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OF

PATENTS

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General Information

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or contact our Customer Service Network on 1300651010

Editorial enquiries
Contact information
Freedom of Information ACT
Professional Standards Board
Sales
Requests for Information under Section 194 (c)
Country Codes
Trade Mark and Designs Hearing Sessions
INID (Internationally agreed Numbers for the Indentification of Data)

GUIDE TO THE USE OF THIS JOURNAL

The Australian Official Journal of Patents (AOJP) reports all major events and actions which take place during the life cycle of an Australian patent and provides certain details of these actions as they relate to the patent or patent application involved. This guide sets out to teach the reader how to use the journal to access this information.

While there are many possible actions in the life of a patent, the majority of actions reported relate to the following events, which are the main stages in the progression of a patent application to a granted patent:

(i) FILING -

This is the act of making an application. When the application is first filed certain details are published.

(ii) OPEN-TO-PUBLIC-INSPECTION (OPI) -

Approximately 18 months after first filing of an Australian or a corresponding foreign application, certain application documents, including the complete specification, become available to the public (Open-to-Public-Inspection or "OPI"). Relevant application details are published.

(iii) ACCEPTANCE –

This is the Commissioner's acceptance of a patent application. Once the Commissioner has accepted a patent application, certain details of the application are published in the AOJP. Notice of opposition may be filed within three months of advertisement of acceptance.

(iv) OPPOSITION –

If an opposition action is commenced against the grant of the patent, the application number and the name of the opponent are published. If the opposition is to the Certification of an Innovation Patent, the patent number and the name of the opponent are published.

(v) GRANTING –

Most accepted applications are not opposed. These proceed to grant and become granted patents. Of the few that are opposed (less than 1%) most of these, after resolution of the opposition, proceed to grant and become granted patents. Granted patents are simply listed in order of their patent number.

(vi) CERTIFICATION

This is the Commissioner's Certification after passing examination of a previously granted unexamined Innovation Patent.

In addition to the actions related to these stages, other actions reported include: assignments, lapsing or withdrawal of applications and ceasing or expiry of patents, voluntary amendments, extensions of time for certain actions and registration of licences.

How To Identify Information Using "INID" Numbers

Patents are published in many different countries and in many different languages. As a result, finding the information that you want (eg the filing date) on a patent document or in a journal can be quite difficult. There is an international system operating, which codifies this information in an unambiguous way, by assigning a specific number to each piece of information about the history of a patent. These numbers are called the I**nternationally agreed Numbers for the Identification of Data** or INID numbers.

These numbers appear on all published patents and abstracts and are used throughout this journal to identify particular items of information. For example, the date on which a document is filed has the INID number (22), while the name of the applicant has the INID number of (71). These numbers are always expressed in parentheses and always immediately precede the information to which they relate. For example:

(22) 12.10.91

means that the filing date of the document which contains this reference is 12 October 1991. Learning the INID numbers for the information you want will help you find it quickly and easily. A complete list of the INID numbers and the items to which they relate is provided at the end of this Guide.

How Australian Patent Documents are Numbered

When searching information or ordering documents it is vital that you understand the numbering system.

Document Numbering in the **Australian Official Journal of Patents from 10th March 2018** All

patents, patent applications and provisional applications are assigned a "10" digit number.

- The first 4 digits identify the year of filing; and
- The fifth digit identifies the type of patent. Numerals; “0”, “2”, or “3” are allocated to standard complete applications and patents (including petty patents); “1” is allocated to innovation applications and patents; and “9” is allocated to provisional applications.

See Examples:
2011236254 and 2000023658 (Standard Complete)
2011158589 (Innovation Complete)
2011902365 (Provisional)

NOTE: Please refer to previous journal publications for numbering formats used prior to 10th March 2018.

Different prefixes will be associated to the application/patent at different stages of its life. This prefix indicates whether the application has been accepted.

A document corresponding to an unaccepted application has the prefix, AU-A; eg AU-A-2002200234. A document corresponding to an accepted application carries the prefix AU-B; eg AU-B-2002200234.

Users need to be aware that an accepted document may differ from the corresponding unaccepted document. This is because amendment may occur between first publication (OPI) and second publication (acceptance).

NOTE: When ordering any patent document from us, whether accepted or not, please quote the application/patent number preceded by the appropriate prefix.

Arrangement of Information in the Journal

For each of the categories

(i) Provisional Applications Filed, (ii)

Complete Applications Filed, iii)

Applications Open to Public Inspection

(iv) Applications Accepted, and (v)

Innovation Patent Certified.

The Journal lists the information published in that category in an alphabetical Name Index list based on the name of the applicant. These indices are useful if you wish to find information about applications made by a particular applicant.

In addition to the Name Index there is provided, for each of these categories, a Numerical Index This index lists the applications either in order of their Application Numbers, in the case of complete applications filed and applications OPI, or in order of their Document Number in the case of accepted applications. It provides, for each number, the name of the applicant. These indices are useful if you wish to track the progress of a particular patent application.

There are also IPC Indices provided for applications which are OPI and for applications which have been accepted. IPC stands for **I**nternational **P**atent **C**lassification. Each IPC "mark" is an alpha-numerical representation of a particular area of technology. These indices are in order of IPC mark, and within each mark provide either the application numbers of the application which are now OPI or the numbers of the cases now accepted. These indices are useful if you wish to check on patent activity in a particular technology.

Using the Indices To Find Patent Information if You Know the Name of the Applicant.

Use the Name Indices. They will give you the following information identified by their INID number:

ITEM	INID No.
A) Provisional applications filed - Name Index	
The name of the applicant	(71)
The Provisional application number	(21)
The date of filing	(22)
The title of the invention	(54)

ITEM	INID No.
B) Complete application filed - Name Index	
The name of the applicant	(71)
The number assigned to the application	(21)
The date of filing	(22)
Title of the invention	(54)
Number of priority document(s) if any	(31)
Date(s) of filing of priority documents	(32)
Country of which priority documents filed	(33)
PCT application number	(86)

ITEM	INID No.
C) Applications open to public inspection Name Index	
The name of the applicant	(71)
The number of the document	(11)
The number assigned to the application	(21)
The date of filing	(22)
The title	(54)
The classification marks	(51)
Priority document number(s)	(31)
Date of filing of priority document(s)	(32)
Country in which priority document filed	(33)
Publication date of unexamined document	(43)
Inventors names if known	(72)
Patent Attorneys	(74)

ITEM	INID No.
D) Applications accepted - Name Index	
The name of the applicant	(71)
The number of the document	(11)
The number of the accepted document	(10)
The number assigned to the application	(21)
The date of filing	(22)
The title	(54)
The classification marks	(51)
PCT publication number	(87)
Priority document number	(31)
Date of filing of priority document(s)	(32)
Country in which priority document filed	(33)
Publication date of unexamined document	(43)

ITEM	INID No.
E) Patents Certified – Name Index	
The name of the applicant	(71)
The number of the accepted document	(10)
The number assigned to the application	(21)
The date of filing	(22)
The title	(54)
The classification marks	(51)
Priority document number	(31)
Date of filing of priority document(s)	(32)
Country in which priority document filed	(33)
Publication date of granted patent	(45)
Inventors names	(72)
Patent Attorneys	(74)
Related by division	(62)

You will notice at each stage of following application through that all applications are in alphabetical order of **Applicant**, not inventor.

1. To Find Information About a Patent Application if You Know its Number.

Use the appropriate numerical index. This will give you the name of the applicant from the number. You will then need to use the appropriate Name Index as above to find out other information about the Patent Application you are interested in.

The following Numerical Indices are available:

A) **Provisional** Applications filed.

B) **Complete** Applications filed.

C) Innovation Applications filed.

D) Applications **Open to Public Inspection.**

E) Applications **Accepted**.

F) Innovation Patent Certified

3. To Find Information About Patent Documents in the Area of Technology in which You are Interested if You Know the International Patent Classification Mark for that Area.

All patent applications are classified according to their subject matter using the International Patent Classification (IPC). Although the system is very detailed and covers all technologies, knowledge of the IPC marks of the technologies you are interested in will allow you to find patent documents in these technologies quite easily. To identify the IPC marks of technologies you are interested in, you can inspect relevant documentation in any of AIPO's state offices.

The indices to use are

A) Applications **OPI** - IPC Index

B) Applications **accepted** - IPC Index.

These indices give you the numbers of the applications which are either OPI or Accepted and are listed in order of their IPC marks.

Once you have the numbers of the documents that interest you, consult the relevant Number Index (see 2. above) to find the applicant's name, and then the Name Index (see 1. above) to find out the details of that application.

'INID' NUMBERS in use on Australian Patent Documents

'INID' is an acronym for '**I**nternationally agreed **N**umbers for the **I**dentification of **D**ata'.

(10) Document identification
- **(11)** Number of the document
- **(12)** Plain language designation of the kind of document
- **(19)** WIPO country code, or other identification, of the country publishing the document.

(20) Document filing data
- **(21)** Number(s) assigned to the application(s).
- **(22)** Date(s) of filing application(s)
- **(23)** Other date(s) of filing, including exhibition filing date and date of filing complete specification following provisional specification.
- **(24)** Date from which industrial property rights may have effect.

(30) Priority data
- **(31)** Number(s) assigned to priority application(s)
- **(32)** Date(s) of filing priority application(s)
- **(33)** Country (countries) in which the priority application(s) was (were) filed.

(40) Date(s) of making available to the public
- (43) Date of publication by printing or similar process of an unexamined document, on which no grant has taken place on or before the said date.

(43) Date of publication by printing or similar process of an examined document, on which no grant has taken place on or before the said date.
(44) Date of publication by printing or similar process of a document, on which grant, or certification has taken place on or before the said date.

(50) Technical Information
(51) International Patent Classification
(52) Domestic or national classification
(54) Title of invention
(56) List of prior art documents, if separate from descriptive text
(57) Abstract or claim

(60) Reference(s) to other legally related domestic document(s)
(60) Related by cognate(s).
(61) Related by addition(s).
(62) Related by division(s).

(70) Identification of parties concerned with the document
(71) Name(s) of applicant(s)
(72) Name(s) of inventor(s) if know to be such
(74) Name(s) of attorney(s) or agent(s)
(75) Name(s) of inventor(s) who is (are) also applicant(s)

(80) Identification of data related to International Conventions other than the Paris Convention
(86) PCT Application Number
(87) PCT Publication Number

NOTE

(1) Australian patent documents published on or after 26 October 1978 should be referred to by the application number preceded by the prefix AU-A or AU-B.

AU-A = Pre-examination **AU-B** = Post-examination

(2) The classification used is the International Patent Classification and is identified by the INID code (51). Further editions of the classification are identified as $(51)_2$, $(51)_3$, $(51)_4$ and $(51)_5$.

(3) INID code 74 provides for the name of the patent attorney, or firm of attorneys, prosecuting an application.

(4) There is a gap in volume numbering of the Australian Official Journal of Patents. The volumes are:

- 1987-2022 Volume 1 - 36
- 2023 - Volume 57 -

Proceedings under the Patents Act 1990

Provisional Applications Filed

Name Index

Applications listed below were processed through the Patent Office Canberra during the period ending 3 Jan 2023 .

(71) A.C.N. 169 569 537 PTY LTD
(21) 2022904033 **(22)** 24.12.2022
(54) CREATION OF A TECHNOLOGICAL MARKETPLACE TO FACILITATE THE TRADE OF VARIABLE HOME EQUITY RELEASE.

(71) Aculeus Therapeutics Pty Ltd
(21) 2022903974 **(22)** 22.12.2022
(54) Benzimidazole derivatives for the modulation of STING

(71) ALMohsen, M.
(21) 2022904036 **(22)** 27.12.2022
(54) Discover a completely new process to produce highest amount of electricity from sea water without building a dam and can be use at any location at cheapest price and very less equipment.

(71) Alzhtec Pty Ltd
(21) 2023900030 **(22)** 09.01.2023
(54) Compositions comprising fungal bioactive compounds, a related apparatus, and methods to treat, ameliorate, or prevent neurodegenerative disorders

(71) AMIA GROUP PTY LTD
(21) 2022904026 **(22)** 23.12.2022
(54) FITTING FOR SUPPORTING PANELS

(71) ANDISHEH, K.
(21) 2022903969 **(22)** 22.12.2022
(54) NO-DAMAGE SHEAR LINK (NDSL)

(71) Ant Engineering Pty Ltd
(21) 2022904039 **(22)** 29.12.2022
(54) GRADER BLADE ATTACHMENT

(71) ANTONIADES, C.
(21) 2022903968 **(22)** 22.12.2022
(54) SLEEP MANAGEMENT AND SLEEP DISORDER DIAGNOSIS SYSTEM AND METHOD

(71) APPLIED ELECTRIC VEHICLES LTD
(21) 2023900007 **(22)** 03.01.2023
(54) METHOD FOR SEAMLESS AND SAFE OPERATION OF AUTONOMOUS VEHICLE CONTROLLERS

(71) APPLIED ELECTRIC VEHICLES LTD
(21) 2023900008 **(22)** 03.01.2023
(54) AUTONOMOUS VEHICLE OPERATIONS WHILE MAINTAINING A SAFE OPERATING ENVELOPE

(71) APPLIED ELECTRIC VEHICLES LTD
(21) 2023900009 **(22)** 03.01.2023
(54) CONTINUOUS AND DETERMINISTIC SAFE OPERATIONAL STATE OF AN AUTONOMOUS VEHICLE

(71) Archer Materials Limited
(21) 2022904006 **(22)** 23.12.2022
(54) METHODS FOR FABRICATION OF GRAPHENE FIELD-EFFECT TRANSISTORS WITH A LIQUID TOP-GATE AND ASSOCIATED COMPONENTRY

(71) atkinson, j.
(21) 2023900011 **(22)** 04.01.2023
(54) Poison Dispenser

Atlassian Inc. see Atlassian Pty Ltd
(21) 2022903979

(71) Atlassian Pty Ltd; Atlassian Inc.
(21) 2022903979 **(22)** 22.12.2022
(54) Issue tracking system

(71) Attey, G.
(21) 2023900019 **(22)** 05.01.2023
(54) IMPROVEMENTS IN SAFETY HELMETS

(71) Australian Honeybee Pty Ltd
(21) 2023900005 **(22)** 03.01.2023
(54) Beehive Frame with Integrated Sensors

(71) Australian Honeybee Pty Ltd
(21) 2023900006 **(22)** 03.01.2023
(54) Load Cell Arrangement for a Non-Rigid Container

(71) Berthold, K.
(21) 2022904034 **(22)** 25.12.2022
(54) Wind/Air Turbine Generated Electric Motor Vehicle

(71) Campbell, B.L.; Ray, P.
(21) 2022904011 **(22)** 23.12.2022
(54) Methods and Preparation and Uses of Xanthorrhoeaceae Compositions

(71) Capper, L.
(21) 2022904032 **(22)** 24.12.2022
(54) Pressurized water dispenser

(71) Capper, L.
(21) 2022904038 **(22)** 29.12.2022
(54) Clip-On Tap

(71) Cartex Hoya Pty Ltd
(21) 2022904043 **(22)** 31.12.2022
(54) Self Cleaning Mobile Solar Generator

(71) Charity Token Pty Ltd
(21) 2022904007 **(22)** 23.12.2022
(54) Charity Token - A revolutionary new way to distribute Charitable Aid

Provisional Applications Filed - Name Index cont'd

(71) Clarity Pharmaceuticals Ltd
(21) 2022903962 **(22)** 22.12.2022
(54) Targeted combination cancer therapy

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(71) ClearVue Technologies Ltd
(21) 2022904008 **(22)** 23.12.2022
(54) A WINDOW UNIT FOR A BUILDING OR STRUCTURE

---

(71) CMOL Pharmaceuticals Australia Pty Ltd
(21) 2023900032 **(22)** 09.01.2023
(54) A HERBAL MEDICINE COMPOSITION AND METHODS OF USING SAME

---

(71) Collier, P.
(21) 2022903950 **(22)** 22.12.2022
(54) WALL SYSTEM AND METHOD OF ASSEMBLY THEREOF

---

(71) Commodore Australia Pty Ltd
(21) 2023900022 **(22)** 06.01.2023
(54) A solar panel arrangement for a transportable module

---

(71) Commonwealth Scientific and Industrial Research Organisation
(21) 2023900012 **(22)** 04.01.2023
(54) Ionisable Lipid Compounds

---

(71) Computer Basics Australia Pty Ltd
(21) 2023900014 **(22)** 04.01.2023
(54) SYSTEM AND METHOD OF CAPTURING AND STORING INFORMATION RELATING TO DWELLINGS

---

(71) Concept Safety Systems (Holdings) Pty Ltd
(21) 2022904045 **(22)** 31.12.2022
(54) EFFICIENT SYSTEM AND METHOD OF GEOREFERENCING TWO IMAGES WITH ONE ANOTHER

---

(71) Control Bionics Limited
(21) 2022904015 **(22)** 23.12.2022
(54) Wheelchair navigation system

---

(71) Corrosion Instruments Pty Ltd
(21) 2022904017 **(22)** 23.12.2022
(54) CORROSION PROTECTION SYSTEM

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(71) Cripps Clark, J.
(21) 2023900010 **(22)** 03.01.2023
(54) ClarZ is a possible patent of addition extension to the invention for block chain processing for consistent asynchronous, non-linear, localized, state-driven and/or condition-based procedurality in distributed systems (and enabling safer application of AI learning) for data/use cases where there is no access or definition of a single global time signal or where time zone information becomes less effective due to privacy protections.

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(71) CSL Behring AG
(21) 2022903972 **(22)** 22.12.2022
(54) A method of purifying proteins

---

(71) Dacey, C.
(21) 2022904004 **(22)** 23.12.2022
(54) The Seikatsu Bed. A bed base that can be reconfigured as required to suit all bed sizes, including single, king single, double, queen & king, using 19 interlocking pieces & secured with 6 screws.

---

(71) davis, s.
(21) 2022903951 **(22)** 22.12.2022
(54) A computer enable method system and computer program for the management of multistage transaction including management booking a service within a hair salon located in hospitals

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Dawson-Sweeney, D. see Dawson-Sweeney, A.
(21) 2022903965

Dawson-Sweeney, D. see Dawson-Sweeney, A.
(21) 2022903965

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(71) Dawson-Sweeney, A.; Dawson-Sweeney, D.; Dawson-Sweeney, D.
(21) 2022903965 **(22)** 22.12.2022
(54) SYSTEM AND METHOD OF PROVIDING INFORMATION ASSISTANCE TO OPERATORS USING A COMPUTING DEVICE

---

(71) de Geeter, P.J.
(21) 2022903984 **(22)** 22.12.2022
(54) Ocean Wave Energy Converter

---

(71) Ecoblue International Pty Ltd
(21) 2022904010 **(22)** 23.12.2022
(54) A process for preparing a diesel exhaust fluid

EDWARDS, B.J. see KELLY, R.
(21) 2022903970

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(71) Essery, B.
(21) 2023900021 **(22)** 06.01.2023
(54) Process for accessing Asset Data

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(71) FGS Scientific Pty Ltd
(21) 2022904029 **(22)** 24.12.2022
(54) BIOACTIVE FOOD AND BEVERAGE COMPOSITIONS AND METHODS

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(71) Formo Bio GmbH
(21) 2022904009 **(22)** 23.12.2022
(54) Compositions

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(71) Formo Bio GmbH
(21) 2022904014 **(22)** 23.12.2022
(54) Solution

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(71) Franklin-AI Pty Ltd
(21) 2022903981 **(22)** 22.12.2022
(54) Diagnostic date user interfaces

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(71) FST INNOVATION PTY LTD
(21) 2023900043 **(22)** 10.01.2023
(54) ADAPTOR TO CONVERT FIRE SPRINKLER OR INLINE FITTING TO A CONNECTABLE FIRE SPRINKLER OR CONNECTABLE INLINE FITTING

---

(71) Gomez, R.
(21) 2022903977 **(22)** 22.12.2022
(54) Multi Staging Unipolar Electrolysis of Water

Gordon, A. see Milne, R.
(21) 2022903987

---

(71) Grant, G.
(21) 2023900013 **(22)** 04.01.2023
(54) Table Top Ball Games Competition Enhancements

---

(71) Hancock, B.
(21) 2022904003 **(22)** 23.12.2022
(54) PAINT ROLLER

Harriss, P. see Harriss, M.
(21) 2022904040

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(71) Harriss, M.; Harriss, P.
(21) 2022904040 **(22)** 29.12.2022
(54) A system and method for communicating a social point of view

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(71) Harvest Technology Pty Ltd
(21) 2022903986 **(22)** 22.12.2022
(54) SYSTEMS METHODS AND STORAGE MEDIA FOR TRANSMITTING MULTIPLE DATA STREAMS OVER A COMMUNICATIONS NETWORK FOR REMOTE INSPECTION

Provisional Applications Filed - Name Index cont'd

(71) Hoselink Pty Ltd
(21) 2022903999 **(22)** 23.12.2022
(54) REEL SPOOLING DEVICE

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(71) Hoselink Pty Ltd
(21) 2022904000 **(22)** 23.12.2022
(54) REEL SPOOLING DEVICE

---

(71) IGO Limited
(21) 2023900023 **(22)** 06.01.2023
(54) Extraction Process

---

(71) Infinity Innovation Solutions
(21) 2023900025 **(22)** 06.01.2023
(54) Website traffic analyser software application

---

(71) Inter Earth Pty Ltd
(21) 2022903990 **(22)** 22.12.2022
(54) A continuous harvester machine

---

(71) J&K&Co Pty Ltd
(21) 2023900002 **(22)** 03.01.2023
(54) Boat Anchor

---

(71) Johnson, K.
(21) 2022904044 **(22)** 31.12.2022
(54) A heat pack

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(71) June365 Limited
(21) 2022903963 **(22)** 22.12.2022
(54) IMPROVEMENTS IN OR RELATING TO RESISTANCE TRAINERS

---

(71) Kegland Holdings Pty Ltd
(21) 2022904035 **(22)** 26.12.2022
(54) BEVERAGE DISPENSING APPARATUS AND SYSTEM

---

(71) KELLY, R.; KRSINIC, G.L.; EDWARDS, B.J.
(21) 2022903970 **(22)** 22.12.2022
(54) USE OF WOOL CELLS IN PAPER COMPOSITES

---

(71) Khateeb, W.
(21) 2022904022 **(22)** 23.12.2022
(54) Injector unit

KRSINIC, G.L. see KELLY, R.
(21) 2022903970

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(71) Lam, T.T.
(21) 2023900038 **(22)** 09.01.2023
(54) CIRCULAR ORBIT BASED WAVE ENERGY SYSTEM FOR UTILITY SCALE POWER PLANTS

---

(71) LIN, J.
(21) 2022903993 **(22)** 23.12.2022
(54) A gripping tool

---

(71) LM Connections Pty Ltd
(21) 2022903953 **(22)** 22.12.2022
(54) AN APPARATUS AND METHOD FOR USE IN CREATING A CONDUIT

---

(71) Logic Environmental Safe Solutions (Less) Pty Ltd
(21) 2023900016 **(22)** 04.01.2023
(54) Drive assembly

---

(71) Mascarenhas, S.
(21) 2023900031 **(22)** 09.01.2023
(54) Self Charger for battery systems

---

(71) McFarlane, W.
(21) 2023900000 **(22)** 01.01.2023
(54) Novel Design of Auricular Vagus Nerve Stimulator

---

(71) Memphasys Limited
(21) 2022903998 **(22)** 23.12.2022
(54) Methods and devices for measuring antioxidant levels in biological samples

---

(71) MESSENGER, O.
(21) 2022904042 **(22)** 31.12.2022
(54) The Bed Conditioner A device to improve sleep comfort

---

(71) Mills, L.
(21) 2023900036 **(22)** 09.01.2023
(54) Tryptamine alkaloids and uses thereof

---

(71) Milne, R.; Gordon, A.
(21) 2022903987 **(22)** 22.12.2022
(54) EXTRACTION PROCESS

---

(71) Milne, R.
(21) 2022903991 **(22)** 22.12.2022
(54) JUICING APPARATUS

---

(71) MO, Y.
(21) 2022904030 **(22)** 24.12.2022
(54) A Method Enabling Law Enforcements, Regulations, Social, Economic, and Financial Transactions and Verifications at the Blockchain Protocol Level

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(71) MORSE MICRO PTY. LTD.
(21) 2022903996 **(22)** 23.12.2022
(54) Methods and Devices of Processing Wireless Signals with Adaptive Frequency Shift Correction and DC Mitigation

---

(71) MRIme PTY LTD
(21) 2022904002 **(22)** 23.12.2022
(54) A METHOD FOR PREDICTING BRAIN PATHOLOGY PROGRESSION

---

(71) Myrio Therapeutics Pty Ltd
(21) 2023900035 **(22)** 09.01.2023
(54) BINDING AGENTS FOR PRAME PEPTIDE-MHC COMPLEX

---

(71) NEIGHBOURS, G.
(21) 2022903964 **(22)** 22.12.2022
(54) FLOATING OFFSHORE WIND TURBINE INSTALLATION METHODS AND SYSTEMS

---

(71) Nelson, P.
(21) 2022904041 **(22)** 30.12.2022
(54) SYSTEM AND METHOD

---

(71) NewSouth Innovations Pty Limited
(21) 2022903976 **(22)** 22.12.2022
(54) Method of Producing Protein

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(71) NewSouth Innovations Pty Ltd
(21) 2022904005 **(22)** 23.12.2022
(54) Quantum processing device and method

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(71) NewSouth Innovations Pty Ltd
(21) 2022904019 **(22)** 23.12.2022
(54) Splicing Kinase Inhibitors

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(71) NewSouth Innovations Pty Ltd
(21) 2022904020 **(22)** 23.12.2022
(54) Splicing Kinase Inhibitors

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(71) Nuheara IP Pty Ltd
(21) 2023900003 **(22)** 03.01.2023
(54) AN EAR BUD

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(71) Nuheara IP Pty Ltd
(21) 2023900004 **(22)** 03.01.2023
(54) AN AUDIO TRANSMITTER

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(71) Open Induction Motors Pty. LTD
(21) 2022904027 **(22)** 23.12.2022
(54) Turbo Electrolyzer

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(71) ORIGINAL CONEY PTY LTD
(21) 2022904023 **(22)** 23.12.2022
(54) MARKER CONE TOOL AND SYSTEM

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(71) Osho Limited
(21) 2022903989 **(22)** 22.12.2022
(54) SYSTEM, DEVICE AND METHOD FOR CONFIGURING CIRCUIT PROTECTION DEVICE(S)

Provisional Applications Filed - Name Index cont'd

(71) Ovula Pty Ltd
(21) 2022904031 **(22)** 24.12.2022
(54) Method for improved ovulation outcome for assisted reproductive therapy

(71) Pardo, M.L.
(21) 2023900001 **(22)** 03.01.2023
(54) A STACKABLE DRINK BOTTLE

(71) Pharmako Biotechnologies PTY LTD; University of South Australia
(21) 2022903957 **(22)** 22.12.2022
(54) COMPOSITION FOR PREVENTING AND/OR TREATING METABOLIC DISORDERS AND METHOD OF ITS PREPARATION

(71) Pongrass, R.
(21) 2022903973 **(22)** 22.12.2022
(54) Tufted carpet

(71) Psylo Pty Ltd
(21) 2022904012 **(22)** 23.12.2022
(54) Compounds

(71) PYC Therapeutics Limited
(21) 2023900033 **(22)** 09.01.2023
(54) Methods of treating pre-mRNA processing factor 31 (prpf31) gene-mediated conditions

Queensland University of Technology see Royal Melbourne Institute of Technology
(21) 2022903994

Ray, P. see Campbell, B.L.
(21) 2022904011

(71) Red Automotive Technologies Pty Ltd
(21) 2022903975 **(22)** 22.12.2022
(54) HITCH COUPLING SYSTEM

(71) Redenlab Pty. Ltd.
(21) 2022903954 **(22)** 22.12.2022
(54) Systems and methods for assessing brain health

(71) Rembiotics Pty Ltd
(21) 2023900029 **(22)** 09.01.2023
(54) Compositions comprising fungal bioactive compounds, and related apparatus and methods to treat, ameliorate or prevent depression or diseases and/or conditions with allergic responses

(71) ResMed Pty Ltd
(21) 2022903966 **(22)** 22.12.2022
(54) Positioning, Stabilising, And Interfacing Structures And System Incorporating Same

(71) Rio Tinto Alcan International Limited
(21) 2022904018 **(22)** 23.12.2022
(54) CALCINATION APPARATUS AND PROCESS

(71) Rollease Acmeda, Inc.
(21) 2022903958 **(22)** 22.12.2022
(54) A chain protection system

(71) Roobuck Pty Ltd
(21) 2022904028 **(22)** 24.12.2022
(54) LTE Enabled Safety Communication Cap Lamp

(71) Rossi, G.
(21) 2022903997 **(22)** 23.12.2022
(54) TETHERING DEVICE AND TETHERING ASSEMBLY

(71) Royal Melbourne Institute of Technology; Queensland University of Technology
(21) 2022903994 **(22)** 23.12.2022
(54) Method and catalyst for producing ammonia

(71) Royal Melbourne Institute of Technology
(21) 2022903995 **(22)** 23.12.2022
(54) METHOD OF SYNTHESISING MICRODROPLETS

(71) Sausage Machine Pty Ltd
(21) 2023900015 **(22)** 04.01.2023
(54) IN-MEMORY BEHAVIOURAL ANALYTICS ENGINE

(71) Schemeczko, A.
(21) 2022903961 **(22)** 22.12.2022
(54) SYSTEM AND METHOD FOR FACILITATING PLACEMENT OF VOLUNTEERS

(71) Scimita Operations Pty Ltd
(21) 2022904001 **(22)** 23.12.2022
(54) A method for extracting valuable metals from battery waste

(71) Smile Real Estate Pty. Ltd.
(21) 2023900020 **(22)** 05.01.2023
(54) Customer identification system and network

(71) SOUTHERN INNOVATION INTERNATIONAL PTY LTD
(21) 2022903971 **(22)** 22.12.2022
(54) INPUT COUNT RATE MEASUREMENT

(71) Spencer, M.
(21) 2022903988 **(22)** 22.12.2022
(54) Wearable Visual Aid in Driving Position

(71) Starburst Global Holdings Limited
(21) 2023900039 **(22)** 09.01.2023
(54) Multi-Chambered "Cold Fission" Reactor Water Renewal, Desalination and Deuterium Destruction Technology

(71) STEWART, H.
(21) 2022903980 **(22)** 22.12.2022
(54) IMPROVED WHEELIE BIN

(71) STIP Pty Ltd
(21) 2022903955 **(22)** 22.12.2022
(54) A snow sport apparatus

(71) STIP Pty Ltd
(21) 2022903956 **(22)** 22.12.2022
(54) Snow sport apparatus

(71) TALBOT, A.
(21) 2022903978 **(22)** 22.12.2022
(54) Apparatus, System and Method of On-Site Dry Wall Fabrication

(71) Talga Technologies Limited
(21) 2022903983 **(22)** 22.12.2022
(54) Silicon Containing Composite Material and Method for Producing Same

(71) Technological Resources Pty. Limited
(21) 2022904021 **(22)** 23.12.2022
(54) BIOMASS DIRECT REDUCED IRON

(71) THINKONE PTY LTD
(21) 2023900034 **(22)** 09.01.2023
(54) REUSABLE CONTAINER FOR FROZEN FOODS AND METHOD FOR REUSE

TONKIN, A. see TONKIN, A.
(21) 2022903982

(71) TONKIN, A.; TONKIN, A.
(21) 2022903982 **(22)** 22.12.2022
(54) Traffice signage cover

(71) UAM Tec Pty Ltd
(21) 2022903967 **(22)** 22.12.2022
(54) A COMPACT PROTECTED TWO-WAY COMMUNICATION SYSTEM

Provisional Applications Filed - Name Index cont'd

(71) UniQuest Pty Ltd
(21) 2022904013 **(22)** 23.12.2022
(54) Transient Receptor Potential Vanilloid 6 Inhibitors

(71) UniQuest Pty Ltd
(21) 2022904016 **(22)** 23.12.2022
(54) Transient Receptor Potential Vanilloid 6 Inhibitors

University of South Australia see Pharmako Biotechnologies PTY LTD
(21) 2022903957

(71) University of Tasmania
(21) 2022904025 **(22)** 23.12.2022
(54) Feed Additives and Feed Compositions containing the same

(71) Urosevski, P.
(21) 2022903992 **(22)** 23.12.2022
(54) Mounting Assembly

(71) Veganic SKN Pty Ltd
(21) 2022903959 **(22)** 22.12.2022
(54) A pest repellent composition

(71) VIVID WHITE PTY LTD
(21) 2022904037 **(22)** 28.12.2022
(54) A glaucoma device

Wale, J. see Wale, M.
(21) 2023900040

(71) Wale, M.; Wale, J.
(21) 2023900040 **(22)** 09.01.2023
(54) A metal drink holder that has a swivel on the bottom that keeps it upright when someone bends over and it is not longer horizontal.

(71) Winter, D.
(21) 2022903952 **(22)** 22.12.2022
(54) Method and system using tactile feedback for teaching golfers the correct motion of the lead wrist in the transition and early downswing.

(71) Woven Image Pty Limited
(21) 2022903960 **(22)** 22.12.2022
(54) A non-woven biopolymer board

(71) Zhang, W.
(21) 2022903985 **(22)** 22.12.2022
(54) ANTI SKIN AGING COMPOSITIONS

(71) Zoe Friedman
(21) 2022904024 **(22)** 23.12.2022
(54) Method and system for simulating a display of an artwork

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2022903950	Collier, P.
2022903951	davis, s.
2022903952	Winter, D.
2022903953	LM Connections Pty Ltd
2022903954	Redenlab Pty. Ltd.
2022903955	STIP Pty Ltd
2022903956	STIP Pty Ltd
2022903957	Pharmako Biotechnologies PTY LTD; University of South Australia
2022903958	Rollease Acmeda, Inc.
2022903959	Veganic SKN Pty Ltd
2022903960	Woven Image Pty Limited
2022903961	Schemeczko, A.
2022903962	Clarity Pharmaceuticals Ltd
2022903963	June365 Limited
2022903964	NEIGHBOURS, G.
2022903965	Dawson-Sweeney, A.; Dawson-Sweeney, D.; Dawson-Sweeney, D.
2022903966	ResMed Pty Ltd
2022903967	UAM Tec Pty Ltd
2022903968	ANTONIADES, C.
2022903969	ANDISHEH, K.
2022903970	KELLY, R.; KRSINIC, G.L.; EDWARDS, B.J.
2022903971	SOUTHERN INNOVATION INTERNATIONAL PTY LTD
2022903972	CSL Behring AG
2022903973	Pongrass, R.
2022903974	Aculeus Therapeutics Pty Ltd
2022903975	Red Automotive Technologies Pty Ltd
2022903976	NewSouth Innovations Pty Limited
2022903977	Gomez, R.
2022903978	TALBOT, A.
2022903979	Atlassian Pty Ltd; Atlassian Inc.
2022903980	STEWART, H.
2022903981	Franklin-AI Pty Ltd
2022903982	TONKIN, A.; TONKIN, A.
2022903983	Talga Technologies Limited
2022903984	de Geeter, P.J.
2022903985	Zhang, W.
2022903986	Harvest Technology Pty Ltd
2022903987	Milne, R.; Gordon, A.
2022903988	Spencer, M.
2022903989	Osho Limited
2022903990	Inter Earth Pty Ltd
2022903991	Milne, R.
2022903992	Urosevski, P.
2022903993	LIN, J.
2022903994	Royal Melbourne Institute of Technology; Queensland University of Technology
2022903995	Royal Melbourne Institute of Technology
2022903996	MORSE MICRO PTY. LTD.
2022903997	Rossi, G.
2022903998	Memphasys Limited
2022903999	Hoselink Pty Ltd
2022904000	Hoselink Pty Ltd
2022904001	Scimita Operations Pty Ltd
2022904002	MRIme PTY LTD
2022904003	Hancock, B.
2022904004	Dacey, C.
2022904005	NewSouth Innovations Pty Ltd
2022904006	Archer Materials Limited
2022904007	Charity Token Pty Ltd
2022904008	ClearVue Technologies Ltd
2022904009	Formo Bio GmbH
2022904010	Ecoblue International Pty Ltd
2022904011	Campbell, B.L.; Ray, P.
2022904012	Psylo Pty Ltd
2022904013	UniQuest Pty Ltd
2022904014	Formo Bio GmbH
2022904015	Control Bionics Limited
2022904016	UniQuest Pty Ltd
2022904017	Corrosion Instruments Pty Ltd
2022904018	Rio Tinto Alcan International Limited
2022904019	NewSouth Innovations Pty Ltd
2022904020	NewSouth Innovations Pty Ltd
2022904021	Technological Resources Pty. Limited
2022904022	Khateeb, W.
2022904023	ORIGINAL CONEY PTY LTD
2022904024	Zoe Friedman
2022904025	University of Tasmania
2022904026	AMIA GROUP PTY LTD
2022904027	Open Induction Motors Pty. LTD
2022904028	Roobuck Pty Ltd
2022904029	FGS Scientific Pty Ltd
2022904030	MO, Y.
2022904031	Ovula Pty Ltd
2022904032	Capper, L.
2022904033	A.C.N. 169 569 537 PTY LTD
2022904034	Berthold, K.
2022904035	Kegland Holdings Pty Ltd
2022904036	ALMohsen, M.
2022904037	VIVID WHITE PTY LTD
2022904038	Capper, L.
2022904039	Ant Engineering Pty Ltd
2022904040	Harriss, M.; Harriss, P.
2022904041	Nelson, P.
2022904042	MESSENGER, O.
2022904043	Cartex Hoya Pty Ltd
2022904044	Johnson, K.
2022904045	Concept Safety Systems (Holdings) Pty Ltd
2023900000	McFarlane, W.
2023900001	Pardo, M.L.
2023900002	J&K&Co Pty Ltd
2023900003	Nuheara IP Pty Ltd
2023900004	Nuheara IP Pty Ltd
2023900005	Australian Honeybee Pty Ltd
2023900006	Australian Honeybee Pty Ltd
2023900007	APPLIED ELECTRIC VEHICLES LTD
2023900008	APPLIED ELECTRIC VEHICLES LTD
2023900009	APPLIED ELECTRIC VEHICLES LTD
2023900010	Cripps Clark, J.
2023900011	atkinson, j.
2023900012	Commonwealth Scientific and Industrial Research Organisation
2023900013	Grant, G.
2023900014	Computer Basics Australia Pty Ltd
2023900015	Sausage Machine Pty Ltd
2023900016	Logic Environmental Safe Solutions (Less) Pty Ltd
2023900019	Attey, G.
2023900020	Smile Real Estate Pty. Ltd.
2023900021	Essery, B.
2023900022	Commodore Australia Pty Ltd
2023900023	IGO Limited
2023900025	Infinity Innovation Solutions
2023900029	Rembiotics Pty Ltd
2023900030	Alzhtec Pty Ltd
2023900031	Mascarenhas, S.
2023900032	CMOL Pharmaceuticals Australia Pty Ltd
2023900033	PYC Therapeutics Limited
2023900034	THINKONE PTY LTD
2023900035	Myrio Therapeutics Pty Ltd
2023900036	Mills, L.
2023900038	Lam, T.T.
2023900039	Starburst Global Holdings Limited
2023900040	Wale, M.; Wale, J.
2023900043	FST INNOVATION PTY LTD

Complete Applications Filed

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Applications listed below were processed through the Patent Office Canberra during the period ending 3 Jan 2023 .

. (*) Title not in Roman characters
. (**) Title not given

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(71) 3D At Depth, Inc.
(21) 2022283612 **(22)** 05.12.2022
(54) SYSTEMS AND METHODS FOR MONITORING UNDERWATER STRUCTURES
(62) 2018261777

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(71) Abbott Diabetes Care Inc.
(21) 2022283734 **(22)** 08.12.2022
(54) Analyte sensors and sensing methods featuring dual detection of glucose and ketones
(62) 2020216325

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(71) Ability Innovations Pty Ltd
(21) 2022283617 **(22)** 05.12.2022
(54) Sanitiser Dispenser
(31) 2021903999 **(32)** 10.12.21 **(33)** AU

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(71) Ablexis, LLC
(21) 2022283715 **(22)** 08.12.2022
(54) Anti-CD115 antibodies
(62) 2016323582

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(71) Ablynx NV
(21) 2022279373 **(22)** 28.11.2022
(54) Improved immunoglobulin variable domains
(62) 2020202855

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(71) Acer Incorporated
(21) 2022283627 **(22)** 05.12.2022
(54) DEVICE AND METHOD FOR HANDLING A RECEPTION OF A MULTICAST BROADCAST SERVICE TRANSMISSION AND A SMALL DATA TRANSMISSION
(31) 18/071,637 **(32)** 30.11.22 **(33)** US
63/287,540 09.12.21 US

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(71) Adam, R.
(21) 2022279528 **(22)** 01.12.2022
(54) SYSTEM AND METHOD FOR MANAGING THE CONTENT IN A STORAGE ASSEMBLY

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(71) AFINITI, LTD.
(21) 2022279463 **(22)** 30.11.2022
(54) Techniques for estimating expected performance in a task assignment system
(62) 2020264261

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(71) Aizoon S.r.l.
(21) 2022283713 **(22)** 08.12.2022
(54) METHOD FOR DETECTING ANOMALIES IN COMMUNICATIONS, AND CORRESPONDING DEVICE AND COMPUTER PROGRAM PRODUCT
(31) 102021000033203 **(32)** 31.12.21 **(33)** IT

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(71) Alcyone Therapeutics, Inc.
(21) 2022279517 **(22)** 01.12.2022
(54) Automated drug delivery systems and methods
(62) 2017302599

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(71) Alexion Pharmaceuticals, Inc.
(21) 2022279414 **(22)** 29.11.2022
(54) HIGH CONCENTRATION ANTI-C5 ANTIBODY FORMULATIONS
(62) 2018306612

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(71) Aliaxis Research & Technology
(21) 2022279400 **(22)** 29.11.2022
(54) FITTING HAVING A GRIP RING
(31) 500977 **(32)** 10.12.21 **(33)** LU

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(71) American Express Travel Related Services Company, Inc.
(21) 2022279532 **(22)** 02.12.2022
(54) PEER-TO-PEER MONEY TRANSFERS
(62) 2019301479

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(71) AMIET, J.
(21) 2022279494 **(22)** 01.12.2022
(54) A CRANK

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(71) Amphenol (Maryland), Inc.
(21) 2022283659 **(22)** 06.12.2022
(54) Hermetically sealed hydrophones with very low acceleration sensitivity
(62) 2016256671

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(71) Angel Group Co., Ltd.
(21) 2022279468 **(22)** 30.11.2022
(54) CHIP RECOGNIZING AND LEARNING SYSTEM
(62) 2018211647

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(71) Angel Group Co., Ltd.
(21) 2022283664 **(22)** 06.12.2022
(54) System and method for managing packages of shuffled playing cards
(62) 2021200045

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(71) Anglo American Technical & Sustainability Services Ltd; Anglo Corporate Services South Africa (Pty) Ltd.
(21) 2022279471 **(22)** 30.11.2022
(54) An integrated heap leach process
(62) 2021205046

Anglo Corporate Services South Africa (Pty) Ltd. see Anglo American Technical & Sustainability Services Ltd
(21) 2022279471

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(71) AP&C Advanced Powders & Coatings Inc.
(21) 2022283742 **(22)** 08.12.2022
(54) REACTIVE METAL POWDERS IN-FLIGHT HEAT TREATMENT PROCESSES
(62) 2017249439

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(71) Apple Inc.
(21) 2022279466 **(22)** 30.11.2022
(54) Implementation of biometric authentication
(62) 2019281965

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(71) Apple Inc.
(21) 2022283731 **(22)** 08.12.2022
(54) Devices and methods for navigating between user interfaces
(62) 2020257134

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(71) Ardelyx, Inc.
(21) 2022279504 **(22)** 01.12.2022
(54) Substituted 4-Phenyl Pyridine Compounds As Non-Systemic TGR5 Agonists
(62) 2016369631

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(71) Arena Pharmaceuticals, Inc.
(21) 2022283660 **(22)** 06.12.2022
(54) Methods of treating conditions related to the S1P1 receptor
(62) 2021200129

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(71) Arrowhead Pharmaceuticals, Inc.
(21) 2022283623 **(22)** 05.12.2022

Complete Applications Filed - Name Index cont'd

(54) Compositions and methods for inhibiting gene expression of LPA
(62) 2016331084

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(71) Assurant, Inc.
(21) 2022279538 **(22)** 02.12.2022
(54) APPARATUS AND METHOD FOR RESOURCE ALLOCATION PREDICTION AND MODELING, AND RESOURCE ACQUISITION OFFER GENERATION, ADJUSTMENT AND APPROVAL
(62) 2019269723

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(71) Avanir Pharmaceuticals, Inc.
(21) 2022283671 **(22)** 06.12.2022
(54) Pharmaceutical compositions comprising a dextromethorphan compound and quinidine for the treatment of agitation in dementia
(62) 2020289733

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(71) B3 CORP PTY LTD
(21) 2022279431 **(22)** 29.11.2022
(54) A Retaining Wall System
(62) PCT/AU2021/051196

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(71) Barum Holdings Pty Ltd
(21) 2022279480 **(22)** 30.11.2022
(54) Motorised Retracting Awning
(31) 2021903934 **(32)** 03.12.21 **(33)** AU

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(71) Becton, Dickinson and Company
(21) 2022279403 **(22)** 29.11.2022
(54) UNIVERSAL SINGLE-USE CAP FOR MALE AND FEMALE CONNECTORS
(62) 2022200552

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(71) Becton, Dickinson and Company
(21) 2022279541 **(22)** 02.12.2022
(54) Retaining element to prevent break loose contamination for partially prefilled syringes
(62) 2020308488

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(71) Becton Dickinson France
(21) 2022283654 **(22)** 06.12.2022
(54) Auto-injector with audio indicator
(62) 2020228948

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(71) Becton Dickinson France
(21) 2022283702 **(22)** 07.12.2022
(54) Auto-injector with locking clip
(62) 2020228740

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(71) Beijing Baidu Netcom Science Technology Co., Ltd.
(21) 2022283685 **(22)** 07.12.2022
(54) Quantum neural network training method and system, electronic device, and medium
(31) 202111533169.X **(32)** 15.12.21 **(33)** CN

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(71) Beijing Geekplus Technology Co., Ltd.
(21) 2022279434 **(22)** 29.11.2022
(54) MANAGEMENT METHOD, DEVICE AND SYSTEM APPLIED TO GOODS-TO-PERSON SYSTEM, SERVER AND COMPUTER STORAGE MEDIUM
(62) 2019278136

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(71) Bezzina, J.
(21) 2022279402 **(22)** 29.11.2022
(54) Conduit Support
(31) 2021903891 **(32)** 01.12.21 **(33)** AU

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(71) BGC Partners, Inc
(21) 2022283624 **(22)** 05.12.2022
(54) CUSTOMIZABLE TRADING DISPLAY OF MARKET DATA
(62) 2020277145

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(71) BGC Partners, L.P.
(21) 2022279438 **(22)** 30.11.2022
(54) NETWORKS FOR PACKET MONITORING AND REPLAY
(62) 2021201078

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(71) Biocompatibles UK Limited
(21) 2022283628 **(22)** 05.12.2022
(54) Cryoprobe with stiffening element
(62) 2019370496

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(71) Biometic S.r.l.
(21) 2022283714 **(22)** 08.12.2022
(54) Method and plant for inspecting an animal carcass
(31) 102021000031448 **(32)** 15.12.21 **(33)** IT

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(71) Blue Planet Systems Corporation
(21) 2022283620 **(22)** 05.12.2022
(54) Ammonia mediated carbon dioxide (CO2) sequestration methods and systems
(62) 2017238848

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(71) Blue River Technology Inc.
(21) 2022283668 **(22)** 06.12.2022
(54) CAMERA ARRAY CALIBRATION IN A FARMING MACHINE
(31) 17/566,396 **(32)** 30.12.21 **(33)** US

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(71) Board of Regents, The University of Texas System
(21) 2022279445 **(22)** 30.11.2022
(54) COMPOSITIONS AND METHODS FOR TARGETING CONNEXIN HEMICHANNELS
(62) 2020202304

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(71) Boston Scientific Scimed, Inc.
(21) 2022279409 **(22)** 29.11.2022
(54) Stone identification methods and systems
(62) 2018206495

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(71) Botanic Gardens and Parks Authority
(21) 2022279522 **(22)** 01.12.2022
(54) METHOD AND APPARATUS FOR USE IN ESTABLISHING OR RE-ESTABLISHING PLANT LIFE IN A LAND AREA
(31) 2021903931 **(32)** 03.12.21 **(33)** AU

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(71) Bowman, B.
(21) 2022279553 **(22)** 04.12.2022
(54) Latches to hold commercial and residential bin lids closed

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(71) Breathe Technologies, Inc.
(21) 2022279459 **(22)** 30.11.2022
(54) Modular ventilation system
(62) 2021200814

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(71) Brien Holden Vision Institute Limited
(21) 2022283726 **(22)** 08.12.2022
(54) Devices, systems and/or methods for myopia control
(62) 2017351635

Bruce, R. see Bruce, S.
(21) 2022279406

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(71) Bruce, S.; Bruce, R.; Hayes, B.
(21) 2022279406 **(22)** 29.11.2022
(54) TOOL AND METHOD FOR FORMING A PUDDLE DRAIN RECESS
(31) 2021903921 **(32)** 03.12.21 **(33)** AU
788621 24.05.22 NZ

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(71) CAN Technologies, Inc.
(21) 2022279545 **(22)** 02.12.2022
(54) OPTIMIZING ORGANIC GROWTH USING SPECTRIAL MEASUREMENT
(62) 2019337093

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(71) Cantor Index LLC
(21) 2022283649 **(22)** 06.12.2022
(54) SYSTEM AND METHOD FOR WAGERING-BASED TRANSFERABLE FINANCIAL INSTRUMENTS
(62) 2020256293

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(71) Carrier Corporation
(21) 2022283708 **(22)** 07.12.2022
(54) Creating a workflow from multiple disparate workflow systems leveraging predictive actionable insights for equipment
(31) 63/294,129 **(32)** 28.12.21 **(33)** US

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(71) Carrosserie HESS AG
(21) 2022283706 **(22)** 07.12.2022
(54) Method for Predicting Future Driving Conditions for a Vehicle
(62) 2018207854

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(71) Caterpillar Underground Mining Pty. Ltd.
(21) 2022283690 **(22)** 07.12.2022
(54) VARIABLE SYSTEM PRESSURE BASED ON IMPLEMENT POSITION
(31) 17/563,977 **(32)** 28.12.21 **(33)** US

(71) Cepheid
(21) 2022279465 **(22)** 30.11.2022
(54) INTEGRATED PURIFICATION AND MEASUREMENT OF DNA METHYLATION AND CO-MEASUREMENT OF MUTATIONS AND/OR MRNA EXPRESSION LEVELS IN AN AUTOMATED REACTION CARTRIDGE
(62) 2016277943

(71) CFPH, LLC
(21) 2022283657 **(22)** 06.12.2022
(54) MULTI-DISPLAY COMPUTER TERMINAL SYSTEM
(62) 2020270476

(71) Chengdu Shangyi Information Technology Co., Ltd.
(21) 2022279513 **(22)** 01.12.2022
(54) Personalized Exercise Guidance System and Method Based on Machine Learning
(31) 202210477547.5 **(32)** 05.05.22 **(33)** CN

(71) CNH Industrial America LLC
(21) 2022283680 **(22)** 06.12.2022
(54) System and method for an agricultural applicator
(31) 17/544,484 **(32)** 07.12.21 **(33)** US

(71) Cognitive Performance Ltd
(21) 2022283739 **(22)** 08.12.2022
(54) INTEGRATED NUTRITION ITEM PROCUREMENT AND VENUE ACCESS CONTROL PLATFORM
(31) 2021904043 **(32)** 14.12.21 **(33)** AU

(71) Commonwealth Scientific and Industrial Research Organisation
(21) 2022283635 **(22)** 05.12.2022
(54) Detection of viral infection
(62) 2021203781

(71) Cyclopure, Inc.
(21) 2022283700 **(22)** 07.12.2022
(54) CHARGE-BEARING CYCLODEXTRIN POLYMERIC MATERIALS AND METHODS OF MAKING AND USING SAME
(62) 2020221359

(71) Cyclopure, Inc.
(21) 2022283703 **(22)** 07.12.2022
(54) CHARGE-BEARING CYCLODEXTRIN POLYMERIC MATERIALS AND METHODS OF MAKING AND USING SAME
(62) 2020221359

(71) Daikin Industries, Ltd.
(21) 2022283653 **(22)** 06.12.2022
(54) Composition containing refrigerant, and refrigeration method using said composition, operating method for refrigeration device, and refrigeration device
(62) 2019427789

(71) Dendisc Holdings Pty Ltd
(21) 2022279407 **(22)** 29.11.2022
(54) An Intraoral Cleaning Tablet
(31) 2021903876 **(32)** 30.11.21 **(33)** AU

(71) Dexcom, Inc.
(21) 2022279518 **(22)** 01.12.2022
(54) System and method for wireless communication of glucose data
(62) 2021200100

(71) Dublin City University
(21) 2022283663 **(22)** 06.12.2022
(54) Microfluidic device for detection of analytes
(62) 2018247760

(71) Dunbowin Pty Ltd
(21) 2022283705 **(22)** 07.12.2022
(54) Personnel record and match system
(31) 2021903974 **(32)** 08.12.21 **(33)** AU

(71) Eco Shed Industries Pty Ltd
(21) 2022279398 **(22)** 29.11.2022
(54) A CONSTRUCTION ELEMENT COMPRISING A STORAGE TANK
(62) 2017274067

(71) Edwards Lifesciences Corporation
(21) 2022283645 **(22)** 06.12.2022
(54) Prosthetic heart valve
(62) 2017305328

(71) Electric Loans Australia Pty Ltd
(21) 2022279495 **(22)** 01.12.2022
(54) A METHOD FOR PURCHASING AN ASSET

(71) Eli Lilly and Company
(21) 2022279524 **(22)** 01.12.2022
(54) GIP/GLP1 AGONIST COMPOSITIONS
(62) 2019289110

(71) Encore Medical, L.P. (d/b/a DJO Surgical)
(21) 2022279542 **(22)** 02.12.2022
(54) SHOULDER IMPLANT COMPONENTS
(62) 2018210170

(71) Entellus Medical, Inc.
(21) 2022279501 **(22)** 01.12.2022
(54) Wireless endoscope
(62) 2017325566

(71) Epimeron Inc.
(21) 2022279419 **(22)** 29.11.2022
(54) Compositions and methods of making (R)-Reticuline and precursors thereof
(62) 2020200131

(71) Equilume Limited
(21) 2022283707 **(22)** 07.12.2022
(54) AN APPARATUS AND METHOD FOR INHIBITING MELATONIN SYNTHESIS IN A HORSE
(62) 2020204434

(71) Ergomotion, Inc.
(21) 2022279439 **(22)** 30.11.2022
(54) Modular pneumatic actuation system for head tilt and lumbar supports in an adjustable bed
(31) 17/539,999 **(32)** 01.12.21 **(33)** US

(71) Estetra SRL
(21) 2022283615 **(22)** 05.12.2022
(54) Orodispersible dosage unit containing an estetrol component
(62) 2021203265

(71) ETA Green Power Limited
(21) 2022279411 **(22)** 29.11.2022
(54) MOTOR ROTOR AND METHODS OF MANUFACTURE
(31) 2117310.9 **(32)** 30.11.21 **(33)** GB
2217803.2 28.11.22 GB

(71) Evolva SA
(21) 2022283672 **(22)** 06.12.2022
(54) Methods for improved production of Rebaudioside D and Rebaudioside M
(62) 2020273296

(71) EZZ Life Science Holdings Pty Ltd
(21) 2022283733 **(22)** 08.12.2022
(54) Helicobacter pylori detection kit and detection method thereof

(71) F. Hoffmann-La Roche AG
(21) 2022279425 **(22)** 29.11.2022
(54) Bicyclic lactams and methods of use thereof
(62) 2021202398

(71) FalCom A/S
(21) 2022283644 **(22)** 06.12.2022

Complete Applications Filed - Name Index cont'd

(54) Communication device for a hearing protection system, a hearing protection system, and related methods
(31) 21214642.7 **(32)** 15.12.21 **(33)** EP

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(71) Fisher & Paykel Healthcare Limited
(21) 2022279424 **(22)** 29.11.2022
(54) BREATHING ASSISTANCE APPARATUS USER INTERFACE
(62) 2021201223

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(71) Fisher & Paykel Healthcare Limited
(21) 2022279499 **(22)** 01.12.2022
(54) ADAPTOR FOR RESPIRATORY ASSISTANCE SYSTEMS
(62) 2017313628

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(71) Footprint International, LLC
(21) 2022283735 **(22)** 08.12.2022
(54) Methods and apparatus for manufacturing fiber-based food containers
(62) 2017302297

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(71) Forendo Pharma Ltd.
(21) 2022279473 **(22)** 30.11.2022
(54) ESTRA-1,3,5(10)-TRIENE COMPOUNDS CONDENSED IN POSITION 16(17) WITH A PYRAZOLE RING AS INHIBITORS OF 17-HSD1
(62) 2019393005

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(71) Form 700 Pty Ltd
(21) 2022279457 **(22)** 30.11.2022
(54) POSITIONABLE PLATFORM
(31) 2021903908 **(32)** 02.12.21 **(33)** AU
2022900962 11.04.22 AU

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(71) FUJIFILM Corporation
(21) 2022283721 **(22)** 08.12.2022
(54) Hemostatic material composition
(31) 2021-207605 **(32)** 21.12.21 **(33)** JP

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(71) FUJIFILM Corporation
(21) 2022283725 **(22)** 08.12.2022
(54) Hemostatic material composition
(31) 2021-207606 **(32)** 21.12.21 **(33)** JP

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(71) G1 Therapeutics, Inc.
(21) 2022279510 **(22)** 01.12.2022
(54) Morphic forms of GIT38 and methods of manufacture thereof
(62) 2018291026

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(71) Gavish-Galilee Bio Applications, Ltd
(21) 2022279442 **(22)** 30.11.2022
(54) Optimized polypeptide for a subunit vaccine against avian reovirus
(62) 2021201168

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(71) GenesisCare Ventures Pty Ltd
(21) 2022279427 **(22)** 29.11.2022
(54) Method for treating cancerous and precancerous skin
(62) 2021266262

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(71) Georg Fischer Rohrleitungssysteme AG
(21) 2022279493 **(22)** 01.12.2022
(54) Welding assessment during welding process
(31) 21 212 668.4 **(32)** 07.12.21 **(33)** EP

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(71) Georg Fischer Rohrleitungssysteme AG
(21) 2022283666 **(22)** 06.12.2022
(54) Double pipe system
(31) 21 212 664.3 **(32)** 07.12.21 **(33)** EP

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(71) Getac Technology Corporation
(21) 2022279472 **(22)** 30.11.2022
(54) Waterproof Gate Assembly And Electronic Device
(31) 202210994410.7 **(32)** 18.08.22 **(33)** CN
63/309,093 11.02.22 US

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(71) Getac Technology Corporation
(21) 2022279474 **(22)** 30.11.2022
(54) Electronic Device
(31) 202210994665.3 **(32)** 18.08.22 **(33)** CN
63/309,463 11.02.22 US

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(71) Getac Technology Corporation
(21) 2022279475 **(22)** 30.11.2022
(54) Replacement Device And Electronic Device
(31) 63/309,463 **(32)** 11.02.22 **(33)** US
202211129329.9 16.09.22 CN

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(71) Getac Technology Corporation
(21) 2022279476 **(22)** 30.11.2022
(54) Electronic Device
(31) 202210994622.5 **(32)** 18.08.22 **(33)** CN
63/309,470 11.02.22 US

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(71) Getac Technology Corporation
(21) 2022279477 **(22)** 30.11.2022
(54) Transmission Dock And Electronic Device
(31) 202210991555.1 **(32)** 18.08.22 **(33)** CN
63/309,102 11.02.22 US

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(71) Getac Technology Corporation
(21) 2022279478 **(22)** 30.11.2022
(54) Power Delivery Device And Control Method Of Power Supply Path
(31) 63/302,983 **(32)** 25.01.22 **(33)** US

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(71) Getac Technology Corporation
(21) 2022279479 **(22)** 30.11.2022
(54) Power Delivery Device And Control Method Thereof
(31) 63/302,983 **(32)** 25.01.22 **(33)** US

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(71) Getac Technology Corporation
(21) 2022279481 **(22)** 30.11.2022
(54) Electronic Device
(31) 202211138206.1 **(32)** 19.09.22 **(33)** CN
63/309,463 11.02.22 US

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(71) Getac Technology Corporation
(21) 2022279482 **(22)** 30.11.2022
(54) Casing With Replacement Structure And Electronic Device
(31) 202211093933.0 **(32)** 08.09.22 **(33)** CN
63/309,124 11.02.22 US

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(71) Getac Technology Corporation
(21) 2022279483 **(22)** 30.11.2022
(54) Millimeter Wave Communication Apparatus
(31) 63/351,425 **(32)** 12.06.22 **(33)** US

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(71) Getac Technology Corporation
(21) 2022279547 **(22)** 02.12.2022
(54) Electronic Device, Expansion Structure For Electronic Card And Assembly Method Thereof
(31) 202111474967.X **(32)** 03.12.21 **(33)** CN

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(71) Getac Technology Corporation
(21) 2022283640 **(22)** 05.12.2022
(54) ELECTRONIC DEVICE AND LOCKING ASSEMBLY THEREOF
(31) 63/303,449 **(32)** 26.01.22 **(33)** US
202211280995.2 19.10.22 CN

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(71) Getac Technology Corporation
(21) 2022283641 **(22)** 05.12.2022
(54) Heat Dissipation Structure And Electronic Device
(31) 202210814618.6 **(32)** 11.07.22 **(33)** CN

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(71) Giant Manufacturing Co., Ltd.
(21) 2022279470 **(22)** 30.11.2022
(54) POWER-MEASURING DEVICES
(31) 63/264,833 **(32)** 02.12.21 **(33)** US
18/058,744 24.11.22 US

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(71) Gilead Sciences, Inc.
(21) 2022279537 **(22)** 02.12.2022
(54) PD-1/PD-L1 inhibitors
(62) 2021200639

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(71) Gilead Sciences, Inc.
(21) 2022283687 **(22)** 07.12.2022
(54) Crystalline forms of tenofovir alafenamide
(62) 2021200857

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(71) GLASS VICE HOLDINGS LIMITED
(21) 2022279450 **(22)** 30.11.2022
(54) A TIMBER CONNECTOR AND RELATED METHODS
(62) 2017202400

Complete Applications Filed - Name Index cont'd

(71) GlaxoSmithKline Consumer Healthcare Holdings (US) LLC
(21) 2022279523 **(22)** 01.12.2022
(54) VARIABLE DOSE CONTAINER
(62) 2019345162

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(71) Globeride, Inc.
(21) 2022279446 **(22)** 30.11.2022
(54) FISHING SPINNING REEL
(31) 2021-193991 **(32)** 30.11.21 **(33)** JP

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(71) Globeride, Inc.
(21) 2022279447 **(22)** 30.11.2022
(54) FISHING SPINNING REEL
(31) 2021-193814 **(32)** 30.11.21 **(33)** JP

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(71) Globeride, Inc.
(21) 2022279448 **(22)** 30.11.2022
(54) FISHING SPINNING REEL
(31) 2021-195457 **(32)** 01.12.21 **(33)** JP

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(71) Google LLC
(21) 2022279429 **(22)** 29.11.2022
(54) SURFACE CODE COMPUTATIONS USING AUTO-CCZ QUANTUM STATES
(62) 2020253282

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(71) Green Eco International Pty Ltd
(21) 2022283670 **(22)** 06.12.2022
(54) System and method for food waste decomposition
(62) 2020250241

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(71) Hans Künz GmbH
(21) 2022279535 **(22)** 02.12.2022
(54) Method for controlling a movement of a load in a workspace of a load transport device
(31) A 192/2021 **(32)** 06.12.21 **(33)** AT

Hayes, B. see Bruce, S.
(21) 2022279406

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(71) Hayward Industries, Inc.
(21) 2022279418 **(22)** 29.11.2022
(54) Systems and methods for providing network connectivity and remote monitoring, optimization, and control of pool/spa equipment
(62) 2017210106

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(71) Hen Luminary Energy International Pty Ltd
(21) 2022283673 **(22)** 06.12.2022
(54) ADAOLISA UNIVERSAL DISINFECTANT, ANTISEPTIC AND SANITIZER FOR GERMS AND VIRUSES
(62) 2020204642

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(71) Heye International GmbH
(21) 2022279435 **(22)** 29.11.2022
(54) IS Machine For Producing Glass Containers And Method For Operating An IS Machine Of This Kind
(31) 10 2021 131 486.0 **(32)** 30.11.21 **(33)** DE

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(71) HICARE HEALTH FOODS PTY LIMITED
(21) 2022279396 **(22)** 29.11.2022
(54) DIGESTIVE SUPPLEMENT TO MITIGATE ADVERSE REACTIONS
(62) 2020273385

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(71) Holcomb Scientific Research Limited
(21) 2022283616 **(22)** 05.12.2022
(54) Solid state multi-pole and uni-pole electric generator rotor for AC/DC electric generators
(62) 2017339586

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(71) Howe, S.
(21) 2022283639 **(22)** 05.12.2022
(54) TRAIN COLLISION OBSTRUCTION REMOVAL AND PEDESTRIAN IMPACT MITIGATION SYSTEM

Huang, K. see Lai, Z.
(21) 2022279437

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(71) Huawei Technologies Co., Ltd.
(21) 2022283743 **(22)** 08.12.2022
(54) METHOD FOR GENERATING SCREENSHOT, CONTROL METHOD, AND ELECTRONIC DEVICE
(62) 2019351406

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(71) IGT
(21) 2022283626 **(22)** 05.12.2022
(54) Sporting event wagering with insurance
(31) 17/557,452 **(32)** 21.12.21 **(33)** US

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(71) Illinois Tool Works Inc.
(21) 2022283704 **(22)** 07.12.2022
(54) Joint assembly and reusable height adjustar for positioning between two concrete slabs
(62) 2017264404

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(71) ImmunityBio, Inc.
(21) 2022283619 **(22)** 05.12.2022
(54) Chimeric antigen receptor-modified NK-92 cells
(62) 2019375375

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(71) ImmunityBio, Inc.
(21) 2022283688 **(22)** 07.12.2022
(54) IL-2 Dependent NK-92 cells with stable Fc receptor expression
(62) 2019388876

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(71) Incyte Corporation
(21) 2022283611 **(22)** 05.12.2022
(54) Imidazopyrimidines and triazolopyrimidines as A2A / A2B inhibitors
(62) 2019227607

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(71) Instrumentation Laboratory Company
(21) 2022283636 **(22)** 05.12.2022
(54) A MICROFLUIDIC IMAGE ANALYSIS SYSTEM
(31) 17/555,939 **(32)** 20.12.21 **(33)** US

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(71) Janssen Pharmaceutica NV
(21) 2022279416 **(22)** 29.11.2022
(54) Methods of treating depression using orexin-2 receptor antagonists
(62) 2017231828

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(71) Jet Tech Products Pty Ltd
(21) 2023200006 **(22)** 02.01.2023
(54) CHASSIS CLEANING DEVICE
(31) 2022900595 **(32)** 11.03.22 **(33)** AU

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(71) JINKO SOLAR (HAINING) CO., LTD.; ZHEJIANG JINKO SOLAR CO., LTD.
(21) 2022279531 **(22)** 02.12.2022
(54) PHOTOVOLTAIC MODULE AND METHOD FOR PREPARING THE PHOTOVOLTAIC MODULE
(31) 202211191178.X **(32)** 28.09.22 **(33)** CN

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(71) JNK design engineering Corp.
(21) 2022283718 **(22)** 08.12.2022
(54) Electric door controller

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(71) Johnson & Johnson Consumer Inc.
(21) 2022279507 **(22)** 01.12.2022
(54) Hair growth composition and method
(62) 2016381081

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(71) Johnson & Johnson Consumer Inc.
(21) 2022279519 **(22)** 01.12.2022
(54) Hair growth composition and method
(62) 2016381082

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(71) Johnson & Johnson Consumer Inc.
(21) 2022279530 **(22)** 02.12.2022
(54) Hair growth composition and method
(62) 2016381084

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(71) Karyopharm Therapeutics Inc.
(21) 2022283662 **(22)** 06.12.2022
(54) Nuclear transport modulators and uses thereof
(62) 2020277088

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(71) Kimura Kohki Co., Ltd.
(21) 2022279430 **(22)** 29.11.2022
(54) Heat exchanger
(31) 2022-009142 **(32)** 25.01.22 **(33)** JP

Complete Applications Filed - Name Index cont'd

(71) Lai, Z.; Huang, K.
(21) 2022279437 **(22)** 30.11.2022
(54) PREPARATION METHOD AND APPLICATION OF TRADITIONAL CHINESE MEDICINE COMPOSITION FOR TREATING COVID-19
(31) 202211051421.8 **(32)** 29.08.22 **(33)** CN

(71) Lam, T.T.
(21) 2022279401 **(22)** 29.11.2022
(54) FLEXIBLE NET OF NON-HORIZONTAL CONNECTIONS FOR SOLAR ENERGY SYSTEMS
(31) 2022900855 **(32)** 01.04.22 **(33)** AU

(71) Lemnature AquaFarms Corporation
(21) 2022283618 **(22)** 05.12.2022
(54) Methods and systems for extracting reduced oxalic acid protein from aquatic species and compositions thereof
(62) 2016304892

(71) LG Electronics Inc.
(21) 2022279412 **(22)** 29.11.2022
(54) Cleaner holder
(62) 2021202241

(71) LG Electronics Inc.
(21) 2022279460 **(22)** 30.11.2022
(54) Cleaner
(62) 2020233725

(71) LG Electronics Inc.
(21) 2022279462 **(22)** 30.11.2022
(54) Mop for cleaner
(62) 2019303419

(71) LG Electronics Inc.
(21) 2022279488 **(22)** 01.12.2022
(54) Intra-prediction method, and encoder and decoder using same
(62) 2021204343

(71) LG ELECTRONICS INC.
(21) 2022279405 **(22)** 29.11.2022
(54) Apparatus for controlling clothes treating apparatus, clothes treating apparatus and method for controlling clothes treating apparatus
(62) 2020217449

(71) LG ELECTRONICS INC.
(21) 2022279548 **(22)** 02.12.2022
(54) REFRIGERATOR
(62) 2020270472

(71) Light Field Lab, Inc.
(21) 2022283646 **(22)** 06.12.2022
(54) Energy relay and transverse Anderson localization for propagation of two-dimensional, light field and holographic energy
(62) 2020204378

(71) Light Field Lab, Inc.
(21) 2022283651 **(22)** 06.12.2022
(54) System and methods of holographic sensory data generation, manipulation and transport
(62) 2017297628

(71) Lion Group, Inc.
(21) 2022283747 **(22)** 08.12.2022
(54) Radio frequency identification (RFID) system for determining location
(62) 2017362444

(71) Lithium Ark Holding B.V.
(21) 2022279526 **(22)** 01.12.2022
(54) Production Of Lithium Hydroxide And Lithium Carbonate
(62) 2022209268

(71) LIU, B.
(21) 2022283634 **(22)** 05.12.2022
(54) SYSTEM AND METHOD FOR EXCHANGE OF DATA AND/OR SECRET KEYS
(31) 2022901865 **(32)** 01.07.22 **(33)** AU
2022900535 04.03.22 AU

(71) Longyear TM, Inc.
(21) 2022283610 **(22)** 05.12.2022
(54) Continuous sampling drill bit
(31) 63/285,844 **(32)** 03.12.21 **(33)** US

(71) Magic Leap, Inc.
(21) 2022283674 **(22)** 06.12.2022
(54) Patterning of liquid crystals using soft-imprint replication of surface alignment patterns
(62) 2017376453

(71) Magic Leap, Inc.
(21) 2022283723 **(22)** 08.12.2022
(54) WAVEGUIDE LIGHT MULTIPLEXER USING CROSSED GRATINGS
(62) 2017363078

(71) Maytronics Ltd.
(21) 2022283691 **(22)** 07.12.2022
(54) Apparatus for Measuring Characteristics of a Water Facility
(31) 63/287,183 **(32)** 08.12.21 **(33)** US

(71) MBL Limited
(21) 2022279521 **(22)** 01.12.2022
(54) ROBOTIC MANIPULATION METHODS AND SYSTEMS FOR EXECUTING A DOMAINSPECIFIC APPLICATION IN AN INSTRUMENTED ENVIRONMENT WITH ELECTRONIC MINIMANIPULATION LIBRARIES
(62) 2020226988

(71) MedRegen, LLC
(21) 2022279453 **(22)** 30.11.2022
(54) Pharmaceutical compositions useful for the treatment of tissue injury
(62) 2016293581

(71) Mitsubishi Chemical Corporation
(21) 2022279395 **(22)** 29.11.2022
(54) Oil-in-water type emulsion composition, and method for producing said oil-in-water type emulsion composition
(62) 2017372671

(71) Mitsubishi Chemical Corporation
(21) 2022279397 **(22)** 29.11.2022
(54) Oil-in-water type emulsion composition, and method for producing said oil-in-water type emulsion composition
(62) 2017372671

(71) Monz Handelsgesellschaft International mbH & Co. KG
(21) 2022283643 **(22)** 06.12.2022
(54) CLEANING DEVICE FOR A DRIVE CHAIN
(31) DE 20 2021 003 846.9 **(32)** 22.12.21 **(33)** DE

(71) MPEG LA, LLC
(21) 2022283737 **(22)** 08.12.2022
(54) DEFINED MULTI-CONJUGATE OLIGONUCLEOTIDES
(62) 2016280709

(71) Nanjing Chervon Industry Co., Ltd.
(21) 2022279550 **(22)** 02.12.2022
(54) BATTERY PACK AND STATE OF CHARGE ESTIMATION METHOD THEREOF
(31) 202111632544.6 **(32)** 28.12.21 **(33)** CN

(71) Natural Fiber Welding, Inc.
(21) 2022279422 **(22)** 29.11.2022
(54) Curative
(62) 2019256523

(71) Natural Fiber Welding, Inc.
(21) 2022279423 **(22)** 29.11.2022
(54) Curative
(62) 2019256523

(71) NEXTracker Inc.
(21) 2022283665 **(22)** 06.12.2022
(54) BATTERY MANAGEMENT ARCHITECTURES FOR FLOW BATTERIES
(62) 2019282598

Complete Applications Filed - Name Index cont'd

(71) Nguyen, N.H.
(21) 2022283656 **(22)** 06.12.2022
(54) Automatic locking mechanism and clamping devices with automatic locking mechanism
(62) 2021221385

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(71) Nguyen, N.H.
(21) 2022283658 **(22)** 06.12.2022
(54) Automatic locking mechanism and clamping devices with automatic locking mechanism
(62) 2021221385

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(71) NGUYEN, DUY HUU trading as D.Invent
(21) 2022279443 **(22)** 30.11.2022
(54) FLOORS WITH INTEGRATED, VERTICAL AND HORIZONTAL, ADJUSTABLE SHOCK ABSORPTION

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(71) Nicoventures Trading Limited
(21) 2022283694 **(22)** 07.12.2022
(54) Flow directing member for a vapour provision system
(62) 2020243278

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(71) Nilo Global Limited
(21) 2022279505 **(22)** 01.12.2022
(54) A PLASTIC EMULSION AND USE THEREOF

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(71) Ningbo Shijia Cleaning Tools Co., Ltd.
(21) 2022283669 **(22)** 06.12.2022
(54) BRUSH HEAD MOUNTING STRUCTURE OF LIQUID SPRAYING BRUSH
(31) 2022201851364 **(32)** 24.01.22 **(33)** CN

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(71) Normalu SAS
(21) 2022283633 **(22)** 05.12.2022
(54) LIGHTING FALSE-WALL DEVICE
(62) 2017293056

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(71) Northrop Grumman Systems Corporation
(21) 2022283689 **(22)** 07.12.2022
(54) Atomic sensor system
(31) 63/289,947 **(32)** 15.12.21 **(33)** US

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(71) Nova Eye, Inc.
(21) 2022279455 **(22)** 30.11.2022
(54) Opthalmic microsurgical instrument
(62) 2018353126

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(71) Novartis AG
(21) 2022279408 **(22)** 29.11.2022
(54) Antiviral pyridopyrazinedione compounds
(62) 2019339777

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(71) Nunhems B.V.
(21) 2022279497 **(22)** 01.12.2022
(54) Lettuce Variety NUN 09185 LTL
(31) 2021903885 **(32)** 01.12.21 **(33)** AU

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(71) Nunhems B.V.
(21) 2022279498 **(22)** 01.12.2022
(54) Lettuce variety NUN 06820 LTL
(31) 2021903884 **(32)** 01.12.21 **(33)** AU

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(71) Nunhems B.V.
(21) 2022279511 **(22)** 01.12.2022
(54) Lettuce Variety NUN 06584 LTL
(31) 2021903883 **(32)** 01.12.21 **(33)** AU

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(71) Nunhems B.V.
(21) 2022279512 **(22)** 01.12.2022
(54) Lettuce Variety NUN 06599 LTL
(31) 2021903883 **(32)** 01.12.21 **(33)** AU

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(71) Nunhems B.V.
(21) 2022279514 **(22)** 01.12.2022
(54) Lettuce Variety NUN 06529 LTL

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(71) Nunhems B.V.
(21) 2022279515 **(22)** 01.12.2022
(54) Lettuce Variety NUN 09188 LTL

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(71) Nunhems B.V.
(21) 2022279516 **(22)** 01.12.2022
(54) Lettuce Variety NUN 09174 LTL

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(71) Oticon Medical A/S
(21) 2022283642 **(22)** 05.12.2022
(54) A Hearing Aid Including a Piezo Assembly and an Electromagnetic Assembly
(31) 21212676.7 **(32)** 07.12.21 **(33)** EP

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(71) OXTI Pte Ltd
(21) 2022283675 **(22)** 06.12.2022
(54) DISPLAY SYSTEM WITH INTEGRATED ARM AND SPEAKER

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(71) OXTI Pte Ltd
(21) 2022283676 **(22)** 06.12.2022
(54) ELECTRONIC DEVICE WITH MOVABLE SOUND SOURCE

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(71) OXTI Pte Ltd
(21) 2022283677 **(22)** 06.12.2022
(54) NECKLACE EARPHONES

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(71) OXTI Pte Ltd
(21) 2022283678 **(22)** 06.12.2022
(54) WRISTBAND FOR EARPHONE PLACEMENT

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(71) OXTI Pte Ltd
(21) 2022283679 **(22)** 06.12.2022
(54) LOUDSPEAKER CABINET-ATTACHED FOLDING SCREEN STRUCTURE

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(71) Packsize LLC
(21) 2022279496 **(22)** 01.12.2022
(54) Converting machine with fold sensing mechanism
(62) 2018210234

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(71) Paloma Co., Ltd.
(21) 2022279456 **(22)** 30.11.2022
(54) Water heater
(31) 2021-199277 **(32)** 08.12.21 **(33)** JP

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(71) Paltronics Australasia Pty Limited
(21) 2022283629 **(22)** 05.12.2022
(54) A METHOD OF PROVIDING A TABLE GAME AND AN ASSOCIATED SYSTEM
(62) 2021240238

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(71) Patriot Campers Holdings Pty Ltd
(21) 2022283698 **(22)** 07.12.2022
(54) Cabinet
(31) 2022903224 **(32)** 31.10.22 **(33)** AU

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(71) Phillips, M.
(21) 2022279487 **(22)** 01.12.2022
(54) Traffic signage apparatus
(31) 2021903882 **(32)** 01.12.21 **(33)** AU

Politecnico di Milano see Prysmian S.p.A.
(21) 2022279440

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(71) Power Distribution, Inc.
(21) 2022279544 **(22)** 02.12.2022
(54) UNIVERSAL TAP-OFF BOX
(62) 2018345911

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(71) Precision Drone Services Intellectual Property, LLC
(21) 2022279503 **(22)** 01.12.2022
(54) AERIAL VEHICLE IMPLEMENT HITCH ASSEMBLY
(62) 2018325539

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(71) Provectus IP Pty Ltd
(21) 2022279500 **(22)** 01.12.2022
(54) AUTOMATED CELL ANALYSER AND METHOD

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(71) Prysmian S.p.A.; Politecnico di Milano
(21) 2022279440 **(22)** 30.11.2022
(54) Flame-retardant cable with self-extinguishing layer
(31) 102021000032810 **(32)** 28.12.21 **(33)** IT

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(71) Prysmian S.p.A.
(21) 2022279444 **(22)** 30.11.2022
(54) Flame-retardant cable with self-extinguishing coating layer
(31) 21383239.7 **(32)** 30.12.21 **(33)** EP

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(71) Reata Pharmaceuticals, Inc.
(21) 2022283638 **(22)** 05.12.2022
(54) Co-crystal forms of a novobiocin analog and proline
(62) 2019217821

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(71) Reborna Biosciences, Inc.
(21) 2022283732 **(22)** 08.12.2022
(54) Prophylactic or therapeutic agent for spinal muscular atrophy
(62) 2019293757

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(71) Reflex Instruments Asia Pacific Pty Ltd
(21) 2022279491 **(22)** 01.12.2022
(54) Housing assembly for a core orientation device

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(71) Replimune Limited
(21) 2022279486 **(22)** 01.12.2022
(54) Modified Oncolytic Virus
(62) 2017205216

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(71) Rheem Australia Pty Limited
(21) 2022279539 **(22)** 02.12.2022
(54) LOCATION BASED TEMPERATURE LIMIT CONTROL FOR A WATER HEATER
(62) 2017368446

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(71) Rhythm Pharmaceuticals, Inc.
(21) 2022279420 **(22)** 29.11.2022
(54) Method of treating melanocortin-4 receptor pathway-associated disorders
(62) 2021201448

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(71) Rolls-Royce plc
(21) 2022279451 **(22)** 30.11.2022
(54) Fuel characteristics
(31) 2118653.1 **(32)** 21.12.21 **(33)** GB

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(71) Rolls-Royce plc
(21) 2022279454 **(22)** 30.11.2022
(54) Aviation fuel
(31) 2118647.3 **(32)** 21.12.21 **(33)** GB

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(71) Rolls-Royce plc
(21) 2022279461 **(22)** 30.11.2022
(54) Aircraft operation
(31) 2118650.7 **(32)** 21.12.21 **(33)** GB

Rupil, C. see Rupil, M.
(21) 2022279458

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(71) Rupil, M.; Rupil, C.
(21) 2022279458 **(22)** 30.11.2022
(54) A tool to help assist tradesman when installing beams / joist / rafters etc.

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(71) Sadleir Laboratories Pty Ltd
(21) 2022279546 **(22)** 02.12.2022
(54) Medication delivery system and method
(62) 2022204074

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(71) Safetylink Pty Ltd
(21) 2022283745 **(22)** 08.12.2022
(54) Roof Anchor
(31) 2022900059 **(32)** 12.01.22 **(33)** AU

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(71) Samsung Electronics Co., Ltd.
(21) 2022283647 **(22)** 06.12.2022
(54) VIDEO DECODING METHOD AND APPARATUS USING MULTI-CORE TRANSFORM, AND VIDEO ENCODING METHOD AND APPARATUS USING MULTI-CORE TRANSFORM
(62) 2018295861

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(71) Seagen, Inc.
(21) 2022283652 **(22)** 06.12.2022
(54) Methylene carbamate linkers for use with targeted-drug conjugates
(62) 2020281140

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(71) SELOW, R.
(21) 2022283614 **(22)** 05.12.2022
(54) LAMINATED PRODUCT AND METHOD FOR MANUFACTURING A LAMINATED PRODUCT, METHOD FOR PROCESSING A LAMINATED PRODUCT AND USE OF CORRESPONDING CUT PRODUCT, COMPUTER-READABLE MEMORY
(31) PCT/BR2021/050540 **(32)** 07.12.21 **(33)** WO

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(71) Shanghai Jinko Green Energy Enterprise Management Co. Ltd.; Zhejiang Jinko Solar Co., Ltd.
(21) 2022279394 **(22)** 29.11.2022
(54) PHOTOVOLTAIC MODULE AND MANUFACTURING METHOD THEREOF
(31) 202211320245.3 **(32)** 26.10.22 **(33)** CN

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(71) Shenzhen Shyugj Technology Co., Ltd.
(21) 2022279527 **(22)** 01.12.2022
(54) Control method of AC multi-channel dimmer

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(71) Snap-on Incorporated
(21) 2022279506 **(22)** 01.12.2022
(54) Non-conductive magnetic retrieval tool
(61) 2020244553

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(71) Snap Wrap Pty Ltd
(21) 2022279436 **(22)** 29.11.2022
(54) Hydraulic Hose Protection system

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(71) Sony Corporation
(21) 2022283728 **(22)** 08.12.2022
(54) Frequency band extending device and method, encoding device and method, decoding device and method, and program
(62) 2021215291

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(71) Southern Mills, Inc.
(21) 2022283681 **(22)** 06.12.2022
(54) FLAME RESISTANT FABRICS
(62) 2020245599

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(71) SPCM SA
(21) 2022279492 **(22)** 01.12.2022
(54) Equipment and method for preparing an aldehyde-functionalised polymer
(31) 21216732.4 **(32)** 22.12.21 **(33)** EP
17/868,371 19.07.22 US

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(71) State Grid Jiangsu Electric Power Co., Ltd Nanjing Power Supply Company
(21) 2022279432 **(22)** 29.11.2022
(54) DEEP LEARNING-BASED METHOD FOR FUSING MULTI-SOURCE URBAN ENERGY DATA AND STORAGE MEDIUM
(31) 2022112890314 **(32)** 20.10.22 **(33)** CN

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(71) State Grid Jiangsu Electric Power Co., Ltd Nanjing Power Supply Company
(21) 2022279433 **(22)** 29.11.2022
(54) TRANSFORMER-ARCHITECTURE-BASED METHOD AND SYSTEM FOR IOT FOR AND SMART CONTROL OF URBAN INTEGRATED ENERGY
(31) 2022112876815 **(32)** 20.10.22 **(33)** CN

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(71) Stormtech Pty Limited
(21) 2022279421 **(22)** 29.11.2022
(54) Drainage channel with integral shower screen support
(31) 2021904197 **(32)** 22.12.21 **(33)** AU

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(71) Stramit Corporation Pty Limited
(21) 2022279426 **(22)** 29.11.2022
(54) A Roller Door Track Assembly
(31) 2021903855 **(32)** 29.11.21 **(33)** AU

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(71) SUPERSONIC IMAGINE
(21) 2022283744 **(22)** 08.12.2022
(54) METHOD AND SYSTEM FOR PROCESSING BEAMFORMED DATA
(31) 21315271.3 **(32)** 10.12.21 **(33)** EP

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(71) SUREFOOT IP HOLDINGS PTY LTD
(21) 2022283625 **(22)** 05.12.2022
(54) ADJUSTABLE FOOTING SYSTEM

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(71) Sysmex Corporation
(21) 2022279508 **(22)** 01.12.2022
(54) Information processing apparatus and method for clinical laboratory management
(62) 2017208315

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(71) Tableau Software, Inc.
(21) 2022279452 **(22)** 30.11.2022
(54) Elimination of query fragment duplication in complex database queries
(62) 2019405137

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(71) Techtronic Cordless GP
(21) 2022279554 **(22)** 05.12.2022
(54) Pressure washer
(31) 202111537101.9 **(32)** 15.12.21 **(33)** CN

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(71) Techtronic Cordless GP
(21) 2022283630 **(22)** 05.12.2022
(54) A battery pack and housing assembly for battery packs
(31) 202111479173.2 **(32)** 06.12.21 **(33)** CN

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(71) Techtronic Cordless GP
(21) 2022283632 **(22)** 05.12.2022
(54) Battery pack
(31) 202111477495.3 **(32)** 06.12.21 **(33)** CN

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(71) Terra Quantum AG
(21) 2022283661 **(22)** 06.12.2022
(54) WAVEGUIDE FOR LOW LOSS, HIGH SPEED ELECTRO-OPTICAL MODULATOR
(31) 21218377.6 **(32)** 30.12.21 **(33)** EP

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(71) Terumo BCT, Inc.
(21) 2022279399 **(22)** 29.11.2022
(54) Automated production and collection
(62) 2017261348

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(71) The Board of Trustees of the Leland Stanford Junior University
(21) 2022279551 **(22)** 02.12.2022
(54) Non-invasive diagnosis of graft rejection in organ transplant patients
(62) 2020220162

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(71) THE CHEMOURS COMPANY FC, LLC
(21) 2022283722 **(22)** 08.12.2022
(54) Compositions comprising fluoroolefins and uses thereof
(62) 2020213451

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(71) The Fynder Group, Inc.
(21) 2022279428 **(22)** 29.11.2022
(54) EDIBLE COMPOSITION WITH FILAMENTOUS FUNGI AND BIOREACTOR SYSTEM FOR THE CULTIVATION THEREOF
(62) 2021266237

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(71) The Nielsen Company (US), LLC
(21) 2022279417 **(22)** 29.11.2022
(54) Methods and apparatus to collect distributed user information for media impressions
(62) 2021200245

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(71) The Raymond Corporation
(21) 2022279552 **(22)** 03.12.2022
(54) MATERIAL HANDLING VEHICLE GUIDANCE SYSTEMS AND METHODS
(31) 63/286,909 **(32)** 07.12.21 **(33)** US

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(71) The Research Foundation for the State University of New York; The United States of America, as represented by the Secretary, Department of Health and Human Services
(21) 2022279509 **(22)** 01.12.2022
(54) Attenuation of human respiratory syncytial virus by genome scale codon-pair deoptimization
(62) 2020203460

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(71) The Scripps Research Institute
(21) 2022283729 **(22)** 08.12.2022
(54) Pharmacophore for trail induction
(62) 2020286314

The United States of America, as represented by the Secretary, Department of Health and Human Services see The Research Foundation for the State University of New York
(21) 2022279509

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(71) THE USA, AS REPRESENTED BY THE SECRETARY, DEPT. OF HEALTH AND HUMAN SERVICES
(21) 2022279441 **(22)** 30.11.2022
(54) NOVEL MULTIVALENT NANOPARTICLE-BASED VACCINES
(62) 2020200303

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(71) Thomson Reuters Enterprise Centre GmbH
(21) 2022279549 **(22)** 02.12.2022
(54) Systems and methods for aiding tax compliance
(62) 2019262384

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(71) Transportation IP Holdings, LLC
(21) 2022283683 **(22)** 06.12.2022
(54) Systems And Methods For Traction
(31) 17/644,324 **(32)** 14.12.21 **(33)** US

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(71) Transportation IP Holdings, LLC
(21) 2022283719 **(22)** 08.12.2022
(54) DRIVE SYSTEM
(62) 2021229144

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(71) Transportation IP Holdings, LLC
(21) 2022283720 **(22)** 08.12.2022
(54) THERMAL MANAGEMENT SYSTEM AND METHOD
(62) 2021205005

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(71) Twist Bioscience Corporation
(21) 2022279404 **(22)** 29.11.2022
(54) Oligonucleic acid variant libraries and synthesis thereof
(62) 2016324296

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(71) Tyco Electronics Raychem GmbH
(21) 2022279467 **(22)** 30.11.2022
(54) Method of installing a heat shrink cover, installation kit, and installation system
(62) 2019340445

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(71) Ubiquitous Energy, Inc.
(21) 2022279533 **(22)** 02.12.2022
(54) Window-integrated transparent photovoltaic module
(62) 2018207278

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(71) Ullah, A.
(21) 2022279502 **(22)** 01.12.2022
(54) Weighted Beanie/Hat

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(71) Unilever IP Holdings B.V.
(21) 2022283631 **(22)** 05.12.2022
(54) Process for the preparation of a flavouring
(62) 2019364985

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(71) University of Florida Research Foundation
(21) 2022283622 **(22)** 05.12.2022
(54) Di-amino acid repeat-containing proteins associated with ALS
(62) 2020202852

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(71) University of Florida Research Foundation, Incorporated
(21) 2022283724 **(22)** 08.12.2022
(54) Nonmuscle myosin II inhibitors for substance use relapse
(62) 2019285034

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(71) Valspar B.V.
(21) 2022283655 **(22)** 06.12.2022
(54) CANDY COLOR PAINT AND REFINISHING METHOD
(62) 2017266289

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(71) Verinata Health, Inc.
(21) 2022283736 **(22)** 08.12.2022
(54) Sequencing methods and compositions for prenatal diagnoses
(62) 2021200209

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(71) Versitech Limited
(21) 2022279489 **(22)** 01.12.2022
(54) COMPOUNDS AND USE THEREOF FOR THE TREATMENT OF MICROBIAL INFECTIONS
(62) 2018304613

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(71) Versitech Limited
(21) 2022279490 **(22)** 01.12.2022
(54) COMPOUNDS AFFECTING PIGMENT PRODUCTION AND USE THEREOF FOR TREATMENT OF BACTERIAL DISEASES
(62) 2018302790

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(71) ViaSat, Inc.
(21) 2022283637 **(22)** 05.12.2022
(54) RETURN-LINK ROUTING IN A HYBRID NETWORK
(62) 2022211883

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(71) Visa International Service Association
(21) 2022283686 **(22)** 07.12.2022
(54) System and method employing reduced time device processing
(62) 2021215250

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(71) VISUAL DEFENCE INC.
(21) 2022279540 **(22)** 02.12.2022
(54) SYSTEM AND METHOD FOR OPTIMIZING COLLECTION AND TRANSMISSION OF SURVEYING DATA ACROSS A ROAD NETWORK
(31) 17/559,315 **(32)** 22.12.21 **(33)** US

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(71) Vorwerk & Co. Interholding GmbH
(21) 2022279449 **(22)** 30.11.2022
(54) Control device for a food thermometer and system comprising control device and food thermometer
(31) 22151701.4 **(32)** 17.01.22 **(33)** EP

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(71) W. L. Gore & Associates, Inc.
(21) 2022283738 **(22)** 08.12.2022
(54) Prosthetic heart valve with retention elements
(62) 2020273333

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(71) Walliwala Gamage, N.
(21) 2022279485 **(22)** 30.11.2022
(54) Innovative Water Seal for Leg Prosthetic
(31) 2021903866 **(32)** 30.11.21 **(33)** AU

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(71) Windplussonne GmbH
(21) 2022279415 **(22)** 29.11.2022
(54) METHOD AND DEVICE FOR SEPARATING AND/OR CLEANING AEROSOLS AND SOLID MATERIAL PARTICLES AND FIBERS FROM GASES AS WELL AS SOLID MATERIAL PARTICLES AND FIBERS FROM LIQUID MATERIALS BY ACOUSTOPHORESIS
(62) 2017229176

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(71) Wing Aviation LLC
(21) 2022281288 **(22)** 05.12.2022
(54) Methods and systems for using an unmanned aerial vehicle (UAV) dedicated to deployment of operational infrastructure
(62) 2021203440

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(71) Xard Group Pty Ltd
(21) 2022279484 **(22)** 30.11.2022
(54) PPARATUS AND METHOD FOR DIRECTLY COMMUNICATING WITH A DIGITAL TRANSACTION PROCESSING UNIT (DTPU)
(62) 2017212145

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(71) Xard Group Pty Ltd
(21) 2022279529 **(22)** 01.12.2022
(54) TRANSACTION RECORDING
(62) 2017213233

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(71) Xard Group Pty Ltd
(21) 2022279536 **(22)** 02.12.2022
(54) DETECTING UNAUTHORIZED USAGE
(62) 2017210753

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(71) Xard Group Pty Ltd
(21) 2022283682 **(22)** 06.12.2022
(54) INDIRECT SECURITY SYSTEM AND METHOD
(62) 2017210752

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(71) Xard Group Pty Ltd
(21) 2022283711 **(22)** 07.12.2022
(54) SYSTEM AND METHOD FOR SECURE TRANSACTING
(62) 2017210754

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(71) X Development LLC
(21) 2022283648 **(22)** 06.12.2022
(54) Hierarchical context in risk assessment using machine learning
(31) 63/265,051 **(32)** 07.12.21 **(33)** US

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(71) X Development LLC
(21) 2022283650 **(22)** 06.12.2022
(54) Training machine learning models to predict fire behavior
(31) 63/265,038 **(32)** 07.12.21 **(33)** US

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(71) X Development LLC
(21) 2022283684 **(22)** 07.12.2022
(54) Training machine learning models to predict characteristics of adverse events using intermittent data
(31) 63/265,042 **(32)** 07.12.21 **(33)** US

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(71) XORIA LIMITED
(21) 2022283692 **(22)** 07.12.2022
(54) MEDICAL SUPPLIES CABINET
(62) 2018343311

Zhejiang Jinko Solar Co., Ltd. see Shanghai Jinko Green Energy Enterprise Management Co. Ltd.
(21) 2022279394

ZHEJIANG JINKO SOLAR CO., LTD. see JINKO SOLAR (HAINING) CO., LTD.
(21) 2022279531

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(71) ZHEJIANG JINKO SOLAR CO., LTD.
(21) 2022279534 **(22)** 02.12.2022
(54) SOLAR CELL AND PHOTOVOLTAIC MODULE
(31) 202211298941.9 **(32)** 24.10.22 **(33)** CN
202211298934.9 24.10.22 CN

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(71) Zogenix International Limited
(21) 2022279469 **(22)** 30.11.2022
(54) Formulation for inhibiting formation of 5-HT 2b agonists and methods of using same
(62) 2021204250

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2022279373 Ablynx NV
2022279394 Shanghai Jinko Green Energy Enterprise Management Co. Ltd.; Zhejiang Jinko Solar Co., Ltd.
2022279395 Mitsubishi Chemical Corporation
2022279396 HICARE HEALTH FOODS PTY LIMITED
2022279397 Mitsubishi Chemical Corporation
2022279398 Eco Shed Industries Pty Ltd
2022279399 Terumo BCT, Inc.
2022279400 Aliaxis Research & Technology
2022279401 Lam, T.T.
2022279402 Bezzina, J.
2022279403 Becton, Dickinson and Company
2022279404 Twist Bioscience Corporation
2022279405 LG ELECTRONICS INC.
2022279406 Bruce, S.; Bruce, R.; Hayes, B.
2022279407 Dendisc Holdings Pty Ltd
2022279408 Novartis AG
2022279409 Boston Scientific Scimed, Inc.
2022279411 ETA Green Power Limited
2022279412 LG Electronics Inc.
2022279414 Alexion Pharmaceuticals, Inc.
2022279415 Windplussonne GmbH
2022279416 Janssen Pharmaceutica NV
2022279417 The Nielsen Company (US), LLC
2022279418 Hayward Industries, Inc.
2022279419 Epimeron Inc.
2022279420 Rhythm Pharmaceuticals, Inc.
2022279421 Stormtech Pty Limited
2022279422 Natural Fiber Welding, Inc.
2022279423 Natural Fiber Welding, Inc.
2022279424 Fisher & Paykel Healthcare Limited
2022279425 F. Hoffmann-La Roche AG
2022279426 Stramit Corporation Pty Limited
2022279427 GenesisCare Ventures Pty Ltd
2022279428 The Fynder Group, Inc.
2022279429 Google LLC
2022279430 Kimura Kohki Co., Ltd.
2022279431 B3 CORP PTY LTD
2022279432 State Grid Jiangsu Electric Power Co., Ltd Nanjing Power Supply Company
2022279433 State Grid Jiangsu Electric Power Co., Ltd Nanjing Power Supply Company
2022279434 Beijing Geekplus Technology Co., Ltd.
2022279435 Heye International GmbH
2022279436 Snap Wrap Pty Ltd
2022279437 Lai, Z.; Huang, K.
2022279438 BGC Partners, L.P.
2022279439 Ergomotion, Inc.
2022279440 Prysmian S.p.A.; Politecnico di Milano
2022279441 THE USA, AS REPRESENTED BY THE SECRETARY, DEPT. OF HEALTH AND HUMAN SERVICES
2022279442 Gavish-Galilee Bio Applications, Ltd
2022279443 NGUYEN, DUY HUU trading as D.Invent
2022279444 Prysmian S.p.A.
2022279445 Board of Regents, The University of Texas System
2022279446 Globeride, Inc.
2022279447 Globeride, Inc.
2022279448 Globeride, Inc.
2022279449 Vorwerk & Co. Interholding GmbH
2022279450 GLASS VICE HOLDINGS LIMITED
2022279451 Rolls-Royce plc
2022279452 Tableau Software, Inc.
2022279453 MedRegen, LLC
2022279454 Rolls-Royce plc
2022279455 Nova Eye, Inc.
2022279456 Paloma Co., Ltd.
2022279457 Form 700 Pty Ltd
2022279458 Rupil, M.; Rupil, C.
2022279459 Breathe Technologies, Inc.
2022279460 LG Electronics Inc.
2022279461 Rolls-Royce plc
2022279462 LG Electronics Inc.
2022279463 AFINITI, LTD.
2022279465 Cepheid
2022279466 Apple Inc.
2022279467 Tyco Electronics Raychem GmbH
2022279468 Angel Group Co., Ltd.
2022279469 Zogenix International Limited
2022279470 Giant Manufacturing Co., Ltd.
2022279471 Anglo American Technical & Sustainability Services Ltd; Anglo Corporate Services South Africa (Pty) Ltd.
2022279472 Getac Technology Corporation
2022279473 Forendo Pharma Ltd.
2022279474 Getac Technology Corporation
2022279475 Getac Technology Corporation
2022279476 Getac Technology Corporation
2022279477 Getac Technology Corporation
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2022279488 LG Electronics Inc.
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2022279490 Versitech Limited
2022279491 Reflex Instruments Asia Pacific Pty Ltd
2022279492 SPCM SA
2022279493 Georg Fischer Rohrleitungssysteme AG
2022279494 AMIET, J.
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2022279496 Packsize LLC
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2022279498 Nunhems B.V.
2022279499 Fisher & Paykel Healthcare Limited
2022279500 Provectus IP Pty Ltd
2022279501 Entellus Medical, Inc.
2022279502 Ullah, A.
2022279503 Precision Drone Services Intellectual Property, LLC
2022279504 Ardelyx, Inc.
2022279505 Nilo Global Limited
2022279506 Snap-on Incorporated
2022279507 Johnson & Johnson Consumer Inc.
2022279508 Sysmex Corporation
2022279509 The Research Foundation for the State University of New York; The United States of America, as represented by the Secretary, Department of Health and Human Services
2022279510 G1 Therapeutics, Inc.
2022279511 Nunhems B.V.
2022279512 Nunhems B.V.
2022279513 Chengdu Shangyi Information Technology Co., Ltd.
2022279514 Nunhems B.V.
2022279515 Nunhems B.V.
2022279516 Nunhems B.V.
2022279517 Alcyone Therapeutics, Inc.
2022279518 Dexcom, Inc.
2022279519 Johnson & Johnson Consumer Inc.
2022279521 MBL Limited
2022279522 Botanic Gardens and Parks Authority
2022279523 GlaxoSmithKline Consumer Healthcare Holdings (US) LLC

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2022279524	Eli Lilly and Company
2022279526	Lithium Ark Holding B.V.
2022279527	Shenzhen Shyugj Technology Co., Ltd.
2022279528	Adam, R.
2022279529	Xard Group Pty Ltd
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2022279531	JINKO SOLAR (HAINING) CO., LTD.; ZHEJIANG JINKO SOLAR CO., LTD.
2022279532	American Express Travel Related Services Company, Inc.
2022279533	Ubiquitous Energy, Inc.
2022279534	ZHEJIANG JINKO SOLAR CO., LTD.
2022279535	Hans Künz GmbH
2022279536	Xard Group Pty Ltd
2022279537	Gilead Sciences, Inc.
2022279538	Assurant, Inc.
2022279539	Rheem Australia Pty Limited
2022279540	VISUAL DEFENCE INC.
2022279541	Becton, Dickinson and Company
2022279542	Encore Medical, L.P. (d/b/a DJO Surgical)
2022279544	Power Distribution, Inc.
2022279545	CAN Technologies, Inc.
2022279546	Sadleir Laboratories Pty Ltd
2022279547	Getac Technology Corporation
2022279548	LG ELECTRONICS INC.
2022279549	Thomson Reuters Enterprise Centre GmbH
2022279550	Nanjing Chervon Industry Co., Ltd.
2022279551	The Board of Trustees of the Leland Stanford Junior University
2022279552	The Raymond Corporation
2022279553	Bowman, B.
2022279554	Techtronic Cordless GP
2022281288	Wing Aviation LLC
2022283610	Longyear TM, Inc.
2022283611	Incyte Corporation
2022283612	3D At Depth, Inc.
2022283614	SELOW, R.
2022283615	Estetra SRL
2022283616	Holcomb Scientific Research Limited
2022283617	Ability Innovations Pty Ltd
2022283618	Lemnature AquaFarms Corporation
2022283619	ImmunityBio, Inc.
2022283620	Blue Planet Systems Corporation
2022283622	University of Florida Research Foundation
2022283623	Arrowhead Pharmaceuticals, Inc.
2022283624	BGC Partners, Inc
2022283625	SUREFOOT IP HOLDINGS PTY LTD
2022283626	IGT
2022283627	Acer Incorporated
2022283628	Biocompatibles UK Limited
2022283629	Paltronics Australasia Pty Limited
2022283630	Techtronic Cordless GP
2022283631	Unilever IP Holdings B.V.
2022283632	Techtronic Cordless GP
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2022283634	LIU, B.
2022283635	Commonwealth Scientific and Industrial Research Organisation
2022283636	Instrumentation Laboratory Company
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2022283638	Reata Pharmaceuticals, Inc.
2022283639	Howe, S.
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2022283641	Getac Technology Corporation
2022283642	Oticon Medical A/S
2022283643	Monz Handelsgesellschaft International mbH & Co. KG
2022283644	FalCom A/S
2022283645	Edwards Lifesciences Corporation
2022283646	Light Field Lab, Inc.
2022283647	Samsung Electronics Co., Ltd.
2022283648	X Development LLC
2022283649	Cantor Index LLC
2022283650	X Development LLC
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2022283652	Seagen, Inc.
2022283653	Daikin Industries, Ltd.
2022283654	Becton Dickinson France
2022283655	Valspar B.V.
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2022283668	Blue River Technology Inc.
2022283669	Ningbo Shijia Cleaning Tools Co., Ltd.
2022283670	Green Eco International Pty Ltd
2022283671	Avanir Pharmaceuticals, Inc.
2022283672	Evolva SA
2022283673	Hen Luminary Energy International Pty Ltd
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2022283676	OXTI Pte Ltd
2022283677	OXTI Pte Ltd
2022283678	OXTI Pte Ltd
2022283679	OXTI Pte Ltd
2022283680	CNH Industrial America LLC
2022283681	Southern Mills, Inc.
2022283682	Xard Group Pty Ltd
2022283683	Transportation IP Holdings, LLC
2022283684	X Development LLC
2022283685	Beijing Baidu Netcom Science Technology Co., Ltd.
2022283686	Visa International Service Association
2022283687	Gilead Sciences, Inc.
2022283688	ImmunityBio, Inc.
2022283689	Northrop Grumman Systems Corporation
2022283690	Caterpillar Underground Mining Pty. Ltd.
2022283691	Maytronics Ltd.
2022283692	XORIA LIMITED
2022283694	Nicoventures Trading Limited
2022283698	Patriot Campers Holdings Pty Ltd
2022283700	Cyclopure, Inc.
2022283702	Becton Dickinson France
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2022283720	Transportation IP Holdings, LLC
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2022283722	THE CHEMOURS COMPANY FC, LLC
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2022283726	Brien Holden Vision Institute Limited
2022283728	Sony Corporation
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2022283734	Abbott Diabetes Care Inc.

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2022283737	MPEG LA, LLC
2022283738	W. L. Gore & Associates, Inc.
2022283739	Cognitive Performance Ltd
2022283742	AP&C Advanced Powders & Coatings Inc.
2022283743	Huawei Technologies Co., Ltd.
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2023200006	Jet Tech Products Pty Ltd

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Applications listed below were processed through the Patent Office Canberra during the period ending 3 Jan 2023 .
(This list may contain multiple listings of a patent application where there are multiple applicants for that patent.)

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(71) Apple Inc.
(21) 2023100000 **(22)** 03.01.2023
(54) Force-activated earphone
(62) 2022100096

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(71) Moma Products Pty Ltd
(21) 2023100002 **(22)** 09.01.2023
(54) Streetlight
(62) 2021104880

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(71) Moma Products Pty Ltd
(21) 2023100003 **(22)** 09.01.2023
(54) Streetlight
(62) 2021104880

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(71) ONNI PTY LTD
(21) 2023100001 **(22)** 04.01.2023
(54) An Instant Cross-Border Electronic Tokenised Gifting System
(62) PCT/AU2021/050830

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Applications Lapsed, Refused Or Withdrawn, Patents Ceased or Expired

Reference to the application numbers must include the year of the application of the patent, which is shown preceding the numbers.

The codes next to each number have the following meanings:

Code	Meaning
1	Application Lapsed Section 142(2)(a)
3	Application Lapsed Section 142(2)(c)
4	Application Lapsed Section 142(2)(d)
5	Application Lapsed Section 142(2)(e)
6	Application Lapsed Section 142(2)(f)/Reg. 13.5A(2)\Reg. 8.3(3)
7	Application Lapsed Reg. 3.2A(3)/Reg. 3.2C
8	Application Lapsed Reg. 3.4(6)
9	Application Lapsed Section 142(3)
11	Application Lapsed Section 148(1)(c)
12	Application Withdrawn Section 141(1)
13	Application Withdrawn Section 141(2)/Reg 13.1C\Section 141(3)/See Reg 8.3(2)
14	Patent Ceased Section 143(a), or Expired
15	Patent Ceased Section 143(b)
16	Application Refused
17	Application Lapsed Reg. 22.2B(2)
18	Application Lapsed Reg. 3.2B(3),(5) or (6)
20	Patent Ceased Section 143A(b)/Reg. 22.2D(2) or (4)
21	Patent Ceased Section 101C(b)/Section 143A(c)/Reg. 9A.4
22	Patent Ceased Section 143A(d), or Expired
23	Patent Ceased Section 143A(e)
24	Application Lapsed Reg. 22.2E(2)
25	Application Lapsed Reg. 22.2I(2)
26	Application Lapsed Reg. 3.5AC(11)
27	Application Lapsed Reg. 3.5AF(2F)
28	Application Lapsed Reg. 22.15A(3)
A	Applications on which examination has not been requested or directed
B	Applications on which a direction to request examination has been given
C	Applications on which examination has been requested or on which an examination report has been issued
D	Applications which have been accepted or advertised accepted
E	Patents on which an examination has not been requested
F	Patents on which an examination has been requested or report issued
G	Patents Certified
N	Applications not Open to Public Inspection

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2018

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Assignments before Grant, Section 113

2017

2017202218 Eemax, Inc. The application has been assigned to **Rheem Manufacturing Company**

2018

2018256433 Loto Labs, Inc. The application has been assigned to **Philip Morris Products S.A.**

2018306814 Stryker European Holdings I, LLC The application has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

Assignments before Grant, Section 113

2018389853 Stryker European Holdings I, LLC The application has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

2019

2019202538 Stryker European Holdings I, LLC The application has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

2019202926 Stryker European Holdings I, LLC The application has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

2019215215 Stryker European Holdings I, LLC. The application has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

2019220211 Huntsman Advanced Materials (Switzerland) GmbH The application has been assigned to **Huntsman Textile Effects (Switzerland) GmbH**

2019236621 ALL PURPOSE PUMPS AUSTRALIA PTY LTD The application has been assigned to **ALL PURPOSE PUMPS HOLDINGS PTY LTD**

2019252798 Stryker European Holdings I, LLC The application has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

2019291176 Glykos Biomedical Oy The application has been assigned to **Glykos Finland Oy**

2019293857 Glykos Biomedical Oy The application has been assigned to **Glykos Finland Oy**

2019312427 PÖTSCH, Edmund The application has been assigned to **HeiPoe Schutzrechtsverwertung UG (haftungsbeschrankt)**

2019351427 Shanghai Hengrui Pharmaceutical Co., Ltd.; Jiangsu Hengrui Medicine Co., Ltd. The application has been assigned to **Jiangsu Hansoh Pharmaceutical Group Co., Ltd.; Shanghai Hansoh Biomedical Co., Ltd.; Changzhou Hansoh Pharmaceutical Co., Ltd.**

2019403377 Stryker European Holdings I, LLC The application has been assigned to **STRYKER EUROPEAN OPERATIONS LIMITED**

2020

2020224091 Pickover, Clifford; Jablokov, Igor; Nahamoo, David The application has been assigned to **Pryon Incorporated**

2020385021 Trickett, Andrew The application has been assigned to **Novum Modum (International) Pty Ltd**

2021

2021229172 MC 2020 SCPM The application has been assigned to **TI-Holdings B.V.**

2021255871 RubyElf LLC The application has been assigned to **HemoCept Inc.**

Assignments before Grant, Section 113

2021256968 RubyElf LLC The application has been assigned to **HemoCept Inc.**

2021260669 Guangzhou Kangrui Biological Pharmaceutical Technology Co., Ltd. The application has been assigned to **Lan Tech Limited**

2021269949 Evermore United S.A. The application has been assigned to **Ecoppia Scientific Ltd.**

2021274175 Wine Crush Market BC Ltd. DBA Winecrush The application has been assigned to **Crush Dynamics Inc.**

2022

2022903135 Owens, Mike The application has been assigned to **ENVIROKEN PTY LTD**

Extensions of Time, Section 223

Applications Received

Notice of opposition under Section 223(6) to the undermentioned application(s) for an extension of time may be lodged at the Patent Office within the prescribed time.

2017

2017259160 **Qualcomm Incorporated** An application to extend the time from 28 Apr 2022 to 28 Nov 2022 in which to pay a renewal fee has been filed . Address for service - Madderns Pty Ltd GPO Box 2752 Adelaide SA 5001 AU

2017336930 **J.R. Simplot Company** An application to extend the time from 06 Sep 2021 to 23 Dec 2022 in which to request examination and pay continuation fees has been filed . Address for service - Knightsbridge Patent Attorneys GPO Box 4691 Melbourne VIC 3001 AU

2019

2019232850 **Global Organics Energy** An application to extend the time from 01 Feb 2022 to 01 Nov 2022 in which to pay the continuation fee has been filed . Address for service - Phillips Ormonde Fitzpatrick PO Box 323 COLLINS STREET WEST VIC 8007 AU

2019442941 **MITSUBISHI ELECTRIC CORPORATION** An application to extend the time from 25 Nov 2021 to 25 Dec 2022 in which to enter the national phase has been filed . Address for service - Griffith Hack Level 15 376-390 Collins St MELBOURNE VIC 3000 AU

Applications Allowed - Section 223(2)

2008

2008299561 **Global Coal Solutions Pty Ltd** The time in which to pay a renewal fee has been extended to 18 Aug 2022 . Address for service - KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD PO Box 128 Aspley QLD 4034 AU

2009

2009323734 **Universidad Catolica De Cordoba; Consejo Nacional De Investigaciones Cientificas Y Tecnicas (CONICET)** The time in which to pay a renewal fee has been extended to 02 Oct 2022 . Address for service - Burns IP Law Pty Ltd PO Box 177 Hampton VIC 3188 AU

Extensions of Time, Section 223

2010

2010206482 **Fearman, A.** The time in which to pay a renewal fee has been extended to 15 Aug 2022 . Address for service - Davies Collison Cave Pty Ltd Level 15 1 Nicholson Street MELBOURNE VIC 3000 AU

2013

2013213886 **See-Out Pty Ltd.** The time in which to pay a renewal fee has been extended to 01 Oct 2022 . Address for service - Spruson & Ferguson GPO Box 3898 Sydney NSW 2001 AU

2015

2015214638 **Random Walk Imaging AB** The time in which to pay a renewal fee has been extended to 10 Oct 2022 . Address for service - WRAYS PTY LTD L7 863 Hay St Perth WA 6000 AU

2016

2016361452 **Infagen (Hong Kong) Limited** The time in which to pay a continuation fee has been extended to 23 Jun 2022 . Address for service - Griffith Hack Level 15, 376-390 Collins Street Melbourne VIC 3000 AU

2017

2017201850 **Adhar, V.** The time in which to pay a renewal fee has been extended to 17 Oct 2022 . Address for service - Vireshwar Kumar Adhar 32 Arthur St Ryde NSW 2112 AU

2017213685 **Anellotech, Inc.** The time in which to pay a renewal fee has been extended to 23 Sep 2022 . Address for service - Phillips Ormonde Fitzpatrick PO Box 323 COLLINS STREET WEST VIC 8007 AU

2018

2018101203 **Mine Site Technologies Pty Ltd** in which to file a Statement of Grounds and Particulars 11 Nov 2022 . Address for service - Allens Patent & Trade Mark Attorneys Level 37 101 Collins Street Melbourne VIC 3000 AU

2018212323 **Intellisense.io Ltd** The time in which to pay a continuation fee has been extended to 30 Sep 2022 . Address for service - Collison & Co Gpo Box 2556 Adelaide SA 5001 AU

2019

2019377989 **JANSSEN VACCINES & PREVENTION B.V.** The time in which to enter the National Phase has been extended to 13 Sep 2022 . Address for service - Spruson & Ferguson GPO Box 3898 Sydney NSW 2001 AU

2020

2020224091 **NAHAMOO, David; JABLOKOV, Igor; PICKOVER, Clifford, A.** The time in which to enter the National Phase has been extended to 18 Aug 2022 . Address for service - RnB IP Pty Ltd PO Box 9530 Deakin ACT 2600 AU

2022

2022279520 **Render Networks Pty Ltd** The time in which to make a further application for a divisional patent has been extended to 30 Dec

Extensions of Time, Section 223

2022 . Address for service - Griffith Hack Level 10 161 Collins St MELBOURNE VIC 3000 AU

Section 223(1) Allowances

2022

2022100109 **BASF Plant Science Company GmbH** in which to respond to formality directions 06 Feb 2023

Amendments

Applications for Amendment

A person interested in opposing the allowance of amendments under Section 104 may at any time within two months from the date of this journal give notice at the Patent Office using the approved form accompanied by the prescribed fee.

A person who wishes to be heard in relation to a proposed Rectification of the Register must file a request to be heard within two months from the date of this journal.

2005

2005225511 Glucopyranosyl-substituted benzol derivatives, drugs containing said compounds, the use thereof and method for the production thereof **Boehringer Ingelheim International GmbH** The nature of the amendment is as shown in the statement(s) filed 14 Dec 2022 . Address for service - Spruson & Ferguson GPO Box 3898 Sydney NSW 2001 AU

2016

2016320991 Method for producing retinal pigment epithelial cells **Sumitomo Pharma Co., Ltd. ; Healios K.K.** The nature of the amendment is as shown in the statement(s) filed 23 Dec 2022 . Address for service - Griffith Hack Level 15, 376-390 Collins Street Melbourne VIC 3000 AU

2017

2017285331 Device for illuminating an object with a controlled light intensity and associated method **Sorbonne Université ; Centre National de la Recherche Scientifique ; Institut National de la Sante et de la Recherche Medicale (INSERM) ; Gensight Biologics** The nature of the amendment is as shown in the statement(s) filed 30 Nov 2022 . Address for service - Davies Collison Cave Pty Ltd Level 15 1 Nicholson Street MELBOURNE VIC 3000 AU

2017325110 Methods of detecting lentivirus **St Vincent's Hospital Sydney Limited** The nature of the amendment is as shown in the statement(s) filed 03 Jan 2023 . Address for service - FB Rice Pty Ltd L 33 477 Collins Street Melbourne VIC 3000 AU

2019

2019209199 Multi-arm structured illumination imaging **Illumina, Inc.** The nature of the amendment is as shown in the statement(s) filed 23 Nov 2022 . Address for service - WRAYS PTY LTD L7 863 Hay St Perth WA 6000 AU

2019331959 Method and apparatus for transmitting indication signaling, method and apparatus for receiving indication signaling, network side device, and user equipment **China Mobile Communication Co., Ltd Research Institute ; China Mobile Communications Group Co., Ltd.** The nature of the amendment is as shown in the statement(s) filed 29 Dec 2022 . Address for service - Spruson & Ferguson GPO Box 3898 Sydney NSW 2001 AU

Amendments

2020

2020202755 Delivery of mRNA for the augmentation of proteins and enzymes in human genetic diseases **Shire Human Genetic Therapies** The nature of the amendment is as shown in the statement(s) filed 23 Dec 2022 . Address for service - Spruson & Ferguson GPO Box 3898 Sydney NSW 2001 AU

2021

2021206809 Modulators of the beta-3 adrenergic receptor useful for the treatment or prevention of disorders related thereto **Arena Pharmaceuticals, Inc.** The nature of the amendment is: Amend the name of the inventor to add BLACKBURN, Anthony C. AND NAGURA, Maiko . Address for service - FB Rice Pty Ltd Level 23, 44 Market Street Sydney NSW 2000 AU

Amendments Made

2013

2013287176 **INCYTE HOLDINGS CORPORATION** The nature of the amendment is as shown in the statement filed 06 Oct 2022

2014

2014232508 **Sun Pharmaceutical Industries Limited** The nature of the amendment is as shown in the statement filed 12 Sep 2022

2014336638 **Ruprecht-Karls-Universitat Heidelberg; Deutsches Krebsforschungszentrum** The nature of the amendment is: Amend the name of the inventor to read Eder, Matthias; Kopka, Klaus; Schafer, Martin; Bauder-Wust, Ulrike; Haberkorn, Uwe; Eisenhut, Michael; Mier, Walter; Benesova, Martina; Kliem, Hans-Christian and Kratochwil, Clemens

2015

2015292889 **Delinia, Inc.** The nature of the amendment is as shown in the statement(s) filed 18 Sep 2022

2016

2016237099 **FUJIFILM Corporation** The nature of the amendment is as shown in the statement filed 16 Aug 2022

2016276556 **Adicet Bio Inc.** The nature of the amendment is as shown in the statement(s) filed 15 Sep 2022

2017

2017201858 **Polaris IP Pty Ltd** The nature of the amendment is as shown in the statement(s) filed 30 Aug 2022

2017208226 **Q.E.D. Environmental Systems, Inc.** The nature of the amendment is as shown in the statement(s) filed 05 Aug 2022

2017210106 **Hayward Industries, Inc.** The nature of the amendment is: Amend the name of the inventor to read POTUCEK, Kevin; MURDOCK, James; CARTER, James; FOURNIER, Gregory; JOHNSON III, Arthur W.; BLAINE, David; DEBRUIN, Jason; AUBREY, Bruce; PETTY, Scott; PARCELL, Jason and HORROCKS, Craig

Amendments

2017233068 **Immune Sensor, LLC; The Board of Regents of the University of Texas System** The nature of the amendment is as shown in the statement(s) filed 11 Oct 2022

2017246598 **Bruckbauer, W.** The nature of the amendment is: Application is to proceed under the number 2017101938

2017281474 **Bruckbauer, W.** The nature of the amendment is: Amend the invention title to read INSERT FOR A DOWNDRAFT EXTRACTOR

2017323873 **The University of Adelaide** The nature of the amendment is as shown in the statement(s) filed 11 Oct 2022

2017340775 **Neurolens, Inc.** The nature of the amendment is: Amend the name of the inventor to read Krall, Jeffrey P. and Plumley, Aric

2017417771 **JGC Corporation** The nature of the amendment is: Amend the invention title to read Operation management method for hydrocarbon processing device

2018

2018200419 **Deutsches Krebsforschungszentrum; Ruprecht-Karls-Universitat Heidelberg** The nature of the amendment is: Amend the name of the inventor to read Eder, Matthias; Kopka, Klaus; Schafer, Martin; Bauder-Wust, Ulrike; Haberkorn, Uwe; Mier, Walter; Benesova, Martina; Eisenhut, Michael; Kliem, Hans-Christian and Kratochwil, Clemens

2018215660 **Altiostar Networks, Inc.** The nature of the amendment is as shown in the statement filed 07 Oct 2022

2018311508 **Edge Electrons Limited** The nature of the amendment is: Application is to proceed under the number 2018102248

2018389915 **Novartis AG** The nature of the amendment is as shown in the statement(s) filed 26 Sep 2022

2019

2019252496 **Chong Kun Dang Pharmaceutical Corp.** The nature of the amendment is as shown in the statement(s) filed 13 Sep 2022

2019255516 **Eli Lilly and Company** The nature of the amendment is as shown in the statement filed 12 Sep 2022

2019401968 **3M Innovative Properties Company** The nature of the amendment is as shown in the statement filed 06 Oct 2022

2020

2020201086 **Deutsches Krebsforschungszentrum; Ruprecht-Karls-Universitat Heidelberg** The nature of the amendment is: Amend the name of the inventor to read Eder, Matthias; Kopka, Klaus; Schafer, Martin; Bauder-Wust, Ulrike; Haberkorn, Uwe; Mier, Walter; Benesova, Martina; Eisenhut, Michael; Kratochwil, Clemens and Kliem, Hans-Christian

2020202350 **Transportation IP Holdings, LLC** The nature of the amendment is as shown in the statement(s) filed 04 Oct 2022

Amendments

2020223739 **Deere & Company** The nature of the amendment is as shown in the statement(s) filed 26 Aug 2022

2020270148 **Ariens Company** The nature of the amendment is as shown in the statement(s) filed 30 Sep 2022

2020281015 **Washington University** The nature of the amendment is as shown in the statement(s) filed 01 Oct 2022

2020446598 **Xuzhou Heavy Machinery Co., Ltd.** The nature of the amendment is: Amend the invention title to read HYDRAULIC STEERING SYSTEM AND TRAVELING CRANE

2020458040 **Wenzhou Medical University** The nature of the amendment is: Amend the invention title to read THREE-DIMENSIONAL CHOROIDAL BLOOD VESSEL IMAGING AND QUANTITATIVE ANALYSIS METHOD AND DEVICE BASED ON OPTICAL COHERENCE TOMOGRAPHY SYSTEM

2021

2021262976 **Vivo Mobile Communication Co., Ltd.** The nature of the amendment is: Amend the invention title to read Method and Apparatus for Determining Frequency-Domain Offset, Communication Device, and Readable Storage Medium

2021280929 **Huawei Technologies Co.,Ltd.** The nature of the amendment is: Amend the invention title to read COMMUNICATION METHOD AND APPARATUS

2021286093 **Huawei Technologies Co., Ltd.** The nature of the amendment is: Amend the invention title to read METHOD AND APPARATUS FOR TRANSMITTING/RECEIVING PHYSICAL LAYER PROTOCOL DATA UNIT

2021289230 **Ametalin IP Pte Ltd** The nature of the amendment is: Amend the name of the inventor to read LUMSDEN, Craig; ARCHER, Oscar; JIN, Tony and BOSTROM, Michel

2021290454 **Psilo Scientific Ltd** The nature of the amendment is: Amend the invention title to read Process for Obtaining a Purified Psychoactive Alkaloid Solution

2021292086 **Huawei Technologies Co., Ltd.** The nature of the amendment is: Amend the invention title to read FOLDING APPARATUS AND ELECTRONIC DEVICE

2021299156 **Chong Kun Dang Pharmaceutical Corp.** The nature of the amendment is: Amend the invention title to read Injectable composition comprising GnRH analogue

2021301788 **GAIA BioMedicine Inc.** The nature of the amendment is: Amend the invention title to read Method for stabilizing binding of NK cell and antibody, and use thereof

2021303068 **Sumitomo Precision Products Co., Ltd.** The nature of the amendment is: Amend the invention title to read Vibrating-type gyroscope element and angular velocity sensor including same

2021317306 **HC Synthetic Pharmaceutical Co., Ltd.** The nature of the amendment is: Amend the invention title to read Thiobenzopyrans

Amendments

and their use in preparation of drugs for treatment of rheumatoid arthritis

2021337890 **Komatsu Ltd.** The nature of the amendment is: Amend the invention title to read Work machine, system and method for controlling work machine

2021368834 **LG Energy Solution, Ltd.** The nature of the amendment is: Amend the invention title to read Pack housing including integrated filter mesh applied to venting hole, and battery pack including the same

Alteration of Name(s) of Applicant(s)/Patentee(s)

2003

2003268612 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2003268612 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2003274054 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2003274054 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2003290043 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2003290043 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2004

2004206035 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2005

2005204467 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2005204467 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2005231860 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2005238149 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2005238149 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2006

2006212416 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

Amendments

2006332210 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2007

2007228341 Pluristem Ltd. The name of the patentee has been altered to **PLURI BIOTECH LTD**

2007281012 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2007336147 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008

2008221091 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008228481 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008261290 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008261291 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008266579 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008274669 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008278050 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008281107 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008302798 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008328289 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2008337430 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2009

2009225023 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2009265578 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2009266109 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

Amendments

2009288781 Pluristem Ltd. The name of the patentee has been altered to **PLURI BIOTECH LTD**

2009291489 Luci Novo Limited The name of the patentee has been altered to **Minerbird Group Limited**

2009337948 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010

2010213140 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010244789 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010309729 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010309730 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010309731 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010322808 Pluristem Ltd. The name of the patentee has been altered to **PLURI BIOTECH LTD**

2010329750 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010333402 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2010334698 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2011

2011212702 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2011247199 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2011257091 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2011260632 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2011273331 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2011328390 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

Amendments

2012

2012241521 Pluristem Ltd. The name of the patentee has been altered to **PLURI BIOTECH LTD**

2012276276 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2012292997 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2012292997 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2012299747 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2012299747 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2012304255 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2012306529 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2012306529 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2012323996 Outotec Oyj The name of the patentee has been altered to **Metso Outotec Finland Oy**

2012367080 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2012388418 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2013

2013204818 Outotec (Finland) Oy The name of the patentee has been altered to **Metso Minerals Oy**

2013234571 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2013270913 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2013340326 Pluristem Ltd. The name of the patentee has been altered to **PLURI BIOTECH LTD**

2013380646 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2013393577 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2013407828 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

Amendments

2014

2014335829 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2014351730 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2014364667 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2015

2015212687 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2015329588 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2015370482 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2015370483 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2016

2016102359 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2016259652 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2016269697 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2016333348 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2016390040 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2016423658 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2016430162 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2017

2017101842 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2017272681 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2017365247 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

Amendments

2018

2018296843 Metso Minerals Oy The name of the patentee has been altered to **Metso Outotec Finland Oy**

2018431199 Greeneden U.S. Holdings II, LLC The name of the applicant has been altered to **GENESYS CLOUD SERVICES HOLDINGS II, LLC**

2019

2019242751 Greeneden U.S. Holdings II, LLC The name of the applicant has been altered to **GENESYS CLOUD SERVICES HOLDINGS II, LLC**

2019270168 Greeneden U.S. Holdings II, LLC The name of the applicant has been altered to **GENESYS CLOUD SERVICES HOLDINGS II, LLC**

2019289150 Greeneden U.S. Holdings II, LLC The name of the applicant has been altered to **GENESYS CLOUD SERVICES HOLDINGS II, LLC**

2020

2020247621 Pluristem Ltd. The name of the applicant has been altered to **PLURI BIOTECH LTD**

2020372881 Merck Sharp & Dohme Corp. The name of the applicant has been altered to **Merck Sharp & Dohme LLC**

2021

2021262999 SinoCellTech LTD The name of the applicant has been altered to **SinoCellTech Ltd.**

2021282658 Technip Process Technology, Inc. The name of the applicant has been altered to **T.EN Process Technology Inc.**

2021292460 Nextracker Inc. The name of the applicant has been altered to **Nextracker LLC**

2022

2022232123 China Coal Technology&Engineering Group Shenyang Engineering Company The name of the applicant has been altered to **China Coal Technology & Engineering Group Shenyang Engineering Company**

Notice of Intention to Amend under Section 105 pursuant to the Federal Court Rules

Australian Patent/Patent Application 2015305271 in the name(s) of Perfect Day, Inc.

Applications Open to Public Inspection

Name Index

. (*) Title not in Roman characters
. (**) Title not given

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(71) 4Cabling Pty Ltd
(11) AU-A-2021380856
(21) 2021380856 **(22)** 28.05.2021
(54) Electrical outlet cutting jig
(51) Int. Cl.
E04F 21/00 (2006.01)
B25H 7/02 (2006.01)
B25H 7/04 (2006.01)
E04F 13/074 (2006.01)
G01B 3/04 (2006.01)
G01B 5/14 (2006.01)
(43) 19.01.2023
(72) MADDUMA PATABANDIGE, Chaminda; COMERTPAY, Bilal; STEPHENS, Luke
(74) BLACKWATTLE IP PTY LIMITED

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(71) 4Cabling Pty Ltd
(11) AU-A-2022204553
(21) 2022204553 **(22)** 28.06.2022
(54) Phase isolated electrical plug
(51) Int. Cl.
H01R 13/62 (2006.01)
G01R 19/15 (2006.01)
G01R 31/28 (2006.01)
G01R 31/50 (2020.01)
H01R 4/58 (2006.01)
H01R 9/16 (2006.01)
H01R 24/58 (2011.01)
H01R 31/00 (2006.01)
H02G 15/02 (2006.01)
(31) 2021901960 **(32)** 29.06.21 **(33)** AU
(43) 19.01.2023
(72) MADDUMA PATABANDIGE, Chaminda; COMERTPAY, Bilal
(74) Blackwattle IP

---

(71) 5010889 Ontario Inc.
(11) AU-A-2022204140
(21) 2022204140 **(22)** 14.06.2022
(54) Device for measuring sensitivity in a subject
(51) Int. Cl.
A61B 5/16 (2006.01)
A61B 5/01 (2006.01)
A61B 5/0533 (2021.01)
A61B 5/103 (2006.01)
A61B 18/00 (2006.01)
G01L 5/00 (2006.01)
(31) 3,122,747 **(32)** 18.06.21 **(33)** CA
(43) 19.01.2023
(72) ROSSI, Shawn
(74) Spruson & Ferguson

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(71) ABL Bio Inc.
(11) AU-A-2022252753
(21) 2022252753 **(22)** 12.10.2022
(54) ANTIBODIES TO a-SYNUCLEIN AND USES THEREOF
(51) Int. Cl.
C07K 16/18 (2006.01)
A61P 25/16 (2006.01)
A61P 25/28 (2006.01)
G01N 33/68 (2006.01)
(43) 19.01.2023
(62) 2018370279
(72) Lee, Sang Hoon; You, Weonkyoo; Ahn, Jinhyung; An, Sungwon; Jung, Jinwon; Lee, Bora; Kim, Dongin; Sung, Byungje; Son, Yonggyu; Kim, Yeunju; Eom, Jae-hyun; Ahn, Seawon; Pak, Youngdon; Yeom, Donghoon; Song, Daehae
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Able AI, Inc.
(11) AU-A-2022204258
(21) 2022204258 **(22)** 17.06.2022
(54) TRANSACTION PROCESSING COMPUTER SYSTEM WITH MULTI-CHANNEL COMMUNICATION CONTROL AND DECISION SUPPORT
(51) Int. Cl.
G06Q 40/02 (2012.01)
G06F 16/90 (2019.01)
G06N 5/02 (2006.01)
G06N 5/04 (2006.01)
G06Q 10/04 (2012.01)
G06Q 10/10 (2012.01)
(31) 63/216,955 **(32)** 30.06.21 **(33)** US
17/725,217 20.04.22 US
(43) 19.01.2023
(72) Represas, Diego; Hurst, Andrew R.
(74) Ellis Terry

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(71) Ablynx NV
(11) AU-A-2022279373
(21) 2022279373 **(22)** 28.11.2022
(54) Improved immunoglobulin variable domains
(51) Int. Cl.
C07K 16/00 (2006.01)
C07K 16/18 (2006.01)
C07K 16/28 (2006.01)
(43) 19.01.2023
(62) 2020202855
(72) BUYSE, Marie-Ange; BOUTTON, Carlo
(74) Spruson & Ferguson

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(71) Ablynx NV
(11) AU-A-2022279374
(21) 2022279374 **(22)** 28.11.2022
(54) Improved immunoglobulin variable domains
(51) Int. Cl.
C07K 16/00 (2006.01)
C07K 16/18 (2006.01)
C07K 16/28 (2006.01)
(43) 19.01.2023
(62) 2020202855
(72) BUYSE, Marie-Ange; BOUTTON, Carlo
(74) Spruson & Ferguson

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(71) Acorn Engineering Company
(11) AU-A-2022204308
(21) 2022204308 **(22)** 20.06.2022
(54) Accumulator assembly
(51) Int. Cl.
E03F 1/00 (2006.01)
B65F 1/02 (2006.01)
B67D 7/02 (2010.01)
E03C 1/12 (2006.01)
E03C 1/14 (2006.01)
E03C 1/24 (2006.01)
E03C 1/28 (2006.01)
F16K 24/02 (2006.01)
(31) 63/212,382 **(32)** 18.06.21 **(33)** US
(43) 19.01.2023
(72) ZINN, Thomas K.; GALEAZZI, Carlos J.
(74) Spruson & Ferguson

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(71) Ainsworth Game Technology Limited
(11) AU-A-2021204096
(21) 2021204096 **(22)** 18.06.2021
(54) A gaming machine and method
(51) Int. Cl.
G07F 17/32 (2006.01)
(43) 19.01.2023
(72) Paotrukal, Pairatch
(74) Spruson & Ferguson

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(71) Air Garden Smarts Pty Ltd
(11) AU-A-2021204042
(21) 2021204042 **(22)** 17.06.2021
(54) Modular plant growing system
(51) Int. Cl.
A01G 9/02 (2018.01)
A01G 27/00 (2006.01)
A01G 31/06 (2006.01)
F16B 21/04 (2006.01)
(43) 19.01.2023
(72) Bauer, Prue Amelia; Bauer, Thomas William
(74) Spruson & Ferguson

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(71) Air Products and Chemicals, Inc.
(11) AU-A-2022204410
(21) 2022204410 **(22)** 23.06.2022
(54) PRODUCING LNG FROM METHANE CONTAINING SYNTHETIC GAS
(51) Int. Cl.
F25J 3/02 (2006.01)
(31) 17/360,031 **(32)** 28.06.21 **(33)** US
(43) 19.01.2023
(72) Roberts, Mark Julian; Chen, Fei; Shnitser, Russell B.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Aizoon S.r.l.
(11) AU-A-2022203844

Applications Open to Public Inspection - Name Index cont'd

(21) 2022203844 **(22)** 03.06.2022
(54) METHOD FOR DETECTING ANOMALIES IN SSL AND/OR TLS COMMUNICATIONS, CORRESPONDING DEVICE, AND COMPUTER PROGRAM PRODUCT
(51) Int. Cl.
H04L 9/40 (2022.01)
H04L 41/06 (2022.01)
H04L 41/14 (2022.01)
(31) 102021000015782 **(32)** 16.06.21 **(33)** IT
(43) 19.01.2023
(72) Ucci, Daniele; Sobrero, Filippo; Bisio, Federica
(74) Phillips Ormonde Fitzpatrick

---

(71) Angel Group Co., Ltd.
(11) AU-A-2022279365
(21) 2022279365 **(22)** 28.11.2022
(54) CHIP RECOGNIZING AND LEARNING SYSTEM
(51) Int. Cl.
G07F 17/32 (2006.01)
A63F 11/00 (2006.01)
(43) 19.01.2023
(62) 2018200506
(72) SHIGETA, Yasushi
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Anhui University of Science and Technology
(11) AU-A-2021204289
(21) 2021204289 **(22)** 24.06.2021
(54) A Single-Side Groove Housing For Blasting Grain
(51) Int. Cl.
F42B 3/22 (2006.01)
F42B 1/02 (2006.01)
F42B 3/08 (2006.01)
F42D 1/08 (2006.01)
F42D 3/04 (2006.01)
(43) 19.01.2023
(72) WANG, Haibo; WANG, Mengxiang; XU, Xuan; XU, Ying; MA, Shoulong; ZONG, Qi; LV, Nao; CHENG, Bing
(74) WRAYS PTY LTD

---

(71) Apple Inc.
(11) AU-A-2022203934
(21) 2022203934 **(22)** 07.06.2022
(54) Feedback control schemes for wireless power transfer circuits
(51) Int. Cl.
H02J 50/10 (2016.01)
H02J 7/12 (2006.01)
H02J 50/40 (2016.01)
H02J 50/70 (2016.01)
(31) 63/212,252 **(32)** 18.06.21 **(33)** US
(43) 19.01.2023
(72) HU, Zhiyuan; GHERGHESCU, Alin I.; MEHRABI, Arash; BERDNIKOV, Dmitry
(74) FPA Patent Attorneys Pty Ltd

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(71) Aristocrat Technologies, Inc.
(11) AU-A-2022204206
(21) 2022204206 **(22)** 16.06.2022
(54) GAME PRESENTATION INCLUDING MULTIPLE LINKED AWARDS
(51) Int. Cl.
G07F 17/32 (2006.01)
(31) 17/349,294 **(32)** 16.06.21 **(33)** US
(43) 19.01.2023
(72) MARKS, Daniel; XU, Hua
(74) Griffith Hack

---

(71) Aristocrat Technologies, Inc.
(11) AU-A-2022204249
(21) 2022204249 **(22)** 17.06.2022
(54) ELECTRONIC GAMING MACHINE WITH DISPLAY HAVING COMPONENT PASSTHROUGH
(51) Int. Cl.
G07F 17/32 (2006.01)
A63F 13/90 (2014.01)
(31) 17/263,394 **(32)** 21.04.22 **(33)** US
63/211,915 17.06.21 US
(43) 19.01.2023
(72) JADEJA, Rajendrasinh
(74) Griffith Hack

---

(71) Aristocrat Technologies, Inc.
(11) AU-A-2022204528
(21) 2022204528 **(22)** 27.06.2022
(54) System and Method of Providing a Hold and Spin Game with Base Game Symbol Persistence
(51) Int. Cl.
A63F 13/46 (2014.01)
A63F 9/24 (2006.01)
A63F 13/26 (2014.01)
G07F 17/32 (2006.01)
G07F 17/34 (2006.01)
(31) 17/844,180 **(32)** 20.06.22 **(33)** US
63/216,342 29.06.21 US
63/330,550 13.04.22 US
(43) 19.01.2023
(72) BOESE, Eric; SCHULTZ, Bradley; WILLIAMS II, Ronald
(74) Griffith Hack

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(71) Aristocrat Technologies Australia Pty Limited
(11) AU-A-2022204743
(21) 2022204743 **(22)** 01.07.2022
(54) GAMING MACHINE AND METHOD FOR CENTRALIZED GAMING
(51) Int. Cl.
G07F 17/32 (2006.01)
A63F 3/06 (2006.01)
(31) 63/218,056 **(32)** 02.07.21 **(33)** US
17/809,844 29.06.22 US
(43) 19.01.2023
(72) MEYER, Donovan; O'HARA, Jeremiah; RIZOS, Thomas; PINDER, Jennifer; URBANIAK, James
(74) Griffith Hack

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(71) Arxada AG
(11) AU-A-2022275528
(21) 2022275528 **(22)** 25.11.2022
(54) METHODS AND COMPOSITIONS FOR USE IN GLUE-WOOD PRODUCTS
(51) Int. Cl.
A01N 51/00 (2006.01)
A01N 25/04 (2006.01)
A01P 3/00 (2006.01)
A01P 7/04 (2006.01)
B27D 1/04 (2006.01)
B27D 3/00 (2006.01)
C09J 161/06 (2006.01)
(43) 19.01.2023
(62) 2021204412
(72) Day, Kristina Maree; Molloy, Christopher; Siraa, André Frederik
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Asphalt-IQ Limited
(11) AU-A-2021204265
(21) 2021204265 **(22)** 23.06.2021
(54) Asphalt quality
(51) Int. Cl.
G09F 19/22 (2006.01)
E01C 23/00 (2006.01)
G06Q 90/00 (2006.01)
(43) 19.01.2023
(72) COOK, Gary Alan
(74) BRM Patent Attorneys Pty Ltd

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(71) AT Space Pty Ltd
(11) AU-A-2021204199
(21) 2021204199 **(22)** 22.06.2021
(54) Booster System for Launch Vehicle
(51) Int. Cl.
B64G 1/00 (2006.01)
B64G 1/40 (2006.01)
(43) 19.01.2023
(72) CHEN, Yen-Sen
(74) A.P.T. Patent and Trade Mark Attorneys

---

(71) Australian Direct Pty Ltd
(11) AU-A-2021204325
(21) 2021204325 **(22)** 24.06.2021
(54) A portable power device with charge control connection
(51) Int. Cl.
H01R 13/28 (2006.01)
H01R 24/84 (2011.01)
H02J 7/00 (2006.01)
(43) 19.01.2023
(72) Sheehan, Klaeton
(74) Australian Direct

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(71) B&L Biotech, Inc.; Lee, I.W.
(11) AU-A-2021245261
(21) 2021245261 **(22)** 11.10.2021
(54) Tooth model for tooth treatment practice and method for manufacturing the same
(51) Int. Cl.
G09B 23/28 (2006.01)
G09B 23/30 (2006.01)
(31) 10-2021-0086444 **(32)** 01.07.21 **(33)** KR
(43) 19.01.2023
(72) Lee, In Whan
(74) Spruson & Ferguson

Applications Open to Public Inspection - Name Index cont'd

(71) B3 CORP PTY LTD
(11) AU-A-2022279431
(21) 2022279431 **(22)** 29.11.2022
(54) A Retaining Wall System
(51) Int. Cl.
E02D 29/02 (2006.01)
E04H 17/14 (2006.01)
E04H 17/16 (2006.01)
(43) 19.01.2023
(62) PCT/AU2021/051196
(72) BRADLEY, Gareth James
(74) Michael Buck IP

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(71) BASF Agricultural Solutions Seed US LLC
(11) AU-A-2021204531
(21) 2021204531 **(22)** 30.06.2021
(54) Canola hybrid variety AN20LT001
(51) Int. Cl.
A01H 6/20 (2018.01)
A01H 5/10 (2018.01)
(43) 19.01.2023
(72) Pike, David Keith; Davey, Timothy
(74) Davies Collison Cave Pty Ltd

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(71) BASF Agricultural Solutions Seed US LLC
(11) AU-A-2021204536
(21) 2021204536 **(22)** 30.06.2021
(54) Canola hybrid variety AN20LR005
(51) Int. Cl.
A01H 6/20 (2018.01)
A01H 5/10 (2018.01)
(43) 19.01.2023
(72) Pike, David Keith; Davey, Timothy
(74) Davies Collison Cave Pty Ltd

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(71) Becton, Dickinson and Company
(11) AU-A-2022279392
(21) 2022279392 **(22)** 29.11.2022
(54) System, method, and computer program product for identifying device connections
(51) Int. Cl.
G16H 40/63 (2018.01)
G16H 20/17 (2018.01)
(43) 19.01.2023
(62) 2019257288
(72) WITT, Erik Kurt
(74) FB Rice Pty Ltd

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(71) Becton, Dickinson and Company
(11) AU-A-2022279403
(21) 2022279403 **(22)** 29.11.2022
(54) UNIVERSAL SINGLE-USE CAP FOR MALE AND FEMALE CONNECTORS
(51) Int. Cl.
A61M 39/16 (2006.01)
A61M 39/20 (2006.01)
(43) 19.01.2023
(62) 2022200552
(72) EREKOVCANSKI, Nicholas; JIANG, Chang; MARICI, Paul
(74) Dark IP

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(71) Becton Dickinson France
(11) AU-A-2022278873
(21) 2022278873 **(22)** 28.11.2022
(54) Auto-injector with cap
(51) Int. Cl.
A61M 5/20 (2006.01)
A61M 5/32 (2006.01)
(43) 19.01.2023
(62) 2020227209
(72) BESSON, Nicolas; PLOUVIER, Adrien
(74) FB Rice Pty Ltd

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(71) Beijing Geekplus Technology Co., Ltd.
(11) AU-A-2022279434
(21) 2022279434 **(22)** 29.11.2022
(54) MANAGEMENT METHOD, DEVICE AND SYSTEM APPLIED TO GOODS-TO-PERSON SYSTEM, SERVER AND COMPUTER STORAGE MEDIUM
(51) Int. Cl.
G06Q 10/04 (2023.01)
(43) 19.01.2023
(62) 2019278136
(72) LIU, Kai; WANG, Haoyu; WU, Xun; SUN, Kai
(74) Davies Collison Cave Pty Ltd

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(71) Beijing Tusen Zhitu Technology Co., Ltd.
(11) AU-A-2022204335
(21) 2022204335 **(22)** 21.06.2022
(54) Data communication method, communication system and computer-readable storage medium
(51) Int. Cl.
G06F 12/00 (2006.01)
G06F 13/00 (2006.01)
(31) 202110704954.0 **(32)** 24.06.21 **(33)** CN
(43) 19.01.2023
(72) WEI, Liu; HAO, Wu; JIANGMING, Jin
(74) FB Rice Pty Ltd

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(71) Beijing Tusen Zhitu Technology Co., Ltd.
(11) AU-A-2022204336
(21) 2022204336 **(22)** 21.06.2022
(54) Communication method and related communication apparatus and storage medium
(51) Int. Cl.
G06F 21/00 (2013.01)
G06F 7/58 (2006.01)
H04L 9/08 (2006.01)
(31) 202110703273.2 **(32)** 24.06.21 **(33)** CN
(43) 19.01.2023
(72) YIFAN, Gong; JIANGMING, Jin
(74) FB Rice Pty Ltd

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(71) Biocomposites Limited
(11) AU-A-2022203798
(21) 2022203798 **(22)** 02.06.2022
(54) IMPLANTABLE PHARMACEUTICAL COMPOSITION PREPARED FROM COMPONENTS CONSISTING ONLY OF CALCIUM SULFATE α-HEMIHYDRATE, VANCOMYCIN AND GENTAMICIN
(51) Int. Cl.
A61P 31/04 (2006.01)
A61K 9/00 (2006.01)
A61K 31/7036 (2006.01)
A61K 31/7042 (2006.01)
A61K 38/14 (2006.01)
A61K 47/02 (2006.01)
A61L 24/02 (2006.01)
A61L 27/02 (2006.01)
A61L 27/54 (2006.01)
(31) 2108727.5 **(32)** 18.06.21 **(33)** GB
(43) 19.01.2023
(72) Aiken, Sean Sydney; Laycock, Phillip Anthony; Cooper, John Joseph; Bratt, John Stephen; Harris, Michael Christopher James
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Biocomposites Limited
(11) AU-A-2022203803
(21) 2022203803 **(22)** 02.06.2022
(54) IMPLANTABLE PHARMACEUTICAL COMPOSITION CONSISTING OF CALCIUM SULFATE α-HEMIHYDRATE, VANCOMYCIN AND TOBRAMYCIN
(51) Int. Cl.
A61P 31/04 (2006.01)
A61K 9/00 (2006.01)
A61K 31/7036 (2006.01)
A61K 31/7042 (2006.01)
A61K 38/14 (2006.01)
A61K 47/02 (2006.01)
A61L 27/02 (2006.01)
A61L 27/54 (2006.01)
(31) 2108729.1 **(32)** 18.06.21 **(33)** GB
(43) 19.01.2023
(72) Aiken, Sean Sydney; Laycock, Phillip Anthony; Cooper, John Joseph; Bratt, John Stephen; Harris, Michael Christopher James
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Biogen Chesapeake LLC
(11) AU-A-2022279369
(21) 2022279369 **(22)** 28.11.2022
(54) Methods of treating injuries or conditions related to CNS edema
(51) Int. Cl.
A61K 31/64 (2006.01)
(43) 19.01.2023
(62) 2016335767
(72) Jacobson, Sven Martin
(74) Davies Collison Cave Pty Ltd

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(71) BlackSeries Intelligent Equipment (Weihai) Co., Ltd
(11) AU-A-2022203384
(21) 2022203384 **(22)** 19.05.2022
(54) SELF-BALANCING DEVICE FOR SELF-PROPELLED OFF-ROAD RV BOX BODY
(51) Int. Cl.
B62D 24/04 (2006.01)
B62D 21/03 (2006.01)
B62D 21/11 (2006.01)
B62D 21/20 (2006.01)

Applications Open to Public Inspection - Name Index cont'd

B62D 27/04 (2006.01)
(31) 202110693255.0 **(32)** 22.06.21 **(33)** CN
(43) 19.01.2023
(72) LIU, Xinna; LI, Xiaodong; ZHU, Yongliang
(74) Remarkable IP

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(71) Boston Scientific Scimed, Inc.
(11) AU-A-2022279409
(21) 2022279409 **(22)** 29.11.2022
(54) Stone identification methods and systems
(51) Int. Cl.
A61B 1/307 (2006.01)
A61B 1/00 (2006.01)
A61B 8/08 (2006.01)
A61B 18/00 (2006.01)
A61B 34/00 (2016.01)
A61B 34/20 (2016.01)
G06F 3/0484 (2022.01)
G06F 3/0488 (2022.01)
G06T 7/00 (2017.01)
G06T 7/60 (2017.01)
G06T 11/60 (2006.01)
(43) 19.01.2023
(62) 2018206495
(72) PEREIRA, Peter J.; CHU, Michael S. H.; STOCKLEY, Elizabeth; SALTO, David; RHODES, Candace
(74) Spruson & Ferguson

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(71) Bradley, M.
(11) AU-A-2021204194
(21) 2021204194 **(22)** 22.06.2021
(54) An Improved C spanner for use with a drill rod
(51) Int. Cl.
E21B 19/16 (2006.01)
B25B 13/08 (2006.01)
B25B 13/50 (2006.01)
B25B 13/48 (2006.01)
(43) 19.01.2023
(72) Bradley, Matthew
(74) Matthew Bradley

Buck Institute for Research on Aging see The Johns Hopkins University
(21) 2022256167

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(71) Buildsafe Equipment Sales Pty Ltd
(11) AU-A-2022204828
(21) 2022204828 **(22)** 05.07.2022
(54) Improvements in Relation to Void Covers
(51) Int. Cl.
E04G 21/32 (2006.01)
E04G 1/36 (2006.01)
E04G 1/15 (2006.01)
E04G 27/00 (2006.01)
(31) 2021902032 **(32)** 05.07.21 **(33)** AU
(43) 19.01.2023
(72) Horton, Peter; Thompson, Tim; Edwards, Grant
(74) Morcom Pernat

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(71) BULLFROG INTERNATIONAL, LC
(11) AU-A-2022204204
(21) 2022204204 **(22)** 16.06.2022
(54) POOL AND SPA WATER HAMMOCK DEVICE AND METHODS OF USE
(51) Int. Cl.
E04H 4/14 (2006.01)
A45F 3/22 (2006.01)
A47C 17/84 (2006.01)
(31) 17/351,130 **(32)** 17.06.21 **(33)** US
(43) 19.01.2023
(72) Hales, Eric; McLane, Mark; Santos, Robert; Eddington, Richard Alex
(74) Dentons Patent Attorneys Australasia Limited

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(71) BVN Architecture Pty Ltd
(11) AU-A-2021204072
(21) 2021204072 **(22)** 18.06.2021
(54) AN AIR DIFFUSION SYSTEM
(51) Int. Cl.
F24F 13/02 (2006.01)
B29C 64/209 (2017.01)
B33Y 80/00 (2015.01)
G06F 30/17 (2020.01)
G06F 30/20 (2020.01)
B29C 48/87 (2019.01)
B29C 64/106 (2017.01)
F24F 13/06 (2006.01)
B29K 105/26 (2006.01)
G06F 113/10 (2020.01)
(43) 19.01.2023
(72) Titchkosky, Ninotschka Anna; Schork, Tim; Bickerton, Christopher James; Bennett, Michael John; Page, Mitchell Robert; Pigram, David Anthony; Dang, Tran Tuan Anh
(74) Phillips Ormonde Fitzpatrick

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(71) CareFusion 303, Inc.
(11) AU-A-2022204234
(21) 2022204234 **(22)** 17.06.2022
(54) System and method for detecting a faulty occluder valve
(51) Int. Cl.
A61M 5/142 (2006.01)
(31) 63/212,441 **(32)** 18.06.21 **(33)** US
(43) 19.01.2023
(72) FERNER, Edward Stephen; ROBERTS, Stephen D.; ABAL, Daniel M.
(74) FB Rice Pty Ltd

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(71) Cargotec Finland Oy
(11) AU-A-2022204468
(21) 2022204468 **(22)** 24.06.2022
(54) Dynamic flex compensation, coordinated hoist control, and anti-sway control for load handling machines
(51) Int. Cl.
B66C 7/04 (2006.01)
B65G 63/04 (2006.01)
B66C 19/00 (2006.01)
B66D 1/36 (2006.01)
G05D 3/20 (2006.01)
G05D 13/62 (2006.01)
(31) 20215750 **(32)** 24.06.21 **(33)** FI
(43) 19.01.2023
(72) VIHONEN, Juho; AREF, Mohammad M.; PETRÍK, Vladimír; ARNDT, Karol; BLANCO MULERO, David; KYRKI, Ville; NASKALI, Juuso; RASINEN, Marko
(74) Griffith Hack

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(71) Caterpillar Inc.
(11) AU-A-2022275523
(21) 2022275523 **(22)** 25.11.2022
(54) Information processing method and system
(51) Int. Cl.
G06F 3/00 (2006.01)
(43) 19.01.2023
(62) 2020267159
(72) Blanchard, Glen P.
(74) FPA Patent Attorneys Pty Ltd

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(71) CATERPILLAR INC.
(11) AU-A-2022203511
(21) 2022203511 **(22)** 24.05.2022
(54) CABLE HANDLING SYSTEM FOR LONGWALL MINING MACHINES
(51) Int. Cl.
E21C 35/04 (2006.01)
E21C 25/06 (2006.01)
E21C 41/18 (2006.01)
(31) 2108671.5 **(32)** 17.06.21 **(33)** GB
(43) 19.01.2023
(72) SAIKIA, Siddartha; KIRKHOPE, Euan; ROZARIO, Wilfred; ANGAMUTHU GANESAN, Mahendra Kumar; PADHI, Lakshminarayana
(74) FPA Patent Attorneys Pty Ltd

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(71) CATERPILLAR INC.
(11) AU-A-2022203862
(21) 2022203862 **(22)** 03.06.2022
(54) BATTERY DATA TRANSLATOR
(51) Int. Cl.
G06F 17/40 (2006.01)
G01R 1/36 (2006.01)
H01M 10/48 (2006.01)
H02J 7/04 (2006.01)
H04L 67/12 (2022.01)
(31) 17/353,240 **(32)** 21.06.21 **(33)** US
(43) 19.01.2023
(72) HASLER, Gregory S.
(74) FPA Patent Attorneys Pty Ltd

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(71) Caterpillar Underground Mining Pty Ltd
(11) AU-A-2021204152
(21) 2021204152 **(22)** 21.06.2021
(54) Wheel chock mounting assembly
(51) Int. Cl.
B60R 11/06 (2006.01)
B60T 3/00 (2006.01)
B60P 3/077 (2006.01)
B60R 11/00 (2006.01)
(43) 19.01.2023
(72) Goldwin, Nirmal; Nagaraja, Sriharsha Hebbani; Harding, Robert
(74) FPA Patent Attorneys Pty Ltd

China Coal Technology & Engineering Group see Shenyang Research Institute

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of China Coal Technology & Engineering Group
(21) 2022202272

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(71) China Railway Engineering Equipment Group Co., Ltd
(11) AU-A-2021290425
(21) 2021290425 **(22)** 30.12.2021
(54) SLURRY OPEN DUAL-MODE SHIELD MACHINE EQUIPPED WITH CUTTER HEAD WITH ATMOSPHERIC PRESSURE
(51) Int. Cl.
E21D 9/12 (2006.01)
E21D 9/06 (2006.01)
E21D 9/08 (2006.01)
(31) 202110725855.0 **(32)** 29.06.21 **(33)** CN
(43) 19.01.2023
(72) HAO, Linran; YANG, Chengzhang; PANG, Peiyan; HE, Kaiwei; HUO, Lei; ZHANG, Ningchuan; ZHAI, Guoqiang; ZHENG, Kangtai; XUE, Jin
(74) Griffith Hack

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(71) Clay Industries SDN BHD
(11) AU-A-2022204495
(21) 2022204495 **(22)** 24.06.2022
(54) Ceramic flush water distributor for rimless toilet unit
(51) Int. Cl.
E03D 11/08 (2006.01)
E03D 11/13 (2006.01)
(31) PI2021003664 **(32)** 29.06.21 **(33)** MY
(43) 19.01.2023
(72) SENG, Tan Han
(74) GLMR

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(71) CNH Industrial America LLC
(11) AU-A-2022204168
(21) 2022204168 **(22)** 15.06.2022
(54) System and method for identifying weeds within a field during an agricultural spraying operation
(51) Int. Cl.
A01M 7/00 (2006.01)
A01B 79/00 (2006.01)
G06T 7/00 (2017.01)
G06V 20/80 (2022.01)
(31) 17/349,296 **(32)** 16.06.21 **(33)** US
(43) 19.01.2023
(72) Harmon, Andrew W.; Smith, Kevin M.; Stanhope, Trevor
(74) Griffith Hack

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(71) CNH Industrial America LLC
(11) AU-A-2022204374
(21) 2022204374 **(22)** 22.06.2022
(54) System and method for controlling boom assembly position of an agricultural sprayer
(51) Int. Cl.
A01M 7/00 (2006.01)
A01C 23/04 (2006.01)
B05B 13/00 (2006.01)
B66C 23/18 (2006.01)
B66F 17/00 (2006.01)
(31) 17/355,669 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) Smith, Kevin M.; Bittner, Roy A.
(74) Griffith Hack

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(71) Control Bionics Limited
(11) AU-A-2022268375
(21) 2022268375 **(22)** 11.11.2022
(54) MULTIPLE SWITCHING ELECTROMYOGRAPHY (EMG) ASSISTIVE COMMUNICATIONS DEVICE
(51) Int. Cl.
A61B 5/24 (2021.01)
A61B 5/313 (2021.01)
(31) 17/556,063 **(32)** 20.12.21 **(33)** US
(43) 19.01.2023
(61) 2018367613
(62) 2018367613
(72) SCHOREY, James E.; FORD, Peter S.; WONG, Robert W.
(74) James & Wells Intellectual Property

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(71) CRRC Changchun Railway Vehicles Co., Ltd.
(11) AU-A-2021269394
(21) 2021269394 **(22)** 18.11.2021
(54) Vehicle body and subway vehicle having the same
(51) Int. Cl.
B61D 17/08 (2006.01)
(31) 202110706244.1 **(32)** 24.06.21 **(33)** CN
(43) 19.01.2023
(72) LI, Liheng; ZHENG, Hengliang; YANG, Huimin
(74) FPA Patent Attorneys Pty Ltd

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(71) CTEK Sweden AB
(11) AU-A-2022203789
(21) 2022203789 **(22)** 02.06.2022
(54) Method for communication between a battery charger and an electrically connected vehicle
(51) Int. Cl.
G01R 31/371 (2019.01)
B60L 53/60 (2019.01)
B60L 58/12 (2019.01)
(31) 2150806-4 **(32)** 22.06.21 **(33)** SE
(43) 19.01.2023
(72) SVEDLUND, Jerry
(74) FB Rice Pty Ltd

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(71) CTEK Sweden AB
(11) AU-A-2022204413
(21) 2022204413 **(22)** 23.06.2022
(54) Cable handling arrangement
(51) Int. Cl.
B60L 53/18 (2019.01)
B65H 75/34 (2006.01)
B66D 1/36 (2006.01)
F16L 3/01 (2006.01)
F16L 3/14 (2006.01)
H02G 11/00 (2006.01)
(31) 2150824-7 **(32)** 28.06.21 **(33)** SE
2151106-8 03.09.21 SE
(43) 19.01.2023
(72) SVEDLUND, Jerry; AHLGREN, Lars-Olov; HJORT, Mattias; FÄLT, Tommy
(74) FB Rice Pty Ltd

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(71) Daeyoung Chaevi Co., Ltd.
(11) AU-A-2021209259
(21) 2021209259 **(22)** 28.07.2021
(54) Electric vehicle charging system and method thereof providing additional services
(51) Int. Cl.
B60L 53/126 (2019.01)
B60L 53/16 (2019.01)
B60L 53/18 (2019.01)
B60L 53/65 (2019.01)
B60L 53/66 (2019.01)
(31) 10-2021-0086083 **(32)** 30.06.21 **(33)** KR
17/443,182 21.07.21 US
(43) 19.01.2023
(72) BAE, Kyung Soo; KIM, Sang Ho
(74) FPA Patent Attorneys Pty Ltd

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(71) Dafour Limited
(11) AU-A-2021204018
(21) 2021204018 **(22)** 17.06.2021
(54) FISHING SINKER
(51) Int. Cl.
A01K 95/00 (2006.01)
A01K 91/04 (2006.01)
A01K 97/06 (2006.01)
(43) 19.01.2023
(72) Lenden, David Graeme Bruce
(74) James & Wells Intellectual Property

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(71) Dayton Superior Corporation
(11) AU-A-2022204214
(21) 2022204214 **(22)** 16.06.2022
(54) REINFORCEMENT POSITIONER WITH CLIP
(51) Int. Cl.
E04C 5/16 (2006.01)
E04C 5/20 (2006.01)
(31) 17/350,753 **(32)** 17.06.21 **(33)** US
(43) 19.01.2023
(72) Clarke, Jack Reese; Cross, Brandon Lee
(74) Phillips Ormonde Fitzpatrick

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(71) DD Innovations B.V.
(11) AU-A-2022204303
(21) 2022204303 **(22)** 20.06.2022
(54) Disc for a medicine unit delivery device, medicine unit delivery device comprising such disc, and method for configuring a medicine unit delivery device
(51) Int. Cl.
A61J 7/00 (2006.01)
B65B 35/06 (2006.01)
B65D 83/04 (2006.01)
(31) NL2028489 **(32)** 20.06.21 **(33)** NL
(43) 19.01.2023
(72) BIJLSMA, Dennis Raymond
(74) CHILIAD CONSULTING PTY LTD

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(71) DD Innovations B.V.
(11) AU-A-2022204304
(21) 2022204304 **(22)** 20.06.2022
(54) Device for filling a medicine-unit container for use in a medicine unit dis-

Applications Open to Public Inspection - Name Index cont'd

pensing device, medicine-unit container, assembly of such device and a container and method for cleaning such device
(51) Int. Cl.
A61J 1/03 (2006.01)
A61J 1/16 (2006.01)
A61L 2/20 (2006.01)
B08B 5/04 (2006.01)
B08B 9/28 (2006.01)
B65D 25/04 (2006.01)
B65D 55/02 (2006.01)
B65D 83/04 (2006.01)
(31) NL 2028490 **(32)** 20.06.21 **(33)** NL
NL 2028491 20.06.21 NL
NL 2028765 16.07.21 NL
(43) 19.01.2023
(72) BIJLSMA, Dennis Raymond
(74) CHILIAD CONSULTING PTY LTD

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(71) Deere & Company
(11) AU-A-2022203386
(21) 2022203386 **(22)** 19.05.2022
(54) Implement management system for implement wear detection and estimation
(51) Int. Cl.
A01B 15/20 (2006.01)
A01D 41/127 (2006.01)
G01C 25/00 (2006.01)
G01N 33/24 (2006.01)
G05B 13/02 (2006.01)
G05B 17/02 (2006.01)
G05B 19/18 (2006.01)
G05B 23/02 (2006.01)
G05D 1/10 (2006.01)
(31) 17/349,635 **(32)** 16.06.21 **(33)** US
(43) 19.01.2023
(72) Maeder, Curtis A.; Schleicher, Tyler D.; Anderson, Noel W.
(74) Davies Collison Cave Pty Ltd

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(71) Deere & Company
(11) AU-A-2022203387
(21) 2022203387 **(22)** 19.05.2022
(54) Implement management system for determining implement state
(51) Int. Cl.
G05B 13/04 (2006.01)
A01B 15/20 (2006.01)
A01D 41/127 (2006.01)
G05B 19/04 (2006.01)
G05D 1/02 (2020.01)
(31) 17/349,688 **(32)** 16.06.21 **(33)** US
(43) 19.01.2023
(72) Schleicher, Tyler D.; Maeder, Curtis A.; Anderson, Noel W.; Runde, Jeffrey E.
(74) Davies Collison Cave Pty Ltd

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(71) Deere & Company
(11) AU-A-2022203793
(21) 2022203793 **(22)** 02.06.2022
(54) Communication of fill level to receiving vehicle(s)
(51) Int. Cl.
G06Q 10/08 (2012.01)
A01D 75/00 (2006.01)
B65B 1/48 (2006.01)
G05D 1/02 (2020.01)
G06F 17/00 (2019.01)
G06Q 50/28 (2012.01)
(31) 17/360,282 **(32)** 28.06.21 **(33)** US
(43) 19.01.2023
(72) O'Connor, Kellen; Faust, Jeremy J.
(74) Davies Collison Cave Pty Ltd

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(71) Deere & Company
(11) AU-A-2022203824
(21) 2022203824 **(22)** 02.06.2022
(54) Closed loop control of filling mechanisms
(51) Int. Cl.
A01D 43/08 (2006.01)
G05D 1/02 (2020.01)
G06Q 50/02 (2012.01)
(31) 17/360,291 **(32)** 28.06.21 **(33)** US
(43) 19.01.2023
(72) O'Connor, Kellen; Faust, Jeremy J.
(74) Davies Collison Cave Pty Ltd

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(71) Deere & Company
(11) AU-A-2022203858
(21) 2022203858 **(22)** 03.06.2022
(54) Apparatus, method and system for evaluating an agricultural material
(51) Int. Cl.
G01N 21/31 (2006.01)
A01D 41/127 (2006.01)
G01N 1/14 (2006.01)
G01N 33/24 (2006.01)
(31) 17/304,979 **(32)** 29.06.21 **(33)** US
(43) 19.01.2023
(72) Culpepper, Bret M.; Hershbarger, James M.; Pettit, James K.; Coughlen, Steven
(74) Davies Collison Cave Pty Ltd

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(71) Deere & Company
(11) AU-A-2022203859
(21) 2022203859 **(22)** 03.06.2022
(54) Predictive technique for dispensing product from tractor tool
(51) Int. Cl.
G05D 1/02 (2020.01)
A01C 14/00 (2006.01)
G05B 19/18 (2006.01)
G05B 23/02 (2006.01)
(31) 17/364,092 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) Sawlaw, Solomon J.; Burnley, Ryan C.; Scheufler, Ray M.; Maeder, Curtis A.; Mahrt, Sean A.
(74) Davies Collison Cave Pty Ltd

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(71) Deere & Company
(11) AU-A-2022204331
(21) 2022204331 **(22)** 21.06.2022
(54) SAW APPARATUS WITH HYDRAULIC TENSIONING
(51) Int. Cl.
A01G 23/091 (2006.01)
A01G 3/08 (2006.01)
B27B 17/02 (2006.01)
B27B 17/14 (2006.01)
F16K 15/02 (2006.01)
F16K 15/04 (2006.01)
F16K 15/18 (2006.01)
F16K 17/04 (2006.01)
F16K 31/44 (2006.01)
A01G 23/083 (2006.01)
A01G 23/095 (2006.01)
(31) 777066 **(32)** 21.06.21 **(33)** NZ
(43) 19.01.2023
(72) BOYS, Michael; HOWORTH, James
(74) James & Wells Intellectual Property

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(71) Deere & Company
(11) AU-A-2022204346
(21) 2022204346 **(22)** 21.06.2022
(54) IMPROVEMENTS TO TIMBER-WORKING DEVICES
(51) Int. Cl.
A01G 23/083 (2006.01)
A01G 23/095 (2006.01)
B27B 17/02 (2006.01)
A01G 23/091 (2006.01)
A01G 23/099 (2006.01)
(31) 777065 **(32)** 21.06.21 **(33)** NZ
(43) 19.01.2023
(72) Swinyard, Douglas Craig
(74) James & Wells Intellectual Property

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(71) Deere & Company
(11) AU-A-2022204652
(21) 2022204652 **(22)** 29.06.2022
(54) Pre-charging technique for dispensing product from tractor tool prior to reaching plant site
(51) Int. Cl.
G05D 1/02 (2020.01)
A01B 79/00 (2006.01)
A01C 7/10 (2006.01)
(31) 17/364,099 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) Sawlaw, Solomon J.; Mahrt, Sean A.; Scheufler, Ray M.; Graham, William Douglas; Santiago, Samuel
(74) Davies Collison Cave Pty Ltd

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(71) Deere & Company
(11) AU-A-2022204653
(21) 2022204653 **(22)** 29.06.2022
(54) Methods, apparatus, and articles of manufacture to generate acquisition paths
(51) Int. Cl.
G05D 1/02 (2020.01)
G01C 21/34 (2006.01)
G01C 23/00 (2006.01)
G06F 16/29 (2019.01)
(31) 17/364,347 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) Schaefer, Simon W.
(74) Davies Collison Cave Pty Ltd

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(71) Dentsu Inc.
(11) AU-A-2021427874
(21) 2021427874 **(22)** 04.10.2021
(54) Real-time data processing device
(51) Int. Cl.
G06F 3/048 (2013.01)
G06F 3/01 (2006.01)
(31) 2021-101804 **(32)** 18.06.21 **(33)** JP

Applications Open to Public Inspection - Name Index cont'd

(43) 19.01.2023
(72) IWASHITA, Satoru; KOBUSE, Noritaka; HIBI, Akimichi; SHIGEMASA, Naoto; TOMITA, Susumu; NAGASAKU, Keishi
(74) RnB IP Pty Ltd

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(71) Destec Pty Ltd
(11) AU-A-2021204266
(21) 2021204266 **(22)** 23.06.2021
(54) TRANSPORTABLE BULK MATERIAL PROCESSING PLANT
(51) Int. Cl.
B02C 21/02 (2006.01)
B02C 23/08 (2006.01)
B02C 23/16 (2006.01)
B07B 1/00 (2006.01)
(43) 19.01.2023
(72) Wyatt, Stephen
(74) Griffith Hack

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(71) DIGITAL SEAT MEDIA INC.
(11) AU-A-2022275521
(21) 2022275521 **(22)** 25.11.2022
(54) METHOD AND SYSTEM FOR DIGITAL RECORD VERIFICATION
(51) Int. Cl.
G06Q 10/10 (2023.01)
G06Q 50/10 (2012.01)
H04W 4/021 (2018.01)
G06K 19/06 (2006.01)
G06K 19/07 (2006.01)
H04L 9/40 (2022.01)
(43) 19.01.2023
(62) PCT/US2021/070471,PCT/US2022/071906
(72) FOWLER, Cameron; SULLIVAN, Matthew
(74) Baxter Patent Attorneys Pty Ltd

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(71) dormakaba Deutschland GmbH
(11) AU-A-2022204043
(21) 2022204043 **(22)** 10.06.2022
(54) Method for determining and/or verifying a status of a door system, status determination device, system, computer program product
(51) Int. Cl.
E05F 15/40 (2015.01)
G05B 13/04 (2006.01)
G05B 17/02 (2006.01)
G06N 20/00 (2019.01)
G07C 3/00 (2006.01)
G08B 21/02 (2006.01)
G08B 21/18 (2006.01)
G08B 23/00 (2006.01)
(31) 21180282.2 **(32)** 18.06.21 **(33)** EP
(43) 19.01.2023
(72) Wagner, Martin; Halder, Ingo; Friedrich, Benjamin
(74) Davies Collison Cave Pty Ltd

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(71) dormakaba Deutschland GmbH
(11) AU-A-2022204047
(21) 2022204047 **(22)** 10.06.2022
(54) Method for determining and/or verifying a status of a door system, method for generating a model, status determination device, system, computer program product
(51) Int. Cl.
E05F 15/40 (2015.01)
G05B 17/02 (2006.01)
G06N 20/00 (2019.01)
G07C 3/00 (2006.01)
G08B 21/02 (2006.01)
G08B 21/18 (2006.01)
G08B 23/00 (2006.01)
(31) 21180270.7 **(32)** 18.06.21 **(33)** EP
(43) 19.01.2023
(72) Friedrich, Benjamin; Halder, Ingo; Wagner, Martin
(74) Davies Collison Cave Pty Ltd

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(71) DuAx Innovations Pty Ltd
(11) AU-A-2021204443
(21) 2021204443 **(22)** 29.06.2021
(54) Boom mounted cleaning means
(51) Int. Cl.
B08B 3/02 (2006.01)
B05B 3/12 (2006.01)
(43) 19.01.2023
(72) Blaney-Simpson, Christopher; Axiak, Wilfred; Duggan, Niall; Camenzuli , Mario; Coote, Michael
(74) Armour IP Pty Ltd

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(71) DuAx Innovations Pty Ltd
(11) AU-A-2021204544
(21) 2021204544 **(22)** 30.06.2021
(54) Remotely operated cleaning device
(51) Int. Cl.
E02F 3/34 (2006.01)
E02F 3/28 (2006.01)
E02F 3/30 (2006.01)
E02F 3/38 (2006.01)
(43) 19.01.2023
(72) Blaney-Simpson, Christopher; Axiak, Wilfred; Duggan, Niall; Camenzuli, Mario; Coote, Michael
(74) Armour IP Pty Ltd

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(71) DUNCAN, D.
(11) AU-A-2022204277
(21) 2022204277 **(22)** 19.06.2022
(54) ELECTRIC BAGPIPE AND ELECTRIC BAGPIPE COMPONENTS
(51) Int. Cl.
G10D 7/063 (2020.01)
G10D 9/035 (2020.01)
G10H 3/14 (2006.01)
(31) 63/216,646 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) DUNCAN, DAVID
(74) DAVIS IP PTY LTD

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(71) DYWIDAG-Systems International Pty Limited
(11) AU-A-2022275489
(21) 2022275489 **(22)** 24.11.2022
(54) Dynamic drop testing apparatus
(51) Int. Cl.
G01N 3/303 (2006.01)
E21D 21/00 (2006.01)
G01M 7/08 (2006.01)
G01N 3/04 (2006.01)
G01N 3/06 (2006.01)
G01N 3/48 (2006.01)
E21D 11/40 (2006.01)
(43) 19.01.2023
(62) 2021212150
(72) EVANS, David William; AMOS, Adam
(74) Spruson & Ferguson

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(71) Earshots Limited
(11) AU-A-2021221494
(21) 2021221494 **(22)** 24.08.2021
(54) A WEARABLE DEVICE
(51) Int. Cl.
H04R 1/10 (2006.01)
H04R 1/28 (2006.01)
H04R 1/02 (2006.01)
(31) 777660 **(32)** 30.06.21 **(33)** NZ
(43) 19.01.2023
(72) Bell-Booth, James Alexander
(74) Ellis Terry

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(71) Earthling 3.0 Pty Ltd
(11) AU-A-2022204223
(21) 2022204223 **(22)** 16.06.2022
(54) Hybrid Shoe (with wings)
(51) Int. Cl.
A43B 7/145 (2022.01)
A43B 5/06 (2022.01)
A43B 7/1425 (2022.01)
A43B 13/02 (2022.01)
A43B 13/14 (2006.01)
A43B 13/16 (2006.01)
(31) 2021901812 **(32)** 16.06.21 **(33)** AU
(43) 19.01.2023
(72) Ioannou, George
(74) LESICAR MAYNARD ANDREWS PTY LTD

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(71) eBay Inc.
(11) AU-A-2022204483
(21) 2022204483 **(22)** 24.06.2022
(54) Interface extension operations and interfaces in an item listing system
(51) Int. Cl.
G06F 16/248 (2019.01)
G06F 3/14 (2006.01)
(31) 17/359,353 **(32)** 25.06.21 **(33)** US
(43) 19.01.2023
(72) RUBINSON, Ethan Benjamin; WEINBERG, Mark Jeffrey; PADMANABHAN, Senthil Kumar; JOGANI, Parin Pankaj
(74) FPA Patent Attorneys Pty Ltd

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(71) Ebrahimi Afrouzi, A.
(11) AU-A-2021204125
(21) 2021204125 **(22)** 19.06.2021
(54) METHODS AND SYSTEMS FOR ROBOTIC SURFACE COVERAGE
(51) Int. Cl.
G05D 1/02 (2020.01)
B25J 9/16 (2006.01)
B25J 11/00 (2006.01)
(43) 19.01.2023
(72) Ebrahimi Afrouzi, Ali; Fath, Lukas
(74) Ali Ebrahimi Afrouzi

Applications Open to Public Inspection - Name Index cont'd

(71) Eco Shed Industries Pty Ltd
(11) AU-A-2022279398
(21) 2022279398 **(22)** 29.11.2022
(54) A CONSTRUCTION ELEMENT COMPRISING A STORAGE TANK
(51) Int. Cl.
E03B 3/03 (2006.01)
E04B 2/56 (2006.01)
E04B 2/72 (2006.01)
E04C 1/00 (2006.01)
E04C 2/20 (2006.01)
E04C 2/30 (2006.01)
E04C 2/34 (2006.01)
(43) 19.01.2023
(62) 2017274067
(72) Crew, Trent; Semola, Marco
(74) Madderns Pty Ltd

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(71) ee-FiT Pty Ltd
(11) AU-A-2021204187
(21) 2021204187 **(22)** 21.06.2021
(54) NAIL GUN AND NAIL GUN GUIDE
(51) Int. Cl.
B25C 7/00 (2006.01)
B25C 1/00 (2006.01)
(43) 19.01.2023
(72) McClelland, Aaron
(74) Phillips Ormonde Fitzpatrick

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(71) Emesent IP Pty Ltd
(11) AU-A-2022204622
(21) 2022204622 **(22)** 29.06.2022
(54) Longwall mining control method and system
(51) Int. Cl.
E21C 35/12 (2006.01)
E21C 35/24 (2006.01)
E21C 41/18 (2006.01)
E21D 23/14 (2006.01)
G01B 11/00 (2006.01)
G01C 7/06 (2006.01)
G01S 17/89 (2020.01)
G01S 17/894 (2020.01)
G06T 7/521 (2017.01)
G01C 3/08 (2006.01)
(31) 2021902002 **(32)** 30.06.21 **(33)** AU
(43) 19.01.2023
(72) LE, Xuesong; PALMER, Andrew William; PRASSER, David Peter; MAI, Yuan; WILSON, Benjamin James; KENDOUL, Farid
(74) Davies Collison Cave Pty Ltd

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(71) Epimeron Inc.
(11) AU-A-2022279419
(21) 2022279419 **(22)** 29.11.2022
(54) Compositions and methods of making (R)-Reticuline and precursors thereof
(51) Int. Cl.
C12N 15/63 (2006.01)
A01H 1/04 (2006.01)
A01H 1/06 (2006.01)
A01H 5/00 (2018.01)
C12N 9/02 (2006.01)
C12N 15/52 (2006.01)
C12N 15/82 (2006.01)
C12P 17/10 (2006.01)
C12Q 1/68 (2018.01)
(43) 19.01.2023
(62) 2020200131
(72) Facchini, Peter James; Farrow, Scott Cameron; Beaudoin, Guillaume Arthur Welch
(74) FB Rice Pty Ltd

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(71) ETA Green Power Limited
(11) AU-A-2022204414
(21) 2022204414 **(22)** 23.06.2022
(54) ROTOR FOR AN ELECTRIC MACHINE
(51) Int. Cl.
H02K 15/16 (2006.01)
H02K 1/22 (2006.01)
H02K 1/27 (2022.01)
H02K 15/14 (2006.01)
(31) 2109110.3 **(32)** 24.06.21 **(33)** GB
2109107.9 24.06.21 GB
(43) 19.01.2023
(72) Bowman, Liam; Landgraf, Johannes
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) ETA Green Power Limited
(11) AU-A-2022204415
(21) 2022204415 **(22)** 23.06.2022
(54) STATOR FOR AN ELECTRIC MACHINE
(51) Int. Cl.
H02K 3/28 (2006.01)
H02K 1/16 (2006.01)
H02K 15/02 (2006.01)
H02K 15/04 (2006.01)
(31) 2109104.6 **(32)** 24.06.21 **(33)** GB
(43) 19.01.2023
(72) Bowman, Liam; Collings, Henry
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Everett, P.
(11) AU-A-2021204264
(21) 2021204264 **(22)** 23.06.2021
(54) A Litter Box
(51) Int. Cl.
A01K 1/01 (2006.01)
B65D 5/32 (2006.01)
B65D 5/36 (2006.01)
B65D 5/66 (2006.01)
(43) 19.01.2023
(72) Everett, Peter; Pini, Giordano; Wagner, Kyle
(74) Michael Buck IP

Exact Sciences Corporation see Mayo Foundation for Medical Education and Research
(21) 2022275451

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(71) F.Hoffmann-La Roche AG
(11) AU-A-2022275529
(21) 2022275529 **(22)** 25.11.2022
(54) Granulate formulation of 5-methyl-1-phenyl-2(1H)-pyridone and method of making the same
(51) Int. Cl.
A61K 9/16 (2006.01)
A61K 9/20 (2006.01)
A61K 31/4418 (2006.01)
(43) 19.01.2023
(62) 2017241530
(72) Mujumdar, Siddharthya Krishnachandan
(74) Davies Collison Cave Pty Ltd

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(71) F. Hoffmann-La Roche AG
(11) AU-A-2022279425
(21) 2022279425 **(22)** 29.11.2022
(54) Bicyclic lactams and methods of use thereof
(51) Int. Cl.
C07D 403/12 (2006.01)
A61K 31/55 (2006.01)
A61P 1/00 (2006.01)
A61P 11/00 (2006.01)
C07D 413/12 (2006.01)
C07D 471/04 (2006.01)
C07D 487/04 (2006.01)
C07D 491/04 (2006.01)
C07D 491/10 (2006.01)
C07D 495/04 (2006.01)
C07D 498/04 (2006.01)
(43) 19.01.2023
(62) 2021202398
(72) PATEL, Snahel; HAMILTON, Gregory; STIVALA, Craig; CHEN, Huifen; ZHAO, Guiling
(74) Spruson & Ferguson

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(71) FCX Solar LLC
(11) AU-A-2022201859
(21) 2022201859 **(22)** 02.03.2022
(54) System and method for flexible solar tracker and testing
(51) Int. Cl.
H02S 20/32 (2014.01)
(31) 17/365,986 **(32)** 01.07.21 **(33)** US
17/455,407 17.11.21 US
(43) 19.01.2023
(72) NEEDHAM, Christopher; OUDHEUSDEN, Frank
(74) RnB IP Pty Ltd

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(71) FEI Company
(11) AU-A-2022204718
(21) 2022204718 **(22)** 30.06.2022
(54) Automated peak and baseline generation for chromatogram data
(51) Int. Cl.
G01N 30/86 (2006.01)
G01S 7/18 (2006.01)
G06N 3/02 (2006.01)
(31) 17/364,796 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) LACOUT, Fabrice; SAUTER, Peter
(74) Spruson & Ferguson

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(71) Fisher & Paykel Healthcare Limited
(11) AU-A-2022279424
(21) 2022279424 **(22)** 29.11.2022
(54) BREATHING ASSISTANCE APPARATUS USER INTERFACE
(51) Int. Cl.
A61M 16/00 (2006.01)
G06F 3/00 (2006.01)

Applications Open to Public Inspection - Name Index cont'd

(43) 19.01.2023
(62) 2021201223
(72) SOYSA, Warushahennedige Hansinie; SHOU, Ada Yiwen
(74) AJ PARK

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(71) Float Foods Pte Ltd
(11) AU-A-2021232684
(21) 2021232684 **(22)** 30.08.2021
(54) Plant-based vegan beaten egg composition
(51) Int. Cl.
A23J 3/14 (2006.01)
A23L 11/00 (2021.01)
A23L 29/00 (2016.01)
(31) 10202107001S **(32)** 25.06.21 **(33)** SG
(43) 19.01.2023
(72) CHOOLANI, Vinita M.; BANCILLON, Mathilde Laura; RAJ, Keshav
(74) Michael Buck IP

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(71) Form Brick Pty Ltd
(11) AU-A-2022204499
(21) 2022204499 **(22)** 24.06.2022
(54) IMPROVED PREFABRICATED BRICK INLAY PANELS
(51) Int. Cl.
E04G 9/10 (2006.01)
B28B 7/00 (2006.01)
B28B 19/00 (2006.01)
B29D 99/00 (2010.01)
E04F 13/08 (2006.01)
E04F 13/14 (2006.01)
E04G 11/06 (2006.01)
(31) 2021901930 **(32)** 25.06.21 **(33)** AU
2021902476 10.08.21 AU
(43) 19.01.2023
(72) Gubbins, Charlie
(74) Wulff Partners Pty Ltd

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(71) Formosa Saint Jose Corp.
(11) AU-A-2022202077
(21) 2022202077 **(22)** 25.03.2022
(54) Roof Panel Structure
(51) Int. Cl.
B60R 9/045 (2006.01)
(31) 17/356,978 **(32)** 24.06.21 **(33)** US
(43) 19.01.2023
(72) YANG, Ming-Shun
(74) WRAYS PTY LTD

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(71) Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
(11) AU-A-2022279390
(21) 2022279390 **(22)** 29.11.2022
(54) Apparatus and audio signal processor, for providing a processed audio signal representation, audio decoder, audio encoder, methods and computer programs
(51) Int. Cl.
G10L 19/022 (2013.01)
G10L 25/45 (2013.01)
G10L 19/008 (2013.01)
(43) 19.01.2023
(62) 2019374400
(72) BAYER, Stefan; MABEN, Pallavi; RAVELLI, Emmanuel; FUCHS, Guillaume; FOTOPOULOU, Eleni; MULTRUS, Markus
(74) Spruson & Ferguson

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(71) Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
(11) AU-A-2022279391
(21) 2022279391 **(22)** 29.11.2022
(54) Apparatus and audio signal processor, for providing a processed audio signal representation, audio decoder, audio encoder, methods and computer programs
(51) Int. Cl.
G10L 19/022 (2013.01)
G10L 25/45 (2013.01)
G10L 19/008 (2013.01)
(43) 19.01.2023
(62) 2019374400
(72) BAYER, Stefan; MABEN, Pallavi; RAVELLI, Emmanuel; FUCHS, Guillaume; FOTOPOULOU, Eleni; MULTRUS, Markus
(74) Spruson & Ferguson

Freestone, P. see Tomlinson, M.
(21) 2021221619

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(71) Fujian Changting Golden Dragon Rare-Earth Co., Ltd
(11) AU-A-2021310842
(21) 2021310842 **(22)** 24.06.2021
(54) N,N-dihydrocarbylamide carboxylic acid, preparation method therefor and application thereof
(51) Int. Cl.
C07C 233/05 (2006.01)
C07C 233/09 (2006.01)
(43) 19.01.2023
(72) WANG, Yanliang; XIAO, Wentao; WU, Yuyuan; LIN, Jinchi
(74) GLMR

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(71) Fujian Changting Golden Dragon Rare-Earth Co., Ltd
(11) AU-A-2021310844
(21) 2021310844 **(22)** 29.06.2021
(54) N,N-dihydrocarbylamino carboxylic acid, preparation method therefor and application thereof
(51) Int. Cl.
C07C 233/05 (2006.01)
(43) 19.01.2023
(72) WANG, Yanliang; XIAO, Wentao; WU, Yuyuan; LIN, Jinchi
(74) GLMR

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(71) GB Design Limited
(11) AU-A-2021215243
(21) 2021215243 **(22)** 13.08.2021
(54) HATCH ASSEMBLY
(51) Int. Cl.
E05D 15/50 (2006.01)
E05C 1/16 (2006.01)
E05C 9/04 (2006.01)
E05C 9/18 (2006.01)
E05C 19/00 (2006.01)
E05D 7/10 (2006.01)
E06B 3/32 (2006.01)
H05K 5/03 (2006.01)
A45C 5/03 (2006.01)
E02D 29/14 (2006.01)
E04B 9/00 (2006.01)
H05K 5/00 (2006.01)
(31) 2021901799 **(32)** 16.06.21 **(33)** AU
(43) 19.01.2023
(72) Brebner, Greig
(74) James & Wells Intellectual Property

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(71) GE Energy Power Conversion Technology Limited
(11) AU-A-2022203555
(21) 2022203555 **(22)** 25.05.2022
(54) SELF-RECONFIGURABLE, ADAPTABLE POWER ELECTRONICS BUILDING BLOCK (A-PEBB)
(51) Int. Cl.
H02J 1/00 (2006.01)
H02J 3/00 (2006.01)
H02M 1/00 (2007.01)
H02M 3/00 (2006.01)
(31) 17/358,059 **(32)** 25.06.21 **(33)** US
(43) 19.01.2023
(72) Zhou, Zhi; Mankevich, Steven
(74) Phillips Ormonde Fitzpatrick

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(71) General Electric Company
(11) AU-A-2021221937
(21) 2021221937 **(22)** 30.08.2021
(54) COMBUSTOR FOR A GAS TURBINE ENGINE
(51) Int. Cl.
F23R 3/34 (2006.01)
F02C 3/20 (2006.01)
F02C 7/22 (2006.01)
F02C 9/40 (2006.01)
F23R 3/36 (2006.01)
(31) 202111028367 **(32)** 24.06.21 **(33)** IN
(43) 19.01.2023
(72) Giridharan, Manampathy G.; Naik, Pradeep
(74) Phillips Ormonde Fitzpatrick

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(71) General Electric Company
(11) AU-A-2022203279
(21) 2022203279 **(22)** 17.05.2022
(54) MULTIPLE-SWITCH TYPES HYBRID PEBB POWER CONVERTER
(51) Int. Cl.
H02M 3/00 (2006.01)
H02M 3/02 (2006.01)
H02M 3/04 (2006.01)
H02M 3/10 (2006.01)
H02M 3/155 (2006.01)
H02M 3/158 (2006.01)
H02M 7/53846 (2007.01)
H02M 7/5387 (2007.01)
(31) 17/358,065 **(32)** 25.06.21 **(33)** US
(43) 19.01.2023
(72) Zhou, Zhi; Mankevich, Steven
(74) Phillips Ormonde Fitzpatrick

Applications Open to Public Inspection - Name Index cont'd

(71) Generic Crop Science LLC
(11) AU-A-2022204196
(21) 2022204196 **(22)** 16.06.2022
(54) A combination comprising a triketone herbicide and a diphenylether herbicide, and a method for making and using the combination
(51) Int. Cl.
A01N 33/22 (2006.01)
A01N 41/10 (2006.01)
(31) 63/211,959 **(32)** 17.06.21 **(33)** US
(43) 19.01.2023
(72) SHARMA, Shiv; MIDDIONE Jr., Joe; McCLINTON, Samuel Robert
(74) Spruson & Ferguson

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(71) GenesisCare Ventures Pty Ltd
(11) AU-A-2022279427
(21) 2022279427 **(22)** 29.11.2022
(54) Method for treating cancerous and pre-cancerous skin
(51) Int. Cl.
A61B 5/00 (2006.01)
(43) 19.01.2023
(62) 2021266262
(72) Baker, Christopher; Cole, Judith Mary; Sinclair, Robert; Weightman, Warren; Shumack, Stephen; Spelman, Lynda; Foley, Peter
(74) FPA Patent Attorneys Pty Ltd

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(71) Genetic Technologies Limited; The University of Melbourne
(11) AU-A-2022279367
(21) 2022279367 **(22)** 28.11.2022
(54) Methods of assessing risk of developing breast cancer
(51) Int. Cl.
C12Q 1/6886 (2018.01)
(43) 19.01.2023
(62) 2018348793
(72) ALLMAN, Richard; DITE, Gillian; HOPPER, John
(74) FB Rice Pty Ltd

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(71) GENEVANT SCIENCES GMBH
(11) AU-A-2022252834
(21) 2022252834 **(22)** 14.10.2022
(54) BLOCK COPOLYMERS AND THEIR CONJUGATES OR COMPLEXES WITH OLIGONUCLEOTIDES
(51) Int. Cl.
A61P 3/00 (2006.01)
C08F 293/00 (2006.01)
C12N 15/87 (2006.01)
(43) 19.01.2023
(62) 2020201384
(72) MONAHAN, Sean D.; DECLUE, Michael S.; HARVIE, Pierrot; JOHNSON, Russell N.; PASCHAL, Amber E.; PRIEVE, Mary G.; ROY, Debashish; DIAB, Charbel; HOUSTON Jr., Michael E.; GALPERIN, Anna; QABAR, Maher
(74) Oxygene IP

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(71) Genzyme Corporation
(11) AU-A-2022279381
(21) 2022279381 **(22)** 28.11.2022
(54) SERPINC1 IRNA COMPOSITIONS AND METHODS OF USE THEREOF
(51) Int. Cl.
C12N 15/113 (2010.01)
C07H 21/04 (2006.01)
(43) 19.01.2023
(62) 2020202705
(72) AKINC, Akin; SEHGAL, Alfica; TOUDJARSKA, Ivanka; FOSTER, Donald; MILSTEIN, Stuart; BETTENCOURT, Brian; MAIER, Martin; CHARISSE, Klaus; KUCHIMANCHI, Satyanarayana; RAJEEV, Kallanthottathil G.; MANOHARAN, Muthiah
(74) Griffith Hack

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(71) Gixel GmbH
(11) AU-A-2022204138
(21) 2022204138 **(22)** 14.06.2022
(54) Eyewear display device for displaying a virtual image in a field of view of a user, augmented reality eyewear display device
(51) Int. Cl.
G06T 19/00 (2011.01)
G02B 27/01 (2006.01)
(31) 10 2021 206 209.1 **(32)** 17.06.21 **(33)** DE
(43) 19.01.2023
(72) TAPHANEL, Miro; LUO, Ding
(74) Griffith Hack

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(71) Golden Solar (Quanzhou) New Energy Technology Co., Ltd.
(11) AU-A-2021286436
(21) 2021286436 **(22)** 17.12.2021
(54) FLEXIBLE AND ROLLABLE BACK-CONTACT SOLAR CELL MODULE AND PREPARATION METHOD THEREOF
(51) Int. Cl.
H01L 31/05 (2014.01)
(31) 202110705336.8 **(32)** 24.06.21 **(33)** CN
(43) 19.01.2023
(72) Chiu, Hsin-wang
(74) Madderns Pty Ltd

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(71) Golden Solar (Quanzhou) New Energy Technology Co., Ltd.
(11) AU-A-2021290291
(21) 2021290291 **(22)** 22.12.2021
(54) FLEXIBLE ASSEMBLY WITH STAINLESS STEEL MESH PACKAGING STRUCTURE
(51) Int. Cl.
H01L 31/049 (2014.01)
B32B 15/02 (2006.01)
B32B 15/082 (2006.01)
B32B 15/085 (2006.01)
B32B 15/088 (2006.01)
(31) 202121415872.6 **(32)** 24.06.21 **(33)** CN
(43) 19.01.2023
(72) Chiu, Hsin-wang
(74) Madderns Pty Ltd

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(71) Gomboc, LLC
(11) AU-A-2022203781
(21) 2022203781 **(22)** 01.06.2022
(54) Device and treatment of abnormal spine curvature
(51) Int. Cl.
A61B 17/70 (2006.01)
(31) 17/355,163 **(32)** 22.06.21 **(33)** US
(43) 19.01.2023
(72) COOK, Stephen D.; NOLAN, Liam P.; PATRON, Laura P.
(74) FB Rice Pty Ltd

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(71) Google LLC
(11) AU-A-2022279429
(21) 2022279429 **(22)** 29.11.2022
(54) SURFACE CODE COMPUTATIONS USING AUTO-CCZ QUANTUM STATES
(51) Int. Cl.
G06N 10/00 (2022.01)
(43) 19.01.2023
(62) 2020253282
(72) GIDNEY, Craig; FOWLER, Austin Greig
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Grbin, D.
(11) AU-A-2021204664
(21) 2021204664 **(22)** 04.07.2021
(54) Automatic Robotic And Manual Medical Device Capsule To Aid Self Healing
(51) Int. Cl.
A61N 5/06 (2006.01)
(43) 19.01.2023
(72) Grbin, Darren
(74) Darren N Grbin

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(71) Gretals Australia Pty Ltd
(11) AU-A-2022204464
(21) 2022204464 **(22)** 24.06.2022
(54) METHODS FOR THE PRODUCTION OF PINOCEMBRIN AND METHYLATED FORMS THEREOF
(51) Int. Cl.
C07D 311/40 (2006.01)
A01G 22/00 (2018.01)
A01H 1/04 (2006.01)
A01H 6/00 (2018.01)
A61K 31/352 (2006.01)
A61K 35/644 (2015.01)
A61K 36/61 (2006.01)
C07D 311/32 (2006.01)
G01N 33/00 (2006.01)
G01N 33/50 (2006.01)
(31) 2021901843 **(32)** 18.06.21 **(33)** AU
(43) 19.01.2023
(72) CUMMING, Alistair
(74) Churchill Attorneys

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(71) Grobrix Pte. Ltd.
(11) AU-A-2022202446
(21) 2022202446 **(22)** 13.04.2022
(54) A modular aeroponics assembly
(51) Int. Cl.
A01G 31/06 (2006.01)
(31) 10202106748Y **(32)** 21.06.21 **(33)** SG

Applications Open to Public Inspection - Name Index cont'd

(43) 19.01.2023
(72) HOWE, Mathew Robert
(74) Griffith Hack

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(71) Hainan Green Algae World Biotechnology Co. Ltd
(11) AU-A-2021232694
(21) 2021232694 **(22)** 17.06.2021
(54) Method for hatching and culturing grouper using chlorella
(51) Int. Cl.
A01K 61/17 (2017.01)
(43) 19.01.2023
(72) HUANG, Chengtan; PAN, Jun; YE, Lei; HUANG, Min
(74) Ellis Terry

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(71) Halliburton Energy Services, Inc.
(11) AU-A-2022202188
(21) 2022202188 **(22)** 31.03.2022
(54) COMPOSITIONS AND METHODS FOR INHIBITING SHALE AND PREVENTING SHALE ACCRETION
(51) Int. Cl.
C09K 8/12 (2006.01)
E21B 21/00 (2006.01)
(31) 63/217,438 **(32)** 01.07.21 **(33)** US
(43) 19.01.2023
(72) Chavan, Sandeep; Miller, Jeffrey J.
(74) Phillips Ormonde Fitzpatrick

Hammer, J. see Tomlinson, M.
(21) 2021221619

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(71) Hayward Industries, Inc.
(11) AU-A-2022279418
(21) 2022279418 **(22)** 29.11.2022
(54) Systems and methods for providing network connectivity and remote monitoring, optimization, and control of pool/spa equipment
(51) Int. Cl.
E04H 4/00 (2006.01)
E04H 4/14 (2006.01)
H05B 33/00 (2006.01)
H05B 33/02 (2006.01)
H05B 47/10 (2020.01)
(43) 19.01.2023
(62) 2017210106
(72) Potucek, Kevin; Murdock, James; Carter, James; Fournier, Gregory; Johnson III, Arthur W.; Blaine, David; DeBruin, Jason; Aubrey, Bruce; Petty, Scott; Parcell, Jason; Horrocks, Craig
(74) Davies Collison Cave Pty Ltd

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(71) Headlok Pty Ltd
(11) AU-A-2021221713
(21) 2021221713 **(22)** 25.08.2021
(54) SAFETY HELMET
(51) Int. Cl.
A42B 3/04 (2006.01)
E05B 71/00 (2006.01)
E05B 73/00 (2006.01)
B62H 5/00 (2006.01)
B62J 11/24 (2020.01)
E05B 37/02 (2006.01)
(31) 2021901872 **(32)** 22.06.21 **(33)** AU
(43) 19.01.2023
(72) Cotton, Lisa Jane; Matthews-Frederick, Mark; Tolley, Davis; Tanida, Mamoru; Marshall, Graeme
(74) Phillips Ormonde Fitzpatrick

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(71) Hermetik Hydraulik AB
(11) AU-A-2021404861
(21) 2021404861 **(22)** 17.06.2021
(54) Sealing device, sealing system, and method for sealing a leakage flow at a machine element
(51) Int. Cl.
F16J 15/54 (2006.01)
(43) 19.01.2023
(72) GAYDOUL, Jürgen
(74) Madderns Pty Ltd

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(71) HICARE HEALTH FOODS PTY LIMITED
(11) AU-A-2022279396
(21) 2022279396 **(22)** 29.11.2022
(54) DIGESTIVE SUPPLEMENT TO MITIGATE ADVERSE REACTIONS
(51) Int. Cl.
A23K 10/16 (2016.01)
A23L 33/10 (2016.01)
(43) 19.01.2023
(62) 2020273385
(72) TIVEY, David; VAN DOORE, Frank
(74) Franke Hyland Pty Ltd

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(71) HONEYWELL INTERNATIONAL INC.
(11) AU-A-2022204337
(21) 2022204337 **(22)** 21.06.2022
(54) RUN-TIME RELIABILITY REPORTING FOR ELECTRICAL HARDWARE SYSTEMS
(51) Int. Cl.
G06F 11/00 (2006.01)
G05B 23/02 (2006.01)
G06F 3/048 (2013.01)
G06F 17/10 (2006.01)
G06Q 50/00 (2012.01)
(31) 17/365,973 **(32)** 01.07.21 **(33)** US
(43) 19.01.2023
(72) Kumar, K. N. Dinesh; Ganesh, Chaturvedi
(74) FPA Patent Attorneys Pty Ltd

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(71) Howmedica Osteonics Corp.
(11) AU-A-2022204644
(21) 2022204644 **(22)** 29.06.2022
(54) Supports for cantilevered elements during additive manufacturing and methods of forming such supports
(51) Int. Cl.
B22F 12/30 (2021.01)
A61F 2/30 (2006.01)
B22F 10/28 (2021.01)
B22F 12/20 (2021.01)
B23K 26/382 (2014.01)
B23K 26/40 (2014.01)
H05K 1/18 (2006.01)
H05K 3/46 (2006.01)
H05K 7/20 (2006.01)
(31) 63/216,272 **(32)** 29.06.21 **(33)** US
(43) 19.01.2023
(72) BRAZEL, Emma; MAHER, Anthony; RUSSELL, Sean
(74) FB Rice Pty Ltd

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(71) Hudswell, C.
(11) AU-A-2022204329
(21) 2022204329 **(22)** 21.06.2022
(54) Training or Exercise Apparatus
(51) Int. Cl.
A63B 69/06 (2006.01)
A63B 22/16 (2006.01)
A63B 26/00 (2006.01)
(31) 2021901900 **(32)** 24.06.21 **(33)** AU
(43) 19.01.2023
(72) Hudswell, Christopher
(74) PIPERS

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(71) IGT
(11) AU-A-2022203993
(21) 2022203993 **(22)** 09.06.2022
(54) HYBRID SPORTING EVENT WAGERING
(51) Int. Cl.
G06Q 50/34 (2012.01)
G07F 17/32 (2006.01)
(31) 17/356,024 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) Inamdar, Prasad
(74) Phillips Ormonde Fitzpatrick

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(71) Immersive Group Gaming Ltd
(11) AU-A-2022231737
(21) 2022231737 **(22)** 21.03.2022
(54) Touchscreen display system
(51) Int. Cl.
G06F 3/01 (2006.01)
(31) 2108685.5 **(32)** 17.06.21 **(33)** GB
17/447,925 16.09.21 US
(43) 19.01.2023
(72) DEAN, William Thomas; BREENS, Jan
(74) FPA Patent Attorneys Pty Ltd

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(71) Immersive Group Gaming Ltd
(11) AU-A-2022231739
(21) 2022231739 **(22)** 11.03.2022
(54) Game Delivery System
(51) Int. Cl.
A63F 13/843 (2014.01)
(31) 2108686.3 **(32)** 17.06.21 **(33)** GB
17/447,918 16.09.21 US
(43) 19.01.2023
(72) DEAN, William Thomas; ARNOTT, Thomas James; BREENS, Jan
(74) FPA Patent Attorneys Pty Ltd

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(71) Impossible Foods Inc.
(11) AU-A-2022279368
(21) 2022279368 **(22)** 28.11.2022
(54) Methods and compositions for consumables
(51) Int. Cl.
A23C 20/00 (2006.01)
A23C 11/10 (2021.01)

Applications Open to Public Inspection - Name Index cont'd

A23D 7/00 (2006.01)
A23J 3/14 (2006.01)
C12P 13/00 (2006.01)
(43) 19.01.2023
(62) 2020286304
(72) BROWN, Patrick; CASINO, Monte; VOCCOLA, Lynn S.; VARADAN, Ranjani
(74) Spruson & Ferguson

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(71) Inbiose N.V.
(11) AU-A-2022275482
(21) 2022275482 **(22)** 24.11.2022
(54) In vivo synthesis of sialylated compounds
(51) Int. Cl.
C12P 19/26 (2006.01)
C12N 1/19 (2006.01)
C12N 1/21 (2006.01)
C12N 9/10 (2006.01)
C12N 9/12 (2006.01)
C12N 9/16 (2006.01)
C12N 9/80 (2006.01)
C12N 9/88 (2006.01)
C12N 9/90 (2006.01)
C12N 15/52 (2006.01)
C12P 19/18 (2006.01)
(43) 19.01.2023
(62) 2017385601
(72) BEAUPREZ, Joeri; COUSSEMENT, Pieter; VAN HERPE, Dries; PETERS, Gert; VERCAUTEREN, Annelies
(74) Spruson & Ferguson

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(71) Incyte Holdings Corporation
(11) AU-A-2022275538
(21) 2022275538 **(22)** 28.11.2022
(54) Heteroaryl substituted pyrrolo[2,3-b]pyridines and pyrrolo[2,3-b]pyrimidines as Janus kinase inhibitors
(51) Int. Cl.
C07D 471/04 (2006.01)
A61K 31/395 (2006.01)
A61P 17/00 (2006.01)
A61P 35/00 (2006.01)
A61P 37/00 (2006.01)
C07D 487/04 (2006.01)
(43) 19.01.2023
(62) 2020294336
(72) Rogers, James D.; Shepard, Stacey; Maduskuie, Thomas P.; Wang, Haisheng; Falahatpisheh, Nikoo; Rafalski, Maria; Arvanitis, Argyrios G.; Storace, Louis; Jalluri, Ravi Kumar; Fridman, Jordan S.; Vaddi, Krishna
(74) FB Rice Pty Ltd

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(71) Institute of Geophysics, China Earthquake Administration
(11) AU-A-2022204502
(21) 2022204502 **(22)** 24.06.2022
(54) SITE SHEAR WAVE VELOCITY MEASUREMENT AND CALCULATION METHOD AND APPARATUS
(51) Int. Cl.
G01N 3/24 (2006.01)
G01N 33/24 (2006.01)
G01V 1/28 (2006.01)
(31) 202110757908.7 **(32)** 05.07.21 **(33)** CN
(43) 19.01.2023
(72) Xie, Junju; Wang, Pengfei; Li, Xiaojun; Wen, Zengping; Jia, Lin; An, Zhao
(74) Madderns Pty Ltd

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(71) Institute of Zoology, Guangdong Academy of Sciences
(11) AU-A-2021290241
(21) 2021290241 **(22)** 21.12.2021
(54) RECOMBINANT PROTEIN CAPABLE OF RESISTING MULTIPLE SCLEROSIS AND PREPARATION METHOD AND APPLICATION THEREOF
(51) Int. Cl.
C07K 14/47 (2006.01)
A61K 38/17 (2006.01)
A61K 39/00 (2006.01)
A61K 47/64 (2017.01)
A61P 25/00 (2006.01)
A61P 37/00 (2006.01)
C07K 14/35 (2006.01)
(31) 202110759727.8 **(32)** 05.07.21 **(33)** CN
(43) 19.01.2023
(72) Sun, Yunxiao; Rao, Junhua; Cao, Dainan; Peng, Zhen; Zhang, Libiao; Li, Bihai; He, Xiangyang; Ji, Fang
(74) Remarkable IP

Intima Bioscience, Inc. see The Board of Trustees of the Leland Stanford Junior University
(21) 2022275537

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(71) Intuit Inc.
(11) AU-A-2022204091
(21) 2022204091 **(22)** 31.03.2022
(54) Customer recognition system
(51) Int. Cl.
G06F 16/95 (2019.01)
(31) 17/364,859 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) ZHAO, Runhua; SIKARIA, Sonam; LIU, Jaiyao; KANG, Linhong; TANG, Byron; RIZVI, Bilal
(74) Davies Collison Cave Pty Ltd

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(71) Ishida Co., Ltd.
(11) AU-A-2022203920
(21) 2022203920 **(22)** 06.06.2022
(54) BAG-MAKING AND PACKAGING MACHINE
(51) Int. Cl.
B65B 57/10 (2006.01)
B65B 57/02 (2006.01)
(31) 2021-110358 **(32)** 01.07.21 **(33)** JP
(43) 19.01.2023
(72) Nagashima, Ryota; Fujihara, Hiroki
(74) Phillips Ormonde Fitzpatrick

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(71) ITI (Australia) Pty Ltd
(11) AU-A-2022203537
(21) 2022203537 **(22)** 25.05.2022
(54) Decking Fastener Assembly
(51) Int. Cl.
E04F 15/02 (2006.01)
E04B 1/00 (2006.01)
(31) 2021901816 **(32)** 17.06.21 **(33)** AU
(43) 19.01.2023
(72) Shadbolt, Michael
(74) Clark Intellectual Property Pty Ltd

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(71) Itron, Inc.
(11) AU-A-2022202725
(21) 2022202725 **(22)** 26.04.2022
(54) Ad-hoc authenticated group discovery
(51) Int. Cl.
H04W 12/069 (2021.01)
H04L 67/1061 (2022.01)
H04W 4/38 (2018.01)
H04W 8/14 (2009.01)
H04W 48/16 (2009.01)
H04W 84/18 (2009.01)
(31) 17/304,476 **(32)** 22.06.21 **(33)** US
(43) 19.01.2023
(72) Damm, Benjamin; White, Eric Donald; Parkkila, Tommi Petteri
(74) FPA Patent Attorneys Pty Ltd

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(71) Itron, Inc.
(11) AU-A-2022202755
(21) 2022202755 **(22)** 27.04.2022
(54) Bluetooth low energy (BLE) advertising packet security
(51) Int. Cl.
H04W 12/50 (2021.01)
G06F 21/44 (2013.01)
H04L 9/28 (2006.01)
H04L 9/32 (2006.01)
H04L 9/40 (2022.01)
H04W 4/80 (2018.01)
H04W 12/03 (2021.01)
H04W 12/06 (2021.01)
H04W 12/10 (2021.01)
H04W 12/108 (2021.01)
(31) 17/349,781 **(32)** 16.06.21 **(33)** US
(43) 19.01.2023
(72) Weber, Isaiah Michael; Holmdahl, Bret Gregory
(74) FPA Patent Attorneys Pty Ltd

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(71) Itron, Inc.
(11) AU-A-2022202766
(21) 2022202766 **(22)** 27.04.2022
(54) Data sharing in a mesh network
(51) Int. Cl.
H04L 45/28 (2022.01)
H04W 84/18 (2009.01)
(31) 17/304,471 **(32)** 22.06.21 **(33)** US
(43) 19.01.2023
(72) Damm, Benjamin; White, Eric Donald; Parkkila, Tommi Petteri
(74) FPA Patent Attorneys Pty Ltd

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(71) JANOME Corporation
(11) AU-A-2022203912
(21) 2022203912 **(22)** 06.06.2022
(54) COORDINATE DATA CREATING DEVICE, SEWING MACHINE AND PROGRAM
(51) Int. Cl.
D05B 19/12 (2006.01)
D05B 19/08 (2006.01)
G05B 19/048 (2006.01)

Applications Open to Public Inspection - Name Index cont'd

G06F 3/044 (2006.01)
G06F 3/045 (2006.01)
(31) JP2021-101036 **(32)** 17.06.21 **(33)** JP
(43) 19.01.2023
(72) TSUCHIYA, Minami; ODA, Hiromi
(74) Collison & Co

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(71) JANOME Corporation
(11) AU-A-2022203918
(21) 2022203918 **(22)** 06.06.2022
(54) COORDINATE DATA CREATING DEVICE, SEWING MACHINE AND PROGRAM
(51) Int. Cl.
D05B 19/12 (2006.01)
D05B 19/08 (2006.01)
G06T 7/30 (2017.01)
(31) 2021-101037 **(32)** 17.06.21 **(33)** JP
(43) 19.01.2023
(72) TSUCHIYA, Minami; ODA, Hiromi
(74) Collison & Co

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(71) JANOME Corporation
(11) AU-A-2022203923
(21) 2022203923 **(22)** 06.06.2022
(54) COORDINATE DATA CREATING DEVICE, SEWING MACHINE AND PROGRAM
(51) Int. Cl.
D05B 19/12 (2006.01)
D05B 19/08 (2006.01)
G06T 7/30 (2017.01)
(31) 2021-101038 **(32)** 17.06.21 **(33)** JP
(43) 19.01.2023
(72) TSUCHIYA, Minami; ODA, Hiromi
(74) Collison & Co

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(71) JANOME Corporation
(11) AU-A-2022203927
(21) 2022203927 **(22)** 06.06.2022
(54) LOWER THREAD WINDING DEVICE
(51) Int. Cl.
D05B 59/00 (2006.01)
(31) 2021-103706 **(32)** 23.06.21 **(33)** JP
(43) 19.01.2023
(72) ISHIKAWA, Muneyuki; SHIRATSUCHI, Hiroki
(74) Collison & Co

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(71) Janssen Pharmaceutica NV
(11) AU-A-2022279416
(21) 2022279416 **(22)** 29.11.2022
(54) Methods of treating depression using orexin-2 receptor antagonists
(51) Int. Cl.
A61K 31/498 (2006.01)
A61K 31/5377 (2006.01)
(43) 19.01.2023
(62) 2017231828
(72) KENT, Justine M.; DREVETS, Wayne C.; DE BOER, Peter
(74) Spruson & Ferguson

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(71) JGC Corporation
(11) AU-A-2021425001
(21) 2021425001 **(22)** 23.06.2021
(54) Plant control method, plant control device, program, and plant
(51) Int. Cl.
G06Q 50/06 (2012.01)
G06Q 30/06 (2012.01)
(43) 19.01.2023
(72) SHIMADA, Yohei; KAI, Mototaka; TAKAKUWA, Shuya; HOSHINO, Yuki
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Johnson & Johnson Vision Care, Inc.
(11) AU-A-2022275423
(21) 2022275423 **(22)** 23.06.2022
(54) Transition metal complexes as visible light absorbers
(51) Int. Cl.
C07D 221/18 (2006.01)
(31) 63/216,589 **(32)** 30.06.21 **(33)** US
17/662,910 11.05.22 US
(43) 19.01.2023
(72) LOPEZ, Michael J.; MAHADEVAN, Shivkumar
(74) Spruson & Ferguson

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(71) Johnson & Johnson Vision Care, Inc.
(11) AU-A-2022275424
(21) 2022275424 **(22)** 23.06.2022
(54) Ophthalmic devices derived from grafted polymeric networks and processes for their preparation and use
(51) Int. Cl.
C08J 5/00 (2006.01)
(31) 63/216,586 **(32)** 30.06.21 **(33)** US
17/662,916 11.05.22 US
(43) 19.01.2023
(72) LOPEZ, Michael J.; FORD, James D.; MAHADEVAN, Shivkumar; SHERIDAN, Stephanie; GARCIA, Alejandra Isabel
(74) Spruson & Ferguson

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(71) Joy Global Underground Mining LLC
(11) AU-A-2022204525
(21) 2022204525 **(22)** 27.06.2022
(54) Screen handling system
(51) Int. Cl.
E21D 20/00 (2006.01)
E21D 21/00 (2006.01)
(31) 63/216,967 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) Koekemoer, Renier; St. Amand, Joseph; Barter, Justin
(74) Griffith Hack

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(71) KABUSHIKI KAISHA TOYOTA JIDOSHOKKI
(11) AU-A-2022204301
(21) 2022204301 **(22)** 20.06.2022
(54) Directional control valve
(51) Int. Cl.
F16K 31/12 (2006.01)
F16K 11/072 (2006.01)
F16K 31/163 (2006.01)
(31) 2021-111282 **(32)** 05.07.21 **(33)** JP
(43) 19.01.2023
(72) YAZAWA, Ryo; NAKAJIMA, Shigeto; NIBE, Akihito; KINOSHITA, Koichi
(74) Griffith Hack

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(71) Kairish Innotech Private Ltd.
(11) AU-A-2022203093
(21) 2022203093 **(22)** 09.05.2022
(54) Tray for positioning a medical vial together with a vial adapter in a fixed positional relationship relative to each other and packaging unit comprising the same
(51) Int. Cl.
A61J 1/16 (2006.01)
A61B 50/33 (2016.01)
A61J 1/20 (2006.01)
B65D 25/10 (2006.01)
B65D 81/05 (2006.01)
(31) 202121029262 **(32)** 29.06.21 **(33)** IN
(43) 19.01.2023
(72) Dadachanji, Rishad; Potdar, Pratul; Patel, Keyurkumar; Chudasma, Krupal
(74) Eagar & Associates Pty Ltd

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(71) Kao, H.
(11) AU-A-2022204265
(21) 2022204265 **(22)** 17.06.2022
(54) Sensing Chip with Fluidic Device
(51) Int. Cl.
G01N 27/416 (2006.01)
(31) 110122708 **(32)** 22.06.21 **(33)** TW
111109041 11.03.22 TW
(43) 19.01.2023
(72) Kao, Hsi-Teng
(74) Wallington-Dummer

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(71) Keko Acessórios S/A
(11) AU-A-2021286407
(21) 2021286407 **(22)** 28.06.2021
(54) Retractable tonneau cover for truck bed vehicles and similar
(51) Int. Cl.
B60P 7/02 (2006.01)
(43) 19.01.2023
(72) MANTOVANI, Juliano Scheer
(74) Halfords IP

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(71) KeKo Acessórios S/A
(11) AU-A-2021346300
(21) 2021346300 **(22)** 17.06.2021
(54) Tonneau cover fixing and assembly system
(51) Int. Cl.
B60R 5/04 (2006.01)
(43) 19.01.2023
(72) MANTOVANI, Juliano Scheer
(74) Halfords IP

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(71) L3Harris Technologies, Inc.
(11) AU-A-2022204533
(21) 2022204533 **(22)** 27.06.2022
(54) EXCISION OF INTERFERENCE WITH HOPPED WAVEFORMS
(51) Int. Cl.
H04B 1/715 (2011.01)

Applications Open to Public Inspection - Name Index cont'd

H04B 1/10 (2006.01)
H04B 1/71 (2011.01)
(31) 2017/365910 **(32)** 01.07.21 **(33)** US
(43) 19.01.2023
(72) LINDSAY, Lance R.; GIBSON, Andrew; BROWN, Christopher L.; LANDON, David G.; TWITCHELL, Edwin R.
(74) Maxwells Patent & Trade Mark Attorneys Pty Ltd

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(71) Laughter, G.
(11) AU-A-2021290264
(21) 2021290264 **(22)** 21.12.2021
(54) Battery interrupter
(51) Int. Cl.
H02H 5/00 (2006.01)
H02H 7/08 (2006.01)
(31) 17/352,863 **(32)** 21.06.21 **(33)** US
(43) 19.01.2023
(72) Laughter, Gerald
(74) FB Rice Pty Ltd

Lee, I.W. see B&L Biotech, Inc.
(21) 2021245261

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(71) LG Electronics Inc.
(11) AU-A-2022279412
(21) 2022279412 **(22)** 29.11.2022
(54) Cleaner holder
(51) Int. Cl.
A47L 9/32 (2006.01)
A47L 9/28 (2006.01)
(43) 19.01.2023
(62) 2021202241
(72) Kim, Namhee; Nam, Bohyun; Hwang, Jungbae; Kim, Jinju; Bae, Sehwan
(74) Davies Collison Cave Pty Ltd

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(71) LG ELECTRONICS INC.
(11) AU-A-2022204559
(21) 2022204559 **(22)** 28.06.2022
(54) LAUNDRY TREATING APPARATUS
(51) Int. Cl.
D06F 58/10 (2006.01)
D06F 39/00 (2020.01)
(31) 2021-110376 **(32)** 01.07.21 **(33)** JP
(43) 19.01.2023
(72) KIM, Jaehyung; JANG, Semin; JANG, Jinhyuk; NOH, Boram
(74) Dentons Patent Attorneys Australasia Limited

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(71) LG ELECTRONICS INC.
(11) AU-A-2022204625
(21) 2022204625 **(22)** 29.06.2022
(54) LAUNDRY TREATMENT APPARATUS
(51) Int. Cl.
D06F 58/10 (2006.01)
D06F 39/04 (2006.01)
(31) 2021-110395 **(32)** 01.07.21 **(33)** JP
(43) 19.01.2023
(72) KIM, Jaehyung; JANG, Semin; JANG, Jinhyuk; BOH, Boram
(74) Dentons Patent Attorneys Australasia Limited

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(71) LG ELECTRONICS INC.
(11) AU-A-2022279405
(21) 2022279405 **(22)** 29.11.2022
(54) Apparatus for controlling clothes treating apparatus, clothes treating apparatus and method for controlling clothes treating apparatus
(51) Int. Cl.
F25B 49/02 (2006.01)
D06F 33/50 (2020.01)
D06F 58/32 (2020.01)
F25B 30/02 (2006.01)
(43) 19.01.2023
(62) 2020217449
(72) KIM, Seonghwan; JE, Haeyoon; AHN, Ingeun
(74) Dentons Patent Attorneys Australasia Limited

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(71) Lifetime Brands, Inc.
(11) AU-A-2022203115
(21) 2022203115 **(22)** 10.05.2022
(54) Multifunctional bottle lid assembly
(51) Int. Cl.
B65D 47/08 (2006.01)
B65D 41/62 (2006.01)
B65D 43/04 (2006.01)
(31) 17/350,573 **(32)** 17.06.21 **(33)** US
(43) 19.01.2023
(72) Ridgewood, John; Brooklyn, Alex
(74) FPA Patent Attorneys Pty Ltd

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(71) Lifetime Brands, Inc.
(11) AU-A-2022204068
(21) 2022204068 **(22)** 10.06.2022
(54) Citrus juicer
(51) Int. Cl.
A47J 19/02 (2006.01)
(31) 17/358,420 **(32)** 25.06.21 **(33)** US
(43) 19.01.2023
(72) Krus, Matthew; Morgan, Ian; Piercy, Sami
(74) FPA Patent Attorneys Pty Ltd

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(71) Manifold, N.
(11) AU-A-2021204650
(21) 2021204650 **(22)** 02.07.2021
(54) TWO-POLE IEC LEAD ADAPTOR
(51) Int. Cl.
H01R 24/54 (2011.01)
H01R 13/04 (2006.01)
H01R 24/20 (2011.01)
H01R 24/22 (2011.01)
H01R 24/28 (2011.01)
H01R 24/30 (2011.01)
H01R 31/06 (2006.01)
(43) 19.01.2023
(72) Manifold, Nigel
(74) Halfords IP

Mansour, A. see Mansour Paving (Aust) Pty Ltd
(21) 2021204126

Mansour, H. see Mansour Paving (Aust) Pty Ltd
(21) 2021204126

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(71) Mansour Paving (Aust) Pty Ltd; Mansour, A.; Mansour, H.
(11) AU-A-2021204126
(21) 2021204126 **(22)** 19.06.2021
(54) An integrated system for the filtration & detention of Slurry/Sediment run off & purification of contaminated water for recycling
(51) Int. Cl.
B23Q 11/10 (2006.01)
B01D 21/00 (2006.01)
B01D 29/00 (2006.01)
B01D 36/04 (2006.01)
B23D 45/06 (2006.01)
B23D 59/02 (2006.01)
(43) 19.01.2023
(72) Mansour, Ali; Mansour, Hassan
(74) Mansour Paving (Aust) Pty Ltd

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(71) MAXONIQ Pty Ltd
(11) AU-A-2022204419
(21) 2022204419 **(22)** 23.06.2022
(54) Systems, methods and devices for replacement of the temporomandibular joint
(51) Int. Cl.
A61F 2/30 (2006.01)
(31) 17/356,477 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) DIMITROULIS, George
(74) Spruson & Ferguson

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(71) MAXONIQ Pty Ltd
(11) AU-A-2022204441
(21) 2022204441 **(22)** 23.06.2022
(54) Replaceable fossa component for a temporomandibular joint replacement system
(51) Int. Cl.
A61F 2/30 (2006.01)
(31) 17/356,478 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) DIMITROULIS, George; McCROWE, Chris
(74) Spruson & Ferguson

Mayo Foundation for Medical Education and Research see The Johns Hopkins University
(21) 2022256167

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(71) Mayo Foundation for Medical Education and Research; Exact Sciences Corporation
(11) AU-A-2022275451
(21) 2022275451 **(22)** 23.11.2022
(54) Detecting gastric neoplasm
(51) Int. Cl.
C12Q 1/68 (2018.01)
(43) 19.01.2023
(62) 2016315924
(72) ALLAWI, Hatim T.; AHLQUIST, David A.; TAYLOR, William R.; KISIEL, John

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B.; YAB, Tracy C.; MAHONEY, Douglas W.
(74) Spruson & Ferguson

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(71) MAYSER, LLC
(11) AU-A-2022275527
(21) 2022275527 **(22)** 25.11.2022
(54) STRETCH VALVE BALLOON CATHETER AND METHODS FOR PRODUCING AND USING SAME
(51) Int. Cl.
A61M 25/10 (2013.01)
A61M 27/00 (2006.01)
(43) 19.01.2023
(62) 2020204412
(72) PINCHUK, Leonard; KALSER, Gary A.; MAYBACK, Gregory L.; LEONE, James
(74) Baxter Patent Attorneys Pty Ltd

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(71) McQuade, H.
(11) AU-A-2022204022
(21) 2022204022 **(22)** 09.06.2022
(54) A RAIL LATCH ASSEMBLY AND METHOD OF USE THEREOF
(51) Int. Cl.
E04H 17/14 (2006.01)
A01K 3/00 (2006.01)
F16B 7/04 (2006.01)
(31) 2021901916 **(32)** 24.06.21 **(33)** AU
(43) 19.01.2023
(72) McQuade, Howard
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Meishan CRRC Brake Science & Technology Co., Ltd.
(11) AU-A-2022221473
(21) 2022221473 **(22)** 09.03.2022
(54) System and method for improving release performance of heavy-haul train
(51) Int. Cl.
B60T 13/66 (2006.01)
B60T 15/02 (2006.01)
B60T 15/18 (2006.01)
B60T 17/04 (2006.01)
B60T 17/22 (2006.01)
B61H 13/20 (2006.01)
(31) 2021107393105 **(32)** 30.06.21 **(33)** CN
(43) 19.01.2023
(72) LI, Qiaoyin; XIE, Lei; AN, Hong; ZHANG, Jie; JIANG, Yong; WU, Jiheng; ZHU, Yu; SHEN, Yanfei; ZHANG, Jing
(74) WRAYS PTY LTD

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(71) MEMOLUB INTERNATIONAL
(11) AU-A-2022204631
(21) 2022204631 **(22)** 29.06.2022
(54) DEVICE FOR DELIVERING A FLUID TO A CONSUMPTION POINT AND ASSOCIATED METHOD
(51) Int. Cl.
F04B 13/00 (2006.01)
G01F 15/00 (2006.01)
G05D 7/00 (2006.01)
H05K 7/00 (2006.01)
(31) EP21182824.9 **(32)** 30.06.21 **(33)** EP
(43) 19.01.2023
(72) MOUTHUY, Pierre-Olivier; MANIATIS, Christos
(74) AJ PARK

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(71) Metso Outotec USA Inc.
(11) AU-A-2021221657
(21) 2021221657 **(22)** 25.08.2021
(54) A HYDRAULIC SYSTEM FOR A ROLLER CRUSHER
(51) Int. Cl.
B02C 4/32 (2006.01)
B02C 4/34 (2006.01)
B02C 4/42 (2006.01)
(31) 2150814-8 **(32)** 23.06.21 **(33)** SE
(43) 19.01.2023
(72) BARSCEVICIUS, Paulo
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Metso Outotec USA Inc.
(11) AU-A-2021221662
(21) 2021221662 **(22)** 25.08.2021
(54) A GRINDING ROLL
(51) Int. Cl.
B02C 4/30 (2006.01)
(31) 17/355,447 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) REZNITCHENKO, Vadim; HARBOLD, Keith
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Metso Outotec USA Inc.
(11) AU-A-2021221670
(21) 2021221670 **(22)** 25.08.2021
(54) A GRINDING ROLL
(51) Int. Cl.
B02C 4/30 (2006.01)
(31) 17/355,460 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) REZNITCHENKO, Vadim; HARBOLD, Keith
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Mice Away Organic
(11) AU-A-2021204127
(21) 2021204127 **(22)** 20.06.2021
(54) Mice Away Indoor-Outdoor Organic Repellent Unit
(51) Int. Cl.
A01M 29/12 (2011.01)
A01N 65/00 (2009.01)
A01N 25/08 (2006.01)
A01N 65/22 (2009.01)
(43) 19.01.2023
(72) Borg, Sean
(74) Vital Living Earth

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(71) Michael Cunningham Pty Ltd
(11) AU-A-2021204216
(21) 2021204216 **(22)** 22.06.2021
(54) Loading and unloading cargo
(51) Int. Cl.
B66C 5/02 (2006.01)
B66C 1/10 (2006.01)
B66C 9/02 (2006.01)
(43) 19.01.2023
(72) Cunningham, Michael
(74) BRM Patent Attorneys Pty Ltd

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(71) Microport Orthopedics Holdings Inc.
(11) AU-A-2022204396
(21) 2022204396 **(22)** 22.06.2022
(54) SYSTEMS AND METHODS OF USING THREE-DIMENSIONAL IMAGE RECONSTRUCTION TO AID IN ASSESSING BONE OR SOFT TISSUE ABERRATIONS FOR ORTHOPEDIC SURGERY
(51) Int. Cl.
A61B 34/10 (2016.01)
A61B 6/02 (2006.01)
A61F 2/30 (2006.01)
(31) 17/835,894 **(32)** 08.06.22 **(33)** US
63/217,567 01.07.21 US
(43) 19.01.2023
(72) HARRIS JR., Brian R.
(74) Griffith Hack

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(71) Mitsubishi Chemical Corporation
(11) AU-A-2022279395
(21) 2022279395 **(22)** 29.11.2022
(54) Oil-in-water type emulsion composition, and method for producing said oil-in-water type emulsion composition
(51) Int. Cl.
A23D 7/005 (2006.01)
B01J 13/00 (2006.01)
(43) 19.01.2023
(62) 2017372671
(72) HANASAKI, Minako; MATSUURA, Tsutashi; KASAI, Tetsuo; ISOJIMA, Tatsushi
(74) Spruson & Ferguson

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(71) Mitsubishi Chemical Corporation
(11) AU-A-2022279397
(21) 2022279397 **(22)** 29.11.2022
(54) Oil-in-water type emulsion composition, and method for producing said oil-in-water type emulsion composition
(51) Int. Cl.
A23D 7/005 (2006.01)
B01J 13/00 (2006.01)
(43) 19.01.2023
(62) 2017372671
(72) HANASAKI, Minako; MATSUURA, Tsutashi; KASAI, Tetsuo; ISOJIMA, Tatsushi
(74) Spruson & Ferguson

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(71) Modulate Containers Pty Ltd
(11) AU-A-2021204208
(21) 2021204208 **(22)** 22.06.2021
(54) Modified widened container
(51) Int. Cl.
E04H 1/02 (2006.01)
B25H 1/10 (2006.01)
B26D 1/18 (2006.01)
B26D 3/00 (2006.01)
B26D 7/02 (2006.01)

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B26D 11/00 (2006.01)
B65D 88/12 (2006.01)
E04G 25/04 (2006.01)
E04H 1/12 (2006.01)
E04B 1/343 (2006.01)
(43) 19.01.2023
(72) Adams, Paul Thomas
(74) Spruson & Ferguson

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(71) Nalto Marketing Ltd.
(11) AU-A-2022204299
(21) 2022204299 **(22)** 20.06.2022
(54) SHIPPING APPARATUS
(51) Int. Cl.
B65D 71/06 (2006.01)
B65D 5/42 (2006.01)
B65D 19/02 (2006.01)
B65D 25/02 (2006.01)
B65D 61/00 (2006.01)
B65D 63/10 (2006.01)
B65D 85/50 (2006.01)
B65D 85/52 (2006.01)
(31) 63/213,255 **(32)** 22.06.21 **(33)** US
(43) 19.01.2023
(72) Zamir, Amnon; Kowarsky, John
(74) Collison & Co

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(71) Nanjing Chervon Industry Co., Ltd.
(11) AU-A-2022203881
(21) 2022203881 **(22)** 03.06.2022
(54) OUTDOOR WALKING EQUIPMENT
(51) Int. Cl.
A01D 34/78 (2006.01)
A01D 34/64 (2006.01)
A01D 34/68 (2006.01)
A01D 34/82 (2006.01)
A01D 42/08 (2006.01)
(31) 202110714441.8 **(32)** 25.06.21 **(33)** CN
(43) 19.01.2023
(72) Yang, Dezhong; Liu, Yangzi; Li, Li; Li, Ju
(74) Madderns Pty Ltd

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(71) Natural Fiber Welding, Inc.
(11) AU-A-2022279422
(21) 2022279422 **(22)** 29.11.2022
(54) Curative
(51) Int. Cl.
C08G 63/81 (2006.01)
B32B 7/02 (2019.01)
B32B 25/04 (2006.01)
B32B 25/10 (2006.01)
C07C 69/30 (2006.01)
C08G 59/42 (2006.01)
C08J 9/28 (2006.01)
(43) 19.01.2023
(62) 2019256523
(72) AMSTUTZ, Aaron Kenneth; HAVERHALS, Luke Michael; PIERZ, Albert C.; PIERZ, Ian T.
(74) Spruson & Ferguson

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(71) Natural Fiber Welding, Inc.
(11) AU-A-2022279423
(21) 2022279423 **(22)** 29.11.2022
(54) Curative
(51) Int. Cl.
C08G 63/81 (2006.01)
B32B 7/02 (2019.01)
B32B 25/04 (2006.01)
B32B 25/10 (2006.01)
C07C 69/30 (2006.01)
C08G 59/42 (2006.01)
C08J 9/28 (2006.01)
(43) 19.01.2023
(62) 2019256523
(72) AMSTUTZ, Aaron Kenneth; HAVERHALS, Luke Michael; PIERZ, Albert C.; PIERZ, Ian T.
(74) Spruson & Ferguson

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(71) NAVICO HOLDING AS
(11) AU-A-2022202301
(21) 2022202301 **(22)** 06.04.2022
(54) Sonar Beam Shape Controlling Horn
(51) Int. Cl.
G01S 15/02 (2006.01)
H01Q 3/02 (2006.01)
H01Q 13/02 (2006.01)
(31) 17/352,515 **(32)** 21.06.21 **(33)** US
(43) 19.01.2023
(72) CASPALL, Jayme J.; GAO, Bin; CHAMBERS, Andrew
(74) AJ PARK

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(71) Nemo Power Tools Limited
(11) AU-A-2021273558
(21) 2021273558 **(22)** 23.11.2021
(54) SELF-HOLDING AND SELF-DRIVING DRILLING SYSTEM
(51) Int. Cl.
B25B 11/00 (2006.01)
B23B 45/00 (2006.01)
(31) 17/365,236 **(32)** 01.07.21 **(33)** US
(43) 19.01.2023
(72) ROTEM, Nimrod; JOUKOV, Oleg; TSFASMAN, Eduard
(74) Intellepro

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(71) Neutron Holdings, Inc.
(11) AU-A-2022201085
(21) 2022201085 **(22)** 18.02.2022
(54) SYSTEM AND METHOD FOR TRACKING LIGHT ELECTRIC VEHICLE RENTALS
(51) Int. Cl.
G07C 5/02 (2006.01)
(31) 17/367,011 **(32)** 02.07.21 **(33)** US
(43) 19.01.2023
(72) Murali, Vijay; Guenena, Omar
(74) Dentons Patent Attorneys Australasia Limited

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(71) Nextremity Solutions, Inc.
(11) AU-A-2022203612
(21) 2022203612 **(22)** 27.05.2022
(54) An expandable bone fixation screw with removable core pin
(51) Int. Cl.
A61B 17/68 (2006.01)
A61B 17/88 (2006.01)
(31) 63/213,269 **(32)** 22.06.21 **(33)** US
(43) 19.01.2023
(72) Finely, Adam; Holton, Thomas; Carne, Joel
(74) Zone Patents Limited

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(71) Nimbus Lakshmi, Inc.
(11) AU-A-2022279375
(21) 2022279375 **(22)** 28.11.2022
(54) TYK2 inhibitors and uses thereof
(51) Int. Cl.
C07D 471/04 (2006.01)
C07D 519/00 (2006.01)
(43) 19.01.2023
(62) 2018306444
(72) MASSE, Craig E.; GREENWOOD, Jeremy Robert; MONDAL, Sayan; COWEN, Scott D.; MCLEAN, Thomas H.
(74) Spruson & Ferguson

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(71) Niumeitolu, V.
(11) AU-A-2022203930
(21) 2022203930 **(22)** 06.06.2022
(54) IMPROVED SHOCK ABSORBER
(51) Int. Cl.
F16F 9/44 (2006.01)
B60G 15/06 (2006.01)
F16F 9/512 (2006.01)
B62K 25/04 (2006.01)
F16F 9/504 (2006.01)
(31) 2021901913 **(32)** 24.06.21 **(33)** AU
(43) 19.01.2023
(72) Niumeitolu, Vilo
(74) Summit IP

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(71) NKT HV Cables AB
(11) AU-A-2022203959
(21) 2022203959 **(22)** 08.06.2022
(54) Heating assembly and method for insulation system restoration of a power cable
(51) Int. Cl.
H02G 1/16 (2006.01)
F16L 53/30 (2018.01)
H05B 3/00 (2006.01)
(31) 21182058.4 **(32)** 28.06.21 **(33)** EP
(43) 19.01.2023
(72) GUSTAFSSON, Kristian; ANTONISCHKI, Jörn
(74) Griffith Hack

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(71) NKT HV Cables AB
(11) AU-A-2022203962
(21) 2022203962 **(22)** 08.06.2022
(54) Method for insulation system restoration of a power cable
(51) Int. Cl.
H02G 1/16 (2006.01)
H01B 7/02 (2006.01)
H02G 1/14 (2006.01)
H05B 6/02 (2006.01)
H05B 6/10 (2006.01)
H05B 6/36 (2006.01)
H05B 6/42 (2006.01)
(31) 21182074.1 **(32)** 28.06.21 **(33)** EP

Applications Open to Public Inspection - Name Index cont'd

(43) 19.01.2023
(72) GUSTAFSSON, Kristian; ANTONISCHKI, Jörn
(74) Griffith Hack

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(71) NKT HV Cables AB
(11) AU-A-2022203970
(21) 2022203970 **(22)** 08.06.2022
(54) Pressurisation and heating device and method for insulation system restoration of a power cable
(51) Int. Cl.
H02G 15/24 (2006.01)
F16L 53/30 (2018.01)
(31) 21182096.4 **(32)** 28.06.21 **(33)** EP
(43) 19.01.2023
(72) GUSTAFSSON, Kristian; ANTONISCHKI, Jörn
(74) Griffith Hack

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(71) NNAK Pty Ltd
(11) AU-A-2022204402
(21) 2022204402 **(22)** 22.06.2022
(54) Systems and methods for interacting with a user interface of an electronic device
(51) Int. Cl.
G06F 3/01 (2006.01)
G06F 3/03 (2006.01)
G06V 40/18 (2022.01)
G06V 40/20 (2022.01)
G09G 5/00 (2006.01)
G06F 3/0484 (2022.01)
(31) 2021902017 **(32)** 02.07.21 **(33)** AU
(43) 19.01.2023
(72) Tabrizi, Kaveh Moghaddam
(74) LAMINAR IP PTY LTD

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(71) NO FACE Cosmetic Technology Group
(11) AU-A-2022203973
(21) 2022203973 **(22)** 08.06.2022
(54) MICRO DNA INTERCELLULAR TECHNOLOGY FOR EPIDERMAL DELIVERY OF ACTIVE INGREDIENTS
(51) Int. Cl.
A61K 8/73 (2006.01)
A61K 8/11 (2006.01)
A61K 8/67 (2006.01)
A61Q 19/00 (2006.01)
(31) 2021901945 **(32)** 27.06.21 **(33)** AU
(43) 19.01.2023
(72) Young, Andy
(74) Andy Young

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(71) NORITZ CORPORATION
(11) AU-A-2022204334
(21) 2022204334 **(22)** 21.06.2022
(54) COLLECTIVE EXHAUST SYSTEM
(51) Int. Cl.
F23J 11/12 (2006.01)
F23N 5/24 (2006.01)
(31) 2021-103863 **(32)** 23.06.21 **(33)** JP
(43) 19.01.2023
(72) HASEGAWA, Takahide; USHIO, Atsushi
(74) Collison & Co

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(71) NORITZ CORPORATION
(11) AU-A-2022204342
(21) 2022204342 **(22)** 21.06.2022
(54) EXHAUST ADAPTER
(51) Int. Cl.
F23J 13/04 (2006.01)
F23J 11/00 (2006.01)
(31) 2021-103864 **(32)** 23.06.21 **(33)** JP
(43) 19.01.2023
(72) HASEGAWA, Takahide; NISHIDA, Kazuma; OKUMURA, Kazuaki
(74) Collison & Co

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(71) Novartis AG
(11) AU-A-2022279408
(21) 2022279408 **(22)** 29.11.2022
(54) Antiviral pyridopyrazinedione compounds
(51) Int. Cl.
C07D 471/04 (2006.01)
A61K 31/519 (2006.01)
A61P 31/12 (2006.01)
(43) 19.01.2023
(62) 2019339777
(72) BECKER, Christopher; LI, Xiaolin; LU, Peichao; RAJAPAKSA, Naomi Samadara; TULLY, David Charles; WANG, Xiaojing Michael; ZHAO, Qian
(74) Davies Collison Cave Pty Ltd

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(71) Novolabs Limited
(11) AU-A-2021221445
(21) 2021221445 **(22)** 24.08.2021
(54) LIQUID TREATMENT METHOD AND APPARATUS
(51) Int. Cl.
C02F 1/32 (2006.01)
(31) 777519 **(32)** 25.06.21 **(33)** NZ
(43) 19.01.2023
(72) SHILTON, Andrew Nicholas
(74) Ellis Terry

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(71) NVIDIA Corporation
(11) AU-A-2022204378
(21) 2022204378 **(22)** 22.06.2022
(54) 5G-NR multi-cell software framework
(51) Int. Cl.
H04L 69/322 (2022.01)
H04L 41/122 (2022.01)
H04W 16/10 (2009.01)
(31) 17/359,061 **(32)** 25.06.21 **(33)** US
(43) 19.01.2023
(72) Banuli Nanje Gowda, Harsha Deepak
(74) Davies Collison Cave Pty Ltd

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(71) NVIDIA Corporation
(11) AU-A-2022204554
(21) 2022204554 **(22)** 28.06.2022
(54) Training object detection systems with generated images
(51) Int. Cl.
G06V 10/82 (2022.01)
G06N 20/00 (2019.01)
(31) 17/361,202 **(32)** 28.06.21 **(33)** US
(43) 19.01.2023
(72) Mustikovela, Siva Karthik; De Mello, Shalini; Prakash, Aayush; Iqbal, Umar; Liu, Sifei; Kautz, Jan
(74) Davies Collison Cave Pty Ltd

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(71) NVIDIA Corporation
(11) AU-A-2022204572
(21) 2022204572 **(22)** 28.06.2022
(54) Techniques for combining operations
(51) Int. Cl.
G06N 3/08 (2006.01)
G06N 20/00 (2019.01)
(31) 17/362,547 **(32)** 29.06.21 **(33)** US
(43) 19.01.2023
(72) Collins, Alexander James; Grover, Vinod
(74) Davies Collison Cave Pty Ltd

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(71) NVIDIA Corporation
(11) AU-A-2022204612
(21) 2022204612 **(22)** 29.06.2022
(54) Synchronization barrier
(51) Int. Cl.
G06F 9/52 (2006.01)
G06F 9/30 (2018.01)
G06F 9/38 (2018.01)
G06F 9/50 (2006.01)
G06T 1/20 (2006.01)
(31) 17/366,770 **(32)** 02.07.21 **(33)** US
(43) 19.01.2023
(72) Ciolkosz, Piotr; Perelygin, Kyrylo; Edwards, Harold Carter; Maxey, Wesley
(74) Davies Collison Cave Pty Ltd

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(71) Paladin Safety Technologies Pty Ltd
(11) AU-A-2022204341
(21) 2022204341 **(22)** 21.06.2022
(54) Vehicle Safety Device
(51) Int. Cl.
B60R 21/015 (2006.01)
B60N 2/00 (2006.01)
G08B 7/06 (2006.01)
G08B 21/04 (2006.01)
B60N 2/879 (2018.01)
B60N 2/90 (2018.01)
B60R 22/48 (2006.01)
B60W 40/08 (2012.01)
B60W 50/14 (2020.01)
(31) 2021901857 **(32)** 21.06.21 **(33)** AU
(43) 19.01.2023
(72) Livingstone-Blevins, Stephen
(74) FOUNDRY INTELLECTUAL PROPERTY PTY LTD

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(71) Plaid Inc.
(11) AU-A-2022279378
(21) 2022279378 **(22)** 28.11.2022
(54) Secure permissioning of access to user accounts, including secure distribution of aggregated user account data
(51) Int. Cl.
G06Q 40/00 (2012.01)

Applications Open to Public Inspection - Name Index cont'd

(43) 19.01.2023
(62) 2019253110
(72) HOCKEY, William; ZHENG, Joy; SHOGRY, Baker; KELLY, Michael
(74) Spruson & Ferguson

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(71) Precision Biomonitoring Inc.
(11) AU-A-2021204298
(21) 2021204298 **(22)** 24.06.2021
(54) Computer-Implemented Method for Determining Survey Sampling Parameters for Environmental Nucleic Acid
(51) Int. Cl.
C12N 15/10 (2006.01)
C12Q 1/6806 (2018.01)
C12Q 1/6888 (2018.01)
G06Q 10/04 (2012.01)
(31) 17/356,409 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) Thomas, Mario; Qi, Wenjuan; Crookes, Steven; Niergarth, Jessmyn Adriane
(74) Walker IP

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(71) Protech Co., Ltd.
(11) AU-A-2022279386
(21) 2022279386 **(22)** 28.11.2022
(54) Novel Autophagy-Targeting Chimera (AUTOTAC) Compound, and Composition for Preventing, Alleviating, or Treating Diseases Through Target Protein Degradation Comprising Same
(51) Int. Cl.
C07C 237/20 (2006.01)
A61K 31/165 (2006.01)
A61K 31/336 (2006.01)
A61K 31/4155 (2006.01)
A61K 47/54 (2017.01)
A61P 3/10 (2006.01)
A61P 25/00 (2006.01)
A61P 35/00 (2006.01)
C07D 263/44 (2006.01)
C07D 405/04 (2006.01)
(43) 19.01.2023
(62) 2019312065
(72) KWON, Yong Tae; JI, Chang Hoon; GANIPISETTI, Srinivasrao; KIM, Hee Yeon; MUN, Su Ran; JUNG, Chan Hoon; JUNG, Eui Jung; SUNG, Ki Woon
(74) Adams Pluck

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(71) Prudenfort Pty Ltd
(11) AU-A-2021204566
(21) 2021204566 **(22)** 30.06.2021
(54) Distraction device for needle insertion into tissue
(51) Int. Cl.
A61B 5/15 (2006.01)
A61M 5/42 (2006.01)
A61M 5/32 (2006.01)
(43) 19.01.2023
(72) LISTIJONO, Dave Roberto
(74) FB Rice Pty Ltd

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(71) Prysmian S.p.A.
(11) AU-A-2022204473
(21) 2022204473 **(22)** 24.06.2022
(54) A multi-port gland for an optical closure
(51) Int. Cl.
H02G 15/013 (2006.01)
F16L 3/08 (2006.01)
F16L 5/00 (2006.01)
F16L 5/02 (2006.01)
G02B 6/44 (2006.01)
H02G 3/22 (2006.01)
(31) 102021000016676 **(32)** 25.06.21 **(33)** IT
(43) 19.01.2023
(72) PADDICK, Nathan
(74) Davies Collison Cave Pty Ltd

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(71) Prysmian S.p.A.
(11) AU-A-2022204685
(21) 2022204685 **(22)** 30.06.2022
(54) Method for festooning a power cable
(51) Int. Cl.
B65H 57/14 (2006.01)
B65H 19/10 (2006.01)
B65H 29/02 (2006.01)
B65H 67/02 (2006.01)
B66D 1/28 (2006.01)
(31) 102021000017399 **(32)** 01.07.21 **(33)** IT
(43) 19.01.2023
(72) BACCHINI, Marco; MANFREDI, Simone; GENOVESI, Mario
(74) Davies Collison Cave Pty Ltd

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(71) Pump & Electrical Engineering Services Pty Ltd
(11) AU-A-2021204162
(21) 2021204162 **(22)** 21.06.2021
(54) HOT WATER SYSTEM
(51) Int. Cl.
F24H 9/20 (2006.01)
F24H 1/10 (2006.01)
F24H 9/13 (2022.01)
F24D 17/00 (2006.01)
(43) 19.01.2023
(72) Hiremath, Ravindra; Lokuliyana, Shalitha
(74) COOPER IP PTY. LTD.

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(71) Pump & Electrical Engineering Services Pty Ltd
(11) AU-A-2021204164
(21) 2021204164 **(22)** 21.06.2021
(54) WATER HEATING SYSTEM
(51) Int. Cl.
F24H 9/20 (2006.01)
F24H 1/10 (2006.01)
F24H 9/13 (2022.01)
F24D 17/00 (2006.01)
F24D 19/10 (2006.01)
(43) 19.01.2023
(72) Hiremath, Ravindra; Lokuliyana, Shalitha
(74) COOPER IP PTY. LTD.

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(71) Qingdao University of Technology
(11) AU-A-2021441275
(21) 2021441275 **(22)** 27.07.2021
(54) Use of graphene oxide/butylacrylate/silane composite emulsion as anti-shrinkage agent
(51) Int. Cl.
C04B 24/08 (2006.01)
C04B 22/00 (2006.01)
(31) 202110720469.2 **(32)** 28.06.21 **(33)** CN
(43) 19.01.2023
(72) LI, Shaochun; XU, Shilin; LIU, Ang; GENG, Yongjuan; HOU, Dongshuai; ZHANG, Ruiyong; JIN, Zuquan; GAO, Song
(74) Oxygene IP

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(71) Raccords et Plastiques Nicoll
(11) AU-A-2022204377
(21) 2022204377 **(22)** 22.06.2022
(54) FITTING ASSEMBLY COMPRISING A SOCKET AND AN INTERCHANGEABLE RING
(51) Int. Cl.
F16L 37/04 (2006.01)
F16L 21/03 (2006.01)
(31) 21/07155 **(32)** 01.07.21 **(33)** FR
(43) 19.01.2023
(72) MAZET, Yannick; STEPKA, Samuel; GARAPON, Gilles; BUFFARD, Guillaume
(74) Halfords IP

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(71) Rain Harvesting Pty Ltd
(11) AU-A-2021204102
(21) 2021204102 **(22)** 18.06.2021
(54) Rain head and screen therefor
(51) Int. Cl.
E04D 13/076 (2006.01)
B01D 29/01 (2006.01)
E04D 13/04 (2006.01)
B01D 35/02 (2006.01)
(43) 19.01.2023
(72) Anderson, David; See, Anton Lee; Crossman, Shaun
(74) Spruson & Ferguson

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(71) Ramesh, S.
(11) AU-A-2021204335
(21) 2021204335 **(22)** 25.06.2021
(54) SR Learnings
(51) Int. Cl.
G06Q 90/00 (2006.01)
A01K 67/00 (2006.01)
G01S 13/00 (2006.01)
(43) 19.01.2023
(72) Ramesh, Sumathy
(74) Sumathy Ramesh

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(71) Rehrig Pacific Company
(11) AU-A-2022204676
(21) 2022204676 **(22)** 30.06.2022
(54) Container
(51) Int. Cl.
B65D 88/52 (2006.01)
B65D 6/18 (2006.01)
B65D 6/40 (2006.01)
B65D 19/18 (2006.01)
(31) 63/218,269 **(32)** 02.07.21 **(33)** US
(43) 19.01.2023
(72) Sekowski, Daniel Vincent; Apps, William P.
(74) Griffith Hack

Applications Open to Public Inspection - Name Index cont'd

(71) Rhino Rack Australia Pty Limited
(11) AU-A-2022204323
(21) 2022204323 **(22)** 20.06.2022
(54) Fixing device
(51) Int. Cl.
F16B 21/02 (2006.01)
F16B 7/18 (2006.01)
F16B 37/04 (2006.01)
F16B 39/282 (2006.01)
(31) 2021901841 **(32)** 18.06.21 **(33)** AU
(43) 19.01.2023
(72) Alfakhrany, Tarek
(74) IP SOLVED (ANZ) PTY. LTD.

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(71) Rhythm Pharmaceuticals, Inc.
(11) AU-A-2022279420
(21) 2022279420 **(22)** 29.11.2022
(54) Method of treating melanocortin-4 receptor pathway-associated disorders
(51) Int. Cl.
C07K 7/54 (2006.01)
A61K 38/12 (2006.01)
A61P 3/04 (2006.01)
(43) 19.01.2023
(62) 2021201448
(72) SHARMA, Shubh; PLOEG, Leonardus H.T. Van Der; HENDERSON, Bart
(74) Spruson & Ferguson

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(71) Sage Therapeutics, Inc.
(11) AU-A-2022279366
(21) 2022279366 **(22)** 28.11.2022
(54) Neuroactive steroids and methods of use thereof
(51) Int. Cl.
C07J 9/00 (2006.01)
A61K 31/575 (2006.01)
A61P 25/28 (2006.01)
(43) 19.01.2023
(62) 2021200205
(72) MARTINEZ BOTELLA, Gabriel; HARRISON, Boyd L.; ROBICHAUD, Albert J.; SALITURO, Francesco G.
(74) Spruson & Ferguson

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(71) Samsung Electronics Co., Ltd.
(11) AU-A-2022275533
(21) 2022275533 **(22)** 26.11.2022
(54) A method and apparatus for configuring resources and transmitting/receiving data in wireless cellular communication system
(51) Int. Cl.
H04W 72/04 (2009.01)
H04L 5/00 (2006.01)
H04W 72/12 (2009.01)
(43) 19.01.2023
(62) 2018341370
(72) PARK, Sungjin; OH, Jinyoung; YEO, Jeongho; GHA, Heedon; BAE, Taehan
(74) Griffith Hack

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(71) Sani-Marc Inc.
(11) AU-A-2022204097
(21) 2022204097 **(22)** 13.06.2022
(54) MULTIFUNCTIONAL SOLID AND DISSOLVING WATER-TREATMENT COMPOSITION FOR POOLS AND SPAS
(51) Int. Cl.
A01N 59/08 (2006.01)
A01N 25/08 (2006.01)
A01N 25/34 (2006.01)
A01N 43/64 (2006.01)
A01N 59/00 (2006.01)
A01P 1/00 (2006.01)
A01P 13/00 (2006.01)
C02F 1/50 (2006.01)
C02F 1/68 (2006.01)
C02F 103/42 (2006.01)
(31) 63/212,938 **(32)** 21.06.21 **(33)** US
(43) 19.01.2023
(72) Marchand, Patrick; Blondeau, Dorian; Chartrand, Arianne; Cardenas Bates, Ilse Ileana; Romanens, Alexandre
(74) Phillips Ormonde Fitzpatrick

Santrix Diesel Pty Ltd see Santrix Mining Components Pty Ltd
(21) 2021204501

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(71) Santrix Mining Components Pty Ltd; Santrix Diesel Pty Ltd
(11) AU-A-2021204501
(21) 2021204501 **(22)** 30.06.2021
(54) A valve housing
(51) Int. Cl.
F16K 21/02 (2006.01)
E02F 9/22 (2006.01)
F15B 13/02 (2006.01)
F16K 27/00 (2006.01)
(43) 19.01.2023
(72) Townley, Charles Neville Paul; Sant, Nicholas Luke
(74) Spruson & Ferguson

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(71) Schneider Electric Industries SAS
(11) AU-A-2022204661
(21) 2022204661 **(22)** 29.06.2022
(54) MINIATURE CIRCUIT BREAKER
(51) Int. Cl.
H01H 33/00 (2006.01)
H01H 1/00 (2006.01)
H01H 9/00 (2006.01)
H01H 71/00 (2006.01)
H01H 73/04 (2006.01)
(31) 202110729688.7 **(32)** 29.06.21 **(33)** CN
(43) 19.01.2023
(72) Wang, Hongliang; Sun, Zhenguo; Gong, Zhenyao; Chen, Yu; Gao, Jiaming; Ye, Yuchen
(74) Madderns Pty Ltd

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(71) Season Farm Technology Co., Ltd.
(11) AU-A-2021204046
(21) 2021204046 **(22)** 17.06.2021
(54) MEDICAL MASK RESTORING DEVICE
(51) Int. Cl.
H01T 19/00 (2006.01)
A41D 13/11 (2006.01)
H01T 23/00 (2006.01)
(43) 19.01.2023
(72) Yang, Ching-Chieh
(74) Patent Attorney Services

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(71) Sea to Summit Pty Ltd
(11) AU-A-2021204109
(21) 2021204109 **(22)** 18.06.2021
(54) A Retainer for a Strap
(51) Int. Cl.
A44B 11/00 (2006.01)
A44B 11/24 (2006.01)
A45C 13/30 (2006.01)
A45F 3/14 (2006.01)
(43) 19.01.2023
(72) Sando, Brendan Michael
(74) WRAYS PTY LTD

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(71) Sekise Corporation
(11) AU-A-2022204067
(21) 2022204067 **(22)** 10.06.2022
(54) Image engraving apparatus and engraving head
(51) Int. Cl.
B44B 3/00 (2006.01)
B44B 3/06 (2006.01)
G05G 9/04 (2006.01)
(31) 2021-099913 **(32)** 16.06.21 **(33)** JP
(43) 19.01.2023
(72) Hoshiyama, Yuichi
(74) FB Rice Pty Ltd

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(71) SEMINIS VEGETABLE SEEDS, INC.
(11) AU-A-2022204242
(21) 2022204242 **(22)** 17.06.2022
(54) BROCCOLI HYBRID SVBL0308
(51) Int. Cl.
A01H 6/20 (2018.01)
(31) 17/549,365 **(32)** 13.12.21 **(33)** US
63/216,110 29.06.21 US
(43) 19.01.2023
(72) BOSCH, Franciscus van den
(74) Griffith Hack

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(71) Semtech Corporation
(11) AU-A-2022203549
(21) 2022203549 **(22)** 25.05.2022
(54) WIRELESS COMMUNICATION NETWORK AND TRANCEIVER
(51) Int. Cl.
H04B 1/713 (2011.01)
H04B 1/7143 (2011.01)
(31) 63/218,064 **(32)** 02.07.21 **(33)** US
(43) 19.01.2023
(72) Seller, Olivier; Ning, Baozhu; Wuthrich, Martin
(74) Phillips Ormonde Fitzpatrick

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204528
(21) 2021204528 **(22)** 28.06.2021
(54) Systems, methods, apparatuses, and computer-readable storage media for warning
(51) Int. Cl.
A63F 3/00 (2006.01)
(31) 10202106953P **(32)** 24.06.21 **(33)** SG

Applications Open to Public Inspection - Name Index cont'd

(43) 19.01.2023
(72) WANG, Xinxin; LIN, Jinliang; ZOU, Chuan; WU, Jiacheng
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204540
(21) 2021204540 **(22)** 25.06.2021
(54) Method and apparatus for image processing, electronic device, and computer storage medium
(51) Int. Cl.
G06K 7/10 (2006.01)
(87) WO2022/096948
(31) 10202106587X **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) GUO, Zhiyang; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204542
(21) 2021204542 **(22)** 25.06.2021
(54) Alarm method and apparatus for tabletop game, electronic device and storage medium
(51) Int. Cl.
A63F 1/00 (2006.01)
(87) WO2022/096955
(31) 10202106722W **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; WANG, Xinxin; ZHANG, Shuai; ZHANG, Shuai; WANG, Kaiyun; WANG, Kaiyun
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204548
(21) 2021204548 **(22)** 25.06.2021
(54) Method and apparatus for detecting tokens on game table, device, and storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106715V **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204550
(21) 2021204550 **(22)** 28.06.2021
(54) Scene detection method and apparatus, electronic device and computer storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096959
(31) 10202107011W **(32)** 25.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; GAN, Xin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204551
(21) 2021204551 **(22)** 25.06.2021
(54) Methods, apparatuses, systems, devices and storage media for processing abnormal event
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106886W **(32)** 23.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; XIE, Fei; XIE, Naiwei
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204555
(21) 2021204555 **(22)** 25.06.2021
(54) Warning method, apparatus, device and computer storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096952
(31) 10202106583R **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204558
(21) 2021204558 **(22)** 28.06.2021
(54) Alerting method and device, apparatus and computer storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096958
(31) 10202106454Q **(32)** 16.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204562
(21) 2021204562 **(22)** 25.06.2021
(54) Object information association method and apparatus, device and storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096953
(31) 10202106446P **(32)** 16.06.21 **(33)** SG
(43) 19.01.2023
(72) GUO, Zhiyang; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204563
(21) 2021204563 **(22)** 25.06.2021
(54) Target detection methods, apparatuses, electronic devices and computer-readable storage media
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106559T **(32)** 17.06.21 **(33)** SG
(43) 19.01.2023
(72) CHEN, Jinghuan; LIU, Chunya; ZHANG, Xuesen; WANG, Bairun
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204564
(21) 2021204564 **(22)** 28.06.2021
(54) Methods of detecting game prop operation event and apparatuses, devices and systems thereof
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106956S **(32)** 24.06.21 **(33)** SG
(43) 19.01.2023
(72) XIE, Fei; WANG, Xinxin
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204568
(21) 2021204568 **(22)** 25.06.2021
(54) Methods, apparatuses, devices, and storage media for controlling game states
(51) Int. Cl.
G06F 3/0484 (2013.01)
A63F 1/00 (2006.01)
(31) 10202106746V **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; SUN, Bing
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204570
(21) 2021204570 **(22)** 25.06.2021
(54) Warning method, apparatus and device, and storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(87) WO2022/096956
(31) 10202106589S **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204572
(21) 2021204572 **(22)** 25.06.2021
(54) Image processing method and device, edge computing device, and computer storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(87) WO2022/096954
(31) 10202106600X **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) GUO, Zhiyang; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204573
(21) 2021204573 **(22)** 25.06.2021
(54) Methods and apparatuses for controlling game states
(51) Int. Cl.
G06F 3/0484 (2013.01)
A63F 1/00 (2006.01)
G06K 9/00 (2006.01)
(31) 10202106647X **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) XIE, Fei; WANG, Xinxin
(74) Madderns Pty Ltd

Applications Open to Public Inspection - Name Index cont'd

(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204586
(21) 2021204586 **(22)** 28.06.2021
(54) Methods, apparatuses, devices and storage media for switching states of tabletop games
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(31) 10202106955X **(32)** 24.06.21 **(33)** SG
(43) 19.01.2023
(72) SUN, Bing; WANG, Xinxin
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204587
(21) 2021204587 **(22)** 28.06.2021
(54) Game monitoring
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(31) 10202106954Y **(32)** 24.06.21 **(33)** SG
(43) 19.01.2023
(72) XIE, Fei; WANG, Xinxin; YANG, Liyao
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204588
(21) 2021204588 **(22)** 25.06.2021
(54) Methods, apparatuses, systems and electronic devices for processing data
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(31) 10202106645U **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) ZHUANG, Shuo; WANG, Xinxin
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204592
(21) 2021204592 **(22)** 29.06.2021
(54) Methods and apparatuses for automatic operational maintenance
(51) Int. Cl.
G06F 16/10 (2019.01)
A63F 1/00 (2006.01)
(31) 10202107096Q **(32)** 28.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; XIAO, Gan
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204593
(21) 2021204593 **(22)** 29.06.2021
(54) Methods and apparatuses for installing device application
(51) Int. Cl.
G06F 16/10 (2019.01)
A63F 1/00 (2006.01)
(31) 10202107092P **(32)** 28.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; XIAO, Gan
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204607
(21) 2021204607 **(22)** 25.06.2021
(54) Method and apparatus for detecting object exchange behavior, electronic device and storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(31) 10202106719W **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; ZHANG, Shuai; WANG, Kaiyun
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204608
(21) 2021204608 **(22)** 25.06.2021
(54) Image data generation method and apparatus, electronic device, and storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(31) 10202106738T **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) TIAN, Maoqing; YI, Shuai
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204609
(21) 2021204609 **(22)** 28.06.2021
(54) Cluster management method and apparatus, electronic device and storage medium
(51) Int. Cl.
G06F 16/10 (2019.01)
A63F 1/00 (2006.01)
(87) WO2022/096960
(31) 10202107015X **(32)** 25.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; XIAO, Gan
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204611
(21) 2021204611 **(22)** 25.06.2021
(54) Method and apparatus for detecting tokens on game table, device, and storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(87) WO2022/175733
(31) 10202106613W **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204614
(21) 2021204614 **(22)** 25.06.2021
(54) Body and hand correlation method and apparatus, device, and storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(87) WO2022/096951
(31) 10202106728X **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Bairun; ZHANG, Xuesen; LIU, Chunya; YI, Shuai
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204616
(21) 2021204616 **(22)** 25.06.2021
(54) Game image processing method and apparatus, electronic device, and computer storage medium, and computer program
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(87) WO2022/096950
(31) 10202106863Q **(32)** 23.06.21 **(33)** SG
(43) 19.01.2023
(72) GUO, Zhiyang; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204618
(21) 2021204618 **(22)** 28.06.2021
(54) Method and device for managing scene equipment, server, and computer storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(31) 10202107014Y **(32)** 25.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; XIAO, Gan
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204619
(21) 2021204619 **(22)** 28.06.2021
(54) Body and hand association method and apparatus, device, and storage medium
(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(87) WO2022/096957
(31) 10202106806S **(32)** 22.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Bairun; ZHANG, Xuesen; LIU, Chunya; YI, Shuai
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204621
(21) 2021204621 **(22)** 25.06.2021
(54) Method and apparatus for data processing, electronic device, and storage medium

Applications Open to Public Inspection - Name Index cont'd

(51) Int. Cl.
G06K 9/00 (2006.01)
A63F 1/00 (2006.01)
(87) WO2022/096947
(31) 10202106869P **(32)** 23.06.21 **(33)** SG
(43) 19.01.2023
(72) GUO, Zhiyang; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204623
(21) 2021204623 **(22)** 25.06.2021
(54) Game state detection and configuration updating method and apparatus, device and storage medium
(51) Int. Cl.
G06F 17/00 (2019.01)
A63F 1/00 (2006.01)
(87) WO2022/096946
(31) 10202106467P **(32)** 16.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; XIAO, Gan; GAN, Xin; WU, Wenxuan
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021240261
(21) 2021240261 **(22)** 13.09.2021
(54) Methods, apparatuses, devices and storage media for training object detection network and for detecting object
(51) Int. Cl.
G06K 9/00 (2006.01)
(31) 10202107102Y **(32)** 28.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Bairun; ZHANG, Xuesen; LIU, Chunya; CHEN, Jinghuan; YI, Shuai
(74) Madderns Pty Ltd

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(71) SG Gaming ANZ Pty Ltd
(11) AU-A-2022275524
(21) 2022275524 **(22)** 25.11.2022
(54) Gaming user interface with multi-table view
(51) Int. Cl.
A63F 13/00 (2014.01)
G06F 3/01 (2006.01)
(43) 19.01.2023
(62) 2018206840
(72) ATKINSON, Lyal; WADDS, Nathan
(74) Spruson & Ferguson

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(71) Shade Chic Pty Ltd
(11) AU-A-2021204652
(21) 2021204652 **(22)** 02.07.2021
(54) Fitted Sheet
(51) Int. Cl.
A47G 9/02 (2006.01)
(43) 19.01.2023
(72) Blain, Jill
(74) COOPER IP PTY. LTD.

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(71) SHAN, R.
(11) AU-A-2021205084
(21) 2021205084 **(22)** 15.07.2021
(54) MOBILE UNMANNED MEDICINE VENDING VEHICLE
(51) Int. Cl.
G07F 11/00 (2006.01)
G06Q 50/00 (2012.01)
G07F 7/08 (2006.01)
G07F 17/04 (2006.01)
G07F 17/40 (2006.01)
(31) 2021106820771 **(32)** 19.06.21 **(33)** CN
(43) 19.01.2023
(72) SHAN, Ruyang
(74) Alder IP Pty Ltd

Shanghai International Superconduction Technology Co., Ltd. see State Grid Shanghai Municipal Electric Power Company
(21) 2021338587

Shanghai International Superconduction Technology Co., Ltd. see State Grid Shanghai Municipal Electric Power Company
(21) 2021355610

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(71) Shanghai Linghuo Trading Co., Ltd.
(11) AU-A-2022203205
(21) 2022203205 **(22)** 12.05.2022
(54) INNER-C-FORGING ASSEMBLY, FRONT AXLE ASSEMBLY AND MODIFICATION METHOD OF AN INTEGRAL FRONT AXLE ASSEMBLY
(51) Int. Cl.
B60B 35/00 (2006.01)
B21K 1/00 (2006.01)
B21K 1/06 (2006.01)
B21K 1/26 (2006.01)
B21K 1/74 (2006.01)
B60B 35/12 (2006.01)
B60B 35/16 (2006.01)
B62D 17/00 (2006.01)
F16B 7/18 (2006.01)
(31) CN202121371523.9 **(32)** 18.06.21 **(33)** CN
CN202110681408.X 18.06.21 CN
(43) 19.01.2023
(72) DU, Dehui; FU, Jia
(74) MOHAN MURALI KODIVEL

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(71) Shanghai Linghuo Trading Co., Ltd.
(11) AU-A-2022203206
(21) 2022203206 **(22)** 12.05.2022
(54) FRONT AXLE ASSEMBLY AND VEHICLE WITH THE SAME
(51) Int. Cl.
B60B 35/00 (2006.01)
B60B 35/16 (2006.01)
B62D 17/00 (2006.01)
(31) CN202110682630.1 **(32)** 18.06.21 **(33)** CN
CN202121371525.8 18.06.21 CN
(43) 19.01.2023
(72) DU, Dehui; FU, Jia
(74) MOHAN MURALI KODIVEL

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(71) Shenyang Research Institute of China Coal Technology & Engineering Group; China Coal Technology & Engineering Group
(11) AU-A-2022202272
(21) 2022202272 **(22)** 05.04.2022
(54) GAS DETECTION DEVICE AND METHOD
(51) Int. Cl.
G01N 33/22 (2006.01)
G01N 30/72 (2006.01)
(31) 202110739292.0 **(32)** 30.06.21 **(33)** CN
(43) 19.01.2023
(72) Tian, Fuchao; Qin, Yujin; Wang, Hao; Su, Weiwei; Song, Shuanglin; Li, Shuaikui; Liu, Bingquan
(74) Madderns Pty Ltd

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(71) Simonelli Group S.p.A.
(11) AU-A-2022204135
(21) 2022204135 **(22)** 14.06.2022
(54) Electric espresso coffee machine equipped and conceived to also dispense American coffee
(51) Int. Cl.
A47J 31/06 (2006.01)
A47J 31/02 (2006.01)
A47J 31/24 (2006.01)
A47J 31/36 (2006.01)
A47J 31/44 (2006.01)
(31) 102021000016391 **(32)** 22.06.21 **(33)** IT
(43) 19.01.2023
(72) PARRINI, Mauro; CINGOLANI, Claudio Enrico
(74) FB Rice Pty Ltd

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(71) SKC Co., Ltd.
(11) AU-A-2022204076
(21) 2022204076 **(22)** 10.06.2022
(54) Polyester film, heat-shrinkable label and packaging comprising same
(51) Int. Cl.
C08K 3/36 (2006.01)
B65D 65/40 (2006.01)
C08G 63/60 (2006.01)
C08G 63/672 (2006.01)
C08J 5/18 (2006.01)
C08K 5/521 (2006.01)
G09F 3/02 (2006.01)
(31) 10-2021-0087847 **(32)** 05.07.21 **(33)** KR
(43) 19.01.2023
(72) YANG, Joo Ho; KIM, Chul Kyu; KIM, Yong Deuk; KIM, Seung Kyun
(74) FB Rice Pty Ltd

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(71) Slip IP Holdings Pty Ltd
(11) AU-A-2022204819
(21) 2022204819 **(22)** 05.07.2022
(54) A mask
(51) Int. Cl.
A61F 9/04 (2006.01)
(31) 2021902041 **(32)** 05.07.21 **(33)** AU
(43) 19.01.2023
(72) Dubois, Justin Matthew; Stewart, Fiona Margaret
(74) Allens Patent & Trade Mark Attorneys

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(71) Solutions for Millennia Pty Ltd
(11) AU-A-2022204201

Applications Open to Public Inspection - Name Index cont'd

(21) 2022204201 **(22)** 16.06.2022
(54) Method for sealing a bore
(51) Int. Cl.
C09K 8/42 (2006.01)
E21B 33/12 (2006.01)
E21B 33/13 (2006.01)
E21B 33/068 (2006.01)
E21B 47/005 (2012.01)
(31) 2021901890 **(32)** 23.06.21 **(33)** AU
(43) 19.01.2023
(72) TAIT, Peter James
(74) Spruson & Ferguson

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(71) Southern Wire Pty Ltd
(11) AU-A-2021218235
(21) 2021218235 **(22)** 20.08.2021
(54) Fence Clip
(51) Int. Cl.
E04H 17/10 (2006.01)
E04H 17/02 (2006.01)
(31) 2021901911 **(32)** 24.06.21 **(33)** AU
(43) 19.01.2023
(72) Sivewright, Jerry Trevor
(74) WRAYS PTY LTD

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(71) SOUTHWEST FORESTRY UNIVERSITY
(11) AU-A-2022203263
(21) 2022203263 **(22)** 16.05.2022
(54) PROCESSING METHOD OF MACADAMIA INTEGRIFOLIA NUT PULP, AND PROTEIN BEVERAGE THEREBY
(51) Int. Cl.
A23L 25/00 (2016.01)
A23J 1/14 (2006.01)
A23L 2/38 (2021.01)
(31) 202110712836 .4 **(32)** 25.06.21 **(33)** CN
(43) 19.01.2023
(72) SHI, Rui; LIU, Can; WANG, Wenlin; TAO, Liang; QIAO, Jinchao; LI, Siqi; LU, Na
(74) Origin Patent and Trade Mark Attorneys

Spear, T. see Tomlinson, M.
(21) 2021221619

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(71) State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
(11) AU-A-2021338587
(21) 2021338587 **(22)** 29.12.2021
(54) High-vacuum multi-layer flexible heat-insulated pipe for high-temperature superconducting cable and manufacturing method thereof
(51) Int. Cl.
H01B 12/14 (2006.01)
G06F 30/20 (2020.01)
(31) 202110704662.7 **(32)** 24.06.21 **(33)** CN
(43) 19.01.2023
(72) JIAO, Ting; ZHANG, Xize; HAN, Yunwu; ZONG, Xihua; XIE, Wei; YANG, Jianping; ZHENG, Jian; WEI, Bengang; CHEN, Zhiyue; HUANG, Yijia; TIAN, Xiang
(74) Madderns Pty Ltd

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(71) State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
(11) AU-A-2021355610
(21) 2021355610 **(22)** 30.12.2021
(54) Current lead structure for high-temperature superconducting (HTS) cable and design method thereof
(51) Int. Cl.
H01B 12/02 (2006.01)
(31) 202110704661.2 **(32)** 24.06.21 **(33)** CN
202121414937.5 24.06.21 CN
(43) 19.01.2023
(72) JIAO, Ting; ZHANG, Xize; YANG, Jianping; ZHENG, Jian; ZHANG, Qiqi; HAN, Yunwu; ZHANG, Zhiyong; LI, Honglei; ZONG, Xihua; WEI, Bengang; HUANG, Yijia; CHEN, Zhiyue
(74) Madderns Pty Ltd

Stephenson, M. see Tomlinson, M.
(21) 2021221619

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(71) Sully, M.
(11) AU-A-2022275496
(21) 2022275496 **(22)** 24.11.2022
(54) VISUAL MEDIA CAPTURE AND USER INTERFACE ANIMATION
(51) Int. Cl.
G06F 3/04842 (2022.01)
G06F 3/0485 (2022.01)
G06T 11/60 (2006.01)
H04L 51/52 (2022.01)
G06T 13/80 (2011.01)
H04L 51/10 (2022.01)
H04L 51/224 (2022.01)
(31) 2017901947 **(32)** 23.05.17 **(33)** AU
15/987,705 23.05.18 US
(43) 19.01.2023
(72) Sully, Melissa
(74) Melissa Jane Sully

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(71) Takeda Vaccines, Inc.
(11) AU-A-2022259826
(21) 2022259826 **(22)** 27.10.2022
(54) Methods of detection and removal of rhabdoviruses from cell lines
(51) Int. Cl.
C12N 15/47 (2006.01)
(43) 19.01.2023
(62) 2020294216
(72) Haynes, Joel
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Takeda Vaccines, Inc.
(11) AU-A-2022275515
(21) 2022275515 **(22)** 25.11.2022
(54) Zika Vaccines And Immunogenic Compositions, And Methods Of Using The Same
(51) Int. Cl.
C07K 16/10 (2006.01)
C12N 7/02 (2006.01)
(43) 19.01.2023
(62) 2018375173
(72) LIVENGOOD, Jill A.; DEAN, Hansi; HAN, Htay Htay; RAO, Raman; MARKS, Jackie; DUBIN, Gary; DE MOERLOOZE, Laurence; PATEL, Hetal
(74) WRAYS PTY LTD

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(71) Tayar, E.
(11) AU-A-2022204768
(21) 2022204768 **(22)** 04.07.2022
(54) Fitness device
(51) Int. Cl.
A63B 21/018 (2006.01)
A63B 21/015 (2006.01)
A63B 21/22 (2006.01)
A63B 23/035 (2006.01)
B66D 1/36 (2006.01)
(31) 284597 **(32)** 04.07.21 **(33)** IL
(43) 19.01.2023
(72) Tayar, Eliahu
(74) FB Rice Pty Ltd

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(71) Taylor, A.
(11) AU-A-2022204476
(21) 2022204476 **(22)** 24.06.2022
(54) A Panel Assembly
(51) Int. Cl.
E04C 2/06 (2006.01)
B28B 23/02 (2006.01)
E02D 29/02 (2006.01)
E04C 2/22 (2006.01)
E04C 5/06 (2006.01)
B29C 39/10 (2006.01)
B29L 31/10 (2006.01)
(31) 2021901910 **(32)** 24.06.21 **(33)** AU
(43) 19.01.2023
(72) Taylor, Andrew
(74) Eagar & Associates Pty Ltd

Tebbutt, A. see Tomlinson, M.
(21) 2021221619

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(71) Techtronic Cordless GP
(11) AU-A-2022204312
(21) 2022204312 **(22)** 20.06.2022
(54) Power equipment with detachable accessory assembly
(51) Int. Cl.
B25F 5/02 (2006.01)
B25F 3/00 (2006.01)
(31) 63/215,103 **(32)** 25.06.21 **(33)** US
(43) 19.01.2023
(72) BOYLES, Tyler; GUY, Aric
(74) Spruson & Ferguson

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(71) Techtronic Cordless GP
(11) AU-A-2022204542
(21) 2022204542 **(22)** 27.06.2022
(54) Wearable vacuum cleaner
(51) Int. Cl.
A47L 5/36 (2006.01)
A45F 3/08 (2006.01)
A45F 3/14 (2006.01)
A47L 9/00 (2006.01)
B65F 1/12 (2006.01)

Applications Open to Public Inspection - Name Index cont'd

(31) 63/216,095 **(32)** 29.06.21 **(33)** US
(43) 19.01.2023
(72) THACKERY, Clinton C.; CREASMAN, Jacob F.
(74) Spruson & Ferguson

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(71) Terra Quantum AG
(11) AU-A-2022204632
(21) 2022204632 **(22)** 29.06.2022
(54) METHOD FOR DETERMINING A CRYPTOGRAPHIC KEY, COMPUTER PROGRAM, AND DATA PROCESSING SYSTEM
(51) Int. Cl.
G06F 21/30 (2013.01)
G06F 17/00 (2019.01)
(31) 21183810.7 **(32)** 05.07.21 **(33)** EP
(43) 19.01.2023
(72) VOLOSHINOV, Vladimir; LESOVIK, Gordey; PAKHOMCHIK, Aleksey
(74) Griffith Hack

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(71) Terumo BCT, Inc.
(11) AU-A-2022279399
(21) 2022279399 **(22)** 29.11.2022
(54) Automated production and collection
(51) Int. Cl.
C12M 1/12 (2006.01)
C12M 1/18 (2006.01)
C12M 1/34 (2006.01)
C12M 1/36 (2006.01)
(43) 19.01.2023
(62) 2017261348
(72) Vang, Boah; Nankervis, Brian J.
(74) Griffith Hack

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(71) Thales Holdings UK Plc
(11) AU-A-2022204313
(21) 2022204313 **(22)** 20.06.2022
(54) A CASING FOR A TOWABLE SONAR APPARATUS AND A METHOD OF MANUFACTURING A CASING FOR A TOWABLE SONAR APPARATUS
(51) Int. Cl.
G01S 3/801 (2006.01)
B33Y 80/00 (2015.01)
G01S 7/521 (2006.01)
(31) 2108892.7 **(32)** 21.06.21 **(33)** GB
(43) 19.01.2023
(72) HARDIE, David J. W.
(74) Griffith Hack

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(71) The Board of Trustees of the Leland Stanford Junior University; Intima Bioscience, Inc.
(11) AU-A-2022275537
(21) 2022275537 **(22)** 28.11.2022
(54) Nuclease systems for genetic engineering
(51) Int. Cl.
C12N 15/11 (2006.01)
C12N 9/22 (2006.01)
C12N 15/63 (2006.01)
(43) 19.01.2023
(62) 2018330197
(72) Qi, Lei S.; Choudhry, Modassir S.; Lin, Xueqiu; Xu, Xiaoshu
(74) FPA Patent Attorneys Pty Ltd

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(71) The Fynder Group, Inc.
(11) AU-A-2022279428
(21) 2022279428 **(22)** 29.11.2022
(54) EDIBLE COMPOSITION WITH FILAMENTOUS FUNGI AND BIOREACTOR SYSTEM FOR THE CULTIVATION THEREOF
(51) Int. Cl.
A23L 33/195 (2016.01)
A01G 18/64 (2018.01)
A01G 18/66 (2018.01)
A23J 3/20 (2006.01)
A23L 31/00 (2016.01)
C12R 1/645 (2006.01)
C12R 1/77 (2006.01)
(43) 19.01.2023
(62) 2021266237
(72) Kozubal, Mark A.; Macur, Richard E.; Avniel, Yuval C.; Hamilton, Maximilian DeVane
(74) Madderns Pty Ltd

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(71) The Johns Hopkins University; Mayo Foundation for Medical Education and Research; Buck Institute for Research on Aging; Unity Biotechnology, Inc.
(11) AU-A-2022256167
(21) 2022256167 **(22)** 20.10.2022
(54) Methods and compositions for killing senescent cells and for treating senescence-associated diseases and disorders
(51) Int. Cl.
A61K 31/496 (2006.01)
A61K 35/12 (2015.01)
A61K 39/395 (2006.01)
A61P 1/16 (2006.01)
(43) 19.01.2023
(62) 2020244600
(72) Laberge, Remi-Martin; Campisi, Judith; Davalos, Albert; Demaria, Marco; David, Nathaniel; Vasserot, Alain Philippe; Baker, Darren J.; Childs, Bennett G.; Kirkland, James L.; Tchkonia, Tamar; Van Deursen, Jan M. A.; Zhu, Yi; Elisseeff, Jennifer; Kim, Chaekyu; Jeon, Okhee
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) The Nielsen Company (US), LLC
(11) AU-A-2022279417
(21) 2022279417 **(22)** 29.11.2022
(54) Methods and apparatus to collect distributed user information for media impressions
(51) Int. Cl.
H04W 12/04 (2021.01)
H04H 60/29 (2008.01)
(43) 19.01.2023
(62) 2021200245
(72) BURBANK, John R.; ALLA, Madhusudhan Reddy
(74) Spruson & Ferguson

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(71) The Regents of the University of California
(11) AU-A-2022275510
(21) 2022275510 **(22)** 25.11.2022
(54) Modular polypeptide libraries and methods of making and using same
(51) Int. Cl.
C40B 20/04 (2006.01)
C07K 14/705 (2006.01)
C12N 5/0783 (2010.01)
C12N 5/0784 (2010.01)
C12N 15/62 (2006.01)
C12N 15/63 (2006.01)
C40B 30/04 (2006.01)
C40B 40/08 (2006.01)
C40B 50/06 (2006.01)
(43) 19.01.2023
(62) 2016315941
(72) Lim, Wendell A.; Coyle, Scott M.; Gordley, Russell M.; Roybal, Kole T.
(74) FB Rice Pty Ltd

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(71) Thermaguard Pty Ltd
(11) AU-A-2022204753
(21) 2022204753 **(22)** 01.07.2022
(54) System and method for securing radiant heat shields
(51) Int. Cl.
B60J 1/20 (2006.01)
A62C 2/06 (2006.01)
A62C 2/10 (2006.01)
A62C 3/07 (2006.01)
(31) 2021902014 **(32)** 02.07.21 **(33)** AU
(43) 19.01.2023
(72) Gooden, Andrew Laurence
(74) LESICAR MAYNARD ANDREWS PTY LTD

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(71) The Sy-Klone Company, LLC
(11) AU-A-2021209139
(21) 2021209139 **(22)** 26.07.2021
(54) Self-cleaning air filtration apparatus and method
(51) Int. Cl.
B01D 45/12 (2006.01)
B01D 46/04 (2006.01)
F04D 19/00 (2006.01)
F04D 25/08 (2006.01)
(31) 17/356,973 **(32)** 24.06.21 **(33)** US
(43) 19.01.2023
(72) Ehrenberg, Eric L.; Moredock, James G.
(74) Davies Collison Cave Pty Ltd

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(71) The Sy-Klone Company, LLC
(11) AU-A-2022201171
(21) 2022201171 **(22)** 22.02.2022
(54) Air Filter Assembly
(51) Int. Cl.
B01D 45/12 (2006.01)
B01D 46/04 (2006.01)

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F04D 19/00 (2006.01)
F04D 25/08 (2006.01)
(43) 19.01.2023
(62) 2021209139
(72) Ehrenberg, Eric L.; Moredock, James G.
(74) Davies Collison Cave Pty Ltd

The University of Melbourne see Genetic Technologies Limited
(21) 2022279367

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(71) Tomlinson, M.; Tebbutt, A.; Freestone, P.; Hammer, J.; Spear, T.; Stephenson, M.
(11) AU-A-2021221619
(21) 2021221619 **(22)** 25.08.2021
(54) MASK ASSEMBLIES FOR RESPIRATORY THERAPY
(51) Int. Cl.
A61M 16/06 (2006.01)
(31) 63/218,431 **(32)** 05.07.21 **(33)** US
63/202,988 02.07.21 US
(43) 19.01.2023
(72) Tomlinson, Mark; Tebbutt, Adam; Freestone, Paul; Hammer, Jeroen; Spear, Tony; Stephenson, Matthew
(74) AJ PARK

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(71) Toshiba Energy Systems & Solutions Corporation
(11) AU-A-2022204805
(21) 2022204805 **(22)** 05.07.2022
(54) DAMAGE EVALUATION DEVICE, DAMAGE EVALUATION METHOD
(51) Int. Cl.
G05B 23/02 (2006.01)
F01D 21/00 (2006.01)
G01M 13/003 (2019.01)
G01M 15/02 (2006.01)
G01M 15/05 (2006.01)
G01N 3/40 (2006.01)
G05B 19/048 (2006.01)
(31) 2021-111442 **(32)** 05.07.21 **(33)** JP
(43) 19.01.2023
(72) Shitaka, Tetsuya; Suzuki, Yusuke; Ninomiya, Yoshikazu
(74) Davies Collison Cave Pty Ltd

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(71) TRACTO-TECHNIK GmbH & Co. KG
(11) AU-A-2022204803
(21) 2022204803 **(22)** 05.07.2022
(54) DRILL HEAD OF AN EARTH DRILLING DEVICE, METHOD FOR MANUFACTURING A DRILL HEAD OF AN EARTH DRILLING DEVICE AND USE OF A DRILL HEAD OF AN EARTH DRILLING DEVICE
(51) Int. Cl.
E21B 10/62 (2006.01)
E21B 17/02 (2006.01)
E21B 33/03 (2006.01)
(31) 102021003448.1 **(32)** 05.07.21 **(33)** DE
(43) 19.01.2023
(72) Püttmann, Franz-Josef
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Transportation IP Holdings, LLC
(11) AU-A-2022202836
(21) 2022202836 **(22)** 29.04.2022
(54) SYSTEMS AND METHODS FOR ESTIMATING TIME OF ARRIVAL OF VEHICLE SYSTEMS
(51) Int. Cl.
G06Q 10/04 (2012.01)
G01C 21/34 (2006.01)
G06N 20/00 (2019.01)
G06Q 10/08 (2012.01)
G06Q 50/30 (2012.01)
G07C 5/02 (2006.01)
(31) 17/364,345 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) Con, Eren; Kundur, Shereesh; Melamud, Anatoly; Calegari, Carlos
(74) Phillips Ormonde Fitzpatrick

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(71) Transportation IP Holdings, LLC
(11) AU-A-2022203764
(21) 2022203764 **(22)** 01.06.2022
(54) CUSTOMIZED INSTRUCTIONAL FLOWCHART GENERATION AND MODIFICATION SYSTEM
(51) Int. Cl.
G06F 3/048 (2013.01)
G06F 9/00 (2006.01)
G06F 11/07 (2006.01)
G06Q 10/06 (2012.01)
(31) 17/366,321 **(32)** 02.07.21 **(33)** US
(43) 19.01.2023
(72) Scholz, Bernhard Joseph; Roddy, Nicholas; Kacyon, Jeffry; Anandhan, Amuthan; Lahut, John; Shaikh, Hammad; Quigley, Jason
(74) Phillips Ormonde Fitzpatrick

Unity Biotechnology, Inc. see The Johns Hopkins University
(21) 2022256167

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(71) Vermeer Manufacturing Company
(11) AU-A-2022204640
(21) 2022204640 **(22)** 29.06.2022
(54) Additive dosing assemblies and hydro excavation vacuum apparatus incorporating same
(51) Int. Cl.
E02F 3/88 (2006.01)
B01F 33/501 (2022.01)
E02F 3/90 (2006.01)
E02F 3/92 (2006.01)
E02F 3/94 (2006.01)
E02F 9/20 (2006.01)
E02F 9/26 (2006.01)
F04B 15/02 (2006.01)
F04B 23/02 (2006.01)
F04B 23/04 (2006.01)
F04B 43/12 (2006.01)
(31) 63/216,254 **(32)** 29.06.21 **(33)** US
(43) 19.01.2023
(72) Keeley, Jacob; Meyer, Nathan
(74) FPA Patent Attorneys Pty Ltd

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(71) Virastrike Holdings Pty Ltd
(11) AU-A-2022204435
(21) 2022204435 **(22)** 23.06.2022
(54) A DISINFECTING CONTAINER
(51) Int. Cl.
A61L 2/10 (2006.01)
(31) 2021901912 **(32)** 24.06.21 **(33)** AU
(43) 19.01.2023
(72) Asimus, Simon; Smart, Will
(74) Wynnes Patent and Trade Mark Attorneys Pty Ltd

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(71) Wang, A.
(11) AU-A-2021204483
(21) 2021204483 **(22)** 29.06.2021
(54) UNIVERSAL VACUUM SUCTION ADAPTOR FOR BAGS
(51) Int. Cl.
A47L 7/00 (2006.01)
B65D 33/16 (2006.01)
B65D 77/10 (2006.01)
(43) 19.01.2023
(72) Wang, An
(74) An Wang

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(71) Windplussonne GmbH
(11) AU-A-2022279415
(21) 2022279415 **(22)** 29.11.2022
(54) METHOD AND DEVICE FOR SEPARATING AND/OR CLEANING AEROSOLS AND SOLID MATERIAL PARTICLES AND FIBERS FROM GASES AS WELL AS SOLID MATERIAL PARTICLES AND FIBERS FROM LIQUID MATERIALS BY ACOUSTOPHORESIS
(51) Int. Cl.
B01D 43/00 (2006.01)
B01D 21/28 (2006.01)
B01D 21/34 (2006.01)
B01D 49/00 (2006.01)
B01D 51/08 (2006.01)
(43) 19.01.2023
(62) 2017229176
(72) Luthe, Gregor; Gausling, Ludger; Ten Thije, Niels
(74) Baxter Patent Attorneys Pty Ltd

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(71) WRI INDUSTRIES PTY LTD
(11) AU-A-2021221697
(21) 2021221697 **(22)** 25.08.2021
(54) SYSTEM AND METHOD FOR INUNDATION MANAGEMENT
(51) Int. Cl.
E04H 15/32 (2006.01)
E04H 15/02 (2006.01)
E04H 15/62 (2006.01)
E02B 11/00 (2006.01)
E02D 17/18 (2006.01)
(31) 2021901869 **(32)** 22.06.21 **(33)** AU
(43) 19.01.2023
(72) Ingrey, Raymond; Roberts, Clayton
(74) Kevin Ashby

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(71) Xidian University
(11) AU-A-2022204558
(21) 2022204558 **(22)** 28.06.2022

Applications Open to Public Inspection - Name Index cont'd

(54) METHOD FOR VEHICLE SPEED ESTIMATION USING MULTIPLE GEOMAGNETIC SENSORS
(51) Int. Cl.
G01S 19/52 (2010.01)
G01C 21/08 (2006.01)
G01R 33/00 (2006.01)
G01S 19/01 (2010.01)
(31) 202110725027.7 **(32)** 29.06.21 **(33)** CN
(43) 19.01.2023
(72) LI, Changle; Wang, Gang; Mao, Guoqiang; Hui, Yilong; Chen, Yuexu; Cheng, Qingwei; He, Runsen
(74) Remarkable IP

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(71) Yoda Pharmaceuticals Inc.
(11) AU-A-2022204432
(21) 2022204432 **(22)** 23.06.2022
(54) Benzimidazole derivatives for treatment and/or prevention of diseases and disorders mediated by NLRP3
(51) Int. Cl.
A61K 31/517 (2006.01)
A61K 31/4184 (2006.01)
A61P 11/00 (2006.01)
A61P 25/00 (2006.01)
(31) 63/213,943 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) TSENG, Yufeng Jane
(74) Spruson & Ferguson

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(71) Zebra Technologies Corporation
(11) AU-A-2022201964
(21) 2022201964 **(22)** 22.03.2022
(54) Layout generation for location-tracking sensors
(51) Int. Cl.
G06T 7/292 (2017.01)
G01D 21/00 (2006.01)
G06V 20/52 (2022.01)
H04W 4/80 (2018.01)
(31) 17/355,652 **(32)** 23.06.21 **(33)** US
(43) 19.01.2023
(72) BELLOWS, David; MOHAMMED, Aslam
(74) Spruson & Ferguson

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(71) Zebra Technologies Corporation
(11) AU-A-2022202037
(21) 2022202037 **(22)** 24.03.2022
(54) Barcode reader and barcode reader assembly with lift handles
(51) Int. Cl.
B66F 9/00 (2006.01)
G06K 7/10 (2006.01)
G06K 17/00 (2006.01)
(31) 17/363,992 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) SIECKOWSKI, Steven D.; STIBAL, Benjamin H.; HANDSHAW, Darran Michael
(74) Spruson & Ferguson

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(71) Zenzizen
(11) AU-A-2021203990
(21) 2021203990 **(22)** 16.06.2021
(54) Zizenzic is a multisensory too that utilises touch, sight and colour to strengthen the ability to memorise learning the 144 sums of the times tables more easily.
(51) Int. Cl.
G09B 1/04 (2006.01)
G09B 1/32 (2006.01)
G09B 19/02 (2006.01)
(43) 19.01.2023
(72) Spring, Claire
(74) Zenzizen

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2021203990 Zenzizen
2021204018 Dafour Limited
2021204042 Air Garden Smarts Pty Ltd
2021204046 Season Farm Technology Co., Ltd.
2021204072 BVN Architecture Pty Ltd
2021204096 Ainsworth Game Technology Limited
2021204102 Rain Harvesting Pty Ltd
2021204109 Sea to Summit Pty Ltd
2021204125 Ebrahimi Afrouzi, A.
2021204126 Mansour Paving (Aust) Pty Ltd; Mansour, A.; Mansour, H.
2021204127 Mice Away Organic
2021204152 Caterpillar Underground Mining Pty Ltd
2021204162 Pump & Electrical Engineering Services Pty Ltd
2021204164 Pump & Electrical Engineering Services Pty Ltd
2021204187 ee-FiT Pty Ltd
2021204194 Bradley, M.
2021204199 AT Space Pty Ltd
2021204208 Modulate Containers Pty Ltd
2021204216 Michael Cunningham Pty Ltd
2021204264 Everett, P.
2021204265 Asphalt-IQ Limited
2021204266 Destec Pty Ltd
2021204289 Anhui University of Science and Technology
2021204298 Precision Biomonitoring Inc.
2021204325 Australian Direct Pty Ltd
2021204335 Ramesh, S.
2021204443 DuAx Innovations Pty Ltd
2021204483 Wang, A.
2021204501 Santrix Mining Components Pty Ltd; Santrix Diesel Pty Ltd
2021204528 SenseTime International Pte. Ltd.
2021204531 BASF Agricultural Solutions Seed US LLC
2021204536 BASF Agricultural Solutions Seed US LLC
2021204540 SenseTime International Pte. Ltd.
2021204542 SenseTime International Pte. Ltd.
2021204544 DuAx Innovations Pty Ltd
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2021204566 Prudenfort Pty Ltd
2021204568 SenseTime International Pte. Ltd.
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2021204621 SenseTime International Pte. Ltd.
2021204623 SenseTime International Pte. Ltd.
2021204650 Manifold, N.
2021204652 Shade Chic Pty Ltd
2021204664 Grbin, D.
2021205084 SHAN, R.
2021209139 The Sy-Klone Company, LLC
2021209259 Daeyoung Chaevi Co., Ltd.
2021215243 GB Design Limited
2021218235 Southern Wire Pty Ltd
2021221445 Novolabs Limited
2021221494 Earshots Limited
2021221619 Tomlinson, M.; Tebbutt, A.; Freestone, P.; Hammer, J.; Spear, T.; Stephenson, M.
2021221657 Metso Outotec USA Inc.
2021221662 Metso Outotec USA Inc.
2021221670 Metso Outotec USA Inc.
2021221697 WRI INDUSTRIES PTY LTD
2021221713 Headlok Pty Ltd
2021221937 General Electric Company
2021232684 Float Foods Pte Ltd
2021232694 Hainan Green Algae World Biotechnology Co. Ltd
2021240261 SenseTime International Pte. Ltd.
2021245261 B&L Biotech, Inc.; Lee, I.W.
2021269394 CRRC Changchun Railway Vehicles Co., Ltd.
2021273558 Nemo Power Tools Limited
2021286407 Keko Acessórios S/A
2021286436 Golden Solar (Quanzhou) New Energy Technology Co., Ltd.
2021290241 Institute of Zoology, Guangdong Academy of Sciences
2021290264 Laughter, G.
2021290291 Golden Solar (Quanzhou) New Energy Technology Co., Ltd.
2021290425 China Railway Engineering Equipment Group Co., Ltd
2021310842 Fujian Changting Golden Dragon Rare-Earth Co., Ltd
2021310844 Fujian Changting Golden Dragon Rare-Earth Co., Ltd
2021338587 State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
2021346300 KeKo Acessórios S/A
2021355610 State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
2021380856 4Cabling Pty Ltd
2021404861 Hermetik Hydraulik AB
2021425001 JGC Corporation
2021427874 Dentsu Inc.
2021441275 Qingdao University of Technology
2022201085 Neutron Holdings, Inc.
2022201171 The Sy-Klone Company, LLC
2022201859 FCX Solar LLC
2022201964 Zebra Technologies Corporation
2022202037 Zebra Technologies Corporation
2022202077 Formosa Saint Jose Corp.
2022202188 Halliburton Energy Services, Inc.
2022202272 Shenyang Research Institute of China Coal Technology & Engineering Group; China Coal Technology & Engineering Group
2022202301 NAVICO HOLDING AS
2022202446 Grobrix Pte. Ltd.
2022202725 Itron, Inc.
2022202755 Itron, Inc.
2022202766 Itron, Inc.
2022202836 Transportation IP Holdings, LLC
2022203093 Kairish Innotech Private Ltd.
2022203115 Lifetime Brands, Inc.
2022203205 Shanghai Linghuo Trading Co., Ltd.
2022203206 Shanghai Linghuo Trading Co., Ltd.
2022203263 SOUTHWEST FORESTRY UNIVERSITY
2022203279 General Electric Company
2022203384 BlackSeries Intelligent Equipment (Weihai) Co., Ltd
2022203386 Deere & Company
2022203387 Deere & Company

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2022203549	Semtech Corporation
2022203555	GE Energy Power Conversion Technology Limited
2022203612	Nextremity Solutions, Inc.
2022203764	Transportation IP Holdings, LLC
2022203781	Gomboc, LLC
2022203789	CTEK Sweden AB
2022203793	Deere & Company
2022203798	Biocomposites Limited
2022203803	Biocomposites Limited
2022203824	Deere & Company
2022203844	Aizoon S.r.l.
2022203858	Deere & Company
2022203859	Deere & Company
2022203862	CATERPILLAR INC.
2022203881	Nanjing Chervon Industry Co., Ltd.
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2022203918	JANOME Corporation
2022203920	Ishida Co., Ltd.
2022203923	JANOME Corporation
2022203927	JANOME Corporation
2022203930	Niumeitolu, V.
2022203934	Apple Inc.
2022203959	NKT HV Cables AB
2022203962	NKT HV Cables AB
2022203970	NKT HV Cables AB
2022203973	NO FACE Cosmetic Technology Group
2022203993	IGT
2022204022	McQuade, H.
2022204043	dormakaba Deutschland GmbH
2022204047	dormakaba Deutschland GmbH
2022204067	Sekise Corporation
2022204068	Lifetime Brands, Inc.
2022204076	SKC Co., Ltd.
2022204091	Intuit Inc.
2022204097	Sani-Marc Inc.
2022204135	Simonelli Group S.p.A.
2022204138	Gixel GmbH
2022204140	5010889 Ontario Inc.
2022204168	CNH Industrial America LLC
2022204196	Generic Crop Science LLC
2022204201	Solutions for Millennia Pty Ltd
2022204204	BULLFROG INTERNATIONAL, LC
2022204206	Aristocrat Technologies, Inc.
2022204214	Dayton Superior Corporation
2022204223	Earthling 3.0 Pty Ltd
2022204234	CareFusion 303, Inc.
2022204242	SEMINIS VEGETABLE SEEDS, INC.
2022204249	Aristocrat Technologies, Inc.
2022204258	Able AI, Inc.
2022204265	Kao, H.
2022204277	DUNCAN, D.
2022204299	Nalto Marketing Ltd.
2022204301	KABUSHIKI KAISHA TOYOTA JIDOSHOKKI
2022204303	DD Innovations B.V.
2022204304	DD Innovations B.V.
2022204308	Acorn Engineering Company
2022204312	Techtronic Cordless GP
2022204313	Thales Holdings UK Plc
2022204323	Rhino Rack Australia Pty Limited
2022204329	Hudswell, C.
2022204331	Deere & Company
2022204334	NORITZ CORPORATION
2022204335	Beijing Tusen Zhitu Technology Co., Ltd.
2022204336	Beijing Tusen Zhitu Technology Co., Ltd.
2022204337	HONEYWELL INTERNATIONAL INC.
2022204341	Paladin Safety Technologies Pty Ltd
2022204342	NORITZ CORPORATION
2022204346	Deere & Company
2022204374	CNH Industrial America LLC
2022204377	Raccords et Plastiques Nicoll
2022204378	NVIDIA Corporation
2022204396	Microport Orthopedics Holdings Inc.
2022204402	NNAK Pty Ltd
2022204410	Air Products and Chemicals, Inc.
2022204413	CTEK Sweden AB
2022204414	ETA Green Power Limited
2022204415	ETA Green Power Limited
2022204419	MAXONIQ Pty Ltd
2022204432	Yoda Pharmaceuticals Inc.
2022204435	Virastrike Holdings Pty Ltd
2022204441	MAXONIQ Pty Ltd
2022204464	Gretals Australia Pty Ltd
2022204468	Cargotec Finland Oy
2022204473	Prysmian S.p.A.
2022204476	Taylor, A.
2022204483	eBay Inc.
2022204495	Clay Industries SDN BHD
2022204499	Form Brick Pty Ltd
2022204502	Institute of Geophysics, China Earthquake Administration
2022204525	Joy Global Underground Mining LLC
2022204528	Aristocrat Technologies, Inc.
2022204533	L3Harris Technologies, Inc.
2022204542	Techtronic Cordless GP
2022204553	4Cabling Pty Ltd
2022204554	NVIDIA Corporation
2022204558	Xidian University
2022204559	LG ELECTRONICS INC.
2022204572	NVIDIA Corporation
2022204612	NVIDIA Corporation
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2022204661	Schneider Electric Industries SAS
2022204676	Rehrig Pacific Company
2022204685	Prysmian S.p.A.
2022204718	FEI Company
2022204743	Aristocrat Technologies Australia Pty Limited
2022204753	Thermaguard Pty Ltd
2022204768	Tayar, E.
2022204803	TRACTO-TECHNIK GmbH & Co. KG
2022204805	Toshiba Energy Systems & Solutions Corporation
2022204819	Slip IP Holdings Pty Ltd
2022204828	Buildsafe Equipment Sales Pty Ltd
2022221473	Meishan CRRC Brake Science & Technology Co., Ltd.
2022231737	Immersive Group Gaming Ltd
2022231739	Immersive Group Gaming Ltd
2022252753	ABL Bio Inc.
2022252834	GENEVANT SCIENCES GMBH
2022256167	The Johns Hopkins University; Mayo Foundation for Medical Education and Research; Buck Institute for Research on Aging; Unity Biotechnology, Inc.
2022259826	Takeda Vaccines, Inc.
2022268375	Control Bionics Limited
2022275423	Johnson & Johnson Vision Care, Inc.
2022275424	Johnson & Johnson Vision Care, Inc.
2022275451	Mayo Foundation for Medical Education and Research; Exact Sciences Corporation
2022275482	Inbiose N.V.
2022275489	DYWIDAG-Systems International Pty Limited
2022275496	Sully, M.
2022275510	The Regents of the University of California
2022275515	Takeda Vaccines, Inc.
2022275521	DIGITAL SEAT MEDIA INC.
2022275523	Caterpillar Inc.
2022275524	SG Gaming ANZ Pty Ltd
2022275527	MAYSER, LLC

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2022275529	F.Hoffmann-La Roche AG
2022275533	Samsung Electronics Co., Ltd.
2022275537	The Board of Trustees of the Leland Stanford Junior University; Intima Bioscience, Inc.
2022275538	Incyte Holdings Corporation
2022278873	Becton Dickinson France
2022279365	Angel Group Co., Ltd.
2022279366	Sage Therapeutics, Inc.
2022279367	Genetic Technologies Limited; The University of Melbourne
2022279368	Impossible Foods Inc.
2022279369	Biogen Chesapeake LLC
2022279373	Ablynx NV
2022279374	Ablynx NV
2022279375	Nimbus Lakshmi, Inc.
2022279378	Plaid Inc.
2022279381	Genzyme Corporation
2022279386	Protech Co., Ltd.
2022279390	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
2022279391	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
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2022279395	Mitsubishi Chemical Corporation
2022279396	HICARE HEALTH FOODS PTY LIMITED
2022279397	Mitsubishi Chemical Corporation
2022279398	Eco Shed Industries Pty Ltd
2022279399	Terumo BCT, Inc.
2022279403	Becton, Dickinson and Company
2022279405	LG ELECTRONICS INC.
2022279408	Novartis AG
2022279409	Boston Scientific Scimed, Inc.
2022279412	LG Electronics Inc.
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2022279425	F. Hoffmann-La Roche AG
2022279427	GenesisCare Ventures Pty Ltd
2022279428	The Fynder Group, Inc.
2022279429	Google LLC
2022279431	B3 CORP PTY LTD
2022279434	Beijing Geekplus Technology Co., Ltd.

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No IPC Mark

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. (*) Title not in Roman characters
. (**) Title not given

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(71) 10x Genomics, Inc.
(11) AU-A-2021288090
(21) 2021288090 **(22)** 10.06.2021
(54) Fluid delivery methods
(51) Int. Cl.
B01L 3/00 (2006.01)
B01L 7/00 (2006.01)
C12Q 1/68 (2018.01)
G01N 33/569 (2006.01)
(87) WO2021/252747
(31) 63/037,417 **(32)** 10.06.20 **(33)** US
63/080,514 18.09.20 US
63/106,779 28.10.20 US
(43) 16.12.2021
(72) KIM, Hanyoup; TENTORI, Augusto Manuel; XING, Siyuan; BHARADWAJ, Rajiv; LIN, Bill Kengli; BAVA, Felice Alessio; ALIMSIJAH, Pratomo Putra; MIKHAIEL, Nabil
(74) Spruson & Ferguson

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(71) 2seventy bio, Inc.
(11) AU-A-2021286651
(21) 2021286651 **(22)** 10.06.2021
(54) Methods for manufacturing viral vectors
(51) Int. Cl.
C12N 15/86 (2006.01)
B01D 61/04 (2006.01)
C07K 1/34 (2006.01)
(87) WO2021/252782
(31) 63/037,777 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) COISMAN, Brent Julian
(74) Davies Collison Cave Pty Ltd

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(71) 2Wire Innovations Ltd.
(11) AU-A-2021363700
(21) 2021363700 **(22)** 04.02.2021
(54) Irrigation subsystem and method for locating a decoder unit in an irrigation system
(51) Int. Cl.
A01G 25/16 (2006.01)
(87) WO2022/084705
(31) P2000345 **(32)** 19.10.20 **(33)** HU
(43) 28.04.2022
(72) WARE, John Antony
(74) Griffith Hack

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(71) 3M Innovative Properties Company
(11) AU-A-2021289548
(21) 2021289548 **(22)** 04.06.2021
(54) Hearing protection device
(51) Int. Cl.
H04R 1/08 (2006.01)
A61F 11/14 (2006.01)
H04R 1/10 (2006.01)
H04R 1/32 (2006.01)
(87) WO2021/250518
(31) 62/705,057 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) KÅREKULL, Oscar L.
(74) FPA Patent Attorneys Pty Ltd

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(71) 3sun S.R.L.
(11) AU-A-2021279452
(21) 2021279452 **(22)** 27.05.2021
(54) Solar cell and solar cells module
(51) Int. Cl.
H01L 31/0224 (2006.01)
H01L 31/0747 (2012.01)
(87) WO2021/240569
(31) 102020000012613 **(32)** 27.05.20 **(33)** IT
(43) 02.12.2021
(72) SCIUTO, Marcello; CANINO, Andrea; CONDORELLI, Giuseppe; GERARDI, Cosimo; TERRASI, Antonio; TORRISI, Giacomo; BATTAGLIA, Anna
(74) Griffith Hack

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(71) AbacusLabs Ltd.
(11) AU-A-2021263081
(21) 2021263081 **(22)** 27.04.2021
(54) A method for distinguishing healthy individuals from individuals having infectious or inflammatory conditions
(51) Int. Cl.
G01N 33/569 (2006.01)
(87) WO2021/219670
(31) 20171474.8 **(32)** 27.04.20 **(33)** EP
(43) 04.11.2021
(72) ANHOLD, Heinrich; CANDON, Ruth
(74) MOSAIC IP

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(71) Abbisko Therapeutics Co., Ltd.
(11) AU-A-2021323844
(21) 2021323844 **(22)** 11.08.2021
(54) FGFR and mutation inhibitor thereof, and preparation method therefor and use thereof
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/395 (2006.01)
A61K 31/519 (2006.01)
A61P 35/00 (2006.01)
C07D 413/14 (2006.01)
C07D 417/14 (2006.01)
C07D 519/00 (2006.01)
(87) WO2022/033532
(31) 202010811490.9 **(32)** 13.08.20 **(33)** CN
(43) 17.02.2022
(72) DENG, Haibing; YING, Haiyan; YU, Hongping; CHEN, Zhui; XU, Yaochang
(74) FPA Patent Attorneys Pty Ltd

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(71) Abbott Diabetes Care Inc.
(11) AU-A-2021289264
(21) 2021289264 **(22)** 13.05.2021
(54) Analyte sensors featuring one or more detection-facilitating enhancements
(51) Int. Cl.
A61B 5/145 (2006.01)
A61B 5/1473 (2006.01)
A61B 5/1486 (2006.01)
G01N 27/327 (2006.01)
(87) WO2021/252124
(31) 63/037,051 **(32)** 10.06.20 **(33)** US
(43) 16.12.2021
(72) LIU, Zenghe; FOX, Cade Brylee; MCCANLESS, Jonathan D.; FELDMAN, Benjamin J.
(74) FPA Patent Attorneys Pty Ltd

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(71) Abbott Diabetes Care Inc.
(11) AU-A-2021293036
(21) 2021293036 **(22)** 15.06.2021
(54) Analyte sensors featuring a reduced-area working electrode for decreasing interferent signal
(51) Int. Cl.
A61B 5/1486 (2006.01)
A61B 5/1468 (2006.01)
G01N 33/487 (2006.01)
(87) WO2021/257493
(31) 63/039,743 **(32)** 16.06.20 **(33)** US
(43) 23.12.2021
(72) OJA, Stephen; FELDMAN, Benjamin J.; TRAN, Lam N.; BABKA, Jean-Pierre; YAHNKE, Mark Stephen; KHAN, Tahir S.; GARBETT, Max; PETYT, Adrian; SCHULZ, Mark Alan; MCGIBBON, Andrew; BULL, Andrew James; HOSS, Udo
(74) FPA Patent Attorneys Pty Ltd

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(71) Abbott Diabetes Care Inc.
(11) AU-A-2021293873
(21) 2021293873 **(22)** 15.06.2021
(54) Analyte sensors featuring working electrode asperity planing for decreasing interferent signal
(51) Int. Cl.
G01N 27/26 (2006.01)
G01N 27/327 (2006.01)
(87) WO2021/257496
(31) 63/039,768 **(32)** 16.06.20 **(33)** US
(43) 23.12.2021
(72) HOSS, Udo; YAHNKE, Mark Stephen; KHAN, Tahir S.; BABKA, Jean-Pierre; REYNOLDS, Owen Daniel
(74) FPA Patent Attorneys Pty Ltd

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(71) Abbott Diabetes Care Inc.
(11) AU-A-2021306975
(21) 2021306975 **(22)** 15.06.2021
(54) Analyte sensors featuring enhancements for decreasing interferent signal
(51) Int. Cl.
A61B 5/1486 (2006.01)

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A61B 5/1468 (2006.01)
G01N 33/487 (2006.01)
(87) WO2022/010620
(31) 63/049,210 **(32)** 08.07.20 **(33)** US
(43) 13.01.2022
(72) OJA, Stephen; FOX, Cade Brylee; TRAN, Lam N.; LIU, Zenghe; FELDMAN, Benjamin J.; HOSS, Udo; YAHNKE, Mark Stephen; KHAN, Tahir S.; BABKA, Jean-Pierre; REYNOLDS, Owen Daniel
(74) FPA Patent Attorneys Pty Ltd

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(71) Acceleron Pharma Inc.
(11) AU-A-2021293908
(21) 2021293908 **(22)** 16.06.2021
(54) ActRII-ALK4 antagonists and methods of treating heart failure
(51) Int. Cl.
A61K 38/17 (2006.01)
A61K 47/68 (2017.01)
A61P 9/04 (2006.01)
C07K 14/495 (2006.01)
C07K 14/71 (2006.01)
(87) WO2021/257655
(31) 63/159,003 **(32)** 10.03.21 **(33)** US
63/040,400 17.06.20 US
(43) 23.12.2021
(72) SURAGANI, Rajasekhar Naga Venkata Sai; LI, Jia; ANDRE, Patrick; KUMAR, Ravindra
(74) Pearce IP Pty Ltd

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(71) Acceleron Pharma Inc.
(11) AU-A-2021296421
(21) 2021296421 **(22)** 22.06.2021
(54) ActRII proteins for the treatment of pulmonary arterial hypertension (PAH)
(51) Int. Cl.
A61K 38/17 (2006.01)
A61K 38/43 (2006.01)
A61K 47/68 (2017.01)
A61P 9/12 (2006.01)
A61P 11/00 (2006.01)
C07K 14/71 (2006.01)
(87) WO2021/262718
(31) 63/084,409 **(32)** 28.09.20 **(33)** US
63/042,722 23.06.20 US
63/112,513 11.11.20 US
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(43) 30.12.2021
(72) DE OLIVEIRA PENA, Janethe; LINDE, Peter; JOSHI, Sachindra; LI, Gang; ANDRE, Patrick; KUMAR, Ravindra
(74) Pearce IP Pty Ltd

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(71) Ace Oil Tools AS
(11) AU-A-2021288919
(21) 2021288919 **(22)** 08.06.2021
(54) Control line clamp
(51) Int. Cl.
F16L 3/24 (2006.01)
E21B 17/10 (2006.01)
(87) WO2021/250005
(31) 2008604.7 **(32)** 08.06.20 **(33)** GB
(43) 16.12.2021
(72) STEINE, Ken Erik; HETLAND, Lasse; KLAUSEN, Morten; SØRBØ, Espen; KAURSTAD, Anbjørn
(74) Davies Collison Cave Pty Ltd

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(71) Acep TryLive
(11) AU-A-2021290093
(21) 2021290093 **(22)** 08.06.2021
(54) Device and method for acquiring images of a pair of spectacles
(51) Int. Cl.
G06V 10/40 (2022.01)
G06V 20/20 (2022.01)
G06V 20/64 (2022.01)
(87) WO2021/250027
(31) FR2006159 **(32)** 12.06.20 **(33)** FR
(43) 16.12.2021
(72) MOBUCHON, Pascal; SAYAG, Jean-Philippe
(74) Patent Attorney Services

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(71) Acergy France SAS
(11) AU-A-2021311096
(21) 2021311096 **(22)** 24.07.2021
(54) Monitoring cable integrity during pipeline manufacture
(51) Int. Cl.
B29D 23/00 (2006.01)
B29C 53/58 (2006.01)
G01R 31/08 (2020.01)
H02G 1/00 (2006.01)
(87) WO2022/018520
(31) 2011547.3 **(32)** 24.07.20 **(33)** GB
(43) 27.01.2022
(72) AIELLO, Giovanni; MENCARELLI, Guy
(74) Allens Patent & Trade Mark Attorneys

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(71) Act Co., Ltd.
(11) AU-A-2020454529
(21) 2020454529 **(22)** 25.06.2020
(54) Organic waste recycling device, and recycling method therefor
(51) Int. Cl.
B09B 3/00 (2022.01)
C08J 11/12 (2006.01)
C08J 11/16 (2006.01)
C10B 47/32 (2006.01)
(87) WO2021/260875
(43) 30.12.2021
(72) OKUMURA, Akihisa; SHIBATA, Hideki
(74) Cooper IP Pty Ltd

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(71) Adagene Pte. Ltd.
(11) AU-A-2021297240
(21) 2021297240 **(22)** 23.06.2021
(54) Combination therapy comprising anti-CD137 antibodies
(51) Int. Cl.
A61K 39/395 (2006.01)
A61K 31/4184 (2006.01)
A61K 31/4406 (2006.01)
A61K 31/475 (2006.01)
A61K 31/63 (2006.01)
A61K 31/69 (2006.01)
A61K 38/20 (2006.01)
A61P 35/00 (2006.01)
C07K 16/38 (2006.01)
(87) WO2021/262869
(31) 63/043,042 **(32)** 23.06.20 **(33)** US
(43) 30.12.2021
(72) LIU, Guizhong; NGUYEN, Aaron; LUO, Peter Peizhi
(74) AJ PARK

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(71) Adama Makhteshim Ltd.
(11) AU-A-2021286610
(21) 2021286610 **(22)** 08.06.2021
(54) Solid state forms of cyantraniliprole
(51) Int. Cl.
C07D 401/04 (2006.01)
A01N 43/56 (2006.01)
A01P 7/00 (2006.01)
C07C 233/65 (2006.01)
(87) WO2021/249395
(31) 63/035,865 **(32)** 08.06.20 **(33)** US
(43) 16.12.2021
(72) SUEZ, Gal; FORCKOSH, Hagit; GOLUB, Yanai; LIE, Jie; CHEN, Bob; PARNES, Regev
(74) Davies Collison Cave Pty Ltd

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(71) Advent Therapeutics, Inc.
(11) AU-A-2021285819
(21) 2021285819 **(22)** 01.06.2021
(54) Pharmaceutical compositions comprising insoluble active ingredients
(51) Int. Cl.
A61K 31/07 (2006.01)
A61K 9/00 (2006.01)
A61K 9/107 (2006.01)
A61P 11/00 (2006.01)
(87) WO2021/247542
(31) 63/032,768 **(32)** 01.06.20 **(33)** US
63/054,425 21.07.20 US
63/069,927 25.08.20 US
(43) 09.12.2021
(72) GELFAND, Craig Alan; SEGAL, Robert; REHAN, Virender; LOPEZ, David Lawrence
(74) Arcadia Intellectual Property

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(71) Aeglea Biotherapeutics, Inc.
(11) AU-A-2020449880
(21) 2020449880 **(22)** 29.05.2020
(54) Treatment of homocystinuria and hyperhomocysteinemia using cystathionine-gamma-lyase
(51) Int. Cl.
A61K 38/51 (2006.01)
A61K 9/00 (2006.01)
A61P 7/00 (2006.01)
C12N 9/88 (2006.01)
C12N 9/96 (2006.01)
C12N 15/70 (2006.01)
C12N 15/80 (2006.01)
(87) WO2021/242258
(43) 02.12.2021
(72) ROWLINSON, Scott W.; SLOAN, Leslie; DAIGE, Christopher
(74) Dark IP

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(71) Agensys, Inc.; Seagen Inc.
(11) AU-A-2021292566

PCT applications which have entered the National Phase - Name Index cont'd

(21) 2021292566 **(22)** 18.06.2021
(54) Markers for use in methods for treating cancers with antibody drug conjugates (ADC)
(51) Int. Cl.
A61K 39/00 (2006.01)
A61K 39/395 (2006.01)
A61K 47/68 (2017.01)
A61P 35/00 (2006.01)
C07K 16/28 (2006.01)
C07K 16/30 (2006.01)
(87) WO2021/257938
(31) 63/041,636 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) LEWIS, Timothy Shaun; LIU, Bernard Arthur
(74) Davies Collison Cave Pty Ltd

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(71) Agscent Pty Ltd
(11) AU-A-2021275158
(21) 2021275158 **(22)** 20.05.2021
(54) Method for determining the pregnancy state of an animal
(51) Int. Cl.
G01N 33/497 (2006.01)
A61D 17/00 (2006.01)
G01N 30/02 (2006.01)
G01N 30/72 (2006.01)
G16H 50/20 (2018.01)
(87) WO2021/232110
(31) 2020901611 **(32)** 20.05.20 **(33)** AU
(43) 25.11.2021
(72) DARLINGTON, Bronwyn
(74) FOUNDRY INTELLECTUAL PROPERTY PTY LTD

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(71) Air-Clenz Systems, LLC
(11) AU-A-2021299699
(21) 2021299699 **(22)** 26.05.2021
(54) Exhaled air purification unit and system for indoor multi-person venues or environments
(51) Int. Cl.
B60H 3/06 (2006.01)
B01D 53/04 (2006.01)
B60H 1/00 (2006.01)
B60H 1/24 (2006.01)
B60H 3/00 (2006.01)
(87) WO2022/005650
(31) 63/046,430 **(32)** 30.06.20 **(33)** US
63/060,009 01.08.20 US
63/149,581 15.02.21 US
63/048,877 07.07.20 US
63/173,443 11.04.21 US
63/125,701 15.12.20 US
63/050,253 10.07.20 US
63/031,321 28.05.20 US
63/029,956 26.05.20 US
63/051,309 13.07.20 US
63/158,983 10.03.21 US
63/182,964 02.05.21 US
63/063,727 10.08.20 US
63/156,598 04.03.21 US
(43) 06.01.2022
(72) BLUM, Ronald; BROACH, Anita; FRENCH, Russell
(74) Spruson & Ferguson

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(71) Alastin Skincare, Inc.
(11) AU-A-2021266770
(21) 2021266770 **(22)** 07.05.2021
(54) Compositions and methods for modulating inflammation and wound healing
(51) Int. Cl.
C07K 7/06 (2006.01)
A61K 38/08 (2019.01)
A61P 17/00 (2006.01)
(87) WO2021/226429
(31) 63/022,209 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) WIDGEROW, Alan David; GARRUTO, John A.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Alcoa USA Corp.
(11) AU-A-2021287240
(21) 2021287240 **(22)** 03.06.2021
(54) Methods of producing aluminum fluoride from cryolite bath
(51) Int. Cl.
C01F 7/50 (2006.01)
C01F 7/74 (2006.01)
C25C 3/06 (2006.01)
(87) WO2021/252267
(31) 63/036,829 **(32)** 09.06.20 **(33)** US
63/070,584 26.08.20 US
(43) 16.12.2021
(72) WANG, Xiangwen; ZUKAS, Brian
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Alcon Inc.
(11) AU-A-2021307604
(21) 2021307604 **(22)** 14.07.2021
(54) Digital image optimization for ophthalmic surgery
(51) Int. Cl.
A61B 3/13 (2006.01)
A61B 3/00 (2006.01)
A61B 90/20 (2016.01)
G02B 21/00 (2006.01)
G02B 21/36 (2006.01)
(87) WO2022/013794
(31) 63/052,373 **(32)** 15.07.20 **(33)** US
(43) 20.01.2022
(72) HALLEN, Paul R.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Alcon Inc.
(11) AU-A-2021312394
(21) 2021312394 **(22)** 16.07.2021
(54) Controlling a surgical system using a footswitch
(51) Int. Cl.
A61B 3/13 (2006.01)
A61F 9/007 (2006.01)
A61F 9/008 (2006.01)
G02B 21/00 (2006.01)
G02B 21/36 (2006.01)
(87) WO2022/018593
(31) 63/055,587 **(32)** 23.07.20 **(33)** US
(43) 27.01.2022
(72) DURANT, Daniel
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Alert Innovation Inc.
(11) AU-A-2021281268
(21) 2021281268 **(22)** 27.05.2021
(54) High density micro fulfillment center "HD-MFC" with nightly G2P storage batch pick replenishment from store floor and method of operating same
(51) Int. Cl.
G06Q 10/06 (2012.01)
G06Q 10/08 (2012.01)
(87) WO2021/243059
(31) 63/030,662 **(32)** 27.05.20 **(33)** US
63/060,994 04.08.20 US
63/067,759 19.08.20 US
(43) 02.12.2021
(72) LERT Jr., John G.; FOSNIGHT, William J.
(74) Davies Collison Cave Pty Ltd

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(71) Alnylam Pharmaceuticals, Inc.
(11) AU-A-2021292296
(21) 2021292296 **(22)** 17.06.2021
(54) Xanthine dehydrogenase (XDH) iRNA compositions and methods of use thereof
(51) Int. Cl.
C12N 15/113 (2010.01)
(87) WO2021/257782
(31) 63/040,587 **(32)** 18.06.20 **(33)** US
63/153,983 26.02.21 US
(43) 23.12.2021
(72) MCININCH, James D.; LIU, Jingxuan; SCHLEGEL, Mark K.; CASTORENO, Adam; BORODOVSKY, Anna
(74) Griffith Hack

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(71) Ambisense Ltd.
(11) AU-A-2021277489
(21) 2021277489 **(22)** 18.05.2021
(54) Air quality monitoring device and system
(51) Int. Cl.
G01N 33/00 (2006.01)
F24F 11/30 (2018.01)
F24F 110/10 (2018.01)
F24F 110/20 (2018.01)
(87) WO2021/233957
(31) 2007340.9 **(32)** 18.05.20 **(33)** GB
(43) 25.11.2021
(72) MCNULTY, Stephen; ARCHER, Thomas
(74) Madderns Pty Ltd

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(71) Ametalin IP Pte Ltd
(11) AU-A-2021289230
(21) 2021289230 **(22)** 01.06.2021
(54) Partially or fully non-combustible and vapour permeable pliable building membrane and associated methods
(51) Int. Cl.
D06N 5/00 (2006.01)
B32B 5/02 (2006.01)
C03C 25/1095 (2018.01)
C03C 25/30 (2018.01)
C09D 127/00 (2006.01)
D06M 15/244 (2006.01)
D06N 3/04 (2006.01)
D06N 3/06 (2006.01)
E04B 1/62 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

E04B 1/76 (2006.01)
E04B 1/88 (2006.01)
E04B 1/94 (2006.01)
E04D 13/16 (2006.01)
E04D 13/17 (2006.01)
(87) WO2021/248177
(31) 2020901890 **(32)** 09.06.20 **(33)** AU
(43) 16.12.2021
(72) LUMSDEN, Craig; OSCAR, Archer; JIN, Tony; BOSTROM, Michel
(74) Adams Pluck

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(71) Amgen Inc.
(11) AU-A-2021292417
(21) 2021292417 **(22)** 18.06.2021
(54) Methods of measuring carfilzomib
(51) Int. Cl.
B01D 15/08 (2006.01)
A61K 38/07 (2006.01)
G01N 30/02 (2006.01)
G01N 30/88 (2006.01)
G01N 33/15 (2006.01)
(87) WO2021/257941
(31) 63/041,141 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) HARPER, Emma; COHEN, Dawn Elyse
(74) Spruson & Ferguson

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(71) Amgen Inc.
(11) AU-A-2021330845
(21) 2021330845 **(22)** 23.08.2021
(54) Pharmaceutical formulation comprising a bite, bispecific antibody, and methionine
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 39/395 (2006.01)
A61P 35/00 (2006.01)
C07K 16/30 (2006.01)
(87) WO2022/046651
(31) 63/069,432 **(32)** 24.08.20 **(33)** US
63/197,020 04.06.21 US
(43) 03.03.2022
(72) JAGANNATHAN, Bharadwaj
(74) Spruson & Ferguson

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(71) Amicoat AS
(11) AU-A-2021286915
(21) 2021286915 **(22)** 14.06.2021
(54) Medical devices and materials comprising biodegradable polyesters
(51) Int. Cl.
A01N 37/46 (2006.01)
A01N 25/10 (2006.01)
A01N 47/44 (2006.01)
A01P 1/00 (2006.01)
A61K 38/00 (2006.01)
A61L 2/00 (2006.01)
A61P 31/00 (2006.01)
(87) WO2021/250283
(31) 2008980.1 **(32)** 12.06.20 **(33)** GB
(43) 16.12.2021
(72) STENSEN, Wenche; SVENDSEN, John Sigurd
(74) FPA Patent Attorneys Pty Ltd

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(71) Amicoat AS
(11) AU-A-2021287311
(21) 2021287311 **(22)** 14.06.2021
(54) Antimicrobial formulations comprising silicone
(51) Int. Cl.
A01N 37/46 (2006.01)
A01N 25/10 (2006.01)
A01N 47/44 (2006.01)
A01P 1/00 (2006.01)
A61K 38/00 (2006.01)
A61L 2/00 (2006.01)
A61P 31/00 (2006.01)
(87) WO2021/250286
(31) 2008978.5 **(32)** 12.06.20 **(33)** GB
(43) 16.12.2021
(72) SPIEGELBERG, Andreas; STENSEN, Wenche; SVENDSEN, John Sigurd
(74) FPA Patent Attorneys Pty Ltd

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(71) Amphenol Corporation
(11) AU-A-2021283386
(21) 2021283386 **(22)** 03.06.2021
(54) Rotatable electrical receptacle for luminaire
(51) Int. Cl.
F21V 17/02 (2006.01)
F21V 23/04 (2006.01)
F21V 23/06 (2006.01)
G01J 1/02 (2006.01)
(87) WO2021/247873
(31) 63/034,472 **(32)** 04.06.20 **(33)** US
17/336,719 02.06.21 US
(43) 09.12.2021
(72) MUGAN, Shan; GREEN, Adrian
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Amphenol Corporation
(11) AU-A-2021285973
(21) 2021285973 **(22)** 04.06.2021
(54) Rotatable electrical receptacle assembly for luminaire
(51) Int. Cl.
F21V 17/00 (2006.01)
F21V 17/02 (2006.01)
F21V 17/16 (2006.01)
F21V 23/04 (2006.01)
F21V 23/06 (2006.01)
G01J 1/02 (2006.01)
F21W 131/103 (2006.01)
(87) WO2021/247966
(31) 63/034,472 **(32)** 04.06.20 **(33)** US
17/336,949 02.06.21 US
(43) 09.12.2021
(72) MUGAN, Shan; GREEN, Adrian
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Amplyx Pharmaceuticals, Inc.
(11) AU-A-2021293911
(21) 2021293911 **(22)** 16.06.2021
(54) Compounds and methods for treating fungal infections
(51) Int. Cl.
A61K 31/4196 (2006.01)
A61K 31/506 (2006.01)
A61P 31/10 (2006.01)
(87) WO2021/257670
(31) 63/040,450 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) SHAW, Karen Joy; SCHLAMM, Haran; HODGES, Michael R.
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Andis Company
(11) AU-A-2021296601
(21) 2021296601 **(22)** 24.06.2021
(54) Blade hinge assembly
(51) Int. Cl.
B26B 19/06 (2006.01)
B26B 19/20 (2006.01)
B26B 19/38 (2006.01)
(87) WO2021/262975
(31) 63/044,118 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) WERNER, Edwin A.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Anima Biotech Inc.
(11) AU-A-2021288584
(21) 2021288584 **(22)** 09.06.2021
(54) Collagen 1 translation inhibitors and methods of use thereof
(51) Int. Cl.
C07D 417/00 (2006.01)
A61K 31/42 (2006.01)
C07D 263/30 (2006.01)
C07D 277/44 (2006.01)
C07D 471/00 (2006.01)
C07D 487/00 (2006.01)
(87) WO2021/252555
(31) 63/036,458 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) SHEPPARD, David William; TIERNEY, Jason Paul; MANDABI Aviad; SCHMIDT Wolfgang; LEVANTO Stefano; HAMBLIN, Julie Nicole; BULL, Richard James; ALROY Iris; MANSOUR Wissam; KLEPFISH Moty; WANG Yaode; LI Haitang
(74) Griffith Hack

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(71) Annalise-AI Pty Ltd
(11) AU-A-2021289232
(21) 2021289232 **(22)** 09.06.2021
(54) Systems and methods for automated analysis of medical images
(51) Int. Cl.
A61B 6/00 (2006.01)
G06N 3/04 (2006.01)
G06N 3/08 (2006.01)
G06T 7/00 (2017.01)
G16H 30/40 (2018.01)
G16H 50/20 (2018.01)
(87) WO2021/248187
(31) 2020901881 **(32)** 09.06.20 **(33)** AU
2020903056 27.08.20 AU
2020903405 22.09.20 AU
2021900349 12.02.21 AU
(43) 16.12.2021
(72) TRAN, Dang-Dinh-Ang; SEAH, Jarrel; HUANG, David; VUONG, David; HOLT, Xavier; NOTHROP, Marc; AUSTIN, Benjamin; LEE, Aaron; AMOROSO, Marco; WARDMAN, Jeffrey
(74) FB Rice Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) AnnJi Pharmaceutical Co., Ltd.
(11) AU-A-2021288568
(21) 2021288568 **(22)** 08.06.2021
(54) Quinazoline derivatives useful as selective HDAC6 inhibitors
(51) Int. Cl.
C07D 239/91 (2006.01)
A61K 31/517 (2006.01)
A61P 25/02 (2006.01)
(87) WO2021/252475
(31) 63/036,282 **(32)** 08.06.20 **(33)** US
(43) 16.12.2021
(72) YU, Chao-Wu; HUNG, Pei-Yun; JAGTAP, Ajit Dhananjay; HO, Yi-Hsun; CHIANG, Hsin-Yi
(74) FB Rice Pty Ltd

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(71) Antengene Biologics Limited
(11) AU-A-2021297923
(21) 2021297923 **(22)** 23.06.2021
(54) Antibodies and methods for treating claudin-associated diseases
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 39/395 (2006.01)
A61K 45/06 (2006.01)
A61P 35/00 (2006.01)
G01N 33/574 (2006.01)
G01N 33/68 (2006.01)
(87) WO2021/259304
(31) PCT/CN2020/097635 **(32)** 23.06.20 **(33)** CN
PCT/CN2021/098416 04.06.21 CN
(43) 30.12.2021
(72) HOU, Bing; CHEN, Peng; YUWEN, Hui; SHAN, Bo; MEI, Jay
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Antengene Discovery Limited
(11) AU-A-2021302146
(21) 2021302146 **(22)** 02.07.2021
(54) ATR inhibitors and uses thereof
(51) Int. Cl.
C07D 269/00 (2006.01)
A61K 31/4025 (2006.01)
A61K 31/4155 (2006.01)
A61K 31/4439 (2006.01)
A61K 31/444 (2006.01)
A61P 35/00 (2006.01)
C07D 213/06 (2006.01)
C07D 213/16 (2006.01)
C07D 213/24 (2006.01)
C07D 227/04 (2006.01)
C07D 231/10 (2006.01)
C07D 265/00 (2006.01)
C07D 265/30 (2006.01)
(87) WO2022/002245
(31) PCT/CN2020/100088 **(32)** 03.07.20 **(33)** CN
PCT/CN2020/110396 21.08.20 CN
PCT/CN2020/134732 09.12.20 CN
PCT/CN2020/135604 11.12.20 CN
(43) 06.01.2022
(72) SHAN, Bo; HOU, Bing; YUWEN, Hui; SHI, Zhongyang; CHEN, Peng; MEI, Jay
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Apple Inc.
(11) AU-A-2021283914
(21) 2021283914 **(22)** 02.06.2021
(54) User interfaces for tracking of physical activity events
(51) Int. Cl.
G06Q 30/00 (2012.01)
(87) WO2021/247745
(31) 63/033,814 **(32)** 02.06.20 **(33)** US
(43) 09.12.2021
(72) SUNDSTROM, Matthew J.; BUTCHER, Gary Ian; CHAN, Joseph Y.; FELTON, Nicholas; FENNIS, Jules K.; GILRAVI, Eamon Francis; KING, Nicholas V.; LEMMENS, Cas; LUXTON, Joseph M.; MOUSSETTE, Camille; NAGUIT, Charmian Bondoc; VERWEIJ, Hugo; WIEBE, Molly Pray; LYNCH, Kevin
(74) FPA Patent Attorneys Pty Ltd

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(71) Aquarius Engines (A.M.) Ltd.
(11) AU-A-2020454769
(21) 2020454769 **(22)** 16.11.2020
(54) Internal combustion engine having a gas exchange chamber
(51) Int. Cl.
F01B 9/02 (2006.01)
F02B 25/02 (2006.01)
F16C 5/00 (2006.01)
F16C 9/04 (2006.01)
(87) WO2021/260425
(31) 63/044,096 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) YAAKOBY, Shaul
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Arcturus Therapeutics, Inc.
(11) AU-A-2021263590
(21) 2021263590 **(22)** 30.04.2021
(54) Nucleic acids and methods of treatment for cystic fibrosis
(51) Int. Cl.
C07K 14/47 (2006.01)
A61K 48/00 (2006.01)
A61P 11/00 (2006.01)
(87) WO2021/222801
(31) 63/082,997 **(32)** 24.09.20 **(33)** US
63/019,170 01.05.20 US
(43) 04.11.2021
(72) PEREZ-GARCIA, Carlos G.; TACHIKAWA, Kiyoshi; MATSUDA, Daiki; CHIVUKULA, Padmanabh; KARMALI, Priya Prakash; BAO, Yanjie; VEGA, Jerel Boyd Lee; MUKTHAVARAM, Rajesh; SAGI, Amit
(74) FB Rice Pty Ltd

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(71) Argus Security S.R.L.
(11) AU-A-2021268270
(21) 2021268270 **(22)** 03.05.2021
(54) Security system, preferably a fire alarm system, and method for managing the communication of such a security system
(51) Int. Cl.
G08B 29/16 (2006.01)
(87) WO2021/224752
(31) 102020000009826 **(32)** 05.05.20 **(33)** IT
(43) 11.11.2021
(72) NESTA, Vincenzo
(74) GLMR

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(71) Arizona Board of Regents on behalf of Northern Arizona University
(11) AU-A-2021286554
(21) 2021286554 **(22)** 09.06.2021
(54) Cable-actuated, kinetically-balanced, parallel torque transfer exoskeleton joint actuator with or without strain sensing
(51) Int. Cl.
A61H 3/00 (2006.01)
(87) WO2021/252614
(31) 63/036,618 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) LERNER, Zachary F.; OREKHOV, Greg
(74) Davies Collison Cave Pty Ltd

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(71) Array Technologies, INC.
(11) AU-A-2021269127
(21) 2021269127 **(22)** 08.05.2021
(54) Mounting bracket
(51) Int. Cl.
H02S 20/00 (2014.01)
E04D 13/18 (2018.01)
F16M 13/02 (2006.01)
H01L 31/042 (2014.01)
H02S 20/22 (2014.01)
(87) WO2021/226563
(31) 63/022,319 **(32)** 08.05.20 **(33)** US
17/315,285 08.05.21 US
(43) 11.11.2021
(72) SCHUKNECHT, Nathan; CREASY, Lucas; ADDINK, Jason; CHASE, Andrew
(74) Griffith Hack

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(71) Arsenal Medical, Inc.
(11) AU-A-2021287905
(21) 2021287905 **(22)** 09.06.2021
(54) Embolic compositions and methods
(51) Int. Cl.
A61L 24/02 (2006.01)
A61L 24/04 (2006.01)
(87) WO2021/252642
(31) 63/036,564 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) GROOM, Jeffrey; WILTSEY, Craig; PHAM, Quynh; MANSUKHANI, Nikhita; GUERTIN, Courtney; CORE, Lee; SHARMA, Upma
(74) Davies Collison Cave Pty Ltd

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(71) Arthrex, Inc.
(11) AU-A-2021293512
(21) 2021293512 **(22)** 29.03.2021
(54) Suture device
(51) Int. Cl.

PCT applications which have entered the National Phase - Name Index cont'd

A61B 17/04 (2006.01)
A61B 17/06 (2006.01)
A61F 2/08 (2006.01)
(87) WO2021/257149
(31) 20180257.6 **(32)** 16.06.20 **(33)** EP
(43) 23.12.2021
(72) LINDEN, David John; RAVENSCROFT, Matthew John; DOONEY, Thomas
(74) Spruson & Ferguson

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(71) Asahi Kasei Kabushiki Kaisha
(11) AU-A-2021309310
(21) 2021309310 **(22)** 04.06.2021
(54) Operation support method, operation support device, operation support system, and operation support program
(51) Int. Cl.
C25B 1/46 (2006.01)
C25B 15/023 (2021.01)
(87) WO2022/014197
(31) 2020-121700 **(32)** 15.07.20 **(33)** JP
(43) 20.01.2022
(72) SUZUKI, Yuto; SASAKI, Takeaki; FUKUCHI, Shingo
(74) Griffith Hack

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(71) Assa Abloy AB
(11) AU-A-2021270815
(21) 2021270815 **(22)** 05.05.2021
(54) Ultra-wide band test system
(51) Int. Cl.
G01S 11/02 (2010.01)
G01R 29/08 (2006.01)
(87) WO2021/228658
(31) 63/023,972 **(32)** 13.05.20 **(33)** US
(43) 18.11.2021
(72) PIRCH, Hans-Juergen
(74) Davies Collison Cave Pty Ltd

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(71) Astra Navigation, Inc.
(11) AU-A-2021292209
(21) 2021292209 **(22)** 16.06.2021
(54) Generating a geomagnetic map
(51) Int. Cl.
G01C 21/00 (2006.01)
G01C 17/30 (2006.01)
G01C 21/08 (2006.01)
G01C 21/20 (2006.01)
(87) WO2021/257713
(31) 17/348,561 **(32)** 15.06.21 **(33)** US
63/210,411 14.06.21 US
63/040,352 17.06.20 US
(43) 23.12.2021
(72) TOUTOV, Alexandre; MUKHINA, Maryna; ILNYTSKA, Svitlana
(74) WRAYS PTY LTD

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(71) Astra Navigation, Inc.
(11) AU-A-2021293922
(21) 2021293922 **(22)** 16.06.2021
(54) Correlating overlapping magnetic measurement data from multiple magnetic navigation devices and updating a geomagnetic map with that data
(51) Int. Cl.
G01C 21/00 (2006.01)
G01C 17/30 (2006.01)
G01C 21/08 (2006.01)
G01C 21/20 (2006.01)
(87) WO2021/257725
(31) 63/210,411 **(32)** 14.06.21 **(33)** US
63/040,352 17.06.20 US
17/348,575 15.06.21 US
(43) 23.12.2021
(72) TOUTOV, Alexandre; MUKHINA, Maryna; ILNYTSKA, Svitlana
(74) WRAYS PTY LTD

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(71) Astra Navigation, Inc.
(11) AU-A-2021327945
(21) 2021327945 **(22)** 16.06.2021
(54) Operating modes of magnetic navigation devices
(51) Int. Cl.
G01C 21/08 (2006.01)
G01C 17/30 (2006.01)
G01C 21/00 (2006.01)
G01C 21/16 (2006.01)
G01S 19/13 (2010.01)
G01S 19/47 (2010.01)
(87) WO2022/039823
(31) 63/040,352 **(32)** 17.06.20 **(33)** US
63/210,411 14.06.21 US
17/348,600 15.06.21 US
(43) 24.02.2022
(72) TOUTOV, Alexandre; MUKHINA, Maryna; ILNYTSKA, Svitlana
(74) WRAYS PTY LTD

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(71) AstraZeneca AB
(11) AU-A-2021269764
(21) 2021269764 **(22)** 10.05.2021
(54) ATR inhibitors for the treatment of cancer
(51) Int. Cl.
A61K 31/337 (2006.01)
A61K 31/5377 (2006.01)
A61K 45/06 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/228758
(31) 63/022,730 **(32)** 11.05.20 **(33)** US
63/166,291 26.03.21 US
(43) 18.11.2021
(72) SMITH, Simon Andrew; DEAN, Emma Jane; CLACK, Glen; LEE, Jeeyun
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) AstraZeneca UK Limited
(11) AU-A-2021275361
(21) 2021275361 **(22)** 17.05.2021
(54) SARS-CoV-2 antibodies and methods of selecting and using the same
(51) Int. Cl.
A61P 31/14 (2006.01)
C07K 16/10 (2006.01)
(87) WO2021/233834
(31) 63/026,121 **(32)** 17.05.20 **(33)** US
(43) 25.11.2021
(72) ESSER, Mark; STEINHARDT, James; MCTAMNEY II, Patrick; LOO, Yueh-Ming; VARKEY, Reena M.; DU, Qun; RAJAN, Saravanan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Atlas Copco Airpower, Naamloze Vennootschap
(11) AU-A-2021272725
(21) 2021272725 **(22)** 29.03.2021
(54) Device and method for the adsorption of a gas from a gas mixture to be treated
(51) Int. Cl.
B01D 53/047 (2006.01)
B01D 53/26 (2006.01)
(87) WO2021/229314
(31) 2020/5333 **(32)** 13.05.20 **(33)** BE
(43) 18.11.2021
(72) VAN DIJCK, Wouter Denis Ann
(74) Davies Collison Cave Pty Ltd

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(71) Aucentra Therapeutics Pty Ltd
(11) AU-A-2021304686
(21) 2021304686 **(22)** 09.07.2021
(54) Derivatives of 2-oxo-n-(4-(pyrimidin-4-yloxy/thio)phenyl)-1,2-dihydropyridine-3-carboxamide for use as protein kinase inhibitors for therapy
(51) Int. Cl.
C07D 401/12 (2006.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
C07K 14/705 (2006.01)
(87) WO2022/006638
(31) 2020902392 **(32)** 10.07.20 **(33)** AU
(43) 13.01.2022
(72) WANG, Shudong; GOH, Aik Wye
(74) Madderns Pty Ltd

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(71) Auspex Pharmaceuticals, Inc.
(11) AU-A-2021288087
(21) 2021288087 **(22)** 10.06.2021
(54) Osmotic dosage forms comprising deutetrabenazine and methods of use thereof
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/20 (2006.01)
A61K 9/28 (2006.01)
A61K 31/473 (2006.01)
A61K 47/10 (2017.01)
A61K 47/38 (2006.01)
A61P 25/14 (2006.01)
A61P 25/28 (2006.01)
(87) WO2021/252741
(31) 63/044,451 **(32)** 26.06.20 **(33)** US
63/037,953 11.06.20 US
63/037,369 10.06.20 US
(43) 16.12.2021
(72) SHAH, Parag; JOSHI, Mayank; PATTANAYEK, Soumen; PATEL, Divyang; PANDITA, Sandeep
(74) Davies Collison Cave Pty Ltd

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(71) Australian Droid & Robot Pty Ltd
(11) AU-A-2021277098
(21) 2021277098 **(22)** 20.05.2021
(54) Excavation inspection and clearance system
(51) Int. Cl.
G05D 1/00 (2006.01)
E21B 7/00 (2006.01)
(87) WO2021/232106
(31) 2020901631 **(32)** 20.05.20 **(33)** AU

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(43) 25.11.2021
(72) CRONIN, Joe; ALLAN, Mat
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Australian Laboratory Services Pty. Ltd.
(11) AU-A-2021284923
(21) 2021284923 **(22)** 01.06.2021
(54) Automated liquid dispensing systems
(51) Int. Cl.
G01N 35/10 (2006.01)
G01N 35/02 (2006.01)
(87) WO2021/243450
(31) 63/034,773 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) ROBERTSON, Archibald Donald; SCHNEIDER, Kieran; HAVLIK, Jan
(74) Spruson & Ferguson

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(71) Autnhive Corporation
(11) AU-A-2021272736
(21) 2021272736 **(22)** 10.05.2021
(54) Generating keys using controlled corruption in computer networks
(51) Int. Cl.
H04L 9/14 (2006.01)
G06F 21/62 (2013.01)
H04L 9/30 (2006.01)
(87) WO2021/229410
(31) 16/872,127 **(32)** 11.05.20 **(33)** US
(43) 18.11.2021
(72) VIJAYANARAYANAN, Devi Selva Kumar
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Avirmax, Inc.
(11) AU-A-2021305166
(21) 2021305166 **(22)** 06.07.2021
(54) Catalysis deactivated angiotensin-converting enzyme 2 (ACE2) variants and their uses
(51) Int. Cl.
A61K 38/48 (2006.01)
A61P 31/14 (2006.01)
C12N 9/48 (2006.01)
C12N 15/12 (2006.01)
C12N 15/79 (2006.01)
(87) WO2022/010938
(31) 63/048,645 **(32)** 06.07.20 **(33)** US
63/093,788 19.10.20 US
(43) 13.01.2022
(72) LIU, Shengjiang
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Avril
(11) AU-A-2021278293
(21) 2021278293 **(22)** 27.05.2021
(54) Cold pressing method and device implementing said method
(51) Int. Cl.
C11B 1/04 (2006.01)
C11B 1/06 (2006.01)
(87) WO2021/239867
(31) 2005582 **(32)** 27.05.20 **(33)** FR
(43) 02.12.2021
(72) MONVOISIN, Eric; DUNACH, Laurent; BOGAERT, Laurine
(74) AJ PARK

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(71) AZAD Pharma AG
(11) AU-A-2021285002
(21) 2021285002 **(22)** 31.05.2021
(54) Microemulsion for the treatment of dry eye syndrome
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/107 (2006.01)
A61K 47/02 (2006.01)
A61K 47/12 (2006.01)
A61K 47/14 (2017.01)
A61K 47/26 (2006.01)
A61K 47/36 (2006.01)
A61P 27/04 (2006.01)
(87) WO2021/245001
(31) 20178029.3 **(32)** 03.06.20 **(33)** EP
(43) 09.12.2021
(72) CARLI, Fabio; CHIELLINI, Elisabetta; BARONIAN, Mihran
(74) Davies Collison Cave Pty Ltd

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(71) Babu, K.R.
(11) AU-A-2020451875
(21) 2020451875 **(22)** 11.09.2020
(54) Brake assembly for a pneumatic vacuum elevator and method to operate the same
(51) Int. Cl.
B66B 9/04 (2006.01)
B66B 1/32 (2006.01)
(87) WO2021/245457
(31) 202041023091 **(32)** 02.06.20 **(33)** IN
(43) 09.12.2021
(72) BABU, Killakathu Ramanathan
(74) KILLAKATHU RAMANATHAN BABU

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(71) Babu, Killakathu Ramanathan
(11) AU-A-2020451088
(21) 2020451088 **(22)** 10.09.2020
(54) A pneumatic flow controlling device for a pneumatic vacuum elevator and a method thereof
(51) Int. Cl.
B66B 9/04 (2006.01)
F16K 7/00 (2006.01)
(87) WO2021/245454
(31) 202041023082 **(32)** 02.06.20 **(33)** IN
(43) 09.12.2021
(72) BABU, Killakathu Ramanathan
(74) KILLAKATHU RAMANATHAN BABU

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(71) Babu, Killakathu Ramanathan
(11) AU-A-2020451874
(21) 2020451874 **(22)** 11.09.2020
(54) Landing lever assembly of a pneumatic vacuum elevator and method to operate the same
(51) Int. Cl.
B66B 9/04 (2006.01)
B66B 1/26 (2006.01)
(87) WO2021/245456
(31) 202041023083 **(32)** 02.06.20 **(33)** IN
(43) 09.12.2021
(72) BABU, Killakathu Ramanathan
(74) KILLAKATHU RAMANATHAN BABU

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(71) BAE Systems Information and Electronic Systems Integration Inc.
(11) AU-A-2021281478
(21) 2021281478 **(22)** 25.05.2021
(54) Apparatus and control of a single or multiple sources to fire countermeasure expendables
(51) Int. Cl.
F41H 11/02 (2006.01)
F41H 11/04 (2006.01)
F42B 4/24 (2006.01)
F42B 12/56 (2006.01)
F42B 12/70 (2006.01)
(87) WO2021/242707
(31) 16/888,035 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) BRANCH, Jason H.; HERB, Karl P.; PLEMONS, Danny L.
(74) Spruson & Ferguson

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(71) Baili-Bio (Chengdu) Pharmaceutical Co., Ltd.
(11) AU-A-2021289927
(21) 2021289927 **(22)** 31.05.2021
(54) Camptothecin drug having high-stability hydrophilic connecting unit and conjugate thereof
(51) Int. Cl.
A61K 47/50 (2017.01)
A61K 31/4745 (2006.01)
A61P 35/00 (2006.01)
C07K 7/06 (2006.01)
C07K 16/30 (2006.01)
C07K 16/32 (2006.01)
(87) WO2021/249228
(31) 202010510363.5 **(32)** 08.06.20 **(33)** CN
(43) 16.12.2021
(72) ZHU, Yi; WAN, Weili; ZHUO, Shi; ZHANG, Yong; ZHANG, Yiying; YU, Tianzi; LI, Gangrui; YANG, Xiujuan
(74) FPA Patent Attorneys Pty Ltd

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(71) Bard Access Systems, Inc.
(11) AU-A-2021289351
(21) 2021289351 **(22)** 08.06.2021
(54) Catheter with variable length extension leg
(51) Int. Cl.
A61M 25/00 (2006.01)
(87) WO2021/252518
(31) 63/036,899 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) THORNLEY, Kyle G.
(74) FB Rice Pty Ltd

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(71) Bard Access Systems, Inc.
(11) AU-A-2021299453
(21) 2021299453 **(22)** 28.06.2021
(54) Rapidly insertable central catheters including assemblies
(51) Int. Cl.
A61M 25/06 (2006.01)
A61M 25/01 (2006.01)

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(87) WO2022/005983
(31) 63/045,599 **(32)** 29.06.20 **(33)** US
(43) 06.01.2022
(72) HOWELL, Glade H.
(74) FB Rice Pty Ltd

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(71) Bard Access Systems, Inc.
(11) AU-A-2021301374
(21) 2021301374 **(22)** 30.06.2021
(54) Rapidly insertable central catheters and methods of manufacture thereof
(51) Int. Cl.
A61M 25/00 (2006.01)
(87) WO2022/006243
(31) 63/047,118 **(32)** 01.07.20 **(33)** US
(43) 06.01.2022
(72) HOWELL, Glade H.
(74) FB Rice Pty Ltd

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(71) Bardex Corporation
(11) AU-A-2021296603
(21) 2021296603 **(22)** 24.06.2021
(54) Mooring equipment for use in in-line tensioning
(51) Int. Cl.
B63B 21/04 (2006.01)
B63B 21/10 (2006.01)
B63B 21/16 (2006.01)
B63B 21/18 (2006.01)
B63B 21/20 (2006.01)
B63B 21/22 (2006.01)
(87) WO2021/262980
(31) 63/043,403 **(32)** 24.06.20 **(33)** US
(43) 30.12.2021
(72) O'ROURKE, Charlie; ATALLAH, Nick
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) BASF Agricultural Solutions Seed US LLC
(11) AU-A-2021288254
(21) 2021288254 **(22)** 25.03.2021
(54) In vitro embryo rescue
(51) Int. Cl.
A01H 4/00 (2006.01)
A01H 1/02 (2006.01)
(87) WO2021/251860
(31) 2050671-3 **(32)** 09.06.20 **(33)** SE
(43) 16.12.2021
(72) KÖHLER, Claudia; XU, Wenjia
(74) Griffith Hack

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(71) BASF SE
(11) AU-A-2021268725
(21) 2021268725 **(22)** 26.04.2021
(54) A process and apparatus for producing aqueous compositions of water-soluble polymers
(51) Int. Cl.
C08F 6/06 (2006.01)
C08F 6/00 (2006.01)
C08F 220/56 (2006.01)
C08L 33/26 (2006.01)
(87) WO2021/224043
(31) 20172807.8 **(32)** 04.05.20 **(33)** EP
(43) 11.11.2021
(72) LOESCH, Dennis; LARYEA, Esther Matyka; SCHMIDT, Anna-corina; EL-TOUFAILI, Faissal-Ali; BARRERA-MEDRANO, Daniel; OSTERMAYR, Markus
(74) Davies Collison Cave Pty Ltd

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(71) BASF SE
(11) AU-A-2021288898
(21) 2021288898 **(22)** 07.06.2021
(54) Use of strobilurin type compounds for combating phytopathogenic fungi containing an amino acid substitution F129L in the mitochondrial cytochrome b protein conferring resistance to Qo inhibitors V
(51) Int. Cl.
C07C 251/58 (2006.01)
A01N 35/10 (2006.01)
C07D 213/65 (2006.01)
C07D 317/46 (2006.01)
(87) WO2021/249928
(31) 20188910.2 **(32)** 31.07.20 **(33)** EP
21176864.3 31.05.21 EP
202021024406 10.06.20 IN
(43) 16.12.2021
(72) KULKARNI, Sarang; DEY, Chandan; POONOTH, Manojkumar; LE VEZOUET, Ronan; LOHMANN, Jan Klaas; CRAIG, Ian Robert; GROTE, Thomas; KHANNA, Smriti; RATH, Rakesh; KOCH, Andreas; FEHR, Marcus; TEGGE, Vanessa
(74) Griffith Hack

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(71) BASF SE
(11) AU-A-2021290887
(21) 2021290887 **(22)** 10.06.2021
(54) A stable, solvent-free, self-emulsifiable concentrate
(51) Int. Cl.
A01N 25/02 (2006.01)
A01N 25/30 (2006.01)
A01N 43/653 (2006.01)
A01N 53/00 (2006.01)
A01P 3/00 (2006.01)
(87) WO2021/254875
(31) 63/039,135 **(32)** 15.06.20 **(33)** US
20188107.5 28.07.20 EP
(43) 23.12.2021
(72) KLIMA, Rodney F.; OESTER, Dean A
(74) Griffith Hack

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(71) Battelle Memorial Institute
(11) AU-A-2021283972
(21) 2021283972 **(22)** 04.06.2021
(54) Portable and wearable hand-grasp neuro-orthosis
(51) Int. Cl.
A61N 1/04 (2006.01)
A61B 5/256 (2021.01)
A61B 5/296 (2021.01)
A61B 5/389 (2021.01)
A61H 3/04 (2006.01)
A61N 1/36 (2006.01)
(87) WO2021/248007
(31) 63/035,720 **(32)** 06.06.20 **(33)** US
(43) 09.12.2021
(72) FRIEDENBERG, David; SHARMA, Gaurav; COLACHIS, Samuel; ANNETTA, Nicholas; NOONAN, Amanda
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Battelle Memorial Institute
(11) AU-A-2021320480
(21) 2021320480 **(22)** 06.08.2021
(54) Salt separation and destruction of PFAS utilizing reverse osmosis and salt separation
(51) Int. Cl.
C02F 9/00 (2006.01)
(87) WO2022/032207
(31) 63/062,251 **(32)** 06.08.20 **(33)** US
(43) 10.02.2022
(72) ROSANSKY, Stephen H.; MILLER, Michael; NORRIS, Patrick; ARGUMEDO, Darwin; HENDRY, Douglas; HAGGERTY, Ian; BROWN, Keith; JAMES, Joshua; CASCIANO, Joe; WINECKI, Slawomir; LAL, Vivek; MCGUINNESS, Tom
(74) Michael Buck IP

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(71) Bavarian Nordic A/S
(11) AU-A-2021290177
(21) 2021290177 **(22)** 10.06.2021
(54) A recombinant Modified Vaccinia Virus Ankara (MVA) vaccine against coronavirus disease
(51) Int. Cl.
A61K 39/12 (2006.01)
A61P 31/14 (2006.01)
(87) WO2021/250219
(31) 20179347.8 **(32)** 10.06.20 **(33)** EP
(43) 16.12.2021
(72) HAUSMANN, Jürgen; STEIGERWALD, Robin; HABJAN, Matthias; MEDINA ECHEVERZ, Jose; RAMBICHLER, Stephan
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Baxter International Inc.; Baxter Healthcare SA
(11) AU-A-2021275875
(21) 2021275875 **(22)** 20.05.2021
(54) Infusion pump with accelerometer controlled surface temperature
(51) Int. Cl.
A61M 5/142 (2006.01)
(87) WO2021/236924
(31) 63/028,640 **(32)** 22.05.20 **(33)** US
(43) 25.11.2021
(72) SLABY, Jiri; WOJTYSIAK, Slawomir Edward
(74) K&L Gates

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(71) Baxter International Inc.; Baxter Healthcare SA
(11) AU-A-2021283044
(21) 2021283044 **(22)** 27.05.2021
(54) Parenteral nutrition formulation
(51) Int. Cl.

PCT applications which have entered the National Phase - Name Index cont'd

A61K 9/00 (2006.01)
A61K 31/198 (2006.01)
A61K 9/107 (2006.01)
(87) WO2021/247360
(31) 16/893,807 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) JEANNIN, Laurent Christian; BROWN, Mary Hise; HECQ, Julien Andre Roger; ZALOGA, Gary P.; TAPPENDEN, Kelly
(74) K&L Gates

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(71) Baxter International Inc.; Baxter Healthcare SA
(11) AU-A-2021296781
(21) 2021296781 **(22)** 22.06.2021
(54) Patient-monitoring system
(51) Int. Cl.
A61B 5/00 (2006.01)
A61B 5/02 (2006.01)
A61B 5/021 (2006.01)
A61B 5/0215 (2006.01)
A61B 5/024 (2006.01)
A61B 5/0245 (2006.01)
A61B 5/08 (2006.01)
A61B 5/11 (2006.01)
A61M 25/00 (2006.01)
A61B 5/0205 (2006.01)
A61B 5/0535 (2021.01)
(87) WO2021/262670
(31) 63/043,494 **(32)** 24.06.20 **(33)** US
(43) 30.12.2021
(72) BIVANS, Matthew; CEISEL, Ahren; WALIMBE, Vivek; HANDLER, Jonathan; DHILLON, Marshal; DHILLON, Mark; TANG, Erik; MCCANNA, James; HAYWARD, Lauren, N., M.; BANET, Matthew
(74) K&L Gates

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(71) Bayer Aktiengesellschaft
(11) AU-A-2021283661
(21) 2021283661 **(22)** 31.05.2021
(54) Selective herbicides based on substituted isoxazolin carboxamides and furilazole
(51) Int. Cl.
A01N 43/76 (2006.01)
A01N 43/80 (2006.01)
A01P 13/00 (2006.01)
A01P 13/02 (2006.01)
C07D 261/04 (2006.01)
C07D 413/12 (2006.01)
(87) WO2021/245006
(31) 20177904.8 **(32)** 02.06.20 **(33)** EP
(43) 09.12.2021
(72) DITTGEN, Jan; GATZWEILER, Elmar; ROSINGER, Christopher Hugh; LORENTZ, Lothar; HAAF, Klaus Bernhard; TRABOLD, Klaus; MENNE, Hubert; PEREZ CATALAN, Julio
(74) Griffith Hack

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(71) Bayer Aktiengesellschaft
(11) AU-A-2021285006
(21) 2021285006 **(22)** 31.05.2021
(54) Selective herbicides based on substituted isoxazolin carboxamides and mefenpyr-diethyl
(51) Int. Cl.
A01N 43/56 (2006.01)
A01N 43/80 (2006.01)
A01P 13/00 (2006.01)
A01P 13/02 (2006.01)
C07D 261/04 (2006.01)
C07D 413/12 (2006.01)
(87) WO2021/245007
(31) 20177910.5 **(32)** 02.06.20 **(33)** EP
(43) 09.12.2021
(72) DITTGEN, Jan; GATZWEILER, Elmar; ROSINGER, Christopher Hugh; LORENTZ, Lothar; HAAF, Klaus Bernhard; TRABOLD, Klaus; MENNE, Hubert; PEREZ CATALAN, Julio
(74) Griffith Hack

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(71) Bayer Aktiengesellschaft
(11) AU-A-2021286151
(21) 2021286151 **(22)** 31.05.2021
(54) Selective herbicides based on substituted isoxazolin carboxamides and isoxadifen-ethyl
(51) Int. Cl.
A01N 43/80 (2006.01)
A01P 13/00 (2006.01)
A01P 13/02 (2006.01)
C07D 261/04 (2006.01)
C07D 413/12 (2006.01)
(87) WO2021/245003
(31) 20177907.1 **(32)** 02.06.20 **(33)** EP
(43) 09.12.2021
(72) DITTGEN, Jan; GATZWEILER, Elmar; ROSINGER, Christopher Hugh; LORENTZ, Lothar; HAAF, Klaus Bernhard; TRABOLD, Klaus; MENNE, Hubert; PEREZ CATALAN, Julio
(74) Griffith Hack

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(71) Bayer Aktiengesellschaft
(11) AU-A-2021295721
(21) 2021295721 **(22)** 25.06.2021
(54) Anti CCR8 antibody therapy: biomarkers and combination therapies
(51) Int. Cl.
A61K 38/00 (2006.01)
C07K 16/24 (2006.01)
(87) WO2021/260210
(31) 62/705,608 **(32)** 07.07.20 **(33)** US
62/705,434 26.06.20 US
20205426.8 03.11.20 EP
(43) 30.12.2021
(72) BERNDT, Sandra; FILARSKY, Katharina; ELLINGER, Philipp; STELTE-LUDWIG, Beatrix; HOFF, Sabine; ROIDER, Helge; WEBER, Ernst; TRAUTWEIN, Mark; VOTSMEIER, Christian; PAWLOWSKI, Nikolaus; GRITZAN, Uwe; BUCHMANN, Pascale; BERTLING, Christian; VON AHSEN, Oliver; NADLER, Wiebke Maria; TSENG, Su-Yi; PAZ, Pedro; OH, Phaik Lyn; JONES, Patrick; GORJANACZ, Matyas
(74) Davies Collison Cave Pty Ltd

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(71) Beam Alpha, Inc.
(11) AU-A-2021322581
(21) 2021322581 **(22)** 07.06.2021
(54) Sulfur blanket
(51) Int. Cl.
G21B 1/00 (2006.01)
G21B 3/00 (2006.01)
G21D 7/00 (2006.01)
H05H 1/14 (2006.01)
(87) WO2022/031361
(31) 63/036,029 **(32)** 08.06.20 **(33)** US
(43) 10.02.2022
(72) JACKSON, Gerald Peter; ZLOTNICKI, Joseph Matthew
(74) Davies Collison Cave Pty Ltd

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(71) Becton, Dickinson and Company
(11) AU-A-2021285759
(21) 2021285759 **(22)** 25.05.2021
(54) Capillary-based pressure threshold sensor for liquids and methods and apparatuses using same
(51) Int. Cl.
B60R 21/01 (2006.01)
(87) WO2021/247277
(31) 63/034,029 **(32)** 03.06.20 **(33)** US
17/327,244 21.05.21 US
(43) 09.12.2021
(72) BEGUIN, Steve; ADAMS, John; ABOUD, Danielle; CURTIN, Maurice
(74) FB Rice Pty Ltd

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(71) Becton, Dickinson and Company
(11) AU-A-2021285901
(21) 2021285901 **(22)** 03.06.2021
(54) System, method, and computer program product for medication administration
(51) Int. Cl.
G16H 20/17 (2018.01)
A61M 5/14 (2006.01)
A61M 5/168 (2006.01)
A61M 5/172 (2006.01)
G16H 70/40 (2018.01)
(87) WO2021/247826
(31) 63/034,755 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) ROTHENBERG, Ashley Rachel; WITT, Erik Kurt; JESSER, Mark; KUMORDZIE, Ami
(74) FB Rice Pty Ltd

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(71) Beijing Beyond Biotechnology Co., Ltd
(11) AU-A-2021282053
(21) 2021282053 **(22)** 25.05.2021
(54) Fc-CD80 fusion protein and conjugate thereof, and use thereof
(51) Int. Cl.
C07K 19/00 (2006.01)
A61K 38/17 (2006.01)
A61K 39/395 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/238904
(31) 202010453172.X **(32)** 25.05.20 **(33)** CN
(43) 02.12.2021
(72) HU, Pinliang; ZOU, Jing; HONG, Weidong; HE, Yun; SONG, Lingyun; YANG, Wendi
(74) Madderns Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) Beijing DIDI Infinity Technology and Development Co., Ltd.
(11) AU-A-2021323772
(21) 2021323772 **(22)** 03.08.2021
(54) Information exchange method and apparatus, storage medium, and electronic device
(51) Int. Cl.
G06Q 10/02 (2012.01)
(87) WO2022/033352
(31) 202010803509.5 **(32)** 11.08.20 **(33)** CN
(43) 17.02.2022
(72) ZHANG, Xudong
(74) Spruson & Ferguson

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(71) Beijing Geekplus Technology Co., Ltd.
(11) AU-A-2021289874
(21) 2021289874 **(22)** 21.05.2021
(54) Transfer robot, box retrieval method, cargo box loading method and warehouse logistics system
(51) Int. Cl.
B65G 1/04 (2006.01)
(87) WO2021/249163
(31) 202010524246.4 **(32)** 10.06.20 **(33)** CN
(43) 16.12.2021
(72) XIAO, Yuhui
(74) Davies Collison Cave Pty Ltd

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(71) Beijing Greatway Pharmaceutical Technology Co., Ltd.
(11) AU-A-2021270664
(21) 2021270664 **(22)** 12.05.2021
(54) Compound for adjusting activity of NMDA receptor, and pharmaceutical composition and use thereof
(51) Int. Cl.
C07D 513/10 (2006.01)
A61K 31/425 (2006.01)
A61P 25/00 (2006.01)
A61P 25/22 (2006.01)
A61P 25/24 (2006.01)
A61P 25/28 (2006.01)
(87) WO2021/228123
(31) 202010397265.5 **(32)** 12.05.20 **(33)** CN
(43) 18.11.2021
(72) GU, Wei; DONG, Zhaoji; WANG, Ruiluan
(74) AJ PARK

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(71) Beijing Guanghe Original Technology Co., Ltd.
(11) AU-A-2020446817
(21) 2020446817 **(22)** 15.05.2020
(54) Amino acid composition and method for catalytic synthesis of amino acid by means of energy radiation
(51) Int. Cl.
A61K 31/4172 (2006.01)
C07C 227/12 (2006.01)
C07C 229/36 (2006.01)
C07D 213/38 (2006.01)
C07D 307/52 (2006.01)
(87) WO2021/227077
(43) 18.11.2021
(72) WANG, Cong; HUO, Haibin
(74) Spruson & Ferguson

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(71) Beijing Mabworks Biotech Co., Ltd.
(11) AU-A-2021285226
(21) 2021285226 **(22)** 04.02.2021
(54) Antibodies binding LAG3 and uses thereof
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 38/20 (2006.01)
A61K 39/395 (2006.01)
A61K 45/06 (2006.01)
A61P 17/06 (2006.01)
A61P 31/00 (2006.01)
A61P 31/04 (2006.01)
A61P 31/10 (2006.01)
A61P 31/12 (2006.01)
A61P 35/00 (2006.01)
A61P 37/02 (2006.01)
C07K 14/725 (2006.01)
C07K 19/00 (2006.01)
C12N 15/13 (2006.01)
(87) WO2021/243919
(31) 202010509498.X **(32)** 05.06.20 **(33)** CN
(43) 09.12.2021
(72) HU, Wenqi; LI, Jiangmei; LI, Feng
(74) Davies Collison Cave Pty Ltd

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(71) Benjamin Moore & Co.; Columbia Insurance Company
(11) AU-A-2021304938
(21) 2021304938 **(22)** 30.06.2021
(54) Multi-stage polymer with low mw shell and high Tg core for early block resistance
(51) Int. Cl.
C08F 2/22 (2006.01)
C08F 2/38 (2006.01)
C08K 5/00 (2006.01)
C08L 33/10 (2006.01)
C08L 33/12 (2006.01)
C09D 5/02 (2006.01)
C09D 107/02 (2006.01)
C09D 133/10 (2006.01)
C09D 133/12 (2006.01)
(87) WO2022/010705
(31) 16/921,059 **(32)** 06.07.20 **(33)** US
(43) 13.01.2022
(72) PASTENA, Gianna; GHARAPETIAN, Hrire
(74) Chrysiliou IP

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(71) BIO 54, LLC
(11) AU-A-2021329370
(21) 2021329370 **(22)** 19.08.2021
(54) Devices for treatment of bleeding in body lumens or spaces, including epistaxis, and methods of making and using the same
(51) Int. Cl.
A61L 15/16 (2006.01)
(87) WO2022/040450
(31) 63/068,032 **(32)** 20.08.20 **(33)** US
(43) 24.02.2022
(72) MANASCO, Anton Travis
(74) RnB IP Pty Ltd

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(71) Bioactive Materials Pty Ltd
(11) AU-A-2021279209
(21) 2021279209 **(22)** 27.05.2021
(54) Devices and methods for the isolation of particles
(51) Int. Cl.
B04C 5/081 (2006.01)
B01D 45/12 (2006.01)
(87) WO2021/237298
(31) 2020901719 **(32)** 27.05.20 **(33)** AU
(43) 02.12.2021
(72) HE, Lizhong; DIXON, Ian Edward; PAUL, Puja; SHANBHAG, Bhuvana; JI, Li
(74) FB Rice Pty Ltd

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(71) Bio-Diagnostics Limited
(11) AU-A-2021266428
(21) 2021266428 **(22)** 04.05.2021
(54) A diagnostic device
(51) Int. Cl.
G01N 33/569 (2006.01)
B01L 3/00 (2006.01)
G01N 33/543 (2006.01)
(87) WO2021/224607
(31) 2006581.9 **(32)** 04.05.20 **(33)** GB
2016894.4 23.10.20 GB
(43) 11.11.2021
(72) MICO, Simon
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Biohaven Therapeutics Ltd.
(11) AU-A-2021267874
(21) 2021267874 **(22)** 05.05.2021
(54) Process for the preparation of verdiperstat
(51) Int. Cl.
A61K 31/513 (2006.01)
A61K 31/519 (2006.01)
A61P 25/28 (2006.01)
C07D 239/70 (2006.01)
C07D 239/95 (2006.01)
C07D 255/00 (2006.01)
(87) WO2021/226161
(31) 63/021,041 **(32)** 06.05.20 **(33)** US
(43) 11.11.2021
(72) PENDRI, Yadagiri R.; KATHAM, Srinivasa; MENDE, Sreenivas; KEDAS, Chendrasekhar; KANDIYALA, Srinivasa; CHILAKALA, Dhanaraj
(74) Adams Pluck

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(71) BioInvent International AB
(11) AU-A-2021286202
(21) 2021286202 **(22)** 04.06.2021
(54) Improving antibody tolerability associated with intravenous administration
(51) Int. Cl.
A61K 39/395 (2006.01)
A61K 39/00 (2006.01)
A61K 47/28 (2006.01)
A61P 35/00 (2006.01)
A61P 37/06 (2006.01)
C07K 14/575 (2006.01)
C07K 14/72 (2006.01)
C07K 16/00 (2006.01)
C07K 16/28 (2006.01)
(87) WO2021/245238
(31) 20178287.7 **(32)** 04.06.20 **(33)** EP
21163703.8 19.03.21 EP

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(43) 09.12.2021
(72) FRENDÉUS, Björn; MÅRTENSSON, Linda; TEIGE, Ingrid; KARLSSON, Ingrid
(74) WRAYS PTY LTD

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(71) BioNTech SE; TRON – Translationale Onkologie an der Universitätsmedizin der Johannes Gutenberg-Universität Mainz Gemeinnützige GmbH
(11) AU-A-2021286169
(21) 2021286169 **(22)** 01.06.2021
(54) RNA replicon for versatile and efficient gene expression
(51) Int. Cl.
C12N 9/12 (2006.01)
A61K 39/12 (2006.01)
C12N 15/86 (2006.01)
(87) WO2021/245090
(31) PCT/ **(32)** 04.06.20 **(33)** EP EP2020/065491
(43) 09.12.2021
(72) PERKOVIC, Mario; WITZEL, Sonja; BEISSERT, Tim; SAHIN, Ugur
(74) FB Rice Pty Ltd

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(71) Bluefors Oy
(11) AU-A-2021269871
(21) 2021269871 **(22)** 11.05.2021
(54) Heat exchanger material and heat exchanger for cryogenic cooling systems, and a system
(51) Int. Cl.
F28F 21/00 (2006.01)
B22F 5/10 (2006.01)
B33Y 80/00 (2015.01)
F28F 3/02 (2006.01)
F28F 13/00 (2006.01)
(87) WO2021/229148
(31) 20174427.3 **(32)** 13.05.20 **(33)** EP
(43) 18.11.2021
(72) SALMELA, Anssi
(74) FB Rice Pty Ltd

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(71) BNSF Railway Company
(11) AU-A-2021300804
(21) 2021300804 **(22)** 12.05.2021
(54) Systems and methods for reconstructing objects using transitional images
(51) Int. Cl.
G06T 3/40 (2006.01)
(87) WO2022/005622
(31) 16/917,590 **(32)** 30.06.20 **(33)** US
(43) 06.01.2022
(72) KOHLER, Rachel
(74) Oxygene IP

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(71) Boehringer Ingelheim Animal Health USA Inc.
(11) AU-A-2021278871
(21) 2021278871 **(22)** 04.05.2021
(54) Bi-modal release intra-ruminal capsule device and methods of use thereof
(51) Int. Cl.
A23K 20/195 (2016.01)
A23K 40/35 (2016.01)
A23K 50/10 (2016.01)
A61D 7/00 (2006.01)
A61K 9/00 (2006.01)
A61M 31/00 (2006.01)
(87) WO2021/242481
(31) 63/031,064 **(32)** 28.05.20 **(33)** US
(43) 02.12.2021
(72) HAN, Jian; JOHNSON, Alan; DE SOUZA MOURA, Edson; DOHERTY, Mark
(74) FB Rice Pty Ltd

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(71) Boehringer Ingelheim International GmbH
(11) AU-A-2021284275
(21) 2021284275 **(22)** 01.06.2021
(54) Antibodies targeting a complex comprising non-classical HLA-I and neoantigen and their methods of use
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 39/00 (2006.01)
A61K 47/68 (2017.01)
A61P 35/00 (2006.01)
(87) WO2021/247607
(31) 63/032,747 **(32)** 01.06.20 **(33)** US 17/199,205 11.03.21 US
(43) 09.12.2021
(72) WEIDANZ, Jon; UPCHURCH-ANGE, Katherine
(74) FB Rice Pty Ltd

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(71) Boehringer Ingelheim International GmbH
(11) AU-A-2021285068
(21) 2021285068 **(22)** 02.06.2021
(54) Recombinant rhabdovirus encoding for a CD80 extracellular domain Fc-fusion protein
(51) Int. Cl.
A61K 35/766 (2015.01)
C07K 14/005 (2006.01)
C07K 14/705 (2006.01)
C12N 7/00 (2006.01)
C12N 15/86 (2006.01)
(87) WO2021/245111
(31) 20178032.7 **(32)** 03.06.20 **(33)** EP
(43) 09.12.2021
(72) MUELLER, Philipp; ERB, Klaus; ERLMANN, Patrik; WOLLMANN, Guido
(74) Spruson & Ferguson

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(71) Boehringer Ingelheim International GmbH
(11) AU-A-2021304892
(21) 2021304892 **(22)** 09.07.2021
(54) Process for producing a purified rhabdovirus from cell culture
(51) Int. Cl.
C12N 7/00 (2006.01)
(87) WO2022/008700
(31) 20185118.5 **(32)** 10.07.20 **(33)** EP
(43) 13.01.2022
(72) MUELLER, Dethardt; GARCIA, Alan Pardo; GREIN, Tanja Anneliese; KAESS, Friedrich; NG, Judy; PESTA, Katharina; SCHNEIDER, Sabrina; TURNBULL, Jordan
(74) Spruson & Ferguson

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(71) Boehringer Ingelheim International GmbH
(11) AU-A-2021322137
(21) 2021322137 **(22)** 05.08.2021
(54) Soluble NPY2 receptor agonists
(51) Int. Cl.
C07K 14/575 (2006.01)
A61K 38/22 (2006.01)
(87) WO2022/029231
(31) 20189966.3 **(32)** 07.08.20 **(33)** EP
(43) 10.02.2022
(72) HAEBEL, Peter; BRENNAUER, Albert; PETERS, Stefan; MADSEN,, Charlotte Stahl; PEDERSEN, Søren Ljungberg
(74) Spruson & Ferguson

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(71) BORCHERS GMBH
(11) AU-A-2021298133
(21) 2021298133 **(22)** 23.06.2021
(54) Paints containing driers based on vanadium compounds bearing anions of sulfonic acids as counter ions
(51) Int. Cl.
C09F 9/00 (2006.01)
C09D 163/00 (2006.01)
C09D 163/10 (2006.01)
C09D 167/08 (2006.01)
C09D 191/00 (2006.01)
(87) WO2021/260037
(31) PV 2020-366 **(32)** 24.06.20 **(33)** CZ
(43) 30.12.2021
(72) KLUSSMANN, Martin; SIMPSON, Neil John; HONZICEK, Jan; KALENDA, Petr; VINKLAREK, Jaromir; CHARAMZOVA, Iva
(74) FB Rice Pty Ltd

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(71) Bravado Holding AG
(11) AU-A-2021288799
(21) 2021288799 **(22)** 09.06.2021
(54) Three-part clasp for pumping garment
(51) Int. Cl.
A41C 3/04 (2006.01)
A41F 1/00 (2006.01)
A44B 13/00 (2006.01)
(87) WO2021/250592
(31) 63/036,588 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) WOLFF, Tom; HABIS, Nicole
(74) Spruson & Ferguson

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(71) Bristol-Myers Squibb Company
(11) AU-A-2021265103
(21) 2021265103 **(22)** 28.04.2021
(54) Miniaturized dystrophins having spectrin fusion domains and uses thereof
(51) Int. Cl.
C07K 14/47 (2006.01)
(87) WO2021/222332
(31) 63/017,148 **(32)** 29.04.20 **(33)** US
(43) 04.11.2021
(72) BANKS, Glen; DAVIS, Jonathan Harry; LEVESQUE, Paul Charles
(74) AJ PARK

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(71) Bristol-Myers Squibb Company
(11) AU-A-2021270513
(21) 2021270513 **(22)** 11.05.2021
(54) Dosing and administration of activatable anti-CTLA-4 antibody
(51) Int. Cl.
A61K 39/395 (2006.01)
A61P 35/04 (2006.01)
C07K 16/28 (2006.01)
(87) WO2021/231346
(31) 63/023,850 **(32)** 12.05.20 **(33)** US
(43) 18.11.2021
(72) JAMES, Leonard P.; BROWN, Michelle
(74) AJ PARK

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(71) Bristol-Myers Squibb TGF Beta Inc.
(11) AU-A-2021289242
(21) 2021289242 **(22)** 11.06.2021
(54) Transforming growth factor beta TGFβ binding agents and uses thereof
(51) Int. Cl.
C07K 14/71 (2006.01)
A61K 38/18 (2006.01)
A61K 47/68 (2017.01)
A61P 11/00 (2006.01)
A61P 19/00 (2006.01)
C12N 15/12 (2006.01)
C12N 15/63 (2006.01)
C07K 14/495 (2006.01)
(87) WO2021/248247
(31) 63/038,290 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) O'CONNOR, Maureen; TREMBLAY, Gilles; DENIS, Jean-Francois; GANESH, Vannakambadi K.
(74) AJ PARK

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(71) Buck Institute for Research on Aging
(11) AU-A-2021283886
(21) 2021283886 **(22)** 01.06.2021
(54) Dihomo-gamma linolenic acid (DGLA) is a novel senolytic
(51) Int. Cl.
A61K 8/30 (2006.01)
A61K 31/201 (2006.01)
A61K 31/202 (2006.01)
A61P 17/00 (2006.01)
A61P 29/00 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/247594
(31) 63/033,739 **(32)** 02.06.20 **(33)** US
63/148,094 10.02.21 US
(43) 09.12.2021
(72) WILEY, Christopher D.; CAMPISI, Judith
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Bundesdruckerei GmbH
(11) AU-A-2021283713
(21) 2021283713 **(22)** 04.06.2021
(54) Blockchain supported banknote
(51) Int. Cl.
H04L 9/32 (2006.01)
G07D 7/1205 (2016.01)
H04W 12/069 (2021.01)
H04W 12/12 (2021.01)
(87) WO2021/245244
(31) 10 2020 115 035.0 **(32)** 05.06.20 **(33)** DE
(43) 09.12.2021
(72) BÖSCH, Christoph; PETERS, Florian; RÜCKRIEMEN, Jörg; SZEGVARI, Piotr
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Bundesdruckerei GmbH
(11) AU-A-2021285203
(21) 2021285203 **(22)** 04.06.2021
(54) Banknote having processor
(51) Int. Cl.
G07D 7/01 (2016.01)
B42D 25/29 (2014.01)
B42D 25/305 (2014.01)
G06Q 20/30 (2012.01)
(87) WO2021/245242
(31) 10 2020 115 034.2 **(32)** 05.06.20 **(33)** DE
(43) 09.12.2021
(72) PETERS, Florian; SAUTER, Dieter-Heinrich
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) ByteDance Inc.
(11) AU-A-2021283263
(21) 2021283263 **(22)** 02.06.2021
(54) Signaling of general constrain information
(51) Int. Cl.
H04N 19/187 (2014.01)
(87) WO2021/247648
(31) 63/033,689 **(32)** 02.06.20 **(33)** US
(43) 09.12.2021
(72) WANG, Ye-kui; ZHANG, Li
(74) Griffith Hack

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(71) Cable Coatings Limited
(11) AU-A-2021301256
(21) 2021301256 **(22)** 01.07.2021
(54) Composition for coating an overhead conductor
(51) Int. Cl.
C09D 1/00 (2006.01)
C09D 5/08 (2006.01)
C09D 7/61 (2018.01)
C09D 7/65 (2018.01)
C09D 7/80 (2018.01)
C09D 183/02 (2006.01)
C08K 3/22 (2006.01)
C08K 3/32 (2006.01)
C08K 3/36 (2006.01)
H01B 13/32 (2006.01)
(87) WO2022/003096
(31) 2010054.1 **(32)** 01.07.20 **(33)** GB
LU101950 28.07.20 LU
2014340.0 11.09.20 GB
(43) 06.01.2022
(72) COOGAN, Niall; PARKER, Rachel
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Calm Water Therapeutics LLC
(11) AU-A-2021267928
(21) 2021267928 **(22)** 07.05.2021
(54) Methods for using bioadhesive and steric interactions of copolymers with at least two moieties to minimize adverse effects mediated by external influences on cell, tissue, organ system, and organism biology
(51) Int. Cl.
A01N 25/10 (2006.01)
A61K 47/64 (2017.01)
A61P 31/12 (2006.01)
(87) WO2021/226441
(31) 63/021,277 **(32)** 07.05.20 **(33)** US
(43) 11.11.2021
(72) KLEINMAN, David M.
(74) WRAYS PTY LTD

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(71) Cammegh Limited
(11) AU-A-2021274898
(21) 2021274898 **(22)** 24.05.2021
(54) A gaming system
(51) Int. Cl.
G07F 17/32 (2006.01)
(87) WO2021/234179
(31) 2007711.1 **(32)** 22.05.20 **(33)** GB
(43) 25.11.2021
(72) CAMMEGH, Andrew; CAMMEGH, Richard
(74) PIPERS

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(71) Cancer Research Technology Limited
(11) AU-A-2021285216
(21) 2021285216 **(22)** 04.06.2021
(54) Methods for predicting treatment response in cancers
(51) Int. Cl.
G16B 20/10 (2019.01)
C12Q 1/6886 (2018.01)
G16H 50/30 (2018.01)
(87) WO2021/245265
(31) 2008450.5 **(32)** 04.06.20 **(33)** GB
(43) 09.12.2021
(72) MACINTYRE, Geoff; BRENTON, James; PISKORZ, Anna; MARKOWETZ, Florian
(74) FB Rice Pty Ltd

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(71) Cao, Z.
(11) AU-A-2020466978
(21) 2020466978 **(22)** 23.12.2020
(54) Plastic ukulele
(51) Int. Cl.
G10D 1/08 (2006.01)
G10D 3/22 (2020.01)
(87) WO2022/048067
(31) 202010908486.4 **(32)** 02.09.20 **(33)** CN
(43) 10.03.2022
(72) CAO, Zhengliang
(74) Spruson & Ferguson

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(71) Capsugel Belgium NV
(11) AU-A-2021299299
(21) 2021299299 **(22)** 30.06.2021
(54) Dietary composition and method
(51) Int. Cl.
A23D 7/00 (2006.01)
A23D 7/005 (2006.01)
A23L 27/10 (2016.01)
A23L 33/00 (2016.01)
A23L 33/105 (2016.01)
A23L 33/115 (2016.01)
(87) WO2022/006200

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(31) 63/046,880 **(32)** 01.07.20 **(33)** US
63/107,071 29.10.20 US
(43) 06.01.2022
(72) WHITE, Tyler; FOWLER, Kelli; BELLAMINE, Aouatef
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Carbon Revolution Limited
(11) AU-A-2021284915
(21) 2021284915 **(22)** 31.05.2021
(54) Improved carbon fibre wheel external face
(51) Int. Cl.
B60B 5/02 (2006.01)
B29C 70/06 (2006.01)
B29C 70/30 (2006.01)
(87) WO2021/243400
(31) 2020901840 **(32)** 04.06.20 **(33)** AU
(43) 09.12.2021
(72) LAW, Haydn; AGIUS, Steven; DENMEAD, Ashley James; DINGLE, Matthew Edward
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) CareFusion 303, Inc.
(11) AU-A-2021279058
(21) 2021279058 **(22)** 27.05.2021
(54) Automated device maintenance support tool
(51) Int. Cl.
G16H 20/17 (2018.01)
G16H 40/40 (2018.01)
(87) WO2021/243068
(31) 63/032,309 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) CHEN, Evan; NESTERENKO, Igor; HAMRICK, Tiffany; WORKMAN, Michael; SULLIVAN, Brian
(74) FB Rice Pty Ltd

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(71) Carisma Therapeutics Inc.
(11) AU-A-2021296914
(21) 2021296914 **(22)** 25.06.2021
(54) mRNA transfection of immune cells
(51) Int. Cl.
A61K 35/12 (2015.01)
A61K 35/15 (2015.01)
A61K 39/00 (2006.01)
A61K 45/00 (2006.01)
(87) WO2021/263152
(31) 63/044,855 **(32)** 26.06.20 **(33)** US
(43) 30.12.2021
(72) KLICHINSKY, Michael; YASHIRO-OHTANI, Yumi; ROSS, Kayleigh
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Carl Zeiss Meditec AG
(11) AU-A-2021288908
(21) 2021288908 **(22)** 07.06.2021
(54) Injector assembly for inserting an intraocular lens and injector
(51) Int. Cl.
A61F 2/16 (2006.01)
(87) WO2021/249948
(31) 10 2020 115 482.8 **(32)** 10.06.20 **(33)** DE
(43) 16.12.2021
(72) KOHLSAAT, Malte; GÜHRS, Julian; DAMM, Niklas; JASTRAM, Jakob; RINMAN, Alfred
(74) Griffith Hack

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(71) Carmin Dimase Pty Ltd
(11) AU-A-2021301453
(21) 2021301453 **(22)** 30.06.2021
(54) Improved methods of grafting plants
(51) Int. Cl.
A01G 2/30 (2018.01)
(87) WO2022/000033
(31) 2020902234 **(32)** 01.07.20 **(33)** AU
(43) 06.01.2022
(72) DIMASE, Carmin
(74) Churchill Attorneys

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(71) Cascade Corporation
(11) AU-A-2021293925
(21) 2021293925 **(22)** 16.06.2021
(54) Synchronized hybrid clamp force controller for lift truck attachment
(51) Int. Cl.
B66F 9/22 (2006.01)
B25B 5/06 (2006.01)
(87) WO2021/257740
(31) 63/041,014 **(32)** 18.06.20 **(33)** US
(43) 23.12.2021
(72) WALTHERS, Christopher M.
(74) Davies Collison Cave Pty Ltd

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(71) Casco Signal Ltd.
(11) AU-A-2021379787
(21) 2021379787 **(22)** 04.11.2021
(54) Operation diagram-based method for automatically changing traffic route and returning when operation is interrupted
(51) Int. Cl.
B61L 23/14 (2006.01)
B61L 27/04 (2006.01)
(87) WO2022/100501
(31) 202011279855.4 **(32)** 16.11.20 **(33)** CN
(43) 19.05.2022
(72) XU, Jing; YAN, Honghui; QIAN, Jiang; ZHOU, Tingliang; XIE, Juan
(74) Spruson & Ferguson

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(71) Casco Signal Ltd.
(11) AU-A-2021428867
(21) 2021428867 **(22)** 28.09.2021
(54) System and method for automatic adjustment of planned train operation chart
(51) Int. Cl.
B61L 27/04 (2006.01)
B61L 27/00 (2022.01)
(87) WO2022/174588
(31) 202110188356.2 **(32)** 18.02.21 **(33)** CN
(43) 25.08.2022
(72) LIU, Fengbo; QIAN, Jiang; ZHOU, Tingliang; WU, Xiang; XU, Jing; QIU, Junkui; ZHOU, Gongjian; LIU, Xiao
(74) Spruson & Ferguson

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(71) Catalent Pharma Solutions, LLC
(11) AU-A-2021283272
(21) 2021283272 **(22)** 02.06.2021
(54) Cell lines with multiple docks for gene insertion
(51) Int. Cl.
C12N 15/90 (2006.01)
C12N 9/22 (2006.01)
C12N 15/113 (2010.01)
(87) WO2021/247671
(31) 63/033,514 **(32)** 02.06.20 **(33)** US
63/033,516 02.06.20 US
(43) 09.12.2021
(72) BLECK, Gregory T.; KRAVITZ, Rachel H.; HALL, Chad A.
(74) Spruson & Ferguson

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(71) Caterpillar Inc.
(11) AU-A-2021278104
(21) 2021278104 **(22)** 12.05.2021
(54) System, method, and device for electronically providing paving information
(51) Int. Cl.
G06Q 10/06 (2012.01)
(87) WO2021/242517
(31) 16/888,411 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) SUBRAMANIAN, Gautham; MARSOLEK, John; MCALPINE, Jacob
(74) FPA Patent Attorneys Pty Ltd

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(71) Caterpillar Inc.
(11) AU-A-2021283351
(21) 2021283351 **(22)** 03.06.2021
(54) Rib-less hoist structure for truck body
(51) Int. Cl.
B60P 1/28 (2006.01)
B60P 1/16 (2006.01)
(87) WO2021/247784
(31) 16/892,997 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) ARUL, Samuel J.
(74) FPA Patent Attorneys Pty Ltd

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(71) Caterpillar Inc.
(11) AU-A-2021283795
(21) 2021283795 **(22)** 05.03.2021
(54) Role-based asset tagging for quantification and reporting of asset performance
(51) Int. Cl.
G06Q 10/06 (2012.01)
(87) WO2021/247111
(31) 16/889,569 **(32)** 01.06.20 **(33)** US
(43) 09.12.2021
(72) ALAYAMANI, Arun Prasad; DECLERK, Allen J.; BRICKNER, Chad Timothy; HANAUER, Nicholas Adam; VARMAN, Chetna; SELVARAJ, Vishnu Gaurav; NOON, Timothy Edward; SPURGEON, Eric J.; BOMER, Bradley K.; DEVIREDDY, Umasri
(74) FPA Patent Attorneys Pty Ltd

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(71) CB Therapeutics, Inc.
(11) AU-A-2021283988
(21) 2021283988 **(22)** 04.06.2021

PCT applications which have entered the National Phase - Name Index cont'd

(54) Enzymes and regulatory proteins in tryptamine metabolism
(51) Int. Cl.
C12N 9/10 (2006.01)
C12N 15/09 (2006.01)
C12N 15/52 (2006.01)
(87) WO2021/248087
(31) 63/035,692 **(32)** 06.06.20 **(33)** US
(43) 09.12.2021
(72) PEIFFER, Laura Flatauer; VOGAN, Jacob Michael; WADE, James Lee; YACOUB, Tyrone Jacob; TANG, Kirsten; BURNETT, Rachel Nadine
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Celgene Corporation
(11) AU-A-2021296833
(21) 2021296833 **(22)** 23.06.2021
(54) Cereblon binding compounds, compositions thereof, and methods of treatment therewith
(51) Int. Cl.
A61K 31/517 (2006.01)
A61K 47/54 (2017.01)
(87) WO2021/262810
(31) 63/043,555 **(32)** 24.06.20 **(33)** US
(43) 30.12.2021
(72) ALEXANDER, Matthew D.; CORREA, Matthew D.; DALVIE, Deepak; GRANT, Virginia Heather Sharron; HANSEN, Joshua; HARRIS III, Roy L.; HORN, Evan J.; HUANG, Dehua; MAYNE, Christopher; NORRIS, Stephen; PLANTEVIN-KRENITSKY, Veronique; SAPIENZA, John J.; TEHRANI, Lida; WHITEFIELD, Brandon W.
(74) AJ PARK

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(71) Centor Design Pty Ltd
(11) AU-A-2021300878
(21) 2021300878 **(22)** 28.06.2021
(54) Cone and clamp assembly for screen assembly
(51) Int. Cl.
E06B 9/58 (2006.01)
E06B 9/54 (2006.01)
(87) WO2022/000026
(31) 2020902215 **(32)** 30.06.20 **(33)** AU
(43) 06.01.2022
(72) SMITH, Christopher Paul
(74) Spruson & Ferguson

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(71) Ceramic Data Solutions GmbH
(11) AU-A-2020456046
(21) 2020456046 **(22)** 03.07.2020
(54) Increased storage capacity for a method for long-term storage of information and storage medium therefor
(51) Int. Cl.
G06K 19/06 (2006.01)
C04B 41/00 (2006.01)
G06K 7/10 (2006.01)
G06K 19/10 (2006.01)
G09F 3/02 (2006.01)
(87) WO2022/002418
(43) 06.01.2022
(72) PFLAUM, Christian; KUNZE, Martin
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Certus Molecular Diagnostics AG
(11) AU-A-2021286886
(21) 2021286886 **(22)** 09.06.2021
(54) Isothermal real-time PCR method for determining presence of a pre-determined nucleic acid sequence in human samples
(51) Int. Cl.
C12Q 1/686 (2018.01)
C12Q 1/689 (2018.01)
(87) WO2021/250138
(31) 20179110.0 **(32)** 09.06.20 **(33)** EP
(43) 16.12.2021
(72) ZÜRCHER, Samuel; LÜTHI, Alexander; WEIBEL, Lea
(74) Spruson & Ferguson

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(71) Certus Molecular Diagnostics AG
(11) AU-A-2021290161
(21) 2021290161 **(22)** 09.06.2021
(54) Isothermal real-time PCR method for determining presence of a pre-determined nucleic acid sequence of a bacterium of the mollicutes class in a sample
(51) Int. Cl.
C12Q 1/686 (2018.01)
C12Q 1/689 (2018.01)
(87) WO2021/250139
(31) 20179107.6 **(32)** 09.06.20 **(33)** EP
(43) 16.12.2021
(72) ZÜRCHER, Samuel; LÜTHI, Alexander; WEIBEL, Lea
(74) Spruson & Ferguson

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(71) Ceva Sante Animale
(11) AU-A-2021291232
(21) 2021291232 **(22)** 18.06.2021
(54) System for detecting a filling state of a diffuser vial
(51) Int. Cl.
G01F 23/292 (2006.01)
(87) WO2021/255274
(31) FR2006355 **(32)** 18.06.20 **(33)** FR
(43) 23.12.2021
(72) CAVELIER, Brice; CAPDEVIELLE, Marc; JOLY, Flavien
(74) Spruson & Ferguson

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(71) CG Bio Co., Ltd.
(11) AU-A-2021312621
(21) 2021312621 **(22)** 23.07.2021
(54) Anti-adhesion polymer composition
(51) Int. Cl.
A61L 31/04 (2006.01)
A61L 31/14 (2006.01)
A61L 31/16 (2006.01)
C08K 5/053 (2006.01)
C08L 5/08 (2006.01)
C08L 71/02 (2006.01)
C08L 89/00 (2006.01)
(87) WO2022/019701
(31) 10-2020-0092274 **(32)** 24.07.20 **(33)** KR
(43) 27.01.2022
(72) PARK, Cho Hee; YOON, Hong Sun; PARK, Hee Jun; MOON, Bo Mi; KIM, Gwi Jae; PARK, Jun Kyu
(74) WRAYS PTY LTD

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(71) CHDI Foundation, Inc.
(11) AU-A-2021288104
(21) 2021288104 **(22)** 10.06.2021
(54) Heterocyclic compounds and imaging agents for imaging huntingtin protein
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/4985 (2006.01)
A61K 51/04 (2006.01)
C07D 471/04 (2006.01)
C07D 471/14 (2006.01)
C07D 519/00 (2006.01)
(87) WO2021/252775
(31) 63/037,751 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) LIU, Longbin; LEE, Matthew; DOMINGUEZ, Celia; JOHNSON, Peter David; GREENAWAY, Catherine Jane; KHURANA, Kanika; MILLS, Matthew Robert; ROTA, Filippo
(74) FPA Patent Attorneys Pty Ltd

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(71) Chemtor, LP
(11) AU-A-2021281245
(21) 2021281245 **(22)** 27.05.2021
(54) Purification and extraction of cannabinoids
(51) Int. Cl.
A23L 33/105 (2016.01)
(87) WO2021/242947
(31) 63/031,775 **(32)** 29.05.20 **(33)** US
17/330,504 26.05.21 US
(43) 02.12.2021
(72) LANIER, William; DAVIS, Scott
(74) Griffith Hack

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(71) Chengdu Kanghong Pharmaceutical Co.Ltd
(11) AU-A-2021283577
(21) 2021283577 **(22)** 02.06.2021
(54) Novel thyroid hormone β receptor agonist
(51) Int. Cl.
C07D 239/34 (2006.01)
A61K 31/505 (2006.01)
A61K 31/506 (2006.01)
A61P 3/04 (2006.01)
A61P 3/06 (2006.01)
A61P 5/14 (2006.01)
C07D 239/02 (2006.01)
C07D 403/12 (2006.01)
(87) WO2021/244582
(31) 202010491859.2 **(32)** 02.06.20 **(33)** CN
202110178964.5 09.02.21 CN
(43) 09.12.2021
(72) YU, Yongguo; WANG, Yiqian; KE, Zunhong
(74) FPA Patent Attorneys Pty Ltd

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(71) Chevron U.S.A. Inc.
(11) AU-A-2021288315

PCT applications which have entered the National Phase - Name Index cont'd

(21) 2021288315 **(22)** 11.06.2021
(54) Systems and methods for continuous measurement of erosion and corrosion in oil and gas facilities
(51) Int. Cl.
G01N 17/02 (2006.01)
G01F 1/88 (2006.01)
G01N 17/04 (2006.01)
(87) WO2021/252942
(31) 63/037,692 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) CAMERON, John Alasdair; JONES, Colin; JANAKIRAM SUBRAMANI, Hariprasad; RHYNE, Lee D.; LAZO, Antonio
(74) FPA Patent Attorneys Pty Ltd

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(71) Chia Tai Tianqing Pharmaceutical Group Co., Ltd.
(11) AU-A-2021263650
(21) 2021263650 **(22)** 26.04.2021
(54) Bifunctional protein against PD-1 and TGF-beta
(51) Int. Cl.
C07K 19/00 (2006.01)
A61K 39/395 (2006.01)
A61P 35/00 (2006.01)
C07K 1/00 (2006.01)
C07K 16/28 (2006.01)
C12N 15/62 (2006.01)
(87) WO2021/218895
(31) 202010359751.8 **(32)** 29.04.20 **(33)** CN
(43) 04.11.2021
(72) ZHAO, Wei; LI, Yingchun; LV, Haili; XIE, Lianxiang; ZHANG, Zhewen; QIN, Yu; ZHANG, Xiquan; CHENG, Yanju; LV, Peng; LI, Tiantian
(74) AJ PARK

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(71) Chia Tai Tianqing Pharmaceutical Group Co., Ltd.
(11) AU-A-2021271381
(21) 2021271381 **(22)** 10.05.2021
(54) SOS1 inhibitor containing phosphorus
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/517 (2006.01)
A61K 31/519 (2006.01)
A61P 35/00 (2006.01)
C07D 401/14 (2006.01)
C07D 403/12 (2006.01)
(87) WO2021/228028
(31) 202010387620.0 **(32)** 09.05.20 **(33)** CN
202110450032.1 25.04.21 CN
(43) 18.11.2021
(72) ZHANG, Yinsheng; LIU, Baomin; CHEN, Zhengbang; HU, Jinfa; CHEN, Yuchen; SUN, Kewen; WANG, Jinan; ZHU, Lijuan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Children's Medical Center Corporation
(11) AU-A-2021283279
(21) 2021283279 **(22)** 02.06.2021
(54) Nanobody (VHH) conjugates and uses there of
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 39/395 (2006.01)
A61K 47/68 (2017.01)
C12N 5/078 (2010.01)
(87) WO2021/247688
(31) 63/033,710 **(32)** 02.06.20 **(33)** US
63/154,455 26.02.21 US
(43) 09.12.2021
(72) PISHESHA, Novalia; PLOEGH, Hidde L.; HARMAND, Thibault
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Children's Medical Center Corporation
(11) AU-A-2021305213
(21) 2021305213 **(22)** 08.07.2021
(54) MYBPC3 polypeptides and uses thereof
(51) Int. Cl.
A61K 38/17 (2006.01)
A61K 48/00 (2006.01)
A61P 9/06 (2006.01)
C12N 15/86 (2006.01)
(87) WO2022/011151
(31) 63/049,398 **(32)** 08.07.20 **(33)** US
(43) 13.01.2022
(72) PU, William T.; LU, Fujian; BEZZERIDES, Vassilios
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) China Petroleum & Chemical Corporation; Sinopec Southwest Oil & Gas Company
(11) AU-A-2021286694
(21) 2021286694 **(22)** 10.06.2021
(54) Sliding sleeve device
(51) Int. Cl.
E21B 34/06 (2006.01)
E21B 43/26 (2006.01)
(87) WO2021/249498
(31) 202010534864.7 **(32)** 12.06.20 **(33)** CN
202010535615.X 12.06.20 CN
202010534832.7 12.06.20 CN
(43) 16.12.2021
(72) HOU, Zhimin; HU, Dan; WANG, Qiang; ZHOU, Yijun; QIAN, Jiang; CHEN, Chen; LIU, Tao; CI, Jianfa; PANG, Wenfeng; TENG, Wenjiang
(74) Adams Pluck

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(71) China Petroleum & Chemical Corporation; Sinopec Southwest Oil & Gas Company
(11) AU-A-2021287917
(21) 2021287917 **(22)** 10.06.2021
(54) Wellbore segmented operation method and rubber plug for said method
(51) Int. Cl.
E21B 43/26 (2006.01)
(87) WO2021/249499
(31) 202010534849.2 **(32)** 12.06.20 **(33)** CN
202010534828.0 12.06.20 CN
202010596721.9 28.06.20 CN
(43) 16.12.2021
(72) LEI, Wei; HOU, Zhimin; DONG, Haifeng; YAN, Yancheng; LAN, Lin; WANG, Xingwen; WANG, Xiaogang; QIAO, Zhiguo; FANG, Zhou
(74) Adams Pluck

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(71) China UnionPay Co., Ltd.
(11) AU-A-2021404438
(21) 2021404438 **(22)** 16.09.2021
(54) Card management method, user terminal, server, system and storage medium
(51) Int. Cl.
G06Q 20/34 (2012.01)
(87) WO2022/127230
(31) 202011469593.8 **(32)** 15.12.20 **(33)** CN
(43) 23.06.2022
(72) LIU, Gang; PENG, Cheng; SUN, Quan; ZOU, Zhenzhong; ZHAN, Chengchu; CAI, Hua
(74) Madderns Pty Ltd

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(71) Choi, W.H.; Hwang, N.K.; Yoo, H.J.
(11) AU-A-2021272685
(21) 2021272685 **(22)** 02.04.2021
(54) Non-rotating alternating current generating device
(51) Int. Cl.
H02K 99/00 (2014.01)
H02K 1/04 (2006.01)
H02K 1/14 (2006.01)
H02K 3/34 (2006.01)
H02K 15/10 (2006.01)
(87) WO2021/230496
(31) 10-2020-0057044 **(32)** 13.05.20 **(33)** KR
10-2020-0057048 13.05.20 KR
(43) 18.11.2021
(72) CHOI, Woo Hee; HWANG, Nan Kyung; YOO, Hyung Ju; YU, Sung Kwon
(74) H & H Lawyers

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(71) Chong Kun Dang Pharmaceutical Corp.
(11) AU-A-2021299156
(21) 2021299156 **(22)** 29.06.2021
(54) Injectable composition comprising GnRH derivatives
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/127 (2006.01)
A61K 38/09 (2006.01)
A61K 47/14 (2017.01)
A61K 47/22 (2006.01)
A61K 47/24 (2006.01)
A61K 47/28 (2006.01)
A61P 5/02 (2006.01)
(87) WO2022/005169
(31) 10-2020-0080621 **(32)** 30.06.20 **(33)** KR
(43) 06.01.2022
(72) KO, Jin Young; JUNG, Sung Bum; NOH, Sang Myoung; LIM, Jong Lae
(74) Spruson & Ferguson

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(71) Chorus, LLC
(11) AU-A-2021287887
(21) 2021287887 **(22)** 08.06.2021
(54) Systems, methods, and apparatuses for disinfection and decontamination
(51) Int. Cl.
A61B 5/00 (2006.01)
A61B 5/01 (2006.01)
A61B 5/145 (2006.01)
A61B 5/1486 (2006.01)
A61B 5/1495 (2006.01)
(87) WO2021/252552
(31) 63/049,919 **(32)** 09.07.20 **(33)** US

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63/157,368 05.03.21 US
63/049,541 08.07.20 US
63/036,412 08.06.20 US
63/081,459 22.09.20 US
63/126,734 17.12.20 US
63/049,524 08.07.20 US
(43) 16.12.2021
(72) RADER, Richard S.; HEATER, Kenneth J.; DESABATO, Raymond; LORCH, Daniel P.; LEWIS, Adriane L.; WELLS, Timothy N.
(74) Caska Intellectual Property Pty Ltd

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(71) Chr. Hansen A/S
(11) AU-A-2021299960
(21) 2021299960 **(22)** 30.06.2021
(54) Production of dairy and dairy anologue products with pichia kluyveri yeast
(51) Int. Cl.
A23C 9/12 (2006.01)
A23C 11/10 (2021.01)
A23L 2/38 (2021.01)
A23L 7/20 (2016.01)
A23L 11/50 (2021.01)
A23L 11/60 (2021.01)
A23L 11/65 (2021.01)
A23L 25/00 (2016.01)
A23L 29/30 (2016.01)
A23L 33/125 (2016.01)
A23L 33/135 (2016.01)
A23L 33/14 (2016.01)
A61K 35/741 (2015.01)
A61K 35/744 (2015.01)
A61K 35/747 (2015.01)
A61K 36/06 (2006.01)
A61K 36/064 (2006.01)
C12N 1/16 (2006.01)
C12R 1/84 (2006.01)
(87) WO2022/003012
(31) 20183014.8 **(32)** 30.06.20 **(33)** EP
20198931.6 29.09.20 EP
(43) 06.01.2022
(72) BULDO, Patrizia; FERNANDEZ, Raquel; TANG, Kasui; NIELSEN, Kristian Fog; GEPPEL, Asger
(74) Spruson & Ferguson

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(71) Claret Bioscience, LLC
(11) AU-A-2021297880
(21) 2021297880 **(22)** 23.06.2021
(54) Methods and compositions for analyzing nucleic acid
(51) Int. Cl.
C12Q 1/6806 (2018.01)
(87) WO2021/262805
(31) 63/086,208 **(32)** 01.10.20 **(33)** US
63/159,174 10.03.21 US
63/195,352 01.06.21 US
63/043,688 24.06.20 US
(43) 30.12.2021
(72) TROLL, Christopher J.; RAO, Varsha
(74) Spruson & Ferguson

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(71) Classic Connectors, Inc.
(11) AU-A-2021283811
(21) 2021283811 **(22)** 14.05.2021
(54) Fastening system for an electrical transmission line repair device
(51) Int. Cl.
H01R 43/027 (2006.01)
H01R 4/30 (2006.01)
H01R 4/36 (2006.01)
(87) WO2021/247219
(31) 16/888,759 **(32)** 31.05.20 **(33)** US
(43) 09.12.2021
(72) TAMM, Carl Russel; WOLF, Randy L.; FIELDS, Brent; PRINSLOO, Jonathan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Climeworks AG
(11) AU-A-2021298078
(21) 2021298078 **(22)** 17.06.2021
(54) Method and apparatus for direct air capture of carbon dioxide by using a solid polymeric support material functionalized with amino functionalities and the use of this material for carbon dioxide capture from air
(51) Int. Cl.
B01D 53/02 (2006.01)
B01D 53/04 (2006.01)
B01D 53/047 (2006.01)
(87) WO2021/259760
(31) 20181440.7 **(32)** 22.06.20 **(33)** EP
20213511.7 11.12.20 EP
(43) 30.12.2021
(72) VARGAS, Angelo; GEBALD, Christoph; ALBANI, Davide; NIEBEL, Tobias
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Climeworks AG
(11) AU-A-2021307537
(21) 2021307537 **(22)** 13.07.2021
(54) Amino sorbents for capturing of CO2 from gas streams
(51) Int. Cl.
B01D 53/02 (2006.01)
B01D 53/04 (2006.01)
(87) WO2022/013197
(31) 20186310.7 **(32)** 16.07.20 **(33)** EP
(43) 20.01.2022
(72) GEBALD, Christoph; VARGAS, Angelo; ALBANI, Davide; MICHELS, Nina-Luisa; ENGKAGUL, Visuta; MONNEY, Baptiste; BERROCAL, José, Augusto; WEDER, Christoph
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Clix, Inc.
(11) AU-A-2021267392
(21) 2021267392 **(22)** 08.05.2021
(54) Online media distribution and tracking framework for streaming video dissemination to consumers
(51) Int. Cl.
G06Q 30/00 (2012.01)
(87) WO2021/226565
(31) 63/022,291 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) SULLIVAN, Edward M.; JANUSZKO, Eric; SULLIVAN, Patrica
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Colgate-Palmolive Company
(11) AU-A-2021294350
(21) 2021294350 **(22)** 25.06.2021
(54) Oral care compositions
(51) Int. Cl.
A61Q 11/00 (2006.01)
A61K 8/24 (2006.01)
A61K 8/43 (2006.01)
A61K 8/44 (2006.01)
A61K 8/46 (2006.01)
A61K 8/49 (2006.01)
A61K 8/60 (2006.01)
(87) WO2021/263151
(31) 63/044,522 **(32)** 26.06.20 **(33)** US
(43) 30.12.2021
(72) LI, Ningwei; SHEN, Hongwei; TANG, Saide; WON, Betty; DUBOVOY, Viktor; PAN, Long
(74) Spruson & Ferguson

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(71) Coloplast A/S
(11) AU-A-2021282924
(21) 2021282924 **(22)** 31.05.2021
(54) Tracheostoma device holder
(51) Int. Cl.
A61M 16/04 (2006.01)
A61M 16/00 (2006.01)
A61M 25/02 (2006.01)
(87) WO2021/246938
(31) 2050635-8 **(32)** 02.06.20 **(33)** SE
(43) 09.12.2021
(72) VAN ALPHEN, Maarten Jan Antony; LEEMANS, Maartje; HEKMAN, Edsko Evert Geert; DIRVEN, Richard
(74) FB Rice Pty Ltd

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(71) Commonwealth Scientific and Industrial Research Organisation
(11) AU-A-2021284978
(21) 2021284978 **(22)** 04.06.2021
(54) A power optimized lithium ion energy storage device
(51) Int. Cl.
H01M 4/36 (2006.01)
H01M 4/131 (2010.01)
H01M 4/48 (2010.01)
H01M 4/50 (2010.01)
H01M 4/58 (2010.01)
H01M 10/052 (2010.01)
(87) WO2021/243423
(31) 2020901857 **(32)** 05.06.20 **(33)** AU
(43) 09.12.2021
(72) BEST, Adam; SNOOK, Graeme Andrew; BARGHAMADI, Marzi
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Complement Therapeutics Limited
(11) AU-A-2021267650
(21) 2021267650 **(22)** 06.05.2021
(54) Detection of complement proteins
(51) Int. Cl.
G01N 33/68 (2006.01)
(87) WO2021/224430
(31) 2006789.8 **(32)** 07.05.20 **(33)** GB
(43) 11.11.2021
(72) BISHOP, Paul; CLARK, Simon; UNWIN, Richard
(74) FB Rice Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

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(71) ConMed Corporation
(11) AU-A-2021289448
(21) 2021289448 **(22)** 09.06.2021
(54) Disposable arthroscopic suture cutting device
(51) Int. Cl.
A61B 17/04 (2006.01)
(87) WO2021/252608
(31) 63/036,673 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) MILLER, Peter; MUSER, Andrew
(74) Griffith Hack

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(71) ConocoPhillips Company
(11) AU-A-2021289762
(21) 2021289762 **(22)** 14.06.2021
(54) Mud circulating density alert
(51) Int. Cl.
E21B 21/08 (2006.01)
E21B 44/00 (2006.01)
E21B 45/00 (2006.01)
E21B 47/00 (2012.01)
E21B 49/00 (2006.01)
(87) WO2021/253001
(31) 63/038,396 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) CHEN, Yenshou James
(74) RnB IP Pty Ltd

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(71) Cook, B.
(11) AU-A-2021267877
(21) 2021267877 **(22)** 05.05.2021
(54) Rotatable airfoil structure with integrated solar photovoltaic electricity generation
(51) Int. Cl.
H02S 10/00 (2014.01)
(87) WO2021/226194
(31) 63/021,257 **(32)** 07.05.20 **(33)** US
(43) 11.11.2021
(72) COOK, Bradley
(74) Alder IP Pty Ltd

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(71) CooperVision International Limited
(11) AU-A-2021297025
(21) 2021297025 **(22)** 18.06.2021
(54) Contact lens packages and methods of use
(51) Int. Cl.
B65D 75/32 (2006.01)
A45C 11/00 (2006.01)
B65D 77/20 (2006.01)
(87) WO2021/260353
(31) 63/042,575 **(32)** 23.06.20 **(33)** US
(43) 30.12.2021
(72) ELLIS, Matthew John; NOYCE, Timothy; SLUKA, Dmitrijus
(74) Griffith Hack

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(71) Cosmetic Edge Pty Ltd
(11) AU-A-2021284974
(21) 2021284974 **(22)** 01.06.2021
(54) Adaptive dermal care methods and apparatus
(51) Int. Cl.
G06Q 50/00 (2012.01)
A45D 34/04 (2006.01)
A61B 5/00 (2006.01)
A61F 7/00 (2006.01)
A61H 23/00 (2006.01)
A61M 35/00 (2006.01)
A61N 1/30 (2006.01)
A61N 5/06 (2006.01)
(87) WO2021/243403
(31) 2020901818 **(32)** 03.06.20 **(33)** AU
(43) 09.12.2021
(72) JAFARZADEH, Mathew
(74) K&L Gates

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(71) Coulton, R.
(11) AU-A-2021287334
(21) 2021287334 **(22)** 10.06.2021
(54) Method and apparatus for separating synthetic turf infill material
(51) Int. Cl.
B29B 17/02 (2006.01)
(87) WO2021/250411
(31) 2008848.0 **(32)** 11.06.20 **(33)** GB
(43) 16.12.2021
(72) COULTAN, Richard Henry
(74) FOUNDRY INTELLECTUAL PROPERTY PTY LTD

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(71) CPI Card Group - Colorado, Inc.
(11) AU-A-2021297314
(21) 2021297314 **(22)** 24.06.2021
(54) Recovered plastic cards
(51) Int. Cl.
B29B 17/00 (2006.01)
B42D 25/47 (2014.01)
G06K 19/02 (2006.01)
G06K 19/077 (2006.01)
(87) WO2021/262994
(31) 63/044,228 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) MICHIELI, Maxmillian David; COLLERAN, James P.; MOSTELLER, Barry
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Crime Science Technology
(11) AU-A-2021286927
(21) 2021286927 **(22)** 10.06.2021
(54) Fluorescent composition comprising at least one benzazole compound for the securement of products
(51) Int. Cl.
B42D 25/29 (2014.01)
C09B 49/06 (2006.01)
C09D 11/50 (2014.01)
(87) WO2021/250358
(31) 20 06079 **(32)** 10.06.20 **(33)** FR
(43) 16.12.2021
(72) PRETE, Cosimo; MALINGE, Jérémy; DEPAUW, Alexis
(74) Spruson & Ferguson

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(71) CRISPR Therapeutics AG
(11) AU-A-2021271317
(21) 2021271317 **(22)** 13.05.2021
(54) Messenger RNA encoding Cas9 for use in genome-editing systems
(51) Int. Cl.
C12N 15/11 (2006.01)
A61K 48/00 (2006.01)
(87) WO2021/229502
(31) 63/025,755 **(32)** 15.05.20 **(33)** US
(43) 18.11.2021
(72) COBAUGH, Christian
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Crown Equipment Corporation
(11) AU-A-2021325685
(21) 2021325685 **(22)** 10.08.2021
(54) Remote control device
(51) Int. Cl.
G05D 1/00 (2006.01)
(87) WO2022/035797
(31) 63/064,011 **(32)** 11.08.20 **(33)** US
63/202,588 17.06.21 US
(43) 17.02.2022
(72) LUTHMAN, Trisha M.; PULSKAMP, Steven R.; WOODRUFF III, Vern I.; MAC MANUS, Daniel T.; FRADY, Jamison S.; WENNING, Megan E.
(74) Griffith Hack

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(71) CV6 Therapeutics (NI) Limited
(11) AU-A-2021297566
(21) 2021297566 **(22)** 25.06.2021
(54) Combination therapy with deoxyuridine triphosphatase inhibitors
(51) Int. Cl.
A61K 31/4164 (2006.01)
A61K 31/41 (2006.01)
A61K 31/4168 (2006.01)
A61K 31/4178 (2006.01)
A61K 31/4184 (2006.01)
A61K 31/4192 (2006.01)
A61K 31/4196 (2006.01)
A61K 31/422 (2006.01)
A61K 31/4245 (2006.01)
A61K 31/427 (2006.01)
A61K 31/433 (2006.01)
A61K 31/4439 (2006.01)
A61K 31/454 (2006.01)
A61K 31/496 (2006.01)
A61K 31/497 (2006.01)
A61K 31/501 (2006.01)
A61K 31/506 (2006.01)
A61K 31/5377 (2006.01)
A61K 31/541 (2006.01)
A61K 31/7072 (2006.01)
A61K 45/06 (2006.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
A61P 35/04 (2006.01)
(87) WO2021/263205
(31) 63/044,926 **(32)** 26.06.20 **(33)** US
(43) 30.12.2021
(72) MULLIGAN, Karl Andrew; WILSON, Peter Michael; WILSON, Melissa J LaBonte; LADNER, Robert D.
(74) HENRY HUGHES IP LTD

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(71) Cytosite Biopharma Inc.
(11) AU-A-2021286564
(21) 2021286564 **(22)** 09.06.2021
(54) Granzyme B directed imaging and therapy

PCT applications which have entered the National Phase - Name Index cont'd

(51) Int. Cl.
A61K 51/08 (2006.01)
A61K 51/04 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/252664
(31) 63/036,918 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) CLAY, Julia Marie; XIONG, Hui; RULEY, Kevin Michael; VALENZUELA, Francisco A.; HOYE, Adam T.; CASTANARES, Mark A.; KRONAUGE, James
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) D&D Manufacturing LLC
(11) AU-A-2021295823
(21) 2021295823 **(22)** 06.05.2021
(54) Solar distillation system with supplemental distillation units and associated methods
(51) Int. Cl.
B01D 3/10 (2006.01)
B01D 1/00 (2006.01)
B01D 3/00 (2006.01)
(87) WO2021/262327
(31) 16/907,434 **(32)** 22.06.20 **(33)** US
(43) 30.12.2021
(72) POLK JR., Dale E.; POLK, Karl Leslie
(74) Spruson & Ferguson

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(71) Daiwa Can Company
(11) AU-A-2021280590
(21) 2021280590 **(22)** 26.05.2021
(54) Can lid tab and can lid
(51) Int. Cl.
B65D 17/34 (2006.01)
(87) WO2021/241640
(31) 2020-092832 **(32)** 28.05.20 **(33)** JP
(43) 02.12.2021
(72) SHIOTANI, Masahiro; MIYASHITA, Rio
(74) FB Rice Pty Ltd

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(71) Daiwa Can Company
(11) AU-A-2021281838
(21) 2021281838 **(22)** 26.05.2021
(54) Can lid
(51) Int. Cl.
B65D 17/40 (2006.01)
(87) WO2021/241639
(31) 2020-092838 **(32)** 28.05.20 **(33)** JP
(43) 02.12.2021
(72) SHIOTANI, Masahiro; MIYASHITA, Rio
(74) FB Rice Pty Ltd

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(71) Dalian Safe Technology Co., LTD
(11) AU-A-2020453094
(21) 2020453094 **(22)** 12.10.2020
(54) Safety socket module, and power strip and mobile cable reel comprising safety socket module
(51) Int. Cl.
H01R 13/713 (2006.01)
H01R 13/52 (2006.01)
(87) WO2021/248758
(31) 202010513546.2 **(32)** 08.06.20 **(33)** CN
(43) 16.12.2021
(72) MA, Wen; MA, Junge; CAO, Liwei
(74) WRAYS PTY LTD

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(71) Dana-Farber Cancer Institute, Inc.
(11) AU-A-2021284369
(21) 2021284369 **(22)** 03.06.2021
(54) Quinazoline-derived HCK inhibitors for use in the treatment of MYD88 mutated diseases
(51) Int. Cl.
A61P 35/00 (2006.01)
A61K 31/517 (2006.01)
C07D 403/12 (2006.01)
C07D 417/12 (2006.01)
C07D 487/04 (2006.01)
(87) WO2021/247845
(31) 63/035,493 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) GRAY, Nathanael S.; TREON, Steven P.; BUHRLAGE, Sara Jean; YANG, Guang; WANG, Jinhua; TAN, Li; HUNTER, Zachary R.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Dana-Farber Cancer Institute, Inc.; The General Hospital Corporation
(11) AU-A-2021293907
(21) 2021293907 **(22)** 16.06.2021
(54) Targeted aberrant alpha-synuclein species and induced ubiquitination and proteosomal clearance via co-recruitment of an E3-ligase system
(51) Int. Cl.
C07K 16/00 (2006.01)
C07K 16/18 (2006.01)
C12N 15/10 (2006.01)
(87) WO2021/257650
(31) 63/040,105 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) FERGUSON, Fleur, M.; GRAY, Nathanael, S.; ZHANG, Tinghu; HAGGARTY, Stephen, J.
(74) Spruson & Ferguson

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(71) Danmarks Tekniske Universitet
(11) AU-A-2021304815
(21) 2021304815 **(22)** 07.07.2021
(54) Bacterial vehicle for engineering of non-phagocytic immune cells
(51) Int. Cl.
A61K 35/74 (2015.01)
A61K 31/7105 (2006.01)
A61K 31/713 (2006.01)
A61K 38/16 (2006.01)
A61K 38/17 (2006.01)
A61K 38/19 (2006.01)
A61P 31/00 (2006.01)
A61P 31/04 (2006.01)
A61P 31/12 (2006.01)
A61P 35/00 (2006.01)
A61P 37/00 (2006.01)
(87) WO2022/008550
(31) 20184439.6 **(32)** 07.07.20 **(33)** EP
(43) 13.01.2022
(72) QUAINOO, Scott; SOMMER, Morten Otto Alexander; SOARES, Sarah Aparecida
(74) Spruson & Ferguson

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(71) Davol Inc.
(11) AU-A-2021292080
(21) 2021292080 **(22)** 15.06.2021
(54) Implantable prosthesis
(51) Int. Cl.
A61F 2/00 (2006.01)
(87) WO2021/257509
(31) 16/907,100 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) FELIX, Augustus; D'AMBRUOSO, Talia; SPINNEY, Cuixiang Qu; CUDMORE, Korel
(74) FB Rice Pty Ltd

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(71) Davol Inc.
(11) AU-A-2021293874
(21) 2021293874 **(22)** 15.06.2021
(54) Prosthetic repair fabric
(51) Int. Cl.
D04B 21/10 (2006.01)
A61F 2/00 (2006.01)
D04B 21/12 (2006.01)
(87) WO2021/257501
(31) 16/907,104 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) FELIX, Augustus; LIGEIKIS, Michael
(74) FB Rice Pty Ltd

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(71) Davol Inc.
(11) AU-A-2021293881
(21) 2021293881 **(22)** 15.06.2021
(54) Implantable prosthesis
(51) Int. Cl.
A61F 2/00 (2006.01)
(87) WO2021/257536
(31) 16/907,091 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) FELIX, Augustus; LIGEIKIS, Michael
(74) FB Rice Pty Ltd

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(71) DDP Specialty Electronic Materials US, Inc.
(11) AU-A-2020239045
(21) 2020239045 **(22)** 11.03.2020
(54) A two-component polyurethane or polyisocyanurate low pressure spray foam composition containing a gaseous blowing agent comprising pressurized carbon dioxide
(51) Int. Cl.
C08G 18/16 (2006.01)
C08G 18/22 (2006.01)
C08G 18/24 (2006.01)
C08G 18/30 (2006.01)
C08G 18/38 (2006.01)
C08G 18/40 (2006.01)
C08G 18/42 (2006.01)
C08G 18/48 (2006.01)
C08G 18/66 (2006.01)
C08G 18/76 (2006.01)
C08G 77/46 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

C08J 9/08 (2006.01)
C08J 9/12 (2006.01)
C08J 9/14 (2006.01)
C08K 5/00 (2006.01)
C08K 5/54 (2006.01)
C08G 101/00 (2006.01)
(87) WO2020/185843
(31) 62/816,467 **(32)** 11.03.19 **(33)** US
(43) 17.09.2020
(72) THOMAS, Megan Marie; KOH, Kyoung Moo; RICKARD, Mark Alan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Decathlon
(11) AU-A-2021285003
(21) 2021285003 **(22)** 31.05.2021
(54) Tent comprising a bed base
(51) Int. Cl.
E04H 15/06 (2006.01)
A47C 23/06 (2006.01)
A47C 27/08 (2006.01)
E04H 15/20 (2006.01)
(87) WO2021/245002
(31) 2005809 **(32)** 03.06.20 **(33)** FR
(43) 09.12.2021
(72) LAFOUX, Benjamin
(74) FPA Patent Attorneys Pty Ltd

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(71) Dechert, M.; Georg, S.
(11) AU-A-2021271182
(21) 2021271182 **(22)** 14.05.2021
(54) Device and method for carrying out decontamination measures, method for preparing decontamination measures and method for monitoring decontamination measures
(51) Int. Cl.
F24F 11/00 (2018.01)
F24C 15/20 (2006.01)
F24F 3/163 (2021.01)
F24F 7/00 (2021.01)
F24F 7/08 (2006.01)
F24F 8/97 (2021.01)
F24F 9/00 (2006.01)
F24F 120/10 (2018.01)
(87) WO2021/229074
(31) PCT/EP2020/063710 **(32)** 15.05.20 **(33)** EP
PCT/EP2020/065694 05.06.20 EP
10 2021 106 401.5 16.03.21 DE
(43) 18.11.2021
(72) DECHERT, Michael Dieter; GEORG, Silvano
(74) Spruson & Ferguson

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(71) Dentsu Inc.
(11) AU-A-2021427874
(21) 2021427874 **(22)** 04.10.2021
(54) Real-time data processing device
(51) Int. Cl.
G06F 3/048 (2013.01)
G06F 3/01 (2006.01)
(31) 2021-101804 **(32)** 18.06.21 **(33)** JP
(43) 19.01.2023
(72) IWASHITA, Satoru; KOBUSE, Noritaka; HIBI, Akimichi; SHIGEMASA, Naoto; TOMITA, Susumu; NAGASAKU, Keishi
(74) RnB IP Pty Ltd

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(71) Depuy Ireland Unlimited Company, Inc.
(11) AU-A-2021265192
(21) 2021265192 **(22)** 30.04.2021
(54) Orthopaedic knee implant system with controlled stiffness
(51) Int. Cl.
A61F 2/30 (2006.01)
A61F 2/38 (2006.01)
(87) WO2021/219836
(31) 16/863,112 **(32)** 30.04.20 **(33)** US
(43) 04.11.2021
(72) WHITE, Stephen E.; MALONEY, William J.
(74) Spruson & Ferguson

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(71) Depuy Synthes Products, Inc.
(11) AU-A-2021266181
(21) 2021266181 **(22)** 23.04.2021
(54) Self-retaining screw and screwdriver
(51) Int. Cl.
A61B 17/88 (2006.01)
A61B 90/00 (2016.01)
(87) WO2021/220122
(31) 16/863,586 **(32)** 30.04.20 **(33)** US
(43) 04.11.2021
(72) SPREITER, Gregor; DÉFOSSEZ, Henri; SCHERRER, Simon; EL ZOGHBI, Gaser; KOCH, Roger; SCHUMACHER, Yvonne; RAPIER, Rhett A.
(74) Spruson & Ferguson

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(71) Dermavant Sciences GmbH
(11) AU-A-2021296867
(21) 2021296867 **(22)** 24.06.2021
(54) Topical pharmaceutical compositions
(51) Int. Cl.
A61K 31/05 (2006.01)
A61K 47/06 (2006.01)
A61K 47/10 (2017.01)
(87) WO2021/262917
(31) 63/043,340 **(32)** 24.06.20 **(33)** US
63/043,360 24.06.20 US
(43) 30.12.2021
(72) JAIN, Piyush; LEMING, Robert Michael; TABOLT, Glenn; COLBORN, Alan Scott
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Detnet South Africa (Pty) Ltd
(11) AU-A-2021262878
(21) 2021262878 **(22)** 02.02.2021
(54) A safety arrangement for a wireless blasting system
(51) Int. Cl.
F42D 1/055 (2006.01)
F42C 15/42 (2006.01)
F42D 1/045 (2006.01)
F42D 5/00 (2006.01)
F42D 5/02 (2006.01)
(87) WO2021/222946
(31) NA/P/2020/0011 **(32)** 29.04.20 **(33)** NA
(43) 04.11.2021
(72) MULLER, Elmar Lennox; MEYER, Tielman Christiaan; LIEBENBERG, Abraham Johannes
(74) Madderns Pty Ltd

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(71) Detnet South Africa (Pty) Ltd
(11) AU-A-2021264095
(21) 2021264095 **(22)** 23.04.2021
(54) Detonator position determination
(51) Int. Cl.
F42D 1/00 (2006.01)
(87) WO2021/222948
(31) NA/P/2020/0012 **(32)** 29.04.20 **(33)** NA
(43) 04.11.2021
(72) SCHLENTER, Craig; YATES, Marinus
(74) Madderns Pty Ltd

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(71) Diehl Metall Stiftung & Co. KG
(11) AU-A-2021295229
(21) 2021295229 **(22)** 09.06.2021
(54) Base part for producing a cartridge case and cartridge case, method for producing a base part for a cartridge case, and method for producing a cartridge case
(51) Int. Cl.
B21K 21/04 (2006.01)
F42B 5/28 (2006.01)
(87) WO2021/259643
(31) 10 2020 003 744.5 **(32)** 23.06.20 **(33)** DE
(43) 30.12.2021
(72) WOSCH, Stefan; SINGER, Marcus; ARBAK, Murat
(74) Spruson & Ferguson

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(71) Digital Surgery Systems, Inc.
(11) AU-A-2021288309
(21) 2021288309 **(22)** 11.06.2021
(54) System, method, and apparatus for hand-centric controller for the robotic digital surgical microscope
(51) Int. Cl.
A61B 34/35 (2016.01)
A61B 34/30 (2016.01)
A61B 90/00 (2016.01)
(87) WO2021/252930
(31) 63/038,254 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) POLCHIN, George C.
(74) K&L Gates

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(71) Dionis Therapeutics, Inc.
(11) AU-A-2021280261
(21) 2021280261 **(22)** 26.05.2021
(54) Nucleic acid artificial mini-proteome libraries
(51) Int. Cl.
C12N 15/10 (2006.01)
C40B 40/08 (2006.01)
(87) WO2021/242793
(31) 63/030,056 **(32)** 26.05.20 **(33)** US
(43) 02.12.2021
(72) FRITSCH, Edward, F.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Dispensing Technologies B.V.
(11) AU-A-2021277968
(21) 2021277968 **(22)** 25.05.2021

PCT applications which have entered the National Phase - Name Index cont'd

(54) Device for dispensing a material by means of pressurized gas and partially gas-filled tubular body for use therein
(51) Int. Cl.
B05B 9/08 (2006.01)
(87) WO2021/242094
(31) 2025666 **(32)** 25.05.20 **(33)** NL
2026776 27.10.20 NL
(43) 02.12.2021
(72) NERVO, Paulo; VAN MELICK, Dennis; VAN WIJK, Dominicus Jan
(74) DAVIS IP PTY LTD

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(71) DNA Script
(11) AU-A-2021290908
(21) 2021290908 **(22)** 14.06.2021
(54) Systems, apparatus and kits for enzymatic polynucleotide synthesis
(51) Int. Cl.
B01J 19/00 (2006.01)
C12P 19/34 (2006.01)
(87) WO2021/254934
(31) 20180224.6 **(32)** 16.06.20 **(33)** EP
(43) 23.12.2021
(72) MARTIN, Carl; ARTIGUE, Marc; CRETON, Sandrine; DE CROZALS, Gabriel; GODRON, Xavier; HORGAN, Adrian; LACHAIZE, Henri; LUCKY, John; PEPONNET, Christine; YBERT, Thomas
(74) Davies Collison Cave Pty Ltd

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(71) Docsheen Pty Ltd
(11) AU-A-2021267567
(21) 2021267567 **(22)** 06.05.2021
(54) Urinary flow rate measurement device and method
(51) Int. Cl.
A61B 5/20 (2006.01)
(87) WO2021/222986
(31) 2020901463 **(32)** 07.05.20 **(33)** AU
(43) 11.11.2021
(72) SHEEN, Adrian
(74) FPA Patent Attorneys Pty Ltd

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(71) Dolby Laboratories Licensing Corporation
(11) AU-A-2021286636
(21) 2021286636 **(22)** 10.06.2021
(54) Encoding of multi-channel audio signals comprising downmixing of a primary and two or more scaled non-primary input channels
(51) Int. Cl.
G10L 19/008 (2013.01)
G10L 19/04 (2013.01)
G10L 19/02 (2013.01)
(87) WO2021/252748
(31) 63/037,635 **(32)** 11.06.20 **(33)** US
63/193,926 27.05.21 US
(43) 16.12.2021
(72) MCGRATH, David S.
(74) Spruson & Ferguson

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(71) Dolby Laboratories Licensing Corporation
(11) AU-A-2021288690
(21) 2021288690 **(22)** 10.06.2021
(54) Methods and devices for encoding and/or decoding spatial background noise within a multi-channel input signal
(51) Int. Cl.
G10L 19/008 (2013.01)
G10L 19/012 (2013.01)
(87) WO2021/252705
(31) 63/037,650 **(32)** 11.06.20 **(33)** US
63/193,946 27.05.21 US
(43) 16.12.2021
(72) ECKERT, Michael; TYAGI, Rishabh
(74) Spruson & Ferguson

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(71) Dreame Innovation Technology (Suzhou) Co., Ltd.
(11) AU-A-2021297829
(21) 2021297829 **(22)** 08.06.2021
(54) Rinse control method and apparatus for cleaning mechanism, and storage medium
(51) Int. Cl.
A47L 11/40 (2006.01)
(87) WO2021/259059
(31) 202010577982.6 **(32)** 23.06.20 **(33)** CN
(43) 30.12.2021
(72) WANG, Shengle
(74) Adams Pluck

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(71) Dropbox, Inc.
(11) AU-A-2021287206
(21) 2021287206 **(22)** 25.01.2021
(54) Intelligently generating and managing third-party sources within a contextual hub
(51) Int. Cl.
G06F 16/954 (2019.01)
(87) WO2021/252023
(31) 16/937,208 **(32)** 23.07.20 **(33)** US
16/937,195 23.07.20 US
63/036,402 08.06.20 US
16/937,092 23.07.20 US
(43) 16.12.2021
(72) ARNOLD, Hudson; KLEINPETER, Thomas; MCARDLE, Terrence; MENDOZA, Kristoffer
(74) FPA Patent Attorneys Pty Ltd

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(71) DSM IP Assets B.V.
(11) AU-A-2021301154
(21) 2021301154 **(22)** 28.06.2021
(54) Personalization of dietary and nutraceutical supplements
(51) Int. Cl.
A23L 33/15 (2016.01)
A23L 33/00 (2016.01)
A23L 33/155 (2016.01)
(87) WO2022/002842
(31) 20183048.6 **(32)** 30.06.20 **(33)** EP
(43) 06.01.2022
(72) CONNOLLY, Alan; MATUSHESKI, Nathan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Duke University
(11) AU-A-2021267885
(21) 2021267885 **(22)** 05.05.2021
(54) Compositions and methods for formation and secretion of extracellular vesicles and AAV particles
(51) Int. Cl.
C07K 14/005 (2006.01)
C07K 14/015 (2006.01)
C12N 1/15 (2006.01)
C12N 1/19 (2006.01)
C12N 1/21 (2006.01)
C12N 15/00 (2006.01)
(87) WO2021/226253
(31) 63/020,051 **(32)** 05.05.20 **(33)** US
63/123,668 10.12.20 US
(43) 11.11.2021
(72) ASOKAN, Aravind; ELMORE, Zachary; HAVLIK, Lawrence Patrick; OH, Daniel K.
(74) Spruson & Ferguson

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(71) Duke University
(11) AU-A-2021283961
(21) 2021283961 **(22)** 04.06.2021
(54) Compositions and methods for augmenting autologous fat grafts
(51) Int. Cl.
A61K 35/12 (2015.01)
A61K 35/35 (2015.01)
A61L 27/26 (2006.01)
A61L 27/58 (2006.01)
(87) WO2021/247952
(31) 63/035,173 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) ROBERTS, Stefan; CHILKOTI, Ashutosh; KLITZMAN, Bruce; HOLLENBECK, Scott
(74) Griffith Hack

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(71) Dyadic International (USA), Inc.
(11) AU-A-2021271311
(21) 2021271311 **(22)** 13.05.2021
(54) Modified filamentous fungi for production of exogenous proteins
(51) Int. Cl.
C12N 1/14 (2006.01)
C12N 15/09 (2006.01)
C12N 15/85 (2006.01)
C12R 1/645 (2006.01)
C12R 1/66 (2006.01)
(87) WO2021/229483
(31) 63/024,550 **(32)** 14.05.20 **(33)** US
(43) 18.11.2021
(72) VITIKAINEN, Marika; HUUSKONEN, Anne; KOVALCHUK, Andriy; LANDOWSKI, Christopher; TCHELET, Ronen; EMALFARB, Mark Aaron; SALOHEIMO, Markku
(74) PIPERS

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(71) Eaton Intelligent Power Limited
(11) AU-A-2021284813
(21) 2021284813 **(22)** 31.05.2021
(54) Synchronization of electrical power grids
(51) Int. Cl.
H02J 3/08 (2006.01)
H02J 3/38 (2006.01)
H02J 3/40 (2006.01)
(87) WO2021/244776
(31) 63/035,061 **(32)** 05.06.20 **(33)** US

PCT applications which have entered the National Phase - Name Index cont'd

(43) 09.12.2021
(72) BHAVARAJU, Vijay; CHANDRA, Souvik; MONDAL, Abrez; YANG, Yi
(74) Maxwells Patent & Trade Mark Attorneys Pty Ltd

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(71) Edge Embossing, Inc.
(11) AU-A-2021283352
(21) 2021283352 **(22)** 03.06.2021
(54) Thermoplastic articles having precise micro-scale features and long-range macro-scale reproducibility
(51) Int. Cl.
B29C 59/02 (2006.01)
B81C 1/00 (2006.01)
(87) WO2021/247788
(31) 63/034,103 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) SMITH, Brian Alexander; KAMHOLZ, Andrew Evan; HARRIS, Cameron John; FARHAT, Hootan; TRUEB, Jacob Thomas; MCLOUD, Courtney Ann; HEMOND, Meghan Ashley
(74) FPA Patent Attorneys Pty Ltd

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(71) Effegi Brevetti S.R.L.
(11) AU-A-2021291301
(21) 2021291301 **(22)** 27.01.2021
(54) Device for supporting and fixing furniture shelves
(51) Int. Cl.
A47B 96/06 (2006.01)
F16B 12/20 (2006.01)
F16B 12/32 (2006.01)
(87) WO2021/254665
(31) 102020000014326 **(32)** 16.06.20 **(33)** IT
(43) 23.12.2021
(72) GIOVANNETTI, Antonio
(74) LAMINAR IP PTY LTD

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(71) Ehrl, A.; Ott, R.
(11) AU-A-2020446448
(21) 2020446448 **(22)** 07.05.2020
(54) Agent for liquefying crude oil and/or for removing oil residues
(51) Int. Cl.
B08B 3/00 (2006.01)
B08B 3/04 (2006.01)
B08B 9/00 (2006.01)
C09K 8/58 (2006.01)
C11D 7/50 (2006.01)
C11D 11/00 (2006.01)
C09K 8/524 (2006.01)
(87) WO2021/223870
(43) 11.11.2021
(72) EHRL, Alwin; OTT, Rainer
(74) WRAYS PTY LTD

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(71) Eisai R&D Management Co., Ltd.
(11) AU-A-2021315234
(21) 2021315234 **(22)** 29.07.2021
(54) Therapeutic agent for breast cancer
(51) Int. Cl.
A61K 31/4545 (2006.01)
A61K 31/138 (2006.01)
A61K 31/4196 (2006.01)
A61K 31/565 (2006.01)
A61K 31/5685 (2006.01)
A61K 31/58 (2006.01)
A61K 45/00 (2006.01)
A61P 15/00 (2006.01)
A61P 35/00 (2006.01)
A61P 35/04 (2006.01)
A61P 43/00 (2006.01)
(87) WO2022/025150
(31) 2020-130935 **(32)** 31.07.20 **(33)** JP
2020-163258 29.09.20 JP
(43) 03.02.2022
(72) KAWANO Satoshi; MIYANO Saori; NISHIBATA Kyoko; FUKUSHIMA Sayo
(74) Davies Collison Cave Pty Ltd

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(71) ELC Management LLC
(11) AU-A-2021272989
(21) 2021272989 **(22)** 12.05.2021
(54) Shear-thinning cosmetic composition
(51) Int. Cl.
A61K 8/04 (2006.01)
A61Q 19/00 (2006.01)
(87) WO2021/231658
(31) 63/025,800 **(32)** 15.05.20 **(33)** US
(43) 18.11.2021
(72) LEE, Wilson A.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) ELC Management LLC
(11) AU-A-2021293904
(21) 2021293904 **(22)** 15.06.2021
(54) Packaging for sprayable perfume products
(51) Int. Cl.
B65D 85/30 (2006.01)
B65D 5/42 (2006.01)
B65D 77/02 (2006.01)
B65D 81/113 (2006.01)
(87) WO2021/257635
(31) 16/903,846 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) BUZOT, Hervé Georges; TARAJANO NOYA, Lemis
(74) Maxwells Patent & Trade Mark Attorneys Pty Ltd

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(71) Element Biosciences, Inc.
(11) AU-A-2021275128
(21) 2021275128 **(22)** 19.05.2021
(54) Methods for paired-end sequencing library preparation
(51) Int. Cl.
C40B 30/06 (2006.01)
C12Q 1/6811 (2018.01)
C12Q 1/6855 (2018.01)
C12Q 1/6876 (2018.01)
(87) WO2021/236792
(31) 63/027,891 **(32)** 20.05.20 **(33)** US
(43) 25.11.2021
(72) ARSLAN, Sinan; ZHAO, Junhua; HE, Molly; LIGHT, William; KELLINGER, Matthew; PREVITE, Michael
(74) FB Rice Pty Ltd

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(71) ElevateBio Technologies, Inc.
(11) AU-A-2021300378
(21) 2021300378 **(22)** 01.07.2021
(54) Compositions and methods for cellular reprogramming using circular RNA
(51) Int. Cl.
C12N 5/074 (2010.01)
C12N 5/077 (2010.01)
C12N 15/11 (2006.01)
C12N 15/63 (2006.01)
(87) WO2022/006399
(31) 63/046,976 **(32)** 01.07.20 **(33)** US
(43) 06.01.2022
(72) NARAYAN, Santosh; THIEL, Austin; CARPENTER, Melissa; FINER, Mitchell Howard; YANG, Miranda; PLEWA, Cherylene
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) EmendoBio Inc.
(11) AU-A-2021279056
(21) 2021279056 **(22)** 27.05.2021
(54) Biallelic knockout of SARM1
(51) Int. Cl.
C12N 9/12 (2006.01)
C12N 9/22 (2006.01)
C12N 15/11 (2006.01)
C12N 15/70 (2006.01)
C12N 15/83 (2006.01)
(87) WO2021/243058
(31) 63/030,678 **(32)** 27.05.20 **(33)** US
63/036,325 08.06.20 US
(43) 02.12.2021
(72) EMMANUEL, Rafi; GOLAN MASHIACH, Michal
(74) FB Rice Pty Ltd

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(71) Emergex Vaccines Holding Limited
(11) AU-A-2021286179
(21) 2021286179 **(22)** 02.06.2021
(54) Diagnosis, prevention and treatment of coronavirus infection
(51) Int. Cl.
A61K 39/215 (2006.01)
C07K 14/165 (2006.01)
G01N 33/569 (2006.01)
(87) WO2021/245140
(31) 2008250.9 **(32)** 02.06.20 **(33)** GB
(43) 09.12.2021
(72) RADEMACHER, Thomas; PERRINS, Richard; RADEMACHER, Laurens
(74) Catalyst Intellectual Property

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(71) Encapsys, LLC
(11) AU-A-2021342511
(21) 2021342511 **(22)** 17.09.2021
(54) Multifunctional (meth)acrylate polysaccharide microcapsules
(51) Int. Cl.
B01J 13/16 (2006.01)
A61K 8/11 (2006.01)
C08B 31/04 (2006.01)
C08B 31/14 (2006.01)
(87) WO2022/061054
(31) 63/080,062 **(32)** 18.09.20 **(33)** US
(43) 24.03.2022
(72) BAUMLER, Stephen Marc
(74) FB Rice Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) Ender Holding AG
(11) AU-A-2021288610
(21) 2021288610 **(22)** 09.06.2021
(54) Isothermal real-time PCR method for determining presence of a pre-determined RNA sequence in a sample
(51) Int. Cl.
C12Q 1/6888 (2018.01)
(87) WO2021/250140
(31) 20179109.2 **(32)** 09.06.20 **(33)** EP
(43) 16.12.2021
(72) ZÜRCHER, Samuel; LÜTHI, Alexander; WEIBEL, Lea
(74) Spruson & Ferguson

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(71) Ender Holding AG
(11) AU-A-2021288994
(21) 2021288994 **(22)** 09.06.2021
(54) Isothermal real-time PCR method for determining presence of a pre-determined nucleic acid sequence in animal samples
(51) Int. Cl.
C12Q 1/68 (2018.01)
(87) WO2021/250137
(31) 20179108.4 **(32)** 09.06.20 **(33)** EP
(43) 16.12.2021
(72) ZÜRCHER, Samuel; LÜTHI, Alexander; WEIBEL, Lea
(74) Spruson & Ferguson

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(71) Ennis-Flint, Inc.
(11) AU-A-2021276502
(21) 2021276502 **(22)** 20.05.2021
(54) Ketone functionalized polymers, methods of making ketone functionalized polymers, and compositions including the same
(51) Int. Cl.
C08F 220/14 (2006.01)
C08F 220/34 (2006.01)
C09D 133/14 (2006.01)
(87) WO2021/236883
(31) 63/027,568 **(32)** 20.05.20 **(33)** US
(43) 25.11.2021
(72) LI, Haibo; SWENSON, Matthew
(74) Minter Ellison

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(71) Enphase Energy, Inc.
(11) AU-A-2021283869
(21) 2021283869 **(22)** 01.06.2021
(54) Load detection and prioritization for an energy management system
(51) Int. Cl.
H02J 3/14 (2006.01)
H02J 3/32 (2006.01)
(87) WO2021/247509
(31) 63/033,201 **(32)** 01.06.20 **(33)** US
(43) 09.12.2021
(72) BELUR, Raghuveer R.
(74) Spruson & Ferguson

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(71) Enterobiome Inc.
(11) AU-A-2020455122
(21) 2020455122 **(22)** 26.06.2020
(54) Novel picalibacterium prosnich EB-FP-DK9 strain and uses thereof
(51) Int. Cl.
C12N 1/20 (2006.01)
A23L 33/135 (2016.01)
A61K 35/74 (2015.01)
A61P 1/16 (2006.01)
A61P 3/00 (2006.01)
A61P 29/00 (2006.01)
C12R 1/01 (2006.01)
(87) WO2021/261631
(31) 10-2020-0077337 **(32)** 24.06.20 **(33)** KR
(43) 30.12.2021
(72) SEO, Jae Gu; SHIN, Joo Hyun; LEE, Do Kyung
(74) James & Wells Intellectual Property

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(71) Enza Zaden Beheer B.V.
(11) AU-A-2021306505
(21) 2021306505 **(22)** 29.06.2021
(54) Spinach plant resistant to downy mildew and novel resistance gene
(51) Int. Cl.
A01H 1/00 (2006.01)
A01H 1/04 (2006.01)
A01H 6/02 (2018.01)
C07K 14/415 (2006.01)
C12N 15/82 (2006.01)
C12Q 1/6895 (2018.01)
(87) WO2022/008296
(31) PCT/EP2020/069608 **(32)** 10.07.20 **(33)** EP
(43) 13.01.2022
(72) SUIDGEEST, Faira; ROOBEEK, Ilja; DIJKSTRA, Jan Ane
(74) Spruson & Ferguson

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(71) Epiroc Rock Drills Aktiebolag
(11) AU-A-2021299637
(21) 2021299637 **(22)** 02.06.2021
(54) Self-test method for a ranging sensor-arrangement of a work machine
(51) Int. Cl.
G01S 7/48 (2006.01)
G01S 7/497 (2006.01)
G01S 17/87 (2020.01)
G01S 17/931 (2020.01)
G01S 7/41 (2006.01)
G01S 7/52 (2006.01)
G01S 7/539 (2006.01)
G01S 13/87 (2006.01)
G01S 13/931 (2020.01)
G01S 15/87 (2006.01)
G01S 15/931 (2020.01)
(87) WO2022/005357
(31) 2030214-7 **(32)** 29.06.20 **(33)** SE
(43) 06.01.2022
(72) LARSSON, Johan; KALANDER, Jan
(74) WRAYS PTY LTD

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(71) Epiroc Rock Drills Aktiebolag
(11) AU-A-2021300979
(21) 2021300979 **(22)** 02.06.2021
(54) Self-test method for a ranging sensor-arrangement of a work machine
(51) Int. Cl.
G01S 7/48 (2006.01)
G01S 7/40 (2006.01)
G01S 7/497 (2006.01)
G01S 17/87 (2020.01)
G01S 17/931 (2020.01)
G01S 7/41 (2006.01)
G01S 7/52 (2006.01)
G01S 7/539 (2006.01)
G01S 13/87 (2006.01)
G01S 13/931 (2020.01)
G01S 15/87 (2006.01)
G01S 15/931 (2020.01)
(87) WO2022/005358
(31) 2030215-4 **(32)** 29.06.20 **(33)** SE
(43) 06.01.2022
(72) LARSSON, Johan; NOWÉN, Peter; UPPGÅRD, Thomas
(74) WRAYS PTY LTD

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(71) Epiroc Rock Drills Aktiebolag
(11) AU-A-2021305599
(21) 2021305599 **(22)** 06.07.2021
(54) Apparatus and method for securing an anchor bolt
(51) Int. Cl.
E21D 20/02 (2006.01)
(87) WO2022/010407
(31) 2050868-5 **(32)** 09.07.20 **(33)** SE
(43) 13.01.2022
(72) JAKOBSSON, Lars Henrik; JAKOBSSON, Carl Henrik
(74) WRAYS PTY LTD

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(71) Equinix, Inc.
(11) AU-A-2021273280
(21) 2021273280 **(22)** 14.05.2021
(54) Virtual gateways in a cloud exchange
(51) Int. Cl.
H04L 45/02 (2022.01)
H04L 47/20 (2022.01)
(87) WO2021/231964
(31) 63/025,352 **(32)** 15.05.20 **(33)** US
(43) 18.11.2021
(72) DURRANI, Muhammad; JAMAL, Rizwan; MCCULLOUGH, David; SYED, Muhammad Zeeshan Nasir; VALAPHIL, Mithun Thai; GNANESHWAR, Sudhanva; BANSAL, Vivek
(74) FPA Patent Attorneys Pty Ltd

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(71) Erasmus University Medical Center Rotterdam (Erasmus MC)
(11) AU-A-2021313388
(21) 2021313388 **(22)** 23.07.2021
(54) S100 proteins as novel therapeutic targets in myeloproliferative neoplasms
(51) Int. Cl.
A61K 31/4704 (2006.01)
A61P 35/00 (2006.01)
C07K 16/24 (2006.01)
(87) WO2022/018240
(31) 20187323.9 **(32)** 23.07.20 **(33)** EP
(43) 27.01.2022
(72) SCHNEIDER-KRAMANN, Rebekka Katharina Marita
(74) Davies Collison Cave Pty Ltd

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(71) ESN Cleer
(11) AU-A-2021283390
(21) 2021283390 **(22)** 03.06.2021
(54) Biomarker identification for imminent and/or impending heart failure

PCT applications which have entered the National Phase - Name Index cont'd

(51) Int. Cl.
G01N 33/68 (2006.01)
G06N 20/00 (2019.01)
G16H 20/10 (2018.01)
G16H 20/30 (2018.01)
G16H 50/30 (2018.01)
(87) WO2021/245459
(31) 63/034,264 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) DE BRUIN, Leopoldt; COATS, Andrew; DE BRUIN, Gustav
(74) FB Rice Pty Ltd

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(71) Essity Hygiene and Health Aktiebolag
(11) AU-A-2020456199
(21) 2020456199 **(22)** 30.06.2020
(54) Strip element for an absorbent hygiene article
(51) Int. Cl.
A61F 13/42 (2006.01)
A61B 5/00 (2006.01)
G01N 27/02 (2006.01)
G01N 33/493 (2006.01)
(87) WO2022/002364
(43) 06.01.2022
(72) MOREIRA CORREIA, Rui Pedro; SILLERSTRÖM, Filip; OMBERG, Nils Erik Johannes; ROJO PEREZ, Borja Moises
(74) Griffith Hack

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(71) Essity Hygiene And Health Aktiebolag
(11) AU-A-2020455522
(21) 2020455522 **(22)** 30.06.2020
(54) Method of distinguishing between types of excretion in an absorbent hygiene article
(51) Int. Cl.
A61F 13/42 (2006.01)
A61B 5/00 (2006.01)
G01N 27/02 (2006.01)
G01N 33/493 (2006.01)
(87) WO2022/002361
(43) 06.01.2022
(72) MOREIRA CORREIA, Rui Pedro; SILLERSTRÖM, Filip; OMBERG, Nils Erik Johannes; ROJO PEREZ, Borja Moises
(74) Griffith Hack

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(71) Essity Hygiene And Health Aktiebolag
(11) AU-A-2020455918
(21) 2020455918 **(22)** 30.06.2020
(54) Strip element for an absorbent hygiene article
(51) Int. Cl.
A61F 13/42 (2006.01)
A61B 5/00 (2006.01)
G01N 27/02 (2006.01)
G01N 33/493 (2006.01)
(87) WO2022/002363
(43) 06.01.2022
(72) MOREIRA CORREIA, Rui Pedro; SILLERSTRÖM, Filip; OMBERG, Nils Erik Johannes; ROJO PEREZ, Borja Moises; JOHANSSON, Matilda
(74) Griffith Hack

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(71) Essity Hygiene And Health Aktiebolag
(11) AU-A-2020456566
(21) 2020456566 **(22)** 30.06.2020
(54) Method of assessing a degree of saturation of an absorbent hygiene article
(51) Int. Cl.
A61F 13/42 (2006.01)
A61B 5/00 (2006.01)
G01N 27/02 (2006.01)
G01N 33/493 (2006.01)
(87) WO2022/002362
(43) 06.01.2022
(72) MOREIRA CORREIA, Rui Pedro; SILLERSTRÖM, Filip; OMBERG, Nils Erik Johannes; ROJO PEREZ, Borja Moises
(74) Griffith Hack

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(71) Evonik Operations GmbH
(11) AU-A-2021266078
(21) 2021266078 **(22)** 23.04.2021
(54) Use of polyethers as carriers for active ingredients
(51) Int. Cl.
A01N 25/02 (2006.01)
A01N 25/04 (2006.01)
A01N 63/38 (2020.01)
(87) WO2021/219505
(31) 20172266.7 **(32)** 30.04.20 **(33)** EP
(43) 04.11.2021
(72) HÄNSEL, René; SKRABANIA, Katja; KLEINEN, Jochen; SCHUBERT, Frank
(74) AJ PARK

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(71) Exosome Diagnostics, Inc.; The Brigham and Women's Hospital, Inc.
(11) AU-A-2021281287
(21) 2021281287 **(22)** 28.05.2021
(54) Use of microvesicle signature for the diagnosis and treatment of kidney transplant rejection
(51) Int. Cl.
C12Q 1/6883 (2018.01)
(87) WO2021/243206
(31) 63/032,267 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) SKOG, Johan; TADIGOTLA, Vasisht; HURLEY, James; AZZI, Jamil
(74) FPA Patent Attorneys Pty Ltd

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(71) Expro North Sea Limited
(11) AU-A-2021286903
(21) 2021286903 **(22)** 10.06.2021
(54) Controller for use with a remote downhole tool
(51) Int. Cl.
E21B 47/12 (2012.01)
(87) WO2021/250223
(31) 2008909.0 **(32)** 11.06.20 **(33)** GB
(43) 16.12.2021
(72) POLLOCK, David; ROGACHEVA, Alexandra Vasil'Evna
(74) Spruson & Ferguson

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(71) Extrakt Process Solutions, LLC
(11) AU-A-2021283927
(21) 2021283927 **(22)** 03.06.2021
(54) Gravity separation of slurries
(51) Int. Cl.
B01D 21/01 (2006.01)
B03D 3/06 (2006.01)
C02F 1/52 (2006.01)
(87) WO2021/247782
(31) 63/034,613 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) PAINTER, Paul C.; LUPINSKY, Aron; KUJAWA, Christian
(74) Spruson & Ferguson

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(71) F. Hoffmann-La Roche AG
(11) AU-A-2021294222
(21) 2021294222 **(22)** 14.06.2021
(54) Method for determining the free antigen of an antibody in a sample
(51) Int. Cl.
G01N 33/543 (2006.01)
(87) WO2021/254926
(31) 20180205.5 **(32)** 16.06.20 **(33)** EP
(43) 23.12.2021
(72) JORDAN, Gregor; SCHAEFER, Martin; VIERT, Maria
(74) Griffith Hack

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(71) F. Hoffmann-La Roche AG
(11) AU-A-2021295609
(21) 2021295609 **(22)** 25.06.2021
(54) Enhanced oligonucleotides for modulating FUBP1 expression
(51) Int. Cl.
A61K 31/7088 (2006.01)
C12N 15/113 (2010.01)
A61P 31/14 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/260197
(31) 20182437.2 **(32)** 26.06.20 **(33)** EP
(43) 30.12.2021
(72) SEWING, Sabine; OTTOSEN, Søren; RAVN, Jacob; PEDERSEN, Lykke; LUANGSAY, Souphalone; KOLLER, Erich; WALTHER, Johanna Marie; GYLLING, Helene Maria; HRUSCHKA, Natascha; MOHR, Susanne; D'ARIENZO, Valentina
(74) Spruson & Ferguson

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(71) F. Hoffmann-La Roche AG
(11) AU-A-2021325330
(21) 2021325330 **(22)** 09.08.2021
(54) Test strip fixation device for optical measurements of an analyte
(51) Int. Cl.
G01N 21/84 (2006.01)
A61B 5/00 (2006.01)
G01J 3/46 (2006.01)
G01J 3/52 (2006.01)
G01N 21/25 (2006.01)
G01N 33/487 (2006.01)
(87) WO2022/033999
(31) 20190454.7 **(32)** 11.08.20 **(33)** EP
(43) 17.02.2022
(72) BERG, Max; HAILER, Fredrik; LIMBURG, Bernd; MELCHINGER, Christian
(74) Spruson & Ferguson

PCT applications which have entered the National Phase - Name Index cont'd

(71) Faeth Therapeutics, Inc.
(11) AU-A-2021282577
(21) 2021282577 **(22)** 03.06.2021
(54) Personalized methods of treating cancer
(51) Int. Cl.
A61K 31/138 (2006.01)
A61K 31/155 (2006.01)
A61K 31/198 (2006.01)
(87) WO2021/247923
(31) 63/034,679 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) MADDOCKS, Oliver D. K.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Faeth Therapeutics, Inc.
(11) AU-A-2021283293
(21) 2021283293 **(22)** 02.06.2021
(54) Formulations for personalized methods of treatment
(51) Int. Cl.
A61K 31/198 (2006.01)
A23L 33/15 (2016.01)
A23L 33/175 (2016.01)
(87) WO2021/247724
(31) 63/034,137 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) MADDOCKS, Oliver D. K.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Falcon Bioscience, LLC
(11) AU-A-2021275139
(21) 2021275139 **(22)** 19.05.2021
(54) Detection and treatment of conditions characterized by perfusion shortage
(51) Int. Cl.
C12Q 1/6869 (2018.01)
C12Q 1/6844 (2018.01)
G01N 33/50 (2006.01)
(87) WO2021/236836
(31) 63/027,289 **(32)** 19.05.20 **(33)** US
(43) 25.11.2021
(72) DUCKERS, Henricus J.
(74) Michael Buck IP

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(71) FCX Solar LLC
(11) AU-A-2022201859
(21) 2022201859 **(22)** 02.03.2022
(54) System and method for flexible solar tracker and testing
(51) Int. Cl.
H02S 20/32 (2014.01)
(31) 17/365,986 **(32)** 01.07.21 **(33)** US
17/455,407 17.11.21 US
(43) 19.01.2023
(72) NEEDHAM, Christopher; OUDHEUSDEN, Frank
(74) RnB IP Pty Ltd

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(71) Ferring B.V.
(11) AU-A-2020454716
(21) 2020454716 **(22)** 26.06.2020
(54) HP-hMG for use in the treatment of infertility in a patient with Polycystic Ovary Syndrome
(51) Int. Cl.
A61K 38/24 (2006.01)
A61P 5/06 (2006.01)
(87) WO2021/262186
(43) 30.12.2021
(72) HEISER, Patrick
(74) Davies Collison Cave Pty Ltd

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(71) Ferring B.V.
(11) AU-A-2021281055
(21) 2021281055 **(22)** 28.05.2021
(54) A composition comprising HP-hMG for use in treating infertility
(51) Int. Cl.
A61K 38/24 (2006.01)
A61P 15/08 (2006.01)
(87) WO2021/239961
(31) 63/032,430 **(32)** 29.05.20 **(33)** US
20182800.1 29.06.20 EP
(43) 02.12.2021
(72) HEISER, Patrick; FOSTER, Eric
(74) Davies Collison Cave Pty Ltd

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(71) Fertinagro Biotech, S.L.
(11) AU-A-2020450049
(21) 2020450049 **(22)** 28.05.2020
(54) Method for the industrial manufacture of granulated fertilisers
(51) Int. Cl.
C05G 5/12 (2020.01)
C05G 1/00 (2006.01)
(87) WO2021/240028
(43) 02.12.2021
(72) ATARES REAL, Sergio; ROMERO LOPEZ, Joaquin; SALAET MADORRAN, Ignasi; FUERTES DOÑATE, Carlos; CABALLERO MOLADA, Marcos; SANCHEZ SANCHEZ, Laura
(74) Zone Patents Limited

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(71) Firefly Automatix, Inc.
(11) AU-A-2021284358
(21) 2021284358 **(22)** 03.06.2021
(54) Performing low profile object detection on a mower
(51) Int. Cl.
G08G 1/16 (2006.01)
(87) WO2021/247790
(31) 16/892,780 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) WILSON, Eli; APOSHIAN, Steven; ASTON, Eric; DECKER, William
(74) Spruson & Ferguson

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(71) Fisher & Paykel Healthcare Limited
(11) AU-A-2021266894
(21) 2021266894 **(22)** 04.05.2021
(54) Wound edge diffuser
(51) Int. Cl.
A61M 35/00 (2006.01)
A61B 90/40 (2016.01)
A61G 13/10 (2006.01)
A61M 13/00 (2006.01)
(87) WO2021/224768
(31) 63/019,945 **(32)** 04.05.20 **(33)** US
63/062,372 06.08.20 US
(43) 11.11.2021
(72) RANJITSINGH, Michael; STOKS, Elmo Benson; LAMONT, Aaron Joseph; SPENCE, Callum James Thomas; HAZARD, Stephanie Louise; GILMOUR, Lydia Jane; GRAHAM, David Jonathan Seymour
(74) FB Rice Pty Ltd

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(71) Flagship Pioneering Innovations V, Inc.
(11) AU-A-2021288051
(21) 2021288051 **(22)** 11.06.2021
(54) Baculovirus expression systems
(51) Int. Cl.
A61K 35/76 (2015.01)
C12N 7/00 (2006.01)
C12N 15/11 (2006.01)
C12N 15/86 (2006.01)
(87) WO2021/252943
(31) 63/147,056 **(32)** 08.02.21 **(33)** US
63/038,603 12.06.20 US
(43) 16.12.2021
(72) DELAGRAVE, Simon; PITTS, Jared David
(74) Davies Collison Cave Pty Ltd

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(71) Flagship Pioneering Innovations V, Inc.
(11) AU-A-2021288320
(21) 2021288320 **(22)** 11.06.2021
(54) Tandem anellovirus constructs
(51) Int. Cl.
C12N 15/86 (2006.01)
A61K 48/00 (2006.01)
A61P 31/00 (2006.01)
C12N 7/00 (2006.01)
(87) WO2021/252955
(31) 63/038,483 **(32)** 12.06.20 **(33)** US
63/146,963 08.02.21 US
(43) 16.12.2021
(72) DELAGRAVE, Simon; LEBO, Kevin James; NAWANDAR, Dhananjay Maniklal; TIMPONA, Joseph Louis
(74) Davies Collison Cave Pty Ltd

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(71) Flagship Pioneering Innovations V, Inc.
(11) AU-A-2021293245
(21) 2021293245 **(22)** 17.06.2021
(54) Methods of identifying and characterizing anelloviruses and uses thereof
(51) Int. Cl.
C12Q 1/6844 (2018.01)
C12Q 1/6888 (2018.01)
C12Q 1/70 (2006.01)
(87) WO2021/257830
(31) 63/040,371 **(32)** 17.06.20 **(33)** US
63/147,029 08.02.21 US
63/130,074 23.12.20 US
(43) 23.12.2021
(72) KAHVEJIAN, Avak; WEINSTEIN, Erica Gabrielle; HAJJAR, Roger Joseph; YOZWIAK, Nathan Lawrence; DELAGRAVE, Simon; ECHELARD, Yann Paul Guy Régis; SPRINGER, Simeon Ungerleider; ARZE, Cesar A.; ANDERSEN, Kristian Graugaard
(74) Davies Collison Cave Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) Fleet Space Technologies Pty Ltd
(11) AU-A-2021263340
(21) 2021263340 **(22)** 30.04.2021
(54) Antenna and antenna systems for LEO satellite communication
(51) Int. Cl.
H01Q 21/00 (2006.01)
H01Q 1/28 (2006.01)
H01Q 9/04 (2006.01)
(87) WO2021/217219
(31) 2020901388 **(32)** 01.05.20 **(33)** AU
2021900079 15.01.21 AU
(43) 04.11.2021
(72) NARDINI, Flavia Tata; PEARSON, Matthew James; BRAND, Yan; ESMATI, Zahra; ALEXANDRE, Nicollas
(74) FB Rice Pty Ltd

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(71) Float Foods Pte Ltd
(11) AU-A-2021232684
(21) 2021232684 **(22)** 30.08.2021
(54) Plant-based vegan beaten egg composition
(51) Int. Cl.
A23J 3/14 (2006.01)
A23L 11/00 (2021.01)
A23L 29/00 (2016.01)
(31) 10202107001S **(32)** 25.06.21 **(33)** SG
(43) 19.01.2023
(72) CHOOLANI, Vinita M.; BANCILLON, Mathilde Laura; RAJ, Keshav
(74) Michael Buck IP

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(71) Flux Marine Ltd.
(11) AU-A-2021278981
(21) 2021278981 **(22)** 28.05.2021
(54) Dual strut power transmission housing structure of a marine propulsion system
(51) Int. Cl.
B63H 20/14 (2006.01)
B63H 20/34 (2006.01)
B63H 23/02 (2006.01)
(87) WO2021/243239
(31) 63/031,979 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) SORKIN, Benjamin; LORD, Jonathan
(74) Davies Collison Cave Pty Ltd

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(71) FMC Corporation
(11) AU-A-2021268672
(21) 2021268672 **(22)** 05.05.2021
(54) Substituted tolyl fungicides and their mixtures
(51) Int. Cl.
A01N 43/56 (2006.01)
A01N 43/647 (2006.01)
A01N 43/653 (2006.01)
A01P 3/00 (2006.01)
(87) WO2021/226234
(31) 63/020,728 **(32)** 06.05.20 **(33)** US
(43) 11.11.2021
(72) BEREZNAK, James Francis; BOLGUNAS, Stephen P.; TAGGI, Andrew Edmund; VEGA-JIMENEZ, Byron; UPPALAPATI, Srinivasa Rao
(74) WRAYS PTY LTD

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(71) Form Energy, Inc.
(11) AU-A-2021277166
(21) 2021277166 **(22)** 06.05.2021
(54) Iron-bearing electrodes for electrochemical cells
(51) Int. Cl.
H01M 4/38 (2006.01)
H01M 4/24 (2006.01)
H01M 4/52 (2010.01)
H01M 10/24 (2006.01)
H01M 12/08 (2006.01)
(87) WO2021/236347
(31) 63/021,610 **(32)** 07.05.20 **(33)** US
(43) 25.11.2021
(72) GIBSON, Michael Andrew; CHIANG, Yet-Ming; WOODFORD, William Henry
(74) RnB IP Pty Ltd

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(71) Frank's International, LLC
(11) AU-A-2021287875
(21) 2021287875 **(22)** 08.06.2021
(54) Ruggedized bidirectional cutting system
(51) Int. Cl.
E21B 17/10 (2006.01)
E21B 17/22 (2006.01)
(87) WO2021/252492
(31) 16/899,451 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) SMITH, Lee Morgan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Frauscher Sensor Technology Group GmbH
(11) AU-A-2021290913
(21) 2021290913 **(22)** 14.06.2021
(54) Method for monitoring a railway track and monitoring system for monitoring a railway track
(51) Int. Cl.
B61L 1/06 (2006.01)
B61L 23/04 (2006.01)
B61L 25/02 (2006.01)
(87) WO2021/254947
(31) 20180357.4 **(32)** 16.06.20 **(33)** EP
(43) 23.12.2021
(72) ZEILINGER, Rene; HUBER, Stefan; DEETLEFS, Richard; MILLEDER, Roman; EBERTSEDER, Andreas
(74) Spruson & Ferguson

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(71) Fricker, G.
(11) AU-A-2021297194
(21) 2021297194 **(22)** 22.06.2021
(54) A device for collapsibly supporting a cover, an associated covering and a method of operating same
(51) Int. Cl.
B63B 17/02 (2006.01)
A45B 23/00 (2006.01)
E04F 10/10 (2006.01)
E04H 15/02 (2006.01)
E04H 15/38 (2006.01)
E04H 15/44 (2006.01)
(87) WO2021/258137
(31) 2020902080 **(32)** 23.06.20 **(33)** AU
(43) 30.12.2021
(72) FRICKER, Glyn
(74) Cooper IP Pty Ltd

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(71) Frolight BV
(11) AU-A-2021315030
(21) 2021315030 **(22)** 07.05.2021
(54) Frost protection system
(51) Int. Cl.
A01G 13/06 (2006.01)
(87) WO2022/023810
(31) BE2020/5549 **(32)** 27.07.20 **(33)** BE
(43) 03.02.2022
(72) SCHMIDT, Alexander
(74) Spruson & Ferguson

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(71) Fujian Changting Golden Dragon Rare-Earth Co., Ltd
(11) AU-A-2021310842
(21) 2021310842 **(22)** 24.06.2021
(54) N,N-dihydrocarbylamide carboxylic acid, preparation method therefor and application thereof
(51) Int. Cl.
C07C 233/05 (2006.01)
C07C 233/09 (2006.01)
(43) 19.01.2023
(72) WANG, Yanliang; XIAO, Wentao; WU, Yuyuan; LIN, Jinchi
(74) GLMR

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(71) Fujian Changting Golden Dragon Rare-Earth Co., Ltd
(11) AU-A-2021310844
(21) 2021310844 **(22)** 29.06.2021
(54) N,N-dihydrocarbylamino carboxylic acid, preparation method therefor and application thereof
(51) Int. Cl.
C07C 233/05 (2006.01)
(43) 19.01.2023
(72) WANG, Yanliang; XIAO, Wentao; WU, Yuyuan; LIN, Jinchi
(74) GLMR

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(71) GAIA BioMedicine Inc.
(11) AU-A-2021301788
(21) 2021301788 **(22)** 30.06.2021
(54) Method for stabilizing binding of antibody to NK cell and use thereof
(51) Int. Cl.
A61K 47/42 (2017.01)
A61K 35/17 (2015.01)
A61K 39/395 (2006.01)
A61P 31/00 (2006.01)
A61P 35/00 (2006.01)
C07K 16/18 (2006.01)
C07K 19/00 (2006.01)
C12N 5/0783 (2010.01)
(87) WO2022/004805
(31) 2020-113083 **(32)** 30.06.20 **(33)** JP
(43) 06.01.2022
(72) HARADA, Yui; YONEMITSU, Yoshikazu
(74) RnB IP Pty Ltd

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(71) Gallant Pet Inc.
(11) AU-A-2021267900
(21) 2021267900 **(22)** 06.05.2021

PCT applications which have entered the National Phase - Name Index cont'd

(54) Uterine-derived regenerative cell compositions and uses thereof
(51) Int. Cl.
C12N 5/071 (2010.01)
A61K 35/28 (2015.01)
A61K 35/36 (2015.01)
(87) WO2021/226373
(31) 63/022,302 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) BLACK, Linda; ZACHARIAS, Shelly; SAND, Theodore T.; BARILLAS, Samuel; BAUTISTA, Rachel
(74) Davies Collison Cave Pty Ltd

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(71) GARRDE PTY LTD
(11) AU-A-2021368227
(21) 2021368227 **(22)** 26.10.2021
(54) A medical packaging
(51) Int. Cl.
A61B 50/30 (2016.01)
A61B 17/04 (2006.01)
A61B 17/06 (2006.01)
A61B 17/068 (2006.01)
A61B 17/122 (2006.01)
A61B 17/3215 (2006.01)
A61M 5/00 (2006.01)
B65D 75/58 (2006.01)
B65D 81/18 (2006.01)
B65D 85/00 (2006.01)
(87) WO2022/087660
(31) 2020903885 **(32)** 27.10.20 **(33)** AU
2021221549 24.08.21 AU
(43) 05.05.2022
(72) DIMITRI, Jay; DIMITRI, Mark
(74) Baxter Patent Attorneys Pty Ltd

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(71) Genesis Dimensions LLC
(11) AU-A-2021277231
(21) 2021277231 **(22)** 18.05.2021
(54) Robotic platform for construction
(51) Int. Cl.
B33Y 30/00 (2015.01)
B29C 64/00 (2017.01)
B29C 64/10 (2017.01)
B29C 64/20 (2017.01)
B29C 64/205 (2017.01)
B29C 64/209 (2017.01)
(87) WO2021/236686
(31) 63/026,551 **(32)** 18.05.20 **(33)** US
(43) 25.11.2021
(72) COMPTON, James Eric; GILMAN, Chris; ROBERTS, Casey
(74) Davies Collison Cave Pty Ltd

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(71) Genesys Cloud Services Holdings II, LLC
(11) AU-A-2021300121
(21) 2021300121 **(22)** 30.06.2021
(54) Cumulative average spectral entropy analysis for tone and speech classification
(51) Int. Cl.
H04M 3/00 (2006.01)
G10L 25/84 (2013.01)
(87) WO2022/006233
(31) 63/045,908 **(32)** 30.06.20 **(33)** US
(43) 06.01.2022
(72) VERGIN, Rivarol; MCDOWELL, Jason Anthony; PAUGH, Adam M.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Gilead Sciences, Inc.
(11) AU-A-2021281351
(21) 2021281351 **(22)** 28.05.2021
(54) Remdesivir treatment methods
(51) Int. Cl.
A61K 31/4706 (2006.01)
A61K 31/706 (2006.01)
A61P 31/14 (2006.01)
(87) WO2021/243157
(31) 63/032,321 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) CIHLAR, Tomas
(74) Davies Collison Cave Pty Ltd

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(71) Gilead Sciences, Inc.
(11) AU-A-2021285747
(21) 2021285747 **(22)** 13.05.2021
(54) LPA receptor antagonists and uses thereof
(51) Int. Cl.
A61P 9/00 (2006.01)
A61K 31/4439 (2006.01)
A61K 31/506 (2006.01)
A61P 11/00 (2006.01)
A61P 13/12 (2006.01)
A61P 25/00 (2006.01)
A61P 29/00 (2006.01)
A61P 35/00 (2006.01)
A61P 37/08 (2006.01)
C07D 249/06 (2006.01)
C07D 401/04 (2006.01)
C07D 401/12 (2006.01)
C07D 401/14 (2006.01)
C07D 405/14 (2006.01)
C07D 409/14 (2006.01)
C07D 413/14 (2006.01)
C07D 471/04 (2006.01)
(87) WO2021/247217
(31) 63/034,220 **(32)** 03.06.20 **(33)** US
63/130,242 23.12.20 US
(43) 09.12.2021
(72) BESTVATER, Brian P.; DU, Zhimin; FARAND, Julie; KAPLAN, Joshua A.; TANG, Doris T.; VENKATARAMANI, Chandrasekar; WANG, Peiyuan; YANG, Kin S.; ZAGORSKA, Anna
(74) FPA Patent Attorneys Pty Ltd

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(71) Gilead Sciences, Inc.
(11) AU-A-2021296607
(21) 2021296607 **(22)** 24.06.2021
(54) Capsid inhibitors for the treatment of HIV
(51) Int. Cl.
C07D 471/04 (2006.01)
A61K 31/437 (2006.01)
A61K 31/4375 (2006.01)
A61P 31/12 (2006.01)
A61P 31/18 (2006.01)
C07D 513/04 (2006.01)
(87) WO2021/262990
(31) 63/044,086 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) CHOU, Chienhung; KATO, Darryl; LAZERWITH, Scott E.; SCHROEDER, Scott D.; TSE, Winston C.; ZHANG, Jennifer R.
(74) Davies Collison Cave Pty Ltd

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(71) Global Clean Coal Technologies Pty Ltd
(11) AU-A-2022275580
(21) 2022275580 **(22)** 17.05.2022
(54) Thermal imaging assembly
(51) Int. Cl.
G01J 5/00 (2022.01)
B08B 3/02 (2006.01)
B08B 5/02 (2006.01)
B63J 99/00 (2009.01)
G01J 5/05 (2022.01)
G01J 5/10 (2006.01)
G01J 5/48 (2022.01)
G02B 27/00 (2006.01)
(87) WO2022/241511
(31) 2021203154 **(32)** 17.05.21 **(33)** AU
(43) 24.11.2022
(72) VORIAS, Richard
(74) Minter Ellison

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(71) GlycoMimetics
(11) AU-A-2021292458
(21) 2021292458 **(22)** 11.06.2021
(54) Compositions and methods for overcoming microenvironment-mediated resistance via e-selectin targeting
(51) Int. Cl.
A61K 31/7034 (2006.01)
A61K 31/706 (2006.01)
A61K 31/7068 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/257398
(31) 63/038,856 **(32)** 14.06.20 **(33)** US
63/060,605 03.08.20 US
63/198,856 17.11.20 US
(43) 23.12.2021
(72) MAGNANI, John L.; FOGLER, William E.; SMITH, Theodore
(74) Davies Collison Cave Pty Ltd

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(71) Glycotope GmbH
(11) AU-A-2021298824
(21) 2021298824 **(22)** 29.06.2021
(54) Humanized antibodies against lewis Y
(51) Int. Cl.
A61P 35/00 (2006.01)
C07K 16/30 (2006.01)
(87) WO2022/002887
(31) 20183237.5 **(32)** 30.06.20 **(33)** EP
(43) 06.01.2022
(72) DANIELCZYK, Antje; GELLERT, Johanna; FLECHNER, Anke; KEHLER, Patrik
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) GOJO Industries, Inc.
(11) AU-A-2021269570
(21) 2021269570 **(22)** 10.05.2021
(54) Dispensers and dispenser systems for securely controlling a plurality of dose sizes

PCT applications which have entered the National Phase - Name Index cont'd

(51) Int. Cl.
A47K 5/12 (2006.01)
(87) WO2021/231251
(31) 63/024,600 **(32)** 14.05.20 **(33)** US
(43) 18.11.2021
(72) BUELL, Shelby J.; BULLOCK, Mark A.
(74) Collison & Co

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(71) Google LLC
(11) AU-A-2021426284
(21) 2021426284 **(22)** 06.12.2021
(54) Assistant device arbitration using wearable device data
(51) Int. Cl.
G06F 3/01 (2006.01)
(87) WO2022/169502
(31) 17/166,763 **(32)** 03.02.21 **(33)** US
(43) 11.08.2022
(72) CHU, Alexander; PEREZ, Jarlan
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Graphic Packaging International, LLC
(11) AU-A-2021276257
(21) 2021276257 **(22)** 17.05.2021
(54) Carton for containers
(51) Int. Cl.
B65D 71/34 (2006.01)
B65D 5/10 (2006.01)
B65D 5/54 (2006.01)
B65D 71/22 (2006.01)
B65D 71/36 (2006.01)
(87) WO2021/236499
(31) 63/028,628 **(32)** 22.05.20 **(33)** US
(43) 25.11.2021
(72) MANZANO, Ana Maria Gonzalez
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Gree Electric Appliances, Inc. of Zhuhai
(11) AU-A-2021307186
(21) 2021307186 **(22)** 09.07.2021
(54) Optical storage converter and control method and apparatus therefor, and computer readable storage medium
(51) Int. Cl.
H02J 3/38 (2006.01)
H02J 3/32 (2006.01)
H02M 1/088 (2006.01)
H02M 3/158 (2006.01)
(87) WO2022/012421
(31) 202010680650.0 **(32)** 15.07.20 **(33)** CN
(43) 20.01.2022
(72) JIANG, Yingyi; HUANG, Meng; DANG, Peiyu; HUANG, Songru
(74) Davies Collison Cave Pty Ltd

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(71) Gree Electric Appliances, Inc. of Zhuhai
(11) AU-A-2021319600
(21) 2021319600 **(22)** 02.08.2021
(54) Energy control system, method and device, and electronic equipment
(51) Int. Cl.
F24F 11/46 (2018.01)
F24F 11/61 (2018.01)
F24F 11/64 (2018.01)
F24F 11/85 (2018.01)
F24F 11/86 (2018.01)
F24F 11/88 (2018.01)
H02J 1/10 (2006.01)
H02J 1/14 (2006.01)
F24F 130/10 (2018.01)
(87) WO2022/028368
(31) 202010769269.1 **(32)** 03.08.20 **(33)** CN
(43) 10.02.2022
(72) HUANG, Meng; JIANG, Yingyi; LIU, Xiaogao; HUANG, Songru; DANG, Peiyu
(74) Davies Collison Cave Pty Ltd

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(71) Gree Electric Appliances, Inc. of Zhuhai
(11) AU-A-2021331773
(21) 2021331773 **(22)** 12.07.2021
(54) Parameter configuration apparatus
(51) Int. Cl.
H04B 3/54 (2006.01)
(87) WO2022/042086
(31) 202010870339.2 **(32)** 26.08.20 **(33)** CN
(43) 03.03.2022
(72) WANG, Jing; HUANG, Meng; CHEN, Zhenwei; SHENG, Mingqiang; FENG, Shangxian; YU, Xianqiao
(74) Davies Collison Cave Pty Ltd

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(71) Greentech Global Pte. Ltd.
(11) AU-A-2021269235
(21) 2021269235 **(22)** 07.05.2021
(54) Methods for biobased derivatization of cellulosic and synthetic materials and articles obtained therefrom
(51) Int. Cl.
C09D 5/00 (2006.01)
C08J 5/04 (2006.01)
C08J 7/04 (2020.01)
C09D 7/40 (2018.01)
C09D 7/63 (2018.01)
C09D 7/65 (2018.01)
C09D 101/00 (2006.01)
(87) WO2021/224881
(31) 63/022,097 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) SPENDER, Jonathan; BILODEAU, Michael Albert
(74) Minter Ellison

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(71) Gregg Drilling, LLC
(11) AU-A-2021308639
(21) 2021308639 **(22)** 15.07.2021
(54) Geotechnical rig systems and methods
(51) Int. Cl.
E21B 7/00 (2006.01)
E21B 7/02 (2006.01)
E21B 19/00 (2006.01)
E21B 19/20 (2006.01)
E21B 44/00 (2006.01)
(87) WO2022/016016
(31) 63/052,898 **(32)** 16.07.20 **(33)** US
(43) 20.01.2022
(72) GREGG, John; SCHUBERT, Matthew; SCHUBERT, Phillip
(74) Spruson & Ferguson

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(71) Gretals Australia Pty Ltd
(11) AU-A-2021268683
(21) 2021268683 **(22)** 07.05.2021
(54) Compositions and methods for the prophylaxis and treatment of fibrotic and inflammatory conditions
(51) Int. Cl.
A61K 31/352 (2006.01)
A61K 9/00 (2006.01)
A61K 9/08 (2006.01)
A61P 9/00 (2006.01)
A61P 11/00 (2006.01)
A61P 13/00 (2006.01)
A61P 17/00 (2006.01)
A61P 29/00 (2006.01)
A61P 31/04 (2006.01)
A61P 37/00 (2006.01)
A61P 43/00 (2006.01)
(87) WO2021/222987
(31) 2020901475 **(32)** 08.05.20 **(33)** AU
2020904863 29.12.20 AU
(43) 11.11.2021
(72) CUMMING, Alistair; SNIBSON, Kenneth
(74) Churchill Attorneys

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(71) Griffith University
(11) AU-A-2021268684
(21) 2021268684 **(22)** 07.05.2021
(54) High-frequency transformer and applications thereof
(51) Int. Cl.
H01F 38/18 (2006.01)
H01F 3/14 (2006.01)
H01F 19/04 (2006.01)
H01F 21/06 (2006.01)
H01F 30/12 (2006.01)
H01F 30/16 (2006.01)
H02K 19/26 (2006.01)
(87) WO2021/222989
(31) 2020901469 **(32)** 08.05.20 **(33)** AU
(43) 11.11.2021
(72) LU, Junwei; LI, Xiaokun
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Grifols Worldwide Operations Limited
(11) AU-A-2021268454
(21) 2021268454 **(22)** 27.04.2021
(54) Composition comprising albumin for use in the treatment of amyotrophic lateral sclerosis (ALS) by plasma exchange
(51) Int. Cl.
A61K 38/38 (2006.01)
A61M 1/34 (2006.01)
A61P 25/28 (2006.01)
(87) WO2021/224058
(31) 20382375.2 **(32)** 07.05.20 **(33)** EP
(43) 11.11.2021
(72) JORBA RIBES, Javier; PAEZ REGADERA, Antonio Manuel
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Grifols Worldwide Operations Limited
(11) AU-A-2021270817
(21) 2021270817 **(22)** 05.05.2021
(54) System and method for the sterile filling of containers
(51) Int. Cl.
A61L 2/07 (2006.01)
A61L 2/00 (2006.01)

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(87) WO2021/228661
(31) 20382399.2 **(32)** 13.05.20 **(33)** EP
(43) 18.11.2021
(72) BOIRA BONHORA, Jordi; ROURA SALIETTI, Carlos; PAGES BECERRA, David
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Gripple Limited
(11) AU-A-2021291677
(21) 2021291677 **(22)** 11.06.2021
(54) Holding assembly
(51) Int. Cl.
H02G 3/00 (2006.01)
H02G 3/32 (2006.01)
(87) WO2021/255599
(31) 2009393.6 **(32)** 19.06.20 **(33)** GB
2107466.1 26.05.21 GB
(43) 23.12.2021
(72) SUNDERLAND, Oliver
(74) Spruson & Ferguson

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(71) Gripple Limited
(11) AU-A-2021301395
(21) 2021301395 **(22)** 23.06.2021
(54) Joining assembly
(51) Int. Cl.
F16G 11/08 (2006.01)
F16G 11/10 (2006.01)
(87) WO2022/003495
(31) 2010059.0 **(32)** 01.07.20 **(33)** GB
2108872.9 21.06.21 GB
(43) 06.01.2022
(72) HUDSON, James; REYNOLDS, Thomas
(74) Spruson & Ferguson

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(71) Gritstone Bio, Inc.
(11) AU-A-2021273827
(21) 2021273827 **(22)** 19.05.2021
(54) SARS-CoV-2 vaccines
(51) Int. Cl.
C12N 7/00 (2006.01)
A61K 35/15 (2015.01)
A61K 39/39 (2006.01)
C07K 16/18 (2006.01)
C07K 16/40 (2006.01)
(87) WO2021/236854
(31) 63/047,789 **(32)** 02.07.20 **(33)** US
63/139,292 19.01.21 US
63/027,283 19.05.20 US
(43) 25.11.2021
(72) YELENSKY, Roman; CAO, Minh Duc; ZHONG, Mike; HELBERT, Justin; JOOSS, Karin; SCALLAN, Ciaran Daniel; GITLIN, Leonid; RAPPAPORT, Amy Rachel
(74) FB Rice Pty Ltd

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(71) Gruppsol AB
(11) AU-A-2021291392
(21) 2021291392 **(22)** 16.06.2021
(54) Solar panel roof
(51) Int. Cl.
H02S 20/23 (2014.01)
E04D 13/147 (2006.01)
F24S 25/35 (2018.01)
(87) WO2021/255112
(31) 2050723-2 **(32)** 16.06.20 **(33)** SE
(43) 23.12.2021
(72) HANSSON, Mattias
(74) Spruson & Ferguson

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(71) Guangzhou Fermion Technology Co., Ltd.
(11) AU-A-2021276301
(21) 2021276301 **(22)** 21.05.2021
(54) Fused ring compounds, preparation method therefor, pharmaceutical compositions and use thereof
(51) Int. Cl.
C07D 403/12 (2006.01)
A61K 31/403 (2006.01)
A61P 3/10 (2006.01)
A61P 11/06 (2006.01)
A61P 13/00 (2006.01)
A61P 25/00 (2006.01)
A61P 29/00 (2006.01)
C07D 209/52 (2006.01)
C07D 401/12 (2006.01)
C07D 405/12 (2006.01)
C07D 413/12 (2006.01)
C07D 417/12 (2006.01)
C07D 471/04 (2006.01)
C07D 471/12 (2006.01)
C07D 487/04 (2006.01)
(87) WO2021/233427
(31) 202010433988.6 **(32)** 21.05.20 **(33)** CN
202110529033.5 14.05.21 CN
(43) 25.11.2021
(72) DENG, Daiguo; QIU, Guanpeng; WANG, Yonggang; LEI, Zengrong
(74) AJ PARK

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(71) Guangzhou Hybribio Medicine Technology Ltd.; Guangdong Hybribio Biotech Co., Ltd.
(11) AU-A-2022277079
(21) 2022277079 **(22)** 16.03.2022
(54) Method for separating placental trophoblast cells from exfoliated cervical cells of pregnant woman
(51) Int. Cl.
C12N 5/073 (2010.01)
G01N 15/14 (2006.01)
(87) WO2022/242285
(31) 202110549947.8 **(32)** 20.05.21 **(33)** CN
(43) 24.11.2022
(72) ZHENG, Yan; MA, Jiayan; FENG, Xiaowei; LIU, Mengyu; CHEN, Peixuan; GUAN, Zhisheng; XIE, Longxu; GE, Yiyuan
(74) Madderns Pty Ltd

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(71) Guangzhou Shiyuan Electronics Co., Ltd.
(11) AU-A-2021348017
(21) 2021348017 **(22)** 27.07.2021
(54) Interactive panel
(51) Int. Cl.
H01Q 1/24 (2006.01)
G02F 1/1333 (2006.01)
H01Q 1/12 (2006.01)
H01Q 1/22 (2006.01)
(87) WO2022/062632
(31) 202022089665.8 **(32)** 22.09.20 **(33)** CN
(43) 31.03.2022
(72) DENG, Bingjie; HONG, Guofeng; CHEN, Yanxi
(74) WRAYS PTY LTD

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(71) Hainan Green Algae World Biotechnology Co. Ltd
(11) AU-A-2021232694
(21) 2021232694 **(22)** 17.06.2021
(54) Method for hatching and culturing grouper using chlorella
(51) Int. Cl.
A01K 61/17 (2017.01)
(43) 19.01.2023
(72) HUANG, Chengtan; PAN, Jun; YE, Lei; HUANG, Min
(74) Ellis Terry

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(71) Halia Therapeutics, Inc.
(11) AU-A-2021289345
(21) 2021289345 **(22)** 08.06.2021
(54) Inhibitors of NEK7 kinase
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/519 (2006.01)
A61P 37/00 (2006.01)
C07D 471/04 (2006.01)
(87) WO2021/252488
(31) 63/036,244 **(32)** 08.06.20 **(33)** US
63/170,776 05.04.21 US
63/185,257 06.05.21 US
(43) 16.12.2021
(72) BEARSS, David James; KAUWE III, John Sai Keong; MOLLARD, Alexis Henri Abel
(74) Davies Collison Cave Pty Ltd

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(71) Halliburton Energy Services, Inc.
(11) AU-A-2020461229
(21) 2020461229 **(22)** 11.08.2020
(54) A hydraulic screen having a joint with a flow path
(51) Int. Cl.
E21B 43/08 (2006.01)
E21B 33/126 (2006.01)
E21B 34/14 (2006.01)
E21B 43/10 (2006.01)
E21B 43/12 (2006.01)
(87) WO2022/025939
(31) 16/945,689 **(32)** 31.07.20 **(33)** US
(43) 03.02.2022
(72) MCCHESNEY, Ryan; MCLEARY, Gordon; GRANT, David
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Halliburton Energy Services, Inc..
(11) AU-A-2020459959
(21) 2020459959 **(22)** 20.07.2020
(54) Internally adjustable flow control module
(51) Int. Cl.
E21B 43/12 (2006.01)
E21B 34/08 (2006.01)
(87) WO2022/019881
(31) 16/933,347 **(32)** 20.07.20 **(33)** US

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(43) 27.01.2022
(72) MCCHESNEY, Ryan Wesley; MCLEARY, Gordon; GRANT, David Symon
(74) Spruson & Ferguson

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(71) Hangzhou Jingyan Electronics Technology Ltd., Co.
(11) AU-A-2021288378
(21) 2021288378 **(22)** 11.06.2021
(54) Larvae grafting device aid method
(51) Int. Cl.
A01K 49/00 (2006.01)
(87) WO2021/249552
(31) 202010534183.0 **(32)** 12.06.20 **(33)** CN
202010534182.6 12.06.20 CN
(43) 16.12.2021
(72) PAN, Hongfang; CHEN, Junjie; QI, Liquan; MA, Qiufeng
(74) Baxter Patent Attorneys Pty Ltd

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(71) Hanmi Pharm. Co., Ltd.
(11) AU-A-2021274518
(21) 2021274518 **(22)** 24.05.2021
(54) Liquid preparation of long-acting conjugate of glucagon/GLP-1/GIP trigonal agonist
(51) Int. Cl.
A61K 9/08 (2006.01)
A61K 38/00 (2006.01)
A61K 38/17 (2006.01)
A61K 38/26 (2006.01)
A61K 47/12 (2006.01)
A61K 47/18 (2017.01)
A61K 47/20 (2006.01)
A61K 47/22 (2006.01)
A61K 47/26 (2006.01)
A61K 47/64 (2017.01)
(87) WO2021/235916
(31) 10-2020-0061875 **(32)** 22.05.20 **(33)** KR
(43) 25.11.2021
(72) LIM, Hyung Kyu; KIM, Sang Yun; BAE, Sung Min
(74) Spruson & Ferguson

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(71) Hanmi Pharm. Co., Ltd.
(11) AU-A-2021275541
(21) 2021275541 **(22)** 24.05.2021
(54) Liquid formulation of long-acting conjugate of GLP-2
(51) Int. Cl.
A61K 9/08 (2006.01)
A61K 38/00 (2006.01)
A61K 38/26 (2006.01)
A61K 47/12 (2006.01)
A61K 47/18 (2017.01)
A61K 47/20 (2006.01)
A61K 47/22 (2006.01)
A61K 47/26 (2006.01)
A61K 47/64 (2017.01)
A61P 3/04 (2006.01)
(87) WO2021/235913
(31) 10-2020-0061878 **(32)** 22.05.20 **(33)** KR
(43) 25.11.2021
(72) HONG, Sung Hee; KIM, Sang Yun; KIM, Min Young; BAE, Sung Min
(74) Spruson & Ferguson

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(71) Hella Gutmann Solutions GmbH
(11) AU-A-2021269012
(21) 2021269012 **(22)** 04.05.2021
(54) Method and diagnostic device for performing vehicle diagnostics
(51) Int. Cl.
G07C 5/08 (2006.01)
G07C 5/00 (2006.01)
(87) WO2021/224202
(31) 20173583.4 **(32)** 07.05.20 **(33)** EP
(43) 11.11.2021
(72) GÜTLEIN, Martin; RIEGGER, Uwe
(74) Spruson & Ferguson

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(71) Hermetik Hydraulik AB
(11) AU-A-2021404861
(21) 2021404861 **(22)** 17.06.2021
(54) Sealing device, sealing system, and method for sealing a leakage flow at a machine element
(51) Int. Cl.
F16J 15/54 (2006.01)
(43) 19.01.2023
(72) GAYDOUL, Jürgen
(74) Madderns Pty Ltd

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(71) HigherSteaks Limited
(11) AU-A-2021289091
(21) 2021289091 **(22)** 09.06.2021
(54) Systems and methods for cell conversion
(51) Int. Cl.
C12N 5/00 (2006.01)
C12N 5/077 (2010.01)
(87) WO2021/250407
(31) 2008821.7 **(32)** 10.06.20 **(33)** GB
(43) 16.12.2021
(72) FARAM, Ruth; BOLLAG, Benjamina; EMAWODIA, Joy; WALLIS, Stephanie
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Hillstream BioPharma Inc.
(11) AU-A-2021300174
(21) 2021300174 **(22)** 30.06.2021
(54) Nanoparticles and methods of manufacture thereof
(51) Int. Cl.
A61K 31/337 (2006.01)
A61K 31/454 (2006.01)
A61K 31/473 (2006.01)
(87) WO2022/006271
(31) 63/046,508 **(32)** 30.06.20 **(33)** US
(43) 06.01.2022
(72) SINGH, Harpal; MILBY, Randy; TIWARI, Sachchidanand; MOHAMMAD, Anees
(74) Spruson & Ferguson

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(71) Hitachi, Ltd.
(11) AU-A-2021289307
(21) 2021289307 **(22)** 30.04.2021
(54) Obstacle detection system, obstacle detection method, and self-location estimation system
(51) Int. Cl.
B61L 23/00 (2006.01)
G01S 17/89 (2020.01)
(87) WO2021/251028
(31) 2020-100795 **(32)** 10.06.20 **(33)** JP
(43) 16.12.2021
(72) ONO, Yukihiko; IMAMOTO, Kenji; KOIKE, Jun
(74) Davies Collison Cave Pty Ltd

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(71) Hitachi Construction Machinery Co., Ltd.
(11) AU-A-2021284330
(21) 2021284330 **(22)** 11.05.2021
(54) Vehicle control system
(51) Int. Cl.
B60W 50/04 (2006.01)
B60W 30/08 (2012.01)
B60W 60/00 (2020.01)
G05D 1/02 (2020.01)
G08G 1/16 (2006.01)
H04W 4/029 (2018.01)
H04W 4/46 (2018.01)
(87) WO2021/246114
(31) 2020-095568 **(32)** 01.06.20 **(33)** JP
(43) 09.12.2021
(72) ISHII Hirotake; ISHIMOTO Hidefumi; KIRIMURA Akiyoshi
(74) Griffith Hack

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(71) Hollister Incorporated
(11) AU-A-2021281193
(21) 2021281193 **(22)** 24.05.2021
(54) Multi-flex urinary catheter
(51) Int. Cl.
A61M 25/00 (2006.01)
A61M 25/01 (2006.01)
A61M 27/00 (2006.01)
A61M 39/10 (2006.01)
(87) WO2021/242676
(31) 63/030,669 **(32)** 27.05.20 **(33)** US
(43) 02.12.2021
(72) O'DONNELL, Paul M.; FAHEY, Joseph; KEARNS, Barbara J.
(74) Spruson & Ferguson

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(71) Hope Tree Holding GmbH; Hope Tree International GmbH
(11) AU-A-2021270978
(21) 2021270978 **(22)** 11.05.2021
(54) Granulate of only natural constitutions; granulate for the manufacture of composable products and method for manufacturing the granulate and the products obtained therefrom
(51) Int. Cl.
C08J 3/12 (2006.01)
B29B 7/00 (2006.01)
B29B 7/90 (2006.01)
B29B 9/12 (2006.01)
B29B 9/14 (2006.01)
B29B 9/16 (2006.01)
C08J 5/18 (2006.01)
C08J 7/04 (2020.01)
C08L 3/02 (2006.01)
(87) WO2021/228899
(31) 20173968.7 **(32)** 11.05.20 **(33)** EP
PCT/EP2020/072820 13.08.20 EP
20215225.2 17.12.20 EP
20 2020 107 372.9 17.12.20 DE

PCT applications which have entered the National Phase - Name Index cont'd

20 2020 107 373.7 17.12.20 DE
20 2020 107 374.5 17.12.20 DE
(43) 18.11.2021
(72) DINZINGER, Lambert Dustin
(74) Jones Tulloch

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(71) HOVER Inc.
(11) AU-A-2021281502
(21) 2021281502 **(22)** 26.05.2021
(54) Systems and methods for image capture
(51) Int. Cl.
G06V 10/10 (2022.01)
G06V 10/24 (2022.01)
(87) WO2021/242809
(31) 63/029,792 **(32)** 26.05.20 **(33)** US
63/164,449 22.03.21 US
63/192,537 24.05.21 US
(43) 02.12.2021
(72) DZITSIUK, Yevheniia; CURRO, Domenico; CHOW, Siu Fai; SOMMERS, Jeffrey; BARBHAIYA, Harsh
(74) Davies Collison Cave Pty Ltd

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(71) Hovid Berhad
(11) AU-A-2021283774
(21) 2021283774 **(22)** 03.06.2021
(54) Composition for normalisation of fatty liver and method for producing the same
(51) Int. Cl.
A61K 31/355 (2006.01)
A61K 9/00 (2006.01)
A61K 9/107 (2006.01)
A61K 31/353 (2006.01)
A61K 31/683 (2006.01)
A61K 31/685 (2006.01)
A61K 31/714 (2006.01)
A61P 1/16 (2006.01)
(87) WO2021/246861
(31) PI 2020002852 **(32)** 04.06.20 **(33)** MY
(43) 09.12.2021
(72) HO, David Sue San; HO, Sarah Lee-Mun
(74) Adrian M Trioli Patent and Trade Mark Attorney

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(71) Howmedica Osteonics Corp.,
(11) AU-A-2021267483
(21) 2021267483 **(22)** 28.04.2021
(54) Mixed reality-based screw trajectory guidance
(51) Int. Cl.
A61B 34/10 (2016.01)
(87) WO2021/225840
(31) 63/019,906 **(32)** 04.05.20 **(33)** US
(43) 11.11.2021
(72) SIMOES, Vincent Abel Maurice; MAILLE, Florence Delphine Muriel; POLTARETSKYI, Sergii
(74) FB Rice Pty Ltd

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(71) Howmedica Osteonics Corp.,
(11) AU-A-2021267824
(21) 2021267824 **(22)** 08.04.2021
(54) Surgical system for revision orthopedic surgical procedures
(51) Int. Cl.
A61B 34/10 (2016.01)
(87) WO2021/225738
(31) 63/019,604 **(32)** 04.05.20 **(33)** US
(43) 11.11.2021
(72) SIMOES, Vincent Abel Maurice; MAILLE, Florence Delphine Muriel
(74) FB Rice Pty Ltd

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(71) Hsu, H.
(11) AU-A-2020453669
(21) 2020453669 **(22)** 15.06.2020
(54) Mandible displacement adjustment device
(51) Int. Cl.
A61F 5/56 (2006.01)
(87) WO2021/253174
(43) 23.12.2021
(72) HSU, Han-Chung
(74) A.P.T. Patent and Trade Mark Attorneys

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(71) Hua Medicine (Shanghai) Ltd.
(11) AU-A-2020451588
(21) 2020451588 **(22)** 04.06.2020
(54) Glucokinase activator for treating diabetes with renal impairment
(51) Int. Cl.
A61K 31/4155 (2006.01)
A61K 9/20 (2006.01)
A61K 31/415 (2006.01)
A61K 31/426 (2006.01)
A61K 31/427 (2006.01)
A61K 31/437 (2006.01)
A61K 31/4439 (2006.01)
A61K 31/444 (2006.01)
A61K 31/4965 (2006.01)
A61K 31/497 (2006.01)
A61K 31/506 (2006.01)
A61P 3/00 (2006.01)
A61P 3/08 (2006.01)
A61P 3/10 (2006.01)
A61P 13/12 (2006.01)
(87) WO2021/243645
(43) 09.12.2021
(72) CHEN, Li; REN, Shuang; JIAO, Chengfeng; WANG, Yaohui
(74) FB Rice Pty Ltd

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(71) Hua Medicine (Shanghai) Ltd.
(11) AU-A-2020451966
(21) 2020451966 **(22)** 04.06.2020
(54) Glucokinase activator for treating diabetes with hepatic impairment
(51) Int. Cl.
A61K 45/06 (2006.01)
A61K 31/155 (2006.01)
A61K 31/195 (2006.01)
A61K 31/4155 (2006.01)
A61K 31/7048 (2006.01)
A61P 1/16 (2006.01)
A61P 3/00 (2006.01)
A61P 3/04 (2006.01)
A61P 3/08 (2006.01)
A61P 3/10 (2006.01)
A61P 5/50 (2006.01)
(87) WO2021/243646
(43) 09.12.2021
(72) CHEN, Li; REN, Shuang; JIAO, Chengfeng
(74) FB Rice Pty Ltd

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(71) Hua Medicine (Shanghai) Ltd.
(11) AU-A-2021286069
(21) 2021286069 **(22)** 03.06.2021
(54) Glucokinase activator for treating diabetes with hepatic impairment
(51) Int. Cl.
A61K 45/06 (2006.01)
A61K 31/155 (2006.01)
A61K 31/195 (2006.01)
A61K 31/4155 (2006.01)
A61K 31/7048 (2006.01)
A61P 1/16 (2006.01)
A61P 3/00 (2006.01)
A61P 3/04 (2006.01)
A61P 3/08 (2006.01)
A61P 3/10 (2006.01)
A61P 5/50 (2006.01)
(87) WO2021/244606
(31) PCT/CN2020/094372 **(32)** 04.06.20 **(33)** CN
(43) 09.12.2021
(72) CHEN, Li; REN, Shuang; JIAO, Chengfeng
(74) FB Rice Pty Ltd

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(71) Huawei Digital Power Technologies Co., Ltd.
(11) AU-A-2020451937
(21) 2020451937 **(22)** 01.06.2020
(54) Fault protection apparatus
(51) Int. Cl.
H02J 3/38 (2006.01)
(87) WO2021/243501
(43) 09.12.2021
(72) CHEN, Dong; GAO, Yongbing; SHI, Lei; WANG, Xun
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Huawei Technologies Co.,Ltd.
(11) AU-A-2021280929
(21) 2021280929 **(22)** 28.05.2021
(54) Communication method and device
(51) Int. Cl.
H04W 72/04 (2009.01)
(87) WO2021/239131
(31) 202010471252.8 **(32)** 28.05.20 **(33)** CN
202011112221.X 16.10.20 CN
202011391598.3 02.12.20 CN
202011468003.X 14.12.20 CN
(43) 02.12.2021
(72) GAN, Ming; HU, Mengshi; YU, Jian; LIANG, Dandan; LI, Yiqing; LI, Yunbo; GUO, Yuchen
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Huawei Technologies Co., Ltd.
(11) AU-A-2021283545
(21) 2021283545 **(22)** 28.05.2021
(54) Channel measurement method and apparatus
(51) Int. Cl.
H04B 17/309 (2015.01)

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H04W 72/04 (2009.01)
(87) WO2021/244427
(31) 202010480698.7 **(32)** 30.05.20 **(33)** CN
(43) 09.12.2021
(72) FAN, Bo
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Huawei Technologies Co., Ltd.
(11) AU-A-2021284567
(21) 2021284567 **(22)** 27.05.2021
(54) PPDU transmission method and related apparatus
(51) Int. Cl.
H04L 25/02 (2006.01)
(87) WO2021/244405
(31) 202010506948.X **(32)** 05.06.20 **(33)** CN
(43) 09.12.2021
(72) YU, Jian; TSODIK, Genadiy; SHILO, Shimon; GAN, Ming
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Huawei Technologies Co., Ltd.
(11) AU-A-2021286093
(21) 2021286093 **(22)** 07.06.2021
(54) Method and apparatus for transmitting/receiving physical protocol data unit
(51) Int. Cl.
H04W 8/08 (2009.01)
H04L 5/00 (2006.01)
(87) WO2021/244662
(31) 202010507591.7 **(32)** 05.06.20 **(33)** CN
202010541086.4 12.06.20 CN
202010575363.3 22.06.20 CN
202010768684.5 03.08.20 CN
(43) 09.12.2021
(72) LIANG, Dandan; GAN, Ming; YANG, Yang; LEI, Xianfu; LIU, Chenchen; ZHOU, Zhengchun; LIN, Wei; TANG, Xiaohu
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Huawei Technologies Co., Ltd.
(11) AU-A-2021292086
(21) 2021292086 **(22)** 15.06.2021
(54) Folding device and electronic apparatus
(51) Int. Cl.
G09F 9/30 (2006.01)
G06F 1/16 (2006.01)
H04M 1/02 (2006.01)
(87) WO2021/254336
(31) 202010544417.X **(32)** 15.06.20 **(33)** CN
(43) 23.12.2021
(72) LI, Yunyong; MA, Chunjun; XU, Zhengyi; NIU, Linhui; LIU, Ting; WANG, Gangchao
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Humanwell Pharmaceutical US
(11) AU-A-2020454871
(21) 2020454871 **(22)** 25.06.2020
(54) Peptides for treatment of medical disorders
(51) Int. Cl.
C07D 211/02 (2006.01)
C07D 211/28 (2006.01)
C07D 211/56 (2006.01)
(87) WO2021/262173
(31) 16/911,701 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) LIAO, Subo; YANG, Jun; LV, Jinliang; LIAO, Zongquan; ZHOU, Hao; GAO, Jueyuan; XIE, Tianpeng; YANG, Quanli
(74) RNB IP PTY LTD

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(71) Hygiene Habits Pty Ltd
(11) AU-A-2021271275
(21) 2021271275 **(22)** 10.05.2021
(54) Technology configured to monitor correct utilisation of a dispensed substance, including dispensing units having environmental sensors
(51) Int. Cl.
G08B 21/18 (2006.01)
A47K 5/12 (2006.01)
A47K 5/18 (2006.01)
G16H 40/20 (2018.01)
G16H 40/60 (2018.01)
H04W 4/38 (2018.01)
H04W 4/80 (2018.01)
(87) WO2021/226658
(31) 2020901495 **(32)** 09.05.20 **(33)** AU
2020901712 27.05.20 AU
2020904527 07.12.20 AU
2021900361 14.02.21 AU
(43) 18.11.2021
(72) SANDLER, Isaac
(74) FORWARD INTELLECTUAL PROPERTY PTY LTD

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(71) HysensBio
(11) AU-A-2021289122
(21) 2021289122 **(22)** 01.06.2021
(54) Pharmaceutical composition for preventing or treating periodontal disease or luxated teeth
(51) Int. Cl.
A61K 38/08 (2019.01)
A61P 1/02 (2006.01)
C07K 7/06 (2006.01)
(87) WO2021/251673
(31) 10-2020-0069444 **(32)** 09.06.20 **(33)** KR
(43) 16.12.2021
(72) PARK, Joo Hwang; LEE, Ji Hyun; LEE, Dong Seol
(74) Madderns Pty Ltd

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(71) HYUNDAI MOVE-X Co., Ltd.
(11) AU-A-2021289119
(21) 2021289119 **(22)** 13.04.2021
(54) Safe foothold apparatus for platform
(51) Int. Cl.
B61B 1/02 (2006.01)
E01F 1/00 (2006.01)
F16H 1/16 (2006.01)
G01B 7/02 (2006.01)
G01L 5/161 (2020.01)
(87) WO2021/251607
(31) 10-2020-0069812 **(32)** 09.06.20 **(33)** KR
(43) 16.12.2021
(72) KIM, Seo Jun; YUN, Sung Jun
(74) H & H Lawyers

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(71) Ichnos Sciences SA
(11) AU-A-2021288637
(21) 2021288637 **(22)** 14.06.2021
(54) Antibody formulation diluent
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/08 (2006.01)
A61K 38/00 (2006.01)
(87) WO2021/250275
(31) 20179607.5 **(32)** 12.06.20 **(33)** EP
(43) 16.12.2021
(72) DUBEY, Sachin; GASSIAT, Brice
(74) Spruson & Ferguson

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(71) Icoin Technology, Inc.
(11) AU-A-2021283893
(21) 2021283893 **(22)** 02.06.2021
(54) Multiple microprocessor architecture for cold storage
(51) Int. Cl.
G06Q 20/36 (2012.01)
G06F 3/048 (2013.01)
G06K 19/06 (2006.01)
G06Q 20/06 (2012.01)
G06Q 20/40 (2012.01)
H04L 9/06 (2006.01)
H04L 9/08 (2006.01)
(87) WO2021/247639
(31) 16/892,480 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) SILVESTRI, Chester; SILVESTRI, Adam
(74) RnB IP Pty Ltd

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(71) Icosavax, Inc.
(11) AU-A-2021286574
(21) 2021286574 **(22)** 09.06.2021
(54) Method of making virus-like particle
(51) Int. Cl.
C07K 1/14 (2006.01)
B82Y 5/00 (2011.01)
C07K 1/18 (2006.01)
C07K 1/36 (2006.01)
C12N 15/70 (2006.01)
(87) WO2021/252687
(31) 63/036,535 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) LIEN, Hans R.; RICHARDSON, Charles
(74) Davies Collison Cave Pty Ltd

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(71) Icosavax, Inc.
(11) AU-A-2021289470
(21) 2021289470 **(22)** 09.06.2021
(54) Method of assemblying two-component virus-like particle
(51) Int. Cl.
C07K 14/005 (2006.01)
A61K 39/12 (2006.01)
B82Y 5/00 (2011.01)
C07K 14/115 (2006.01)
C12N 15/62 (2006.01)
(87) WO2021/252688
(31) 63/036,505 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) SHEPARD, Scot R.; LIEN, Hans R.; TAYLOR, Ross M.; RICHARDSON, Charles
(74) Davies Collison Cave Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) Ildong Pharmaceutical Co., Ltd.
(11) AU-A-2021293694
(21) 2021293694 **(22)** 16.06.2021
(54) Novel Acid Secretion Inhibitor and use thereof
(51) Int. Cl.
C07D 401/12 (2006.01)
A61K 31/4025 (2006.01)
A61K 31/4155 (2006.01)
A61K 31/4178 (2006.01)
A61K 31/4439 (2006.01)
A61P 1/04 (2006.01)
A61P 1/14 (2006.01)
A61P 29/00 (2006.01)
C07D 403/12 (2006.01)
C07D 409/14 (2006.01)
(87) WO2021/256861
(31) 10-2020-0073900 **(32)** 17.06.20 **(33)** KR
(43) 23.12.2021
(72) YOON, Hong Chul; PARK, Joon Tae; LEE, Jung Woo; AN, Kyung Mi; IM, A Rang; JEON, Woo Jin; HEO, Jae Ho; HONG, Chang Hee; PARK, Jung Eun; SOHN, Te Ik; HONG, Da Hae; KIM, Jung Ho; SHIN, Jae Eui; YOO, Yeong Ran; CHANG, Min Whan; JE, In Gyu; KANG, Su Yeon; SONG, Yoon Sung; LEE, Joo Yun
(74) Davies Collison Cave Pty Ltd

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(71) Ilera Derm LLC
(11) AU-A-2021276680
(21) 2021276680 **(22)** 24.05.2021
(54) Compositions for treating acne and dermatological conditions
(51) Int. Cl.
A61P 17/10 (2006.01)
A61K 8/67 (2006.01)
A61K 31/352 (2006.01)
A61K 31/37 (2006.01)
A61K 31/60 (2006.01)
A61Q 17/04 (2006.01)
(87) WO2021/237214
(31) 63/028,857 **(32)** 22.05.20 **(33)** US
63/162,850 18.03.21 US
(43) 25.11.2021
(72) WARRINGTON, Brian; GROSSMAN, Karyn; ODUMOSU, Oludare; KEREKES, Zoltan
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Illinois Tool Works Inc.
(11) AU-A-2021283048
(21) 2021283048 **(22)** 27.05.2021
(54) Wire strand attachment clip
(51) Int. Cl.
E04H 17/10 (2006.01)
(87) WO2021/247370
(31) 63/034,183 **(32)** 03.06.20 **(33)** US
63/172,399 08.04.21 US
17/328,662 24.05.21 US
(43) 09.12.2021
(72) YOUNG, Graeme; STEMPER, Daniel; ALIREZAEE, Tayebeh
(74) Davies Collison Cave Pty Ltd

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(71) Illinois Tool Works Inc.
(11) AU-A-2021286661
(21) 2021286661 **(22)** 11.06.2021
(54) Tap assembly
(51) Int. Cl.
B67D 3/04 (2006.01)
(87) WO2021/252834
(31) 63/037,947 **(32)** 11.06.20 **(33)** US
17/344,554 10.06.21 US
(43) 16.12.2021
(72) KOO, Yeong-Heng
(74) Davies Collison Cave Pty Ltd

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(71) Illumina, Inc.
(11) AU-A-2021301180
(21) 2021301180 **(22)** 24.06.2021
(54) Compositions and methods for sequencing using at least electrical characteristics
(51) Int. Cl.
C12Q 1/6869 (2018.01)
(87) WO2022/005868
(31) 63/046,618 **(32)** 30.06.20 **(33)** US
(43) 06.01.2022
(72) MANDELL, Jeffrey; ROGERT BACIGALUPO, Maria Candelaria
(74) WRAYS PTY LTD

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(71) Illumina Singapore Pte. Ltd.
(11) AU-A-2021300988
(21) 2021300988 **(22)** 24.06.2021
(54) Compositions and methods for sequencing using at least altering electrical characteristics of bridges between electrodes
(51) Int. Cl.
C12Q 1/6825 (2018.01)
C12Q 1/6869 (2018.01)
(87) WO2022/005395
(31) 63/046,663 **(32)** 30.06.20 **(33)** US
(43) 06.01.2022
(72) BOHRA, Hassan; TEO, Yin Nah
(74) WRAYS PTY LTD

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(71) Immersive Group Gaming Ltd
(11) AU-A-2022231737
(21) 2022231737 **(22)** 21.03.2022
(54) Touchscreen display system
(51) Int. Cl.
G06F 3/01 (2006.01)
(31) 2108685.5 **(32)** 17.06.21 **(33)** GB
17/447,925 16.09.21 US
(43) 19.01.2023
(72) DEAN, William Thomas; BREENS, Jan
(74) FPA Patent Attorneys Pty Ltd

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(71) Immersive Group Gaming Ltd
(11) AU-A-2022231739
(21) 2022231739 **(22)** 11.03.2022
(54) Game Delivery System
(51) Int. Cl.
A63F 13/843 (2014.01)
(31) 2108686.3 **(32)** 17.06.21 **(33)** GB
17/447,918 16.09.21 US
(43) 19.01.2023
(72) DEAN, William Thomas; ARNOTT, Thomas James; BREENS, Jan
(74) FPA Patent Attorneys Pty Ltd

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(71) Inari Medical, Inc.
(11) AU-A-2021283979
(21) 2021283979 **(22)** 04.06.2021
(54) Recapturable funnel catheters, and associated systems and methods
(51) Int. Cl.
A61B 17/00 (2006.01)
A61B 17/22 (2006.01)
A61B 17/3207 (2006.01)
A61M 1/00 (2006.01)
A61M 25/10 (2013.01)
(87) WO2021/248042
(31) 63/035,605 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) THRESS, John Coleman; MERRITT, Benjamin Edward; LOUW, Jacob F.; MACIAS, Jacqueline; STRAUSS, Brian Michael; ZOZULENKO, Marcus Ian Tambongco; ZIKRY, Christopher Andrew; IAN, Cheng Lance; VALENCIA, Juan
(74) RnB IP Pty Ltd

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(71) Incannex Healthcare Limited
(11) AU-A-2021306424
(21) 2021306424 **(22)** 09.07.2021
(54) Compositions and methods for the treatment of obstructive sleep apnoea (OSA)
(51) Int. Cl.
A61K 31/352 (2006.01)
A61K 9/00 (2006.01)
A61K 31/433 (2006.01)
A61P 43/00 (2006.01)
(87) WO2022/006636
(31) 2020902368 **(32)** 09.07.20 **(33)** AU
(43) 13.01.2022
(72) BLEACKLEY, Mark Robert; AGARWAL, Sudhanshu; LATHAM, Joel Bradley
(74) Davies Collison Cave Pty Ltd

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(71) Incyte Corporation
(11) AU-A-2021292484
(21) 2021292484 **(22)** 15.06.2021
(54) ALK2 inhibitors for the treatment of anemia
(51) Int. Cl.
A61K 31/4439 (2006.01)
A61K 31/455 (2006.01)
A61P 7/06 (2006.01)
(87) WO2021/257532
(31) 63/152,516 **(32)** 23.02.21 **(33)** US
63/039,742 16.06.20 US
63/056,761 27.07.20 US
(43) 23.12.2021
(72) SÉGUY, Francis; ASATIANI, Ekaterine; CHEN, Yaoyu
(74) Houlihan Intellectual Property Pty Ltd

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(71) In-Extremis Design and Development, LLC
(11) AU-A-2021293288

PCT applications which have entered the National Phase - Name Index cont'd

(21) 2021293288 **(22)** 21.06.2021
(54) Weapon mountable illumination device
(51) Int. Cl.
F21L 4/02 (2006.01)
F21V 21/34 (2006.01)
F41G 1/00 (2006.01)
F41G 1/34 (2006.01)
F41G 1/35 (2006.01)
(87) WO2021/258045
(31) 16/906,698 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) DEBOBES, Dennis; NEEL, Ryan; JAKUBOWSKI, Jeffrey
(74) FPA Patent Attorneys Pty Ltd

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(71) Ing Co., Ltd.; Nagaki Seiki Co., Ltd.
(11) AU-A-2021284101
(21) 2021284101 **(22)** 03.06.2021
(54) Lifting clamp
(51) Int. Cl.
B66C 1/42 (2006.01)
E04G 21/16 (2006.01)
(87) WO2021/246493
(31) 2020-097675 **(32)** 04.06.20 **(33)** JP
2021-093368 03.06.21 JP
(43) 09.12.2021
(72) SHIOMI, Masao; TAKADA, Junsuke; TSUCHIYA, Akiko
(74) Griffith Hack

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(71) Inkbit, LLC
(11) AU-A-2021286632
(21) 2021286632 **(22)** 10.06.2021
(54) Materials for photoinitiated cationic ring-opening polymerization and uses thereof
(51) Int. Cl.
C08G 65/22 (2006.01)
C08G 65/10 (2006.01)
C08G 65/18 (2006.01)
(87) WO2021/252740
(31) 63/037,226 **(32)** 10.06.20 **(33)** US
(43) 16.12.2021
(72) ELLSON, Gregory; TWIDDY, Scott
(74) RnB IP

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(71) Innovent Biologics (Suzhou) Co., Ltd.
(11) AU-A-2021291259
(21) 2021291259 **(22)** 18.06.2021
(54) Anti-Claudin18.2 antibody and use thereof
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 39/395 (2006.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
(87) WO2021/254481
(31) 202010570517.X **(32)** 19.06.20 **(33)** CN
(43) 23.12.2021
(72) ZHOU, Shuaixiang; LI, Li; GUAN, Zhe; WANG, Jie
(74) James & Wells Intellectual Property

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(71) Inova Diagnostics, Inc.
(11) AU-A-2022206267
(21) 2022206267 **(22)** 07.01.2022
(54) Compositions and methods for diagnosing primary biliary cirrhosis
(51) Int. Cl.
G01N 33/564 (2006.01)
(87) WO2022/150536
(31) 63/135,469 **(32)** 08.01.21 **(33)** US
(43) 14.07.2022
(72) NORMAN, Gary L.; MAHLER, Michael
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Inozyme Pharma, Inc.; Yale University
(11) AU-A-2021286502
(21) 2021286502 **(22)** 08.06.2021
(54) Soluble ENPP1 or ENPP3 proteins and uses thereof
(51) Int. Cl.
C12N 9/14 (2006.01)
A61K 38/46 (2006.01)
C12N 9/16 (2006.01)
(87) WO2021/252549
(31) 63/036,833 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) CHENG, Zhiliang; BRADDOCK, Demetrios; STABACH, Paul; JUNGLES, Steven
(74) Spruson & Ferguson

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(71) Insitro, Inc.
(11) AU-A-2021275995
(21) 2021275995 **(22)** 21.05.2021
(54) Predicting disease outcomes using machine learned models
(51) Int. Cl.
C12Q 1/6883 (2018.01)
G16B 20/20 (2019.01)
G16H 50/20 (2018.01)
G16H 50/30 (2018.01)
(87) WO2021/237117
(31) 63/029,038 **(32)** 22.05.20 **(33)** US
(43) 25.11.2021
(72) KOLLER, Daphne; KAYKAS, Ajamete; SHARON, Eilon; COTTA-RAMUSINO, Cecilia Giovanna Silvia; PALMEDO Jr., Peter Franklin; SULTAN, Mohammad Muneeb; STANITSAS, Panagiotis Dimitrios; CASALE, Francesco Paolo; RIESSELMAN, Adam Joseph; KATEGAYA, Lorn; SALICK, Max R.
(74) FB Rice Pty Ltd

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(71) Insmed, Inc.
(11) AU-A-2021314104
(21) 2021314104 **(22)** 19.07.2021
(54) Methods for extracting neutrophil serine proteases and treating dipeptidyl peptidase 1-mediated conditions
(51) Int. Cl.
G01N 33/68 (2006.01)
G01N 33/569 (2006.01)
(87) WO2022/020245
(31) 63/053,939 **(32)** 20.07.20 **(33)** US
63/215,599 28.06.21 US
(43) 27.01.2022
(72) BASSO, Jessica; ZHANG, Jimin; CIPOLLA, David
(74) RNB IP PTY LTD

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(71) Intelligent Virus Imaging Inc.
(11) AU-A-2021344913
(21) 2021344913 **(22)** 23.08.2021
(54) An autonomous microfluidic device for sample preparation
(51) Int. Cl.
B01L 3/00 (2006.01)
G01N 1/30 (2006.01)
G01N 1/31 (2006.01)
H01J 37/16 (2006.01)
H01J 37/20 (2006.01)
H01J 37/252 (2006.01)
(87) WO2022/060536
(31) 17/023,922 **(32)** 17.09.20 **(33)** US
(43) 24.03.2022
(72) HAUSER, Janosch; KYLBERG, Gustaf; STEMME, Göran; SINTORN, Ida-Maria; ROXHED, Niclas
(74) Ellis Terry

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(71) Intocell, Inc.; Y-Biologics Inc.
(11) AU-A-2021297036
(21) 2021297036 **(22)** 25.06.2021
(54) Antibody-drug conjugates comprising anti-b7-h3 antibodies
(51) Int. Cl.
A61K 47/68 (2017.01)
A61P 29/00 (2006.01)
A61P 35/00 (2006.01)
A61P 37/00 (2006.01)
C07K 16/28 (2006.01)
(87) WO2021/260438
(31) 63/044,764 **(32)** 26.06.20 **(33)** US
(43) 30.12.2021
(72) PARK, Taekyo; KIM, Sunyoung; PARK, Suho; JUNG, Doohwan; SEO, Donghoon; LEE, Sangkwang; YUN, Sanghyeon; HA, Jihyeon; LEE, Hyang, Sook; PARK, Okku; SEO, Beomseok; KIM, Sena; SEOL, Minah; SONG, Jina; WOO, Sung Ho; CHO, Jongun; LEE, Jaeho; LEE, Hyun Mi; PARK, Jae Eun; SONG, Youngja; LEE, Eunjin; LEE, Hyun Ju; SHIM, Eun-Young; KO, Yunjung; LEE, Minju; PARK, Young Woo; REW, Yosup
(74) Pearce IP Pty Ltd

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(71) Intuit Inc.
(11) AU-A-2022204091
(21) 2022204091 **(22)** 31.03.2022
(54) Customer recognition system
(51) Int. Cl.
G06F 16/95 (2019.01)
(31) 17/364,859 **(32)** 30.06.21 **(33)** US
(43) 19.01.2023
(72) ZHAO, Runhua; SIKARIA, Sonam; LIU, Jaiyao; KANG, Linhong; TANG, Byron; RIZVI, Bilal
(74) Davies Collison Cave Pty Ltd

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(71) Invaio Sciences International GmbH
(11) AU-A-2021286174
(21) 2021286174 **(22)** 02.06.2021
(54) Tip setters and tip adapters for installing injection tools to plant parts
(51) Int. Cl.
A01G 7/06 (2006.01)
(87) WO2021/245115

PCT applications which have entered the National Phase - Name Index cont'd

(31) 63/033,745 **(32)** 02.06.20 **(33)** US
63/143,640 29.01.21 US
(43) 09.12.2021
(72) WIDMER, Urs; OEHL, Michael Christian; SCHÜPBACH, Lukas Rudolf; CHETTOOR, Antony Mathai; VERWEIRE, Dimitri
(74) Davies Collison Cave Pty Ltd

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(71) Inventio AG
(11) AU-A-2021285039
(21) 2021285039 **(22)** 01.06.2021
(54) Rail-fastening system
(51) Int. Cl.
B66B 7/02 (2006.01)
(87) WO2021/245062
(31) 20178561.5 **(32)** 05.06.20 **(33)** EP
(43) 09.12.2021
(72) WEIBEL, André
(74) Griffith Hack

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(71) InventisBio Co., Ltd.
(11) AU-A-2021291257
(21) 2021291257 **(22)** 18.06.2021
(54) Oral formulations and uses thereof
(51) Int. Cl.
A61K 31/4745 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/254471
(31) PCT/ **(32)** 19.06.20 **(33)** CN
CN2020/097036
(43) 23.12.2021
(72) DAI, Xing; WANG, Xiaomei; LIU, Yanqin; JIANG, Yueheng; WANG, Yaolin
(74) Madderns Pty Ltd

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(71) Ionaer International Arizona, LLC
(11) AU-A-2021268213
(21) 2021268213 **(22)** 07.05.2021
(54) Air ionization system
(51) Int. Cl.
F24F 8/108 (2021.01)
B60H 1/00 (2006.01)
F24F 8/26 (2021.01)
F24F 8/30 (2021.01)
F24F 8/40 (2021.01)
F24F 13/20 (2006.01)
H01T 23/00 (2006.01)
F24F 110/10 (2018.01)
F24F 110/20 (2018.01)
F24F 110/72 (2018.01)
F24F 110/74 (2018.01)
(87) WO2021/226550
(31) 63/021,197 **(32)** 07.05.20 **(33)** US
63/138,290 15.01.21 US
(43) 11.11.2021
(72) BENDER, Timothy Mark; PAULEY, Perry; ROPER, Brian Keith; ROPER, Todd K.
(74) FB Rice Pty Ltd

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(71) Ipltech Electric Private Limited
(11) AU-A-2021284592
(21) 2021284592 **(22)** 01.06.2021
(54) System and method for storing instant regeneration in electric vehicles
(51) Int. Cl.
B60L 50/15 (2019.01)
B60W 20/14 (2016.01)
H02J 7/14 (2006.01)
(87) WO2021/245548
(31) 202011023743 **(32)** 05.06.20 **(33)** IN
(43) 09.12.2021
(72) DAS, Siddhartha
(74) Cooper IP Pty Ltd

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(71) iRegene Therapeutics LTD
(11) AU-A-2021276853
(21) 2021276853 **(22)** 08.01.2021
(54) Application of TGF-beta inhibitor in inducing neural stem cells and organoid formation
(51) Int. Cl.
C12N 5/0797 (2010.01)
A61K 35/30 (2015.01)
A61P 25/00 (2006.01)
A61P 25/28 (2006.01)
C12N 5/079 (2010.01)
C12N 5/0793 (2010.01)
(87) WO2021/232830
(31) 202011544349.3 **(32)** 23.12.20 **(33)** CN
PCT/ 19.05.20 CN
CN2020/091041
(43) 25.11.2021
(72) WEI, Jun; CAI, Meng; NIU, Lumeng; ZHOU, Jia; HOU, Mengying
(74) ALDRICH PROJECTS PTY LTD

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(71) Ishihara Sangyo Kaisha, Ltd.
(11) AU-A-2021282645
(21) 2021282645 **(22)** 02.06.2021
(54) Antimicrobial agent for nonhuman animal
(51) Int. Cl.
A61K 31/4164 (2006.01)
A61P 17/00 (2006.01)
A61P 17/06 (2006.01)
A61P 27/16 (2006.01)
A61P 31/04 (2006.01)
A61P 31/10 (2006.01)
(87) WO2021/246453
(31) 2020-097170 **(32)** 03.06.20 **(33)** JP
(43) 09.12.2021
(72) SHIKAMA, Hiroshi; HIGUCHI, Koji; ATSUMI, Shogo; IMURA, Takayuki
(74) Davies Collison Cave Pty Ltd

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(71) Ishihara Sangyo Kaisha, Ltd.
(11) AU-A-2021284446
(21) 2021284446 **(22)** 02.06.2021
(54) Antifungal agent for use in humans
(51) Int. Cl.
A61K 31/4164 (2006.01)
A61P 17/00 (2006.01)
A61P 17/06 (2006.01)
A61P 27/16 (2006.01)
A61P 31/10 (2006.01)
(87) WO2021/246455
(31) 2020-097174 **(32)** 03.06.20 **(33)** JP
(43) 09.12.2021
(72) SHIKAMA, Hiroshi; HIGUCHI, Koji; ATSUMI, Shogo; IMURA, Takayuki
(74) Davies Collison Cave Pty Ltd

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(71) Ixaka France
(11) AU-A-2021274132
(21) 2021274132 **(22)** 19.05.2021
(54) Promoter sequences for In Vitro And In Vivo Expression of Gene Therapy Products in CD3+ Cells
(51) Int. Cl.
C12N 15/86 (2006.01)
A61K 48/00 (2006.01)
(87) WO2021/234455
(31) 63/026,964 **(32)** 19.05.20 **(33)** US
(43) 25.11.2021
(72) BAUCHE, Cecile; MOURLANE, Frederic; VAILLANT, Renaud; PACHERIE, Rachel
(74) Southern Cross Intellectual Property

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(71) iX Biopharma Limited; iX Biopharma Ltd
(11) AU-A-2021285083
(21) 2021285083 **(22)** 28.05.2021
(54) Methods for treating major depressive disorder and treatment-resistant depression
(51) Int. Cl.
A61K 31/135 (2006.01)
A61K 47/26 (2006.01)
A61K 47/36 (2006.01)
A61P 25/24 (2006.01)
(87) WO2021/243399
(31) 2020901810 **(32)** 02.06.20 **(33)** AU
(43) 09.12.2021
(72) LEE, Yip Hang Eddy; LIM, Chin Beng Stephen
(74) WRAYS PTY LTD

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(71) Jade Bird Display (Shanghai) Limited
(11) AU-A-2022210050
(21) 2022210050 **(22)** 19.01.2022
(54) Slicing micro-LED wafer and slicing micro-LED chip
(51) Int. Cl.
H01L 33/62 (2010.01)
H01L 25/075 (2006.01)
H01L 27/12 (2006.01)
(87) WO2022/157644
(31) 17/155,543 **(32)** 22.01.21 **(33)** US
(43) 28.07.2022
(72) XU, Qunchao; LI, Qiming
(74) FB Rice Pty Ltd

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(71) Jade Bird Display (Shanghai) Limited
(11) AU-A-2022211670
(21) 2022211670 **(22)** 19.01.2022
(54) Slicing micro-led wafer and slicing micro-led chip
(51) Int. Cl.
H01L 25/16 (2006.01)
H01L 33/00 (2010.01)
(87) WO2022/157643
(31) 17/155,518 **(32)** 22.01.21 **(33)** US
(43) 28.07.2022
(72) XU, Qunchao; LI, Qiming
(74) FB Rice Pty Ltd

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(71) Jagger, R.
(11) AU-A-2021279206

PCT applications which have entered the National Phase - Name Index cont'd

(21) 2021279206 **(22)** 25.05.2021
(54) Container assembly
(51) Int. Cl.
A47G 19/22 (2006.01)
B65D 43/02 (2006.01)
(87) WO2021/237278
(31) 2020901755 **(32)** 28.05.20 **(33)** AU
(43) 02.12.2021
(72) JAGGER, Robin Drummon
(74) WRAYS PTY LTD

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(71) Janssen Biotech, Inc.
(11) AU-A-2021269222
(21) 2021269222 **(22)** 05.05.2021
(54) Methods of treating Crohn's disease with anti-IL23 specific antibody
(51) Int. Cl.
A61K 39/395 (2006.01)
A61P 1/00 (2006.01)
C07K 16/24 (2006.01)
(87) WO2021/224823
(31) 63/020,120 **(32)** 05.05.20 **(33)** US
63/170,121 02.04.21 US
63/180,973 28.04.21 US
(43) 11.11.2021
(72) ADEDOKUN, Omoniyi; CHAN, Daphne; CHEN, Yang; SZAPARY, Philippe
(74) Spruson & Ferguson

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(71) Janssen Pharmaceutica NV
(11) AU-A-2021262588
(21) 2021262588 **(22)** 28.04.2021
(54) Imidazopyrimidines as modulators of IL-17
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/519 (2006.01)
A61P 11/00 (2006.01)
A61P 17/06 (2006.01)
A61P 25/00 (2006.01)
A61P 29/00 (2006.01)
A61P 37/00 (2006.01)
(87) WO2021/220183
(31) 63/017,679 **(32)** 30.04.20 **(33)** US
(43) 04.11.2021
(72) GOLDBERG, Steven; MARTIN, Connor; RHORER, Timothy B.; TANIS, Virginia M.; XUE, Xiaohua
(74) Spruson & Ferguson

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(71) Janssen Pharmaceutica NV
(11) AU-A-2021264528
(21) 2021264528 **(22)** 28.04.2021
(54) Imidazopyridazines as modulators of IL-17
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/5025 (2006.01)
A61P 11/00 (2006.01)
(87) WO2021/222404
(31) 63/017,682 **(32)** 30.04.20 **(33)** US
(43) 04.11.2021
(72) BEHENNA, Douglas; DECKHUT, Charlotte; ROVIRA, Alexander; GOLDBERG, Steven; KUMMER, David; KEITH, John; WOODS, Craig; RHORER, Timothy; TANIS, Virginia; MARTIN, Connor; MEDUNA, Steven; MCCARVER, Stefan; VALDES, Alexander; LOSKOT, Steven; XUE, Xiaohua
(74) Spruson & Ferguson

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(71) Janssen Pharmaceutica NV
(11) AU-A-2021265167
(21) 2021265167 **(22)** 29.04.2021
(54) New triazinoindole compounds
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/53 (2006.01)
A61P 1/16 (2006.01)
A61P 3/10 (2006.01)
A61P 9/00 (2006.01)
A61P 13/00 (2006.01)
A61P 13/12 (2006.01)
A61P 19/02 (2006.01)
A61P 19/06 (2006.01)
A61P 25/28 (2006.01)
A61P 29/00 (2006.01)
A61P 31/14 (2006.01)
A61P 35/00 (2006.01)
A61P 37/06 (2006.01)
(87) WO2021/219784
(31) 20382360.4 **(32)** 30.04.20 **(33)** EP
(43) 04.11.2021
(72) OEHLRICH, Daniel; VAN GOOL, Michiel Luc Maria; VEGA-RAMIRO, Juan Antonio; LAMKANFI, Mohamed; VAN OPDENBOSCH, Nina
(74) Spruson & Ferguson

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(71) Janssen Pharmaceutica NV
(11) AU-A-2021266409
(21) 2021266409 **(22)** 07.05.2021
(54) Pharmaceutical formulations of abiraterone acetate and niraparib
(51) Int. Cl.
A61K 31/454 (2006.01)
A61K 9/16 (2006.01)
A61K 9/20 (2006.01)
A61K 31/573 (2006.01)
A61K 31/58 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/224471
(31) 20173749.1 **(32)** 08.05.20 **(33)** EP
63/142,919 28.01.21 US
63/174,282 13.04.21 US
(43) 11.11.2021
(72) QUINTEN, Thomas Ronald A; DELAET, Urbain Alfons C; HEYNS, Philip Erna H; MARCOZZI, Tatiana; BERTELS, Johny; LUYTEN, Katrien; TAMBWEKAR, Kaustubh Ramesh; LOPEZ-GITLITZ, Angela; HARTMAN KOK, Paul J A
(74) Spruson & Ferguson

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(71) Janssen Pharmaceutica NV
(11) AU-A-2021267146
(21) 2021267146 **(22)** 07.05.2021
(54) Treatments of prostate cancer with combinations of abiraterone acetate and niraparib
(51) Int. Cl.
A61K 31/454 (2006.01)
A61K 9/16 (2006.01)
A61K 9/20 (2006.01)
A61K 31/573 (2006.01)
A61K 31/58 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/224469
(31) 20173749.1 **(32)** 08.05.20 **(33)** EP
63/142,919 28.01.21 US
63/174,282 13.04.21 US
(43) 11.11.2021
(72) QUINTEN, Thomas Ronald A.; DELAET, Urbain Alfons C.; HEYNS, Philip Erna H.; MARCOZZI, Tatiana; BERTELS, Johny; LUYTEN, Katrien; TAMBWEKAR, Kaustubh Ramesh; LOPEZ-GITLITZ, Angela; HARTMAN KOK, Paul J. A.
(74) Spruson & Ferguson

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(71) Janssen Pharmaceutica NV
(11) AU-A-2021269115
(21) 2021269115 **(22)** 07.05.2021
(54) Treatment of prostate cancer with a combination of abiraterone acetate and niraparib
(51) Int. Cl.
A61K 31/454 (2006.01)
A61K 9/16 (2006.01)
A61K 9/20 (2006.01)
A61K 31/573 (2006.01)
A61K 31/58 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/224467
(31) 20173749.1 **(32)** 08.05.20 **(33)** EP
63/142,919 28.01.21 US
63/174,282 13.04.21 US
(43) 11.11.2021
(72) QUINTEN, Thomas Ronald A.; DELAET, Urbain Alfons C.; HEYNS, Philip Erna H.; MARCOZZI, Tatiana; BERTELS, Johny; LUYTEN, Katrien; TAMBWEKAR, Kaustubh Ramesh; LOPEZ-GITLITZ, Angela; HARTMAN KOK, Paul J. A.
(74) Spruson & Ferguson

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(71) Jensen, E.; Peek, J.
(11) AU-A-2021270555
(21) 2021270555 **(22)** 10.05.2021
(54) Insulating holder and method for transporting beverages
(51) Int. Cl.
B65D 25/02 (2006.01)
B65D 51/20 (2006.01)
B65D 71/70 (2006.01)
B65D 77/20 (2006.01)
(87) WO2021/232075
(31) 2020/02602 **(32)** 11.05.20 **(33)** ZA
(43) 18.11.2021
(72) JENSEN, Eugene; PEEK, Johannes Samuel
(74) Griffith Hack

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(71) Jet Black Products Pty Ltd
(11) AU-A-2021268680
(21) 2021268680 **(22)** 29.04.2021
(54) Devices and computer technology configured to enable enhanced simulated bicycle steering, for use with a stationary training system
(51) Int. Cl.
A63B 69/16 (2006.01)
G09B 9/058 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

(87) WO2021/222970
(31) 2020901430 **(32)** 05.05.20 **(33)** AU
(43) 11.11.2021
(72) SIMMONDS, Tony
(74) FORWARD INTELLECTUAL PROPERTY PTY LTD

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(71) JFE Steel Corporation
(11) AU-A-2021288876
(21) 2021288876 **(22)** 08.03.2021
(54) Hardness prediction method of thermally-treated rail, thermal treatment method, hardness prediction device, thermal treatment device, manufacturing method, manufacturing facilities, and generating method of hardness prediction model
(51) Int. Cl.
C21D 9/04 (2006.01)
C21D 1/00 (2006.01)
C21D 11/00 (2006.01)
G01N 3/40 (2006.01)
G01N 19/00 (2006.01)
(87) WO2021/250957
(31) 2020-100895 **(32)** 10.06.20 **(33)** JP
(43) 16.12.2021
(72) OSUKA, Kenichi; FUKUDA, Hiroyuki; UEOKA, Satoshi
(74) Davies Collison Cave Pty Ltd

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(71) JFE Steel Corporation
(11) AU-A-2021302317
(21) 2021302317 **(22)** 01.06.2021
(54) Rail having excellent fatigue crack propagation resistance characteristics, and method for producing same
(51) Int. Cl.
C21D 8/00 (2006.01)
C22C 38/00 (2006.01)
C22C 38/38 (2006.01)
C22C 38/60 (2006.01)
(87) WO2022/004247
(31) 2020-111354 **(32)** 29.06.20 **(33)** JP
(43) 06.01.2022
(72) ANDO, Keisuke; OHTSUBO, Hirofumi
(74) Davies Collison Cave Pty Ltd

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(71) JGC Corporation
(11) AU-A-2021425001
(21) 2021425001 **(22)** 23.06.2021
(54) Plant control method, plant control device, program, and plant
(51) Int. Cl.
G06Q 50/06 (2012.01)
G06Q 30/06 (2012.01)
(43) 19.01.2023
(72) SHIMADA, Yohei; KAI, Mototaka; TAKAKUWA, Shuya; HOSHINO, Yuki
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Jiangsu Hengrui Medicine Co., Ltd.; Shanghai Hengrui Pharmaceutical Co., Ltd.
(11) AU-A-2021298632
(21) 2021298632 **(22)** 29.06.2021
(54) Anti-CD70 antibody and application thereof
(51) Int. Cl.
A61K 39/395 (2006.01)
C07K 16/28 (2006.01)
(87) WO2022/002019
(31) 202010617663.3 **(32)** 30.06.20 **(33)** CN
(43) 06.01.2022
(72) SUN, Le; YE, Xin; CHEN, Yuxiao; JIN, Xinsheng; TAO, Weikang
(74) Davies Collison Cave Pty Ltd

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(71) Jiangsu Hengrui Pharmaceuticals Co., Ltd.; Shanghai Hengrui Pharmaceutical Co., Ltd.
(11) AU-A-2021287927
(21) 2021287927 **(22)** 11.06.2021
(54) Pyridine-pyrimidine derivative, preparation method therefor and pharmaceutical use thereof
(51) Int. Cl.
C07D 471/04 (2006.01)
A61K 31/519 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/249519
(31) 202010529071.6 **(32)** 11.06.20 **(33)** CN
202011042186.9 28.09.20 CN
202011400233.2 02.12.20 CN
202110509569.0 11.05.21 CN
(43) 16.12.2021
(72) LI, Xin; FENG, Binqiang; BAI, Dongdong; HE, Feng; TAO, Weikang
(74) Davies Collison Cave Pty Ltd

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(71) Jiangsu Tasly Diyi Pharmaceutical Co., Ltd.
(11) AU-A-2021422370
(21) 2021422370 **(22)** 19.03.2021
(54) CDK6/DYRK2 dual-target inhibitor, and preparation method therefor and use thereof
(51) Int. Cl.
C07D 417/14 (2006.01)
A61K 31/506 (2006.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
(87) WO2022/156059
(31) 202110066746.2 **(32)** 19.01.21 **(33)** CN
(43) 28.07.2022
(72) YANG, Peng; HAO, Haiping; XIAO, Yibei; YUAN, Kai; WANG, Xiao; KUANG, Wenbin
(74) Spruson & Ferguson

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(71) Jio Platforms Limited
(11) AU-A-2021284526
(21) 2021284526 **(22)** 28.05.2021
(54) System and method of imaging
(51) Int. Cl.
G06T 5/50 (2006.01)
(87) WO2021/245514
(31) 202021022766 **(32)** 30.05.20 **(33)** IN
(43) 09.12.2021
(72) LANKA, Raghuram; REDDY, P. Balakrishna; BANERJEE, Arun; GUPTA, Pradip; BHARDWAJ, Shubham; KUMAR, Shailesh; DASGUPTA, Santanu; BADHWAR, Rahul; PAUL, Kenny
(74) LexGeneris Pty Ltd

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(71) Johnson & Johnson Vision Care, Inc.
(11) AU-A-2021340013
(21) 2021340013 **(22)** 14.09.2021
(54) Single touch contact lens case
(51) Int. Cl.
A45C 11/00 (2006.01)
(87) WO2022/054033
(31) 63/077,784 **(32)** 14.09.20 **(33)** US
(43) 17.03.2022
(72) POPWELL, Sam Jonathan; ANSELL, Scott F.; WARD, Daniel Graham; SAMS, Stephen; HONEY, William Stephen; AKRAM, Ismail
(74) Spruson & Ferguson

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(71) Johnson & Johnson Vision Care, Inc.
(11) AU-A-2021341911
(21) 2021341911 **(22)** 14.09.2021
(54) Single touch contact lens package
(51) Int. Cl.
A45C 11/00 (2006.01)
(87) WO2022/054031
(31) 63/077,779 **(32)** 14.09.20 **(33)** US
(43) 17.03.2022
(72) POPWELL, Sam Jonathan; ANSELL, Scott F.; WARD, Daniel Graham; SAMS, Stephen; HONEY, William Stephen; AKRAM, Ismail
(74) Spruson & Ferguson

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(71) Johnson & Johnson Vision Care, Inc.
(11) AU-A-2021396636
(21) 2021396636 **(22)** 10.12.2021
(54) Contact lens packages and methods of opening
(51) Int. Cl.
B65D 75/32 (2006.01)
A45C 11/00 (2006.01)
(87) WO2022/123525
(31) 63/124,835 **(32)** 13.12.20 **(33)** US
(43) 16.06.2022
(72) POPWELL, Sam Jonathan; ANSELL, Scott F.; WARD, Daniel Graham; SAMS, Stephen; HONEY, William Stephen; AKRAM, Ismail
(74) Spruson & Ferguson

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(71) Johnson & Johnson Vision Care, Inc.
(11) AU-A-2022275423
(21) 2022275423 **(22)** 23.06.2022
(54) Transition metal complexes as visible light absorbers
(51) Int. Cl.
C07D 221/18 (2006.01)
(31) 63/216,589 **(32)** 30.06.21 **(33)** US
17/662,910 11.05.22 US
(43) 19.01.2023
(72) LOPEZ, Michael J.; MAHADEVAN, Shivkumar
(74) Spruson & Ferguson

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(71) Johnson & Johnson Vision Care, Inc.
(11) AU-A-2022275424
(21) 2022275424 **(22)** 23.06.2022

PCT applications which have entered the National Phase - Name Index cont'd

(54) Ophthalmic devices derived from grafted polymeric networks and processes for their preparation and use
(51) Int. Cl.
C08J 5/00 (2006.01)
(31) 63/216,586 **(32)** 30.06.21 **(33)** US
17/662,916 11.05.22 US
(43) 19.01.2023
(72) LOPEZ, Michael J.; FORD, James D.; MAHADEVAN, Shivkumar; SHERIDAN, Stephanie; GARCIA, Alejandra Isabel
(74) Spruson & Ferguson

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(71) Jolt Charge Pty Ltd.
(11) AU-A-2021287073
(21) 2021287073 **(22)** 10.06.2021
(54) Electrical charging structure
(51) Int. Cl.
B60L 53/30 (2019.01)
B60L 53/00 (2019.01)
B60L 53/14 (2019.01)
B60L 53/18 (2019.01)
B60L 53/50 (2019.01)
H02B 1/01 (2006.01)
H02B 1/015 (2006.01)
H02B 1/26 (2006.01)
H02B 7/00 (2006.01)
H02B 7/06 (2006.01)
H02J 7/00 (2006.01)
H05K 5/00 (2006.01)
H05K 5/03 (2006.01)
(87) WO2021/248199
(31) 2020901948 **(32)** 12.06.20 **(33)** AU
(43) 16.12.2021
(72) MCNAMEE, Douglas
(74) Spruson & Ferguson

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(71) K2 Systems GmbH
(11) AU-A-2021281034
(21) 2021281034 **(22)** 26.05.2021
(54) Mounting system, mounting assembly, and solar installation
(51) Int. Cl.
F24S 25/636 (2018.01)
F24S 25/65 (2018.01)
F24S 40/80 (2018.01)
(87) WO2021/239856
(31) 10 2020 206 810.0 **(32)** 29.05.20 **(33)** DE
(43) 02.12.2021
(72) WIGGERS, Melanie; KOCH, Bernd; DANNING, Matthew G.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Kabushiki Kaisha Toshiba; Toshiba Infrastructure Systems & Solutions Corporation
(11) AU-A-2021302559
(21) 2021302559 **(22)** 08.06.2021
(54) Operating system multiplexing device
(51) Int. Cl.
G05B 23/02 (2006.01)
(87) WO2022/004309
(31) 2020-115968 **(32)** 03.07.20 **(33)** JP
(43) 06.01.2022
(72) TAKAYANAGI, Yoichi; FUKAI, Eigo; OKABE, Motohiko; TATENO, Genki
(74) Griffith Hack

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(71) Kansas State University Research Foundation
(11) AU-A-2021308949
(21) 2021308949 **(22)** 15.06.2021
(54) Device and process for mass production of particulate materials
(51) Int. Cl.
C01B 32/182 (2017.01)
B82Y 40/00 (2011.01)
(87) WO2022/015445
(31) 63/039,087 **(32)** 15.06.20 **(33)** US
(43) 20.01.2022
(72) CORKILL, Stephen; SORENSEN, Christopher; WRIGHT, Justin; NEPAL, Arjun; BOSSMANN, Stefan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Kao Corporation
(11) AU-A-2021354512
(21) 2021354512 **(22)** 29.09.2021
(54) Disinfectant composition
(51) Int. Cl.
A01N 37/04 (2006.01)
A01N 37/06 (2006.01)
A01N 37/36 (2006.01)
A01N 41/04 (2006.01)
A01P 3/00 (2006.01)
(87) WO2022/071351
(31) 2020-164405 **(32)** 30.09.20 **(33)** JP
(43) 07.04.2022
(72) KAWAGUCHI, Hiroko; KIYOHARA, Yoshiko; SAITO, Takanori
(74) Davies Collison Cave Pty Ltd

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(71) Kassoul, A.
(11) AU-A-2021275549
(21) 2021275549 **(22)** 22.03.2021
(54) Functional mattress
(51) Int. Cl.
A47C 20/02 (2006.01)
A47C 27/08 (2006.01)
A47C 27/14 (2006.01)
(87) WO2021/234233
(31) FR2005417 **(32)** 21.05.20 **(33)** FR
(43) 25.11.2021
(72) KASSOUL, Aboubakr
(74) LESICAR MAYNARD ANDREWS PTY LTD

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(71) Kazuar Advanced Technologies Ltd.
(11) AU-A-2021285542
(21) 2021285542 **(22)** 03.06.2021
(54) Threat resistant multi-computing environment
(51) Int. Cl.
G06F 21/55 (2013.01)
G06F 9/455 (2018.01)
G06F 21/53 (2013.01)
(87) WO2021/245674
(31) 275098 **(32)** 03.06.20 **(33)** IL
(43) 09.12.2021
(72) FINCHELSTEIN, Daniel Mondy; PORAT, Yuval Moshe; FENSTER, Yaacov; MARCO, Shlomi Raz
(74) Collison & Co

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(71) Keko Acessórios S/A
(11) AU-A-2021286407
(21) 2021286407 **(22)** 28.06.2021
(54) Retractable tonneau cover for truck bed vehicles and similar
(51) Int. Cl.
B60P 7/02 (2006.01)
(43) 19.01.2023
(72) MANTOVANI, Juliano Scheer
(74) Halfords IP

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(71) KeKo Acessórios S/A
(11) AU-A-2021346300
(21) 2021346300 **(22)** 17.06.2021
(54) Tonneau cover fixing and assembly system
(51) Int. Cl.
B60R 5/04 (2006.01)
(43) 19.01.2023
(72) MANTOVANI, Juliano Scheer
(74) Halfords IP

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(71) Keulemans, Y.
(11) AU-A-2021290650
(21) 2021290650 **(22)** 18.06.2021
(54) A measuring device and method of use thereof
(51) Int. Cl.
G01N 3/24 (2006.01)
E02D 1/00 (2006.01)
G01N 15/08 (2006.01)
G01N 33/24 (2006.01)
(87) WO2021/253088
(31) 2020902022 **(32)** 18.06.20 **(33)** AU
(43) 23.12.2021
(72) KEULEMANS, Yvo
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Kinesiometrics, Inc.
(11) AU-A-2021287881
(21) 2021287881 **(22)** 08.06.2021
(54) System and method for providing analytics relating to patients and medical interventions
(51) Int. Cl.
G16H 15/00 (2018.01)
G16H 20/40 (2018.01)
G16H 50/30 (2018.01)
G16H 50/70 (2018.01)
G16H 40/67 (2018.01)
(87) WO2021/252522
(31) 63/036,299 **(32)** 08.06.20 **(33)** US
(43) 16.12.2021
(72) YOON, Jang W.; BASIL, Gregory W.; WANG, Michael Y.
(74) Davies Collison Cave Pty Ltd

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(71) Kinnate Biopharma Inc.
(11) AU-A-2021282596
(21) 2021282596 **(22)** 04.06.2021
(54) Inhibitors of fibroblast growth factor receptor kinases
(51) Int. Cl.
A61P 35/00 (2006.01)
C07D 231/44 (2006.01)
C07D 401/14 (2006.01)

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(87) WO2021/247969
(31) 63/035,155 **(32)** 05.06.20 **(33)** US
63/106,812 28.10.20 US
(43) 09.12.2021
(72) KALDOR, Stephen W.; TYHONAS, John; MURPHY, Eric A.; KANOUNI, Toufike; ARNOLD, Lee D.; KANIA, Robert; COX, Jason M.
(74) FB Rice Pty Ltd

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(71) Kinnate Biopharma Inc.
(11) AU-A-2021285974
(21) 2021285974 **(22)** 04.06.2021
(54) Inhibitors of fibroblast growth factor receptor kinases
(51) Int. Cl.
A61P 35/00 (2006.01)
C07D 231/44 (2006.01)
C07D 401/14 (2006.01)
(87) WO2021/247971
(31) 63/035,243 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) KALDOR, Stephen W.; TYHONAS, John; MURPHY, Eric A.; KANOUNI, Toufike; ARNOLD, Lee D.; KANIA, Robert
(74) FB Rice Pty Ltd

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(71) Klean Industries
(11) AU-A-2021286879
(21) 2021286879 **(22)** 09.06.2021
(54) Device and method for the pyrolysis of organic starting materials
(51) Int. Cl.
C10B 47/30 (2006.01)
C10B 47/44 (2006.01)
C10B 53/07 (2006.01)
(87) WO2021/250103
(31) 10 2020 115 348.1 **(32)** 09.06.20 **(33)** DE
(43) 16.12.2021
(72) PELZ, Eckard; LÖFFLER, Martin
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Knorr-Bremse Systeme für Schienenfahrzeuge GmbH
(11) AU-A-2021310338
(21) 2021310338 **(22)** 07.07.2021
(54) Control device and control method for controlling one or more slip-protection systems and one or more systems for outputting adhesion-optimising means in rail vehicles
(51) Int. Cl.
B60T 8/176 (2006.01)
B60B 39/02 (2006.01)
B60T 8/17 (2006.01)
B61C 15/10 (2006.01)
B61H 11/00 (2006.01)
(87) WO2022/013030
(31) 10 2020 118 361.5 **(32)** 13.07.20 **(33)** DE
(43) 20.01.2022
(72) FISCHER, Marcus; RASEL, Thomas
(74) FPA Patent Attorneys Pty Ltd

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(71) Komatsu Ltd.
(11) AU-A-2021299025
(21) 2021299025 **(22)** 10.05.2021
(54) Unmanned vehicle control system, unmanned vehicle, and unmanned vehicle control method
(51) Int. Cl.
G05D 1/02 (2020.01)
B60W 40/06 (2012.01)
B60W 60/00 (2020.01)
G08G 1/00 (2006.01)
(87) WO2022/004131
(31) 2020-112596 **(32)** 30.06.20 **(33)** JP
(43) 06.01.2022
(72) OSAGAWA, Kenta; TOKU, Isao
(74) Spruson & Ferguson

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(71) Komatsu Ltd.
(11) AU-A-2021337890
(21) 2021337890 **(22)** 07.07.2021
(54) Work machine, method for controlling work machine, and system
(51) Int. Cl.
E02F 3/85 (2006.01)
E02F 9/20 (2006.01)
(87) WO2022/049890
(31) 2020-148850 **(32)** 04.09.20 **(33)** JP
(43) 10.03.2022
(72) KADONO, Yuuichi
(74) Spruson & Ferguson

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(71) Krahn, P.
(11) AU-A-2021265164
(21) 2021265164 **(22)** 28.04.2021
(54) A multipurpose selective fish capture system
(51) Int. Cl.
B63B 35/14 (2006.01)
A01K 73/12 (2006.01)
A01K 74/00 (2006.01)
B63B 35/32 (2006.01)
(87) WO2021/217260
(31) 63/018,468 **(32)** 30.04.20 **(33)** US
(43) 04.11.2021
(72) KRAHN, Peter Karlheinz
(74) James & Wells Intellectual Property

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(71) Kubota Corporation
(11) AU-A-2021307148
(21) 2021307148 **(22)** 19.05.2021
(54) Work vehicle specification change system, work vehicle specification change method, and work vehicle specification change program
(51) Int. Cl.
A01B 71/02 (2006.01)
B60R 16/02 (2006.01)
E02F 9/20 (2006.01)
G06F 40/216 (2020.01)
G06Q 50/04 (2012.01)
(87) WO2022/014146
(31) 2020-121954 **(32)** 16.07.20 **(33)** JP
(43) 20.01.2022
(72) MATSUZAKI, Yushi
(74) Griffith Hack

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(71) Kurin, Inc.
(11) AU-A-2021283887
(21) 2021283887 **(22)** 01.06.2021
(54) Fluid optimization and contaminant containment device and method using displaceable plug
(51) Int. Cl.
G01N 1/10 (2006.01)
A61B 5/00 (2006.01)
A61B 5/15 (2006.01)
A61M 39/00 (2006.01)
A61M 39/06 (2006.01)
B01L 3/00 (2006.01)
G01N 1/02 (2006.01)
G01N 1/18 (2006.01)
(87) WO2021/247609
(31) 63/033,196 **(32)** 01.06.20 **(33)** US
(43) 09.12.2021
(72) ROGERS, Bobby E.; NASON, Kevin; MATSUURA, David G.; MATSUURA, Belinko K.; MOEBIUS, Jacob A.; SIMPSON, Philip J.
(74) Griffith Hack

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(71) Kymera Therapeutics, Inc.
(11) AU-A-2021282568
(21) 2021282568 **(22)** 03.06.2021
(54) Crystalline forms of IRAK degraders
(51) Int. Cl.
A61K 39/395 (2006.01)
A61K 47/64 (2017.01)
A61K 47/68 (2017.01)
(87) WO2021/247899
(31) 63/034,088 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) ZHENG, Xiaozhang; CORSON, Don
(74) Spruson & Ferguson

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(71) Kyocera Corporation
(11) AU-A-2020450413
(21) 2020450413 **(22)** 29.05.2020
(54) Stem for artificial joint
(51) Int. Cl.
A61F 2/30 (2006.01)
(87) WO2021/240799
(43) 02.12.2021
(72) NODA, Iwao
(74) FB Rice Pty Ltd

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(71) Lancer Corporation
(11) AU-A-2021282688
(21) 2021282688 **(22)** 04.06.2021
(54) Hand-held beverage dispenser and related features and accessories
(51) Int. Cl.
B67D 1/00 (2006.01)
A47J 31/41 (2006.01)
A47J 43/27 (2006.01)
(87) WO2021/248094
(31) 63/129,380 **(32)** 22.12.20 **(33)** US
63/034,762 04.06.20 US
(43) 09.12.2021
(72) MARTIN, Joseph Daniel; BEHE Jr., Anthony Joseph; WATKINS, Paul; RODRIGUEZ, Ricardo Abugarade; GOOD, Merrill R.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Lantern Pharma Inc.
(11) AU-A-2021267944

PCT applications which have entered the National Phase - Name Index cont'd

(21) 2021267944 **(22)** 10.05.2021
(54) Method for treating pancreatic cancer
(51) Int. Cl.
A61K 31/122 (2006.01)
A61K 31/19 (2006.01)
A61K 47/54 (2017.01)
(87) WO2021/226592
(31) 63/022,242 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) KULKARNI, Aditya; BHATIA, Kishor
(74) Michael Buck IP

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(71) LanzaTech, Inc.
(11) AU-A-2021284451
(21) 2021284451 **(22)** 04.06.2021
(54) Microorganism with knock-in at acetolactate decarboxylase gene locus
(51) Int. Cl.
C12N 15/74 (2006.01)
C12N 9/10 (2006.01)
C12N 9/88 (2006.01)
C12P 5/00 (2006.01)
C12P 7/00 (2006.01)
(87) WO2021/248015
(31) 63/035,739 **(32)** 06.06.20 **(33)** US
(43) 09.12.2021
(72) LEANG, Ching
(74) SR Intellectual Property

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(71) Levisense Medical, Inc.
(11) AU-A-2021271826
(21) 2021271826 **(22)** 11.05.2021
(54) Beds and other body support devices with individually controllable cells comprising one or more air bladders
(51) Int. Cl.
A61G 7/057 (2006.01)
A47C 27/10 (2006.01)
A47C 27/18 (2006.01)
(87) WO2021/231407
(31) 63/023,805 **(32)** 12.05.20 **(33)** US
63/131,619 29.12.20 US
(43) 18.11.2021
(72) BERTONI, David; CULEN, Matthew; FOX, Jason; BLECK, James; EAGAN Jr., Thomas
(74) RnB IP Pty Ltd

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(71) LG Electronics Inc.
(11) AU-A-2020446627
(21) 2020446627 **(22)** 16.09.2020
(54) Motor assembly
(51) Int. Cl.
H02K 1/04 (2006.01)
H02K 1/32 (2006.01)
H02K 5/16 (2006.01)
H02K 7/00 (2006.01)
H02K 7/14 (2006.01)
H02K 9/06 (2006.01)
(87) WO2021/225228
(31) 10-2020-0055244 **(32)** 08.05.20 **(33)** KR
(43) 11.11.2021
(72) CHA, Jinwook; JUN, Chaseung; JEONG, Jaehoon; PARK, Charyeom
(74) Dentons Patent Attorneys Australasia Limited

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(71) LG Electronics Inc.
(11) AU-A-2021267081
(21) 2021267081 **(22)** 06.05.2021
(54) Induction heating device and method for controlling induction heating device
(51) Int. Cl.
H05B 6/06 (2006.01)
H02M 1/34 (2007.01)
H02M 7/5387 (2007.01)
H05B 6/04 (2006.01)
(87) WO2021/225375
(31) 10-2020-0054013 **(32)** 06.05.20 **(33)** KR
(43) 11.11.2021
(72) JEONG, Sihoon; KANG, Kyelyong; KIM, Hanna
(74) Dentons Patent Attorneys Australasia Limited

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(71) LG Electronics Inc.
(11) AU-A-2021268495
(21) 2021268495 **(22)** 06.05.2021
(54) Induction heating device and method for controlling induction heating device
(51) Int. Cl.
H05B 6/06 (2006.01)
H02M 7/5387 (2007.01)
H05B 6/04 (2006.01)
(87) WO2021/225373
(31) 10-2020-0054014 **(32)** 06.05.20 **(33)** KR
(43) 11.11.2021
(72) JEONG, Sihoon; KANG, Kyelyong; KIM, Hanna
(74) Dentons Patent Attorneys Australasia Limited

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(71) LG Electronics Inc.; Unist(Ulsan National Institute of Science and Technology)
(11) AU-A-2021268496
(21) 2021268496 **(22)** 06.05.2021
(54) Inductive heating device and method for controlling inductive heating device
(51) Int. Cl.
H05B 6/06 (2006.01)
H05B 6/04 (2006.01)
H05B 6/12 (2006.01)
(87) WO2021/225376
(31) 10-2020-0054012 **(32)** 06.05.20 **(33)** KR
(43) 11.11.2021
(72) JEONG, Sihoon; KANG, Kyelyong; HAN, Jinwook; PARK, Hwa Pyeong; JUNG, Jee Hoon
(74) Dentons Patent Attorneys Australasia Limited

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(71) LG Energy Solution, Ltd.
(11) AU-A-2021368834
(21) 2021368834 **(22)** 26.10.2021
(54) Pack housing having integrated filter mesh applied to venting hole and battery pack including same
(51) Int. Cl.
H01M 50/30 (2021.01)
H01M 50/20 (2021.01)
H01M 50/35 (2021.01)
(87) WO2022/092777
(31) 10-2020-0140699 **(32)** 27.10.20 **(33)** KR
(43) 05.05.2022
(72) LIM, Jae-Bum; LEE, Bum-Hyun
(74) FB Rice Pty Ltd

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(71) Life Technologies Corporation
(11) AU-A-2021296296
(21) 2021296296 **(22)** 22.06.2021
(54) Methods and compositions for cultivating pluripotent cell suspensions
(51) Int. Cl.
C12N 5/0735 (2010.01)
C12N 5/074 (2010.01)
(87) WO2021/262663
(31) 63/042,419 **(32)** 22.06.20 **(33)** US
(43) 30.12.2021
(72) NEWMAN, Rhonda; AKENHEAD, Michael
(74) Spruson & Ferguson

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(71) Limatech
(11) AU-A-2021318740
(21) 2021318740 **(22)** 23.07.2021
(54) Battery management system
(51) Int. Cl.
G01R 19/165 (2006.01)
G01R 31/392 (2019.01)
(87) WO2022/023204
(31) FR2007923 **(32)** 27.07.20 **(33)** FR
(43) 03.02.2022
(72) POUYADOU, Luc; DI MEGLIO, Maxime; ROBIN, Florence
(74) AJ PARK

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(71) Lokaway Pty Ltd
(11) AU-A-2021291575
(21) 2021291575 **(22)** 02.06.2021
(54) Diagonally translating door
(51) Int. Cl.
E05D 7/14 (2006.01)
E05B 65/00 (2006.01)
E05D 3/06 (2006.01)
E05D 7/081 (2006.01)
E05D 15/58 (2006.01)
E05G 1/026 (2006.01)
E06B 3/32 (2006.01)
E06B 3/50 (2006.01)
E06B 5/11 (2006.01)
E06B 5/16 (2006.01)
(87) WO2021/253069
(31) 2020901986 **(32)** 16.06.20 **(33)** AU
(43) 23.12.2021
(72) DUNSTAN, Brett
(74) Davies Collison Cave Pty Ltd

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(71) Lovevery, Inc.
(11) AU-A-2020452677
(21) 2020452677 **(22)** 08.06.2020
(54) Separable assembly
(51) Int. Cl.
A63F 9/06 (2006.01)
A63F 3/00 (2006.01)
A63H 33/00 (2006.01)
(87) WO2021/251947
(43) 16.12.2021
(72) RIGBY, Thomas Creason; FOUTS, Philip J.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) Lovevery, Inc.
(11) AU-A-2020452788
(21) 2020452788 **(22)** 08.06.2020
(54) Puzzle
(51) Int. Cl.
A63F 9/06 (2006.01)
(87) WO2021/251949
(43) 16.12.2021
(72) FOUTS, Philip J.; RIGBY, Thomas Creason; RICHINS, Sara Hall; LAWLESS, Stephen Blaise
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Ludwig-Maximilians-Universität München; Technische Universität München
(11) AU-A-2021290926
(21) 2021290926 **(22)** 15.06.2021
(54) Chemokine-selective CXCR4 ectodomain-derived (POLY)peptide
(51) Int. Cl.
C07K 14/715 (2006.01)
A61P 9/10 (2006.01)
A61P 29/00 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/254979
(31) 20180269.1 **(32)** 16.06.20 **(33)** EP
(43) 23.12.2021
(72) BERNHAGEN, Jürgen; EL BOUNKARI, Omar; KAPURNIOTU, Aphrodite; KONTOS, Christos
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) M.E.P. Macchine Elettroniche Piegatrici S.p.A.
(11) AU-A-2021284724
(21) 2021284724 **(22)** 03.06.2021
(54) Apparatus and method for working oblong metal products
(51) Int. Cl.
B21D 11/22 (2006.01)
B21D 11/12 (2006.01)
B21D 43/10 (2006.01)
B21D 43/12 (2006.01)
B21D 43/28 (2006.01)
(87) WO2021/245715
(31) 102020000013174 **(32)** 04.06.20 **(33)** IT
(43) 09.12.2021
(72) DEL FABRO, Giorgio
(74) Baxter Patent Attorneys Pty Ltd

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(71) M.E.P. Macchine Elettroniche Piegatrici S.p.A.
(11) AU-A-2021290477
(21) 2021290477 **(22)** 15.06.2021
(54) Apparatus and method for collecting oblong products
(51) Int. Cl.
B21D 11/15 (2006.01)
B21D 43/00 (2006.01)
B21D 43/13 (2006.01)
(87) WO2021/255768
(31) 102020000014254 **(32)** 16.06.20 **(33)** IT
(43) 23.12.2021
(72) DEL FABRO, Giorgio
(74) Baxter Patent Attorneys Pty Ltd

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(71) Maelgwyn Mineral Services Limited
(11) AU-A-2021287297
(21) 2021287297 **(22)** 10.06.2021
(54) A mineral liberation machine
(51) Int. Cl.
B02C 17/16 (2006.01)
(87) WO2021/250216
(31) 2008822.5 **(32)** 10.06.20 **(33)** GB
(43) 16.12.2021
(72) IMHOF, Rainer Maria
(74) Michael Buck IP

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(71) Magna Imperio Systems Corp.
(11) AU-A-2021283838
(21) 2021283838 **(22)** 27.05.2021
(54) Liquid crystallizer salting out solution
(51) Int. Cl.
C02F 1/26 (2006.01)
C02F 1/469 (2006.01)
(87) WO2021/247354
(31) 63/033,190 **(32)** 01.06.20 **(33)** US
(43) 09.12.2021
(72) GIRON, Rachel Guia; DEMETER, Ethan L.; WILLMAN, Jeremy A.
(74) AJ PARK

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(71) Mai International GmbH
(11) AU-A-2021298045
(21) 2021298045 **(22)** 01.06.2021
(54) Nozzle for dispensing concrete, mortar or the like
(51) Int. Cl.
B28B 1/00 (2006.01)
B28C 5/08 (2006.01)
B28C 5/12 (2006.01)
B33Y 30/00 (2015.01)
(87) WO2021/259595
(31) 10 2020 003 760.7 **(32)** 23.06.20 **(33)** DE
(43) 30.12.2021
(72) KAMPITSCH, Klaus; KAMPITSCH, David
(74) Halfords IP

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(71) MAKO Surgical Corp.
(11) AU-A-2021342049
(21) 2021342049 **(22)** 08.09.2021
(54) Systems and methods for guiding movement of a handheld medical robotic instrument
(51) Int. Cl.
A61B 34/30 (2016.01)
A61B 17/14 (2006.01)
A61B 17/15 (2006.01)
A61B 17/16 (2006.01)
A61B 34/10 (2016.01)
A61B 34/20 (2016.01)
A61B 90/00 (2016.01)
(87) WO2022/055980
(31) 63/075,615 **(32)** 08.09.20 **(33)** US
63/085,651 30.09.20 US
(43) 17.03.2022
(72) POST, Nicholas Jon; DOZEMAN, Michael Dale; DELUCA, Richard Thomas; BOZUNG, Timothy J.
(74) Davies Collison Cave Pty Ltd

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(71) Mammoth Biosciences, Inc.
(11) AU-A-2021279039
(21) 2021279039 **(22)** 28.05.2021
(54) Programmable nuclease diagnostic device
(51) Int. Cl.
A01H 3/00 (2006.01)
B01L 3/00 (2006.01)
C12N 15/11 (2006.01)
C12N 15/74 (2006.01)
C12Q 1/6809 (2018.01)
(87) WO2021/243308
(31) 63/151,592 **(32)** 19.02.21 **(33)** US
63/166,538 26.03.21 US
63/181,130 28.04.21 US
63/032,455 29.05.20 US
63/113,798 13.11.20 US
(43) 02.12.2021
(72) CHING, Jesus; BROUGHTON, James Paul; TSALOGLOU, Maria-Nefeli; LEE, Phillip You Fai; PATNO, Timothy James; CHEN, Janice Sha; SHAPIRO, Sarah Jane; CORDOVA, James Raymond; EASTMAN, Brian J.; LOW-MILLER, Donald Allan; FASCHING, Clare Louise; HENDRIKS, Carley Gelenter; KREINDLER, Lior; DRZAL, Daniel Thomas; SPRATT, Devin; LESINSKI, Jacob; BAIK, Joshua; DERANEY, Rachel Nouha; JAIN, Sonal; HUBBELL, Sophia; VEROSLOFF, Matthew
(74) FB Rice Pty Ltd

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(71) Mars, Incorporated
(11) AU-A-2021292082
(21) 2021292082 **(22)** 15.06.2021
(54) A non-baked food product comprising a chocolate nougat composition
(51) Int. Cl.
A23G 3/36 (2006.01)
A23G 3/38 (2006.01)
A23G 3/42 (2006.01)
A23G 3/48 (2006.01)
A23G 3/52 (2006.01)
A23G 3/54 (2006.01)
(87) WO2021/257519
(31) 63/039,718 **(32)** 16.06.20 **(33)** US
(43) 23.12.2021
(72) HUIJS, Linda; DONNELLY, Susie; VAN DEURZEN, Peter; PRINSEN, Theodor; LITTLE, Raymond; VAN HOUTUM, Hans
(74) MINTER ELLISON

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(71) Materials Engineering and Technical Support Services Corp.
(11) AU-A-2021339526
(21) 2021339526 **(22)** 06.07.2021
(54) Lubricating compositions comprising a non-silicone anti-foaming agent
(51) Int. Cl.
C10M 169/04 (2006.01)
C10M 107/02 (2006.01)
C10M 111/00 (2006.01)
C10M 133/04 (2006.01)
C10M 133/12 (2006.01)
C10M 137/02 (2006.01)
C10M 141/10 (2006.01)
(87) WO2022/055603

PCT applications which have entered the National Phase - Name Index cont'd

(31) 63/049,463 **(32)** 08.07.20 **(33)** US
(43) 17.03.2022
(72) COLLETT, Brian R.; THEYS, Angela; DOCTER, Michelle; SANDERS, Joseph; HEATER, Kenneth J.
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) McNeil AB
(11) AU-A-2021262800
(21) 2021262800 **(22)** 29.04.2021
(54) Nicotine replacement therapy smart device
(51) Int. Cl.
G16H 20/10 (2018.01)
A24F 15/00 (2020.01)
A24F 47/00 (2020.01)
A61B 5/00 (2006.01)
A61M 15/00 (2006.01)
G16H 20/30 (2018.01)
G16H 20/70 (2018.01)
(87) WO2021/222617
(31) 63/018,035 **(32)** 30.04.20 **(33)** US
(43) 04.11.2021
(72) MELLINGER, Justin; WALSH, Ryan; EDGAR, Sophie; DONG, Ming; BINNER, Curt
(74) Spruson & Ferguson

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(71) McNeil AB
(11) AU-A-2021263458
(21) 2021263458 **(22)** 29.04.2021
(54) Biomarker based nicotine replacement therapy
(51) Int. Cl.
G16H 20/10 (2018.01)
A24F 15/00 (2020.01)
A24F 47/00 (2020.01)
A61B 5/00 (2006.01)
A61M 15/00 (2006.01)
G16H 20/30 (2018.01)
G16H 20/70 (2018.01)
(87) WO2021/222625
(31) 63/018,035 **(32)** 30.04.20 **(33)** US
(43) 04.11.2021
(72) MELLINGER, Justin; WALSH, Ryan; EDGAR, Sophie; DONG, Ming; BINNER, Curt
(74) Spruson & Ferguson

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(71) Medacta International SA
(11) AU-A-2021310518
(21) 2021310518 **(22)** 08.07.2021
(54) Device for shaping and cutting a bone graft
(51) Int. Cl.
A61F 2/46 (2006.01)
A61B 17/16 (2006.01)
(87) WO2022/013686
(31) 102020000016882 **(32)** 13.07.20 **(33)** IT
(43) 20.01.2022
(72) SICCARDI, Francesco; BERNARDONI, Massimiliano; ROMEO, Antonino; ROSA, Andrea
(74) FB Rice Pty Ltd

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(71) MediBeacon Inc.
(11) AU-A-2021282156
(21) 2021282156 **(22)** 24.05.2021
(54) Sensor assembly with movable skin sensor
(51) Int. Cl.
A61B 5/00 (2006.01)
A61B 5/022 (2006.01)
A61B 5/0531 (2021.01)
A61B 5/0533 (2021.01)
(87) WO2021/242700
(31) 63/029,927 **(32)** 26.05.20 **(33)** US
(43) 02.12.2021
(72) HARR, Jim
(74) Spruson & Ferguson

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(71) Medical Developments International Limited
(11) AU-A-2021283452
(21) 2021283452 **(22)** 02.06.2021
(54) Inhaler device for inhalable liquids
(51) Int. Cl.
A61M 15/00 (2006.01)
(87) WO2021/243407
(31) 2020901805 **(32)** 02.06.20 **(33)** AU
(43) 09.12.2021
(72) AESCHLIMANN, Andreas; WILLIAMS, Luke Christopher; COURTNEY, Scott Cameron
(74) FAL PATENTS PTY LTD

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(71) Medical Research & Development Fund For Health Services Bnai Zion Medical Center; Technion Research & Development Foundation Limited.; The Chancellor, Masters and Scholars of the University of Oxford
(11) AU-A-2021284697
(21) 2021284697 **(22)** 03.06.2021
(54) Modified Semaphorin 3A, compositions comprising the same and uses thereof
(51) Int. Cl.
A61P 37/00 (2006.01)
A61K 9/00 (2006.01)
A61K 38/17 (2006.01)
A61P 29/00 (2006.01)
C07K 14/47 (2006.01)
(87) WO2021/245670
(31) 63/034,476 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) VADASZ, Zahava; TOUBI, Elias; EIZA, Nasren; SABAG, Adi; NEUFELD, Gera; KESSLER, Ofra; JONES, E. Yvonne
(74) PIPERS

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(71) Medigen Vaccine Biologics Corporation; Dynavax Technologies Corporation
(11) AU-A-2021290765
(21) 2021290765 **(22)** 18.06.2021
(54) Immunogenic composition against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)
(51) Int. Cl.
C12N 15/50 (2006.01)
A61K 39/215 (2006.01)
A61P 31/14 (2006.01)
C07K 14/165 (2006.01)
(87) WO2021/254473
(31) 63/040,696 **(32)** 18.06.20 **(33)** US
PCT/US2021/020277 01.03.21 US
(43) 23.12.2021
(72) KUO, Tsun-Yung; CHEN, Charles; WU, Chung-Chin; LIN, Yi-Jiun; LIN, Meei-Yun; WU, Yu-Chi; CAMPBELL, John D.; JANSSEN, Robert S.; NOVACK, David
(74) A.P.T. Patent and Trade Mark Attorneys

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(71) Medline Industries, LP
(11) AU-A-2021293736
(21) 2021293736 **(22)** 10.05.2021
(54) Urine collection device, system, and method
(51) Int. Cl.
A61F 5/455 (2006.01)
A61F 5/44 (2006.01)
A61F 5/443 (2006.01)
A61M 1/00 (2006.01)
(87) WO2021/257202
(31) 16/905,116 **(32)** 18.06.20 **(33)** US
(43) 23.12.2021
(72) GODINEZ, Saul; PETERSON, Allison
(74) Michael Buck IP

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(71) Medshine Discovery Inc.
(11) AU-A-2021262977
(21) 2021262977 **(22)** 26.04.2021
(54) Compounds containing benzosultam
(51) Int. Cl.
C07D 417/12 (2006.01)
A61P 35/00 (2006.01)
C07D 417/14 (2006.01)
C07D 471/04 (2006.01)
C07D 471/08 (2006.01)
(87) WO2021/218912
(31) 202010363156.1 **(32)** 30.04.20 **(33)** CN
202110145140.8 02.02.21 CN
(43) 04.11.2021
(72) LIU, Xile; DING, Charles Z.; CHEN, Shuhui; HU, Lihong; WAN, Haiwen; JIANG, Xiu
(74) FPA Patent Attorneys Pty Ltd

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(71) Medshine Discovery Inc.
(11) AU-A-2021276287
(21) 2021276287 **(22)** 19.05.2021
(54) Pyridine derivative and application thereof
(51) Int. Cl.
C07D 403/12 (2006.01)
A61K 31/4178 (2006.01)
A61K 31/4196 (2006.01)
A61P 1/16 (2006.01)
(87) WO2021/233349
(31) 202010444113.6 **(32)** 22.05.20 **(33)** CN
(43) 25.11.2021
(72) LUO, Yunfu; BA, Yuyong; CHEN, Shuhui
(74) FPA Patent Attorneys Pty Ltd

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(71) Meishan CRRC Brake Science & Technology Co., Ltd.
(11) AU-A-2022221473
(21) 2022221473 **(22)** 09.03.2022

PCT applications which have entered the National Phase - Name Index cont'd

(54) System and method for improving release performance of heavy-haul train
(51) Int. Cl.
B60T 13/66 (2006.01)
B60T 15/02 (2006.01)
B60T 15/18 (2006.01)
B60T 17/04 (2006.01)
B60T 17/22 (2006.01)
B61H 13/20 (2006.01)
(31) 2021107393105 **(32)** 30.06.21 **(33)** CN
(43) 19.01.2023
(72) LI, Qiaoyin; XIE, Lei; AN, Hong; ZHANG, Jie; JIANG, Yong; WU, Jiheng; ZHU, Yu; SHEN, Yanfei; ZHANG, Jing
(74) WRAYS PTY LTD

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(71) Memorial Sloan Kettering Cancer Center
(11) AU-A-2021280272
(21) 2021280272 **(22)** 26.05.2021
(54) Anti-GD2 SADA conjugates and uses thereof
(51) Int. Cl.
A61K 35/17 (2015.01)
A61K 38/20 (2006.01)
A61K 39/00 (2006.01)
A61K 39/395 (2006.01)
(87) WO2021/242848
(31) 63/030,591 **(32)** 27.05.20 **(33)** US
(43) 02.12.2021
(72) SANTICH, Brian H.; CHEUNG, Nai-Kong V.; AHMED, Mahiuddin
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Merck Patent GmbH
(11) AU-A-2021283356
(21) 2021283356 **(22)** 03.06.2021
(54) Bispecific antibody-drug conjugates targeting egfr and muc1 and uses thereof
(51) Int. Cl.
A61K 47/68 (2017.01)
A61P 35/00 (2006.01)
C07K 16/30 (2006.01)
(87) WO2021/247798
(31) 63/034,296 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) KNUEHL, Christine; TOLEIKIS, Lars; AMENDT, Christiane; DOERNER, Achim; LI, Xiaofan; STAFFORD, Ryan; HENNINGSEN, Robert; ZHOU, Sihong; YAM, Alice
(74) Griffith Hack

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(71) Merck Patent GmbH
(11) AU-A-2021303438
(21) 2021303438 **(22)** 06.07.2021
(54) Combination of a methionine aminopeptidase 2 inhibitor and VEGFR/VEGF inhibitor
(51) Int. Cl.
A61K 31/404 (2006.01)
A61K 31/416 (2006.01)
A61K 31/44 (2006.01)
A61K 31/443 (2006.01)
A61K 31/444 (2006.01)
A61K 31/47 (2006.01)
A61K 31/5025 (2006.01)
A61K 31/506 (2006.01)
A61K 31/517 (2006.01)
A61K 31/53 (2006.01)
A61K 39/00 (2006.01)
A61K 39/395 (2006.01)
A61P 35/02 (2006.01)
(87) WO2022/008469
(31) 20184962.7 **(32)** 09.07.20 **(33)** EP
(43) 13.01.2022
(72) FRIESE-HAMIM, Manja; ROHDICH, Felix; GIMMI, Claude; SCHULTES, Christoph; BOGATYROVA, Olga
(74) Griffith Hack

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(71) Merck Sharp & Dohme LLC
(11) AU-A-2021292061
(21) 2021292061 **(22)** 14.06.2021
(54) 2-oxo-oxazolidine-5-carboxamides as Nav1.8 inhibitors
(51) Int. Cl.
A61K 31/4045 (2006.01)
A61K 31/4155 (2006.01)
A61K 31/4178 (2006.01)
(87) WO2021/257418
(31) 63/040,463 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) ARASAPPAN, Ashok; BELL, Ian M.; BUNGARD, Christopher James; BURGEY, Christopher S.; COX, Jason M.; GUIADEEN, Deodial Guy; KELLY III, Michael J.; LAYTON, Mark E.; LIU, Hong; LIU, Jian; OLSEN, James T.; PERKINS, James J.; SCHUBERT, Jeffrey W.; SHAH, Akshay A.; STACHEL, Shawn J.; VANHEYST, Michael D.; WU, Zhe
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Merck Sharp & Dohme LLC
(11) AU-A-2021292062
(21) 2021292062 **(22)** 14.06.2021
(54) 5-oxopyrrolidine-3-carboxamides as Nav1.8 inhibitors
(51) Int. Cl.
A61K 31/4045 (2006.01)
A61K 31/4155 (2006.01)
A61K 31/4178 (2006.01)
(87) WO2021/257420
(31) 63/040,465 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) ARASAPPAN, Ashok; BELL, Ian M.; COX, Jason M.; KELLY III, Michael J.; LAYTON, Mark E.; LIU, Hong; LIU, Jian; SHAH, Akshay; VANHEYST, Michael D.
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Metso Outotec Finland Oy
(11) AU-A-2021284975
(21) 2021284975 **(22)** 02.06.2021
(54) Chute liner
(51) Int. Cl.
B65G 11/16 (2006.01)
(87) WO2021/243408
(31) 2020901815 **(32)** 02.06.20 **(33)** AU
(43) 09.12.2021
(72) FRY, Liam Michael Elliott; BARNES, Martin James; SEWELL, Heath
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Metso Outotec Finland Oy
(11) AU-A-2021302772
(21) 2021302772 **(22)** 23.06.2021
(54) Flotation arrangement and method related thereto
(51) Int. Cl.
B03D 1/14 (2006.01)
B03D 1/02 (2006.01)
B03D 1/16 (2006.01)
(87) WO2022/003244
(31) 63/046,092 **(32)** 30.06.20 **(33)** US
(43) 06.01.2022
(72) SHERRELL, Ian; RINNE, Antti; MÄKELÄ, Antti Mikael
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) MGI Tech Co., Ltd.
(11) AU-A-2021298561
(21) 2021298561 **(22)** 24.06.2021
(54) Systems and methods for optical scanning and imaging through a fluid medium for nucleic acid sequencing
(51) Int. Cl.
G01N 33/487 (2006.01)
C12Q 1/68 (2018.01)
(87) WO2022/001804
(31) 63/045,566 **(32)** 29.06.20 **(33)** US
(43) 06.01.2022
(72) LUNDQUIST, Paul; SHAFTO, Jay; HUANG, Joyce; WU, Ziyi
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Milwaukee Electric Tool Corporation
(11) AU-A-2021308655
(21) 2021308655 **(22)** 16.07.2021
(54) Hard hat with strap system
(51) Int. Cl.
A42B 3/08 (2006.01)
A42B 3/06 (2006.01)
A44B 11/25 (2006.01)
(87) WO2022/016040
(31) 63/053,289 **(32)** 17.07.20 **(33)** US
(43) 20.01.2022
(72) ADAMS, Caleb C.; WORPLE, Joseph R.; ZEILINGER, Todd Andrew; EISENHARDT, Scott D.
(74) Spruson & Ferguson

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(71) Minch Malt Limited
(11) AU-A-2021286868
(21) 2021286868 **(22)** 08.06.2021
(54) Grain sorting process
(51) Int. Cl.
B07C 5/342 (2006.01)
B07C 5/02 (2006.01)
(87) WO2021/250041
(31) 2008617.9 **(32)** 08.06.20 **(33)** GB

PCT applications which have entered the National Phase - Name Index cont'd

(43) 16.12.2021
(72) ZSOLDOS, Peter; CALUSIC, Ivan
(74) Spruson & Ferguson

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(71) Minerva Biotechnologies Corporation
(11) AU-A-2021289677
(21) 2021289677 **(22)** 08.06.2021
(54) Anti-NME antibody and method of treating cancer or cancer metastasis
(51) Int. Cl.
C07K 16/30 (2006.01)
(87) WO2021/252551
(31) 63/036,288 **(32)** 08.06.20 **(33)** US
63/044,670 26.06.20 US
63/046,852 01.07.20 US
(43) 16.12.2021
(72) BAMDAD, Cynthia; SMAGGHE, Benoit
(74) FB Rice Pty Ltd

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(71) Miotox, LLC
(11) AU-A-2021284378
(21) 2021284378 **(22)** 03.06.2021
(54) Zonal and targeted methods and uses for treating a migraine disorder
(51) Int. Cl.
A61K 35/74 (2015.01)
A61K 9/00 (2006.01)
A61K 38/48 (2006.01)
C07K 14/33 (2006.01)
(87) WO2021/247890
(31) 63/034,215 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) BINDER, William J.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Mission Therapeutics Limited
(11) AU-A-2021279199
(21) 2021279199 **(22)** 27.05.2021
(54) N-(1-cyano-pyrrolidin-3-yl)-5-(3-(trifluoromethyl)phenyl)oxazole-2-carboxamide derivatives and the corresponding oxadiazole derivatives as USP30 inhibitors for the treatment of mitochondrial dysfunction
(51) Int. Cl.
C07D 413/12 (2006.01)
A61K 31/4025 (2006.01)
A61K 31/422 (2006.01)
A61K 31/4245 (2006.01)
A61P 3/00 (2006.01)
A61P 3/10 (2006.01)
A61P 9/00 (2006.01)
A61P 9/10 (2006.01)
A61P 11/00 (2006.01)
A61P 25/00 (2006.01)
A61P 25/28 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/239863
(31) 2016709.4 **(32)** 21.10.20 **(33)** GB
2008051.1 28.05.20 GB
(43) 02.12.2021
(72) LUCKHURST, Christopher Andrew; KEMP, Mark Ian; THOMPSON, Paul William
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Mission Therapeutics Limited
(11) AU-A-2021285130
(21) 2021285130 **(22)** 03.06.2021
(54) N-cyanopyrrolidines with activity as USP30 inhibitors
(51) Int. Cl.
C07D 413/12 (2006.01)
A61K 31/422 (2006.01)
A61P 25/28 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/245186
(31) 2008401.8 **(32)** 04.06.20 **(33)** GB
2016689.8 21.10.20 GB
2101935.1 11.02.21 GB
(43) 09.12.2021
(72) LUCKHURST, Christopher Andrew; KEMP, Mark Ian; THOMPSON, Paul William
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Mitsubishi Shipbuilding Co., Ltd.
(11) AU-A-2021333331
(21) 2021333331 **(22)** 24.08.2021
(54) Ship
(51) Int. Cl.
B63B 25/16 (2006.01)
F17C 13/08 (2006.01)
(87) WO2022/045096
(31) 2020-140909 **(32)** 24.08.20 **(33)** JP
(43) 03.03.2022
(72) TANAKA, Taichi; TANAKA, Hiroshi
(74) Davies Collison Cave Pty Ltd

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(71) Mitsui Mining & Smelting Co., Ltd.
(11) AU-A-2021303983
(21) 2021303983 **(22)** 06.07.2021
(54) Fine metal linear body
(51) Int. Cl.
B22F 9/24 (2006.01)
B22F 1/00 (2022.01)
C25D 1/04 (2006.01)
H01L 21/52 (2006.01)
(87) WO2022/009886
(31) 2020-117661 **(32)** 08.07.20 **(33)** JP
(43) 13.01.2022
(72) KOMODA, Yasuo; SHIBATA, Yasuhiro; SHIMIZU, Yoshinori; OZAWA, Ikuhiro
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Modalis Therapeutics Corporation
(11) AU-A-2021304639
(21) 2021304639 **(22)** 09.07.2021
(54) Method for treating Alzheimer's disease by targeting MAPT gene
(51) Int. Cl.
C12N 15/09 (2006.01)
(87) WO2022/009987
(31) 63/049,736 **(32)** 09.07.20 **(33)** US
63/212,429 18.06.21 US
(43) 13.01.2022
(72) THOMPSON, Iain Robert; YAMAGATA, Tetsuya; AKBULUT, Talha
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) ModernaTX, Inc.
(11) AU-A-2021283934
(21) 2021283934 **(22)** 03.06.2021
(54) Bacterial strains for DNA production
(51) Int. Cl.
C12N 15/69 (2006.01)
C12N 1/20 (2006.01)
(87) WO2021/247817
(31) 63/035,630 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) SMITH, Kevin; DUVALL, Marcus; TILAK, Bhargav
(74) RnB IP Pty Ltd

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(71) Mohlalefi (Pty) Ltd
(11) AU-A-2021265587
(21) 2021265587 **(22)** 30.04.2021
(54) Nut arrangement, rock bolt and driver apparatus
(51) Int. Cl.
F16B 37/00 (2006.01)
F16B 39/00 (2006.01)
F16B 39/12 (2006.01)
F16B 39/16 (2006.01)
(87) WO2021/220240
(31) 2006483.8 **(32)** 01.05.20 **(33)** GB
2020/07430 30.11.20 ZA
(43) 04.11.2021
(72) MASITISE, Martin Nare
(74) Spruson & Ferguson

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(71) Monash University; Peter MacCallum Cancer Institute
(11) AU-A-2021285715
(21) 2021285715 **(22)** 04.06.2021
(54) Dual kinase-bromodomain inhibitors
(51) Int. Cl.
C07D 487/04 (2006.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
C07D 495/04 (2006.01)
(87) WO2021/243421
(31) 2020901867 **(32)** 05.06.20 **(33)** AU
(43) 09.12.2021
(72) THOMPSON, Philip; SHORTT, Jake; JOHNSTONE, Ricky; MA, Xiao; OH, Danielle; JENNINGS, Ian
(74) FB Rice Pty Ltd

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(71) Monash University; Baker Heart and Diabetes Institute
(11) AU-A-2021297551
(21) 2021297551 **(22)** 25.06.2021
(54) Anti-VWF antibodies and uses thereof
(51) Int. Cl.
C07K 16/36 (2006.01)
A61K 39/395 (2006.01)
A61P 7/02 (2006.01)
(87) WO2021/258160
(31) 2020902148 **(32)** 26.06.20 **(33)** AU
(43) 30.12.2021
(72) HAGEMEYER, Christoph; WESTEIN, Erik; HOEFER, Thomas; ANDREWS, Robert; GARDINER, Elizabeth
(74) FPA Patent Attorneys Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) Monotony.AI, Inc.
(11) AU-A-2021300181
(21) 2021300181 **(22)** 30.06.2021
(54) Autonomous laundry folding device and method
(51) Int. Cl.
D06F 89/02 (2006.01)
A41H 43/02 (2006.01)
B25J 11/00 (2006.01)
B65B 63/04 (2006.01)
(87) WO2022/006334
(31) 63/046,697 **(32)** 01.07.20 **(33)** US
63/106,891 29.10.20 US
63/168,540 31.03.21 US
63/168,555 31.03.21 US
(43) 06.01.2022
(72) SCHECHTER, Stuart E.; BIXBY, Benjamin D.; LEBLANC, Kevin M.; MEFFORD, Wilson J.; PENNINGTON, Elliot Sinclair; SCHWARTZ, Laura E.; SIELAFF, Jesse; HICKMAN, Madeline R.; ITHIER, Carter J.; DUFFLEY, Samuel
(74) Spruson & Ferguson

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(71) MorphoSys AG; Gilead Sciences, Inc.
(11) AU-A-2021298106
(21) 2021298106 **(22)** 22.06.2021
(54) Anti-tumor combination therapy comprising anti-CD19 antibody and polypeptides blocking the SIRPalpha-CD47 innate immune checkpoint
(51) Int. Cl.
C07K 16/28 (2006.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
(87) WO2021/259902
(31) 20181309.4 **(32)** 22.06.20 **(33)** EP
20210588.8 30.11.20 EP
(43) 30.12.2021
(72) ENDELL, Jan; FINGERLE-ROWSON, Günter; CHAO, Mark Ping
(74) Spruson & Ferguson

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(71) Motus Labs, LLC.,
(11) AU-A-2021296616
(21) 2021296616 **(22)** 24.06.2021
(54) Magnetic field detection apparatus, system, and method
(51) Int. Cl.
G01R 33/02 (2006.01)
H01F 7/02 (2006.01)
H02K 1/00 (2006.01)
H02K 1/12 (2006.01)
H02K 15/03 (2006.01)
(87) WO2021/263011
(31) 63/043,721 **(32)** 24.06.20 **(33)** US
(43) 30.12.2021
(72) HOEFKEN, Carlos A.
(74) Griffith Hack

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(71) Moxion Power Co.
(11) AU-A-2021284271
(21) 2021284271 **(22)** 01.06.2021
(54) All-electric mobile power unit with variable outputs
(51) Int. Cl.
H02M 7/42 (2006.01)
H02J 3/00 (2006.01)
H02J 3/32 (2006.01)
H02M 1/084 (2006.01)
H02M 1/10 (2006.01)
H02M 7/483 (2007.01)
(87) WO2021/247581
(31) 63/033,120 **(32)** 01.06.20 **(33)** US
(43) 09.12.2021
(72) SMITH, Alexander J.; HUELSKAMP, Paul M.; MEEK, Alexander M.; MICKLE, Jared T.
(74) RnB IP Pty Ltd

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(71) MycoTechnology, Inc.
(11) AU-A-2021298029
(21) 2021298029 **(22)** 25.06.2021
(54) Sweet protein from truffle
(51) Int. Cl.
A01G 18/00 (2018.01)
A23L 2/60 (2006.01)
C07K 14/43 (2006.01)
(87) WO2021/263158
(31) 63/044,245 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) NADAL, Marina; CLARK, Anthony J.; GUO, Zheyuan; GRAVINA, Stephen A.; WESTGATE, Anthony; ALKOTAINI, Bassam; HAN, Ashley; SHARKEY, Brendan; STRASSBURGER, Evan; MEILEN, Joseph; CHANG, Hyung; HAHN, Alan D.
(74) Davies Collison Cave Pty Ltd

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(71) Myokardia, Inc.
(11) AU-A-2021293817
(21) 2021293817 **(22)** 14.06.2021
(54) Treatment of atrial dysfunction
(51) Int. Cl.
A61K 31/454 (2006.01)
A61K 45/06 (2006.01)
A61P 9/04 (2006.01)
(87) WO2021/257456
(31) 63/039,438 **(32)** 15.06.20 **(33)** US
63/042,512 22.06.20 US
(43) 23.12.2021
(72) TAMBY, Jean-Francois; EDELBERG, Jay M.; KURIO, Gregory Howard Takeo; KELLY, Cynthia Lyle; YANG, Chun; HENZE, Marcus Patrick; DEL RIO, Carlos L.; ANDERSON, Robert Lee; SUMANDEA, Marius P.; GANJU, Jitendra
(74) AJ PARK

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(71) Nacuity Pharmaceuticals, Inc.
(11) AU-A-2021288467
(21) 2021288467 **(22)** 07.06.2021
(54) Treatment of cystinosis
(51) Int. Cl.
A61K 31/16 (2006.01)
A61K 9/00 (2006.01)
A61P 25/00 (2006.01)
(87) WO2021/252373
(31) 17/339,652 **(32)** 04.06.21 **(33)** US
63/036,286 08.06.20 US
(43) 16.12.2021
(72) WALL, G. Michael; CAIRNS, Donald; HECTOR, Emma
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Nahamoo, D.; Jablokov, I.; Pickover, C.
(11) AU-A-2020224091
(21) 2020224091 **(22)** 18.02.2020
(54) Intelligent document system
(51) Int. Cl.
G06F 16/93 (2019.01)
G06F 16/332 (2019.01)
(87) WO2020/172155
(31) 62/807,182 **(32)** 18.02.19 **(33)** US
(43) 27.08.2020
(72) NAHAMOO, David; JABLOKOV, Igor; PICKOVER, Clifford A.
(74) RnB IP Pty Ltd

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(71) Nana Products LLC
(11) AU-A-2021292712
(21) 2021292712 **(22)** 13.08.2021
(54) High quality mask
(51) Int. Cl.
A41D 13/11 (2006.01)
(87) WO2021/258085
(31) 63/040,053 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) COLEMAN, Johnathan
(74) Acacia Law

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(71) Nanjing Bioheng Biotech Co., Ltd
(11) AU-A-2021307614
(21) 2021307614 **(22)** 14.07.2021
(54) Engineered immune cell for allotransplantation
(51) Int. Cl.
C12N 5/10 (2006.01)
A61K 35/17 (2015.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
C12N 15/113 (2010.01)
(87) WO2022/012591
(31) 202010679530.9 **(32)** 15.07.20 **(33)** CN
202011534699.1 22.12.20 CN
(43) 20.01.2022
(72) ZHOU, Yali; CHEN, Gong; JIANG, Xiaoyan; REN, Jiangtao; HE, Xiaohong; WANG, Yanbin; HAN, Lu
(74) FPA Patent Attorneys Pty Ltd

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(71) Nano Precision Medical, Inc.
(11) AU-A-2021306256
(21) 2021306256 **(22)** 06.07.2021
(54) Methods to control the rate of release of therapeutic agents from implantable devices
(51) Int. Cl.
A61K 9/00 (2006.01)
(87) WO2022/010846
(31) 63/049,573 **(32)** 08.07.20 **(33)** US
(43) 13.01.2022
(72) OLF, Ryan; GORDON, Lyle; ROORDA, Wouter
(74) FPA Patent Attorneys Pty Ltd

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(71) National Health Research Institutes
(11) AU-A-2021289442
(21) 2021289442 **(22)** 09.06.2021

PCT applications which have entered the National Phase - Name Index cont'd

(54) Anti-human neurotensin receptor 1 antibody and use thereof
(51) Int. Cl.
C07K 16/28 (2006.01)
A01N 43/64 (2006.01)
A61K 31/70 (2006.01)
A61K 31/7088 (2006.01)
(87) WO2021/252578
(31) 63/036,740 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) SHIH, Chuan; YUEH, Andrew; WU, Ren-Huang; HU, Han-Shu; WU, Pei-Shan; YANG, Zhi-Ping; KE, Yi-Yu; CHEN, Chiung-Tong
(74) Spruson & Ferguson

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(71) National Oilwell Varco Denmark I/S
(11) AU-A-2021303524
(21) 2021303524 **(22)** 09.07.2021
(54) Method of and system for manufacturing a carcass with controlled pitch
(51) Int. Cl.
B21C 37/12 (2006.01)
(87) WO2022/008728
(31) PA 2020 00828 **(32)** 10.07.20 **(33)** DK
(43) 13.01.2022
(72) KOCH, Lasse Tang; KRISTIANSEN, Mikael; CHRISTIANSEN, Benny; HANSEN, Steen Hjorth
(74) FPA Patent Attorneys Pty Ltd

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(71) NEC Corporation
(11) AU-A-2020455240
(21) 2020455240 **(22)** 23.06.2020
(54) Method, device and computer storage medium of communication
(51) Int. Cl.
H04W 36/30 (2009.01)
(87) WO2021/258307
(43) 30.12.2021
(72) WANG, Da; WANG, Gang
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) NETZSCH Pumpen & Systeme GmbH
(11) AU-A-2021284794
(21) 2021284794 **(22)** 01.06.2021
(54) Eccentric screw pump with a modular design
(51) Int. Cl.
F04C 2/107 (2006.01)
(87) WO2021/244688
(31) 10 2020 114 937.9 **(32)** 05.06.20 **(33)** DE
(43) 09.12.2021
(72) GOETZ, Frank; ZIERHOFER, Martin; NUEBL, Philipp; VOIT, Stefan
(74) Davies Collison Cave Pty Ltd

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(71) Neurimmune AG
(11) AU-A-2021272369
(21) 2021272369 **(22)** 12.05.2021
(54) Combination therapy for TTR amyloidosis
(51) Int. Cl.
C07K 16/18 (2006.01)
A61K 9/00 (2006.01)
A61K 31/415 (2006.01)
A61K 31/423 (2006.01)
A61K 39/395 (2006.01)
A61K 45/06 (2006.01)
A61P 25/00 (2006.01)
A61P 25/28 (2006.01)
(87) WO2021/228987
(31) 20174177.4 **(32)** 12.05.20 **(33)** EP
(43) 18.11.2021
(72) MICHALON, Aubin; GRIMM, Jan
(74) Davies Collison Cave Pty Ltd

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(71) Neuronano AB
(11) AU-A-2021300986
(21) 2021300986 **(22)** 05.07.2021
(54) Microelectrode for insertion into soft tissue
(51) Int. Cl.
A61N 1/05 (2006.01)
A61B 5/29 (2021.01)
A61B 5/293 (2021.01)
A61N 1/36 (2006.01)
(87) WO2022/005386
(31) 2030220-4 **(32)** 06.07.20 **(33)** SE
2030219-6 03.07.20 SE
(43) 06.01.2022
(72) SCHOUENBORG, Jens
(74) Oxygene IP

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(71) Neutron Holdings, Inc. DBA Lime
(11) AU-A-2021265877
(21) 2021265877 **(22)** 30.04.2021
(54) Flexible connector mechanism for light electric vehicles
(51) Int. Cl.
B60L 50/64 (2019.01)
B60L 50/60 (2019.01)
B60L 53/80 (2019.01)
B62J 43/00 (2020.01)
B62M 6/90 (2010.01)
H01M 50/20 (2021.01)
(87) WO2021/222860
(31) 63/019,040 **(32)** 01.05.20 **(33)** US
(43) 04.11.2021
(72) FOLEY, Nick; TITUS, Andrew; SCHECHTER, Shai
(74) Dentons Patent Attorneys Australasia Limited

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(71) NewSouth Innovations Pty Limited
(11) AU-A-2021287075
(21) 2021287075 **(22)** 11.06.2021
(54) Outdoor photoluminescence imaging of photovoltaic modules
(51) Int. Cl.
G01N 21/64 (2006.01)
G01J 1/58 (2006.01)
G01N 21/88 (2006.01)
H02S 50/15 (2014.01)
(87) WO2021/248209
(31) 2020901949 **(32)** 12.06.20 **(33)** AU
(43) 16.12.2021
(72) KUNZ, Oliver; REY, Germaine Antoine; TRUPKE, Thorsten; PADUTHOL, Appu Rshikesan
(74) FB Rice Pty Ltd

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(71) Nextracker Inc.
(11) AU-A-2021292460
(21) 2021292460 **(22)** 11.06.2021
(54) Clip for mounting a solar module to a rail system
(51) Int. Cl.
H02S 20/00 (2014.01)
F24S 25/634 (2018.01)
(87) WO2021/257408
(31) 16/903,431 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) WATSON, Tyler; DELGADO-NANEZ, Ricardo
(74) Clark Intellectual Property Pty Ltd

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(71) Nippon Steel Corporation
(11) AU-A-2021289296
(21) 2021289296 **(22)** 19.03.2021
(54) Hot-dipped Zn–Al–Mg-based plated steel
(51) Int. Cl.
C23C 2/06 (2006.01)
C22C 18/00 (2006.01)
C22C 18/04 (2006.01)
C23C 2/26 (2006.01)
C23C 2/40 (2006.01)
(87) WO2021/250973
(31) 2020-100073 **(32)** 09.06.20 **(33)** JP
(43) 16.12.2021
(72) TOBA, Tetsuya; MORISHITA, Atsushi; KOHIGASHI, Yusuke; YAMAGUCHI, Shinichi; MITSUNOBU, Takuya
(74) Spruson & Ferguson

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(71) Nissenbaum, I.; Bogart, M.; Baum, A.
(11) AU-A-2021263471
(21) 2021263471 **(22)** 29.04.2021
(54) Remote pathogen eradication
(51) Int. Cl.
A61L 2/10 (2006.01)
A61B 1/012 (2006.01)
A61B 90/70 (2016.01)
(87) WO2021/222664
(31) 63/077,003 **(32)** 11.09.20 **(33)** US
63/149,611 15.02.21 US
63/139,294 19.01.21 US
17/244,860 29.04.21 US
63/017,407 29.04.20 US
63/118,638 25.11.20 US
63/044,641 26.06.20 US
(43) 04.11.2021
(72) NISSENBAUM, Israel; BOGART, Mitchell J.; BAUM, Asher
(74) Collison & Co

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(71) Noema Pharma Ag
(11) AU-A-2021285273
(21) 2021285273 **(22)** 04.06.2021
(54) Methods of treatment of tuberous sclerosis complex
(51) Int. Cl.
A61K 31/4439 (2006.01)
A61K 9/48 (2006.01)
A61P 25/00 (2006.01)
A61P 25/08 (2006.01)
A61P 25/28 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/245281
(31) 63/035,313 **(32)** 05.06.20 **(33)** US

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(43) 09.12.2021
(72) GARIBALDI, George
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Noema Pharma AG
(11) AU-A-2021285225
(21) 2021285225 **(22)** 04.06.2021
(54) Use of a phosphodiesterase 10 inhibitor for the treatment of Tourette Syndrome
(51) Int. Cl.
A61K 31/5375 (2006.01)
A61K 9/48 (2006.01)
A61K 45/06 (2006.01)
A61P 25/14 (2006.01)
C07D 471/04 (2006.01)
(87) WO2021/245280
(31) 63/035,310 **(32)** 05.06.20 **(33)** US
63/160,302 12.03.21 US
(43) 09.12.2021
(72) GARIBALDI, George
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Noema Pharma AG
(11) AU-A-2021316675
(21) 2021316675 **(22)** 30.07.2021
(54) Methods of treatment of trigeminal neuralgia
(51) Int. Cl.
A61K 31/4439 (2006.01)
A61K 9/48 (2006.01)
A61P 25/00 (2006.01)
A61P 25/04 (2006.01)
(87) WO2022/023519
(31) 63/058,630 **(32)** 30.07.20 **(33)** US
(43) 03.02.2022
(72) GARIBALDI, George
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) NOFUSCO Corporation
(11) AU-A-2021292075
(21) 2021292075 **(22)** 14.06.2021
(54) Intravertebral implant system and methods of use
(51) Int. Cl.
A61B 17/70 (2006.01)
A61B 17/80 (2006.01)
A61F 2/44 (2006.01)
(87) WO2021/257484
(31) 63/039,242 **(32)** 15.06.20 **(33)** US
(43) 23.12.2021
(72) WHIPPLE, Dale E.; BETZ, Randal R.
(74) IPiphany Limited

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(71) Novartis AG
(11) AU-A-2021291799
(21) 2021291799 **(22)** 11.06.2021
(54) Methyl 2-methyl-5-oxo-1,4,5,7-tetrahydrofuro(3,4- b)pyridine-3-carboxylate compounds as Cav1.2 activators
(51) Int. Cl.
C07D 491/048 (2006.01)
A61K 31/4355 (2006.01)
A61P 25/00 (2006.01)
(87) WO2021/255608
(31) 63/039,691 **(32)** 16.06.20 **(33)** US
(43) 23.12.2021
(72) CAYA, Thomas Charles; NEEF, James; PATHAK, Tejaskumar Pankajbhai; SADAGHIANI, Amir Masoud; ZHOU, Xilin; PARK, Hye-Yeon
(74) Davies Collison Cave Pty Ltd

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(71) Novartis AG
(11) AU-A-2021325431
(21) 2021325431 **(22)** 12.08.2021
(54) Heteroaryl substituted spiropiperidinyl derivatives and pharmaceutical uses thereof
(51) Int. Cl.
C07D 471/10 (2006.01)
A61K 31/4747 (2006.01)
A61P 11/06 (2006.01)
A61P 37/08 (2006.01)
C07D 491/10 (2006.01)
C07D 498/10 (2006.01)
C07D 519/00 (2006.01)
(87) WO2022/034529
(31) 20191191.4 **(32)** 14.08.20 **(33)** EP
(43) 17.02.2022
(72) BUSHABOINA, Mallesh; CHEN, Xin; CHEUNG, Atwood Kim; CULSHAW, Andrew James; HURLEY, Timothy Brian; LABBE-GIGUERE, Nancy; MILTZ, Wolfgang; ORAIN, David; PATEL, Tajesh; RAJAGOPALAN, Srinivasan; ROEHN, Till; SANDHAM, David Andrew; THOMA, Gebhard; TICHKULE, Ritesh Bhanudasji; WÄLCHLI, Rudolf
(74) Davies Collison Cave Pty Ltd

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(71) Novel Pharma Inc.
(11) AU-A-2020454140
(21) 2020454140 **(22)** 16.06.2020
(54) Composition for treatment of glutaric aciduria and administration method therefor
(51) Int. Cl.
A61K 38/44 (2006.01)
A61K 9/00 (2006.01)
A61P 43/00 (2006.01)
(87) WO2021/256579
(43) 23.12.2021
(72) JIN, Dong Kyu
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Novomedix, LLC
(11) AU-A-2021280361
(21) 2021280361 **(22)** 31.05.2021
(54) Biarylsulfonamides and pharmaceutical compositions thereof, and their use for treating fibrotic lung disease
(51) Int. Cl.
A61K 31/18 (2006.01)
A61P 11/00 (2006.01)
A61P 43/00 (2006.01)
C07C 311/21 (2006.01)
(87) WO2021/243319
(31) 63/032,361 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) SWINDLEHURST, Cathy A.; CHAN, Kyle W.H.; CORRAL, Laura Graciana; ERDMAN, Paul E.; FUNG, Leah M.; LAM, Imelda; SULLIVAN, Robert W.; TORRES, Eduardo
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) OBG Consumer Reg Scientific Limited
(11) AU-A-2021285422
(21) 2021285422 **(22)** 03.06.2021
(54) A refill for an inhaler particularly a cannabinoid inhaler
(51) Int. Cl.
A61M 15/00 (2006.01)
A24F 15/015 (2020.01)
A24F 42/00 (2020.01)
A24F 42/20 (2020.01)
A61M 15/06 (2006.01)
B65D 83/42 (2006.01)
(87) WO2021/245417
(31) 2008359.8 **(32)** 03.06.20 **(33)** GB
(43) 09.12.2021
(72) YOUNG, Paul
(74) Griffith Hack

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(71) Ocado Innovation Limited
(11) AU-A-2021285116
(21) 2021285116 **(22)** 02.06.2021
(54) Load-handling device
(51) Int. Cl.
B65G 1/04 (2006.01)
B65G 1/06 (2006.01)
(87) WO2021/245162
(31) 2008292.1 **(32)** 02.06.20 **(33)** GB
(43) 09.12.2021
(72) SHARP, Nick; EBENEZER, David; KHOSROSHAHLI, Negar
(74) James & Wells Intellectual Property

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(71) Occlugel; Centre National De La Recherche Scientifique (CNRS); Universite Paris-Saclay
(11) AU-A-2021304877
(21) 2021304877 **(22)** 07.07.2021
(54) Hydrophilic degradable microsphere for delivering travoprost
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/16 (2006.01)
A61K 9/19 (2006.01)
A61K 9/50 (2006.01)
(87) WO2022/008625
(31) 20305777.3 **(32)** 07.07.20 **(33)** EP
(43) 13.01.2022
(72) BEILVERT, Anne; CORUS, Emeline; BEDOUET, Laurent; MOINE, Laurence
(74) Davies Collison Cave Pty Ltd

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(71) Occlugel; Centre National de la Recherche Scientifique (CNRS); Universite Paris-Saclay
(11) AU-A-2021306634
(21) 2021306634 **(22)** 07.07.2021
(54) Hydrophilic degradable microspheres for local delivering of glycopeptide antibiotics and polycationic peptide antibiotics
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/16 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

A61K 9/19 (2006.01)
A61K 9/50 (2006.01)
(87) WO2022/008624
(31) 20305778.1 **(32)** 07.07.20 **(33)** EP
(43) 13.01.2022
(72) BEILVERT, Anne; CORUS, Emeline; BEDOUET, Laurent; MOINE, Laurence
(74) Davies Collison Cave Pty Ltd

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(71) Occlugel; Centre National de la Recherche Scientifique (CNRS) (25%); Universite Paris-Saclay
(11) AU-A-2021306799
(21) 2021306799 **(22)** 07.07.2021
(54) Hydrophilic degradable microspheres for delivering buprenorphine
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/16 (2006.01)
A61K 9/19 (2006.01)
A61K 9/50 (2006.01)
(87) WO2022/008100
(31) 20305776.5 **(32)** 07.07.20 **(33)** EP
(43) 13.01.2022
(72) BEILVERT, Anne; CORUS, Emeline; BEDOUET, Laurent; MOINE, Laurence
(74) Davies Collison Cave Pty Ltd

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(71) OccuRx Pty. Ltd.
(11) AU-A-2021284380
(21) 2021284380 **(22)** 03.06.2021
(54) Compounds and methods for the treatment of eye disorders
(51) Int. Cl.
A61K 31/5375 (2006.01)
A61K 9/00 (2006.01)
A61K 31/4412 (2006.01)
(87) WO2021/247900
(31) 2020901856 **(32)** 05.06.20 **(33)** AU
2020901858 05.06.20 AU
(43) 09.12.2021
(72) KELLY, Darren; PAPADIMITRIOU, Michelle; BURNS, Chris; DANIELS, Eric
(74) Davies Collison Cave Pty Ltd

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(71) Ohmium International, Inc.
(11) AU-A-2021297462
(21) 2021297462 **(22)** 28.06.2021
(54) Impedance monitoring of a modular electrolysis system
(51) Int. Cl.
G01N 27/02 (2006.01)
G01N 27/416 (2006.01)
G01R 31/36 (2020.01)
(87) WO2021/263231
(31) 202021027158 **(32)** 26.06.20 **(33)** IN
(43) 30.12.2021
(72) SRINIVASAN, Ramesh; ADAPA, Anil; BALLANTINE, Arne; BURPEE, Zachary
(74) Davies Collison Cave Pty Ltd

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(71) Omnicell, Inc.
(11) AU-A-2021300786
(21) 2021300786 **(22)** 11.02.2021
(54) Apparatuses, systems, and methods for the grasping of objects
(51) Int. Cl.
B25J 15/04 (2006.01)
B25J 15/06 (2006.01)
(87) WO2022/005536
(31) 16/915,113 **(32)** 29.06.20 **(33)** US
(43) 06.01.2022
(72) MEYER, William A.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) oneNav, Inc.
(11) AU-A-2021283884
(21) 2021283884 **(22)** 01.06.2021
(54) Modernized consumer grade GNSS secondary code acquisition and signal tracking
(51) Int. Cl.
G01S 19/24 (2010.01)
G01S 19/01 (2010.01)
G01S 19/13 (2010.01)
G01S 19/25 (2010.01)
G01S 19/30 (2010.01)
(87) WO2021/247584
(31) 62/704,884 **(32)** 01.06.20 **(33)** US
62/704,882 01.06.20 US
17/334,477 28.05.21 US
(43) 09.12.2021
(72) MCBURNEY, Paul; SHIVARAMAIAH, Nagaraj; KRASNER, Norman; CONFLITTI, Paul A; MOEGLEIN, Mark
(74) FPA Patent Attorneys Pty Ltd

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(71) Orion Corporation
(11) AU-A-2021269870
(21) 2021269870 **(22)** 10.05.2021
(54) Method for the preparation of androgen receptor antagonists and intermediates thereof
(51) Int. Cl.
C07D 405/04 (2006.01)
C07D 231/12 (2006.01)
C07D 231/14 (2006.01)
(87) WO2021/229145
(31) 20207081 **(32)** 11.05.20 **(33)** FI
(43) 18.11.2021
(72) GRUMANN, Arne; KARJALAINEN, Oskari
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Orna Therapeutics, Inc.
(11) AU-A-2021276410
(21) 2021276410 **(22)** 19.05.2021
(54) Circular RNA compositions and methods
(51) Int. Cl.
A61K 48/00 (2006.01)
A61K 31/7088 (2006.01)
A61K 31/7105 (2006.01)
C07K 14/725 (2006.01)
C12N 15/11 (2006.01)
C12N 15/115 (2010.01)
C12N 15/64 (2006.01)
C12N 15/85 (2006.01)
(87) WO2021/236855
(31) 63/027,292 **(32)** 19.05.20 **(33)** US
PCT/US2021/031629 10.05.21 US
(43) 25.11.2021
(72) WESSELHOEFT, Robert Alexander; BARNES, Thomas; GOODMAN, Brian; MOTZ, Gregory; BECKER, Amy; HORHOTA, Allen T.
(74) FB Rice Pty Ltd

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(71) Outrider Technologies, Inc.
(11) AU-A-2021280347
(21) 2021280347 **(22)** 28.05.2021
(54) System and method for operating and managing an autonomous vehicle interchange zone
(51) Int. Cl.
B65G 63/00 (2006.01)
(87) WO2021/243268
(31) 63/031,552 **(32)** 28.05.20 **(33)** US
17/332,474 27.05.21 US
(43) 02.12.2021
(72) SMITH, Andrew F.; WELSH, Joseph A.; KLARQUIST, William N.; JAMES, Peter; JOHNSON, Geoffrey W.; HOLCOMB, Kayla M.; KLEIN, Lawrence S.; WILLIAMS, Jason L.; HENNING, Floyd C.; NETT, Jeremy M.
(74) Griffith Hack

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(71) Owens-Brockway Glass Container Inc.
(11) AU-A-2021325686
(21) 2021325686 **(22)** 10.08.2021
(54) Cast cullet-based layer on wall panel for a melter
(51) Int. Cl.
C03B 5/425 (2006.01)
C03B 5/44 (2006.01)
F27B 1/00 (2006.01)
(87) WO2022/035802
(31) 16/993,825 **(32)** 14.08.20 **(33)** US
(43) 17.02.2022
(72) RASHLEY, Shane; COBURN, Brian
(74) Spruson & Ferguson

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(71) Owens-Brockway Glass Container Inc.
(11) AU-A-2021325871
(21) 2021325871 **(22)** 10.08.2021
(54) Container finish gripper
(51) Int. Cl.
B25J 15/00 (2006.01)
B25J 15/02 (2006.01)
B25J 15/10 (2006.01)
B65G 47/90 (2006.01)
(87) WO2022/035800
(31) 63/065,740 **(32)** 14.08.20 **(33)** US
(43) 17.02.2022
(72) CHISHOLM, Brian J.
(74) Spruson & Ferguson

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(71) Palo Alto Research Center Incorporated
(11) AU-A-2021280889
(21) 2021280889 **(22)** 04.05.2021
(54) Tunable, rapid uptake, aminopolymer aerogel sorbent for capture of CO2
(51) Int. Cl.
B01J 13/00 (2006.01)
B01J 20/26 (2006.01)
B01J 20/28 (2006.01)
(87) WO2021/242485
(31) 63/031,098 **(32)** 28.05.20 **(33)** US
17/211,588 24.03.21 US

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(43) 02.12.2021
(72) CHINTAPALLI, Mahati; MECKLER, Stephen; IFTIME, Gabriel; PANDEY, Rahul; LOUIE, Mary; BEH, Eugene Shin Ming
(74) Davies Collison Cave Pty Ltd

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(71) Panotopoulos, C.
(11) AU-A-2021272366
(21) 2021272366 **(22)** 12.05.2021
(54) Multifunctional surgical instrument
(51) Int. Cl.
A61B 17/32 (2006.01)
A61B 18/04 (2006.01)
A61B 18/12 (2006.01)
A61B 18/14 (2006.01)
A61M 1/00 (2006.01)
A61B 18/00 (2006.01)
(87) WO2021/228924
(31) 20200100249 **(32)** 13.05.20 **(33)** GR
(43) 18.11.2021
(72) PANOTOPOULOS, Christos
(74) Spruson & Ferguson

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(71) PayPal, Inc.
(11) AU-A-2021329284
(21) 2021329284 **(22)** 16.08.2021
(54) Systems and methods for configuration information autofill at a browser linked with user accounts
(51) Int. Cl.
G06Q 40/00 (2012.01)
(87) WO2022/040104
(31) 16/996,562 **(32)** 18.08.20 **(33)** US
(43) 24.02.2022
(72) TIBREWALA, Rachna; DESAI, Darshankumar Bhadrasinh; GOMES, Dinesh Agnello
(74) FPA Patent Attorneys Pty Ltd

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(71) Peacefulsleep Pty Ltd
(11) AU-A-2021294598
(21) 2021294598 **(22)** 16.06.2021
(54) Mouthguard
(51) Int. Cl.
A61F 5/56 (2006.01)
A61C 7/08 (2006.01)
A61C 7/36 (2006.01)
(87) WO2021/258129
(31) 2020902101 **(32)** 24.06.20 **(33)** AU
(43) 30.12.2021
(72) NGUYEN, Hoang
(74) Cooper IP Pty Ltd

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(71) Peloton Interactive, Inc.
(11) AU-A-2021282376
(21) 2021282376 **(22)** 27.05.2021
(54) Braking systems and methods for exercise equipment
(51) Int. Cl.
A63B 21/22 (2006.01)
A63B 22/06 (2006.01)
A63B 24/00 (2006.01)
A63B 71/06 (2006.01)
(87) WO2021/243092
(31) 63/032,512 **(32)** 29.05.20 **(33)** US
63/075,198 06.09.20 US
(43) 02.12.2021
(72) PETRILLO, David William; NG, Jeff; SKAVENSKI, Matt; KISS, Eric; VIVORI, Marissa; INTONATO, Bud; POLAT, Mete; LEE, Jooyoung; LEJA, Piotr; EVANCHA, Betina
(74) Madderns Pty Ltd

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(71) Pepsico, Inc.
(11) AU-A-2021287695
(21) 2021287695 **(22)** 12.05.2021
(54) Water filter and filter cartridge
(51) Int. Cl.
B01D 15/08 (2006.01)
B01D 63/02 (2006.01)
C02F 1/28 (2006.01)
(87) WO2021/252121
(31) 63/038,314 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) FANTAPPIE, Giancarlo; JERSEY, Steven T.
(74) Allens Patent & Trade Mark Attorneys

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(71) PerFormS s.r.l.
(11) AU-A-2021305974
(21) 2021305974 **(22)** 07.07.2021
(54) Formulation to deliver lipophilic active ingredients
(51) Int. Cl.
A61K 9/51 (2006.01)
A23L 33/00 (2016.01)
A61K 9/00 (2006.01)
A61K 31/00 (2006.01)
A61K 38/00 (2006.01)
(87) WO2022/009118
(31) 102020000016411 **(32)** 07.07.20 **(33)** IT
(43) 13.01.2022
(72) MARETTI, Eleonora; LEO, Eliana Grazia; BRIGHENTI, Virginia
(74) AJ PARK

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(71) Pfizer Inc.
(11) AU-A-2021263534
(21) 2021263534 **(22)** 22.04.2021
(54) Modified nucleic acids encoding aspartoacylase (ASPA) and vector for gene therapy
(51) Int. Cl.
A61K 35/761 (2015.01)
A61K 38/00 (2006.01)
A61K 48/00 (2006.01)
C07K 14/075 (2006.01)
C12N 15/12 (2006.01)
C12N 15/86 (2006.01)
(87) WO2021/221995
(31) 63/077,144 **(32)** 11.09.20 **(33)** US
63/016,507 28.04.20 US
(43) 04.11.2021
(72) LEONE, Paola; FRANCIS, Jeremy; ASSAF, Basel Tariq; ASANO, Shoh; HALES, Kathrine; BERG, Allison P.
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Pfizer Inc.
(11) AU-A-2021289169
(21) 2021289169 **(22)** 07.06.2021
(54) Spiro compounds as melanocortin 4 receptor antagonists and uses thereof
(51) Int. Cl.
C07D 471/20 (2006.01)
A61K 31/438 (2006.01)
A61P 1/08 (2006.01)
A61P 3/04 (2006.01)
A61P 19/00 (2006.01)
A61P 21/00 (2006.01)
A61P 29/00 (2006.01)
C07D 519/00 (2006.01)
(87) WO2021/250541
(31) 63/036,798 **(32)** 09.06.20 **(33)** US
63/167,271 29.03.21 US
(43) 16.12.2021
(72) BUTLER, Christopher Ryan; GARNSEY, Michelle Renee; OGILVIE, Kevin Alexander; POLIVKOVA, Jana; SAMMONS, Matthew Forrest; SMITH, Aaron Christopher; YANG, Qingyi
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Pfizer Inc.
(11) AU-A-2021301417
(21) 2021301417 **(22)** 30.06.2021
(54) Aminopyrimidinyl derivatives
(51) Int. Cl.
C07D 487/08 (2006.01)
A61K 31/4995 (2006.01)
A61P 35/00 (2006.01)
A61P 37/00 (2006.01)
(87) WO2022/003583
(31) 63/047,606 **(32)** 02.07.20 **(33)** US
(43) 06.01.2022
(72) GERSTENBERGER, Brian Stephen; JIAO, Wenhua; LALL, Manjinder Singh; LIRA, Ricardo; SCHNUTE, Mark Edward
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Pintz, G.
(11) AU-A-2020464283
(21) 2020464283 **(22)** 03.12.2020
(54) Device and method for self-service mixing and dispensing carbonated fermented drinks from concentrates
(51) Int. Cl.
B67D 1/00 (2006.01)
B67D 1/04 (2006.01)
B67D 1/12 (2006.01)
B67D 1/07 (2006.01)
B67D 1/08 (2006.01)
(87) WO2022/038408
(31) P2000274 **(32)** 17.08.20 **(33)** HU
(43) 24.02.2022
(72) PINTZ, Gyorgy
(74) LAMINAR IP PTY LTD

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(71) Plasser & Theurer Export Von Bahnbaumaschinen Gesellschaft m.b.H.
(11) AU-A-2021299878
(21) 2021299878 **(22)** 02.06.2021
(54) Machine and method using a tamping assembly
(51) Int. Cl.
E01B 27/16 (2006.01)
(87) WO2022/002520

PCT applications which have entered the National Phase - Name Index cont'd

(31) A50566/2020 **(32)** 03.07.20 **(33)** AT
(43) 06.01.2022
(72) PHILIPP, Thomas; HOFSTÄTTER, Josef
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Plasser & Theurer Export Von Bahnbaumaschinen Gesellschaft m.b.H.
(11) AU-A-2021305364
(21) 2021305364 **(22)** 09.06.2021
(54) Machine and method for compacting a ballast bed of a track
(51) Int. Cl.
E01B 27/20 (2006.01)
E01B 27/13 (2006.01)
(87) WO2022/008151
(31) A50591/2020 **(32)** 09.07.20 **(33)** AT
(43) 13.01.2022
(72) AUER, Florian; ANTONY, Bernhard; BUCHBAUER, David
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Platelet Biogenesis, Inc.
(11) AU-A-2021273015
(21) 2021273015 **(22)** 13.05.2021
(54) Novel anucleated cells as a source for treatment of platelet rich plasma dependent disorders
(51) Int. Cl.
A61K 35/19 (2015.01)
A61K 35/16 (2015.01)
A61P 17/02 (2006.01)
A61P 17/14 (2006.01)
A61P 19/02 (2006.01)
(87) WO2021/231807
(31) 63/024,587 **(32)** 14.05.20 **(33)** US
63/106,009 27.10.20 US
63/144,033 01.02.21 US
(43) 18.11.2021
(72) FALB, Dean
(74) WRAYS PTY LTD

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(71) PMV Pharmaceuticals, Inc.
(11) AU-A-2021297716
(21) 2021297716 **(22)** 15.06.2021
(54) Combination therapy for treatment of cancer
(51) Int. Cl.
A61K 31/404 (2006.01)
A61P 35/00 (2006.01)
C07D 209/04 (2006.01)
(87) WO2021/262484
(31) 63/043,342 **(32)** 24.06.20 **(33)** US
63/162,184 17.03.21 US
(43) 30.12.2021
(72) LEVINE, Arnold; DUMBLE, Melissa
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Prairie Aquatech LLC
(11) AU-A-2021287209
(21) 2021287209 **(22)** 10.03.2021
(54) Microbial-based process for improved quality protein concentrate
(51) Int. Cl.
A23K 10/30 (2016.01)
A23J 1/12 (2006.01)
A23J 1/14 (2006.01)
A23J 1/18 (2006.01)
C12N 1/16 (2006.01)
C12P 21/04 (2006.01)
(87) WO2021/252038
(31) 63/052,745 **(32)** 16.07.20 **(33)** US
63/039,694 16.06.20 US
17/093,557 09.11.20 US
63/036,274 08.06.20 US
63/035,797 07.06.20 US
(43) 16.12.2021
(72) HARSTAD, Dennis; NATES, Sergio F.
(74) Griffith Hack

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(71) Praxis Precision Medicines, Inc.
(11) AU-A-2021263804
(21) 2021263804 **(22)** 28.04.2021
(54) Methods of use of T-type calcium channel modulators
(51) Int. Cl.
A61K 38/00 (2006.01)
A61K 45/00 (2006.01)
A61K 45/06 (2006.01)
A61P 3/00 (2006.01)
A61P 3/04 (2006.01)
A61P 3/06 (2006.01)
(87) WO2021/222342
(31) 63/017,140 **(32)** 29.04.20 **(33)** US
63/050,410 10.07.20 US
63/082,946 24.09.20 US
(43) 04.11.2021
(72) REDDY, Kiran; BELFORT, Gabriel; RAVINA, Bernard; WITTMANN, Marion
(74) RnB IP

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(71) Prayon
(11) AU-A-2021290912
(21) 2021290912 **(22)** 14.06.2021
(54) Process for purifying a phosphate containing acidic solution comprising impurities and apparatus for applying same
(51) Int. Cl.
B01D 61/02 (2006.01)
C01B 25/234 (2006.01)
(87) WO2021/254944
(31) 20180333.5 **(32)** 16.06.20 **(33)** EP
(43) 23.12.2021
(72) SONVEAUX, Marc; HUEBER, Damien
(74) Spruson & Ferguson

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(71) Prelude Therapeutics, Incorporated
(11) AU-A-2021271694
(21) 2021271694 **(22)** 13.05.2021
(54) Spiro-sulfonamide derivatives as inhibitors of Myeloid Cell Leukemia-1 (MCL-1) protein
(51) Int. Cl.
C07D 515/04 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/231737
(31) 63/024,110 **(32)** 13.05.20 **(33)** US
(43) 18.11.2021
(72) ZHUO, Jincong; CAO, Ganfeng; COMBS, Andrew Paul; LI, Qun; ZHANG, Huaping
(74) FPA Patent Attorneys Pty Ltd

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(71) Prelude Therapeutics, Incorporated
(11) AU-A-2021289730
(21) 2021289730 **(22)** 09.06.2021
(54) BRM targeting compounds and associated methods of use
(51) Int. Cl.
C07D 487/14 (2006.01)
A61K 31/5025 (2006.01)
A61P 35/00 (2006.01)
A61P 35/02 (2006.01)
(87) WO2021/252666
(31) 63/036,811 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) COMBS, Andrew, Paul; LIN, Hong; PITIS, Philip; LU, Liang
(74) FPA Patent Attorneys Pty Ltd

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(71) President and Fellows of Harvard College
(11) AU-A-2021288048
(21) 2021288048 **(22)** 11.06.2021
(54) Compositions and methods for DNA methylation analysis
(51) Int. Cl.
C12Q 1/68 (2018.01)
(87) WO2021/252937
(31) 63/038,157 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) GRIFFIN, Patrick Thomas; SINCLAIR, David A.
(74) Davies Collison Cave Pty Ltd

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(71) President and Fellows of Harvard College; The General Hospital Corporation; Vesigen, Inc.
(11) AU-A-2021288226
(21) 2021288226 **(22)** 11.06.2021
(54) ARRDC1-mediated microvesicle-based delivery to the nervous system
(51) Int. Cl.
A61K 47/69 (2017.01)
A61K 47/54 (2017.01)
C12N 15/87 (2006.01)
(87) WO2021/252924
(31) 63/038,461 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) LU, Quan; HAGGARTY, Stephen J.; MILLMAN, Robert
(74) RnB IP Pty Ltd

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(71) President and Fellows of Harvard College
(11) AU-A-2021297973
(21) 2021297973 **(22)** 24.06.2021
(54) Automatic multi-step reaction device
(51) Int. Cl.
B01L 3/00 (2006.01)
G01N 33/543 (2006.01)
G01N 35/00 (2006.01)
(87) WO2021/263003
(31) 63/043,232 **(32)** 24.06.20 **(33)** US
63/046,424 30.06.20 US
63/082,776 24.09.20 US
63/083,640 25.09.20 US
(43) 30.12.2021
(72) SCHAUS, Thomas E.; GOPALKRISHNAN, Nikhil; YIN, Peng
(74) Davies Collison Cave Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) Primewan Limited
(11) AU-A-2021294059
(21) 2021294059 **(22)** 19.03.2021
(54) Method of forming a virtual network
(51) Int. Cl.
H04L 9/08 (2006.01)
H04J 14/02 (2006.01)
H04L 12/46 (2006.01)
(87) WO2021/253903
(31) 16/907,075 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) LI, Ming
(74) Murray Trento & Associates Pty Ltd

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(71) Proabtech Inc.
(11) AU-A-2021350514
(21) 2021350514 **(22)** 24.09.2021
(54) Uricase-albumin conjugate, preparation method therefor, and use thereof
(51) Int. Cl.
C07K 14/435 (2006.01)
A61K 49/00 (2006.01)
(87) WO2022/065913
(31) 10-2020-0125215 **(32)** 25.09.20 **(33)** KR
10-2021-0013537 29.01.21 KR
(43) 31.03.2022
(72) CHO, Jeong Haeng; SHIN, Sun Oh; KIM, Hyun Woo; KIM, Hyeongseok; BAK, Dong Ho; KWON, Inchan
(74) Griffith Hack

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(71) ProteomEdge AB
(11) AU-A-2021295441
(21) 2021295441 **(22)** 24.06.2021
(54) New method and kit
(51) Int. Cl.
G01N 33/543 (2006.01)
G01N 33/68 (2006.01)
(87) WO2021/260128
(31) 20182679.9 **(32)** 26.06.20 **(33)** EP
(43) 30.12.2021
(72) EDFORS, Fredrik; UHLÉN, Mathias
(74) Davies Collison Cave Pty Ltd

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(71) Psilo Scientific Ltd
(11) AU-A-2021290454
(21) 2021290454 **(22)** 14.06.2021
(54) Compositions comprising psychoactive compounds from psychoactive organisms
(51) Int. Cl.
A61K 36/07 (2006.01)
A61K 31/4045 (2006.01)
A61K 31/675 (2006.01)
B01D 11/02 (2006.01)
C07D 209/16 (2006.01)
C07F 9/572 (2006.01)
(87) WO2021/253116
(31) 63/040,317 **(32)** 17.06.20 **(33)** US
63/046,089 30.06.20 US
3,089,455 07.08.20 CA
3,088,384 29.07.20 CA
3,097,246 23.10.20 CA
3,101,765 04.12.20 CA
3,103,707 18.12.20 CA
(43) 23.12.2021
(72) LIGHTBURN, Benjamin; MOSS, Ryan; RANKEN, Lisa
(74) Davies Collison Cave Pty Ltd

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(71) PteroDynamics
(11) AU-A-2021278828
(21) 2021278828 **(22)** 13.05.2021
(54) Control of aircraft with vertical take-off and landing capabilities
(51) Int. Cl.
B64C 29/00 (2006.01)
B64C 3/56 (2006.01)
B64C 27/26 (2006.01)
B64C 27/28 (2006.01)
B64C 29/02 (2006.01)
(87) WO2021/242535
(31) 63/024,693 **(32)** 14.05.20 **(33)** US
(43) 02.12.2021
(72) PETROV, Val
(74) FB Rice Pty Ltd

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(71) Purdue Research Foundation
(11) AU-A-2021270608
(21) 2021270608 **(22)** 15.03.2021
(54) Compounds for the treatment of SARS
(51) Int. Cl.
A61K 39/12 (2006.01)
C07K 14/005 (2006.01)
C07K 16/10 (2006.01)
(87) WO2021/230973
(31) 63/025,775 **(32)** 15.05.20 **(33)** US
63/120,091 01.12.20 US
(43) 18.11.2021
(72) GHOSH, Arun K.; MITSUYA, Hiroaki; MESECAR, Andrew
(74) FB Rice Pty Ltd

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(71) QiLu Regor Therapeutics Inc.
(11) AU-A-2021268648
(21) 2021268648 **(22)** 04.05.2021
(54) CDK inhibitors
(51) Int. Cl.
C07D 471/04 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/226140
(31) PCT/CN2020/088585 **(32)** 05.05.20 **(33)** CN
(43) 11.11.2021
(72) HU, Zhilong; HE, Hu; ZHANG, Fei; ZHONG, Wenge; ZHU, Xiaotian
(74) Griffith Hack

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(71) QiLu Regor Therapeutics Inc.
(11) AU-A-2021281237
(21) 2021281237 **(22)** 26.05.2021
(54) Salt and crystal forms of GLP-1R agonists and uses thereof
(51) Int. Cl.
C07D 405/14 (2006.01)
(87) WO2021/242817
(31) PCT/CN2020/092530 **(32)** 27.05.20 **(33)** CN
(43) 02.12.2021
(72) ZHONG, Wenge; JIANG, Meng; CHEN, Beibei; WEI, Xudong
(74) Griffith Hack

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(71) Qingdao University of Technology
(11) AU-A-2021441275
(21) 2021441275 **(22)** 27.07.2021
(54) Use of graphene oxide/butylacrylate/silane composite emulsion as anti-shrinkage agent
(51) Int. Cl.
C04B 24/08 (2006.01)
C04B 22/00 (2006.01)
(31) 202110720469.2 **(32)** 28.06.21 **(33)** CN
(43) 19.01.2023
(72) LI, Shaochun; XU, Shilin; LIU, Ang; GENG, Yongjuan; HOU, Dongshuai; ZHANG, Ruiyong; JIN, Zuquan; GAO, Song
(74) Oxygene IP

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(71) Quidel Corporation
(11) AU-A-2021281360
(21) 2021281360 **(22)** 28.05.2021
(54) System and methods for remote assessment of a sample assay for disease diagnostics
(51) Int. Cl.
G01N 21/84 (2006.01)
G01N 21/64 (2006.01)
(87) WO2021/243179
(31) 63/031,989 **(32)** 29.05.20 **(33)** US
63/035,219 05.06.20 US
(43) 02.12.2021
(72) YAGHOUBI, Houman; MARSH, Curtis; RONGEY, Scott; SALEM, Ziad; STASSINOPOULOS, Adonis
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Quin Global Us, Inc.
(11) AU-A-2021289458
(21) 2021289458 **(22)** 09.06.2021
(54) Disinfectant and sanitizer canister system and metering device for system
(51) Int. Cl.
B05B 7/32 (2006.01)
B05B 1/02 (2006.01)
B05B 7/12 (2006.01)
B05B 7/24 (2006.01)
B05B 9/01 (2006.01)
B05B 9/08 (2006.01)
B65D 83/54 (2006.01)
(87) WO2021/252658
(31) 17/342,955 **(32)** 09.06.21 **(33)** US
63/036,633 09.06.20 US
(43) 16.12.2021
(72) PETERSEN, Matthew; FOWLER, Carl; EARL, Jayden
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Quorum Innovations, LLC
(11) AU-A-2021286002
(21) 2021286002 **(22)** 07.06.2021
(54) Materials and methods for inhibiting a viral infection, including a coronavirus infection
(51) Int. Cl.
A61K 38/16 (2006.01)
A61K 35/747 (2015.01)

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A61P 31/14 (2006.01)
(87) WO2021/248111
(31) 63/035,733 **(32)** 06.06.20 **(33)** US
(43) 09.12.2021
(72) MONSUL, Nicholas T.; BERKES, Eva A.; BOEHM, Frederick T.; LIAO, Yu-Hsien
(74) FPA Patent Attorneys Pty Ltd

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(71) QurAlis Corporation
(11) AU-A-2021284360
(21) 2021284360 **(22)** 03.06.2021
(54) Treatment of neurological diseases using modulators of gene transcripts
(51) Int. Cl.
C12N 15/113 (2010.01)
A61K 31/7115 (2006.01)
A61K 31/712 (2006.01)
A61K 31/7125 (2006.01)
(87) WO2021/247800
(31) 63/033,926 **(32)** 03.06.20 **(33)** US
63/119,717 01.12.20 US
(43) 09.12.2021
(72) ELBAUM, Daniel; HINCKLEY, Sandra
(74) Spruson & Ferguson

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(71) Ractigen Therapeutics
(11) AU-A-2021288166
(21) 2021288166 **(22)** 06.05.2021
(54) Nucleic acid molecule targeting MITF gene and use thereof
(51) Int. Cl.
C12N 15/113 (2010.01)
A61K 31/713 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/249064
(31) 202010524139.1 **(32)** 10.06.20 **(33)** CN
(43) 16.12.2021
(72) LI, Longcheng; KANG, Moorim
(74) AJ PARK

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(71) Ramaco Carbon, LLC
(11) AU-A-2021281316
(21) 2021281316 **(22)** 01.06.2021
(54) Systems and methods for manufacturing low-density carbon fiber from coal
(51) Int. Cl.
C10C 3/00 (2006.01)
C08L 95/00 (2006.01)
D01F 9/15 (2006.01)
(87) WO2021/243338
(31) 63/031,725 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) TARGETT, Matthew; YURCHICK, Christopher L.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) RAPT Ventures, Inc.
(11) AU-A-2021289333
(21) 2021289333 **(22)** 08.06.2021
(54) Method and apparatus for constructing and/or using saliently patterned spatiotemporal inputs that support the development and maintenance of neural circuitry critical to efficient language processing
(51) Int. Cl.
G09B 5/04 (2006.01)
(87) WO2021/252431
(31) 16/946,174 **(32)** 09.06.20 **(33)** US
(43) 16.12.2021
(72) BENASICH, April A.; WHITEHEAD, Julia M.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Reckitt & Colman (Overseas) Hygiene Home Limited
(11) AU-A-2021288735
(21) 2021288735 **(22)** 10.06.2021
(54) Pest control composition
(51) Int. Cl.
A01N 53/04 (2006.01)
A01N 53/06 (2006.01)
A01P 7/04 (2006.01)
A01P 17/00 (2006.01)
(87) WO2021/250410
(31) 202041024306 **(32)** 10.06.20 **(33)** IN
2011407.0 23.07.20 GB
(43) 16.12.2021
(72) DAS, Avijit; MAKKAPATI, Anil Kumar; MUKHOPADHYAY, Kunal; PANHALKAR, Vartul; SHANMUGAM PERUMAL, Shanthakumar; SINGH, Ramneek; VERMA, Adeeti
(74) Spruson & Ferguson

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(71) Redefine Meat Ltd.
(11) AU-A-2021359863
(21) 2021359863 **(22)** 14.10.2021
(54) Meat analogue and method of producing the same
(51) Int. Cl.
A23L 13/60 (2016.01)
A23J 3/22 (2006.01)
A23P 20/20 (2016.01)
(87) WO2022/079717
(31) 278052 **(32)** 14.10.20 **(33)** IL
(43) 21.04.2022
(72) DIKOVSKY, Daniel; HAUSNER, Jonathan
(74) James & Wells Intellectual Property

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(71) Redefine Meat Ltd.
(11) AU-A-2021362256
(21) 2021362256 **(22)** 14.10.2021
(54) System and method for fabrication of a three-dimensional edible product
(51) Int. Cl.
A23P 20/20 (2016.01)
A23P 30/00 (2016.01)
B33Y 10/00 (2015.01)
B33Y 30/00 (2015.01)
(87) WO2022/079718
(31) 278059 **(32)** 14.10.20 **(33)** IL
(43) 21.04.2022
(72) MANDELIK, Daniel; COMFORTI, Eyal; SCHACHTER, Sagee; SHAPIRA, Gur; DIKOVSKY, Daniel
(74) James & Wells Intellectual Property

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(71) RedHill Biopharma Ltd.
(11) AU-A-2021298936
(21) 2021298936 **(22)** 30.06.2021
(54) Triple antibiotic fixed-dose combination products, dosing regimen, methods, and kits for treating pulmonary non-tuberculosis mycobacterial infections
(51) Int. Cl.
A61K 31/395 (2006.01)
A61K 47/10 (2017.01)
A61P 31/04 (2006.01)
(87) WO2022/003421
(31) 63/046,335 **(32)** 30.06.20 **(33)** US
63/046,322 30.06.20 US
(43) 06.01.2022
(72) FATHI, Reza; RADAY, Gilead; ANDERSON, Patricia; OFFMAN, Elliot
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Reeves Wireline Technologies Limited
(11) AU-A-2021300617
(21) 2021300617 **(22)** 02.07.2021
(54) Method of and apparatus for determining variations in wall thickness in ferromagnetic tubes
(51) Int. Cl.
G01B 7/06 (2006.01)
E21B 47/085 (2012.01)
G01N 27/83 (2006.01)
(87) WO2022/003366
(31) 2010248.9 **(32)** 03.07.20 **(33)** GB
(43) 06.01.2022
(72) ASSOUS, Said; ELKINGTON, Peter Adrian Spencer; BACCIARELLI, Mark
(74) WRAYS PTY LTD

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(71) Regeneron Pharmaceuticals, Inc.
(11) AU-A-2021268026
(21) 2021268026 **(22)** 07.05.2021
(54) VEGF traps and mini-traps and methods for treating ocular disorders and cancer
(51) Int. Cl.
C07K 14/71 (2006.01)
A61K 9/00 (2006.01)
A61K 38/17 (2006.01)
A61P 27/02 (2006.01)
A61P 27/06 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/226444
(31) 63/022,178 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) OLSON, William; MARTIN, Joel; STAHL, Neil; KIM, Jee
(74) Griffith Hack

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(71) Regeneron Pharmaceuticals, Inc.
(11) AU-A-2021282179
(21) 2021282179 **(22)** 26.05.2021
(54) Anti-SARS-CoV-2-spike glycoprotein antibodies and antigen-binding fragments
(51) Int. Cl.
C07K 16/10 (2006.01)
A61P 31/14 (2006.01)
(87) WO2021/242815
(31) 63/030,260 **(32)** 26.05.20 **(33)** US
63/033,198 01.06.20 US
63/093,888 20.10.20 US
63/112,143 10.11.20 US

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63/141,956 26.01.21 US
63/142,472 27.01.21 US
63/145,389 03.02.21 US
63/159,437 10.03.21 US
(43) 02.12.2021
(72) BAUM, Alina; FULTON, Benjamin; KYRATSOUS, Christos; YANCOPOULOS, George D.
(74) Griffith Hack

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(71) Regeneron Pharmaceuticals, Inc.
(11) AU-A-2021293591
(21) 2021293591 **(22)** 18.06.2021
(54) Heavy peptide approach to accurately measure unprocessed C-terminal lysine
(51) Int. Cl.
G01N 33/68 (2006.01)
(87) WO2021/258017
(31) 63/041,015 **(32)** 18.06.20 **(33)** US
(43) 23.12.2021
(72) GREER, Tyler; CEJKOV, Milos; O'BRIEN JOHNSON, Reid; ZHENG, Xiaojing; LI, Ning
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Regeneron Pharmaceuticals, Inc.
(11) AU-A-2021296449
(21) 2021296449 **(22)** 23.06.2021
(54) Tubulysins and protein-tubulysin conjugates
(51) Int. Cl.
A61K 47/68 (2017.01)
A61P 35/00 (2006.01)
C07K 5/062 (2006.01)
C07K 16/30 (2006.01)
(87) WO2021/262910
(31) 63/043,771 **(32)** 24.06.20 **(33)** US
(43) 30.12.2021
(72) HAN, Amy
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Rememdia LC
(11) AU-A-2021300262
(21) 2021300262 **(22)** 02.07.2021
(54) Current health status certification
(51) Int. Cl.
G16H 50/30 (2018.01)
G16H 50/20 (2018.01)
(87) WO2022/006552
(31) 16/920,368 **(32)** 02.07.20 **(33)** US
(43) 06.01.2022
(72) SMITH, Fraser M.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Rennsteig Werkzeuge GmbH
(11) AU-A-2021327144
(21) 2021327144 **(22)** 18.08.2021
(54) Hand pliers designed to carry out crimping, and hand pliers comprising a plier head
(51) Int. Cl.
H01R 43/042 (2006.01)
B25B 27/14 (2006.01)
H02G 1/12 (2006.01)
(87) WO2022/038186
(31) 10 2020 121 823.0 **(32)** 20.08.20 **(33)** DE
(43) 24.02.2022
(72) HOLLAND-MORITZ, Georg; WEISHEIT, Benjamin; BRÜCKNER, Michael
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Re-Nut AG
(11) AU-A-2021263879
(21) 2021263879 **(22)** 27.04.2021
(54) Methods of processing culinary nuts and extraction products obtained by the same
(51) Int. Cl.
A23L 2/38 (2021.01)
A23C 11/10 (2021.01)
A23L 2/66 (2006.01)
A23L 11/60 (2021.01)
A23L 25/00 (2016.01)
(87) WO2021/219589
(31) 20171571.1 **(32)** 27.04.20 **(33)** EP
20208604.7 19.11.20 EP
(43) 04.11.2021
(72) LAUX, Roland; HÜHN, Tilo
(74) FPA Patent Attorneys Pty Ltd

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(71) ResApp Health Limited
(11) AU-A-2021290651
(21) 2021290651 **(22)** 18.06.2021
(54) Event detection in subject sounds
(51) Int. Cl.
A61B 5/00 (2006.01)
A61B 5/08 (2006.01)
A61B 7/00 (2006.01)
(87) WO2021/253093
(31) 2020902025 **(32)** 18.06.20 **(33)** AU
(43) 23.12.2021
(72) WOOD, Javan Tanner; PELTONEN, Vesa Tuomas Kristian; MAY, John Campbell; PARTRIDGE, Nicholas Kim
(74) Michael Buck IP

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(71) ResMed Pty Ltd
(11) AU-A-2021289611
(21) 2021289611 **(22)** 09.06.2021
(54) Patient interface
(51) Int. Cl.
A61M 16/06 (2006.01)
(87) WO2021/248193
(31) 2020901894 **(32)** 09.06.20 **(33)** AU
2020903878 26.10.20 AU
(43) 16.12.2021
(72) SCHEINER, Rupert Christian
(74) Griffith Hack

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(71) ResMed Pty Ltd
(11) AU-A-2021297197
(21) 2021297197 **(22)** 25.06.2021
(54) Remote configuration of a respiratory device
(51) Int. Cl.
G16H 40/63 (2018.01)
A61M 16/00 (2006.01)
G16H 40/40 (2018.01)
(87) WO2021/258152
(31) 2020902141 **(32)** 26.06.20 **(33)** AU
(43) 30.12.2021
(72) MATTHEWS, Lisa Nicole; RATH-MAY, Millen James; VUONG, My Hong
(74) James & Wells Intellectual Property

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(71) ResMed Sensor Technologies Limited
(11) AU-A-2021289172
(21) 2021289172 **(22)** 07.06.2021
(54) Systems and methods for categorizing and/or characterizing a user interface
(51) Int. Cl.
A61M 16/06 (2006.01)
A61B 8/08 (2006.01)
(87) WO2021/250553
(31) 63/036,303 **(32)** 08.06.20 **(33)** US
63/108,161 30.10.20 US
(43) 16.12.2021
(72) LYON, Graeme Alexander; TIRON, Roxana; FOX, Niall Andrew; SHOULDICE, Redmond
(74) Griffith Hack

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(71) Reunion Neuroscience Canada Inc.
(11) AU-A-2021302692
(21) 2021302692 **(22)** 30.06.2021
(54) Tryptamine prodrugs
(51) Int. Cl.
C07D 209/16 (2006.01)
A61K 9/08 (2006.01)
A61K 31/4045 (2006.01)
A61P 25/00 (2006.01)
(87) WO2022/000091
(31) 63/045,901 **(32)** 30.06.20 **(33)** US
63/109,095 03.11.20 US
17/364,047 30.06.21 US
(43) 06.01.2022
(72) BRYSON, Nathan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) RGT Inc.
(11) AU-A-2020465080
(21) 2020465080 **(22)** 25.11.2020
(54) Multifunctional autonomous serving robot
(51) Int. Cl.
B25J 11/00 (2006.01)
B25J 9/00 (2006.01)
B25J 9/08 (2006.01)
B25J 9/16 (2006.01)
(87) WO2022/045464
(31) 10-2020-0110626 **(32)** 31.08.20 **(33)** KR
(43) 03.03.2022
(72) JEONG, Ho Jeong
(74) H & H Lawyers

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(71) Rhaeos, Inc.
(11) AU-A-2021297256
(21) 2021297256 **(22)** 24.06.2021
(54) Wireless, non-invasive, continuous monitoring of cerebrospinal fluid flow through shunts
(51) Int. Cl.
A61B 5/01 (2006.01)
A61B 5/02 (2006.01)
A61B 5/03 (2006.01)
A61B 5/145 (2006.01)
A61B 5/1477 (2006.01)

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A61B 5/1491 (2006.01)
A61B 5/1495 (2006.01)
(87) WO2021/262949
(31) 63/043,720 **(32)** 24.06.20 **(33)** US
(43) 30.12.2021
(72) KRISHNAN, Siddharth; ZYSK, Adam; AYER, Amit; SOMERA, Anna Lisa; HASSE, Michelle
(74) Oxygene IP

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(71) Rigel Pharmaceuticals, Inc.
(11) AU-A-2021300831
(21) 2021300831 **(22)** 25.06.2021
(54) RIP1k inhibitors
(51) Int. Cl.
A61P 9/00 (2006.01)
A61K 31/55 (2006.01)
A61K 31/553 (2006.01)
A61K 31/554 (2006.01)
A61P 25/00 (2006.01)
A61P 29/00 (2006.01)
A61P 37/00 (2006.01)
C07D 487/04 (2006.01)
C07D 498/04 (2006.01)
C07D 498/14 (2006.01)
C07D 513/04 (2006.01)
C07D 513/14 (2006.01)
(87) WO2022/005898
(31) 63/047,194 **(32)** 01.07.20 **(33)** US
(43) 06.01.2022
(72) BHAMIDIPATI, Somasekhar; DARWISH, Ihab; IRVING, Mark; KOLLURI, Rao; MASUDA, Esteban; SHAW, Simon; TAYLOR, Vanessa; YU, Jiaxin
(74) Davies Collison Cave Pty Ltd

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(71) Rite-Hite Holding Corporation
(11) AU-A-2021270304
(21) 2021270304 **(22)** 13.05.2021
(54) Apparatus for tensioning pliable air-ducts while supporting internal HVAC components
(51) Int. Cl.
F24F 13/02 (2006.01)
(87) WO2021/231740
(31) 63/024,061 **(32)** 13.05.20 **(33)** US
(43) 18.11.2021
(72) SCHMIDT, Blaine; GEBKE, Kevin J.; KAUFMANN, Nicholas L.; NIEHAUS, William A.
(74) WRAYS PTY LTD

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(71) Rocky Research
(11) AU-A-2021301095
(21) 2021301095 **(22)** 02.06.2021
(54) Thermal management system for directed energy weapon system
(51) Int. Cl.
F41H 13/00 (2006.01)
(87) WO2022/005679
(31) 16/893,234 **(32)** 04.06.20 **(33)** US
(43) 06.01.2022
(72) ROCKENFELLER, Uwe; KHALILI, Kaveh
(74) Davies Collison Cave Pty Ltd

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(71) Röhm GmbH
(11) AU-A-2021262414
(21) 2021262414 **(22)** 15.04.2021
(54) Intumescent coating having improved low-temperature flexibility
(51) Int. Cl.
C09D 5/18 (2006.01)
C09K 21/14 (2006.01)
E04B 1/94 (2006.01)
(87) WO2021/219394
(31) 20172245.1 **(32)** 30.04.20 **(33)** EP
(43) 04.11.2021
(72) KLEIN, Alexander; LOTZ, Janos
(74) AJ PARK

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(71) Rolapal Limited
(11) AU-A-2021310829
(21) 2021310829 **(22)** 11.05.2021
(54) A seat
(51) Int. Cl.
A61G 5/10 (2006.01)
A47C 3/025 (2006.01)
A47C 3/026 (2006.01)
A61G 5/14 (2006.01)
(87) WO2022/015177
(31) 766176 **(32)** 13.07.20 **(33)** NZ
(43) 20.01.2022
(72) SCARLETT, Roydon Mark
(74) AJ Pietras IP Limited

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(71) Rotojar Innovations Limited
(11) AU-A-2021281027
(21) 2021281027 **(22)** 25.05.2021
(54) Thrust bearing
(51) Int. Cl.
F16C 17/04 (2006.01)
E21B 4/00 (2006.01)
F16C 17/26 (2006.01)
F16C 23/04 (2006.01)
F16C 25/04 (2006.01)
F16C 27/02 (2006.01)
(87) WO2021/239735
(31) 2008026.3 **(32)** 28.05.20 **(33)** GB
(43) 02.12.2021
(72) MOYES, Peter Barnes
(74) Griffith Hack

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(71) RTX A/S
(11) AU-A-2021291010
(21) 2021291010 **(22)** 17.06.2021
(54) Low latency audio packet loss concealment
(51) Int. Cl.
G10L 19/005 (2013.01)
G10L 25/30 (2013.01)
(87) WO2021/255153
(31) PA 2020 70403 **(32)** 19.06.20 **(33)** DK
(43) 23.12.2021
(72) MARIAGER, Peter; JENSEN, Jonas Koldkjær; JØRGENSEN, Filip Mathias Lillelund; JENSEN, Ricco
(74) FPA Patent Attorneys Pty Ltd

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(71) Rutgers, The State University of New Jersey
(11) AU-A-2021276383
(21) 2021276383 **(22)** 19.05.2021
(54) Lewis/Bronsted acid/base and nickel phosphide binary catalyst-system (co-catalysts) for direct electrochemical CO2 reduction to hydrocarbons
(51) Int. Cl.
H01M 8/18 (2006.01)
H01M 8/0273 (2016.01)
H01M 8/20 (2006.01)
(87) WO2021/236746
(31) 16/878,165 **(32)** 19.05.20 **(33)** US
(43) 25.11.2021
(72) DISMUKES, Charles G.; LAURSEN, Anders Bo; CALVINHO, Karin Ute Doehl
(74) FB Rice Pty Ltd

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(71) S.C.R. (Engineers) Limited
(11) AU-A-2021291807
(21) 2021291807 **(22)** 13.05.2021
(54) An animal tag
(51) Int. Cl.
A01K 11/00 (2006.01)
A01K 29/00 (2006.01)
(87) WO2021/255719
(31) 275518 **(32)** 18.06.20 **(33)** IL
(43) 23.12.2021
(72) COHEN, Mordehay; KHOMITSKY, Taras; HAZAN, Samy
(74) Spruson & Ferguson

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(71) Sagar Defence Engineering Private Limited
(11) AU-A-2020448850
(21) 2020448850 **(22)** 28.09.2020
(54) Method and system to ascertain location of drone box for landing and charging drones
(51) Int. Cl.
B64C 39/02 (2006.01)
(87) WO2021/234722
(31) 202021020842 **(32)** 18.05.20 **(33)** IN
(43) 25.11.2021
(72) SHAH, Chirag; PATIL, Saurabh; BABBAR, Mridul; DANG, Lakshay
(74) Alder IP Pty Ltd

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(71) Sagar Defence Engineering Private Limited
(11) AU-A-2021423790
(21) 2021423790 **(22)** 07.08.2021
(54) Method and system to ascertain location of drone box for stabilized landing and charging of drone
(51) Int. Cl.
G05D 1/00 (2006.01)
B64C 39/02 (2006.01)
B64F 1/00 (2006.01)
(87) WO2022/162682
(31) 202123004263 **(32)** 01.02.21 **(33)** IN
(43) 04.08.2022
(72) SHAH, Chirag; PATIL, Saurabh; BABBAR, Mridul; DANG, Lakshay; SINGH, Vishal Veer
(74) Alder IP Pty Ltd

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(71) Sage Products LLC
(11) AU-A-2021283853

PCT applications which have entered the National Phase - Name Index cont'd

(21) 2021283853 **(22)** 28.05.2021
(54) Bed exercise systems and methods
(51) Int. Cl.
A63B 21/04 (2006.01)
(87) WO2021/247429
(31) 63/033,053 **(32)** 01.06.20 **(33)** US
63/129,691 23.12.20 US
(43) 09.12.2021
(72) KONOPACZ, Kaitlin; SIRIANNI, Heather; SEXTON, Kristin; PONSI, Lawrence, G.
(74) Davies Collison Cave Pty Ltd

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(71) Saint-Augustin Canada Electric Inc.
(11) AU-A-2021286969
(21) 2021286969 **(22)** 11.06.2021
(54) Solar panel assembly
(51) Int. Cl.
H02S 30/10 (2014.01)
H02S 20/00 (2014.01)
(87) WO2021/250636
(31) 63/037,622 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) ROBERGE, Maxime
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) Saint-Gobain Placo
(11) AU-A-2021314450
(21) 2021314450 **(22)** 25.05.2021
(54) A filler compound and use of a filler compound
(51) Int. Cl.
C04B 26/04 (2006.01)
C04B 28/14 (2006.01)
C09D 5/34 (2006.01)
(87) WO2022/017664
(31) 20305837.5 **(32)** 21.07.20 **(33)** EP
(43) 27.01.2022
(72) ADAM, Robert; RIDDLE, Carl
(74) Michael Buck IP

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(71) Saltpower Holding ApS
(11) AU-A-2021278277
(21) 2021278277 **(22)** 25.05.2021
(54) Brine saturator
(51) Int. Cl.
F03G 7/00 (2006.01)
(87) WO2021/239701
(31) 2007804.4 **(32)** 26.05.20 **(33)** GB
(43) 02.12.2021
(72) MADSEN, Henrik Tækker; PEDERSEN, Lars Storm
(74) FB Rice Pty Ltd

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(71) Salts Healthcare Limited
(11) AU-A-2021285419
(21) 2021285419 **(22)** 02.06.2021
(54) An ostomy appliance
(51) Int. Cl.
A61F 5/44 (2006.01)
A61F 5/445 (2006.01)
(87) WO2021/245412
(31) 2008524.7 **(32)** 05.06.20 **(33)** GB
(43) 09.12.2021
(72) POWNER, Iain; ALFARO, Jesus; HOWARD, Lee
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Samsung Bioepis Co., Ltd.
(11) AU-A-2020447192
(21) 2020447192 **(22)** 11.05.2020
(54) Human genome-derived polynucleotide and method for producing polypeptide of interest using same
(51) Int. Cl.
C12N 15/85 (2006.01)
C07K 16/42 (2006.01)
(87) WO2021/230391
(43) 18.11.2021
(72) RYU, Sung Jin; PARK, Sangjoon; KIM, Sunkyu; LIN, Powei; KANG, Eunji; KIM, Young Soo; KIM, Hyung-Chan; LEE, Ju Hee; LEE, Chanmoo; JEONG, Yun Ju
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Sandvik Mining and Construction OY
(11) AU-A-2021286164
(21) 2021286164 **(22)** 01.06.2021
(54) Piston guiding element, rock drilling machine and method
(51) Int. Cl.
E21B 1/38 (2006.01)
B25D 9/12 (2006.01)
B25D 9/26 (2006.01)
B25D 17/06 (2006.01)
E21B 4/14 (2006.01)
F16J 10/04 (2006.01)
(87) WO2021/245065
(31) 20177658.0 **(32)** 01.06.20 **(33)** EP
(43) 09.12.2021
(72) KOSKIMÄKI, Antti; KANDELIN, Lars; HÄMÄLÄINEN, Mikko; KELA, Timo; VIINIKKA, Matti; LÄÄKKÖLÄ, Esa
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Sanquin IP B.V.
(11) AU-A-2021278756
(21) 2021278756 **(22)** 25.05.2021
(54) ADAMTS13 protein variants and uses thereof
(51) Int. Cl.
C12N 9/64 (2006.01)
A61K 38/48 (2006.01)
(87) WO2021/242092
(31) 20176333.1 **(32)** 25.05.20 **(33)** EP
(43) 02.12.2021
(72) VOORBERG, Johannes Jacobus; GOMES GRAÇA, Nuno Alexandre; ERÇIĞ, Boğaç
(74) Davies Collison Cave Pty Ltd

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(71) Sapience Therapeutics, Inc.
(11) AU-A-2021297172
(21) 2021297172 **(22)** 21.06.2021
(54) Administration of CEBPβ antagonist and methods of use
(51) Int. Cl.
A61K 38/16 (2006.01)
(87) WO2021/262604
(31) 63/041,989 **(32)** 21.06.20 **(33)** US
63/041,986 21.06.20 US
63/041,991 21.06.20 US
63/041,988 21.06.20 US
63/172,560 08.04.21 US
63/041,990 21.06.20 US
(43) 30.12.2021
(72) KAPPEL, Barry Jay; MERUTKA, Gene; ROTOLO, Jimmy Andrew; MICHEL, Robert E.; BEXON, Alice Susannah
(74) FPA Patent Attorneys Pty Ltd

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(71) Sarcos Corp.
(11) AU-A-2021303411
(21) 2021303411 **(22)** 06.07.2021
(54) Augmented reality system and method for conveying to a human operator information associated with human-imperceptible indicia within an operating environment of a robot
(51) Int. Cl.
B25J 9/16 (2006.01)
(87) WO2022/010944
(31) 63/048,123 **(32)** 04.07.20 **(33)** US
(43) 13.01.2022
(72) SMITH, Fraser M.
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Sarong Societa' Per Azioni
(11) AU-A-2021301403
(21) 2021301403 **(22)** 28.06.2021
(54) System for preparing beverages
(51) Int. Cl.
A47J 31/36 (2006.01)
(87) WO2022/003529
(31) 102020000015676 **(32)** 29.06.20 **(33)** IT
(43) 06.01.2022
(72) BARTOLI, Andrea; CAPITINI, Davide
(74) Spruson & Ferguson

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(71) Sarong Societa' Per Azioni
(11) AU-A-2021302937
(21) 2021302937 **(22)** 28.06.2021
(54) Apparatus and method for applying an annular body to a perimeter flange of a container
(51) Int. Cl.
B65B 29/02 (2006.01)
B29C 65/00 (2006.01)
B32B 7/12 (2006.01)
B65B 7/28 (2006.01)
B65B 51/14 (2006.01)
B65B 51/22 (2006.01)
B65B 61/28 (2006.01)
B65D 85/804 (2006.01)
(87) WO2022/003526
(31) 102020000015670 **(32)** 29.06.20 **(33)** IT
(43) 06.01.2022
(72) BARTOLI, Andrea; CAPITINI, Davide
(74) Spruson & Ferguson

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(71) Savage, A.
(11) AU-A-2021265805
(21) 2021265805 **(22)** 29.04.2021
(54) Marine fishery trap baits and deterrents
(51) Int. Cl.
A01K 61/50 (2017.01)

PCT applications which have entered the National Phase - Name Index cont'd

A01K 85/01 (2006.01)
A01K 97/04 (2006.01)
A01M 23/00 (2006.01)
A23K 40/20 (2016.01)
A23K 40/25 (2016.01)
A23K 40/30 (2016.01)
A23K 50/80 (2016.01)
(87) WO2021/217208
(31) 2020901375 **(32)** 30.04.20 **(33)** AU
(43) 04.11.2021
(72) SAVAGE, Alan
(74) Golja Haines & Friend

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(71) Savage Equipment Incorporated
(11) AU-A-2021292312
(21) 2021292312 **(22)** 17.06.2021
(54) High speed nut cracking apparatus
(51) Int. Cl.
A23N 5/00 (2006.01)
(87) WO2021/257859
(31) 63/040,349 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) SAVAGE, Basil W.; SAVAGE, Steven W.; WAGONER, William Ferrell
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Savio Healthy Innovations Pty Ltd
(11) AU-A-2021297192
(21) 2021297192 **(22)** 12.02.2021
(54) A method of producing a beverage
(51) Int. Cl.
A23L 2/04 (2006.01)
A23L 2/02 (2006.01)
A23L 2/44 (2006.01)
A23L 2/84 (2006.01)
A23L 33/22 (2016.01)
(87) WO2021/258127
(31) 2020902548 **(32)** 22.07.20 **(33)** AU
2020902086 23.06.20 AU
(43) 30.12.2021
(72) YOUNG, Gordon
(74) Spruson & Ferguson

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(71) Schenck Process Australia Pty Limited
(11) AU-A-2021291578
(21) 2021291578 **(22)** 16.06.2021
(54) Screening panel
(51) Int. Cl.
B07B 1/46 (2006.01)
B07B 1/04 (2006.01)
(87) WO2021/253084
(31) 2020902012 **(32)** 17.06.20 **(33)** AU
(43) 23.12.2021
(72) JOHNSTONE, Aidan Paul
(74) Dennemeyer & Associates

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(71) Schlage Lock Company LLC
(11) AU-A-2021282182
(21) 2021282182 **(22)** 26.05.2021
(54) Powered opening module for a door closer
(51) Int. Cl.
E05F 15/614 (2015.01)
E05F 3/12 (2006.01)
E05F 3/18 (2006.01)
E05F 3/22 (2006.01)
E05F 5/02 (2006.01)
E05F 15/73 (2015.01)
(87) WO2021/242829
(31) 63/030,680 **(32)** 27.05.20 **(33)** US
17/225,615 08.04.21 US
(43) 02.12.2021
(72) LANGENBERG, Daniel; FODSTAD, Jason; SHETTY, Adithya Gangadhar; WOLFE, John A.; TOLODAY, David V.
(74) Alder IP Pty Ltd

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(71) Season Bright (Cambodia) Electronic Lighting Co., Ltd.; Lam, S.
(11) AU-A-2020457540
(21) 2020457540 **(22)** 31.07.2020
(54) Anti-pull-off decorative lamp and anti-pull-off lamp string
(51) Int. Cl.
F21K 9/238 (2016.01)
F21S 4/00 (2016.01)
F21V 15/00 (2015.01)
H01R 33/09 (2006.01)
F21Y 115/10 (2016.01)
(87) WO2022/007065
(31) 202010644466.0 **(32)** 07.07.20 **(33)** CN
(43) 13.01.2022
(72) LAM, Su Io
(74) Flint Intellectual Property Limited

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(71) Seattle Children's Hospital (DBA Seattle Children's Research Institute)
(11) AU-A-2021288464
(21) 2021288464 **(22)** 07.06.2021
(54) Anti-CD171 chimeric antigen receptors
(51) Int. Cl.
A61K 35/17 (2015.01)
C07K 16/28 (2006.01)
C07K 19/00 (2006.01)
C12N 15/62 (2006.01)
(87) WO2021/252358
(31) 63/036,021 **(32)** 08.06.20 **(33)** US
(43) 16.12.2021
(72) JENSEN, Michael C.; JOHNSON, Adam
(74) Davies Collison Cave Pty Ltd

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(71) Selvax Pty Ltd
(11) AU-A-2021283455
(21) 2021283455 **(22)** 04.06.2021
(54) Agonist anti-CD40 antibodies
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 39/395 (2006.01)
A61P 35/00 (2006.01)
(87) WO2021/243422
(31) 2020901845 **(32)** 04.06.20 **(33)** AU
(43) 09.12.2021
(72) NELSON, Delia Jane; PROKSCH, Stephen; STINE, Jonny T.
(74) WRAYS PTY LTD

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204528
(21) 2021204528 **(22)** 28.06.2021
(54) Systems, methods, apparatuses, and computer-readable storage media for warning
(51) Int. Cl.
A63F 3/00 (2006.01)
(31) 10202106953P **(32)** 24.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; LIN, Jinliang; ZOU, Chuan; WU, Jiacheng
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204540
(21) 2021204540 **(22)** 25.06.2021
(54) Method and apparatus for image processing, electronic device, and computer storage medium
(51) Int. Cl.
G06K 7/10 (2006.01)
(87) WO2022/096948
(31) 10202106587X **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) GUO, Zhiyang; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204542
(21) 2021204542 **(22)** 25.06.2021
(54) Alarm method and apparatus for tabletop game, electronic device and storage medium
(51) Int. Cl.
A63F 1/00 (2006.01)
(87) WO2022/096955
(31) 10202106722W **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; WANG, Xinxin; ZHANG, Shuai; ZHANG, Shuai; WANG, Kaiyun; WANG, Kaiyun
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204548
(21) 2021204548 **(22)** 25.06.2021
(54) Method and apparatus for detecting tokens on game table, device, and storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106715V **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204550
(21) 2021204550 **(22)** 28.06.2021
(54) Scene detection method and apparatus, electronic device and computer storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096959
(31) 10202107011W **(32)** 25.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; GAN, Xin
(74) FB Rice Pty Ltd

PCT applications which have entered the National Phase - Name Index cont'd

(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204551
(21) 2021204551 **(22)** 25.06.2021
(54) Methods, apparatuses, systems, devices and storage media for processing abnormal event
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106886W **(32)** 23.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; XIE, Fei; XIE, Naiwei
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204555
(21) 2021204555 **(22)** 25.06.2021
(54) Warning method, apparatus, device and computer storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096952
(31) 10202106583R **(32)** 18.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204558
(21) 2021204558 **(22)** 28.06.2021
(54) Alerting method and device, apparatus and computer storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096958
(31) 10202106454Q **(32)** 16.06.21 **(33)** SG
(43) 19.01.2023
(72) OUYANG, Miao; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204562
(21) 2021204562 **(22)** 25.06.2021
(54) Object information association method and apparatus, device and storage medium
(51) Int. Cl.
G06K 7/00 (2006.01)
(87) WO2022/096953
(31) 10202106446P **(32)** 16.06.21 **(33)** SG
(43) 19.01.2023
(72) GUO, Zhiyang; WANG, Xinxin
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204563
(21) 2021204563 **(22)** 25.06.2021
(54) Target detection methods, apparatuses, electronic devices and computer-readable storage media
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106559T **(32)** 17.06.21 **(33)** SG
(43) 19.01.2023
(72) CHEN, Jinghuan; LIU, Chunya; ZHANG, Xuesen; WANG, Bairun
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204564
(21) 2021204564 **(22)** 28.06.2021
(54) Methods of detecting game prop operation event and apparatuses, devices and systems thereof
(51) Int. Cl.
G06K 7/00 (2006.01)
(31) 10202106956S **(32)** 24.06.21 **(33)** SG
(43) 19.01.2023
(72) XIE, Fei; WANG, Xinxin
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204568
(21) 2021204568 **(22)** 25.06.2021
(54) Methods, apparatuses, devices, and storage media for controlling game states
(51) Int. Cl.
G06F 3/0484 (2013.01)
A63F 1/00 (2006.01)
(31) 10202106746V **(32)** 21.06.21 **(33)** SG
(43) 19.01.2023
(72) WANG, Xinxin; SUN, Bing
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204592
(21) 2021204592 **(22)** 29.06.2021
(54) Methods and apparatuses for automatic operational maintenance
(51) Int. Cl.
G06F 16/10 (2019.01)
A63F 1/00 (2006.01)
(31) 10202107096Q **(32)** 28.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; XIAO, Gan
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204593
(21) 2021204593 **(22)** 29.06.2021
(54) Methods and apparatuses for installing device application
(51) Int. Cl.
G06F 16/10 (2019.01)
A63F 1/00 (2006.01)
(31) 10202107092P **(32)** 28.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; XIAO, Gan
(74) Madderns Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204609
(21) 2021204609 **(22)** 28.06.2021
(54) Cluster management method and apparatus, electronic device and storage medium
(51) Int. Cl.
G06F 16/10 (2019.01)
A63F 1/00 (2006.01)
(87) WO2022/096960
(31) 10202107015X **(32)** 25.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; LIN, Jinliang; XIAO, Gan
(74) FB Rice Pty Ltd

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(71) SenseTime International Pte. Ltd.
(11) AU-A-2021204623
(21) 2021204623 **(22)** 25.06.2021
(54) Game state detection and configuration updating method and apparatus, device and storage medium
(51) Int. Cl.
G06F 17/00 (2019.01)
A63F 1/00 (2006.01)
(87) WO2022/096946
(31) 10202106467P **(32)** 16.06.21 **(33)** SG
(43) 19.01.2023
(72) WU, Jiacheng; ZHANG, Shuai; XIAO, Gan; GAN, Xin; WU, Wenxuan
(74) FB Rice Pty Ltd

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(71) Sestra Systems, Inc.
(11) AU-A-2021292939
(21) 2021292939 **(22)** 05.04.2021
(54) Fob system for intelligent flow detection and dispense control
(51) Int. Cl.
B67D 1/00 (2006.01)
B67D 1/08 (2006.01)
B67D 1/12 (2006.01)
(87) WO2021/257152
(31) 17/084,434 **(32)** 29.10.20 **(33)** US
63/029,585 25.05.20 US
(43) 23.12.2021
(72) VOLFTSUN, Lev; KUSHNIR, Alex; GODA, Paras
(74) Griffith Hack

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(71) Shaheen Innovations Holding Limited
(11) AU-A-2021285405
(21) 2021285405 **(22)** 28.05.2021
(54) An infectious disease screening system
(51) Int. Cl.
A24B 15/167 (2020.01)
A24F 40/05 (2020.01)
A24F 40/10 (2020.01)
A61M 11/00 (2006.01)
A61M 15/00 (2006.01)
B01L 7/00 (2006.01)
B05B 17/06 (2006.01)
C12M 1/00 (2006.01)
B05B 17/00 (2006.01)
(87) WO2021/245390
(31) 20177685.3 **(32)** 01.06.20 **(33)** EP
20200852.0 08.10.20 EP
20214228.7 15.12.20 EP
PCT/GB2021/050822 01.04.21 GB
(43) 09.12.2021
(72) LAHOUD, Imad; MACHOVEC, Jeff; BHATTI, Sajid; ALSHAIBA SALEH GHANNAM ALMAZROUEI, Mohammed; LAMOUREUX, Clement
(74) Davies Collison Cave Pty Ltd

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(71) Shaheen Innovations Holding Limited
(11) AU-A-2021285406

PCT applications which have entered the National Phase - Name Index cont'd

(21) 2021285406 **(22)** 28.05.2021
(54) An infectious disease screening device
(51) Int. Cl.
B01L 3/00 (2006.01)
B01L 7/00 (2006.01)
C12M 1/00 (2006.01)
(87) WO2021/245391
(31) 20177685.3 **(32)** 01.06.20 **(33)** EP
63/064,386 11.08.20 US
20200852.0 08.10.20 EP
20214228.7 15.12.20 EP
PCT/GB2021/050822 01.04.21 GB
(43) 09.12.2021
(72) LAHOUD, Imad; MACHOVEC, Jeff; BHATTI, Sajid; ALSHAIBA SALEH GHANNAM ALMAZROUEI, Mohammed; LAMOUREUX, Clement
(74) Davies Collison Cave Pty Ltd

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(71) Shanghai Beiqi New Energy Technology Co., Ltd.
(11) AU-A-2021289930
(21) 2021289930 **(22)** 01.06.2021
(54) Fermentation device and fermentation method for organic matter
(51) Int. Cl.
C12M 1/16 (2006.01)
C02F 11/04 (2006.01)
C12M 1/00 (2006.01)
C12M 1/107 (2006.01)
C12M 1/12 (2006.01)
C12P 5/02 (2006.01)
(87) WO2021/249243
(31) 202010526539.6 **(32)** 09.06.20 **(33)** CN
202021046268.6 09.06.20 CN
(43) 16.12.2021
(72) VERNEDE, Stephane; LI, Zhuoya
(74) Remarkable IP

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(71) Shanghai Jemincare Pharmaceuticals Co., Ltd; Jiangxi Jemincare Group Co., Ltd
(11) AU-A-2021286738
(21) 2021286738 **(22)** 11.06.2021
(54) Phthalazinone compound, and preparation method therefor and medical use thereof
(51) Int. Cl.
C07D 401/14 (2006.01)
A61K 31/502 (2006.01)
A61K 31/506 (2006.01)
A61P 5/26 (2006.01)
A61P 21/00 (2006.01)
A61P 35/00 (2006.01)
A61P 35/04 (2006.01)
C07D 471/04 (2006.01)
(87) WO2021/249534
(31) 202010536221.6 **(32)** 12.06.20 **(33)** CN
202011147078.8 23.10.20 CN
202011261665.X 12.11.20 CN
202110485680.0 30.04.21 CN
202110614030.1 02.06.21 CN
(43) 16.12.2021
(72) LU, Hongfu; XING, Weiqiang; LV, Yongcong; QI, Baojian; PENG, Jianbiao; GUO, Haibing
(74) RNB IP PTY LTD

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(71) Shanghai Yuanxi Medicine Corp.
(11) AU-A-2021268710
(21) 2021268710 **(22)** 06.07.2021
(54) Use of benzisoselazole derivative for anti-coronavirus and control of interstitial lung disease (ILD) related to coronavirus
(51) Int. Cl.
C07D 293/12 (2006.01)
A61K 31/41 (2006.01)
A61K 31/4439 (2006.01)
A61P 31/14 (2006.01)
(87) WO2021/223780
(31) 202010373848.4 **(32)** 06.05.20 **(33)** CN
(43) 11.11.2021
(72) ZENG, Huihui; YIN, Hanwei
(74) WRAYS PTY LTD

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(71) Sharp Kabushiki Kaisha
(11) AU-A-2021295761
(21) 2021295761 **(22)** 18.06.2021
(54) Cooker
(51) Int. Cl.
F24C 7/02 (2006.01)
F24C 7/04 (2021.01)
(87) WO2021/261386
(31) 2020-108940 **(32)** 24.06.20 **(33)** JP
(43) 30.12.2021
(72) NOZAWA, Rika; KAMATA, Yu
(74) Davies Collison Cave Pty Ltd

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(71) Shell Internationale Research Maatschappij B.V.
(11) AU-A-2021291006
(21) 2021291006 **(22)** 17.06.2021
(54) Process to prepare fischer-tropsch derived middle distillates and base oils
(51) Int. Cl.
C10G 2/00 (2006.01)
C10G 45/62 (2006.01)
C10G 45/64 (2006.01)
C10L 1/00 (2006.01)
C10L 1/02 (2006.01)
C10L 1/08 (2006.01)
C10M 171/02 (2006.01)
(87) WO2021/255145
(31) 20180628.8 **(32)** 17.06.20 **(33)** EP
(43) 23.12.2021
(72) CREYGHTON, Edward Julius; SAMMELIUS, Olav; RIGUTTO, Marcello Stefano; JANSSEN, Andries Hendrik
(74) Spruson & Ferguson

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(71) Shenzhen Immunotherapy Biotech Co., Ltd.
(11) AU-A-2021285330
(21) 2021285330 **(22)** 08.03.2021
(54) SARS-CoV-2 spike protein binding molecule and application thereof
(51) Int. Cl.
C07K 16/10 (2006.01)
A61K 39/395 (2006.01)
A61K 47/68 (2017.01)
A61P 31/14 (2006.01)
C12N 15/13 (2006.01)
C12N 15/63 (2006.01)
C12P 21/08 (2006.01)
G01N 33/569 (2006.01)
(87) WO2021/244089
(31) 202010491549.0 **(32)** 02.06.20 **(33)** CN
(43) 09.12.2021
(72) ZHANG, Junfang
(74) James & Wells Intellectual Property

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(71) Shenzhen Shokz Co., Ltd.
(11) AU-A-2021314878
(21) 2021314878 **(22)** 29.07.2021
(54) Earphone
(51) Int. Cl.
H04R 1/10 (2006.01)
(87) WO2022/022618
(31) 202011328519.4 **(32)** 24.11.20 **(33)** CN
202010743396.4 29.07.20 CN
(43) 03.02.2022
(72) ZHENG, Zeying; XU, Jiang; WANG, Yonggen; ZHANG, Haofeng; LAI, Gan; WANG, Chong; WANG, Liwei; HAN, Ruixin; ZHANG, Lei; FU, Junjiang
(74) Madderns Pty Ltd

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(71) Shimkonis, J.
(11) AU-A-2021282740
(21) 2021282740 **(22)** 13.05.2021
(54) Collapsible fluid collection container
(51) Int. Cl.
F16N 31/00 (2006.01)
B01D 35/027 (2006.01)
B65D 1/02 (2006.01)
B65D 33/00 (2006.01)
B65D 33/16 (2006.01)
B65D 75/58 (2006.01)
F01M 11/04 (2006.01)
(87) WO2021/248148
(31) 62/704,928 **(32)** 03.06.20 **(33)** US
17/302,519 05.05.21 US
(43) 09.12.2021
(72) SHIMKONIS, Joseph Dennis
(74) Griffith Hack

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(71) SHL Medical AG
(11) AU-A-2021307532
(21) 2021307532 **(22)** 12.07.2021
(54) Micro dosing device and method of assembly of the micro dosing device
(51) Int. Cl.
A61M 5/168 (2006.01)
A61M 5/142 (2006.01)
A61F 9/00 (2006.01)
(87) WO2022/013172
(31) 63/052,963 **(32)** 17.07.20 **(33)** US
20195129.0 08.09.20 EP
(43) 20.01.2022
(72) EGLOFF, Christoph; WYLER, Samuel; JANN, Urs; SOMMER, Ralph
(74) Pearce IP Pty Ltd

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(71) Shonan Gosei-Jushi Seisakusho K.K.
(11) AU-A-2021315123
(21) 2021315123 **(22)** 21.05.2021
(54) Pipe rehabilitation construction method
(51) Int. Cl.
F16L 1/00 (2006.01)
E03F 3/04 (2006.01)
E03F 7/00 (2006.01)
F16B 21/16 (2006.01)
F16L 1/038 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

F16L 9/22 (2006.01)
F16L 55/18 (2006.01)
(87) WO2022/024519
(31) 2020-126405 **(32)** 27.07.20 **(33)** JP
(43) 03.02.2022
(72) KAMIYAMA, Takao; KARASHIMA, Tomoki; ISHIDA, Makoto
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Sika Technology AG
(11) AU-A-2021302531
(21) 2021302531 **(22)** 28.06.2021
(54) Free-flowing powder comprising a porous substrate functionalized with at least one accelerator
(51) Int. Cl.
C04B 20/10 (2006.01)
C04B 28/02 (2006.01)
(87) WO2022/002877
(31) 20305753.4 **(32)** 03.07.20 **(33)** EP
(43) 06.01.2022
(72) SOUDIER, Jerome; HARRATH, Alexandre Ben
(74) WRAYS PTY LTD

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(71) Sika Technology AG
(11) AU-A-2021327074
(21) 2021327074 **(22)** 17.08.2021
(54) Use of a polyol for reducing shrinking of construction chemicals
(51) Int. Cl.
C04B 24/02 (2006.01)
C04B 28/06 (2006.01)
C04B 28/14 (2006.01)
C04B 28/16 (2006.01)
(87) WO2022/038105
(31) 20191910.7 **(32)** 20.08.20 **(33)** EP
(43) 24.02.2022
(72) KNOEBEL, Markus; SCHNEIDER, Nick
(74) WRAYS PTY LTD

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(71) Simpson Strong-Tie Company Inc.
(11) AU-A-2021322001
(21) 2021322001 **(22)** 21.07.2021
(54) Pinned base connection for a structural member
(51) Int. Cl.
E04H 9/02 (2006.01)
(87) WO2022/031439
(31) 16/984,325 **(32)** 04.08.20 **(33)** US
(43) 10.02.2022
(72) PRYOR, Steven E.
(74) Davies Collison Cave Pty Ltd

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(71) Simulation Training Group Pty Ltd
(11) AU-A-2021272254
(21) 2021272254 **(22)** 14.05.2021
(54) Virtual firearms training system
(51) Int. Cl.
F41G 3/26 (2006.01)
A63F 9/02 (2006.01)
G02B 27/02 (2006.01)
(87) WO2021/226678
(31) 2020901552 **(32)** 14.05.20 **(33)** AU
(43) 18.11.2021
(72) BATCHELOR, Daryl
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) SinoCellTech LTD
(11) AU-A-2021262999
(21) 2021262999 **(22)** 29.04.2021
(54) Method for improving immunogenicity of protein/peptide antigen
(51) Int. Cl.
A61K 39/00 (2006.01)
A61K 39/085 (2006.01)
A61P 31/06 (2006.01)
C07K 16/12 (2006.01)
(87) WO2021/219047
(31) 202010369100.7 **(32)** 01.05.20 **(33)** CN
(43) 04.11.2021
(72) XIE, Liangzhi; ZHANG, Yanjing; ZHANG, Jiandong
(74) Madderns Pty Ltd

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(71) Sirona Genomics, Inc.
(11) AU-A-2021282588
(21) 2021282588 **(22)** 04.06.2021
(54) Methods of identifying markers of graft rejection
(51) Int. Cl.
C12Q 1/6811 (2018.01)
C12Q 1/6827 (2018.01)
C12Q 1/6876 (2018.01)
(87) WO2021/247949
(31) 63/035,477 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) KRISHNAKUMAR, Sujatha; LI, Ming; PALSGAARD, Peggy; MINDRINOS, Michael N.
(74) ALLENS PATENT & TRADE MARK ATTORNEYS

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(71) Smithers-Oasis Company
(11) AU-A-2021277183
(21) 2021277183 **(22)** 14.05.2021
(54) Composition and manufacturing method for a compostable floral arrangement medium
(51) Int. Cl.
A47G 7/03 (2006.01)
C08J 9/24 (2006.01)
C08J 9/35 (2006.01)
C08K 13/04 (2006.01)
C08L 101/16 (2006.01)
(87) WO2021/236432
(31) 63/026,209 **(32)** 18.05.20 **(33)** US
(43) 25.11.2021
(72) KELLY, Paul Thomas; PARK, Sang Hyen; LEGNANI, Gary
(74) SOUTHERN CROSS INTELLECTUAL PROPERTY PTY LTD

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(71) Societe Des Produits Nestle S.A.
(11) AU-A-2021316405
(21) 2021316405 **(22)** 24.06.2021
(54) A process and equipment for manufacturing a reinforced sachet
(51) Int. Cl.
B65B 3/02 (2006.01)
B31B 70/00 (2017.01)
B31B 70/26 (2017.01)
B31B 70/84 (2017.01)
B65B 29/02 (2006.01)
B65B 43/02 (2006.01)
B65B 61/00 (2006.01)
B65B 61/18 (2006.01)
B65D 75/58 (2006.01)
B65D 85/804 (2006.01)
B31B 150/00 (2017.01)
B31B 160/20 (2017.01)
(87) WO2022/022900
(31) 20188733.8 **(32)** 30.07.20 **(33)** EP
(43) 03.02.2022
(72) PELLEGRINI, Stéphane; GALANTINE, Charles; MORRAL ROCA, Jose
(74) Spruson & Ferguson

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(71) Societe Des Produits Nestle S.A.
(11) AU-A-2021317765
(21) 2021317765 **(22)** 24.06.2021
(54) A flexible package for food or beverage preparation having a rigid part
(51) Int. Cl.
B65D 85/804 (2006.01)
(87) WO2022/022901
(31) 20188738.7 **(32)** 30.07.20 **(33)** EP
(43) 03.02.2022
(72) PELLEGRINI, Stéphane
(74) Spruson & Ferguson

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(71) Societe Des Produits Nestle S.A.
(11) AU-A-2021317766
(21) 2021317766 **(22)** 24.06.2021
(54) An improved flexible package for food or beverage preparation having a rigid part
(51) Int. Cl.
B65D 85/804 (2006.01)
(87) WO2022/022902
(31) 20188741.1 **(32)** 30.07.20 **(33)** EP
(43) 03.02.2022
(72) PELLEGRINI, Stéphane; MARTIN, Olivier Jean-Michel; VISHTAL, Alexey
(74) Spruson & Ferguson

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(71) Société des Produits Nestlé S.A.
(11) AU-A-2021314533
(21) 2021314533 **(22)** 20.07.2021
(54) MCT formulations for improving cognitive functions and methods of making and using such formulations
(51) Int. Cl.
A23D 7/00 (2006.01)
A23D 7/005 (2006.01)
A23L 33/115 (2016.01)
A23L 35/00 (2016.01)
(87) WO2022/018094
(31) 63/055,552 **(32)** 23.07.20 **(33)** US
(43) 27.01.2022
(72) STEVENSON, Nancy
(74) Spruson & Ferguson

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(71) Société des Produits Nestlé S.A.
(11) AU-A-2021314969
(21) 2021314969 **(22)** 29.07.2021

PCT applications which have entered the National Phase - Name Index cont'd

(54) Beverage preparation machine with machine housing and detachable liquid tank
(51) Int. Cl.
A47J 31/44 (2006.01)
A47J 31/60 (2006.01)
(87) WO2022/023478
(31) 20188293.3 **(32)** 29.07.20 **(33)** EP
(43) 03.02.2022
(72) KOLLEP, Alexandre; VUAGNIAUX, Didier
(74) Spruson & Ferguson

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(71) Société des Produits Nestlé S.A.
(11) AU-A-2021318815
(21) 2021318815 **(22)** 27.07.2021
(54) Roasting apparatus
(51) Int. Cl.
A23N 12/08 (2006.01)
A23N 12/12 (2006.01)
(87) WO2022/023324
(31) 20188069.7 **(32)** 28.07.20 **(33)** EP
(43) 03.02.2022
(72) CECCAROLI, Stefano; MARTIN, Vincent; BRÄNDLE, Manuel; NIEDERMANN, Christof; RICKLIN, Adrian
(74) Spruson & Ferguson

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(71) Société des Produits Nestlé S.A.
(11) AU-A-2021318817
(21) 2021318817 **(22)** 27.07.2021
(54) Method for roasting coffee beans
(51) Int. Cl.
A23F 5/04 (2006.01)
A23N 12/08 (2006.01)
A23N 12/12 (2006.01)
(87) WO2022/023328
(31) 20188216.4 **(32)** 28.07.20 **(33)** EP
(43) 03.02.2022
(72) DUBIEF, Flavien Florent; BIGLER, Nicolas
(74) Spruson & Ferguson

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(71) Société des Produits Nestlé S.A.
(11) AU-A-2021319023
(21) 2021319023 **(22)** 30.07.2021
(54) Beverage preparation system
(51) Int. Cl.
B65B 3/02 (2006.01)
A47J 31/40 (2006.01)
B31B 70/00 (2017.01)
B31B 70/26 (2017.01)
B31B 70/84 (2017.01)
B65B 29/02 (2006.01)
B65B 43/02 (2006.01)
B65B 61/00 (2006.01)
B65B 61/18 (2006.01)
B65D 75/58 (2006.01)
B65D 85/804 (2006.01)
B31B 150/00 (2017.01)
B31B 160/20 (2017.01)
(87) WO2022/023578
(31) 20188741.1 **(32)** 30.07.20 **(33)** EP
20188733.8 30.07.20 EP
20188738.7 30.07.20 EP
(43) 03.02.2022
(72) ABRAHAM, Sophie; BONIN, Marilyne Isabelle; FIORE, Gina; PELLEGRINI, Stéphane
(74) Spruson & Ferguson

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(71) Solana Technologies Inc.
(11) AU-A-2021297784
(21) 2021297784 **(22)** 22.06.2021
(54) Satellite handover management in a broadband communication system
(51) Int. Cl.
H04B 7/185 (2006.01)
(87) WO2021/262666
(31) 63/044,295 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) STANWOOD, Kenneth; GELL, David
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Solar Dynamics LLC
(11) AU-A-2021270863
(21) 2021270863 **(22)** 11.05.2021
(54) Systems and methods for mounting a heliostat
(51) Int. Cl.
F24S 30/452 (2018.01)
F24S 30/40 (2018.01)
F24S 30/422 (2018.01)
H02S 20/30 (2014.01)
H02S 20/32 (2014.01)
(87) WO2021/231453
(31) 63/023,648 **(32)** 12.05.20 **(33)** US
(43) 18.11.2021
(72) STEGALL, Nathaniel; KATTKE, Kyle; SOMMERS, Rick
(74) Madderns Pty Ltd

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(71) Solenis Technologies, L.P.
(11) AU-A-2021265258
(21) 2021265258 **(22)** 29.04.2021
(54) Method and apparatus for controlling the production of a haloamine biocide
(51) Int. Cl.
A01N 33/14 (2006.01)
A01N 33/00 (2006.01)
A01N 33/02 (2006.01)
C02F 1/50 (2006.01)
C02F 1/72 (2006.01)
C02F 1/76 (2006.01)
(87) WO2021/222498
(31) 63/017,205 **(32)** 29.04.20 **(33)** US
(43) 04.11.2021
(72) CAREY, William Sean; CHEBI, Patrick; PETRILLO, Steven; ZALITE, Martin
(74) AJ PARK

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(71) Soletanche Freyssinet
(11) AU-A-2021283736
(21) 2021283736 **(22)** 03.06.2021
(54) Grout for the injection of prestressing cables and method for installing a cable comprising such a grout
(51) Int. Cl.
C04B 28/00 (2006.01)
B28B 23/00 (2006.01)
C04B 12/00 (2006.01)
C04B 32/02 (2006.01)
E04C 5/10 (2006.01)
E04G 21/12 (2006.01)
(87) WO2021/245359
(31) 20 05925 **(32)** 05.06.20 **(33)** FR
(43) 09.12.2021
(72) TOURNEUR, Christian; MERCIER, Julien; ZIVANOVIC, Ivica; HALLOPEAU, Xavier
(74) FPA Patent Attorneys Pty Ltd

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(71) Solugen, Inc.
(11) AU-A-2021282373
(21) 2021282373 **(22)** 27.05.2021
(54) Reactor sparger assembly
(51) Int. Cl.
B01F 23/21 (2022.01)
B01F 23/454 (2022.01)
B01F 23/53 (2022.01)
B01F 23/80 (2022.01)
B01J 4/00 (2006.01)
B01J 8/00 (2006.01)
(87) WO2021/243083
(31) 63/031,257 **(32)** 28.05.20 **(33)** US
(43) 02.12.2021
(72) HUNT, Sean T.; KECKLER, Kenneth
(74) Spruson & Ferguson

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(71) Sonoco Development, Inc.
(11) AU-A-2021280297
(21) 2021280297 **(22)** 27.05.2021
(54) Systems and methods for the high-speed application of paper-based end closures on composite containers
(51) Int. Cl.
B65B 7/28 (2006.01)
(87) WO2021/242978
(31) 63/125,013 **(32)** 14.12.20 **(33)** US
63/030,959 28.05.20 US
(43) 02.12.2021
(72) PRICE, Trevor
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Sound Agriculture Company
(11) AU-A-2021284383
(21) 2021284383 **(22)** 03.06.2021
(54) Compounds and methods for stimulating plants
(51) Int. Cl.
A01N 43/16 (2006.01)
A01N 63/22 (2020.01)
C07D 311/22 (2006.01)
(87) WO2021/247915
(31) 63/034,228 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) BAYER, Travis S.; SCHWARTZ, Allison; IBARRA, Christian; CHADHA, Shailaja
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Speir Hunter Ltd
(11) AU-A-2021274924
(21) 2021274924 **(22)** 24.05.2021
(54) Stress concentration mapping in insulated pipework
(51) Int. Cl.

PCT applications which have entered the National Phase - Name Index cont'd

G01N 27/82 (2006.01)
(87) WO2021/234334
(31) 2007712.9 **(32)** 22.05.20 **(33)** GB
(43) 25.11.2021
(72) VO, Chau; GAN, Yongze; TWEDDLE, David; HABIBI, Hamed
(74) WRAYS PTY LTD

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(71) Spiber Inc.
(11) AU-A-2021289041
(21) 2021289041 **(22)** 08.06.2021
(54) Meat-like food composition
(51) Int. Cl.
A23J 3/00 (2006.01)
A23J 3/14 (2006.01)
A23J 3/16 (2006.01)
A23J 3/28 (2006.01)
A23L 13/00 (2016.01)
C07K 14/435 (2006.01)
C12N 9/10 (2006.01)
C12P 21/02 (2006.01)
(87) WO2021/251387
(31) 2020-100099 **(32)** 09.06.20 **(33)** JP
2020-126650 27.07.20 JP
(43) 16.12.2021
(72) CHUANG, Yu Chun; NAIDU, Arin
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Squarex Pharmaceutical Corporation
(11) AU-A-2021294314
(21) 2021294314 **(22)** 14.06.2021
(54) Dermal patches and glass swabs for application of topical immunosensitizers
(51) Int. Cl.
A61K 9/70 (2006.01)
A61F 13/00 (2006.01)
A61F 13/40 (2006.01)
A61K 31/122 (2006.01)
(87) WO2021/257479
(31) 63/040,138 **(32)** 17.06.20 **(33)** US
16/932,111 17.07.20 US
(43) 23.12.2021
(72) McTAVISH, Hugh
(74) AJ PARK

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(71) Stamicarbon B.V.
(11) AU-A-2021296691
(21) 2021296691 **(22)** 23.06.2021
(54) Thermal stripping urea plant and process
(51) Int. Cl.
C07C 273/04 (2006.01)
B01J 3/00 (2006.01)
(87) WO2021/261999
(31) 20181754.1 **(32)** 23.06.20 **(33)** EP
(43) 30.12.2021
(72) GEURTS, Wilhelmus Hubertus
(74) Davies Collison Cave Pty Ltd

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(71) Starkey & Associates Inc.
(11) AU-A-2021289617
(21) 2021289617 **(22)** 07.06.2021
(54) Lab-scale continuous semi-autogenous (SAG) grinding mill
(51) Int. Cl.
B02C 17/00 (2006.01)
B02C 17/18 (2006.01)
B02C 23/00 (2006.01)
B02C 23/02 (2006.01)
(87) WO2021/248233
(31) 63/037,892 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) STARKEY, John
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
(11) AU-A-2021338587
(21) 2021338587 **(22)** 29.12.2021
(54) High-vacuum multi-layer flexible heat-insulated pipe for high-temperature superconducting cable and manufacturing method thereof
(51) Int. Cl.
H01B 12/14 (2006.01)
G06F 30/20 (2020.01)
(31) 202110704662.7 **(32)** 24.06.21 **(33)** CN
(43) 19.01.2023
(72) JIAO, Ting; ZHANG, Xize; HAN, Yunwu; ZONG, Xihua; XIE, Wei; YANG, Jianping; ZHENG, Jian; WEI, Bengang; CHEN, Zhiyue; HUANG, Yijia; TIAN, Xiang
(74) Madderns Pty Ltd

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(71) State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
(11) AU-A-2021355610
(21) 2021355610 **(22)** 30.12.2021
(54) Current lead structure for high-temperature superconducting (HTS) cable and design method thereof
(51) Int. Cl.
H01B 12/02 (2006.01)
(31) 202110704661.2 **(32)** 24.06.21 **(33)** CN
202121414937.5 24.06.21 CN
(43) 19.01.2023
(72) JIAO, Ting; ZHANG, Xize; YANG, Jianping; ZHENG, Jian; ZHANG, Qiqi; HAN, Yunwu; ZHANG, Zhiyong; LI, Honglei; ZONG, Xihua; WEI, Bengang; HUANG, Yijia; CHEN, Zhiyue
(74) Madderns Pty Ltd

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(71) Stora Enso Oyj
(11) AU-A-2021301429
(21) 2021301429 **(22)** 02.07.2021
(54) A method for producing a carbon-silicon composite material powder, and a carbon-silicon composite material powder
(51) Int. Cl.
C01B 32/318 (2017.01)
C08H 7/00 (2011.01)
H01M 4/04 (2006.01)
H01M 4/133 (2010.01)
B29B 7/02 (2006.01)
B29C 48/03 (2019.01)
H01M 4/583 (2010.01)
H01M 10/058 (2010.01)
(87) WO2022/003633
(31) 2050837-0 **(32)** 03.07.20 **(33)** SE
(43) 06.01.2022
(72) OLSSON, Vilhelm; WACHTLER, Mario; WALTER, Stephan; MASSON, David; LÖNNEMARK, Lena
(74) Spruson & Ferguson

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(71) Storopack Hans Reichenecker GmbH
(11) AU-A-2021308370
(21) 2021308370 **(22)** 19.02.2021
(54) An embossed wrapping material
(51) Int. Cl.
B65D 81/03 (2006.01)
B31F 1/00 (2006.01)
(87) WO2022/012784
(31) 20 186 026.9 **(32)** 15.07.20 **(33)** EP
(43) 20.01.2022
(72) DEIS, Paul; SLOVENCIK, Jean-Marc
(74) Griffith Hack

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(71) String Bio Private Limited
(11) AU-A-2021279438
(21) 2021279438 **(22)** 28.05.2021
(54) Whole cell methanotroph based biostimulant compositions, methods and applications thereof
(51) Int. Cl.
A01N 63/20 (2020.01)
A01P 21/00 (2006.01)
C05F 11/08 (2006.01)
C12N 1/20 (2006.01)
(87) WO2021/240472
(31) 202041022403 **(32)** 28.05.20 **(33)** IN
(43) 02.12.2021
(72) SARMA, Rajeev Kumar; AVALAKKI, Uday Kashinath; BONDALAKUNTA, Ravindra Babu; UDAGATTI, Prashanth Muralidhar; KUMAR, Vinod Munisanjeevaiah Lakshmi Devi; SUBBIAN, Ezhilkani; GJ, Pavithra
(74) Davies Collison Cave Pty Ltd

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(71) Stryker European Operations Limited
(11) AU-A-2021278357
(21) 2021278357 **(22)** 28.05.2021
(54) Funnel hole for intramedullary nail
(51) Int. Cl.
A61B 17/72 (2006.01)
(87) WO2021/240242
(31) 63/031,701 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) ZANDER, Nils; HOWLING, Ilan; WIELAND, Manfred
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Stryker Leibinger GmbH & Co. KG; Technical University of Munich
(11) AU-A-2021288756
(21) 2021288756 **(22)** 08.06.2021
(54) Spatially-aware displays for computer-assisted interventions
(51) Int. Cl.
A61B 90/00 (2016.01)
A61B 34/10 (2016.01)
A61B 34/20 (2016.01)
(87) WO2021/250577
(31) 63/036,559 **(32)** 09.06.20 **(33)** US

PCT applications which have entered the National Phase - Name Index cont'd

(43) 16.12.2021
(72) NAVAB, Nassir; WINKLER, Alexander
(74) Davies Collison Cave Pty Ltd

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(71) Suez International
(11) AU-A-2021279241
(21) 2021279241 **(22)** 24.05.2021
(54) Detection of change in the physico-chemical composition of a liquid
(51) Int. Cl.
G16C 20/30 (2019.01)
C02F 1/00 (2006.01)
G01N 33/18 (2006.01)
G16C 20/90 (2019.01)
G16C 20/70 (2019.01)
(87) WO2021/239646
(31) 2005509 **(32)** 25.05.20 **(33)** FR
(43) 02.12.2021
(72) MARUEJOULS, Thibaud
(74) FB Rice Pty Ltd

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(71) Sumitomo Metal Mining Co., Ltd.
(11) AU-A-2022250148
(21) 2022250148 **(22)** 30.03.2022
(54) Lithium-containing solution production method
(51) Int. Cl.
C22B 3/24 (2006.01)
C22B 3/44 (2006.01)
C22B 26/12 (2006.01)
(87) WO2022/210847
(31) 2021-059031 **(32)** 31.03.21 **(33)** JP
(43) 06.10.2022
(72) IKEDA, Osamu; TAKANO, Masatoshi; ASANO, Satoshi; HEGURI, Shin-ichi; MATSUMOTO, Shin-ya; KUDO, Yohei; SENBA, Yusuke; MAEDA, Kyohei
(74) Davies Collison Cave Pty Ltd

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(71) Sumitomo Precision Products Co., Ltd.
(11) AU-A-2021303068
(21) 2021303068 **(22)** 24.06.2021
(54) Vibrating-type gyroscope element and angular rate sensor including same
(51) Int. Cl.
G01C 19/5684 (2012.01)
(87) WO2022/004563
(31) 2020-115612 **(32)** 03.07.20 **(33)** JP
(43) 06.01.2022
(72) UCHINO, Ryohei; MORIGUCHI, Takafumi; OKIMOTO, Naoki
(74) FB Rice Pty Ltd

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(71) Sunlighten, Inc.
(11) AU-A-2021288223
(21) 2021288223 **(22)** 11.06.2021
(54) Folding personal therapy chamber
(51) Int. Cl.
A61G 10/02 (2006.01)
A61H 33/06 (2006.01)
A61N 5/06 (2006.01)
(87) WO2021/252918
(31) 63/037,915 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) ZACK, Aaron Michael; FRANSON, Brian; PEARSON, Brett; KEMNITZER, Jonathon
(74) Madderns Pty Ltd

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(71) Suntory Holdings Limited
(11) AU-A-2021298432
(21) 2021298432 **(22)** 29.06.2021
(54) Non-alcoholic beer-flavored beverage
(51) Int. Cl.
A23L 2/00 (2006.01)
A23L 2/52 (2006.01)
(87) WO2022/004725
(31) 2020-114432 **(32)** 01.07.20 **(33)** JP
(43) 06.01.2022
(72) TAKAGI, Risa; SUDO, Saiko; IWASA, Keiko; OZAWA, Masaaki; KANDA, Naoto; MATSUO, Yoshihide
(74) Davies Collison Cave Pty Ltd

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(71) SURGE Therapeutics, Inc.
(11) AU-A-2021308083
(21) 2021308083 **(22)** 17.07.2021
(54) Preparations and compositions comprising polymer combination preparations
(51) Int. Cl.
A61K 8/02 (2006.01)
A61K 9/00 (2006.01)
A61K 9/06 (2006.01)
A61K 9/08 (2006.01)
A61K 9/10 (2006.01)
A61K 9/14 (2006.01)
(87) WO2022/016129
(31) 63/053,488 **(32)** 17.07.20 **(33)** US
63/108,861 02.11.20 US
(43) 20.01.2022
(72) GOLDBERG, Michael Solomon; KONOWICZ, Paul Adam; CHEN, Ivy Xiaoyu
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) SurgicEn SLU; Vitoria, C.
(11) AU-A-2021270982
(21) 2021270982 **(22)** 12.05.2021
(54) Spinal cord stimulation system
(51) Int. Cl.
A61N 1/05 (2006.01)
A61N 1/372 (2006.01)
G16H 50/50 (2018.01)
(87) WO2021/228916
(31) 20382387.7 **(32)** 12.05.20 **(33)** EP
(43) 18.11.2021
(72) GARCÍA VITORIA, Carles; DURÁ CANTERO, José Luis
(74) Spruson & Ferguson

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(71) Survivon Ltd
(11) AU-A-2021285714
(21) 2021285714 **(22)** 03.06.2021
(54) Article with pathogen inhibiting treatment
(51) Int. Cl.
C23C 14/06 (2006.01)
C23C 14/14 (2006.01)
C23C 16/06 (2006.01)
C23C 16/22 (2006.01)
D06M 11/83 (2006.01)
(87) WO2021/243416
(31) 2020901837 **(32)** 04.06.20 **(33)** AU
2021900010 05.01.21 AU
(43) 09.12.2021
(72) HUSSEY, Thomas; WHITBY, Scott
(74) XEFCO PTY LTD

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(71) Suzhou Qi Biodesign Biotechnology Company Limited
(11) AU-A-2021264887
(21) 2021264887 **(22)** 27.04.2021
(54) Methof for obtaining wheat with increased resistance to powdery mildew
(51) Int. Cl.
C12N 15/82 (2006.01)
A01H 1/00 (2006.01)
A01H 1/02 (2006.01)
A01H 5/00 (2018.01)
(87) WO2021/218961
(31) 202010343433.2 **(32)** 27.04.20 **(33)** CN
(43) 04.11.2021
(72) QIU, Jinlong; LI, Shengnan; GAO, Caixia; WANG, Yanpeng
(74) Davies Collison Cave Pty Ltd

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(71) Suzhou Rêveda Medical Co., Ltd.
(11) AU-A-2020453460
(21) 2020453460 **(22)** 22.06.2020
(54) Microneedle casting system and microneedle fabrication method
(51) Int. Cl.
A61M 37/00 (2006.01)
B29C 33/36 (2006.01)
B29C 33/42 (2006.01)
(87) WO2021/253465
(31) 202010549505.9 **(32)** 16.06.20 **(33)** CN
(43) 23.12.2021
(72) LIU, Long; YAN, Ping; HUANG, Yuan; QU, Qiuyu
(74) Davies Collison Cave Pty Ltd

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(71) Swift Health Systems Inc.
(11) AU-A-2021286568
(21) 2021286568 **(22)** 09.06.2021
(54) Orthodontic appliance with non-sliding archform
(51) Int. Cl.
A61C 7/28 (2006.01)
A61C 7/12 (2006.01)
A61C 7/14 (2006.01)
A61C 7/30 (2006.01)
A61C 7/34 (2006.01)
(87) WO2021/252675
(31) 63/037,974 **(32)** 11.06.20 **(33)** US
63/148,263 11.02.21 US
63/160,222 12.03.21 US
(43) 16.12.2021
(72) ODA, Todd; CHUNG, Alston; RODRIGUEZ, Andres; FARZIN-NIA, Farrokh
(74) FB Rice Pty Ltd

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(71) Swunning Sàrl
(11) AU-A-2021286816
(21) 2021286816 **(22)** 02.06.2021

PCT applications which have entered the National Phase - Name Index cont'd

(54) Foot worn aquatic fin
(51) Int. Cl.
A63B 31/11 (2006.01)
(87) WO2021/249851
(31) 20179588.7 **(32)** 11.06.20 **(33)** EP
(43) 16.12.2021
(72) STEINMANN, Thomas; HABIS-REUTINGER, Marc
(74) Madderns Pty Ltd

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(71) Syncona Investment Management Limited; The University of Bristol; Purespring Therapeutics Limited
(11) AU-A-2021300616
(21) 2021300616 **(22)** 30.06.2021
(54) Vector
(51) Int. Cl.
C12N 15/86 (2006.01)
A61P 13/12 (2006.01)
A61P 37/00 (2006.01)
(87) WO2022/003357
(31) 2010009.5 **(32)** 30.06.20 **(33)** GB
(43) 06.01.2022
(72) GRIFFITH, Alan William; STANCZUK, Lukas; KUZMUK, Valeryia; HOLLOWOOD, Chris; SCHMIDT, Dominic; SALEEM-UDDIN, Moin Ahson; WELSH, Gavin Iain
(74) Davies Collison Cave Pty Ltd

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(71) Tactogen Inc
(11) AU-A-2021289434
(21) 2021289434 **(22)** 08.06.2021
(54) Advantageous benzofuran compositions for mental disorders or enhancement
(51) Int. Cl.
A61K 31/34 (2006.01)
A61K 31/343 (2006.01)
C07D 307/78 (2006.01)
C07D 307/80 (2006.01)
(87) WO2021/252538
(31) 63/036,382 **(32)** 08.06.20 **(33)** US
63/046,496 30.06.20 US
63/048,616 06.07.20 US
63/149,223 13.02.21 US
63/165,731 24.03.21 US
63/055,897 23.07.20 US
63/062,434 06.08.20 US
(43) 16.12.2021
(72) BAGGOTT, Matthew
(74) Davies Collison Cave Pty Ltd

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(71) Takagi Co., Ltd.
(11) AU-A-2020448005
(21) 2020448005 **(22)** 14.05.2020
(54) Water faucet
(51) Int. Cl.
F16K 11/078 (2006.01)
(87) WO2021/229737
(43) 18.11.2021
(72) KOBAYASHI, Satoshi; HATA, Shogo
(74) Davies Collison Cave Pty Ltd

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(71) Taroko Door & Window Technologies, Inc.
(11) AU-A-2021274437
(21) 2021274437 **(22)** 18.03.2021
(54) Flat-type ventilation door-window structure
(51) Int. Cl.
E06B 3/50 (2006.01)
E05D 15/22 (2006.01)
E05D 15/48 (2006.01)
E06B 3/42 (2006.01)
E06B 3/44 (2006.01)
(87) WO2021/232917
(31) 202010424312.0 **(32)** 19.05.20 **(33)** CN
(43) 25.11.2021
(72) ZHANG, Deyou
(74) Collison & Co

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(71) TEC Austria GmbH
(11) AU-A-2021307611
(21) 2021307611 **(22)** 16.07.2021
(54) Apparatus and method for producing a fertiliser and/or fodder
(51) Int. Cl.
C02F 1/04 (2006.01)
C02F 11/13 (2019.01)
B01D 1/00 (2006.01)
C02F 1/32 (2006.01)
C02F 11/121 (2019.01)
F26B 3/18 (2006.01)
C02F 101/32 (2006.01)
C02F 103/00 (2006.01)
C02F 103/32 (2006.01)
(87) WO2022/013834
(31) 10 2020 119 041.7 **(32)** 17.07.20 **(33)** DE
(43) 20.01.2022
(72) KÜHLWEIN, Michael
(74) SOUTHERN CROSS INTELLECTUAL PROPERTY PTY LTD

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(71) Technip Process Technology, Inc.
(11) AU-A-2021282658
(21) 2021282658 **(22)** 04.06.2021
(54) Systems and methods for producing lignocellulosis alkanes
(51) Int. Cl.
C07C 1/20 (2006.01)
C07C 9/22 (2006.01)
C10G 1/06 (2006.01)
(87) WO2021/248019
(31) 16/892,947 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) MILLS, Kevin J.
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Technische Universität München
(11) AU-A-2021302717
(21) 2021302717 **(22)** 02.07.2021
(54) Modified terpene synthases and their use for production of pseudopterosin intermediates and/or pseudopterosins
(51) Int. Cl.
C12N 9/88 (2006.01)
C12P 5/00 (2006.01)
(87) WO2022/003167
(31) 20183732.5 **(32)** 02.07.20 **(33)** EP
(43) 06.01.2022
(72) RINGEL, Marion; BRÜCK, Thomas; REINBOLD, Markus; GARBE, Daniel
(74) RnB IP Pty Ltd

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(71) Technological Resources Pty Limited
(11) AU-A-2020449987
(21) 2020449987 **(22)** 29.05.2020
(54) Method and system for controlling drill functionality
(51) Int. Cl.
E21B 4/06 (2006.01)
E21B 7/02 (2006.01)
E21B 21/16 (2006.01)
E21B 44/00 (2006.01)
(87) WO2021/237268
(43) 02.12.2021
(72) INNES, Chris; LEEMAN, Joshua; HENNESSY, Ross
(74) Blackwattle IP

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(71) Technological Resources Pty Limited
(11) AU-A-2020450751
(21) 2020450751 **(22)** 29.05.2020
(54) Anti-stall automated track steer propulsion
(51) Int. Cl.
E21B 44/00 (2006.01)
B62D 11/00 (2006.01)
E02F 3/84 (2006.01)
E02F 9/20 (2006.01)
E21B 7/02 (2006.01)
E21C 41/26 (2006.01)
(87) WO2021/237267
(43) 02.12.2021
(72) INNES, Chris; CARTWRIGHT, Joel
(74) Blackwattle IP

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(71) Technological Resources Pty Ltd
(11) AU-A-2020449622
(21) 2020449622 **(22)** 29.05.2020
(54) Method and system for controlling a plurality of drill rigs
(51) Int. Cl.
E21B 44/00 (2006.01)
E21C 41/26 (2006.01)
H04W 4/00 (2018.01)
(87) WO2021/237266
(43) 02.12.2021
(72) INNES, Chris; JONES, Benjamin; COOK, Steven; LEEMAN, Joshua
(74) Blackwattle IP

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(71) TeneoOne, Inc.
(11) AU-A-2021263926
(21) 2021263926 **(22)** 29.04.2021
(54) Methods of treating multiple myeloma
(51) Int. Cl.
A61K 39/395 (2006.01)
A61P 35/02 (2006.01)
C07K 16/28 (2006.01)
A61K 39/00 (2006.01)
(87) WO2021/222616
(31) 63/017,597 **(32)** 29.04.20 **(33)** US
63/073,343 01.09.20 US
63/118,624 25.11.20 US
(43) 04.11.2021
(72) BUELOW, Ben; SCHELLENBERGER, Ute
(74) Spruson & Ferguson

PCT applications which have entered the National Phase - Name Index cont'd

(71) Tensar International Corporation
(11) AU-A-2021297964
(21) 2021297964 **(22)** 24.06.2021
(54) Multi-axial integral geogrid and methods of making and using same
(51) Int. Cl.
B32B 5/12 (2006.01)
B29C 55/12 (2006.01)
B29D 7/00 (2006.01)
B29D 28/00 (2006.01)
B32B 3/10 (2006.01)
B32B 5/02 (2006.01)
E01C 3/04 (2006.01)
(87) WO2021/262958
(31) 63/043,627 **(32)** 24.06.20 **(33)** US
63/154,209 26.02.21 US
63/154,588 26.02.21 US
17/355,843 23.06.21 US
(43) 30.12.2021
(72) CURSON, Andrew; JENKINS, Tom-Ross; WALLER, Andrew Edward; GALLAGHER, Daniel John; BAKER, Daniel Mark; TYAGI, Manoj Kumar; CAVANAUGH, Joseph
(74) AJ PARK

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(71) Tensar International Corporation
(11) AU-A-2021429140
(21) 2021429140 **(22)** 21.12.2021
(54) Multilayer integral geogrids having a cellular layer structure, and methods of making and using same
(51) Int. Cl.
B29C 48/21 (2019.01)
B29C 48/00 (2019.01)
B29C 48/18 (2019.01)
(87) WO2022/182412
(31) 63/154,209 **(32)** 26.02.21 **(33)** US
63/154,588 26.02.21 US
(43) 01.09.2022
(72) CAVANAUGH, Joseph; TYAGI, Manoj Kumar; BAKER, Daniel Mark; CURSON, Andrew; JENKINS, Tom-Ross; WALLER, Andrew Edward; GALLAGHER, Daniel John
(74) AJ PARK

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(71) Tessa Therapeutics Ltd.; The University of North Carolina at Chapel Hill
(11) AU-A-2021283714
(21) 2021283714 **(22)** 04.06.2021
(54) Treatment of CD30-positive cancer
(51) Int. Cl.
A61K 39/00 (2006.01)
A61K 31/41 (2006.01)
(87) WO2021/245249
(31) 63/035,104 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) MYO, Aung; HORAK, Ivan David; SERODY, Jonathan; DOTTI, Gianpietro; SAVOLDO, Barbara
(74) FB Rice Pty Ltd

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(71) The Armstrong Monitoring Corporation
(11) AU-A-2021284927
(21) 2021284927 **(22)** 04.06.2021
(54) System and method of calibrating sensing instruments
(51) Int. Cl.
G01D 18/00 (2006.01)
G01N 37/00 (2006.01)
(87) WO2021/243470
(31) 63/035,318 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) COOPER, Andrew; JOHNSON, Joanne; PICHETTE, Stephanie; SPRULES, Rodney; TOUPIN, Curtis; WATKINS, Aaron
(74) Griffith Hack

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(71) The Babraham Institute
(11) AU-A-2021281095
(21) 2021281095 **(22)** 28.05.2021
(54) Amniotic-like epithelial cell generation
(51) Int. Cl.
C12N 5/073 (2010.01)
(87) WO2021/240176
(31) 2008119.6 **(32)** 29.05.20 **(33)** GB
(43) 02.12.2021
(72) ROSTOVSKAYA, Maria; RUGG-GUNN, Peter
(74) Spruson & Ferguson

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(71) The Binding Site Group Limited
(11) AU-A-2021276617
(21) 2021276617 **(22)** 20.05.2021
(54) Method of identifying or characterising an immune response in a subject
(51) Int. Cl.
G01N 33/68 (2006.01)
(87) WO2021/234396
(31) 63/028,887 **(32)** 22.05.20 **(33)** US
2008887.8 11.06.20 GB
(43) 25.11.2021
(72) HARDING, Stephen; BARNIDGE, David; DE ROHAN, Charles; HUGHES, Richard; PASHA, Sabah; NORTH, Simon; PATEL, Roshani; WALLIS, Gregg
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) The Board of Regents of The University of Texas System
(11) AU-A-2021279051
(21) 2021279051 **(22)** 29.05.2021
(54) Network-based functional imaging output for evaluating multiple sclerosis
(51) Int. Cl.
A61B 5/055 (2006.01)
G01R 33/56 (2006.01)
G06N 3/02 (2006.01)
G16H 30/40 (2018.01)
G16H 50/20 (2018.01)
(87) WO2021/243379
(31) 62/704,808 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) CHIANG, Florence Yi Yi Ling; FOX, Peter T.; ROMERO, Rebecca S.; PRICE, Larry
(74) Davies Collison Cave Pty Ltd

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(71) The Board of Trustees of the Leland Stanford Junior University
(11) AU-A-2021297340
(21) 2021297340 **(22)** 25.06.2021
(54) Genetic elements driving circular RNA translation and methods of use
(51) Int. Cl.
A61K 39/39 (2006.01)
C12N 15/117 (2010.01)
C12N 15/67 (2006.01)
(87) WO2021/263124
(31) 63/043,964 **(32)** 25.06.20 **(33)** US
63/186,507 10.05.21 US
(43) 30.12.2021
(72) CHANG, Howard Y.; CHEN, Chun-Kan
(74) FPA Patent Attorneys Pty Ltd

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(71) The Broaster Company
(11) AU-A-2021287813
(21) 2021287813 **(22)** 07.06.2021
(54) Pressure fryer
(51) Int. Cl.
A47J 27/08 (2006.01)
A47J 37/12 (2006.01)
(87) WO2021/252370
(31) 16/895,413 **(32)** 08.06.20 **(33)** US
(43) 16.12.2021
(72) FREYMILLER, Otley D.; SPORS, Sean
(74) Clark Intellectual Property Pty Ltd

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(71) The Chinese University of Hong Kong; Grail, Inc.
(11) AU-A-2021310008
(21) 2021310008 **(22)** 13.07.2021
(54) Nuclease-associated end signature analysis for cell-free nucleic acids
(51) Int. Cl.
C12Q 1/6883 (2018.01)
(87) WO2022/012504
(31) 63/051,268 **(32)** 13.07.20 **(33)** US
(43) 20.01.2022
(72) LO, Yuk-Ming Dennis; CHIU, Rossa Wai Kwun; CHAN, Kwan Chee; JIANG, Peiyong; CHAN, Wing Yan; LAM, Wai Kei; HAN, Diana Siao Cheng; PENG, Wenlei; DING, Chen
(74) Griffith Hack

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(71) The Cleveland Clinic Foundation
(11) AU-A-2021284455
(21) 2021284455 **(22)** 04.06.2021
(54) Ambulatory fluid drainage and collection device
(51) Int. Cl.
A61M 27/00 (2006.01)
A61M 1/00 (2006.01)
A61M 39/22 (2006.01)
(87) WO2021/248035
(31) 63/035,035 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) NAGEL, Sean; SAMOREZOV, Sergey
(74) Gorton IP

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(71) The Government of the United States, as represented by the Secretary of the Army
(11) AU-A-2021277160
(21) 2021277160 **(22)** 05.05.2021
(54) Shigella-based minimal plasmid recombinant invasion construct
(51) Int. Cl.
A61K 39/00 (2006.01)
A61K 38/00 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

C12N 15/00 (2006.01)
C12N 15/70 (2006.01)
C12N 15/86 (2006.01)
(87) WO2021/236327
(31) 63/021,463 **(32)** 07.05.20 **(33)** US
(43) 25.11.2021
(72) VENKATESAN, Malabi M.; CHANDRASEKARAN, Lakshmi; SUVARNAPUNYA, Akamol E.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) The Protein Brewery B.V.
(11) AU-A-2021295115
(21) 2021295115 **(22)** 23.06.2021
(54) Novel food
(51) Int. Cl.
A23K 10/16 (2016.01)
A23K 20/147 (2016.01)
A23K 20/158 (2016.01)
A23K 20/163 (2016.01)
A23K 50/40 (2016.01)
A23L 13/40 (2016.01)
A23L 13/60 (2016.01)
(87) WO2021/259966
(31) 20181591.7 **(32)** 23.06.20 **(33)** EP
(43) 30.12.2021
(72) LEUNE, Elisa; KNOBEL, Kirsten; DE HAAN, Ap; DE LAAT, Wilhelmus Theodorus Antonius Maria
(74) FPA Patent Attorneys Pty Ltd

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(71) The Queen's University of Belfast
(11) AU-A-2021281063
(21) 2021281063 **(22)** 28.05.2021
(54) A method of diagnosing, prognosing and/or monitoring ovarian cancer
(51) Int. Cl.
C12Q 1/6886 (2018.01)
(87) WO2021/240001
(31) 2008113.9 **(32)** 29.05.20 **(33)** GB
(43) 02.12.2021
(72) MULLAN, Paul; BEIRNE, James P.; FEENEY, Laura; MCCLUGGAGE, W. Glenn; HARLEY, Ian JG
(74) WRAYS PTY LTD

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(71) Theraly Fibrosis, Inc.
(11) AU-A-2021284461
(21) 2021284461 **(22)** 04.06.2021
(54) Trail compositions with reduced immunogenicity
(51) Int. Cl.
C07K 14/705 (2006.01)
A61K 38/00 (2006.01)
C12N 15/62 (2006.01)
(87) WO2021/248065
(31) 63/035,472 **(32)** 05.06.20 **(33)** US
17/223,283 06.04.21 US
(43) 09.12.2021
(72) SOKOLOFF, Alex; ROSCHKE, Viktor; LEE, Kang Choon; LEE, Seulki; OH, Yumin
(74) RnB IP

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(71) Theratechnologies Inc.
(11) AU-A-2021306736
(21) 2021306736 **(22)** 30.06.2021
(54) Low-dose pharmaceutical compositions of GHRH analogs and uses thereof
(51) Int. Cl.
A61K 38/22 (2006.01)
A61K 31/19 (2006.01)
A61P 3/00 (2006.01)
A61P 3/04 (2006.01)
C07C 53/10 (2006.01)
C07K 14/575 (2006.01)
C07K 14/60 (2006.01)
(87) WO2022/006657
(31) 63/048,167 **(32)** 05.07.20 **(33)** US
(43) 13.01.2022
(72) MARSOLAIS, Christian; SHINGEL, Kirill; POTVIN, Diane
(74) Davies Collison Cave Pty Ltd

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(71) The Regents of the University of California
(11) AU-A-2021271016
(21) 2021271016 **(22)** 12.05.2021
(54) SARS-CoV2 neutralizing single domain antibody constructs
(51) Int. Cl.
C07K 16/10 (2006.01)
A61K 38/16 (2006.01)
A61P 31/12 (2006.01)
C07K 16/28 (2006.01)
C07K 16/32 (2006.01)
(87) WO2021/231651
(31) 63/061,928 **(32)** 06.08.20 **(33)** US
63/023,645 12.05.20 US
63/047,655 02.07.20 US
63/042,135 22.06.20 US
(43) 18.11.2021
(72) SAUNDERS, Reuben; BILLESBOELLE, Christian; WALTER, Peter; MANGLIK, Aashish; SCHOOF, Michael; FAUST, Bryan; HOPPE, Nicholas
(74) RnB IP Pty Ltd

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(71) The Toro Company
(11) AU-A-2021296123
(21) 2021296123 **(22)** 16.06.2021
(54) Turf management systems and methods
(51) Int. Cl.
G06Q 10/06 (2012.01)
G06Q 50/02 (2012.01)
(87) WO2021/262500
(31) 63/044,016 **(32)** 25.06.20 **(33)** US
(43) 30.12.2021
(72) FRIELL, Joshua Craig; OLKIN, Terry Michael
(74) Michael Buck IP

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(71) The Trustees of The University of Pennsylvania
(11) AU-A-2021267932
(21) 2021267932 **(22)** 07.05.2021
(54) Methods for detection of pathogenic infections using red blood cell-containing patient samples
(51) Int. Cl.
C12Q 1/6844 (2018.01)
C12Q 1/686 (2018.01)
C12Q 1/6869 (2018.01)
C12Q 1/6876 (2018.01)
C12Q 1/6888 (2018.01)
(87) WO2021/226475
(31) 63/022,181 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) MANGALMURTI, Nilam
(74) WRAYS PTY LTD

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(71) The United States of America, as represented by The Secretary, Department of Health and Human Services
(11) AU-A-2021271702
(21) 2021271702 **(22)** 13.05.2021
(54) RSV vaccine bearing one or more P gene mutations
(51) Int. Cl.
C07K 14/135 (2006.01)
A61K 38/16 (2006.01)
A61K 39/155 (2006.01)
C12N 7/04 (2006.01)
(87) WO2021/231767
(31) 63/023,949 **(32)** 13.05.20 **(33)** US
(43) 18.11.2021
(72) COLLINS, Peter L.; LE NOUEN, Cyril; BUCHHOLZ, Ursula J.
(74) James & Wells Intellectual Property

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(71) The United States of America, as represented by The Secretary, Department of Health and Human Services
(11) AU-A-2021285997
(21) 2021285997 **(22)** 04.06.2021
(54) Live attenuated respiratory syncytial virus
(51) Int. Cl.
A61K 39/12 (2006.01)
(87) WO2021/248086
(31) 63/035,617 **(32)** 05.06.20 **(33)** US
(43) 09.12.2021
(72) COLLINS, Peter; BUCHHOLZ, Ursula
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) The United States of America, as represented by the Secretary of Agriculture; Codagenix Inc.
(11) AU-A-2021282245
(21) 2021282245 **(22)** 26.05.2021
(54) Live attenuated strains of foot and mouth disease modified by deoptimization and uses thereof
(51) Int. Cl.
C12N 7/00 (2006.01)
A61K 39/00 (2006.01)
A61K 39/135 (2006.01)
A61P 31/12 (2006.01)
C07K 14/005 (2006.01)
(87) WO2021/242879
(31) 63/030,431 **(32)** 27.05.20 **(33)** US
17/330,545 26.05.21 US
(43) 02.12.2021
(72) DE LOS SANTOS, Teresa B.; RIEDER, Aida E.; DIAZ-SAN SEGUNDO, Fayna C.; KLOC, Anna; COLEMAN, John R.; MUELLER, Steffen; MEDINA, Gisselle N.
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

PCT applications which have entered the National Phase - Name Index cont'd

(71) The University Court of the University of Edinburgh
(11) AU-A-2021278349
(21) 2021278349 **(22)** 27.05.2021
(54) Method of producing macrophages
(51) Int. Cl.
C12N 5/0786 (2010.01)
(87) WO2021/240162
(31) 2007903.4 **(32)** 27.05.20 **(33)** GB
(43) 02.12.2021
(72) FORBES, Stuart; CAMPANA, Lara; DWYER, Benjamin; CAMPBELL, John; FRASER, Alasdair
(74) Spruson & Ferguson

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(71) The University of Melbourne
(11) AU-A-2021289612
(21) 2021289612 **(22)** 10.06.2021
(54) HIV-1 antibodies
(51) Int. Cl.
C07K 16/10 (2006.01)
A61K 39/42 (2006.01)
A61K 47/68 (2017.01)
C07K 14/005 (2006.01)
C12N 15/85 (2006.01)
(87) WO2021/248198
(31) 2020901907 **(32)** 10.06.20 **(33)** AU
2021901071 13.04.21 AU
(43) 16.12.2021
(72) PURCELL, Damian; HEYDARCHI, Behnaz
(74) FPA Patent Attorneys Pty Ltd

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(71) The University of Tokyo; Gellycle Co., Ltd.
(11) AU-A-2021268414
(21) 2021268414 **(22)** 06.05.2021
(54) Hemostatic polymer material kit
(51) Int. Cl.
A61L 31/14 (2006.01)
A61L 31/04 (2006.01)
A61L 31/06 (2006.01)
(87) WO2021/225144
(31) 2020-082474 **(32)** 08.05.20 **(33)** JP
(43) 11.11.2021
(72) SAKAI, Takamasa; MASUI, Kosuke; NARITA, Shinichi; KAMATA, Hiroyuki
(74) WRAYS PTY LTD

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(71) thyssenkrupp nucera AG & Co. KGaA
(11) AU-A-2021279136
(21) 2021279136 **(22)** 25.05.2021
(54) Electrolytic cell, method for operating a cell of this type and electrolyser
(51) Int. Cl.
C25B 1/04 (2021.01)
C25B 1/26 (2006.01)
C25B 9/75 (2021.01)
C25B 9/77 (2021.01)
C25B 15/08 (2006.01)
(87) WO2021/239674
(31) 10 2020 206 576.4 **(32)** 26.05.20 **(33)** DE
(43) 02.12.2021
(72) BÜRKIN, Cornelia; TOROS, Peter; POLCYN, Gregor Damian; AUSTENFELD, Sebastian; KLINK, Stefan; BRINKMANN, Jonas
(74) Griffith Hack

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(71) Tidel Engineering, L.P.; Taylor, D.; Lee, J.; Crawford, J.; Remis, S.; Shelton, C.; Tollifson, L.
(11) AU-A-2021259651
(21) 2021259651 **(22)** 26.04.2021
(54) Systems and methods for improving cash management system operation
(51) Int. Cl.
G06Q 20/38 (2012.01)
G06Q 20/40 (2012.01)
G07G 1/00 (2006.01)
(87) WO2021/217134
(31) 63/015,064 **(32)** 24.04.20 **(33)** US
(43) 28.10.2021
(72) TAYLOR, Darren; LEE, John T.; CRAWFORD, Jerry; REMIS, Steven; SHELTON, Christopher; TOLLIFSON, Laurie K.
(74) FB Rice Pty Ltd

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(71) Tiense Suikerraffinaderij NV; MEAM BV
(11) AU-A-2021313391
(21) 2021313391 **(22)** 23.07.2021
(54) System for controlling the growth of weeds
(51) Int. Cl.
A01M 21/04 (2006.01)
(87) WO2022/018255
(31) 20187733.9 **(32)** 24.07.20 **(33)** EP
(43) 27.01.2022
(72) GROFFILS, Carlo; GROFFILS, Karel
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Tiziana Life Sciences PLC
(11) AU-A-2021316723
(21) 2021316723 **(22)** 30.07.2021
(54) CD-3 antibodies for the treatment of coronavirus
(51) Int. Cl.
A61K 39/395 (2006.01)
A61K 31/573 (2006.01)
A61P 11/00 (2006.01)
A61P 31/14 (2006.01)
A61P 37/06 (2006.01)
C07K 16/28 (2006.01)
(87) WO2022/023566
(31) 63/058,978 **(32)** 30.07.20 **(33)** US
(43) 03.02.2022
(72) SHAILUBHAI, Kunwar; WEINER, Howard L.
(74) Spruson & Ferguson

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(71) Tizona Therapeutics
(11) AU-A-2021286650
(21) 2021286650 **(22)** 10.06.2021
(54) Bispecific immune cell engagers with binding specificity for HLA-G and another antigen
(51) Int. Cl.
C07K 16/28 (2006.01)
A61K 47/68 (2017.01)
A61P 35/00 (2006.01)
C07K 16/46 (2006.01)
(87) WO2021/252780
(31) 63/037,985 **(32)** 11.06.20 **(33)** US
(43) 16.12.2021
(72) BEERS, Courtney; CHU, Ling Hon Matthew; HODGES, Doug; KOCHEL, Christina M.
(74) K&L Gates

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(71) Top Intellectual Property Pty Ltd
(11) AU-A-2021289358
(21) 2021289358 **(22)** 10.06.2021
(54) Gutter installation and gutter mesh fastener
(51) Int. Cl.
E04D 13/064 (2006.01)
E04D 13/076 (2006.01)
(87) WO2021/248195
(31) 2020901911 **(32)** 10.06.20 **(33)** AU
2020101209 30.06.20 AU
(43) 16.12.2021
(72) JELACIC, Richard
(74) MEYER WEST IP

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(71) Topsoe A/S
(11) AU-A-2021313320
(21) 2021313320 **(22)** 15.07.2021
(54) A structured catalyst
(51) Int. Cl.
B01J 19/24 (2006.01)
(87) WO2022/017900
(31) 20187305.6 **(32)** 23.07.20 **(33)** EP
21182132.7 28.06.21 EP
(43) 27.01.2022
(72) MORTENSEN, Peter Mølgaard; WISMANN, Sebastian Thor; LARSEN, Kasper Emil; HANSEN, Anders Helbo
(74) Griffith Hack

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(71) Topsøe A/S
(11) AU-A-2021304436
(21) 2021304436 **(22)** 06.07.2021
(54) Porous material for removing impurities in feedstocks
(51) Int. Cl.
C10G 25/00 (2006.01)
B01J 20/02 (2006.01)
B01J 20/08 (2006.01)
B01J 20/28 (2006.01)
B01J 20/284 (2006.01)
B01J 21/04 (2006.01)
B01J 23/28 (2006.01)
B01J 23/30 (2006.01)
B01J 23/75 (2006.01)
B01J 23/755 (2006.01)
B01J 35/10 (2006.01)
(87) WO2022/008508
(31) 20184467.7 **(32)** 07.07.20 **(33)** EP
(43) 13.01.2022
(72) WEISE, Christian Frederik; LUTECKI, Michal; JOHANSSON, Frank Bartnik
(74) Griffith Hack

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(71) Trace Orthopedics, LLC
(11) AU-A-2021284392
(21) 2021284392 **(22)** 04.06.2021
(54) Dual-function anchor system
(51) Int. Cl.
A61B 17/04 (2006.01)
A61F 2/08 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

A61L 31/02 (2006.01)
A61L 31/04 (2006.01)
(87) WO2021/247960
(31) 63/034,895 **(32)** 04.06.20 **(33)** US
(43) 09.12.2021
(72) MORRISON, William B.; GREENSPAN, Adam J.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Translate Bio, Inc.
(11) AU-A-2021268028
(21) 2021268028 **(22)** 07.05.2021
(54) Generation of optimized nucleotide sequences
(51) Int. Cl.
G16B 30/20 (2019.01)
A61K 48/00 (2006.01)
C12N 15/85 (2006.01)
G16B 25/00 (2019.01)
(87) WO2021/226461
(31) 63/021,345 **(32)** 07.05.20 **(33)** US
(43) 11.11.2021
(72) TRAN, Khang Anh; DIAS, Anusha; DEROSA, Frank
(74) Griffith Hack

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(71) TripActions, Inc.
(11) AU-A-2021305184
(21) 2021305184 **(22)** 07.07.2021
(54) Methods and systems for dynamically generating contextual user interface elements
(51) Int. Cl.
G06F 9/451 (2018.01)
G06F 16/958 (2019.01)
G06F 21/31 (2013.01)
G06Q 10/02 (2012.01)
G06Q 50/14 (2012.01)
(87) WO2022/010995
(31) 63/050,544 **(32)** 10.07.20 **(33)** US
(43) 13.01.2022
(72) BARNETT, Connor Jennings; OZTURK, Ali; LECHNER, Alexander; MELISI, Carlo
(74) RnB IP Pty Ltd

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(71) Triplet Therapeutics, Inc.
(11) AU-A-2021267186
(21) 2021267186 **(22)** 07.05.2021
(54) Methods for the treatment of nucleotide repeat expansion disorders associated with MSH3 activity
(51) Int. Cl.
C12N 15/113 (2010.01)
A61K 31/713 (2006.01)
C12N 15/11 (2006.01)
(87) WO2021/226549
(31) 63/022,134 **(32)** 08.05.20 **(33)** US
(43) 11.11.2021
(72) BERMINGHAM, Nessan Anthony; BETTENCOURT, Brian R.; BIALEK, Peter Edward
(74) FB Rice Pty Ltd

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(71) Truvian Sciences, Inc.
(11) AU-A-2021275051
(21) 2021275051 **(22)** 18.05.2021
(54) Continuous scanning optical assembly and method of use thereof
(51) Int. Cl.
B01L 3/00 (2006.01)
G01N 21/25 (2006.01)
G01N 21/75 (2006.01)
G01N 33/50 (2006.01)
G01N 33/53 (2006.01)
(87) WO2021/236683
(31) 63/026,589 **(32)** 18.05.20 **(33)** US
(43) 25.11.2021
(72) TAYLOR, Roger; BOWEN, Michael Shane; BRABON, George; ADAMS, Michael; HAWKINS, Jeff
(74) FB Rice Pty Ltd

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(71) Truvian Sciences, Inc.
(11) AU-A-2021275773
(21) 2021275773 **(22)** 18.05.2021
(54) Capture assembly and method of use thereof
(51) Int. Cl.
G01N 21/25 (2006.01)
B23B 31/103 (2006.01)
C12M 1/34 (2006.01)
(87) WO2021/236675
(31) 63/026,581 **(32)** 18.05.20 **(33)** US
(43) 25.11.2021
(72) TAYLOR, Roger; HAWKINS, Jeff; RACHELE, Johnny Steve; TROTT, Daniel Adam; DELMENICO, Peter
(74) FB Rice Pty Ltd

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(71) TScan Therapeutics, Inc.; AHS Hospital Corp.
(11) AU-A-2021293931
(21) 2021293931 **(22)** 17.06.2021
(54) SARS-CoV-2 immunodominant peptides and uses thereof
(51) Int. Cl.
A61K 38/00 (2006.01)
A61K 38/08 (2019.01)
A61K 39/00 (2006.01)
C07K 7/00 (2006.01)
C07K 7/06 (2006.01)
C07K 14/725 (2006.01)
(87) WO2021/257770
(31) 63/056,849 **(32)** 27.07.20 **(33)** US
63/050,930 13.07.20 US
63/056,462 24.07.20 US
63/040,267 17.06.20 US
(43) 23.12.2021
(72) KULA, Tomasz; MACBEATH, Gavin; FERRETTI, Andrew, P.; WANG, Yifan
(74) RnB IP Pty Ltd

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(71) Tsinghua University; Nuctech Company Limited; NuRay Technology Co., Ltd.
(11) AU-A-2021323079
(21) 2021323079 **(22)** 02.07.2021
(54) Deflection electrode assembly, X-ray source, and X-ray imaging system
(51) Int. Cl.
H01J 35/04 (2006.01)
(87) WO2022/028173
(31) 202010772301.1 **(32)** 04.08.20 **(33)** CN
(43) 10.02.2022
(72) CHEN, Zhiqiang; TANG, Huaping; JIN, Xin
(74) AJ PARK

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(71) Tyco Fire Products LP
(11) AU-A-2021328739
(21) 2021328739 **(22)** 12.08.2021
(54) Dry pipe accelerator systems and methods
(51) Int. Cl.
A62C 35/66 (2006.01)
A62C 35/62 (2006.01)
A62C 35/64 (2006.01)
A62C 35/68 (2006.01)
(87) WO2022/038467
(31) 63/066,901 **(32)** 18.08.20 **(33)** US
(43) 24.02.2022
(72) WILLIAMS, James O.; MOTHA, Joshua
(74) Spruson & Ferguson

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(71) Tygrus LLC
(11) AU-A-2021262868
(21) 2021262868 **(22)** 03.05.2021
(54) Aqueous anti microbial composition useful as a therapeutic material
(51) Int. Cl.
A61K 9/00 (2006.01)
A61K 9/08 (2006.01)
A61K 33/04 (2006.01)
(87) WO2021/222884
(31) 63/019,258 **(32)** 01.05.20 **(33)** US
63/121,856 04.12.20 US
63/144,305 01.02.21 US
(43) 04.11.2021
(72) CARLSON, Lawrence; ATALA, Anthony; SCALERA, Patrick; YAKSIC, Andrew
(74) Griffith Hack

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(71) UCL Business Ltd.
(11) AU-A-2021288734
(21) 2021288734 **(22)** 09.06.2021
(54) Chimeric antigen receptor cell
(51) Int. Cl.
C12N 5/0783 (2010.01)
A61K 39/00 (2006.01)
C07K 14/705 (2006.01)
C07K 14/725 (2006.01)
C07K 16/28 (2006.01)
C07K 16/30 (2006.01)
(87) WO2021/250405
(31) 2008688.0 **(32)** 09.06.20 **(33)** GB
(43) 16.12.2021
(72) PULÉ, Martin; CHEUNG, Weng-Kit
(74) Davies Collison Cave Pty Ltd

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(71) Unilever Global IP Limited
(11) AU-A-2021299894
(21) 2021299894 **(22)** 17.06.2021
(54) A unit dose capsule
(51) Int. Cl.
C11D 11/00 (2006.01)
C11D 17/04 (2006.01)
(87) WO2022/002620
(31) PCT/CN2020/100209 **(32)** 03.07.20 **(33)** CN

PCT applications which have entered the National Phase - Name Index cont'd

20190812.6 13.08.20 EP
(43) 06.01.2022
(72) DAI, Mo; DONG, Siyu
(74) Davies Collison Cave Pty Ltd

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(71) Unilever Global IP Limited
(11) AU-A-2021299912
(21) 2021299912 **(22)** 22.06.2021
(54) Unit dose capsule
(51) Int. Cl.
C11D 11/00 (2006.01)
C11D 17/04 (2006.01)
(87) WO2022/002692
(31) PCT/CN2020/100181 **(32)** 03.07.20 **(33)** CN
20190805.0 13.08.20 EP
(43) 06.01.2022
(72) SHEN, Jun
(74) Davies Collison Cave Pty Ltd

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(71) Universidade do Minho
(11) AU-A-2021294422
(21) 2021294422 **(22)** 28.06.2021
(54) Composition for hair follicle modulation, methods and uses thereof
(51) Int. Cl.
A61K 8/44 (2006.01)
A61K 8/36 (2006.01)
A61K 8/42 (2006.01)
A61K 8/49 (2006.01)
A61K 8/60 (2006.01)
A61K 8/69 (2006.01)
A61K 31/00 (2006.01)
A61Q 5/06 (2006.01)
(87) WO2021/260667
(31) 116531 **(32)** 26.06.20 **(33)** PT
(43) 30.12.2021
(72) CAVACO PAULO, Artur Manuel; GONÇALVES DE MACEDO MATAMÁ, Maria Teresa; CHAVES COSTA, Cristiana Filipa; PACHECO FERNANDES, Bruno
(74) Golja Haines & Friend

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(71) Universitat Pompeu Fabra
(11) AU-A-2021298189
(21) 2021298189 **(22)** 28.06.2021
(54) Artificial RNAs for modulating RNA fragments
(51) Int. Cl.
C12N 15/113 (2010.01)
(87) WO2021/260233
(31) 20382569.0 **(32)** 26.06.20 **(33)** EP
(43) 30.12.2021
(72) DÍEZ ANTÓN, Juana María; DOTU RODRÍGUEZ, Ivan Javier; TALLÓ PARRA, Marc
(74) Spruson & Ferguson

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(71) Universite Claude Bernard Lyon 1; Institut National de la Sante et de la Recherche Medicale; Centre national de la recherche scientifique; Ecole Normale Superieure de Lyon; Commissariat à l'Énergie Atomique et aux Énergies Alternatives; Centre Leon Berard
(11) AU-A-2021306571
(21) 2021306571 **(22)** 06.07.2021
(54) Indole derivatives and uses thereof for treating a cancer
(51) Int. Cl.
A61P 35/00 (2006.01)
A61K 31/4439 (2006.01)
C07D 401/14 (2006.01)
C07D 403/14 (2006.01)
C07D 405/14 (2006.01)
C07D 413/14 (2006.01)
(87) WO2022/008475
(31) 20305767.4 **(32)** 06.07.20 **(33)** EP
(43) 13.01.2022
(72) BANCET, Alexandre; COCHET, Claude; FILHOL-COCHET, Odile; KRIMM, Isabelle; LOMBERGET, Thierry; LE BORGNE, Marc
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) University Health Network
(11) AU-A-2021272064
(21) 2021272064 **(22)** 10.05.2021
(54) Salt and crystal forms of 4-amino-5-(6-(4-methylpiperazin-1-yl)-1H-benzo(d)imidazol-2-yl)thieno(2,3-b)pyridin-6(7H)
(51) Int. Cl.
C07D 495/04 (2006.01)
A61K 31/194 (2006.01)
A61K 31/4365 (2006.01)
A61P 35/00 (2006.01)
C07C 59/255 (2006.01)
(87) WO2021/226707
(31) 63/022,867 **(32)** 11.05.20 **(33)** US
(43) 18.11.2021
(72) BRAY, Mark R.; LI, Sze-wan
(74) Davies Collison Cave Pty Ltd

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(71) University of Louisville Research Foundation, Inc.; University of Pittsburgh - of the Commonwealth System of Higher Education
(11) AU-A-2021276335
(21) 2021276335 **(22)** 18.05.2021
(54) Compositions and methods for prevention of Coronavirus infection
(51) Int. Cl.
C07K 14/00 (2006.01)
A61K 47/38 (2006.01)
A61M 11/00 (2006.01)
A61P 11/00 (2006.01)
A61P 11/02 (2006.01)
A61P 31/12 (2006.01)
(87) WO2021/236672
(31) 63/026,375 **(32)** 18.05.20 **(33)** US
63/070,375 26.08.20 US
(43) 25.11.2021
(72) PALMER, Kenneth E.; FUQUA, Joshua L.; ROHAN, Lisa Cencia; WANG, Lin; O'KEEFE, Barry R.
(74) Dentons Patent Attorneys Australasia Limited

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(71) University of Massachusetts
(11) AU-A-2021271004
(21) 2021271004 **(22)** 12.05.2021
(54) Modified guide RNAs for CRISPR genome editing
(51) Int. Cl.
C12N 15/113 (2010.01)
(87) WO2021/231606
(31) 63/023,313 **(32)** 12.05.20 **(33)** US
(43) 18.11.2021
(72) SONTHEIMER, Erik Joseph; KHVOROVA, Anastasia; WATTS, Jonathan Kenneth; AMRANI, Nadia; CHEN, Zexiang; HASSLER, Matthew; MORENO, Dimas Echeverria; ALTERMAN, Julia Frances; WOLFE, Scot; YAMADA, Ken; DEVI, Gitali; ZHANG, Han
(74) FB Rice Pty Ltd

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(71) University of Rochester
(11) AU-A-2021289600
(21) 2021289600 **(22)** 07.06.2021
(54) Encoding and expression of ACE-tRNAs
(51) Int. Cl.
C12N 15/11 (2006.01)
A61K 31/7088 (2006.01)
A61K 48/00 (2006.01)
(87) WO2021/252354
(31) 63/038,245 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) LUECK, John D.; PORTER, Joseph J.; THORNTON, Charles A.; KO, Wooree
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(71) UPL Limited
(11) AU-A-2021274959
(21) 2021274959 **(22)** 17.05.2021
(54) A stabilization system for an agrochemical composition
(51) Int. Cl.
A01N 25/22 (2006.01)
A01N 25/04 (2006.01)
A01N 25/30 (2006.01)
A01N 43/56 (2006.01)
(87) WO2021/234531
(31) 202021020816 **(32)** 18.05.20 **(33)** IN
(43) 25.11.2021
(72) BORANE, Mahesh Dharma; CHAVAN, Popat Ganesh; MORE, Pravin Namadeo
(74) Churchill Attorneys

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(71) Urteste S.A.
(11) AU-A-2021284151
(21) 2021284151 **(22)** 01.06.2021
(54) Novel diagnostic marker for prostate cancer
(51) Int. Cl.
G01N 33/574 (2006.01)
G01N 33/533 (2006.01)
G01N 33/542 (2006.01)
G01N 33/58 (2006.01)
(87) WO2021/246883
(31) 20461540.5 **(32)** 04.06.20 **(33)** EP
(43) 09.12.2021
(72) LESNER, Adam; GRUBA, Natalia
(74) Halfords IP

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(71) Valenti, D.
(11) AU-A-2021269584
(21) 2021269584 **(22)** 10.05.2021

PCT applications which have entered the National Phase - Name Index cont'd

(54) Method of testing tears as a biomarker for cannabinoids
(51) Int. Cl.
G01N 33/94 (2006.01)
B01L 3/02 (2006.01)
G01N 33/50 (2006.01)
(87) WO2021/231318
(31) 63/022,874 **(32)** 11.05.20 **(33)** US
(43) 18.11.2021
(72) VALENTI, Denise A.
(74) Griffith Hack

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(71) Vanderbilt University
(11) AU-A-2021293583
(21) 2021293583 **(22)** 18.06.2021
(54) Arylsulfonyl derivatives and their use as muscarinic acetylcholine receptor M5 inhibitors
(51) Int. Cl.
C07D 417/14 (2006.01)
A61K 31/4523 (2006.01)
A61K 31/454 (2006.01)
A61P 25/18 (2006.01)
C07D 405/14 (2006.01)
C07D 417/12 (2006.01)
C07D 471/04 (2006.01)
C07D 513/04 (2006.01)
(87) WO2021/257977
(31) 63/041,477 **(32)** 19.06.20 **(33)** US
(43) 23.12.2021
(72) FELTS, Andrew S.; HAN, Changho; CAPSTICK, Rory A.; ORSI, Douglas L.; WHOMBLE, David L.; LINDSLEY, Craig W.; CONN, P. Jeffrey
(74) Griffith Hack

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(71) VectivBio AG
(11) AU-A-2021286563
(21) 2021286563 **(22)** 09.06.2021
(54) Manufacture, formulation and dosing of apraglutide
(51) Int. Cl.
A61K 38/00 (2006.01)
C07K 14/435 (2006.01)
C07K 14/605 (2006.01)
(87) WO2021/252659
(31) 63/036,507 **(32)** 09.06.20 **(33)** US
63/074,119 03.09.20 US
63/157,083 05.03.21 US
(43) 16.12.2021
(72) FELDMAN, Gleb; BOLOGNANI, Federico
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Verdox, INC.
(11) AU-A-2021289475
(21) 2021289475 **(22)** 10.06.2021
(54) Electroswing adsorption cell with patterned electrodes for separation of gas components
(51) Int. Cl.
B01J 20/08 (2006.01)
B01J 20/10 (2006.01)
B01J 20/16 (2006.01)
(87) WO2021/252713
(31) 63/037,829 **(32)** 11.06.20 **(33)** US
63/128,358 21.12.20 US
(43) 16.12.2021
(72) VOSKIAN, Sahag; THOMAS-ALYEA, Karen; BURNS, Elizabeth; POPERE, Bhooshan
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Verseau Therapeutics, Inc.
(11) AU-A-2021281356
(21) 2021281356 **(22)** 28.05.2021
(54) Anti-VSIG4 compositions and methods for modulating myeloid cell inflammatory phenotypes and uses thereof
(51) Int. Cl.
C07K 16/30 (2006.01)
A61P 35/00 (2006.01)
C12N 15/35 (2006.01)
(87) WO2021/243169
(31) 63/032,337 **(32)** 29.05.20 **(33)** US
(43) 02.12.2021
(72) NOVOBRANTSEVA, Tatiana I.; FELDMAN, Igor; SAZINSKY, Stephen L.; CULYBA, Elizabeth; NGUYEN, Phuong Anh; RAZLOG, Maja
(74) Davies Collison Cave Pty Ltd

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(71) Vertex Pharmaceuticals Incorporated
(11) AU-A-2021286666
(21) 2021286666 **(22)** 11.06.2021
(54) Inhibitors of APOL1 and use of the same
(51) Int. Cl.
C07D 209/14 (2006.01)
A61K 31/404 (2006.01)
A61P 13/12 (2006.01)
C07D 403/06 (2006.01)
C07D 403/12 (2006.01)
C07D 407/12 (2006.01)
C07D 409/12 (2006.01)
C07D 413/12 (2006.01)
C07D 417/12 (2006.01)
(87) WO2021/252849
(31) 63/038,276 **(32)** 12.06.20 **(33)** US
(43) 16.12.2021
(72) CAO, Jingrong; COME, Jon H.; DAKIN, Leslie A.; DENIS, Francois; DORSCH, Warren A.; FORTIER, Anne; HAMEL, Martine; KRUEGER, Elaine B.; LEDFORD, Brian; MALTAIS, Francois; NANTHAKUMAR, Suganthini S.; NICOLAS, Olivier; SAYEGH, Camil E.; SENTER, Timothy J.; WANG, Tiansheng
(74) AJ PARK

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(71) Vertex Pharmaceuticals Incorporated
(11) AU-A-2021286728
(21) 2021286728 **(22)** 11.06.2021
(54) Inhibitors of APOL1 and use of the same
(51) Int. Cl.
C07D 209/08 (2006.01)
A61K 31/404 (2006.01)
A61P 13/00 (2006.01)
C07D 403/12 (2006.01)
C07D 407/12 (2006.01)
C07D 409/12 (2006.01)
C07D 413/12 (2006.01)
(87) WO2021/252859
(31) 63/038,275 **(32)** 12.06.20 **(33)** US
63/040,183 17.06.20 US
(43) 16.12.2021
(72) CAO, Jingrong; COME, Jon H.; DAKIN, Leslie A.; DENIS, Francois; DORSCH, Warren A.; FORTIER, Anne; HAMEL, Martine; KRUEGER, Elaine B.; LEDFORD, Brian; MALTAIS, Francois; NANTHAKUMAR, Suganthini S.; NICOLAS, Olivier; SAYEGH, Camil E.; SENTER, Timothy J.; WANG, Tiansheng
(74) AJ PARK

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(71) Vertex Pharmaceuticals Incorporated
(11) AU-A-2021293174
(21) 2021293174 **(22)** 14.06.2021
(54) Complement Factor I-related compositions and methods
(51) Int. Cl.
C12N 9/64 (2006.01)
C12N 15/57 (2006.01)
C12N 15/62 (2006.01)
(87) WO2021/257480
(31) 63/038,874 **(32)** 14.06.20 **(33)** US
63/122,437 07.12.20 US
63/124,698 11.12.20 US
63/179,160 23.04.21 US
(43) 23.12.2021
(72) BLOUSE, Grant E.; KUMAR, Brajesh; KNUDSEN, Tom; JENSEN, Jan Kristian; OLDENBURG, Emil; SCHAR, Christine René; TRAYLOR, Matthew John; FURFINE, Eric Steven; WAY, Jeffrey Charles; JENDROSZEK, Agnieszka; SANDIKCI, Arzu; MCGUIRE, Jim; IYER, Shyam Rajan; LE MOAN, Natacha
(74) RnB IP Pty Ltd

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(71) Vir Biotechnology, Inc.
(11) AU-A-2021288203
(21) 2021288203 **(22)** 11.06.2021
(54) Antibody therapies for SARS-CoV-2 infection
(51) Int. Cl.
C07K 16/10 (2006.01)
A61P 31/14 (2006.01)
(87) WO2021/252878
(31) 63/038,738 **(32)** 12.06.20 **(33)** US
63/066,966 18.08.20 US
63/141,430 25.01.21 US
63/159,404 10.03.21 US
63/186,055 07.05.21 US
63/196,089 02.06.21 US
(43) 16.12.2021
(72) ALEXANDER, Elizabeth; YEH, Wendy; PANG, Phillip S.; HONG, David; CONNOLLY, Lynn E.; MOGALIAN, Erik; SAGAR, Jennifer; SMITHEY, Megan
(74) Spruson & Ferguson

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(71) Viro-Gen (Pty) Ltd
(11) AU-A-2021304479
(21) 2021304479 **(22)** 09.07.2021
(54) Compositions and methods useful for the prevention and/or treatment of disease in mammals
(51) Int. Cl.
A61K 38/17 (2006.01)

PCT applications which have entered the National Phase - Name Index cont'd

A61K 38/18 (2006.01)
A61K 39/00 (2006.01)
A61K 48/00 (2006.01)
A61P 31/12 (2006.01)
(87) WO2022/009165
(31) 2020/03850 **(32)** 09.07.20 **(33)** ZA
2020/04008 09.07.20 ZA
(43) 13.01.2022
(72) SMIT, Michelle Olga Patricia Giesteira Da Silva
(74) James & Wells Intellectual Property

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(71) Virustatic Ltd.; Hope, P.
(11) AU-A-2021276913
(21) 2021276913 **(22)** 06.07.2021
(54) Anti-viral lactoferrin facemask
(51) Int. Cl.
D06M 15/15 (2006.01)
A41D 13/11 (2006.01)
A61K 38/40 (2006.01)
D06M 16/00 (2006.01)
(87) WO2021/234549
(31) 63/028,073 **(32)** 21.05.20 **(33)** US
17/322,815 17.05.21 US
(43) 25.11.2021
(72) HOPE, Paul
(74) LAMINAR IP PTY LTD

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(71) Vita Zahnfabrik H. Rauter GmbH & Co. KG
(11) AU-A-2021310902
(21) 2021310902 **(22)** 07.07.2021
(54) Method for defining different layer elements of an artificial tooth element
(51) Int. Cl.
A61C 13/00 (2006.01)
A61C 13/08 (2006.01)
A61C 13/09 (2006.01)
(87) WO2022/017788
(31) 20186640.7 **(32)** 20.07.20 **(33)** EP
(43) 27.01.2022
(72) KIRSTEN, Armin
(74) Halfords IP

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(71) Vivo Mobile Communication Co., Ltd.
(11) AU-A-2021262976
(21) 2021262976 **(22)** 26.04.2021
(54) Method and apparatus for determining frequency domain offset, and communication device and readable storage medium
(51) Int. Cl.
H04W 56/00 (2009.01)
(87) WO2021/218909
(31) 202010368255.9 **(32)** 30.04.20 **(33)** CN
(43) 04.11.2021
(72) HONG, Qi; LI, Gen
(74) Adams Pluck

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(71) Vivo Mobile Communication Co., Ltd.
(11) AU-A-2021263694
(21) 2021263694 **(22)** 26.04.2021
(54) Link state switching method and communication device
(51) Int. Cl.
H04W 40/22 (2009.01)
H04B 7/155 (2006.01)
(87) WO2021/218910
(31) 202010367097.5 **(32)** 30.04.20 **(33)** CN
(43) 04.11.2021
(72) PENG, Shuyan
(74) Adams Pluck

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(71) Vivo Mobile Communication Co., Ltd.
(11) AU-A-2021272214
(21) 2021272214 **(22)** 12.05.2021
(54) Information sending method, resource processing method, apparatus, and electronic device
(51) Int. Cl.
H04W 72/04 (2009.01)
(87) WO2021/228132
(31) 202010399103.5 **(32)** 12.05.20 **(33)** CN
(43) 18.11.2021
(72) LIU, Shixiao; JI, Zichao; PENG, Shuyan
(74) Adams Pluck

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(71) Vivo Mobile Communication Co., Ltd.
(11) AU-A-2021280023
(21) 2021280023 **(22)** 24.05.2021
(54) Channel information processing method and apparatus
(51) Int. Cl.
H04B 7/0413 (2017.01)
H04B 7/06 (2006.01)
(87) WO2021/238850
(31) 202010470360.3 **(32)** 28.05.20 **(33)** CN
(43) 02.12.2021
(72) LI, Jianjun; SONG, Yang; SUN, Peng
(74) Adams Pluck

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(71) Volvo Autonomous Solutions AB
(11) AU-A-2020456261
(21) 2020456261 **(22)** 30.06.2020
(54) Method for mapping, mapping device, computer program, computer readable medium, and vehicle
(51) Int. Cl.
G08G 1/01 (2006.01)
G01C 21/26 (2006.01)
(87) WO2022/003838
(43) 06.01.2022
(72) GEIGER, Simon
(74) Griffith Hack

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(71) VSPC Ltd
(11) AU-A-2021287454
(21) 2021287454 **(22)** 08.06.2021
(54) Method for making lithium metal phosphates
(51) Int. Cl.
H01M 4/1397 (2010.01)
C01B 25/30 (2006.01)
C01B 25/45 (2006.01)
H01M 4/136 (2010.01)
H01M 4/58 (2010.01)
(87) WO2021/248181
(31) 2020203801 **(32)** 09.06.20 **(33)** AU
(43) 16.12.2021
(72) SHRESTHA, Aabhash; WORSLEY, John
(74) FB Rice Pty Ltd

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(71) vTv Therapeutics LLC
(11) AU-A-2021289309
(21) 2021289309 **(22)** 07.06.2021
(54) Salts or co-crystals of {2-(3-cyclohexyl-3-(trans-4-propoxy-cyclohexyl)-ureido)-thiazol-5-ylsulfanyl}-acetic acid and uses thereof
(51) Int. Cl.
A61P 3/06 (2006.01)
A61P 3/10 (2006.01)
A61P 9/12 (2006.01)
C07D 277/54 (2006.01)
(87) WO2021/252311
(31) 63/035,996 **(32)** 08.06.20 **(33)** US
(43) 16.12.2021
(72) TENG, Jing; GIGNAC, Nathan E.
(74) FB Rice Pty Ltd

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(71) vTv Therapeutics LLC
(11) AU-A-2021289591
(21) 2021289591 **(22)** 07.06.2021
(54) Crystalline forms of {2-(3-cyclohexyl-3-(trans-4-propoxy- cyclohexyl)-ureido)-thiazol-5-ylsulfanyl} - acetic acid and and uses thereof
(51) Int. Cl.
A61P 3/06 (2006.01)
A61P 3/10 (2006.01)
A61P 9/12 (2006.01)
C07D 277/54 (2006.01)
(87) WO2021/252309
(31) 63/035,994 **(32)** 08.06.20 **(33)** US
(43) 16.12.2021
(72) TENG, Jing; CAO, Yizheng
(74) FB Rice Pty Ltd

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(71) VulcanForms Inc.
(11) AU-A-2021306181
(21) 2021306181 **(22)** 24.06.2021
(54) Optical zoom in additive manufacturing
(51) Int. Cl.
B22F 10/00 (2021.01)
B22F 12/00 (2021.01)
B33Y 30/00 (2015.01)
B33Y 40/00 (2020.01)
(87) WO2022/010657
(31) 63/049,353 **(32)** 08.07.20 **(33)** US
(43) 13.01.2022
(72) VON DADELSZEN, Michael; AGGARWAL, Raghav; SUN, Hongqing
(74) Spruson & Ferguson

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(71) W. L. Gore & Associates, Inc.
(11) AU-A-2021286653
(21) 2021286653 **(22)** 10.06.2021
(54) Multi-branch intraluminal devices and methods of making and using same
(51) Int. Cl.
A61F 2/07 (2013.01)
(87) WO2021/252785
(31) 63/037,115 **(32)** 10.06.20 **(33)** US
(43) 16.12.2021
(72) BIRDNO, Merrill J.; KILGROW, Bret J.; MAJOLAGBE, Kehinde Adeitunu; WARD, Derek M.; YOUNG, Patrick S.
(74) Griffith Hack

PCT applications which have entered the National Phase - Name Index cont'd

(71) Wageningen Universiteit
(11) AU-A-2021299904
(21) 2021299904 **(22)** 21.06.2021
(54) Amuc-1100 polypeptide variants for effecting immune signalling and/or affecting intestinal barrier function and/or modulating metabolic status
(51) Int. Cl.
C07K 14/195 (2006.01)
A61P 3/06 (2006.01)
A61P 3/08 (2006.01)
(87) WO2022/002660
(31) 2025968 **(32)** 01.07.20 **(33)** NL
(43) 06.01.2022
(72) DE VOS, Willem Meindert; TYTGAT, Hanne Lore Paula; SWARTS, Daniël Christianus
(74) Griffith Hack

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(71) WANdisco, Inc.
(11) AU-A-2021290111
(21) 2021290111 **(22)** 05.04.2021
(54) Methods, devices and systems for migrating an active filesystem
(51) Int. Cl.
G06F 17/00 (2019.01)
(87) WO2021/252055
(31) 16/898,328 **(32)** 10.06.20 **(33)** US
(43) 16.12.2021
(72) AAHLAD, Yeturu; THURIMELLA, Ramakrishna; MACKEY, Christopher
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Washington University
(11) AU-A-2021285823
(21) 2021285823 **(22)** 01.06.2021
(54) Coronavirus vaccine constructs and methods of making and using same
(51) Int. Cl.
A61K 39/235 (2006.01)
A61P 37/04 (2006.01)
C12N 15/09 (2006.01)
C12N 15/86 (2006.01)
C12N 15/861 (2006.01)
(87) WO2021/247567
(31) 63/032,815 **(32)** 01.06.20 **(33)** US
63/051,103 13.07.20 US
63/162,417 17.03.21 US
(43) 09.12.2021
(72) CURIEL, David; DIAMOND, Michael; DMITRIEV, Igor; HASSAN, Ahmed
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Weber-Stephen Products LLC
(11) AU-A-2021391272
(21) 2021391272 **(22)** 08.10.2021
(54) Handle-integrated cooking surface lighting for lids of grills
(51) Int. Cl.
A47J 37/07 (2006.01)
A47J 37/06 (2006.01)
F21S 9/02 (2006.01)
F21V 5/04 (2006.01)
F21V 23/00 (2015.01)
F21V 23/04 (2006.01)
F21V 33/00 (2006.01)
F21Y 115/10 (2016.01)
(87) WO2022/119639
(31) 63/120,530 **(32)** 02.12.20 **(33)** US
63/203,656 27.07.21 US
17/472,254 10.09.21 US
(43) 09.06.2022
(72) MASEK, Douglas W.; NANOS Jr., Nicholas M.; CROWELL, Chris; D'AMBROSIO, Mark; KECLIK, James; SCHNELL JR., Thomas J.; BERLAND, Kerry S.; GRAEF, Michael A.; MELLAS, Nathan
(74) WRAYS PTY LTD

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(71) Weber-Stephen Products LLC
(11) AU-A-2021392592
(21) 2021392592 **(22)** 08.10.2021
(54) Adjustable warming racks for cookboxes of grills
(51) Int. Cl.
A47J 37/06 (2006.01)
A47J 37/07 (2006.01)
(87) WO2022/119640
(31) 63/120,535 **(32)** 02.12.20 **(33)** US
63/203,923 04.08.21 US
17/472,271 10.09.21 US
(43) 09.06.2022
(72) MASEK, Douglas W.; KECLIK, James; GRAEF, Michael A.; MATTHEWS, Brian; MELLAS, Nathan; NANOS Jr., Nicholas N.
(74) WRAYS PTY LTD

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(71) Well Innovation AS
(11) AU-A-2021282888
(21) 2021282888 **(22)** 25.05.2021
(54) Pulling tool
(51) Int. Cl.
E21B 23/14 (2006.01)
(87) WO2021/246875
(31) 20200652 **(32)** 03.06.20 **(33)** NO
(43) 09.12.2021
(72) AKSELBERG, Frank Ove
(74) Caska Intellectual Property Pty Ltd

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(71) Wenzhou Medical University
(11) AU-A-2020458040
(21) 2020458040 **(22)** 28.12.2020
(54) Three-dimensional choroidal vessel imaging and quantitative analysis method and apparatus based on optical coherence tomography system
(51) Int. Cl.
G06T 7/11 (2017.01)
(87) WO2022/007352
(31) 202010660715.5 **(32)** 10.07.20 **(33)** CN
(43) 13.01.2022
(72) ZHOU, Xiangtian; SHEN, Meixiao; WU, Hao; CHEN, Sisi; JIN, Zi
(74) Madderns Pty Ltd

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(71) WestRock MWV, LLC
(11) AU-A-2021331083
(21) 2021331083 **(22)** 25.08.2021
(54) Thermoformable ovenable recyclable coated cellulosic board, ovenable recyclable coated cellulosic board food vessels thermoformed therefrom, and methods for manufacturing and using thereof
(51) Int. Cl.
D21H 19/82 (2006.01)
D21H 19/84 (2006.01)
D21H 21/16 (2006.01)
D21H 27/10 (2006.01)
(87) WO2022/046934
(31) 63/072,305 **(32)** 31.08.20 **(33)** US
(43) 03.03.2022
(72) CALVERT, Barry G.
(74) Spruson & Ferguson

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(71) WestRock Packaging Systems, LLC
(11) AU-A-2021284367
(21) 2021284367 **(22)** 03.06.2021
(54) Carton and blank therefor
(51) Int. Cl.
B65D 71/30 (2006.01)
(87) WO2021/247835
(31) 63/034,019 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) BALL, Nathaniel B.
(74) Spruson & Ferguson

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(71) Wine Crush Market BC Ltd. DBA Winecrush
(11) AU-A-2021274175
(21) 2021274175 **(22)** 25.05.2021
(54) System for integration into a fruit processing facility
(51) Int. Cl.
C12G 1/00 (2019.01)
C12G 1/02 (2006.01)
C12G 1/022 (2006.01)
C12G 3/00 (2019.01)
C12M 1/00 (2006.01)
(87) WO2021/234680
(31) 16/882,317 **(32)** 22.05.20 **(33)** US
(43) 25.11.2021
(72) STRACHAN, Gary; BRODDY, William Leslie
(74) Alder IP Pty Ltd

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(71) Wirepas Oy
(11) AU-A-2021287316
(21) 2021287316 **(22)** 08.06.2021
(54) Resource scheduling system for a wireless communication network
(51) Int. Cl.
H04W 72/04 (2009.01)
H04W 28/18 (2009.01)
H04W 72/12 (2009.01)
H04W 84/18 (2009.01)
(87) WO2021/250321
(31) 20205602 **(32)** 10.06.20 **(33)** FI
(43) 16.12.2021
(72) PIRSKANEN, Juho; KASEVA, Ville
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Wisk Aero LLC
(11) AU-A-2021283348
(21) 2021283348 **(22)** 02.06.2021
(54) Battery with selective phase change features
(51) Int. Cl.
H01M 10/659 (2014.01)

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H01M 10/613 (2014.01)
H01M 10/6552 (2014.01)
H01M 10/6569 (2014.01)
(87) WO2021/247778
(31) 63/034,246 **(32)** 03.06.20 **(33)** US
(43) 09.12.2021
(72) HOM, Lewis Romeo
(74) Davies Collison Cave Pty Ltd

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(71) Worxsafe AB
(11) AU-A-2020446553
(21) 2020446553 **(22)** 07.05.2020
(54) A safety barrier
(51) Int. Cl.
E01F 15/08 (2006.01)
(87) WO2021/223869
(43) 11.11.2021
(72) JOHANSSON, Pär
(74) WRAYS PTY LTD

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(71) Wuxi Boton Iot Technology Co., Ltd.
(11) AU-A-2021285876
(21) 2021285876 **(22)** 19.03.2021
(54) Conveying line with infrared and visual combined tearing and damage monitoring device, and monitoring means thereof
(51) Int. Cl.
B65G 43/02 (2006.01)
(87) WO2021/244106
(31) 202010494164.X **(32)** 03.06.20 **(33)** CN
(43) 09.12.2021
(72) ZHAO, Cheng; GAO, Canhong; YUAN, Jiachun; LIU, Jianguo; ZHAI, Guijin; ZUO, Yi; MA, Qingfeng; WANG, Yin
(74) MOHAN MURALI KODIVEL

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(71) Xuzhou Heavy Machinery Co., Ltd.
(11) AU-A-2020446598
(21) 2020446598 **(22)** 06.05.2020
(54) Hydraulic steering system and mobile crane
(51) Int. Cl.
B62D 5/06 (2006.01)
B62D 5/09 (2006.01)
(87) WO2021/223120
(43) 11.11.2021
(72) HU, Xiaodong; ZHU, Tao; YANG, Jianchun; REN, Xiuzhi; DU, Xiaojie
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) XWpharma Ltd.
(11) AU-A-2021292406
(21) 2021292406 **(22)** 17.06.2021
(54) Controlled release granulations of water-soluble active pharmaceutical ingredients
(51) Int. Cl.
A61K 9/50 (2006.01)
A61K 31/00 (2006.01)
(87) WO2021/257886
(31) 63/059,514 **(32)** 31.07.20 **(33)** US
63/040,780 18.06.20 US
(43) 23.12.2021
(72) KARABORNI, Sami; CANAFAX, Daniel M.; XIANG, Jia-Ning; TIEN, James; KIRKLAND, Nicolas D.; XIANG, William W.
(74) Minter Ellison

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(71) XWpharma Ltd.
(11) AU-A-2021293941
(21) 2021293941 **(22)** 17.06.2021
(54) Pharmaceutical granulations of water-soluble active pharmaceutical ingredients
(51) Int. Cl.
A61K 9/16 (2006.01)
A61K 31/00 (2006.01)
(87) WO2021/257832
(31) 63/040,780 **(32)** 18.06.20 **(33)** US
(43) 23.12.2021
(72) XIANG, Jia-Ning; KARABORNI, Sami; XIANG, William W.; CANAFAX, Daniel M.
(74) Minter Ellison

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(71) Yale University
(11) AU-A-2021273980
(21) 2021273980 **(22)** 21.05.2021
(54) Methods and compositions to treat vascular leak
(51) Int. Cl.
A61K 38/00 (2006.01)
A61K 39/395 (2006.01)
C07K 14/00 (2006.01)
C07K 14/435 (2006.01)
C07K 16/46 (2006.01)
C07K 19/00 (2006.01)
(87) WO2021/237159
(31) 63/029,062 **(32)** 22.05.20 **(33)** US
(43) 25.11.2021
(72) SIMONS, Michael; CORTI, Federico
(74) Spruson & Ferguson

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(71) Yeda Research and Development Co. Ltd.; The Walter and Eliza Hall Institute of Medical Research
(11) AU-A-2021270901
(21) 2021270901 **(22)** 13.05.2021
(54) De-novo designed transmembrane polypeptides and their uses in cellular immunotherapy
(51) Int. Cl.
A61K 35/17 (2015.01)
C07K 14/725 (2006.01)
C07K 19/00 (2006.01)
(87) WO2021/229581
(31) 274696 **(32)** 14.05.20 **(33)** IL
(43) 18.11.2021
(72) FLEISHMAN, Sarel; ELAZAR, Assaf; WEINSTEIN, Jonathan Y.; CALL, Melissa J.; CALL, Matthew E.; CHANDLER, Nicholas J.
(74) The Walter and Eliza Hall Institute of Medical Research

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(71) Yissum Research Development Company of the Hebrew University of Jerusalem Ltd.
(11) AU-A-2021265602
(21) 2021265602 **(22)** 02.05.2021
(54) E protein channel blockers and ORF3 inhibitors as anti-covid-19 agents
(51) Int. Cl.
A61K 31/13 (2006.01)
A61K 31/155 (2006.01)
A61K 31/357 (2006.01)
A61K 31/375 (2006.01)
A61K 31/40 (2006.01)
A61K 31/433 (2006.01)
A61K 31/4427 (2006.01)
A61K 31/495 (2006.01)
A61K 31/506 (2006.01)
A61K 31/517 (2006.01)
A61K 31/64 (2006.01)
A61K 31/704 (2006.01)
A61K 31/7072 (2006.01)
A61K 31/7076 (2006.01)
A61K 31/708 (2006.01)
(87) WO2021/220284
(31) 63/018,598 **(32)** 01.05.20 **(33)** US
63/117,619 24.11.20 US
(43) 04.11.2021
(72) ARKIN, Isaiah; SINGH TOMAR, Prabhat Pratap; KRUGLIAK, Miriam
(74) Collison & Co

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(71) Y-mAbs Therapeutics, Inc.
(11) AU-A-2021292231
(21) 2021292231 **(22)** 14.06.2021
(54) CD38 antibodies for the treatment of human diseases
(51) Int. Cl.
C07K 16/28 (2006.01)
A61P 35/00 (2006.01)
A61P 37/02 (2006.01)
(87) WO2021/254574
(31) 63/040,220 **(32)** 17.06.20 **(33)** US
(43) 23.12.2021
(72) MAHIUDDIN, Ahmed; WANG, Linlin; HOSEINI, Sayed Shahabuddin; BAADSGAARD, Ole; J. MØLLER SANPEDRO, Claus
(74) Spruson & Ferguson

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(71) Ynsect
(11) AU-A-2021291600
(21) 2021291600 **(22)** 15.06.2021
(54) Device for sorting insects for sorting a mixture comprising nymphs
(51) Int. Cl.
A01K 67/033 (2006.01)
(87) WO2021/255379
(31) 2006379 **(32)** 18.06.20 **(33)** FR
(43) 23.12.2021
(72) SARTON DU JONCHAY, Thibault; ESCALANTE, Pedro; COMPARAT, Solène; ESCAROZ CETINA, Arturo; CHÂTEAU, Mathieu
(74) Griffith Hack

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(71) Yoshino Gypsum Co., Ltd.
(11) AU-A-2021280613
(21) 2021280613 **(22)** 27.05.2021
(54) neutron beam shielding gypsum-based construction board, and method for producing neutron beam shielding gypsum-based construction board
(51) Int. Cl.
C04B 28/14 (2006.01)

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B28B 1/30 (2006.01)
C04B 14/32 (2006.01)
C04B 14/36 (2006.01)
C04B 22/06 (2006.01)
C04B 22/08 (2006.01)
C04B 24/18 (2006.01)
C04B 24/22 (2006.01)
C04B 24/26 (2006.01)
C04B 24/30 (2006.01)
G21F 1/06 (2006.01)
G21F 3/00 (2006.01)
(87) WO2021/241707
(31) 2020-094834 **(32)** 29.05.20 **(33)** JP
(43) 02.12.2021
(72) SATO, Yosuke; NAITO, Daisuke; OKAMOTO, Natsuki; SUZUKI, Masaki; IKEO, Yosaku; KUSHIBE, Atsumichi; OKAMOTO, Hajime; NORIMONO, Takemi; ODAGAWA, Masanobu
(74) Spruson & Ferguson

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(71) Yu, R.
(11) AU-A-2020483987
(21) 2020483987 **(22)** 31.12.2020
(54) Disc-type motor stator and winding method therefor
(51) Int. Cl.
H02K 23/54 (2006.01)
(87) WO2022/141363
(43) 07.07.2022
(72) YU, Renwei
(74) Madderns Pty Ltd

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(71) Zestt Wellness Limited
(11) AU-A-2021296153
(21) 2021296153 **(22)** 21.06.2021
(54) Anthocyanin and quercetin based formulations for improved respiratory health
(51) Int. Cl.
A61K 9/06 (2006.01)
A61K 9/14 (2006.01)
A61K 31/352 (2006.01)
A61K 47/26 (2006.01)
A61P 11/00 (2006.01)
(87) WO2021/262567
(31) 63/042,783 **(32)** 23.06.20 **(33)** US
17/352,336 20.06.21 US
(43) 30.12.2021
(72) SCHACK, Darcy Marc; CAMPBELL, Anna Wendy
(74) Spruson & Ferguson

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(71) Zhejiang Sany Equipment Co., Ltd.
(11) AU-A-2021432497
(21) 2021432497 **(22)** 14.07.2021
(54) Dynamic simulation display method and system for working machine structure
(51) Int. Cl.
B66C 13/16 (2006.01)
G06F 30/20 (2020.01)
(87) WO2022/188324
(31) 202110258232.7 **(32)** 09.03.21 **(33)** CN
(43) 15.09.2022
(72) HAN, Xiaodong; SUN, Hao; GUO, Song
(74) Madderns Pty Ltd

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(71) Zhong, W.
(11) AU-A-2020468487
(21) 2020468487 **(22)** 21.09.2020
(54) Substituted 1-(3,3-difluoropiperidin-4-yl)-imidazo(4,5-c) quinolin-2-one compounds with blood-brain barrier penetrable capability
(51) Int. Cl.
A61K 31/28 (2006.01)
A61K 31/407 (2006.01)
C07D 471/04 (2006.01)
C07D 471/14 (2006.01)
(87) WO2022/060377
(43) 24.03.2022
(72) ZHONG, Wei
(74) Davies Collison Cave Pty Ltd

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(71) ZIVO Bioscience, Inc.
(11) AU-A-2021294353
(21) 2021294353 **(22)** 25.06.2021
(54) Positive latency effects on coccidiosis prevention and treatment via animal feed
(51) Int. Cl.
A61K 39/012 (2006.01)
A61K 39/00 (2006.01)
A61P 37/04 (2006.01)
(87) WO2021/263160
(31) 17/358,953 **(32)** 25.06.21 **(33)** US
63/044,770 26.06.20 US
(43) 30.12.2021
(72) PFUND, William P.; STEFFEK, Amy E.; DAHL, Andrew A.
(74) FOUNDRY INTELLECTUAL PROPERTY PTY LTD

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(71) ZIVO Bioscience, Inc.
(11) AU-A-2021296916
(21) 2021296916 **(22)** 25.06.2021
(54) Immune priming to accelerate/enhance immune response through administration of natural immune modulator
(51) Int. Cl.
A23K 50/75 (2016.01)
A61K 39/00 (2006.01)
A61K 39/012 (2006.01)
A61P 33/02 (2006.01)
C07K 14/455 (2006.01)
C12N 15/09 (2006.01)
(87) WO2021/263162
(31) 63/044,841 **(32)** 26.06.20 **(33)** US
17/358,878 25.06.21 US
(43) 30.12.2021
(72) STEFFEK, Amy E.; DAHL, Andrew A.; PFUND, William P.
(74) FOUNDRY INTELLECTUAL PROPERTY PTY LTD

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(71) Zodiac Pool Care Europe
(11) AU-A-2021324636
(21) 2021324636 **(22)** 05.08.2021
(54) Systems and methods of operating automatic swimming pool cleaners, especially when approaching walls or other objects
(51) Int. Cl.
E04H 4/16 (2006.01)
(87) WO2022/035683
(31) 63/063,621 **(32)** 10.08.20 **(33)** US
(43) 17.02.2022
(72) MCQUEEN, E. Keith; BESNIER, Arnaud; DALLET, Florent; DUFFAUT, Simon
(74) FB Rice Pty Ltd

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(71) Zodiac Pool Systems LLC
(11) AU-A-2021328514
(21) 2021328514 **(22)** 16.08.2021
(54) Locking mechanisms for vessels for swimming pool and spa equipment
(51) Int. Cl.
E04H 4/12 (2006.01)
B65D 43/02 (2006.01)
(87) WO2022/040087
(31) 63/067,980 **(32)** 20.08.20 **(33)** US
(43) 24.02.2022
(72) HOHN, James; ASPLUND, Richard; BOLANE, Jesse; BAUCKMAN, Mark
(74) FB Rice Pty Ltd

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(71) ZTE Corporation
(11) AU-A-2021262325
(21) 2021262325 **(22)** 29.04.2021
(54) Transmission method and apparatus, communication node, and storage medium
(51) Int. Cl.
H04W 72/04 (2009.01)
H04L 5/00 (2006.01)
(87) WO2021/219057
(31) 202010363319.6 **(32)** 30.04.20 **(33)** CN
(43) 04.11.2021
(72) PAN, Yu; JIANG, Chuangxin; ZHANG, Shujuan; LU, Zhaohua; GAO, Bo; HE, Zhen; YAN, Wenjun
(74) GLMR

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(71) ZTE Corporation
(11) AU-A-2021301699
(21) 2021301699 **(22)** 12.05.2021
(54) Positioning method, device and system for receiving device, storage medium, and electronic device
(51) Int. Cl.
H04W 4/021 (2018.01)
H04W 4/02 (2018.01)
(87) WO2022/001401
(31) 202010617374.3 **(32)** 30.06.20 **(33)** CN
(43) 06.01.2022
(72) DOU, Jianwu; FANG, Min; CHEN, Yijian; ZHANG, Nan; PENG, Lin
(74) Davies Collison Cave Pty Ltd

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2020449987	Technological Resources Pty Limited
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2021259651	Tidel Engineering, L.P.; Taylor, D.; Lee, J.; Crawford, J.; Remis, S.; Shelton, C.; Tollifson, L.
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2021262800	McNeil AB
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2021262878	Detnet South Africa (Pty) Ltd
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2021262999	SinoCellTech LTD
2021263081	AbacusLabs Ltd.
2021263340	Fleet Space Technologies Pty Ltd
2021263458	McNeil AB
2021263471	Nissenbaum, I.; Bogart, M.; Baum, A.
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2021263694	Vivo Mobile Communication Co., Ltd.
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2021266078	Evonik Operations GmbH
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2021267928	Calm Water Therapeutics LLC
2021267932	The Trustees of The University of Pennsylvania
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2021268270	Argus Security S.R.L.
2021268414	The University of Tokyo; Gellycle Co., Ltd.
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2021268495	LG Electronics Inc.
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2021269870	Orion Corporation
2021269871	Bluefors Oy
2021270304	Rite-Hite Holding Corporation
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2021270608	Purdue Research Foundation
2021270664	Beijing Greatway Pharmaceutical Technology Co., Ltd.
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2021270817	Grifols Worldwide Operations Limited
2021270863	Solar Dynamics LLC
2021270901	Yeda Research and Development Co. Ltd.; The Walter and Eliza Hall Institute of Medical Research
2021270978	Hope Tree Holding GmbH; Hope Tree International GmbH
2021270982	SurgicEn SLU; Vitoria, C.
2021271004	University of Massachusetts
2021271016	The Regents of the University of California
2021271182	Dechert, M.; Georg, S.
2021271275	Hygiene Habits Pty Ltd
2021271311	Dyadic International (USA), Inc.
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2021271381	Chia Tai Tianqing Pharmaceutical Group Co., Ltd.
2021271694	Prelude Therapeutics, Incorporated
2021271702	The United States of America, as represented by The Secretary, Department of Health and Human Services
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2021272685	Choi, W.H.; Hwang, N.K.; Yoo, H.J.
2021272725	Atlas Copco Airpower, Naamloze Vennootschap
2021272736	Autnhive Corporation
2021272989	ELC Management LLC
2021273015	Platelet Biogenesis, Inc.
2021273280	Equinix, Inc.
2021273827	Gritstone Bio, Inc.
2021273980	Yale University
2021274132	Ixaka France
2021274175	Wine Crush Market BC Ltd. DBA Winecrush
2021274437	Taroko Door & Window Technologies, Inc.
2021274518	Hanmi Pharm. Co., Ltd.
2021274898	Cammegh Limited
2021274924	Speir Hunter Ltd
2021274959	UPL Limited
2021275051	Truvian Sciences, Inc.
2021275128	Element Biosciences, Inc.
2021275139	Falcon Bioscience, LLC
2021275158	Agscent Pty Ltd
2021275361	AstraZeneca UK Limited
2021275541	Hanmi Pharm. Co., Ltd.
2021275549	Kassoul, A.
2021275773	Truvian Sciences, Inc.
2021275875	Baxter International Inc.; Baxter Healthcare SA
2021275995	Insitro, Inc.
2021276257	Graphic Packaging International, LLC
2021276287	Medshine Discovery Inc.
2021276301	Guangzhou Fermion Technology Co., Ltd.
2021276335	University of Louisville Research Foundation, Inc.; University of Pittsburgh - of the Commonwealth System of Higher Education
2021276383	Rutgers, The State University of New Jersey
2021276410	Orna Therapeutics, Inc.
2021276502	Ennis-Flint, Inc.
2021276617	The Binding Site Group Limited
2021276680	Ilera Derm LLC
2021276853	iRegene Therapeutics LTD
2021276913	Virustatic Ltd.; Hope, P.
2021277098	Australian Droid & Robot Pty Ltd
2021277160	The Government of the United States, as represented by the Secretary of the Army
2021277166	Form Energy, Inc.
2021277183	Smithers-Oasis Company
2021277231	Genesis Dimensions LLC
2021277489	Ambisense Ltd.
2021277968	Dispensing Technologies B.V.
2021278104	Caterpillar Inc.
2021278277	Saltpower Holding ApS
2021278293	Avril
2021278349	The University Court of the University of Edinburgh
2021278357	Stryker European Operations Limited
2021278756	Sanquin IP B.V.
2021278828	PteroDynamics
2021278871	Boehringer Ingelheim Animal Health USA Inc.
2021278981	Flux Marine Ltd.
2021279039	Mammoth Biosciences, Inc.
2021279051	The Board of Regents of The University of Texas System
2021279056	EmendoBio Inc.
2021279058	CareFusion 303, Inc.
2021279136	thyssenkrupp nucera AG & Co. KGaA
2021279199	Mission Therapeutics Limited
2021279206	Jagger, R.
2021279209	Bioactive Materials Pty Ltd
2021279241	Suez International
2021279438	String Bio Private Limited
2021279452	3sun S.R.L.
2021280023	Vivo Mobile Communication Co., Ltd.
2021280261	Dionis Therapeutics, Inc.
2021280272	Memorial Sloan Kettering Cancer Center
2021280297	Sonoco Development, Inc.
2021280347	Outrider Technologies, Inc.
2021280361	Novomedix, LLC
2021280590	Daiwa Can Company
2021280613	Yoshino Gypsum Co., Ltd.
2021280889	Palo Alto Research Center Incorporated
2021280929	Huawei Technologies Co.,Ltd.
2021281027	Rotojar Innovations Limited
2021281034	K2 Systems GmbH
2021281055	Ferring B.V.
2021281063	The Queen's University of Belfast
2021281095	The Babraham Institute
2021281193	Hollister Incorporated
2021281237	QiLu Regor Therapeutics Inc.
2021281245	Chemtor, LP
2021281268	Alert Innovation Inc.
2021281287	Exosome Diagnostics, Inc.; The Brigham and Women's Hospital, Inc.
2021281316	Ramaco Carbon, LLC
2021281351	Gilead Sciences, Inc.
2021281356	Verseau Therapeutics, Inc.
2021281360	Quidel Corporation
2021281478	BAE Systems Information and Electronic Systems Integration Inc.
2021281502	HOVER Inc.
2021281838	Daiwa Can Company
2021282053	Beijing Beyond Biotechnology Co., Ltd
2021282156	MediBeacon Inc.
2021282179	Regeneron Pharmaceuticals, Inc.
2021282182	Schlage Lock Company LLC

PCT applications which have entered the National Phase - Numerical Index cont'd

2021282245	The United States of America, as represented by the Secretary of Agriculture; Codagenix Inc.
2021282373	Solugen, Inc.
2021282376	Peloton Interactive, Inc.
2021282568	Kymera Therapeutics, Inc.
2021282577	Faeth Therapeutics, Inc.
2021282588	Sirona Genomics, Inc.
2021282596	Kinnate Biopharma Inc.
2021282645	Ishihara Sangyo Kaisha, Ltd.
2021282658	Technip Process Technology, Inc.
2021282688	Lancer Corporation
2021282740	Shimkonis, J.
2021282888	Well Innovation AS
2021282924	Coloplast A/S
2021283044	Baxter International Inc.; Baxter Healthcare SA
2021283048	Illinois Tool Works Inc.
2021283263	ByteDance Inc.
2021283272	Catalent Pharma Solutions, LLC
2021283279	Children's Medical Center Corporation
2021283293	Faeth Therapeutics, Inc.
2021283348	Wisk Aero LLC
2021283351	Caterpillar Inc.
2021283352	Edge Embossing, Inc.
2021283356	Merck Patent GmbH
2021283386	Amphenol Corporation
2021283390	ESN Cleer
2021283452	Medical Developments International Limited
2021283455	Selvax Pty Ltd
2021283545	Huawei Technologies Co., Ltd.
2021283577	Chengdu Kanghong Pharmaceutical Co.Ltd
2021283661	Bayer Aktiengesellschaft
2021283713	Bundesdruckerei GmbH
2021283714	Tessa Therapeutics Ltd.; The University of North Carolina at Chapel Hill
2021283736	Soletanche Freyssinet
2021283774	Hovid Berhad
2021283795	Caterpillar Inc.
2021283811	Classic Connectors, Inc.
2021283838	Magna Imperio Systems Corp.
2021283853	Sage Products LLC
2021283869	Enphase Energy, Inc.
2021283884	oneNav, Inc.
2021283886	Buck Institute for Research on Aging
2021283887	Kurin, Inc.
2021283893	Icoin Technology, Inc.
2021283914	Apple Inc.
2021283927	Extrakt Process Solutions, LLC
2021283934	ModernaTX, Inc.
2021283961	Duke University
2021283972	Battelle Memorial Institute
2021283979	Inari Medical, Inc.
2021283988	CB Therapeutics, Inc.
2021284101	Ing Co., Ltd.; Nagaki Seiki Co., Ltd.
2021284151	Urteste S.A.
2021284271	Moxion Power Co.
2021284275	Boehringer Ingelheim International GmbH
2021284330	Hitachi Construction Machinery Co., Ltd.
2021284358	Firefly Automatix, Inc.
2021284360	QurAlis Corporation
2021284367	WestRock Packaging Systems, LLC
2021284369	Dana-Farber Cancer Institute, Inc.
2021284378	Miotox, LLC
2021284380	OccuRx Pty. Ltd.
2021284383	Sound Agriculture Company
2021284392	Trace Orthopedics, LLC
2021284446	Ishihara Sangyo Kaisha, Ltd.
2021284451	LanzaTech, Inc.
2021284455	The Cleveland Clinic Foundation
2021284461	Theraly Fibrosis, Inc.
2021284526	Jio Platforms Limited
2021284567	Huawei Technologies Co., Ltd.
2021284592	Ipltech Electric Private Limited
2021284697	Medical Research & Development Fund For Health Services Bnai Zion Medical Center; Technion Research & Development Foundation Limited.; The Chancellor, Masters and Scholars of the University of Oxford
2021284724	M.E.P. Macchine Elettroniche Piegatrici S.p.A.
2021284794	NETZSCH Pumpen & Systeme GmbH
2021284813	Eaton Intelligent Power Limited
2021284915	Carbon Revolution Limited
2021284923	Australian Laboratory Services Pty. Ltd.
2021284927	The Armstrong Monitoring Corporation
2021284974	Cosmetic Edge Pty Ltd
2021284975	Metso Outotec Finland Oy
2021284978	Commonwealth Scientific and Industrial Research Organisation
2021285002	AZAD Pharma AG
2021285003	Decathlon
2021285006	Bayer Aktiengesellschaft
2021285039	Inventio AG
2021285068	Boehringer Ingelheim International GmbH
2021285083	iX Biopharma Limited; iX Biopharma Ltd
2021285116	Ocado Innovation Limited
2021285130	Mission Therapeutics Limited
2021285203	Bundesdruckerei GmbH
2021285216	Cancer Research Technology Limited
2021285225	Noema Pharma AG
2021285226	Beijing Mabworks Biotech Co., Ltd.
2021285273	Noema Pharma Ag
2021285330	Shenzhen Immunotherapy Biotech Co., Ltd.
2021285405	Shaheen Innovations Holding Limited
2021285406	Shaheen Innovations Holding Limited
2021285419	Salts Healthcare Limited
2021285422	OBG Consumer Reg Scientific Limited
2021285542	Kazuar Advanced Technologies Ltd.
2021285714	Survivon Ltd
2021285715	Monash University; Peter MacCallum Cancer Institute
2021285747	Gilead Sciences, Inc.
2021285759	Becton, Dickinson and Company
2021285819	Advent Therapeutics, Inc.
2021285823	Washington University
2021285876	Wuxi Boton Iot Technology Co., Ltd.
2021285901	Becton, Dickinson and Company
2021285973	Amphenol Corporation
2021285974	Kinnate Biopharma Inc.
2021285997	The United States of America, as represented by The Secretary, Department of Health and Human Services
2021286002	Quorum Innovations, LLC
2021286069	Hua Medicine (Shanghai) Ltd.
2021286093	Huawei Technologies Co., Ltd.
2021286151	Bayer Aktiengesellschaft
2021286164	Sandvik Mining and Construction OY
2021286169	BioNTech SE; TRON – Translationale Onkologie an der Universitätsmedizin der Johannes Gutenberg-Universität Mainz Gemeinnützige GmbH
2021286174	Invaio Sciences International GmbH
2021286179	Emergex Vaccines Holding Limited
2021286202	BioInvent International AB
2021286407	Keko Acessórios S/A
2021286502	Inozyme Pharma, Inc.; Yale University
2021286554	Arizona Board of Regents on behalf of Northern Arizona University
2021286563	VectivBio AG
2021286564	Cytosite Biopharma Inc.
2021286568	Swift Health Systems Inc.
2021286574	Icosavax, Inc.
2021286610	Adama Makhteshim Ltd.
2021286632	Inkbit, LLC
2021286636	Dolby Laboratories Licensing Corporation
2021286650	Tizona Therapeutics
2021286651	2seventy bio, Inc.
2021286653	W. L. Gore & Associates, Inc.
2021286661	Illinois Tool Works Inc.
2021286666	Vertex Pharmaceuticals Incorporated

PCT applications which have entered the National Phase - Numerical Index cont'd

2021286694	China Petroleum & Chemical Corporation; Sinopec Southwest Oil & Gas Company
2021286728	Vertex Pharmaceuticals Incorporated
2021286738	Shanghai Jemincare Pharmaceuticals Co., Ltd; Jiangxi Jemincare Group Co., Ltd
2021286816	Swunning Sàrl
2021286868	Minch Malt Limited
2021286879	Klean Industries
2021286886	Certus Molecular Diagnostics AG
2021286903	Expro North Sea Limited
2021286915	Amicoat AS
2021286927	Crime Science Technology
2021286969	Saint-Augustin Canada Electric Inc.
2021287073	Jolt Charge Pty Ltd.
2021287075	NewSouth Innovations Pty Limited
2021287206	Dropbox, Inc.
2021287209	Prairie Aquatech LLC
2021287240	Alcoa USA Corp.
2021287297	Maelgwyn Mineral Services Limited
2021287311	Amicoat AS
2021287316	Wirepas Oy
2021287334	Coulton, R.
2021287454	VSPC Ltd
2021287695	Pepsico, Inc.
2021287813	The Broaster Company
2021287875	Frank's International, LLC
2021287881	Kinesiometrics, Inc.
2021287887	Chorus, LLC
2021287905	Arsenal Medical, Inc.
2021287917	China Petroleum & Chemical Corporation; Sinopec Southwest Oil & Gas Company
2021287927	Jiangsu Hengrui Pharmaceuticals Co., Ltd.; Shanghai Hengrui Pharmaceutical Co., Ltd.
2021288048	President and Fellows of Harvard College
2021288051	Flagship Pioneering Innovations V, Inc.
2021288087	Auspex Pharmaceuticals, Inc.
2021288090	10x Genomics, Inc.
2021288104	CHDI Foundation, Inc.
2021288166	Ractigen Therapeutics
2021288203	Vir Biotechnology, Inc.
2021288223	Sunlighten, Inc.
2021288226	President and Fellows of Harvard College; The General Hospital Corporation; Vesigen, Inc.
2021288254	BASF Agricultural Solutions Seed US LLC
2021288309	Digital Surgery Systems, Inc.
2021288315	Chevron U.S.A. Inc.
2021288320	Flagship Pioneering Innovations V, Inc.
2021288378	Hangzhou Jingyan Electronics Technology Ltd., Co.
2021288464	Seattle Children's Hospital (DBA Seattle Children's Research Institute)
2021288467	Nacuity Pharmaceuticals, Inc.
2021288568	AnnJi Pharmaceutical Co., Ltd.
2021288584	Anima Biotech Inc.
2021288610	Ender Holding AG
2021288637	Ichnos Sciences SA
2021288690	Dolby Laboratories Licensing Corporation
2021288734	UCL Business Ltd.
2021288735	Reckitt & Colman (Overseas) Hygiene Home Limited
2021288756	Stryker Leibinger GmbH & Co. KG; Technical University of Munich
2021288799	Bravado Holding AG
2021288876	JFE Steel Corporation
2021288898	BASF SE
2021288908	Carl Zeiss Meditec AG
2021288919	Ace Oil Tools AS
2021288994	Ender Holding AG
2021289041	Spiber Inc.
2021289091	HigherSteaks Limited
2021289119	HYUNDAI MOVE-X Co., Ltd.
2021289122	HysensBio
2021289169	Pfizer Inc.
2021289172	ResMed Sensor Technologies Limited
2021289230	Ametalin IP Pte Ltd
2021289232	Annalise-AI Pty Ltd
2021289242	Bristol-Myers Squibb TGF Beta Inc.
2021289264	Abbott Diabetes Care Inc.
2021289296	Nippon Steel Corporation
2021289307	Hitachi, Ltd.
2021289309	vTv Therapeutics LLC
2021289333	RAPT Ventures, Inc.
2021289345	Halia Therapeutics, Inc.
2021289351	Bard Access Systems, Inc.
2021289358	Top Intellectual Property Pty Ltd
2021289434	Tactogen Inc
2021289442	National Health Research Institutes
2021289448	ConMed Corporation
2021289458	Quin Global Us, Inc.
2021289470	Icosavax, Inc.
2021289475	Verdox, INC.
2021289548	3M Innovative Properties Company
2021289591	vTv Therapeutics LLC
2021289600	University of Rochester
2021289611	ResMed Pty Ltd
2021289612	The University of Melbourne
2021289617	Starkey & Associates Inc.
2021289677	Minerva Biotechnologies Corporation
2021289730	Prelude Therapeutics, Incorporated
2021289762	ConocoPhillips Company
2021289874	Beijing Geekplus Technology Co., Ltd.
2021289927	Baili-Bio (Chengdu) Pharmaceutical Co., Ltd.
2021289930	Shanghai Beiqi New Energy Technology Co., Ltd.
2021290093	Acep TryLive
2021290111	WANdisco, Inc.
2021290161	Certus Molecular Diagnostics AG
2021290177	Bavarian Nordic A/S
2021290454	Psilo Scientific Ltd
2021290477	M.E.P. Macchine Elettroniche Piegatrici S.p.A.
2021290650	Keulemans, Y.
2021290651	ResApp Health Limited
2021290765	Medigen Vaccine Biologics Corporation; Dynavax Technologies Corporation
2021290887	BASF SE
2021290908	DNA Script
2021290912	Prayon
2021290913	Frauscher Sensor Technology Group GmbH
2021290926	Ludwig-Maximilians-Universität München; Technische Universität München
2021291006	Shell Internationale Research Maatschappij B.V.
2021291010	RTX A/S
2021291232	Ceva Sante Animale
2021291257	InventisBio Co., Ltd.
2021291259	Innovent Biologics (Suzhou) Co., Ltd.
2021291301	Effegi Brevetti S.R.L.
2021291392	Gruppsol AB
2021291575	Lokaway Pty Ltd
2021291578	Schenck Process Australia Pty Limited
2021291600	Ynsect
2021291677	Gripple Limited
2021291799	Novartis AG
2021291807	S.C.R. (Engineers) Limited
2021292061	Merck Sharp & Dohme LLC
2021292062	Merck Sharp & Dohme LLC
2021292075	NOFUSCO Corporation
2021292080	Davol Inc.
2021292082	Mars, Incorporated
2021292086	Huawei Technologies Co., Ltd.
2021292209	Astra Navigation, Inc.
2021292231	Y-mAbs Therapeutics, Inc.
2021292296	Alnylam Pharmaceuticals, Inc.
2021292312	Savage Equipment Incorporated
2021292406	XWpharma Ltd.
2021292417	Amgen Inc.
2021292458	GlycoMimetics
2021292460	Nextracker Inc.

PCT applications which have entered the National Phase - Numerical Index cont'd

2021292484	Incyte Corporation
2021292566	Agensys, Inc.; Seagen Inc.
2021292712	Nana Products LLC
2021292939	Sestra Systems, Inc.
2021293036	Abbott Diabetes Care Inc.
2021293174	Vertex Pharmaceuticals Incorporated
2021293245	Flagship Pioneering Innovations V, Inc.
2021293288	In-Extremis Design and Development, LLC
2021293512	Arthrex, Inc.
2021293583	Vanderbilt University
2021293591	Regeneron Pharmaceuticals, Inc.
2021293694	Ildong Pharmaceutical Co., Ltd.
2021293736	Medline Industries, LP
2021293817	Myokardia, Inc.
2021293873	Abbott Diabetes Care Inc.
2021293874	Davol Inc.
2021293881	Davol Inc.
2021293904	ELC Management LLC
2021293907	Dana-Farber Cancer Institute, Inc.; The General Hospital Corporation
2021293908	Acceleron Pharma Inc.
2021293911	Amplyx Pharmaceuticals, Inc.
2021293922	Astra Navigation, Inc.
2021293925	Cascade Corporation
2021293931	TScan Therapeutics, Inc.; AHS Hospital Corp.
2021293941	XWpharma Ltd.
2021294059	Primewan Limited
2021294222	F. Hoffmann-La Roche AG
2021294314	Squarex Pharmaceutical Corporation
2021294350	Colgate-Palmolive Company
2021294353	ZIVO Bioscience, Inc.
2021294422	Universidade do Minho
2021294598	Peacefulsleep Pty Ltd
2021295115	The Protein Brewery B.V.
2021295229	Diehl Metall Stiftung & Co. KG
2021295441	ProteomEdge AB
2021295609	F. Hoffmann-La Roche AG
2021295721	Bayer Aktiengesellschaft
2021295761	Sharp Kabushiki Kaisha
2021295823	D&D Manufacturing LLC
2021296123	The Toro Company
2021296153	Zestt Wellness Limited
2021296296	Life Technologies Corporation
2021296421	Acceleron Pharma Inc.
2021296449	Regeneron Pharmaceuticals, Inc.
2021296601	Andis Company
2021296603	Bardex Corporation
2021296607	Gilead Sciences, Inc.
2021296616	Motus Labs, LLC.,
2021296691	Stamicarbon B.V.
2021296781	Baxter International Inc.; Baxter Healthcare SA
2021296833	Celgene Corporation
2021296867	Dermavant Sciences GmbH
2021296914	Carisma Therapeutics Inc.
2021296916	ZIVO Bioscience, Inc.
2021297025	CooperVision International Limited
2021297036	Intocell, Inc.; Y-Biologics Inc.
2021297172	Sapience Therapeutics, Inc.
2021297192	Savio Healthy Innovations Pty Ltd
2021297194	Fricker, G.
2021297197	ResMed Pty Ltd
2021297240	Adagene Pte. Ltd.
2021297256	Rhaeos, Inc.
2021297314	CPI Card Group - Colorado, Inc.
2021297340	The Board of Trustees of the Leland Stanford Junior University
2021297462	Ohmium International, Inc.
2021297551	Monash University; Baker Heart and Diabetes Institute
2021297566	CV6 Therapeutics (NI) Limited
2021297716	PMV Pharmaceuticals, Inc.
2021297784	Solana Technologies Inc.
2021297829	Dreame Innovation Technology (Suzhou) Co., Ltd.
2021297880	Claret Bioscience, LLC
2021297923	Antengene Biologics Limited
2021297964	Tensar International Corporation
2021297973	President and Fellows of Harvard College
2021298029	MycoTechnology, Inc.
2021298045	Mai International GmbH
2021298078	Climeworks AG
2021298106	MorphoSys AG; Gilead Sciences, Inc.
2021298133	BORCHERS GMBH
2021298189	Universitat Pompeu Fabra
2021298432	Suntory Holdings Limited
2021298561	MGI Tech Co., Ltd.
2021298632	Jiangsu Hengrui Medicine Co., Ltd.; Shanghai Hengrui Pharmaceutical Co., Ltd.
2021298824	Glycotope GmbH
2021298936	RedHill Biopharma Ltd.
2021299025	Komatsu Ltd.
2021299156	Chong Kun Dang Pharmaceutical Corp.
2021299299	Capsugel Belgium NV
2021299453	Bard Access Systems, Inc.
2021299637	Epiroc Rock Drills Aktiebolag
2021299699	Air-Clenz Systems, LLC
2021299878	Plasser & Theurer Export Von Bahnbaumaschinen Gesellschaft m.b.H.
2021299894	Unilever Global IP Limited
2021299904	Wageningen Universiteit
2021299912	Unilever Global IP Limited
2021299960	Chr. Hansen A/S
2021300121	Genesys Cloud Services Holdings II, LLC
2021300174	Hillstream BioPharma Inc.
2021300181	Monotony.AI, Inc.
2021300262	Rememdia LC
2021300378	ElevateBio Technologies, Inc.
2021300616	Syncona Investment Management Limited; The University of Bristol; Purespring Therapeutics Limited
2021300617	Reeves Wireline Technologies Limited
2021300786	Omnicell, Inc.
2021300804	BNSF Railway Company
2021300831	Rigel Pharmaceuticals, Inc.
2021300878	Centor Design Pty Ltd
2021300979	Epiroc Rock Drills Aktiebolag
2021300986	Neuronano AB
2021300988	Illumina Singapore Pte. Ltd.
2021301095	Rocky Research
2021301154	DSM IP Assets B.V.
2021301180	Illumina, Inc.
2021301256	Cable Coatings Limited
2021301374	Bard Access Systems, Inc.
2021301395	Gripple Limited
2021301403	Sarong Societa' Per Azioni
2021301417	Pfizer Inc.
2021301429	Stora Enso Oyj
2021301453	Carmin Dimase Pty Ltd
2021301699	ZTE Corporation
2021301788	GAIA BioMedicine Inc.
2021302146	Antengene Discovery Limited
2021302317	JFE Steel Corporation
2021302531	Sika Technology AG
2021302559	Kabushiki Kaisha Toshiba; Toshiba Infrastructure Systems & Solutions Corporation
2021302692	Reunion Neuroscience Canada Inc.
2021302717	Technische Universität München
2021302772	Metso Outotec Finland Oy
2021302937	Sarong Societa' Per Azioni
2021303068	Sumitomo Precision Products Co., Ltd.
2021303411	Sarcos Corp.
2021303438	Merck Patent GmbH
2021303524	National Oilwell Varco Denmark I/S
2021303983	Mitsui Mining & Smelting Co., Ltd.
2021304436	Topsøe A/S
2021304479	Viro-Gen (Pty) Ltd
2021304639	Modalis Therapeutics Corporation

PCT applications which have entered the National Phase - Numerical Index cont'd

2021304686	Aucentra Therapeutics Pty Ltd
2021304815	Danmarks Tekniske Universitet
2021304877	Occlugel; Centre National De La Recherche Scientifique (CNRS); Universite Paris-Saclay
2021304892	Boehringer Ingelheim International GmbH
2021304938	Benjamin Moore & Co.; Columbia Insurance Company
2021305166	Avirmax, Inc.
2021305184	TripActions, Inc.
2021305213	Children's Medical Center Corporation
2021305364	Plasser & Theurer Export Von Bahnbaumaschinen Gesellschaft m.b.H.
2021305599	Epiroc Rock Drills Aktiebolag
2021305974	PerFormS s.r.l.
2021306181	VulcanForms Inc.
2021306256	Nano Precision Medical, Inc.
2021306424	Incannex Healthcare Limited
2021306505	Enza Zaden Beheer B.V.
2021306571	Universite Claude Bernard Lyon 1; Institut National de la Sante et de la Recherche Medicale; Centre national de la recherche scientifique; Ecole Normale Superieure de Lyon; Commissariat à l'Énergie Atomique et aux Énergies Alternatives; Centre Leon Berard
2021306634	Occlugel; Centre National de la Recherche Scientifique (CNRS); Universite Paris-Saclay
2021306736	Theratechnologies Inc.
2021306799	Occlugel; Centre National de la Recherche Scientifique (CNRS) (25%); Universite Paris-Saclay
2021306975	Abbott Diabetes Care Inc.
2021307148	Kubota Corporation
2021307186	Gree Electric Appliances, Inc. of Zhuhai
2021307532	SHL Medical AG
2021307537	Climeworks AG
2021307604	Alcon Inc.
2021307611	TEC Austria GmbH
2021307614	Nanjing Bioheng Biotech Co., Ltd
2021308083	SURGE Therapeutics, Inc.
2021308370	Storopack Hans Reichenecker GmbH
2021308639	Gregg Drilling, LLC
2021308655	Milwaukee Electric Tool Corporation
2021308949	Kansas State University Research Foundation
2021309310	Asahi Kasei Kabushiki Kaisha
2021310008	The Chinese University of Hong Kong; Grail, Inc.
2021310338	Knorr-Bremse Systeme für Schienenfahrzeuge GmbH
2021310518	Medacta International SA
2021310829	Rolapal Limited
2021310842	Fujian Changting Golden Dragon Rare-Earth Co., Ltd
2021310844	Fujian Changting Golden Dragon Rare-Earth Co., Ltd
2021310902	Vita Zahnfabrik H. Rauter GmbH & Co. KG
2021311096	Acergy France SAS
2021312394	Alcon Inc.
2021312621	CG Bio Co., Ltd.
2021313320	Topsoe A/S
2021313388	Erasmus University Medical Center Rotterdam (Erasmus MC)
2021313391	Tiense Suikerraffinaderij NV; MEAM BV
2021314104	Insmed, Inc.
2021314450	Saint-Gobain Placo
2021314533	Société des Produits Nestlé S.A.
2021314878	Shenzhen Shokz Co., Ltd.
2021314969	Société des Produits Nestlé S.A.
2021315030	Frolight BV
2021315123	Shonan Gosei-Jushi Seisakusho K.K.
2021315234	Eisai R&D Management Co., Ltd.
2021316405	Societe Des Produits Nestle S.A.
2021316675	Noema Pharma AG
2021316723	Tiziana Life Sciences PLC
2021317765	Societe Des Produits Nestle S.A.
2021317766	Societe Des Produits Nestle S.A.
2021318740	Limatech
2021318815	Société des Produits Nestlé S.A.
2021318817	Société des Produits Nestlé S.A.
2021319023	Société des Produits Nestlé S.A.
2021319600	Gree Electric Appliances, Inc. of Zhuhai
2021320480	Battelle Memorial Institute
2021322001	Simpson Strong-Tie Company Inc.
2021322137	Boehringer Ingelheim International GmbH
2021322581	Beam Alpha, Inc.
2021323079	Tsinghua University; Nuctech Company Limited; NuRay Technology Co., Ltd.
2021323772	Beijing DIDI Infinity Technology and Development Co., Ltd.
2021323844	Abbisko Therapeutics Co., Ltd.
2021324636	Zodiac Pool Care Europe
2021325330	F. Hoffmann-La Roche AG
2021325431	Novartis AG
2021325685	Crown Equipment Corporation
2021325686	Owens-Brockway Glass Container Inc.
2021325871	Owens-Brockway Glass Container Inc.
2021327074	Sika Technology AG
2021327144	Rennsteig Werkzeuge GmbH
2021327945	Astra Navigation, Inc.
2021328514	Zodiac Pool Systems LLC
2021328739	Tyco Fire Products LP
2021329284	PayPal, Inc.
2021329370	BIO 54, LLC
2021330845	Amgen Inc.
2021331083	WestRock MWV, LLC
2021331773	Gree Electric Appliances, Inc. of Zhuhai
2021333331	Mitsubishi Shipbuilding Co., Ltd.
2021337890	Komatsu Ltd.
2021338587	State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
2021339526	Materials Engineering and Technical Support Services Corp.
2021340013	Johnson & Johnson Vision Care, Inc.
2021341911	Johnson & Johnson Vision Care, Inc.
2021342049	MAKO Surgical Corp.
2021342511	Encapsys, LLC
2021344913	Intelligent Virus Imaging Inc.
2021346300	KeKo Acessórios S/A
2021348017	Guangzhou Shiyuan Electronics Co., Ltd.
2021350514	Proabtech Inc.
2021354512	Kao Corporation
2021355610	State Grid Shanghai Municipal Electric Power Company; Shanghai International Superconduction Technology Co., Ltd.
2021359863	Redefine Meat Ltd.
2021362256	Redefine Meat Ltd.
2021363700	2Wire Innovations Ltd.
2021368227	GARRDE PTY LTD
2021368834	LG Energy Solution, Ltd.
2021379787	Casco Signal Ltd.
2021391272	Weber-Stephen Products LLC
2021392592	Weber-Stephen Products LLC
2021396636	Johnson & Johnson Vision Care, Inc.
2021404438	China UnionPay Co., Ltd.
2021404861	Hermetik Hydraulik AB
2021422370	Jiangsu Tasly Diyi Pharmaceutical Co., Ltd.
2021423790	Sagar Defence Engineering Private Limited
2021425001	JGC Corporation
2021426284	Google LLC
2021427874	Dentsu Inc.
2021428867	Casco Signal Ltd.
2021429140	Tensar International Corporation
2021432497	Zhejiang Sany Equipment Co., Ltd.
2021441275	Qingdao University of Technology
2022201859	FCX Solar LLC
2022204091	Intuit Inc.
2022206267	Inova Diagnostics, Inc.
2022210050	Jade Bird Display (Shanghai) Limited
2022211670	Jade Bird Display (Shanghai) Limited
2022221473	Meishan CRRC Brake Science & Technology Co., Ltd.
2022231737	Immersive Group Gaming Ltd

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2022250148	Sumitomo Metal Mining Co., Ltd.
2022275423	Johnson & Johnson Vision Care, Inc.
2022275424	Johnson & Johnson Vision Care, Inc.
2022275580	Global Clean Coal Technologies Pty Ltd
2022277079	Guangzhou Hybribio Medicine Technology Ltd.; Guangdong Hybribio Biotech Co., Ltd.

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B01D 3 /-

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B01D 63 /-

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B01F 23 /-

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B01J 20 /-

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2021289475
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B01J 23 /-

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B01J 3 /-

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B01J 35 /-

2021304436

B01J 4 /-

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B01J 8 /-

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B01L 3 /-

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B01L 7 /-

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2021285406
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B02C 17 /-

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B02C 23 /-

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B03D 1 /-

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B03D 3 /-

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B04C 5 /-

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B05B 1 /-

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B05B 17 /-

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B05B 7 /-

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B05B 9 /-

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2021289458

B07B 1 /-

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B07C 5 /-

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B08B 3 /-

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B08B 9 /-

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B21D 43 /-

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2021290477

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B22F 12 /-

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B22F 5 /-

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B25B 5 /-

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B25D 17 /-

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B25D 9 /-

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B25J 11 /-

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B25J 15 /-

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2021325871

B25J 9 /-

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B26B 19 /-

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B28B 23 /-

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B28C 5 /-

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B29B 17 /-

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B29B 7 /-

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B29B 9 /-

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B29C 33 /-

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B29C 48 /-

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2021429140

B29C 53 /-

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B29C 55 /-

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B29C 59 /-

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B29C 64 /-

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B29C 65 /-

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B29C 70 /-

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B29D 28 /-

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B29D 7 /-

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B31B 160 /-

2021316405
2021319023

B31B 70 /-

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2021319023

B31F 1 /-

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B32B 3 /-

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B32B 5 /-

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B32B 7 /-

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B33Y 10 /-

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B33Y 30 /-

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2021362256

B33Y 40 /-

2021306181

B33Y 80 /-

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B42D 25 /-

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2021297314

B60B 39 /-

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B60B 5 /-

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B60H 1 /-

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2021299699

B60H 3 /-

2021299699

B60L 50 /-

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B60L 53 /-

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2021287073

B60P 1 /-

2021283351

B60P 7 /-

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B60R 16 /-

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B60R 21 /-

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B60R 5 /-

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B60T 17 /-

2022221473

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B60W 30 /-

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B60W 40 /-

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B60W 50 /-

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B60W 60 /-

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B61B 1 /-

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B61C 15 /-

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B61H 11 /-

2021310338

B61H 13 /-

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B61L 1 /-

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B61L 23 /-

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B61L 25 /-

2021290913

B61L 27 /-

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2021428867

B62D 11 /-

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B62D 5 /-

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B62M 6 /-

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B63B 17 /-

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B63B 35 /-

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B63H 20 /-

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B63J 99 /-

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B64C 27 /-

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B64C 29 /-

2021278828

B64C 3 /-

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B64C 39 /-

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B64F 1 /-

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B65B 29 /-

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2021319023

B65B 3 /-

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2021319023

B65B 43 /-

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2021319023

B65B 51 /-

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2021316405
2021319023

B65B 63 /-

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B65B 7 /-

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B65D 25 /-

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B65D 33 /-

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B65D 43 /-

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B65D 5 /-

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B65D 51 /-

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B65D 75 /-

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B65D 81 /-

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B66B 1 /-

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2020451875

B66B 7 /-

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B66B 9 /-

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2020451874
2020451875

B66C 1 /-

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B66C 13 /-

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B66F 9 /-

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B67D 1 /-

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B67D 3 /-

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B81C 1 /-

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B82Y 40 /-

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B82Y 5 /-

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2021290912

C01B 32 /-

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2021308949

C01F 7 /-

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C02F 1 /-

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2021283927
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C02F 103 /-

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C02F 11 /-

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2021307611

C02F 9 /-

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C03B 5 /-

2021325686

C03C 25 /-

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C04B 12 /-

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C04B 14 /-

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C04B 20 /-

2021302531

C04B 22 /-

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2021441275

C04B 24 /-

2021280613
2021327074
2021441275

C04B 26 /-

2021314450

C04B 28 /-

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2021283736
2021302531
2021314450
2021327074

C04B 32 /-

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C04B 41 /-

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C05F 11 /-

2021279438

C05G 1 /-

2020450049

C05G 5 /-

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C07C 1 /-

2021282658

C07C 227 /-

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C07C 229 /-

2020446817

C07C 233 /-

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2021310844

C07C 251 /-

2021288898

C07C 273 /-

2021296691

C07C 311 /-

2021280361

C07C 53 /-

2021306736

C07C 59 /-

2021272064

C07C 9 /-

2021282658

C07D 209 /-

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2021286728
2021290454
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2021302692

C07D 211 /-

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C07D 213 /-

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2021288898
2021302146

C07D 221 /-

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2021285974
2021302146

C07D 239 /-

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2021288568

C07D 249 /-

2021285747

C07D 255 /-

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2021285006
2021286151

C07D 263 /-

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C07D 269 /-

2021302146

C07D 277 /-

2021288584
2021289309
2021289591

C07D 293 /-

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C07D 307 /-

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2021289434

C07D 311 /-

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C07D 317 /-

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2021285974
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2021306571

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2021285747
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2021306571

C07D 407 /-

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2021286666
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2021293694

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2021286151
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2021325431

C07D 495 /-

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2021285715

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2021325431

C07D 513 /-

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2021296607
2021300831

C07D 515 /-

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2021325431

C07F 9 /-

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2021301788

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2021296449

C07K 7 /-

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2021293931

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2021276502

C08F 6 /-

2021268725

C08G 101 /-

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C08G 18 /-

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C08G 77 /-

2020239045

C08H 7 /-

2021301429

C08J 11 /-

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C08J 3 /-

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C08J 5 /-

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2021270978
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2021269235
2021270978

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2021277183

C08K 3 /-

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2021312621

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C08L 3 /-

2021270978

C08L 33 /-

2021268725
2021304938

C08L 5 /-

2021312621

C08L 71 /-

2021312621

C08L 89 /-

2021312621

C08L 95 /-

2021281316

C09B 49 /-

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2021301256

C09D 101 /-

2021269235

C09D 107 /-

2021304938

C09D 11 /-

2021286927

C09D 127 /-

2021289230

C09D 133 /-

2021276502
2021304938

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2021298133

C09D 183 /-

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2021298133

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2021269235
2021301256
2021304938
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2021269235
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2021298133

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C10B 53 /-

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2021282658

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2021291006

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2021339526

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2021291006

C11B 1 /-

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C11D 11 /-

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2021299912

C11D 17 /-

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2021299912

C11D 7 /-

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C12G 1 /-

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C12G 3 /-

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C12M 1 /-

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2021299960

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C12P 21 /-

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2021287209
2021289041

C12P 5 /-

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C12Q 1 /-

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C21D 11 /-

2021288876

C21D 8 /-

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C21D 9 /-

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C23C 2 /-

2021289296

C25B 1 /-

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2021309310

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2021309310

C25B 9 /-

2021279136

C25C 3 /-

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C25D 1 /-

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C40B 30 /-

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C40B 40 /-

2021280261

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D04B 21 /-

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D06F 89 /-

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E02D 1 /-

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E02F 3 /-

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E02F 9 /-

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2021337890

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E04H 17 /-

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E04H 4 /-

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2021291575

E05D 3 /-

2021291575

E05D 7 /-

2021291575

E05F 15 /-

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E05F 3 /-

2021282182

E05F 5 /-

2021282182

E05G 1 /-

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E06B 3 /-

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E06B 5 /-

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E06B 9 /-

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E21B 21 /-

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F01M 11 /-

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F02B 25 /-

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(21) 2017208719 **(22)** 20.01.2017
(54) Hair treatment system, treatments and apparatus
(51) Int. Cl.
B05B 1/18 (2006.01)
B05B 1/34 (2006.01)
E03C 1/046 (2006.01)
(87) WO2017/124154
(43) 27.07.2017
(44) 19.01.2023
(72) Cohen, Ben Jan; Risher, Benny; Roet, Noah; Maarbani, Samir
(74) Pearce IP Pty Ltd

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H04L 9/08 (2006.01)
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H01R 13/639 (2006.01)
H01R 13/04 (2006.01)
H01R 13/193 (2006.01)
H01R 13/447 (2006.01)
(87) WO2018/206071
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(44) 19.01.2023
(72) Abouismail, Mohamed
(74) Mohamed Ali Abouismail

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(21) 2016204724 **(22)** 07.07.2016
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(51) Int. Cl.
E05B 65/08 (2006.01)
E05B 55/00 (2006.01)
(43) 25.01.2018
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(72) Terei, Anaru; Laverty, Edward T.; Horton, Colin
(74) Wynnes Patent and Trade Mark Attorneys Pty Ltd

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(54) Device and Method of Handling Mobility
(51) Int. Cl.
H04W 36/04 (2009.01)
H04W 8/02 (2009.01)
H04W 76/10 (2018.01)
(31) 63/107,453 **(32)** 30.10.20 **(33)** US
17/511,591 27.10.21 US
(43) 19.05.2022
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(74) Griffith Hack

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(21) 2018241039 **(22)** 02.10.2018
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(51) Int. Cl.
H02J 7/00 (2006.01)
B60L 50/00 (2019.01)
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(44) 19.01.2023
(72) Heyne, Raoul; Joslowski, Florian; Kiefer, Michael; Speidel, Thomas; Natour, Ali
(74) Phillips Ormonde Fitzpatrick

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(11) AU-B-2017279477
(21) 2017279477 **(22)** 30.03.2017
(54) Systems and methods for blast impulse reduction
(51) Int. Cl.
F41H 5/24 (2006.01)
F42D 5/045 (2006.01)
F42D 5/05 (2006.01)
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(31) 62/321,449 **(32)** 12.04.16 **(33)** US
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(44) 19.01.2023
(72) O'Neal, James; Miller, Jason
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(21) 2017286680 **(22)** 16.06.2017
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C07K 14/005 (2006.01)
A61F 9/008 (2006.01)
A61K 38/17 (2006.01)
A61K 48/00 (2006.01)
C07K 14/705 (2006.01)
C12N 15/09 (2006.01)
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C12N 15/861 (2006.01)
(87) WO2017/218981
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(54) Device and method for manipulating particles
(51) Int. Cl.
B29C 67/00 (2017.01)
B22F 3/105 (2006.01)
B28B 1/00 (2006.01)
B29C 64/141 (2017.01)
B29C 64/159 (2017.01)
B29C 64/205 (2017.01)
B33Y 10/00 (2015.01)
B33Y 30/00 (2015.01)
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(72) Bedoret, Alexis; Hick, Matthias; Eckes, Kevin
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B64C 27/26 (2006.01)
B64C 29/00 (2006.01)
B64C 29/02 (2006.01)
B64C 39/02 (2006.01)
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(54) Mount improvements
(51) Int. Cl.
F24F 1/60 (2011.01)
F16F 15/04 (2006.01)
F16M 5/00 (2006.01)
F24F 13/32 (2006.01)
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(72) Threadgold, William Trevor
(74) Madderns Pty Ltd

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(54) Connector plate for a vacuum cleaner dust container and a dust container
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A47L 9/14 (2006.01)
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A61F 9/009 (2006.01)
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(54) Centrifugal separation system and method of operating a centrifugal separator
(51) Int. Cl.
B04B 11/02 (2006.01)
B04B 1/14 (2006.01)
B04B 13/00 (2006.01)
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(72) LARSSON, Per-Gustaf
(74) FB Rice Pty Ltd

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(54) TREATMENT PLAN SPECIFIC BITE ADJUSTMENT STRUCTURES
(51) Int. Cl.
A61C 7/08 (2006.01)
A61C 7/36 (2006.01)
(43) 03.02.2022
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(11) AU-B-2017204156
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(54) DOOR JAMB ASSEMBLY
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E06B 1/04 (2006.01)
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(51) Int. Cl.
A61K 39/00 (2006.01)
(43) 09.09.2021
(44) 19.01.2023
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(72) Derouazi, Madiha; Belnoue, Elodie
(74) Allens Patent & Trade Mark Attorneys

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(51) Int. Cl.
C07K 16/28 (2006.01)
C07K 16/30 (2006.01)
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(31) 62/199,939 **(32)** 31.07.15 **(33)** US
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(74) WRAYS PTY LTD

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(11) AU-B-2021200797
(21) 2021200797 **(22)** 09.02.2021
(54) Game token and method for manufacturing the same
(51) Int. Cl.
G06K 19/04 (2006.01)
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(31) 2020-023346 **(32)** 14.02.20 **(33)** JP
(43) 02.09.2021
(44) 19.01.2023
(72) Shigeta, Yasushi
(74) Davies Collison Cave Pty Ltd

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(54) Conductive composites
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H01M 4/36 (2006.01)
H01M 4/38 (2006.01)
H01M 4/62 (2006.01)
(87) WO2017/165916
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A01N 37/10 (2006.01)
A01N 65/00 (2009.01)
A01P 3/00 (2006.01)
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H03G 3/14 (2006.01)
H03G 3/30 (2006.01)
H03G 5/28 (2006.01)
H04R 5/033 (2006.01)
H04R 25/00 (2006.01)
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G06Q 10/10 (2012.01)
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F16B 31/02 (2006.01)
F16B 31/00 (2006.01)

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F16B 43/00 (2006.01)
G01L 1/00 (2006.01)
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C22C 38/02 (2006.01)
B23K 26/00 (2014.01)
B23K 26/38 (2014.01)
B23K 26/40 (2014.01)
C22C 38/04 (2006.01)
C22C 38/18 (2006.01)
B23K 103/04 (2006.01)
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A61G 7/14 (2006.01)
A61G 7/10 (2006.01)
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H04N 21/4363 (2011.01)
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C07D 471/04 (2006.01)
A61K 31/437 (2006.01)
A61K 31/4375 (2006.01)
C07D 401/04 (2006.01)
C07D 401/14 (2006.01)
C07D 417/12 (2006.01)
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C11D 3/48 (2006.01)
A01N 37/46 (2006.01)
C11D 1/62 (2006.01)
C11D 3/20 (2006.01)
C11D 3/34 (2006.01)
C11D 3/386 (2006.01)
C11D 11/00 (2006.01)
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G06Q 10/08 (2012.01)
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G01V 1/18 (2006.01)
B06B 1/06 (2006.01)
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H04R 1/28 (2006.01)
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A61B 5/08 (2006.01)
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B27M 3/00 (2006.01)
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B65G 1/04 (2006.01)
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A61J 3/00 (2006.01)
A61M 5/00 (2006.01)
A61M 5/142 (2006.01)
A61M 5/145 (2006.01)
A61M 5/168 (2006.01)
A61M 39/00 (2006.01)
A61M 39/10 (2006.01)
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F25J 1/02 (2006.01)
F25J 1/00 (2006.01)
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G01N 33/49 (2006.01)
B01L 3/00 (2006.01)
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A61M 39/04 (2006.01)
A61M 39/10 (2006.01)
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B60Q 1/14 (2006.01)
G06K 9/00 (2006.01)
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C12Q 1/68 (2006.01)
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G01G 19/12 (2006.01)
G01P 15/18 (2013.01)
G01S 1/02 (2010.01)
G01S 5/02 (2010.01)
G06Q 10/08 (2012.01)
G06Q 50/02 (2012.01)
A01D 41/00 (2006.01)
A01D 90/02 (2006.01)
G01G 23/18 (2006.01)
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B63B 5/24 (2006.01)
B63B 3/70 (2006.01)
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A01H 5/08 (2006.01)
A01N 37/28 (2006.01)
A01N 37/30 (2006.01)
C07K 14/415 (2006.01)
C12N 9/14 (2006.01)
C12N 15/82 (2006.01)
C12Q 1/42 (2006.01)
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A61B 1/00 (2006.01)
A61B 1/005 (2006.01)
A61B 1/012 (2006.01)
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A61B 18/24 (2006.01)
A61B 1/00 (2006.01)
A61B 1/005 (2006.01)
A61B 1/05 (2006.01)
A61B 1/307 (2006.01)
A61B 18/26 (2006.01)
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(51) Int. Cl.

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A23L 2/08 (2006.01)
B01D 61/00 (2006.01)
C02F 1/44 (2006.01)
(87) WO2019/161444
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F24C 15/20 (2006.01)
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A61B 17/00 (2006.01)
A61B 5/05 (2006.01)
A61B 17/54 (2006.01)
A61B 18/14 (2006.01)
A61B 18/20 (2006.01)
A61N 1/30 (2006.01)
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B32B 19/04 (2006.01)
B32B 27/00 (2006.01)
C08F 261/04 (2006.01)
C08L 51/00 (2006.01)
D21C 5/02 (2006.01)
D21F 11/00 (2006.01)
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B60H 1/00 (2006.01)
H01M 10/625 (2014.01)
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B01J 20/20 (2006.01)
B01J 20/30 (2006.01)
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A61F 2/95 (2013.01)
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A61B 17/15 (2006.01)
A61B 17/00 (2006.01)
A61B 17/17 (2006.01)
A61B 17/56 (2006.01)
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E02F 9/20 (2006.01)
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H04B 5/00 (2006.01)
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(54) Noise based settling detection for an implement of a work machine
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E02F 3/84 (2006.01)
E02F 9/26 (2006.01)
(87) WO2021/150531
(31) 16/751,662 **(32)** 24.01.20 **(33)** US
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B42D 25/324 (2014.01)
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B42D 25/41 (2014.01)
B42D 25/324 (2014.01)
B42D 25/378 (2014.01)
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A61B 1/04 (2006.01)
A61B 5/1455 (2006.01)
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A61F 2/44 (2006.01)
(43) 18.03.2021
(44) 19.01.2023
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(72) Bost, Stephanie M.; McQuaide, Andrew J.; Parry, John J.
(74) KINGS PATENT & TRADE MARKS ATTORNEYS PTY LTD

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(21) 2017409112 **(22)** 05.07.2017
(54) Gasification burner
(51) Int. Cl.
C10J 3/48 (2006.01)
C10J 3/50 (2006.01)
F23D 1/00 (2006.01)
(87) WO2018/188211
(31) 201710245543.3 **(32)** 14.04.17 **(33)** CN
(43) 18.10.2018
(44) 19.01.2023
(72) Chen, Shuanzhu; Ma, Dong; Guo, Jinjun; Zhang, Yan; Zhou, Quan; Ge, Zhihong; Zhang, Xuezhi; Jiang, Congbin
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(71) CHEP Technology Pty Limited
(11) AU-B-2019380259
(21) 2019380259 **(22)** 11.11.2019
(54) Half-size plastic pallet with deck scoop areas
(51) Int. Cl.
B65D 19/00 (2006.01)
B65D 19/24 (2006.01)
B65D 19/32 (2006.01)
B65D 19/40 (2006.01)
(87) WO2020/102050
(31) 62/760,218 **(32)** 13.11.18 **(33)** US
16/674,063 05.11.19 US
(43) 22.05.2020
(44) 19.01.2023
(72) DAUBENSPECK, Bradley Wayne; GORSKY, Daniel Aaron; NORMAN, Craig Rolland
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(71) CHEP Technology Pty Limited
(11) AU-B-2019381674
(21) 2019381674 **(22)** 11.11.2019
(54) Stackable half-size reconfigurable pallet/dolly platform
(51) Int. Cl.
B65D 19/00 (2006.01)
A47B 7/02 (2006.01)
B62B 3/02 (2006.01)
B62B 3/16 (2006.01)
B65D 19/26 (2006.01)
B65D 19/42 (2006.01)
(87) WO2020/102055
(31) 62/760,218 **(32)** 13.11.18 **(33)** US
(43) 22.05.2020
(44) 19.01.2023
(72) DAUBENSPECK, Bradley Wayne; GORSKY, Daniel Aaron; NORMAN, Craig Rolland
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(11) AU-B-2017278080
(21) 2017278080 **(22)** 09.06.2017
(54) Process, method and system for removal of mercury in a gas dehydration process
(51) Int. Cl.
B01D 53/14 (2006.01)
B01D 53/26 (2006.01)
B01D 53/64 (2006.01)
B01D 53/77 (2006.01)
B01D 53/96 (2006.01)
C10L 3/10 (2006.01)
(87) WO2017/214526
(31) 62/348,200 **(32)** 10.06.16 **(33)** US
(43) 14.12.2017
(44) 19.01.2023
(72) Thompson, Joshua Allen; Chinn, Daniel; Hatakeyama, Evan Shigeto; Owen, Ryan Oliver
(74) FPA Patent Attorneys Pty Ltd

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(11) AU-B-2020256402
(21) 2020256402 **(22)** 15.10.2020
(54) HLA-G SPECIFIC CHIMERIC ANTIGEN RECEPTOR, NUCLEIC ACID, HLA-G SPECIFIC CHIMERIC ANTIGEN RECEPTOR EXPRESSION PLASMID, HLA-G SPECIFIC CHIMERIC ANTIGEN RECEPTOR EXPRESSING CELL, USE THEREOF, AND PHARMACEUTICAL COMPOSITION FOR TREATING CANCER
(51) Int. Cl.
C07K 14/705 (2006.01)
A61K 35/17 (2015.01)
A61K 39/00 (2006.01)
A61P 35/00 (2006.01)
C12N 5/0783 (2010.01)
(31) 108138478 **(32)** 24.10.19 **(33)** TW
(43) 13.05.2021
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(72) CHO, Der-Yang; CHIU, Shao-Chih; JAN, Chia-Ing; PAN, Chih-Ming; HUANG, Shi-Wei
(74) Halfords IP

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(71) Chong Kun Dang Pharmaceutical Corp.
(11) AU-B-2020284606
(21) 2020284606 **(22)** 29.05.2020
(54) 1,3,4-oxadiazole homophthalimide derivative compounds as histone deacetylase 6 inhibitor, and the pharmaceutical composition comprising the same
(51) Int. Cl.
C07D 413/06 (2006.01)
A61K 31/4245 (2006.01)
A61K 31/4439 (2006.01)
A61K 31/4725 (2006.01)
A61K 31/517 (2006.01)
A61P 3/00 (2006.01)
A61P 25/00 (2006.01)
A61P 31/00 (2006.01)
C07D 413/10 (2006.01)
C07D 413/14 (2006.01)
(87) WO2020/240493
(31) 10-2019-0064666 **(32)** 31.05.19 **(33)** KR
(43) 03.12.2020
(44) 19.01.2023
(72) LEE, Chang Sik; OH, Jung Taek; YUN, Hokeun; SONG, Hyeseung; KIM, Hyunjin Michael
(74) FPA Patent Attorneys Pty Ltd

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(21) 2020307342 **(22)** 12.06.2020
(54) Bi-directional barbed suture with tailored suture segments
(51) Int. Cl.
A61B 17/06 (2006.01)
A61B 17/04 (2006.01)
A61L 17/00 (2006.01)
A61B 17/00 (2006.01)
(87) WO2020/261033
(31) 16/455,952 **(32)** 28.06.19 **(33)** US
(43) 30.12.2020

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(51) Int. Cl.
A61Q 11/00 (2006.01)
A61K 8/73 (2006.01)
A61K 8/81 (2006.01)
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(43) 23.04.2020
(44) 19.01.2023
(72) NORTH, Michael; DONG, Rong; PIMENTA, Paloma; PILCH, Shira
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(21) 2019417313 **(22)** 17.12.2019
(54) Biomarkers of neutrophil deregulation as diagnostic for gingivitis
(51) Int. Cl.
G01N 33/569 (2006.01)
G01N 33/68 (2006.01)
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(43) 02.07.2020
(44) 19.01.2023
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(21) 2020258282 **(22)** 17.03.2020
(54) Improved methods for synthesizing stannous pyrophosphate
(51) Int. Cl.
A61K 8/21 (2006.01)
A61K 8/24 (2006.01)
A61Q 11/00 (2006.01)
(87) WO2020/214311
(31) 62/835,752 **(32)** 18.04.19 **(33)** US
(43) 22.10.2020
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(72) HAO, Zhigang; THOMSON, Paul; PAN, Long; BRINZARI, Tatiana; XU, Guofeng; LEITE, Sergio; WANG, Yu
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(71) Command Alkon Incorporated
(11) AU-B-2017382998
(21) 2017382998 **(22)** 20.12.2017
(54) Methods and systems for handling fresh concrete
(51) Int. Cl.
B28C 7/02 (2006.01)
G01N 11/14 (2006.01)
G01N 33/38 (2006.01)
(87) WO2018/115192
(31) 62/437,754 **(32)** 22.12.16 **(33)** US
(43) 28.06.2018
(44) 19.01.2023
(72) Beaupré, Denis
(74) Griffith Hack

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(71) Commonwealth Scientific and Industrial Research Organisation
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(21) 2018361705 **(22)** 02.11.2018
(54) Electrolyte composition
(51) Int. Cl.
H01M 10/0565 (2010.01)
H01M 8/1018 (2016.01)
H01M 8/1046 (2016.01)
H01M 8/1048 (2016.01)
(87) WO2019/084623
(31) 2017904460 **(32)** 02.11.17 **(33)** AU
(43) 09.05.2019
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(74) Davies Collison Cave Pty Ltd

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(71) Compagnie Generale des Etablissements Michelin
(11) AU-B-2017334129
(21) 2017334129 **(22)** 21.09.2017
(54) Method for evaluating the dynamic load supported by a tyre by measuring pressure and longitudinal acceleration
(51) Int. Cl.
B60C 23/04 (2006.01)
G01G 19/08 (2006.01)
(87) WO2018/060569
(31) 1659295 **(32)** 29.09.16 **(33)** FR
(43) 05.04.2018
(44) 19.01.2023
(72) Lemineur, Vincent
(74) Griffith Hack

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(71) ConMed Corporation
(11) AU-B-2019366381
(21) 2019366381 **(22)** 23.10.2019
(54) Medical electrode dispenser
(51) Int. Cl.
B65D 73/02 (2006.01)
B65D 83/04 (2006.01)
B65D 83/08 (2006.01)
B65D 85/672 (2006.01)
(87) WO2020/086661
(31) 62/749,146 **(32)** 23.10.18 **(33)** US
(43) 30.04.2020
(44) 19.01.2023
(72) HART, John E.; DONALDSON, Timothy A.
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(71) Continental Global Material Handling LLC
(11) AU-B-2021202434
(21) 2021202434 **(22)** 21.04.2021
(54) Take-up mechanism for conveyor system
(51) Int. Cl.
B65G 23/44 (2006.01)
(43) 13.05.2021
(44) 19.01.2023
(62) 2016201957
(72) DE LORE, Andrew P.; WOOD, Travers T.
(74) Griffith Hack

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(71) Cosmo Koki Co., Ltd.
(11) AU-B-2021202638
(21) 2021202638 **(22)** 28.04.2021
(54) Installment method of fluid control body, and fluid control device including fluid control body
(51) Int. Cl.
F16L 55/105 (2006.01)
F16K 27/00 (2006.01)
F16K 43/00 (2006.01)
F16L 23/02 (2006.01)
F16L 41/04 (2006.01)
(31) 2020-087314 **(32)** 19.05.20 **(33)** JP
(43) 09.12.2021
(44) 19.01.2023
(72) YAMANOUCHI, Shinji
(74) Allens Patent & Trade Mark Attorneys

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(71) CREO MEDICAL LIMITED
(11) AU-B-2021232815
(21) 2021232815 **(22)** 17.09.2021
(54) ELECTROSURGICAL APPARATUS AND METHOD
(51) Int. Cl.
A61B 18/00 (2006.01)
A61B 18/14 (2006.01)
A61B 18/18 (2006.01)
(43) 14.10.2021
(44) 19.01.2023
(62) 2017272523
(72) Meadowcroft, Simon; Hancock, Christopher Paul; Ullrich, George; Webb, David; Turner, Louis; Ebbutt, Julian Mark
(74) AJ PARK

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(71) CREO MEDICAL LIMITED
(11) AU-B-2021232821
(21) 2021232821 **(22)** 17.09.2021
(54) ELECTROSURGICAL APPARATUS AND METHOD
(51) Int. Cl.
A61B 18/00 (2006.01)
A61B 18/14 (2006.01)
A61B 18/18 (2006.01)
(43) 14.10.2021
(44) 19.01.2023
(62) 2017272523
(72) Meadowcroft, Simon; Hancock, Christopher Paul; Ullrich, George; Webb, David; Turner, Louis; Ebbutt, Julian Mark
(74) AJ PARK

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(71) CRINKLAW FARM SERVICES
(11) AU-B-2021282493
(21) 2021282493 **(22)** 09.12.2021
(54) Robotic agricultural system and method
(51) Int. Cl.
A01B 69/00 (2006.01)
A01B 79/00 (2006.01)

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A01M 7/00 (2006.01)
(43) 06.01.2022
(44) 19.01.2023
(62) 2017320593
(72) CRINKLAW, David Curtis; SCHAPANSKY, Chase; VACCARI, Richard; BISCHEL, Jeremy; JOHNSON, Ryan
(74) Griffith Hack

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(71) Crossroads Extremity Systems, LLC
(11) AU-B-2021277682
(21) 2021277682 **(22)** 01.12.2021
(54) Bone plates with dynamic elements
(51) Int. Cl.
A61B 17/84 (2006.01)
(43) 23.12.2021
(44) 19.01.2023
(62) 2020201392
(72) HOLLIS, Chad Michael; HARTDEGEN, Raymond Vernon; SAYGER, Daniel
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(71) CSPC Zhongqi Pharmaceutical Technology (Shijiazhuang) Co., Ltd.
(11) AU-B-2019303777
(21) 2019303777 **(22)** 19.07.2019
(54) Salt of LSD1 inhibitor and a polymorph thereof
(51) Int. Cl.
C07D 271/06 (2006.01)
A61K 31/13 (2006.01)
A61P 35/00 (2006.01)
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(31) 201810804068.3 **(32)** 20.07.18 **(33)** CN
(43) 23.01.2020
(44) 19.01.2023
(72) ZHAO, Lele; SUN, Jianjun; WU, Lingyun; CHEN, Shuhui
(74) Baxter Patent Attorneys Pty Ltd

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(71) Daihachi Chemical Industry Co., Ltd.
(11) AU-B-2018276577
(21) 2018276577 **(22)** 30.05.2018
(54) Flame retardant for woody materials and flame-retardant woody material
(51) Int. Cl.
C09K 21/12 (2006.01)
B27K 3/50 (2006.01)
C09K 21/10 (2006.01)
(87) WO2018/221567
(31) 2017-109571 **(32)** 01.06.17 **(33)** JP
(43) 06.12.2018
(44) 19.01.2023
(72) Ikenosako, Mina
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(71) Daikin Industries, Ltd.
(11) AU-B-2021263240
(21) 2021263240 **(22)** 30.04.2021
(54) AIR CONDITIONING SYSTEM CONTROL METHOD
(51) Int. Cl.
F24F 11/41 (2018.01)
F24F 11/43 (2018.01)
F24F 11/65 (2018.01)
(87) WO2021/221151
(31) 202010367235.X **(32)** 30.04.20 **(33)** CN
(43) 04.11.2021
(44) 19.01.2023
(72) YANG, Zhenghua; WANG, Di; XU, Yangyang; LIU, Xuan
(74) Spruson & Ferguson

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(71) DALIAN INO-TECH CO., LTD.
(11) AU-B-2021203848
(21) 2021203848 **(22)** 10.06.2021
(54) A RESIDUAL CURRENT CIRCUIT BREAKER
(51) Int. Cl.
H01H 83/14 (2006.01)
H01H 50/10 (2006.01)
(31) 202021091716.4 **(32)** 12.06.20 **(33)** CN
(43) 06.01.2022
(44) 19.01.2023
(72) LI, Wenjie; LI, Wenjun; LI, Wenwei
(74) WRAYS PTY LTD

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(71) Datto, Inc.
(11) AU-B-2021251658
(21) 2021251658 **(22)** 30.03.2021
(54) Methods and systems for detecting ransomware attack in incremental backup
(51) Int. Cl.
G06F 21/55 (2013.01)
G06F 11/14 (2006.01)
(87) WO2021/206956
(31) 16/840,665 **(32)** 06.04.20 **(33)** US
(43) 14.10.2021
(44) 19.01.2023
(72) HANSEN, Kurt
(74) Griffith Hack

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(71) DDP Specialty Electronic Materials US, LLC
(11) AU-B-2017345162
(21) 2017345162 **(22)** 16.10.2017
(54) Dispenser with cap
(51) Int. Cl.
B65D 83/20 (2006.01)
B65D 83/30 (2006.01)
B65D 83/40 (2006.01)
B65D 83/46 (2006.01)
B65D 83/34 (2006.01)
(87) WO2018/075381
(31) 62/410,408 **(32)** 20.10.16 **(33)** US
(43) 26.04.2018
(44) 19.01.2023
(72) Schroer, Daniel R.; Black, Marc S.; Schuette, Chad V.; Siler, Christopher J.
(74) Phillips Ormonde Fitzpatrick

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(71) Ddsports, Inc.
(11) AU-B-2019244111
(21) 2019244111 **(22)** 27.03.2019
(54) Wireless charging pod and charging pod rack for game devices with rechargeable batteries
(51) Int. Cl.
H02J 50/90 (2016.01)
A63B 47/00 (2006.01)
H02J 7/02 (2016.01)
H02J 50/10 (2016.01)
H02J 50/80 (2016.01)
(87) WO2019/191315
(31) 62/648,443 **(32)** 27.03.18 **(33)** US
(43) 03.10.2019
(44) 19.01.2023
(72) KEELEY, Thomas J.; IANNI, Bruce C.; ROSS, Davyeon D.; KAHLER, Clint A.; MAZIARZ, Michael; HERRON, Patrick M.
(74) Spruson & Ferguson

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(71) Dexcom, Inc.
(11) AU-B-2021202782
(21) 2021202782 **(22)** 04.05.2021
(54) System and method for data analytics and visualization
(51) Int. Cl.
G16H 15/00 (2018.01)
(43) 27.05.2021
(44) 19.01.2023
(62) 2019202094
(72) ZAMANAKOS, Georgios; WIEDEBACK, Daniel Justin; STEWART, Jeffrey Grant; REIHMAN, Eli; PRICE, David; MILLER, Lauren C.; LEONE, Keri; KRAEMER, Dan; KIRBY, Katherine Eng; KIDA, Greg; KAMATH, Apurv Ullas; GREENE, Adam R.; GIMENEZ, Rebecca; ELLI, Sarah Paige; DRAEGER, Rian; DELMORE, Shane Philip; BOWMAN, Leif N.
(74) FB Rice Pty Ltd

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(21) 2021201082

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(71) Dolby Laboratories Licensing Corporation; Dolby International AB
(11) AU-B-2021201082
(21) 2021201082 **(22)** 19.02.2021
(54) Audio decoder and decoding method
(51) Int. Cl.
H04S 7/00 (2006.01)
(43) 11.03.2021
(44) 19.01.2023
(62) 2016312404
(72) Breebaart, Dirk Jeroen; Cooper, David Matthew; Samuelsson, Leif Jonas
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(71) Dongguan Poweramp Technology Limited
(11) AU-B-2020399038
(21) 2020399038 **(22)** 09.12.2020
(54) Battery module and energy storage apparatus
(51) Int. Cl.
H01M 50/264 (2021.01)
(87) WO2021/115324
(31) 201911252886.8 **(32)** 09.12.19 **(33)** CN
(43) 17.06.2021
(44) 19.01.2023
(72) ZHANG, Chunhui; GAO, Yongjian
(74) Admiral Trademarks & Patents Services

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(21) 2018241039

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(71) Effortless Oxygen, LLC
(11) AU-B-2021221922
(21) 2021221922 **(22)** 04.08.2021
(54) Flow triggered gas delivery
(51) Int. Cl.
A61M 16/00 (2006.01)
A62B 7/02 (2006.01)
(87) WO2022/031800
(31) 16/986,017 **(32)** 05.08.20 **(33)** US
17/199,172 11.03.21 US
17/350,921 17.06.21 US
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(43) 24.02.2022
(44) 19.01.2023
(72) METELITS, Joel B.
(74) Wallington-Dummer

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(71) Elcam Medical Agricultural Cooperative Association Ltd.
(11) AU-B-2020260561
(21) 2020260561 **(22)** 30.10.2020
(54) Injector
(51) Int. Cl.
A61M 5/20 (2006.01)
(43) 26.11.2020
(44) 19.01.2023
(62) 2019202474
(72) RADAY, Lior; CARMEL, Ehud; MARELI, Lior; DAILY, David; KEENAN, Guy
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(71) ENEOS Corporation
(11) AU-B-2019353340
(21) 2019353340 **(22)** 27.09.2019
(54) Method for operating hydrogen production apparatus, and control device for hydrogen production apparatus
(51) Int. Cl.
C01B 3/00 (2006.01)
B60S 5/02 (2006.01)
H01M 8/00 (2016.01)
H01M 8/04 (2016.01)
H01M 8/04186 (2016.01)
H01M 8/04313 (2016.01)
H01M 8/0438 (2016.01)
H01M 8/04746 (2016.01)
H01M 8/0606 (2016.01)
B60L 50/70 (2019.01)
(87) WO2020/071285
(31) 2018-187679 **(32)** 02.10.18 **(33)** JP
(43) 09.04.2020
(44) 19.01.2023
(72) FUKUNAGA, Akihiko; TEZUKA, Toshio; SEIKE, Tadashi; NISHIO, Hirofumi; TATEISHI, Daisaku
(74) WRAYS PTY LTD

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(71) Erwin Junker Grinding Technology A.S.
(11) AU-B-2017333963
(21) 2017333963 **(22)** 28.09.2017
(54) Reciprocating-piston internal combustion engine with device for increasing the torque thereof
(51) Int. Cl.
F02B 21/00 (2006.01)
F02D 13/02 (2006.01)
F02M 23/00 (2006.01)
F02M 23/04 (2006.01)
(87) WO2018/060371
(31) 10 2016 219 101.2 **(32)** 30.09.16 **(33)** DE
(43) 05.04.2018
(44) 19.01.2023
(72) Junker, Erwin
(74) Spruson & Ferguson

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(71) Estetra SRL
(11) AU-B-2016425935
(21) 2016425935 **(22)** 28.10.2016
(54) Method for the management of dysmenorrhea and menstrual pain
(51) Int. Cl.
A61K 31/565 (2006.01)
A61K 31/585 (2006.01)
A61P 15/00 (2006.01)
(87) WO2018/065076
(43) 12.04.2018
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(72) Jost, Maud; Rausin, Glwadys
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(71) ETABLISSEMENTS COLLARD
(11) AU-B-2021203251
(21) 2021203251 **(22)** 20.05.2021
(54) LEAF STRIPPER
(51) Int. Cl.
A01G 17/02 (2006.01)
A01G 3/04 (2006.01)
(31) 20 06 587 **(32)** 24.06.20 **(33)** FR
(43) 20.01.2022
(44) 19.01.2023
(72) COLLARD, Yannick
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Ethicon, Inc.
(11) AU-B-2018257956
(21) 2018257956 **(22)** 16.04.2018
(54) Skin closure devices with self-forming exudate drainage channels
(51) Int. Cl.
A61B 17/08 (2006.01)
A61F 13/02 (2006.01)
(87) WO2018/200242
(31) 15/496,389 **(32)** 25.04.17 **(33)** US
(43) 01.11.2018
(44) 19.01.2023
(72) Quintero, Julian; Kriksunov, Leo B.
(74) Spruson & Ferguson

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(71) Evoqua Water Technologies LLC
(11) AU-B-2017277405
(21) 2017277405 **(22)** 07.06.2017
(54) Ballasted solids treatment system and method
(51) Int. Cl.
C02F 3/12 (2006.01)
C02F 1/28 (2006.01)
C02F 3/28 (2006.01)
C02F 3/30 (2006.01)
(87) WO2017/214216
(31) 62/346,786 **(32)** 07.06.16 **(33)** US
(43) 14.12.2017
(44) 19.01.2023
(72) Lindemann, Timothy; Whittier, Michael Casey
(74) Spruson & Ferguson

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(71) Evoqua Water Technologies LLC
(11) AU-B-2017278103
(21) 2017278103 **(22)** 05.06.2017
(54) Removing heavy metals in a ballasted process
(51) Int. Cl.
C02F 3/08 (2006.01)
B01D 24/14 (2006.01)
C02F 1/52 (2006.01)
C02F 1/62 (2006.01)
C02F 3/00 (2006.01)
C02F 3/12 (2006.01)
(87) WO2017/214003
(31) 62/346,017 **(32)** 06.06.16 **(33)** US
(43) 14.12.2017
(44) 19.01.2023
(72) Wikramanayake, Rohan; Pepin, Raymond G.; Miles, Thomas
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(71) Exact Sciences Corporation
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C12Q 1/68 (2006.01)
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B01J 12/00 (2006.01)
B01J 8/06 (2006.01)
B01J 19/24 (2006.01)
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(51) Int. Cl.
F25J 1/00 (2006.01)
F25J 1/02 (2006.01)
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C07K 16/22 (2006.01)
C07K 16/00 (2006.01)
C07K 16/28 (2006.01)
C07K 16/42 (2006.01)
G01N 33/53 (2006.01)
G01N 33/68 (2006.01)
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A01G 20/15 (2018.01)
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A61M 16/16 (2006.01)
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(21) 2017293759 **(22)** 07.07.2017
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(51) Int. Cl.
A61M 16/20 (2006.01)
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A01N 43/653 (2006.01)
A01N 33/18 (2006.01)
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(54) SYSTEMS AND METHODS FOR AN INTERACTIVE NETWORK ANALYSIS PLATFORM
(51) Int. Cl.
H04L 41/04 (2022.01)
H04L 41/08 (2022.01)
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(51) Int. Cl.
G10L 19/022 (2013.01)
G10L 25/45 (2013.01)
G10L 19/008 (2013.01)
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B65D 51/00 (2006.01)
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(51) Int. Cl.
A61M 1/14 (2006.01)
A61M 1/16 (2006.01)
A61M 39/10 (2006.01)
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G03G 15/20 (2006.01)
G03G 15/16 (2006.01)
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(31) 2019-044949 **(32)** 12.03.19 **(33)** JP
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(11) AU-B-2021202873

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(54) Air purifying device, arrangement and method for separating materials from a gas flow
(51) Int. Cl.
B03C 3/41 (2006.01)
B03C 3/04 (2006.01)
B03C 3/47 (2006.01)
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H01H 33/56 (2006.01)
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C12Q 1/68 (2006.01)
C12N 5/078 (2010.01)
G01N 33/483 (2006.01)
(43) 17.09.2020
(44) 19.01.2023
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(21) 2020213696 **(22)** 31.01.2020
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B21F 27/04 (2006.01)
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H04W 4/02 (2018.01)
G06Q 50/26 (2012.01)
G08B 21/02 (2006.01)
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(31) 15/651,936 **(32)** 17.07.17 **(33)** US
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B32B 7/12 (2006.01)
B65D 65/46 (2006.01)
B65D 85/804 (2006.01)
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A47K 5/12 (2006.01)
A47K 5/14 (2006.01)
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G06N 10/00 (2019.01)
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A47J 27/21 (2006.01)
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(54) Method and device for information transmission
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H04W 72/04 (2009.01)
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(54) Radio link failure handling method and related product
(51) Int. Cl.
H04W 76/00 (2018.01)
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(31) PCT/CN2018/075617 **(32)** 07.02.18 **(33)** CN
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(54) Method for indicating state of PDCP duplicate data, terminal device, and network device
(51) Int. Cl.
H04L 5/00 (2006.01)
(87) WO2020/087258
(43) 07.05.2020
(44) 19.01.2023
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(54) Communication method for dual connectivity, and network device
(51) Int. Cl.
H04W 24/10 (2009.01)
H04W 88/06 (2009.01)
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(72) HU, Rongyi; WANG, Shukun
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(51) Int. Cl.
H01H 9/30 (2006.01)
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(31) 201811095757.8 **(32)** 19.09.18 **(33)** CN
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(54) Automated rate control system for hydraulic fracturing
(51) Int. Cl.
E21B 43/26 (2006.01)
E21B 43/17 (2006.01)
E21B 47/06 (2012.01)
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(54) Energy transfer mechanism for wellbore junction assembly
(51) Int. Cl.
E21B 41/00 (2006.01)
E21B 47/12 (2012.01)
H02J 50/00 (2016.01)
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(54) Shapewear garment with mesh regions
(51) Int. Cl.
A41D 27/28 (2006.01)
A41B 9/06 (2006.01)
A41D 1/18 (2006.01)
D04B 1/24 (2006.01)
A41C 1/06 (2006.01)
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(51) Int. Cl.
B01J 31/02 (2006.01)
C07D 213/643 (2006.01)
C07D 239/34 (2006.01)
C07D 239/52 (2006.01)
(87) WO2020/097971
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(11) AU-B-2020261288
(21) 2020261288 **(22)** 17.04.2020
(54) Tire inflation system with parallel flow path
(51) Int. Cl.
B60C 23/04 (2006.01)
B60C 23/00 (2006.01)
F16K 37/00 (2006.01)
H01H 35/24 (2006.01)
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(31) 62/837,226 **(32)** 23.04.19 **(33)** US
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(21) 2021202458 **(22)** 22.04.2021
(54) Device and method for mixing liquids
(51) Int. Cl.
B01F 25/20 (2022.01)
B01F 35/71 (2022.01)
(31) 20175365.4 **(32)** 19.05.20 **(33)** EP
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(44) 19.01.2023
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(11) AU-B-2019428071
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(54) Print component with memory circuit
(51) Int. Cl.
B41J 2/045 (2006.01)
B41J 2/175 (2006.01)
B41J 2/21 (2006.01)
G06F 12/06 (2006.01)
G11C 13/00 (2006.01)
(87) WO2020/162970
(31) PCT/US2019/016817 **(32)** 06.02.19 **(33)** US
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(11) AU-B-2019428183
(21) 2019428183 **(22)** 06.02.2019
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(51) Int. Cl.
B41J 2/045 (2006.01)
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(21) 2019428305 **(22)** 31.07.2019
(54) Print component with memory circuit
(51) Int. Cl.
B41J 2/045 (2006.01)
B41J 2/175 (2006.01)
B41J 2/21 (2006.01)
G06F 12/06 (2006.01)
G11C 7/16 (2006.01)
G11C 13/00 (2006.01)
(87) WO2020/162969
(31) PCT/US2019/016817 **(32)** 06.02.19 **(33)** US
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(21) 2019428712 **(22)** 06.02.2019
(54) Die for a printhead
(51) Int. Cl.
B41J 2/14 (2006.01)
B41J 2/045 (2006.01)
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(51) Int. Cl.
G01R 19/25 (2006.01)
G01R 1/20 (2006.01)
G01R 31/28 (2006.01)
G01R 35/00 (2006.01)
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C07K 14/47 (2006.01)
A61K 45/06 (2006.01)
A61K 48/00 (2006.01)
A61P 25/28 (2006.01)
C12N 7/00 (2006.01)
C12N 15/86 (2006.01)
(87) WO2020/251954
(31) 63/010,970 **(32)** 16.04.20 **(33)** US
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(54) Device and method for intra-prediction
(51) Int. Cl.
H04N 19/117 (2014.01)
H04N 19/157 (2014.01)
H04N 19/182 (2014.01)
H04N 19/82 (2014.01)
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(44) 19.01.2023
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(54) COMMUNICATIONS METHOD AND APPARATUS
(51) Int. Cl.
H04W 72/12 (2009.01)
(87) WO2020/103842
(31) 201811377833.4 **(32)** 19.11.18 **(33)** CN
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(51) Int. Cl.
H04W 24/04 (2009.01)
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H04W 24/10 (2009.01)
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H04L 12/14 (2006.01)
H04W 24/02 (2009.01)
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B23D 59/00 (2006.01)
B23D 47/00 (2006.01)
B23Q 11/02 (2006.01)
B28D 1/04 (2006.01)
B28D 7/02 (2006.01)
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G02B 21/00 (2006.01)
G02B 21/06 (2006.01)
G02B 21/36 (2006.01)
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G01N 21/84 (2006.01)
G02B 21/00 (2006.01)
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(51) Int. Cl.
E21B 47/06 (2012.01)
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(54) Clamp device and method for repairing a damaged part of a pipe section, and use of such clamp device
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F16L 55/17 (2006.01)
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H04N 19/10 (2014.01)
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C07C 233/60 (2006.01)
A61K 31/16 (2006.01)
A61P 37/00 (2006.01)
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E05D 15/06 (2006.01)
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G06F 21/53 (2013.01)
G06F 9/455 (2018.01)
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G06F 21/57 (2013.01)
G06F 9/455 (2018.01)
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G06F 12/02 (2006.01)
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H01L 27/142 (2014.01)
H01L 31/09 (2006.01)
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H04W 16/10 (2009.01)
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G01K 3/04 (2006.01)
G04F 13/04 (2006.01)
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(54) Methods and systems of securely transferring data
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G06F 21/34 (2013.01)
G06F 21/44 (2013.01)
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(51) Int. Cl.
A61K 45/06 (2006.01)
A61K 9/48 (2006.01)
A61K 31/381 (2006.01)
A61K 31/4015 (2006.01)
A61K 31/437 (2006.01)
A61K 31/4545 (2006.01)
A61K 31/496 (2006.01)
A61K 31/506 (2006.01)
A61P 25/00 (2006.01)
A61P 25/06 (2006.01)
A61P 25/08 (2006.01)
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C22B 3/06 (2006.01)
C01B 17/20 (2006.01)
C01G 3/12 (2006.01)
C01G 11/02 (2006.01)
C01G 53/11 (2006.01)
C22B 3/20 (2006.01)
C22B 3/26 (2006.01)
C22B 15/00 (2006.01)
C22B 17/00 (2006.01)
C22B 23/00 (2006.01)
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F25J 1/00 (2006.01)
E04H 5/02 (2006.01)
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(54) MOSAIC TILE PAVING DEVICE
(51) Int. Cl.
B44B 9/00 (2006.01)
B25B 11/00 (2006.01)
B44C 3/12 (2006.01)
E04F 21/00 (2006.01)
(31) 17/029,271 **(32)** 23.09.20 **(33)** US
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(54) SOLAR CELL AND SOLAR CELL MODULE
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H01L 31/07 (2012.01)
H01L 27/02 (2006.01)
H01L 29/02 (2006.01)
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H01R 24/38 (2011.01)
H01R 13/533 (2006.01)
H01R 13/646 (2011.01)
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E21B 15/00 (2006.01)
E21B 19/14 (2006.01)
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C07D 471/04 (2006.01)
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A61F 13/494 (2006.01)
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A61F 13/49 (2006.01)
A61F 13/494 (2006.01)
A61F 13/495 (2006.01)
A61F 13/513 (2006.01)
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A61F 13/49 (2006.01)
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(54) Methods of administering chimeric antigen receptor immunotherapy
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A61P 35/00 (2006.01)
A61K 39/00 (2006.01)
(43) 06.01.2022
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B32B 27/30 (2006.01)
E01F 9/619 (2016.01)
G02B 5/128 (2006.01)
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C07D 213/04 (2006.01)
A61K 31/425 (2006.01)
A61K 31/505 (2006.01)
C07D 209/04 (2006.01)
C07D 217/04 (2006.01)
C07D 231/56 (2006.01)
C07D 241/10 (2006.01)
C07D 249/08 (2006.01)
C07D 277/20 (2006.01)
C07D 487/04 (2006.01)
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(51) Int. Cl.
C07D 495/04 (2006.01)
A61K 31/535 (2006.01)
(87) WO2017/161028
(31) 62/309,372 **(32)** 16.03.16 **(33)** US
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B65D 41/04 (2006.01)
B32B 3/04 (2006.01)
B32B 5/02 (2006.01)
B32B 27/08 (2006.01)
B32B 27/12 (2006.01)
B32B 27/32 (2006.01)
B65D 53/04 (2006.01)
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B60C 19/08 (2006.01)
B60C 7/00 (2006.01)
B60C 19/00 (2006.01)
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A61K 9/00 (2006.01)
A61K 31/365 (2006.01)
A61K 31/404 (2006.01)
A61K 31/437 (2006.01)
A61K 31/44 (2006.01)
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A61K 31/4709 (2006.01)
A61K 31/496 (2006.01)
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A61K 31/5025 (2006.01)
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A61P 35/00 (2006.01)
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E01C 1/00 (2006.01)
E01C 1/02 (2006.01)
E01C 1/04 (2006.01)
E01F 9/00 (2006.01)
G08G 1/00 (2006.01)
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A61L 2/10 (2006.01)
A61L 2/08 (2006.01)
(43) 25.03.2021
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(62) 2019204237
(72) ROMO, Luis Fernando; CINOGLU, Arto; MOSES, David
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(71) LG Electronics Inc.
(11) AU-B-2019381567
(21) 2019381567 **(22)** 14.11.2019
(54) Ice maker and refrigerator having the same
(51) Int. Cl.
F25C 1/24 (2018.01)
F25C 1/25 (2018.01)
F25D 23/12 (2006.01)
(87) WO2020/101408
(31) 10-2018-0142123 **(32)** 16.11.18 **(33)** KR
10-2019-0088287 22.07.19 KR
(43) 22.05.2020
(44) 19.01.2023
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Applications Accepted - Name Index cont'd

(71) LG Electronics Inc.
(11) AU-B-2019399394
(21) 2019399394 **(22)** 12.12.2019
(54) Laundry machine having induction heater and control method of the same
(51) Int. Cl.
D06F 58/26 (2006.01)
D06F 58/20 (2006.01)
(87) WO2020/122625
(31) 10-2018-0161336 **(32)** 13.12.18 **(33)** KR
(43) 18.06.2020
(44) 19.01.2023
(72) LEE, Youngjoo; HONG, Sangwook
(74) FB Rice Pty Ltd

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(71) LG Electronics Inc.
(11) AU-B-2021203444
(21) 2021203444 **(22)** 26.05.2021
(54) Cleaner
(51) Int. Cl.
A47L 9/16 (2006.01)
A47L 9/28 (2006.01)
A47L 9/32 (2006.01)
(43) 01.07.2021
(44) 19.01.2023
(62) 2019271879
(72) NAM, Bohyun; HWANG, Jungbae; KIM, Jinju; KIM, Namhee; AN, Hyeonjeong
(74) FB Rice Pty Ltd

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(71) LG Electronics Inc.
(11) AU-B-2021203694
(21) 2021203694 **(22)** 04.06.2021
(54) Laundry handling apparatus
(51) Int. Cl.
D06F 35/00 (2006.01)
D06F 33/30 (2020.01)
D06F 39/08 (2006.01)
(43) 01.07.2021
(44) 19.01.2023
(62) 2018271740
(72) LEE, Kyungah; KIM, Hyewon; LEE, Junghwan; YOO, Taewoo
(74) FB Rice Pty Ltd

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(71) LG ELECTRONICS INC.
(11) AU-B-2021282502
(21) 2021282502 **(22)** 09.12.2021
(54) Laundry treatment apparatus
(51) Int. Cl.
D06F 37/30 (2020.01)
D06F 37/40 (2006.01)
(43) 06.01.2022
(44) 19.01.2023
(62) 2018335923
(72) Kim, Dongcheol; Kim, Youngjong
(74) Dentons Patent Attorneys Australasia Limited

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(71) Life Technologies Corporation
(11) AU-B-2019214969
(21) 2019214969 **(22)** 30.01.2019
(54) Instruments, devices and consumables for use in a workflow of a smart molecular analysis system
(51) Int. Cl.
B01L 3/00 (2006.01)
G01N 35/00 (2006.01)
G16H 10/40 (2018.01)
B29C 49/24 (2006.01)
(87) WO2019/152563
(31) 62/624,080 **(32)** 30.01.18 **(33)** US
(43) 08.08.2019
(44) 19.01.2023
(72) POTHINI, Shakila; SANGHA, Hardeep; HABERSTROH, Marc; SURI, Puneet; LUK, Damien
(74) Spruson & Ferguson

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(71) Lubrizol Advanced Materials, Inc.
(11) AU-B-2018212998
(21) 2018212998 **(22)** 30.01.2018
(54) Antimicrobial, non-thrombogenic polymer compositions
(51) Int. Cl.
A01N 25/10 (2006.01)
A01N 47/44 (2006.01)
A01P 1/00 (2006.01)
A61L 2/16 (2006.01)
A61L 27/34 (2006.01)
A61L 29/08 (2006.01)
A61L 31/10 (2006.01)
(87) WO2018/140911
(31) 62/451,903 **(32)** 30.01.17 **(33)** US
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(72) Day, Roger W.; Zhang, Hua; Woofter, Richard; Makal, Umit G.; Smith, Kiara
(74) Oxygene IP

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(11) AU-B-2018312516
(21) 2018312516 **(22)** 17.07.2018
(54) Energy accumulator for storing electrical energy as heat and method for this purpose
(51) Int. Cl.
F01K 3/14 (2006.01)
F01K 3/18 (2006.01)
F28D 20/00 (2006.01)
(87) WO2019/025182
(31) 17184877.3 **(32)** 04.08.17 **(33)** EP
(43) 07.02.2019
(44) 19.01.2023
(72) ZWINKELS, Andrew
(74) Madderns Pty Ltd

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(71) Lumus Ltd.
(11) AU-B-2018372665
(21) 2018372665 **(22)** 21.11.2018
(54) Optical aperture expansion arrangement for near-eye displays
(51) Int. Cl.
G02B 6/00 (2006.01)
(87) WO2019/102366
(31) 62/588,946 **(32)** 21.11.17 **(33)** US
(43) 31.05.2019
(44) 19.01.2023
(72) DANZIGER, Yochay; GELBERG, Jonathan
(74) Wallington-Dummer

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(71) Lycopodium Minerals Pty Ltd
(11) AU-B-2021201301
(21) 2021201301 **(22)** 27.02.2021
(54) Low Headroom Jaw Crushing Facility
(51) Int. Cl.
B02C 21/00 (2006.01)
B02C 1/02 (2006.01)
B02C 23/02 (2006.01)
(31) 2020902426 **(32)** 14.07.20 **(33)** AU
(43) 03.02.2022
(44) 19.01.2023
(72) Ruggiero, Bruno; Luies, Johan Albertus
(74) WRAYS PTY LTD

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(71) Magic Leap, Inc.
(11) AU-B-2022201750
(21) 2022201750 **(22)** 14.03.2022
(54) Fixed-distance virtual and augmented reality systems and methods
(51) Int. Cl.
G06T 19/00 (2011.01)
G02B 27/01 (2006.01)
(43) 07.04.2022
(44) 19.01.2023
(62) 2017305227
(72) Miller, Samuel A.; Welch, William Hudson
(74) Davies Collison Cave Pty Ltd

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(71) Mars, Incorporated
(11) AU-B-2018218303
(21) 2018218303 **(22)** 08.02.2018
(54) Dispenser
(51) Int. Cl.
B65D 83/04 (2006.01)
(87) WO2018/146476
(31) 1702171.8 **(32)** 09.02.17 **(33)** GB
(43) 16.08.2018
(44) 19.01.2023
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(74) MINTER ELLISON

Mastalerz, K. see Tremayne, T.
(21) 2017261850

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(71) Merlin Solar Technologies, Inc.
(11) AU-B-2019299000
(21) 2019299000 **(22)** 27.06.2019
(54) Method for blackening a metallic article
(51) Int. Cl.
H01L 31/18 (2006.01)
H01L 31/02 (2006.01)
H01L 31/0256 (2006.01)
(87) WO2020/009891
(31) 62/694,644 **(32)** 06.07.18 **(33)** US
62/743,178 09.10.18 US
(43) 09.01.2020
(44) 19.01.2023
(72) CHARI, Arvind; MURALI, Venkatesan; BRAINARD, Robert; PRABHU, Gopal; DAM, Jesse
(74) Phillips Ormonde Fitzpatrick

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(71) Mersana Therapeutics, Inc.
(11) AU-B-2017234163
(21) 2017234163 **(22)** 13.03.2017

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(54) NaPi2b-targeted antibody-drug conjugates and methods of use thereof
(51) Int. Cl.
A61P 35/00 (2006.01)
A61K 47/68 (2017.01)
(87) WO2017/160754
(31) 62/308,567 **(32)** 15.03.16 **(33)** US
62/383,324 02.09.16 US
62/323,068 15.04.16 US
(43) 21.09.2017
(44) 19.01.2023
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(74) Spruson & Ferguson

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(71) Metalogenia Research & Technologies S.L.
(11) AU-B-2016419981
(21) 2016419981 **(22)** 18.08.2016
(54) Fastening device for a wearing or protection element in the bucket of an earth moving machine and corresponding fastening system and procedure
(51) Int. Cl.
E02F 9/28 (2006.01)
(87) WO2018/033651
(43) 22.02.2018
(44) 19.01.2023
(72) Martinez Mañé, Angel; Pérez Soria, Francisco; Picón Manjón, Francesc; Triginer Boixeda, Jorge
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(71) Metso Outotec USA Inc.
(11) AU-B-2017258602
(21) 2017258602 **(22)** 29.03.2017
(54) Spider bushing assembly for a gyratory crusher
(51) Int. Cl.
B02C 2/06 (2006.01)
(87) WO2017/189145
(31) 15/137,527 **(32)** 25.04.16 **(33)** US
(43) 02.11.2017
(44) 19.01.2023
(72) Polinski, Donald J.
(74) IP GATEWAY PATENT & TRADE MARK ATTORNEYS PTY LTD

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(71) Micro-Tech (Nanjing) Co., Ltd.
(11) AU-B-2020257902
(21) 2020257902 **(22)** 13.04.2020
(54) Medical device for tissue hemostasis or closure
(51) Int. Cl.
A61B 17/12 (2006.01)
(87) WO2020/211725
(31) 19169940.4 **(32)** 17.04.19 **(33)** EP
(43) 22.10.2020
(44) 19.01.2023
(72) KUHN, Daniel
(74) Michael Buck IP

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(11) AU-B-2017234387
(21) 2017234387 **(22)** 14.03.2017
(54) Cleaner with hot plate for floors provided with a sandwich panel for heating and gradual releasing of the water to an underlying cleaning cloth
(51) Int. Cl.
A47L 11/40 (2006.01)
A47L 13/22 (2006.01)
A47L 13/24 (2006.01)
(87) WO2017/158631
(31) 102016000027284 **(32)** 15.03.16 **(33)** IT
(43) 21.09.2017
(44) 19.01.2023
(72) Milanese, Pier Antonio
(74) Collison & Co

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(71) Mineed Technology Company Limited
(11) AU-B-2019456606
(21) 2019456606 **(22)** 20.08.2019
(54) A dissolvable microneedle
(51) Int. Cl.
A61M 37/00 (2006.01)
(87) WO2021/006823
(31) 1901004256 **(32)** 10.07.19 **(33)** TH
(43) 14.01.2021
(44) 19.01.2023
(72) WANICHWECHARUNGRUANG, Supason; RUTWAREE, Teeranut; SANSUREERUNGSIKUL, Titiporn; ASAWANONDA, Pravit; BANLUNARA, Wijit
(74) Phillips Ormonde Fitzpatrick

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(71) Mitsubishi Electric Corporation
(11) AU-B-2019447906
(21) 2019447906 **(22)** 28.05.2019
(54) Heat pump apparatus, air conditioner and refrigerator
(51) Int. Cl.
F25B 49/02 (2006.01)
F25B 1/00 (2006.01)
H02M 7/48 (2007.01)
H02P 27/08 (2006.01)
(87) WO2020/240686
(43) 03.12.2020
(44) 19.01.2023
(72) KUBOTA, Shunsuke; UEMURA, Keisuke; YAMAKAWA, Takashi
(74) Davies Collison Cave Pty Ltd

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(71) Mölnlycke Health Care AB
(11) AU-B-2018212384
(21) 2018212384 **(22)** 17.01.2018
(54) Fiber materials with improved properties for use in wound treatment
(51) Int. Cl.
A61F 13/02 (2006.01)
A61L 15/60 (2006.01)
D04H 1/425 (2012.01)
D04H 1/4258 (2012.01)
D04H 1/4309 (2012.01)
(87) WO2018/137979
(31) 17153138.7 **(32)** 25.01.17 **(33)** EP
(43) 02.08.2018
(44) 19.01.2023
(72) Carlsson, Erik
(74) FB Rice Pty Ltd

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(71) Mondo Minerals B.V.
(11) AU-B-2016425949
(21) 2016425949 **(22)** 14.10.2016
(54) Polished talc microbeads
(51) Int. Cl.
A61K 8/25 (2006.01)
A61K 8/02 (2006.01)
A61Q 11/00 (2006.01)
A61Q 19/10 (2006.01)
(87) WO2018/068865
(43) 19.04.2018
(44) 19.01.2023
(72) De Barros Sanches, Jose Manuel; Wasilewski, Tomasz; Kanios-Zakrzewska, Anna Maria
(74) Golja Haines & Friend

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(71) Motorola Solutions, Inc.
(11) AU-B-2021239795
(21) 2021239795 **(22)** 19.02.2021
(54) Full duplex operation of a portable communications device in a time division multiple access radio system
(51) Int. Cl.
H04B 1/3827 (2015.01)
H03L 7/16 (2006.01)
H04W 52/02 (2009.01)
(87) WO2021/188252
(31) 16/821,765 **(32)** 17.03.20 **(33)** US
(43) 23.09.2021
(44) 19.01.2023
(72) V K CHACKO, V.C. Prakash; KOK, Yi Lynn; LEE, Wai Mun; LOW, Siew Im
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) Motorola Solutions, Inc.
(11) AU-B-2021251717
(21) 2021251717 **(22)** 06.04.2021
(54) Systems and methods for remote scan and priority operations
(51) Int. Cl.
H04W 84/08 (2009.01)
H04W 4/10 (2009.01)
H04W 84/04 (2009.01)
H04W 88/16 (2009.01)
H04W 36/14 (2009.01)
H04W 88/06 (2009.01)
H04W 88/10 (2009.01)
(87) WO2021/207133
(31) 16/842,632 **(32)** 07.04.20 **(33)** US
(43) 14.10.2021
(44) 19.01.2023
(72) MARTINOVICH, Kris K.; MCDONALD, Daniel J.; VARELA, Ruth A.; MILLS, David R.; ALMASI, Andor
(74) PHILLIPS ORMONDE FITZPATRICK

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(71) MTD Products Inc.
(11) AU-B-2021200640
(21) 2021200640 **(22)** 01.02.2021
(54) HIGH-EFFICIENCY LAWN MAINTENANCE TOOL
(51) Int. Cl.
A01D 34/00 (2006.01)
A01D 34/69 (2006.01)
A01D 69/00 (2006.01)
A01D 101/00 (2006.01)
(43) 04.03.2021

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(62) 2016271523
(72) SCHAEDLER, Axel
(74) Wynnes Patent and Trade Mark Attorneys Pty Ltd

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(71) Mustapha, J.
(11) AU-B-2018247062
(21) 2018247062 **(22)** 02.04.2018
(54) Chronic total occlusion crossing devices and methods
(51) Int. Cl.
A61B 17/32 (2006.01)
(87) WO2018/184017
(31) 15/666,279 **(32)** 01.08.17 **(33)** US
62/500,303 02.05.17 US
62/479,646 31.03.17 US
(43) 04.10.2018
(44) 19.01.2023
(72) Mustapha, Jihad A.
(74) Spruson & Ferguson

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(71) MX Technologies Inc.
(11) AU-B-2021201121
(21) 2021201121 **(22)** 19.02.2021
(54) Aggregation platform portal
(51) Int. Cl.
G06F 16/30 (2019.01)
G06Q 10/10 (2012.01)
G06Q 50/00 (2012.01)
(43) 11.03.2021
(44) 19.01.2023
(62) 2019204322
(72) CALDWELL, John Ryan
(74) Griffith Hack

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(71) Nakamura, K.
(11) AU-B-2020200654
(21) 2020200654 **(22)** 30.01.2020
(54) Self-driving vehicle stop position notification system and vehicle stop range registration method
(51) Int. Cl.
G06V 20/58 (2022.01)
G05D 1/02 (2020.01)
G05D 1/12 (2006.01)
G06N 5/00 (2023.01)
G07C 5/00 (2006.01)
G07C 5/06 (2006.01)
G08G 1/123 (2006.01)
H04N 23/60 (2023.01)
H04N 23/90 (2023.01)
(31) 2019-041006 **(32)** 06.03.19 **(33)** JP
(43) 24.09.2020
(44) 19.01.2023
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(71) Nanjing Transthera Biosciences Co., Ltd.
(11) AU-B-2018340475
(21) 2018340475 **(22)** 26.09.2018
(54) PDE9 inhibitor and use thereof
(51) Int. Cl.
C07D 487/04 (2006.01)
A61K 31/4375 (2006.01)
A61K 31/4545 (2006.01)
A61K 31/496 (2006.01)
A61K 31/519 (2006.01)
A61K 31/5377 (2006.01)
A61K 31/55 (2006.01)
A61P 25/18 (2006.01)
A61P 25/28 (2006.01)
(87) WO2019/062733
(31) 201710900197.8 **(32)** 28.09.17 **(33)** CN
201810871998.0 02.08.18 CN
201810203538.0 13.03.18 CN
(43) 04.04.2019
(44) 19.01.2023
(72) WU, Frank; LI, Lin; YANG, Xiaoju
(74) Davies Collison Cave Pty Ltd

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(71) NantBio, Inc.; Nant Holdings IP, LLC
(11) AU-B-2017360887
(21) 2017360887 **(22)** 09.11.2017
(54) Validation of inferred anticancer pathways
(51) Int. Cl.
G16B 5/00 (2019.01)
(87) WO2018/093658
(31) 62/423,759 **(32)** 17.11.16 **(33)** US
(43) 24.05.2018
(44) 19.01.2023
(72) Niazi, Kayvan; Rabizadeh, Shahrooz; Witchey, Nicholas J.
(74) Pizzeys Patent and Trade Mark Attorneys Pty Ltd

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(21) 2017360887

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(71) Navico Holding AS
(11) AU-B-2019348982
(21) 2019348982 **(22)** 26.09.2019
(54) Bonded information display for marine vessels
(51) Int. Cl.
B63B 49/00 (2006.01)
B60K 35/00 (2006.01)
B60K 37/02 (2006.01)
B63B 79/00 (2020.01)
B63B 79/40 (2020.01)
G01C 21/20 (2006.01)
(87) WO2020/065395
(31) 16/582,397 **(32)** 25.09.19 **(33)** US
62/737,527 27.09.18 US
(43) 02.04.2020
(44) 19.01.2023
(72) BAILEY, Paul Robert; VAN GERVE, Alan; VAN VUREN, Ruan; LASTER, Matthew W.; ROUZAUD, Rafael De Santos; LUNA, David Urrutia
(74) AJ PARK

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(71) NAVICO HOLDING AS
(11) AU-B-2021205099
(21) 2021205099 **(22)** 16.07.2021
(54) SYSTEMS AND ASSOCIATED METHODS FOR GENERATING NAVIGATION CHARTS AND NAVIGABLE ROUTES IN AN OPEN ENVIRONMENT
(51) Int. Cl.
G01C 21/34 (2006.01)
G06Q 10/04 (2012.01)
(43) 09.09.2021
(44) 19.01.2023
(62) 2019253884
(72) BOROVAC, Amir; FALLRO, Kristian; SEVILLANO, Jorge
(74) AJ PARK

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(71) nChain Holdings Limited
(11) AU-B-2017257449
(21) 2017257449 **(22)** 28.04.2017
(54) Operating system for blockchain IOT devices
(51) Int. Cl.
G06Q 20/36 (2012.01)
G06F 21/30 (2013.01)
G06Q 10/06 (2012.01)
H04W 4/00 (2009.01)
(87) WO2017/187397
(31) 1607476.7 **(32)** 29.04.16 **(33)** GB
(43) 02.11.2017
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(72) Wright, Craig Steven; Savanah, Stephane
(74) Madderns Pty Ltd

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(71) NewSouth Innovations Pty Ltd
(11) AU-B-2018221879
(21) 2018221879 **(22)** 20.02.2018
(54) A parametric amplifier
(51) Int. Cl.
H01L 27/30 (2006.01)
H01L 31/18 (2006.01)
H01L 51/05 (2006.01)
H01L 51/42 (2006.01)
H01S 5/50 (2006.01)
H03F 19/00 (2006.01)
(87) WO2018/148784
(31) 2017900543 **(32)** 20.02.17 **(33)** AU
(43) 23.08.2018
(44) 19.01.2023
(72) House, Matthew G.
(74) Allens Patent & Trade Mark Attorneys

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(11) AU-B-2018333735
(21) 2018333735 **(22)** 12.09.2018
(54) Crude oil recovery chemical fluid
(51) Int. Cl.
C09K 8/584 (2006.01)
E21B 43/22 (2006.01)
(87) WO2019/054414
(31) PCT/ **(32)** 13.10.17 **(33)** JP
JP2017/037208
2017-175511 13.09.17 JP
(43) 21.03.2019
(44) 19.01.2023
(72) MURAKAMI, Satoru; OOTA, Isao; Southwell, John Edmond
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(71) Noahm Inc.
(11) AU-B-2019381050
(21) 2019381050 **(22)** 11.11.2019
(54) Anticancer composition
(51) Int. Cl.
A61K 31/155 (2006.01)
A61K 31/683 (2006.01)

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A61K 31/7004 (2006.01)
A61P 35/00 (2006.01)
(87) WO2020/101302
(31) 10-2018-0138345 **(32)** 12.11.18 **(33)** KR
(43) 22.05.2020
(44) 19.01.2023
(72) SUH, Man-chul; JUNG, Yieun; KIM, Eun Ji; JUNG, Jae In
(74) Davies Collison Cave Pty Ltd

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(71) Nouryon Chemicals International B.V.
(11) AU-B-2019398599
(21) 2019398599 **(22)** 11.12.2019
(54) Polyester demulsifier
(51) Int. Cl.
B01D 17/04 (2006.01)
C08G 63/672 (2006.01)
C08G 63/685 (2006.01)
C10G 33/04 (2006.01)
(87) WO2020/120635
(31) 19152547.6 **(32)** 18.01.19 **(33)** EP
62/777,899 11.12.18 US
(43) 18.06.2020
(44) 19.01.2023
(72) BEVINAKATTI, Hanamanthsa
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(71) Novoluto GmbH
(11) AU-B-2017341098
(21) 2017341098 **(22)** 05.10.2017
(54) Improved stimulation apparatus
(51) Int. Cl.
A61H 19/00 (2006.01)
A61H 9/00 (2006.01)
H02J 7/02 (2016.01)
(87) WO2018/065540
(31) 20 2016 008 412.8 **(32)** 05.10.16 **(33)** DE
(43) 12.04.2018
(44) 19.01.2023
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(74) James & Wells Intellectual Property

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(71) NTT DOCOMO, INC.
(11) AU-B-2017416737
(21) 2017416737 **(22)** 31.05.2017
(54) Radio Base Station and Radio Communication Method
(51) Int. Cl.
H04W 72/04 (2009.01)
(87) WO2018/220772
(43) 06.12.2018
(44) 19.01.2023
(72) Matsumura, Yuki; Takeda, Kazuki; Nagata, Satoshi
(74) Spruson & Ferguson

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(71) Nulon Products Australia Pty Ltd
(11) AU-B-2022205158
(21) 2022205158 **(22)** 12.07.2022
(54) FLUID DISPENSING APPARATUS AND METHOD
(51) Int. Cl.
B65D 25/48 (2006.01)
B65D 25/20 (2006.01)
F16L 35/00 (2006.01)
(43) 28.07.2022
(44) 19.01.2023
(62) 2019301573
(72) SIMONS, John
(74) Murray Trento & Associates Pty Ltd

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(71) Nuovo Pignone Tecnologie - S.r.l.
(11) AU-B-2019399804
(21) 2019399804 **(22)** 12.12.2019
(54) Propane dehydrogenation system with single casing reactor effluent compressor and method
(51) Int. Cl.
F04D 17/12 (2006.01)
C07C 5/333 (2006.01)
F04D 29/58 (2006.01)
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(51) Int. Cl.
G06Q 10/08 (2012.01)
B65G 1/04 (2006.01)
G05D 1/00 (2006.01)
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C09C 1/02 (2006.01)
D21H 17/67 (2006.01)
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C12N 7/00 (2006.01)
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B62D 59/04 (2006.01)
B60K 7/00 (2006.01)
B60L 53/80 (2019.01)
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D21H 17/67 (2006.01)
B63B 39/10 (2006.01)
D21H 17/63 (2006.01)
D21H 17/68 (2006.01)
D21H 19/38 (2006.01)
D21H 19/40 (2006.01)
D21H 19/84 (2006.01)
D21H 21/28 (2006.01)
D21H 27/00 (2006.01)
G09F 3/00 (2006.01)
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(51) Int. Cl.
G06F 21/56 (2013.01)
G06N 99/00 (2019.01)
H04L 9/40 (2022.01)
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A23K 10/00 (2016.01)

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A61K 39/395 (2006.01)
A61P 25/28 (2006.01)
C07K 16/40 (2006.01)
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(51) Int. Cl.
C07D 401/14 (2006.01)
A61P 35/00 (2006.01)
C07D 405/14 (2006.01)
C07D 487/04 (2006.01)
C07D 498/04 (2006.01)
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F16L 47/03 (2006.01)
B29C 65/36 (2006.01)
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B01J 19/16 (2006.01)
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C12N 15/63 (2006.01)
C12N 15/09 (2006.01)
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A61F 2/01 (2006.01)
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E04B 2/74 (2006.01)
E04F 11/18 (2006.01)
E04H 17/16 (2006.01)
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G01S 5/02 (2010.01)
H04W 4/02 (2018.01)
H04W 64/00 (2009.01)
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B65H 19/18 (2006.01)
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H01H 13/14 (2006.01)
H01H 11/04 (2006.01)
H01H 13/48 (2006.01)
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(51) Int. Cl.
H04L 27/00 (2006.01)
H04B 7/04 (2017.01)
H04B 7/06 (2006.01)
H04L 25/03 (2006.01)

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A61K 31/765 (2006.01)
A61K 31/78 (2006.01)
A61P 31/12 (2006.01)
C08G 2/00 (2006.01)
C08G 2/18 (2006.01)
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C12N 5/00 (2006.01)
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(51) Int. Cl.
A61M 39/18 (2006.01)
A61M 5/24 (2006.01)
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(54) Bearing assembly and adjustment screw for adjusting a bearing clearance
(51) Int. Cl.
F16C 17/03 (2006.01)
F03D 80/70 (2016.01)
F16C 17/06 (2006.01)
F16C 25/02 (2006.01)
F16C 32/06 (2006.01)
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H02G 1/12 (2006.01)
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(54) Headgear tubing for a patient interface
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A61M 16/06 (2006.01)
A61M 16/08 (2006.01)
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(51) Int. Cl.
A61B 5/00 (2006.01)
A61B 5/24 (2021.01)
A61B 5/369 (2021.01)
A61N 1/00 (2006.01)
A61N 1/08 (2006.01)
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E21B 19/06 (2006.01)
E21B 3/00 (2006.01)
E21B 33/03 (2006.01)
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H04N 21/00 (2011.01)
G06F 21/10 (2013.01)
(43) 06.05.2021
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G06Q 20/38 (2012.01)
G06Q 20/28 (2012.01)
G06Q 20/40 (2012.01)
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A61B 5/021 (2006.01)
A61B 5/1455 (2006.01)
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A46B 11/00 (2006.01)
A45D 44/18 (2006.01)
A46B 15/00 (2006.01)
A47K 5/18 (2006.01)
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A61B 10/06 (2006.01)
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F25D 23/02 (2006.01)
E05D 11/00 (2006.01)
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(54) Method and apparatus for transmitting and receiving reference signal in wireless communication system
(51) Int. Cl.
H04L 5/00 (2006.01)
(87) WO2019/098788
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(21) 2021203768 **(22)** 08.06.2021
(54) BTLA fusion protein agonists and uses thereof
(51) Int. Cl.
C07K 14/705 (2006.01)
A61K 38/17 (2006.01)
A61K 45/06 (2006.01)
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G05B 23/02 (2006.01)
G08C 17/02 (2006.01)
H02G 3/04 (2006.01)
H02G 3/06 (2006.01)
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H05B 44/00 (2022.01)
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E21B 43/34 (2006.01)
B01D 17/02 (2006.01)
B01D 19/00 (2006.01)
E21B 43/36 (2006.01)
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H01Q 1/22 (2006.01)
H01Q 9/04 (2006.01)
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(54) Analytical methods and arrays for use in the same
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C12Q 1/68 (2006.01)
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(11) AU-B-2021266203
(21) 2021266203 **(22)** 09.11.2021
(54) Semantic laser-based multilevel obstacle avoidance system and method for mobile robot
(51) Int. Cl.
G01S 17/931 (2020.01)
B25J 9/16 (2006.01)
B25J 11/00 (2006.01)
B25J 13/08 (2006.01)
G01S 17/04 (2020.01)
G01S 17/89 (2020.01)
G05D 1/02 (2020.01)
(31) 2021100984763 **(32)** 25.01.21 **(33)** CN
(43) 11.08.2022

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(11) AU-B-2019218153
(21) 2019218153 **(22)** 29.01.2019
(54) Therapeutic drug for neurodegenerative disease and application thereof
(51) Int. Cl.
C07H 13/02 (2006.01)
A61K 31/165 (2006.01)
A61K 31/216 (2006.01)
A61P 25/00 (2006.01)
A61P 25/16 (2006.01)
A61P 25/24 (2006.01)
A61P 25/28 (2006.01)
C07H 1/00 (2006.01)
C07H 15/20 (2006.01)
(87) WO2019/154195
(31) 201810616404.1 **(32)** 14.06.18 **(33)** CN
201810119279.3 06.02.18 CN
(43) 15.08.2019
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(74) FB Rice Pty Ltd

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(71) Shenzhen Carku Technology Co., Limited
(11) AU-B-2021203252
(21) 2021203252 **(22)** 20.05.2021
(54) WIRELESS BLOW DRYER SYSTEM AND WIRELESS BLOW DRYER
(51) Int. Cl.
A45D 20/10 (2006.01)
(31) 202011252233.2 **(32)** 10.11.20 **(33)** CN
202022592963.9 10.11.20 CN
(43) 26.05.2022
(44) 19.01.2023
(72) Lei, Yun; Liu, Chuwei; Zhang, Yubin
(74) Madderns Pty Ltd

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(71) Shin-Etsu Chemical Co., Ltd.
(11) AU-B-2018202202
(21) 2018202202 **(22)** 28.03.2018
(54) Method for producing polymer tube containing liquid and being sealed at constant intervals and apparatus for producing polymer tube
(51) Int. Cl.
B29C 48/335 (2019.01)
(31) 2017-071473 **(32)** 31.03.17 **(33)** JP
(43) 18.10.2018
(44) 19.01.2023
(72) Saguchi, Ryuichi; Kaji, Tomoaki; Naruse, Masahiko
(74) FPA Patent Attorneys Pty Ltd

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(71) Shionogi & Co., Ltd.
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(51) Int. Cl.
A61K 31/5383 (2006.01)
A61P 31/12 (2006.01)
A61P 31/16 (2006.01)
A61P 43/00 (2006.01)
(87) WO2018/030463
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(43) 15.02.2018
(44) 19.01.2023
(72) Kawai, Makoto; Tomita, Kenji; Akiyama, Toshiyuki; Okano, Azusa; Miyagawa, Masayoshi
(74) Davies Collison Cave Pty Ltd

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(71) Siemens Energy Global GmbH & Co. KG
(11) AU-B-2020316661
(21) 2020316661 **(22)** 23.07.2020
(54) Overcurrent protection device for a direct current network
(51) Int. Cl.
H02H 3/087 (2006.01)
H03K 17/082 (2006.01)
H03K 17/687 (2006.01)
(87) WO2021/013922
(31) 19188335.4 **(32)** 25.07.19 **(33)** EP
(43) 28.01.2021
(44) 19.01.2023
(72) ANDERSCH, Tobias; LANGEN, Stefan; FEIL, Wolfgang; KALUZA, Peter
(74) Spruson & Ferguson

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(71) SITA Information Networking Computing UK Limited
(11) AU-B-2021200191
(21) 2021200191 **(22)** 13.01.2021
(54) Method and system for monitoring aircraft status
(51) Int. Cl.
H04B 7/185 (2006.01)
(43) 18.03.2021
(44) 19.01.2023
(62) 2015397225
(72) LACROIX, Yanik; GIBSON, Paul
(74) Griffith Hack

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(71) Small Pharma Ltd
(11) AU-B-2021334933
(21) 2021334933 **(22)** 20.08.2021
(54) Injectable formulation
(51) Int. Cl.
A61K 31/4045 (2006.01)
A61K 9/00 (2006.01)
A61K 9/08 (2006.01)
A61K 47/12 (2006.01)
A61P 25/22 (2006.01)
(87) WO2022/043227
(31) 2013571.1 **(32)** 28.08.20 **(33)** GB
17/006,115 28.08.20 US
(43) 03.03.2022
(44) 19.01.2023
(72) LAYZELL, Marie Claire; RENNIE, James Maxwell
(74) Griffith Hack

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(71) Smith & Nephew plc
(11) AU-B-2017335637
(21) 2017335637 **(22)** 26.09.2017
(54) Protection of electronics in negative pressure wound therapy systems
(51) Int. Cl.
A61M 1/00 (2006.01)
H05K 1/02 (2006.01)
H05K 9/00 (2006.01)
(87) WO2018/064079
(31) 62/401,727 **(32)** 29.09.16 **(33)** US
62/469,718 10.03.17 US
(43) 05.04.2018
(44) 19.01.2023
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(74) Griffith Hack

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(71) Smith & Nephew plc
(11) AU-B-2017336305
(21) 2017336305 **(22)** 29.09.2017
(54) Negative pressure wound treatment apparatuses and methods with integrated electronics
(51) Int. Cl.
A61M 1/00 (2006.01)
(87) WO2018/060412
(31) 62/402,298 **(32)** 30.09.16 **(33)** US
62/402,382 30.09.16 US
62/402,146 30.09.16 US
(43) 05.04.2018
(44) 19.01.2023
(72) Beadle, Victoria; Hesketh, Mark; Kelbie, William; Musgrave, Damyn; Robinson, Joseph William; Steward, Daniel
(74) Griffith Hack

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(71) Snap Inc.
(11) AU-B-2021261875
(21) 2021261875 **(22)** 03.11.2021
(54) Interactive media system and method
(51) Int. Cl.
G06F 3/01 (2006.01)
G06F 3/0346 (2013.01)
H04N 21/482 (2011.01)
H04N 21/60 (2011.01)
H04N 21/637 (2011.01)
(43) 02.12.2021
(44) 19.01.2023
(62) 2016251812
(72) Thomas-Brigden, Benjamin; Morlak, Bjoern
(74) FB Rice Pty Ltd

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(71) Snap-on Incorporated
(11) AU-B-2021203215
(21) 2021203215 **(22)** 19.05.2021
(54) Insert for a power tool housing
(51) Int. Cl.
B25F 5/02 (2006.01)
B25B 19/00 (2006.01)
B25B 27/14 (2006.01)
B25F 1/02 (2006.01)
(31) 16/891,826 **(32)** 03.06.20 **(33)** US
(43) 23.12.2021

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(72) BOTHMANN, Richard; KING, Brian C.; KINSLEY, Ray
(74) Griffith Hack

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(71) Snap-on Incorporated
(11) AU-B-2021218155
(21) 2021218155 **(22)** 19.08.2021
(54) TOOL HOUSING AND MOTOR EXHAUST MANAGEMENT
(51) Int. Cl.
B25F 5/02 (2006.01)
B25D 17/04 (2006.01)
(31) 17/010,528 **(32)** 02.09.20 **(33)** US
(43) 17.03.2022
(44) 19.01.2023
(72) CYBORSKI, David A.
(74) Griffith Hack

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(71) Societe des Produits Nestle S.A.
(11) AU-B-2018285143
(21) 2018285143 **(22)** 11.06.2018
(54) Method for roasting coffee beans
(51) Int. Cl.
A23F 5/04 (2006.01)
(87) WO2018/228960
(31) 17176109.1 **(32)** 14.06.17 **(33)** EP
(43) 20.12.2018
(44) 19.01.2023
(72) Elsby, Kevan Arthur; Murphy, Sean Mackay
(74) Spruson & Ferguson

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(71) Societe des Produits Nestle S.A.
(11) AU-B-2018294389
(21) 2018294389 **(22)** 21.06.2018
(54) Process for making a bouillon tablet or bouillon cube
(51) Int. Cl.
A23L 27/00 (2016.01)
A23L 23/10 (2016.01)
A23P 10/35 (2016.01)
(87) WO2019/002088
(31) 17178730.2 **(32)** 29.06.17 **(33)** EP
(43) 03.01.2019
(44) 19.01.2023
(72) Bobe, Ulrich; Bozon, Annabel; Kehlenbeck, Volker; Perdana, Jimmy
(74) Spruson & Ferguson

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(71) Societe des Produits Nestle S.A.
(11) AU-B-2018355656
(21) 2018355656 **(22)** 22.10.2018
(54) Manufacturing process for the production of a lipid-fiber powder
(51) Int. Cl.
A23L 19/00 (2016.01)
A23D 9/05 (2006.01)
A23G 3/34 (2006.01)
A23L 23/10 (2016.01)
A23L 33/105 (2016.01)
A23L 33/115 (2016.01)
A23L 33/21 (2016.01)
(87) WO2019/081398
(31) 17198514.6 **(32)** 26.10.17 **(33)** EP
(43) 02.05.2019
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(72) GADDIPATI, Sanyasi; PERDANA, Jimmy; KIM, Youngbin; BOZON, Annabel; SCHROEDER, Volker; SAGALOWICZ, Laurent; FERNANDEZ FARRES, Isabel
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(71) Société des Produits Nestlé S.A.
(11) AU-B-2017288698
(21) 2017288698 **(22)** 16.06.2017
(54) Beverage preparation machine with a controlled pump
(51) Int. Cl.
A47J 31/36 (2006.01)
A47J 31/46 (2006.01)
(87) WO2018/001750
(31) 16177217.3 **(32)** 30.06.16 **(33)** EP
(43) 04.01.2018
(44) 19.01.2023
(72) Crozier, Etienne; Guyon, Bertrand; Magatti, Marco; Obliger, Nicolas; Thuliez, Jean-Luc
(74) Spruson & Ferguson

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(71) Spine Wave, Inc.
(11) AU-B-2021250995
(21) 2021250995 **(22)** 13.01.2021
(54) Modular tensioned spinal screw
(51) Int. Cl.
A61B 17/70 (2006.01)
A61B 17/86 (2006.01)
(87) WO2021/206778
(31) 16/843,160 **(32)** 08.04.20 **(33)** US
(43) 14.10.2021
(44) 19.01.2023
(72) AVIDANO, Eugene; BARREIRO, Peter; VIGLIOTTI, Daniel
(74) Spruson & Ferguson

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(71) Standish, D.
(11) AU-B-2021221817
(21) 2021221817 **(22)** 25.08.2021
(54) Site Camera Stand
(51) Int. Cl.
E04H 12/22 (2006.01)
E04H 12/18 (2006.01)
F16M 11/22 (2006.01)
G03B 17/56 (2021.01)
(43) 19.01.2023
(44) 19.01.2023
(72) Standish, Darren
(74) LESICAR MAYNARD ANDREWS PTY LTD

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(71) State Grid Henan Electric Power Research Institute; Huazhong University of Science and Technology
(11) AU-B-2021282558
(21) 2021282558 **(22)** 30.07.2021
(54) An energy storage transient power coordinated control method for restraining subsequent commutation failures
(51) Int. Cl.
H02M 7/00 (2006.01)
(87) WO2022/156183
(31) 202110099174.8 **(32)** 25.01.21 **(33)** CN
(43) 11.08.2022
(44) 19.01.2023
(72) LI, Chenghao; YAO, Wei; LIU, Mingyang; ZHOU, Hongyu; CUI, Wei; WEN, Jingyu; ZHOU, Ning; RAO, Yufei; GAO, Ze; XIAO, Han
(74) Tecrich IP

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(71) Stratos Genomics, Inc.
(11) AU-B-2020279629
(21) 2020279629 **(22)** 14.05.2020
(54) Translocation control elements, reporter codes, and further means for translocation control for use in nanopore sequencing
(51) Int. Cl.
C07D 473/18 (2006.01)
C07D 473/34 (2006.01)
C07H 21/02 (2006.01)
(87) WO2020/236526
(31) 62/852,262 **(32)** 23.05.19 **(33)** US
62/877,183 22.07.19 US
62/885,746 12.08.19 US
(43) 26.11.2020
(44) 19.01.2023
(72) O'CONNELL, Dylan; JACOBS, Aaron; VELLUCCI, Jessica; BANASIK, Brent; LOPEZ, Matthew; GOODMAN, Drew; NABAVI, Melud; TABONE, John; KOKORIS, Mark Stamatios; MACHACEK, Cara; MERRILL, Lacey; CHANDRASEKAR, Jagadeeswaran; KRITZER, Svetlana; CECH, Cynthia
(74) Spruson & Ferguson

Sumitomo Chemical Company, Limited see Sumitomo Pharma Co., Ltd.
(21) 2017254264

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(71) Sumitomo Pharma Co., Ltd.; RIKEN; Sumitomo Chemical Company, Limited
(11) AU-B-2017254264
(21) 2017254264 **(22)** 21.04.2017
(54) Method for producing retinal tissue
(51) Int. Cl.
C12N 5/079 (2010.01)
A61K 35/30 (2006.01)
A61L 27/36 (2006.01)
A61L 27/38 (2006.01)
A61P 9/10 (2006.01)
A61P 27/02 (2006.01)
A61P 27/06 (2006.01)
C12N 5/0735 (2010.01)
C12Q 1/02 (2006.01)
G01N 33/15 (2006.01)
G01N 33/50 (2006.01)
(87) WO2017/183732
(31) 2016-086602 **(32)** 22.04.16 **(33)** JP
(43) 26.10.2017
(44) 19.01.2023
(72) Kuwahara, Atsushi; Yamasaki, Suguru; Sasai, Yoshiki; Takahashi, Masayo
(74) Griffith Hack

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(71) Sumitomo SHI FW Energia Oy
(11) AU-B-2019463015
(21) 2019463015 **(22)** 29.08.2019

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(54) Spring hammer for rapping a surface
(51) Int. Cl.
F28G 7/00 (2006.01)
B03C 3/76 (2006.01)
B08B 7/02 (2006.01)
B25D 17/00 (2006.01)
B65D 88/66 (2006.01)
(87) WO2021/037372
(43) 04.03.2021
(44) 19.01.2023
(72) PEIPPO, Rauno
(74) Griffith Hack

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(71) Sun Pharma Advanced Research Company Limited
(11) AU-B-2017273415
(21) 2017273415 **(22)** 02.06.2017
(54) Treatment for Parkinson's disease
(51) Int. Cl.
A61K 31/44 (2006.01)
A61K 31/47 (2006.01)
A61P 25/16 (2006.01)
(87) WO2017/208267
(31) 201621019185 **(32)** 02.06.16 **(33)** IN
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(43) 07.12.2017
(44) 19.01.2023
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(74) Phillips Ormonde Fitzpatrick

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(71) Sunrise SPC Technology, LLC
(11) AU-B-2016412932
(21) 2016412932 **(22)** 14.11.2016
(54) Glueless dustless composite flooring material system
(51) Int. Cl.
E04C 2/52 (2006.01)
(87) WO2018/004724
(31) 15/194,843 **(32)** 28.06.16 **(33)** US
(43) 04.01.2018
(44) 19.01.2023
(72) Troendle, John B.; Qifeng, Mo
(74) AJ PARK

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(71) Sunwave Communications Co., Ltd.
(11) AU-B-2020325457
(21) 2020325457 **(22)** 28.07.2020
(54) UPLINK SUMMATION METHOD AND DEVICE, AND DISTRIBUTED ANTENNA SYSTEM
(51) Int. Cl.
H04B 7/26 (2006.01)
(87) WO2021/023054
(31) 201910712548.1 **(32)** 02.08.19 **(33)** CN
(43) 11.02.2021
(44) 19.01.2023
(72) WU, Wenquan; WANG, Xin; REN, Ailin
(74) Madderns Pty Ltd

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(71) Sustain Holdings, LLC
(11) AU-B-2020286248
(21) 2020286248 **(22)** 09.12.2020
(54) Collagen Peptide-Based Medicament Compositions And Devices And Methods Of Production And Use Thereof
(51) Int. Cl.
A61L 27/24 (2006.01)
A61K 38/39 (2006.01)
A61L 17/08 (2006.01)
A61L 27/54 (2006.01)
C07K 14/47 (2006.01)
(43) 14.01.2021
(44) 19.01.2023
(62) 2018248297
(72) SCHLUMPF, Richard Eric; BARATTA, Robert; DELOREY, Shawn A.
(74) WRAYS PTY LTD

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(71) Suzhou Microport Orthorecon Co., Ltd.
(11) AU-B-2019432092
(21) 2019432092 **(22)** 13.11.2019
(54) Treatment method for zirconium alloy and application
(51) Int. Cl.
C23C 8/10 (2006.01)
A61L 31/12 (2006.01)
C22C 16/00 (2006.01)
C23C 8/42 (2006.01)
C23C 8/80 (2006.01)
(87) WO2020/177382
(31) 201910172951.X **(32)** 07.03.19 **(33)** CN
(43) 10.09.2020
(44) 19.01.2023
(72) SHEN, Yu; YU, Tianbai; WENG, Chih-Hsin
(74) FPA Patent Attorneys Pty Ltd

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(71) Suzhou Oulit Biopharm Co., Ltd
(11) AU-B-2019280295
(21) 2019280295 **(22)** 03.06.2019
(54) Self-assembled amino acid supramolecular polymer, preparation therefor, and application thereof
(51) Int. Cl.
C07C 231/02 (2006.01)
A61K 8/44 (2006.01)
C07C 233/47 (2006.01)
C08G 83/00 (2006.01)
C09K 23/28 (2022.01)
(87) WO2019/233375
(31) 201810562220.1 **(32)** 04.06.18 **(33)** CN
201810562174.5 04.06.18 CN
201810562197.6 04.06.18 CN
(43) 12.12.2019
(44) 19.01.2023
(72) ZHANG, Jian
(74) FB Rice Pty Ltd

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(71) Systems Spray-Cooled, Inc.
(11) AU-B-2018254455
(21) 2018254455 **(22)** 18.04.2018
(54) Cooling system for a surface of a metallurgical furnace
(51) Int. Cl.
C21B 7/10 (2006.01)
F27B 1/24 (2006.01)
(87) WO2018/195223
(31) 15/490,472 **(32)** 18.04.17 **(33)** US
(43) 25.10.2018
(44) 19.01.2023
(72) Ferguson, Scott A.; Temkina, Marina K.; Ward, Troy D.
(74) Davies Collison Cave Pty Ltd

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(71) Tencent America LLC
(11) AU-B-2020238850
(21) 2020238850 **(22)** 06.03.2020
(54) Merge list construction in triangular prediction
(51) Int. Cl.
H04N 19/105 (2014.01)
H04N 19/176 (2014.01)
H04N 19/70 (2014.01)
(87) WO2020/185595
(31) 62/816,058 **(32)** 08.03.19 **(33)** US
16/528,019 31.07.19 US
(43) 17.09.2020
(44) 19.01.2023
(72) LI, Xiang; LI, Guichun; XU, Xiaozhong; LIU, Shan
(74) Phillips Ormonde Fitzpatrick

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(71) Tencent America LLC
(11) AU-B-2020266145
(21) 2020266145 **(22)** 30.04.2020
(54) Method and apparatus for interaction between intra prediction mode and block differential pulse-code modulation mode
(51) Int. Cl.
H04N 19/593 (2014.01)
H04N 19/91 (2014.01)
(87) WO2020/223449
(31) 62/841,003 **(32)** 30.04.19 **(33)** US
16/862,221 29.04.20 US
(43) 05.11.2020
(44) 19.01.2023
(72) ZHAO, Xin; LI, Xiang; ZHAO, Liang; LIU, Shan
(74) Golja Haines & Friend

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(71) Tencent America LLC
(11) AU-B-2020274313
(21) 2020274313 **(22)** 06.05.2020
(54) Method and apparatus for video coding
(51) Int. Cl.
H04N 19/70 (2014.01)
H04N 19/136 (2014.01)
H04N 19/159 (2014.01)
H04N 19/176 (2014.01)
(87) WO2020/231695
(31) 62/849,105 **(32)** 16.05.19 **(33)** US
16/865,052 01.05.20 US
(43) 19.11.2020
(44) 19.01.2023
(72) YE, Jing; LI, Xiang; LIU, Shan
(74) Phillips Ormonde Fitzpatrick

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(71) Tencent America LLC
(11) AU-B-2020348846
(21) 2020348846 **(22)** 18.09.2020
(54) Signaling of inter layer prediction in video bitstream
(51) Int. Cl.
H04N 19/20 (2014.01)
H04N 19/105 (2014.01)

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H04N 19/187 (2014.01)
H04N 19/44 (2014.01)
H04N 19/46 (2014.01)
H04N 19/65 (2014.01)
H04N 19/70 (2014.01)
(87) WO2021/055741
(31) 62/903,647 **(32)** 20.09.19 **(33)** US
17/019,567 14.09.20 US
(43) 25.03.2021
(44) 19.01.2023
(72) CHOI, Byeongdoo; WENGER, Stephan; LIU, Shan
(74) Golja Haines & Friend

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(71) Tencent America LLC
(11) AU-B-2020351200
(21) 2020351200 **(22)** 18.09.2020
(54) Signaling of inter layer prediction in video bitstream
(51) Int. Cl.
H04N 19/39 (2014.01)
H04N 19/105 (2014.01)
H04N 19/33 (2014.01)
H04N 19/507 (2014.01)
H04N 19/70 (2014.01)
(87) WO2021/055740
(31) 62/903,652 **(32)** 20.09.19 **(33)** US
17/019,713 14.09.20 US
(43) 25.03.2021
(44) 19.01.2023
(72) CHOI, Byeongdoo; WENGER, Stephan; LIU, Shan
(74) Griffith Hack

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(71) Tencent America LLC
(11) AU-B-2020371551
(21) 2020371551 **(22)** 19.10.2020
(54) Signaling of coding tools for encoding a video component as monochrome video
(51) Int. Cl.
H04N 11/02 (2006.01)
(87) WO2021/080904
(31) 62/924,674 **(32)** 22.10.19 **(33)** US
17/072,980 16.10.20 US
(43) 29.04.2021
(44) 19.01.2023
(72) AUYEUNG, Cheung; LI, Xiang; LIU, Shan
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(71) Thales
(11) AU-B-2017338287
(21) 2017338287 **(22)** 03.10.2017
(54) Automatic-opening fairlead and towing device comprising the fairlead
(51) Int. Cl.
B63B 21/10 (2006.01)
B63B 21/16 (2006.01)
B63B 21/66 (2006.01)
(87) WO2018/065385
(31) 1601450 **(32)** 06.10.16 **(33)** FR
(43) 12.04.2018
(44) 19.01.2023
(72) Cadalen, François; Cosson, Olivier; Hofmann, Pierre
(74) FB Rice Pty Ltd

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(71) The a2 Milk Company Limited
(11) AU-B-2017240635
(21) 2017240635 **(22)** 29.03.2017
(54) Beta-caseins and cognitive function
(51) Int. Cl.
A61K 35/20 (2006.01)
A23C 9/20 (2006.01)
A23L 33/19 (2016.01)
A61P 25/28 (2006.01)
(87) WO2017/171563
(31) 62/315,441 **(32)** 30.03.16 **(33)** US
(43) 05.10.2017
(44) 19.01.2023
(72) Clarke, Andrew John; Yelland, Gregory Wayne
(74) Catalyst Intellectual Property

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(71) The Chinese University of Hong Kong
(11) AU-B-2018305609
(21) 2018305609 **(22)** 25.07.2018
(54) Enhancement of cancer screening using cell-free viral nucleic acids
(51) Int. Cl.
C12Q 1/68 (2018.01)
(87) WO2019/020057
(31) 62/537,328 **(32)** 26.07.17 **(33)** US
(43) 31.01.2019
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B65F 3/04 (2006.01)
B65F 3/08 (2006.01)
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C12N 15/82 (2006.01)
A01H 1/06 (2006.01)
C12N 15/67 (2006.01)
C12Q 1/68 (2006.01)
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C07K 7/08 (2006.01)
C07K 14/47 (2006.01)
A61K 38/00 (2006.01)
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C07D 249/04 (2006.01)
C05C 1/02 (2006.01)
C05C 3/00 (2006.01)
C05C 9/00 (2006.01)
C05G 3/90 (2020.01)
C07D 403/06 (2006.01)
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C12N 15/82 (2006.01)
C07K 14/415 (2006.01)
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E04H 12/18 (2006.01)
F16B 7/10 (2006.01)
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G06F 21/44 (2013.01)
G06F 8/61 (2018.01)
G06F 8/658 (2018.01)
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C07K 14/195 (2006.01)
A61K 9/127 (2006.01)
A61K 47/66 (2017.01)
A61P 35/00 (2006.01)
C07C 43/295 (2006.01)
C07D 305/14 (2006.01)
C07H 15/252 (2006.01)
C07K 1/06 (2006.01)
C07K 1/113 (2006.01)
C07K 7/08 (2006.01)
C07K 14/00 (2006.01)
C07K 14/47 (2006.01)
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C40B 40/10 (2006.01)
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B65D 39/02 (2006.01)
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C22B 5/12 (2006.01)
C22B 7/00 (2006.01)
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C11D 1/12 (2006.01)
C11D 1/66 (2006.01)
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A61K 31/137 (2006.01)
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A61P 27/02 (2006.01)
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A61K 33/34 (2006.01)
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C12Q 1/6869 (2018.01)
B01D 57/02 (2006.01)

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C07H 21/02 (2006.01)
C12P 21/06 (2006.01)
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A01H 17/00 (2006.01)
A01N 63/30 (2020.01)
C05F 11/08 (2006.01)
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B03D 1/00 (2006.01)
B03D 1/004 (2006.01)
C12N 1/20 (2006.01)
C12R 1/01 (2006.01)
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H04N 19/57 (2014.01)
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G06Q 20/02 (2012.01)
G06K 19/06 (2006.01)
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H04L 9/40 (2022.01)
H04L 67/1396 (2022.01)
H04W 4/02 (2018.01)
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H04W 16/28 (2009.01)
H04W 72/08 (2009.01)
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H04W 64/00 (2009.01)
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G06Q 99/00 (2006.01)
G06F 9/50 (2006.01)
G06F 21/10 (2013.01)
G06F 21/62 (2013.01)
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A45B 11/00 (2006.01)
A45B 25/02 (2006.01)
A45B 25/10 (2006.01)
E04H 12/22 (2006.01)
E04H 12/34 (2006.01)
E04H 15/28 (2006.01)
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(54) A METHOD FOR LARGE SCALE BIOLOGICAL HYDROSYNTHESIS, ENERGY GENERATION AND STORAGE, AND/OR TOPSOIL RESTORATION
(51) Int. Cl.
B09C 1/10 (2006.01)
A01C 21/00 (2006.01)
C05F 11/02 (2006.01)
C05F 17/20 (2020.01)
C05G 5/20 (2020.01)
(43) 16.12.2021
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C12N 5/071 (2010.01)
C12M 1/00 (2006.01)
C12N 5/00 (2006.01)
C12N 5/02 (2006.01)
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B66D 1/46 (2006.01)
B66D 1/54 (2006.01)
B66D 1/60 (2006.01)
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E21B 19/16 (2006.01)
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(51) Int. Cl.
E21B 17/046 (2006.01)
E21B 17/08 (2006.01)
E21B 19/00 (2006.01)
E21B 21/08 (2006.01)
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(51) Int. Cl.
E21B 17/046 (2006.01)
E21B 17/08 (2006.01)
E21B 19/00 (2006.01)
E21B 21/08 (2006.01)
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H04R 1/10 (2006.01)
H01R 24/20 (2011.01)
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F24F 11/30 (2018.01)
F24F 9/00 (2006.01)
F24F 110/32 (2018.01)
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B27N 1/00 (2006.01)
B27N 3/02 (2006.01)
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C12N 15/79 (2006.01)
C07K 16/18 (2006.01)
C12N 15/63 (2006.01)
C12N 15/67 (2006.01)
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(54) Quantum repeater from quantum analog-digital interconverter
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H04B 10/70 (2013.01)
B82Y 10/00 (2011.01)
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G01N 21/64 (2006.01)
C12M 1/34 (2006.01)
G01N 27/414 (2006.01)
G01N 33/50 (2006.01)
G01N 33/53 (2006.01)
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(31) 63/027,587 **(32)** 20.05.20 **(33)** US
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(51) Int. Cl.
A24F 47/00 (2006.01)
A24B 15/16 (2006.01)
A24C 5/00 (2006.01)
A24D 1/00 (2006.01)
A24D 3/02 (2006.01)
A24D 3/04 (2006.01)
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(43) 26.09.2019
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(72) CAO, Yinghui; WANG, Tao; WANG, Songfeng; ZHANG, Yong; CAO, Yunsong
(74) Madderns Pty Ltd

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(71) Zhejiang Aiko Solar Energy Technology Co., Ltd.
(11) AU-B-2022204102
(21) 2022204102 **(22)** 13.06.2022
(54) PASSIVATED CONTACT STRUCTURE AND SOLAR CELL COMPRISING THE SAME, CELL ASSEMBLY, AND PHOTOVOLTAIC SYSTEM
(51) Int. Cl.
H01L 31/18 (2006.01)
H01L 31/0224 (2006.01)
H01L 31/0256 (2006.01)
(31) 202110828475.X **(32)** 22.07.21 **(33)** CN
(43) 19.01.2023
(44) 19.01.2023
(72) CHEN, Gang; XU, Wenli; QIU, Kaifu; WANG, Yongqian; YANG, Xinqiang
(74) Matthias Scholl Inc.

ZHEJIANG JINKO SOLAR CO., LTD. see Jinko Green Energy (Shanghai) Management Co., LTD.
(21) 2021209203

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(71) Zhejiang Xinyi Shengao Mechanical Transmission Co., Ltd.
(11) AU-B-2019204529
(21) 2019204529 **(22)** 26.06.2019
(54) A FASTENING MECHANISM AND A FURNITURE ASSEMBLY
(51) Int. Cl.
F16B 12/20 (2006.01)
A47B 13/02 (2006.01)
F16B 2/02 (2006.01)
F16B 12/32 (2006.01)
(31) 201810680701.2 **(32)** 27.06.18 **(33)** CN
(43) 23.01.2020
(44) 19.01.2023
(72) GOETTLER, Jacob
(74) Baxter Patent Attorneys Pty Ltd

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(71) Zoetis Services LLC
(11) AU-B-2020245614
(21) 2020245614 **(22)** 26.03.2020
(54) Serotonin 5-HT2B inhibitory compounds
(51) Int. Cl.
C07D 401/04 (2006.01)
A61K 31/416 (2006.01)
A61K 31/4178 (2006.01)
A61P 25/00 (2006.01)
C07D 401/12 (2006.01)
C07D 401/14 (2006.01)
C07D 405/14 (2006.01)
C07D 409/14 (2006.01)
(87) WO2020/198478
(31) 62/825,051 **(32)** 28.03.19 **(33)** US
(43) 01.10.2020
(44) 19.01.2023
(72) EWIN, Richard Andrew; SUBRAMANIAN, Govindan; DENG, Jinxia (Nancy)
(74) Davies Collison Cave Pty Ltd

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(71) ZTE Corporation
(11) AU-B-2017427019
(21) 2017427019 **(22)** 10.08.2017
(54) Systems and methods for indicating and determining channel structure information
(51) Int. Cl.
H04W 28/00 (2009.01)
H04B 7/02 (2018.01)
(87) WO2019/028751
(43) 14.02.2019
(44) 19.01.2023
(72) ZHANG, Chenchen; HAO, Peng
(74) Spruson & Ferguson

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(71) ZTE Corporation
(11) AU-B-2019348116
(21) 2019348116 **(22)** 26.09.2019
(54) Method and apparatus for sending and receiving wake-up signal, and base station, terminal and storage medium
(51) Int. Cl.
H04W 4/02 (2018.01)
(87) WO2020/063768
(31) 201811142313.5 **(32)** 28.09.18 **(33)** CN
(43) 02.04.2020
(44) 19.01.2023
(72) YANG, Weiwei; DAI, Bo; LIU, Kun; FANG, Huiying; HU, Youjun; BIAN, Luanjian
(74) GLMR

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2016204724	Ace Products Holdings Pty Ltd
2016302575	Amgen Research (Munich) GmbH; Amgen Inc.
2016343937	Exact Sciences Corporation
2016344665	F. Hoffmann-La Roche AG
2016353320	Board of Regents, The University of Texas System
2016361646	bioMerieux; Hospices Civils de Lyon; Universite Claude Bernard Lyon 1
2016371385	The New Zealand Institute for Plant and Food Research Limited
2016393870	Les Laboratoires Servier; Celgene Corporation
2016396661	University of Utah Research Foundation
2016406757	Aktiebolaget Electrolux
2016412932	Sunrise SPC Technology, LLC
2016419981	Metalogenia Research & Technologies S.L.
2016425935	Estetra SRL
2016425949	Mondo Minerals B.V.
2016428798	Alcon Inc.
2016433836	Kimberly-Clark Worldwide, Inc.
2016434454	Halliburton Energy Services, Inc.
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2017204156	Altro Building Systems Pty Ltd
2017208719	2B1K Imports Pty Ltd
2017212713	Oncorus, Inc.
2017217688	Wake Forest University Health Sciences
2017220391	Recce Pharmaceuticals Ltd
2017231106	Royal Bank of Canada
2017232199	Joy Global Surface Mining Inc
2017232516	Kura Oncology, Inc.; The Regents of the University of Michigan
2017234163	Mersana Therapeutics, Inc.
2017234387	Milanese, P.
2017238455	Senzagen AB
2017240635	The a2 Milk Company Limited
2017243872	Anteo Energy Technology Pty Ltd
2017251709	Warn Industries Inc
2017254264	Sumitomo Pharma Co., Ltd.; RIKEN; Sumitomo Chemical Company, Limited
2017257449	nChain Holdings Limited
2017258602	Metso Outotec USA Inc.
2017261850	Tremayne, T.; Mastalerz, K.
2017266443	Leung, V.
2017268298	Applied Bolting Technology
2017272341	Aerovironment, Inc.
2017273415	Sun Pharma Advanced Research Company Limited
2017277405	Evoqua Water Technologies LLC
2017278050	Becton, Dickinson and Company
2017278080	Chevron U.S.A. Inc.
2017278103	Evoqua Water Technologies LLC
2017279477	Advanced Blast Protection System, LLC
2017281588	Bruckbauer, W.
2017286680	Adverum Biotechnologies, Inc.
2017288698	Société des Produits Nestlé S.A.
2017289294	Air Diffusion Agencies Pty Ltd
2017293759	FISHER & PAYKEL HEALTHCARE LIMITED
2017295964	Intray Ltd
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2017357456	Fresenius Medical Care Deutschland GmbH
2017357597	WOODIO OY
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2017378731	FMC Corporation
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2018206195	Samsung Electronics Co., Ltd.
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2018214933	Bayer HealthCare LLC
2018218303	Mars, Incorporated
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2018225145	The United States Of America, as represented by the Secretary, Department of Health and Human Services
2018230108	Protezioni S.r.l.
2018241039	ads-tec Energy GmbH; Dr. Ing. h.c.F. Porsche AG
2018243309	Interlock USA, Inc.
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2018257609	Caterpillar Global Mining LLC
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2018289297	Bruin Biometrics, LLC
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2018294389	Societe des Produits Nestle S.A.
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2018305609	The Chinese University of Hong Kong
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2018337040	Abiomed, Inc.
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2019247467	The Trustees of the University of Pennsylvania
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2019282610	The Will-Burt Company
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2019352620	President and Fellows of Harvard College
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2019372392	Hust-Suzhou Institute for Brainsmatics
2019373454	Buckman Laboratories International, Inc.
2019373533	HUST-Suzhou Institute for Brainsmatics
2019374400	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
2019379092	Thirdwayv, Inc.
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2019381567	LG Electronics Inc.
2019381674	CHEP Technology Pty Limited
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2019398742	ArcelorMittal
2019399394	LG Electronics Inc.
2019399804	Nuovo Pignone Tecnologie - S.r.l.
2019409171	BYD Company Limited
2019417313	Colgate-Palmolive Company
2019426678	ResMed Pty Ltd
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2019428305	Hewlett-Packard Development Company, L.P.
2019428712	Hewlett-Packard Development Company, L.P.
2019432092	Suzhou Microport Orthorecon Co., Ltd.
2019434978	FUJIFILM Business Innovation Corp.
2019446198	GUANGDONG OPPO MOBILE TELECOMMUNICATIONS CORP., LTD.
2019447906	Mitsubishi Electric Corporation
2019454277	Google LLC
2019456606	Mineed Technology Company Limited
2019463015	Sumitomo SHI FW Energia Oy
2020200052	Regeneron Pharmaceuticals, Inc.
2020200654	Nakamura, K.
2020203535	VRM International Pty Ltd
2020209726	Rhythmlink International, LLC
2020212661	Vivo Mobile Communication Co.,Ltd.
2020213389	Fisher & Paykel Healthcare Limited
2020213574	Huawei Technologies Co., Ltd.
2020213696	Geobrugg AG
2020219695	IK-Norway AS
2020220127	Regeneron Pharmaceuticals, Inc.
2020220897	Huawei Technologies Co., Ltd.
2020223758	Gen-Probe Incorporated
2020224140	Weatherford Technology Holdings, LLC
2020225474	Weatherford Technology Holdings, LLC
2020230627	KBP Biosciences Co., Ltd.
2020230838	Atlas Elektronik GmbH; thyssenkrupp AG
2020233906	International Business Machines Corporation
2020236629	International Business Machines Corporation
2020238850	Tencent America LLC
2020245614	Zoetis Services LLC
2020246590	Vivo Mobile Communication Co., Ltd.
2020250213	Schneider Electric USA, Inc.
2020256402	China Medical University Hospital
2020257033	Cardinal Health 529, LLC
2020257902	Micro-Tech (Nanjing) Co., Ltd.
2020258282	Colgate-Palmolive Company
2020260561	Elcam Medical Agricultural Cooperative Association Ltd.
2020261288	Hendrickson USA, L.L.C.
2020261742	Boston Scientific Scimed, Inc.
2020263826	Unilever Global IP Limited
2020264112	Boston Scientific Scimed, Inc.
2020265402	Wirth Doors Limited
2020266145	Tencent America LLC
2020267016	Hitachi Energy Switzerland AG
2020267309	Cedars-Sinai Medical Center
2020274313	Tencent America LLC
2020277162	University of Washington Through its Center for Commercialization; Illumina, Inc.
2020279629	Stratos Genomics, Inc.
2020284606	Chong Kun Dang Pharmaceutical Corp.
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2020289776	Gort-Barten, A.
2020292256	Homology Medicines, Inc.
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2020311423	Boston Scientific Scimed, Inc.
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2020316661	Siemens Energy Global GmbH & Co. KG
2020316823	Volin, D.
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2020325457	Sunwave Communications Co., Ltd.
2020334109	Alfa Laval Corporate AB
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2020357189	X Development LLC
2020361670	International Business Machines Corporation
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2020373975	Kiwa Chemical Industry Co., Ltd.
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2020381947	International Business Machines Corporation
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2020399038	Dongguan Poweramp Technology Limited
2020425314	Bleakley, J.
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2021200099	Arvinas Operations, Inc.; Yale University
2021200191	SITA Information Networking Computing UK Limited
2021200243	Forward Networks, Inc.
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2021200640	MTD Products Inc.
2021200695	Australian Engineered Solutions Pty Ltd
2021200797	Angel Group Co., Ltd.
2021201082	Dolby Laboratories Licensing Corporation; Dolby International AB
2021201085	TRANSFERT PLUS, S.E.C.
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2021201301	Lycopodium Minerals Pty Ltd
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2021203644	Lanxess Deutschland GmbH
2021203694	LG Electronics Inc.
2021203768	Sanford-Burnham Medical Research Institute; Pfizer Inc.
2021203848	DALIAN INO-TECH CO., LTD.
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2021204835	Sakura Finetek U.S.A., Inc.
2021204971	Apple Inc.
2021205099	NAVICO HOLDING AS
2021206845	Jinhua Wanfeng Tools Factory
2021209188	Ocado Innovation Limited
2021209203	Jinko Green Energy (Shanghai) Management Co., LTD.; ZHEJIANG JINKO SOLAR CO., LTD.
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2021216560	Perseus Science Group, LLC
2021218097	Amal Therapeutics SA
2021218155	Snap-on Incorporated
2021221817	Standish, D.
2021221922	Effortless Oxygen, LLC
2021232815	CREO MEDICAL LIMITED
2021232821	CREO MEDICAL LIMITED
2021239744	Xbrane Biopharma AB
2021239795	Motorola Solutions, Inc.
2021240119	Visa International Service Association
2021250995	Spine Wave, Inc.
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2021256968	RubyElf LLC
2021257917	ASP Global Manufacturing GmbH
2021258058	Acer Incorporated
2021261875	Snap Inc.
2021263240	Daikin Industries, Ltd.
2021266203	Shandong Alesmart Intelligent Technology Co., Ltd.
2021275061	YSI, Inc.
2021277682	Crossroads Extremity Systems, LLC
2021282493	CRINKLAW FARM SERVICES
2021282502	LG ELECTRONICS INC.
2021282551	Kite Pharma, Inc.
2021282558	State Grid Henan Electric Power Research Institute; Huazhong University of Science and Technology
2021334933	Small Pharma Ltd
2022200069	Align Technology, Inc.
2022201049	Apple Inc.
2022201750	Magic Leap, Inc.
2022203864	White, D.
2022204102	Zhejiang Aiko Solar Energy Technology Co., Ltd.
2022205158	Nulon Products Australia Pty Ltd
2022223401	Firefly Automatix, Inc.
2022275407	Rearden, LLC

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(This list may contain multiple listings of a patent where there are multiple patentees for that patent.)

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(11) AU-B-2021101921
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(45) 19.01.2023
(72) John Van Rooy, Barry; James Orr, Stephen
(74) Michael Buck IP

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Opposition Proceedings

(The name in parentheses is that of the opponent)

Opposition Withdrawn

2013273704 **BASF Plant Science GmbH** (Commonwealth Scientific and Industrial Research Organisation)

2013273704 **BASF Plant Science GmbH** (Commonwealth Scientific and Industrial Research Organisation)

2020260458 **FCX Solar LLC** (FTC Solar, Inc)

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2019260687 2019266078 2019278936 2019282485
2019285034 2019289083 2019293757 2019295378
2019298242 2019300356 2019301825 2019302833
2019304166 2019306640 2019314282 2019318167
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2019326304 2019328534 2019336125 2019336607
2019338911 2019340252 2019344107 2019344398
2019349140 2019351738 2019355546 2019357558
2019359263 2019361950 2019365599 2019366869
2019367751 2019371345 2019374778 2019375825
2019378184 2019382495 2019384515 2019388756
2019391657 2019392156 2019393786 2019395470
2019396253 2019396481 2019396482 2019397614
2019397956 2019398326 2019398820 2019398910
2019399077 2019401224 2019403389 2019406297
2019406510 2019411188 2019414550 2019416853
2019418574 2019419410 2019423839 2019424099
2019424100 2019429116 2019430773 2019431538
2019431568 2019439320 2019443098 2019445475
2019452198 2020201007 2020201292 2020201859
2020202065 2020202350 2020203099 2020203266
2020203361 2020203477 2020203826 2020204060
2020204291 2020204434 2020204551 2020204580
2020206670 2020206966 2020207842 2020208539
2020210245 2020212117 2020213369 2020213829
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2020222167 2020222910 2020223739 2020224231
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2020373949 2020374391 2020377296 2020381082
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2021200273 2021200390 2021200410 2021200610
2021200614 2021200814 2021200953 2021201079
2021201238 2021201266 2021201290 2021201291
2021201304 2021201355 2021201361 2021201526
2021201877 2021202000 2021202621 2021202634
2021202806 2021203025 2021203242 2021203356
2021203586 2021203632 2021203633 2021204011
2021204192 2021204283 2021204333 2021204526
2021204779 2021205028 2021205076 2021205088
2021205104 2021212150 2021215250 2021218051
2021218193 2021221640 2021225164 2021225233
2021229144 2021229499 2021245132 2022202307
2022203051 2022203430 2022203845 2022204144

Patents Granted

Standard Patents

2022204421 2022204659 2022206719 2022206720 2022211883 2022211896

Assignments Registered

2003268612 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2003274054 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2003290043 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2005204467 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2005238149 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2007215294 IPPASA, LLC The patent has been assigned to **LEGO A/S**

2008318343 Momenta Pharmaceuticals, Inc. The patent has been assigned to **DILAFOR AB**

2012292997 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2012299747 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2012306529 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2012367080 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2012388418 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2013204818 Outotec Oyj The patent has been assigned to **Outotec (Finland) Oy**

2013212777 Hanmi IT Co., Ltd. The patent has been assigned to **Hanmi Science Co., Ltd.**

2013234571 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2013270913 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2013337715 Crane Pumps & Systems, Inc. The patent has been assigned to **CRANE PUMPS & SYSTEMS PFT CORP.**

2013380646 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2013393577 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2013407828 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2014200954 i2 Pharmaceuticals, Inc. The patent has been assigned to **BIOASSETS, LLC**

2014252584 Guangzhou Kangrui Biological Pharmaceutical Technology Co., Ltd. The patent has been assigned to **Lan Tech Limited**

Assignments Registered

2014335829 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2014351730 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2014364667 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2015101217 ALL PURPOSE PUMPS AUSTRALIA PTY LTD The patent has been assigned to **ALL PURPOSE PUMPS HOLDINGS PTY LTD**

2015212687 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2015270839 Anavo Technologies, LLC The patent has been assigned to **Tethis, Inc.**

2015329588 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2015364502 EEMAX, INC. The patent has been assigned to **Rheem Manufacturing Company**

2015370482 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2015370483 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2016102359 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2016259652 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2016269697 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2016333348 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2016390040 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2016423658 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2016430162 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2017101842 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2017261497 Zhang, Lianfu The patent has been assigned to **Shanghai Biozing Co., Ltd**

2017272681 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2017275732 femtos GmbH The patent has been assigned to **Charité; femtos GmbH**

2017294760 Stryker European Holdings I, LLC The patent has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

2017365247 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

Assignments Registered

2017440984 Stryker European Holdings I, LLC The patent has been assigned to **STRYKER EUROPEAN OPERATIONS HOLDINGS LLC**

2018296843 Outotec (Finland) Oy The patent has been assigned to **Metso Minerals Oy**

2019101107 ALL PURPOSE PUMPS AUSTRALIA PTY LTD The patent has been assigned to **ALL PURPOSE PUMPS HOLDINGS PTY LTD**

2021102981 Capital Medical University The patent has been assigned to **Bomiao Biological Technology (Beijing)Co.,Ltd.; LIANG, Haiyong**

2021106025 CHA, Hao; TIAN, Bin; ZENG, Guodong; GE, Jingjing; SONG, Wei; BO, Wenbo; SU, Yanqin; LUO, Yingguang; XING, Yanzi The patent has been assigned to **PLA Naval Engineering University**

2021106031 CHA, Hao; TIAN, Bin; BO, Wenbo; CUI, Mengda; DENG, Dongli The patent has been assigned to **PLA Naval Engineering University**

2021106032 TIAN, Bin; CHA, Hao; LIANG, Xiang; DENG, Dongli; BO, Wenbo The patent has been assigned to **PLA Naval Engineering University**

2021106036 ZHANG, Yingxing; TIAN, Bin; BO, Wenbo; CHA, Hao; TU, Rui; DENG, Dongli The patent has been assigned to **PLA Naval Engineering University**

2021106043 CHA, Hao; TIAN, Bin; ZENG, Guodong; GE, Jingjing; SONG, Wei; BO, Wenbo; SU, Yanqin; LUO, Yingguang; XING, Yanzi The patent has been assigned to **PLA Naval Engineering University**

2021106182 XING, Yanzi; SU, Yanqin; TIAN, Bin; GE, Jingjing; CHA, Hao; BO, Wenbo; ZENG, Guodong; LUO, Yingguang; SONG, Wei The patent has been assigned to **PLA Naval Engineering University**

2021106197 TIAN, Bin; CUI, Mengda; CHA, Hao; DENG, Dongli; BO, Wenbo The patent has been assigned to **PLA Naval Engineering University**

2021106610 MC 2020 SCPM The patent has been assigned to **TI-Holdings B.V.**

2021106893 Churruca, Erlei The patent has been assigned to **Agustin Ointments Pty Ltd**

Mortgages Registered - Section 187, Reg. 19

(The name in the parentheses is that of the mortgagee)

2003252012 Panavision, Inc. (Bank of America N.A.)

2005236423 Panavision International, L.P. (Bank of America N.A.)

2005277572 Panavision International, L.P. (Bank of America N.A.)

2005277698 Panavision International, L.P. (Bank of America N.A.)

2006234915 Panavision International, L.P. (Bank of America N.A.)

2006240418 Panavision International, L.P. (Bank of America N.A.)

2006275969 Panavision International, L.P. (Bank of America N.A.)

2008222763 Panavision International, L.P. (Bank of America N.A.)

2008310891 Panavision International, L.P. (Bank of America N.A.)

2010200741 Targus Australia Pty Ltd (PNC Bank, National Association)

Mortgages Registered - Section 187, Reg. 19

2011286231 Panavision International, L.P. (Bank of America N.A.)

2013270592 Panavision International, L.P. (Bank of America N.A.)

2015204778 Panavision International, L.P. (Bank of America N.A.)

2015320751 Panavision International, L.P. (Bank of America N.A.)

2015360287 Panavision International, L.P. (Bank of America N.A.)

2016384664 Panavision International, L.P. (Bank of America N.A.)

2017250745 Panavision International, L.P. (Bank of America N.A.)

Extensions of Term of Standard Patents

Extension of Term of a Standard Patent relating to Pharmaceutical Substances

Applications Filed

The following application(s) for Extension of Term under Section 70 have been made and are open for public inspection.

2011312417 **Agensys, Inc.; Seagen Inc.**

The earliest first regulatory approval date provided by the patentee 07 Jul 2022

For the goods PADCEV enfortumab vedotin

2015208821 **Pfizer Inc.**

The earliest first regulatory approval date provided by the patentee 02 Dec 2022

For the goods PREVENAR 20 pneumococcal polysaccharide conjugate vaccine

2015234335 **Agensys, Inc.; Seagen Inc.**

The earliest first regulatory approval date provided by the patentee 07 Jul 2022

For the goods PADCEV enfortumab vedotin

2017236047 **Agensys, Inc.; Seagen Inc.**

The earliest first regulatory approval date provided by the patentee 07 Jul 2022

For the goods PADCEV enfortumab vedotin

Applications Accepted

The following application(s) for Extension of Term have been accepted under Section 74.

Notice of opposition under Section 75(1) to the undermentioned application(s) for an extension of term may be filed at the Patent Office within the prescribed time.

2013288641 **Roche Glycart AG**

The earliest first regulatory approval date provided by the patentee 08 Aug 2022

For the goods VABYSMO faricimab

Address for service : Spruson & Ferguson GPO Box 3898 Sydney NSW 2001 AU

Extensions granted

The following application(s) for Extension of Term have been granted under Section 76.

2011236019 **E. R. Squibb & Sons, L.L.C.**

The earliest first regulatory approval date provided by the patentee 29 Mar 2022

For the goods SAPHNELO anifrolumab

Extensions of Term of Standard Patents

Extension of Term of a Standard Patent relating to Pharmaceutical Substances

Extensions granted

Extension of Term of patent pursuant to Section 77 expires on 20 Jun 2030

2015277786 **Takeda Pharmaceutical Company Limited**

The earliest first regulatory approval date provided by the patentee 19 Jul 2022

For the goods EXKIVITY mobocertinib

Extension of Term of patent pursuant to Section 77 expires on 19 Jul 2037

Corrigenda

In Vol 57 , No 1 , Page(s) 115 under the heading **Applications Accepted - Name Index** Under the name GUANGDONG OPPO MOBILE TELECOMMUNICATIONS CORP., LTD., Application No. 2018418095, under INID (54) correct the title to read Method of uplink power control, terminal device, and network device

In Vol 57 , No 1 , Page(s) 45 under the heading **PCT applications that have entered the National Phase - Name Index** Under the name AstraZeneca AB, Application No. 2021259346, under INID (72) correct the co-inventor to GIARDINO TORCHIA, Maria Letizia

In Vol 57 , No 1 , Page(s) 58 under the heading **PCT applications that have entered the National Phase - Name Index** Under the name Galderma Holdings S.A., Application No. 2021262601, under INID (71) correct the applicant name to Galderma Holding S.A.

In Vol 57 , No 2 , Page(s) 206 under the heading **Assignments Registered** Under the name MSD International GmbH., Application No. 2017379850, under INID (71) correct the name to read MSD International GmbH and Merck Sharp & Dohme LLC

Specifications Republished

The following specifications contained errors when advertised OPI, Accepted or Certified. They have been reissued on the date of this Journal.

2017383285 **Zodiac Pool Care Europe**
2020392315 **Eyesafe Inc.**
2021200428 **Dejero Labs Inc.**
2021225331 **Streamroot**

2015305271 16 Dec 2022

***PATENTS ACT 1990* (Cth)**
Advertisement pursuant to rule 34.41 of the *Federal Court Rules 2011*

FCR 34.41 (1) (a) | IDENTITY OF PROCEEDINGS

Court: Federal Court of Australia
Victoria District Registry
Proceeding No. VID 524/2022

Parties: Perfect Day, Inc.
(**Appellant**)

and

Fonterra Co-operative Group Limited
(**Respondent**)

FCR 34.41 (1) (b) PARTICULARS OF PROPOSED AMENDMENTS

Perfect Day, Inc, the Applicant in respect of Australian Patent Application No. 2015305271 (**AU 271**) and Appellant in the above proceeding, will apply for an order under Section 105(1A) of the *Patents Act 1990* (Cth) directing the amendment of AU 271 as follows and as shown, in mark up, in the **Annexure**:

1. Amend the title on page 1 of the specification.

2. Amend the URL link provided on page 2.

3. Amend "4.5 weight %" on page 4 as originally filed to read "45 weight %".

4. Amend page 6, line 25 to delete "g/L".

5. Amend page 29 are made to insert "compositions produced from" at lines 20, 24, 25, 29, 30 and 31.

6. Amend page 37, line 8, insert commas after two instances of the word "component", and replace "or" with "of a" at the end of the sentence.

7. Enlarge Table 11 on page 113.

8. Amend claim 1, line 1 is amended to insert "that is suitable as a dairy substitute, said food composition". A corresponding amendment is made on page 16.

9. Insert a new claim 3, which reads:

> 3. The food composition of claim 1 or 2, wherein the composition comprises:
>
> a final concentration of α-lactalbumin protein of about 0.4 weight % to about 2.5 weight %; and
>
> a final concentration of β-lactoglobulin protein of about 2.5 weight % to about 4.5 weight %.

10. Amend claim 4 (previous claim 3) to insert "a strain of *Pichia pastoris*, a strain of *Pichia flnlandica*, a strain of *Pichia trehalophila*, a strain of *Pichia koclamae*, a strain of *Pichia membranaefaciens*, a strain of *Pichia minuta* (*Ogataea minuta*, *Pichia lindneri*), a strain of *Pichia opuntiae*, a strain of *Pichia thermotolerans*, a strain of *Pichia salictaria*, a strain of *Pichia guercuum*, a strain of *Pichia pijperi*, a strain of *Pichia stiptis*, a strain of *Pichia methanolica*, and a strain of *Hansenula polymorpha*".

11. Insert new claim 12, which reads:

> 12. The food composition of claim 11, wherein the total concentration of one or more lipids is up to about 45 weight %.

12. Insert new claim 17 which reads:

> 17. The food composition of claim 1, wherein the ash comprises one or more of:
>
> $CaCl_2$ at a final concentration of about 0.005% w/w to about 0.02% w/w;
>
> KH_2PO_4 at a final concentration of about 0.02% w/w to about 0.04% w/w; or
>
> Na_3citrate at a final concentration of about 0.01% w/w to about 0.03% w/w.

13. Amend claim 18 (pervious claim 15) to insert "a dairy substitute" on lines 1-2, and to delete "a caseinate" on lines 2-3.

14. Delete previous claim 19.

15. Insert new claims 33-35 which read as follows:

> 33. The food composition of claim 1, wherein the α-lactalbumin protein comprises an amino acid sequence that is at least 90% identical to SEQ ID NO: 92.
>
> 34. The food composition of claim 1, wherein the β-lactoglobulin protein comprises an amino acid sequence that is at least 90% identical to SEQ ID NO: 100.
>
> 35. The food composition that is a dairy substitute according to claim 2, wherein:
>
>> the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to SEQ ID NO: 92; and the recombinant β-lactoglobulin protein comprises a sequence that is at least 90% identical to SEQ ID NO: 100;
>>
>> the composition comprises one or more lipids; and
>>
>> the dairy substitute is selected from the group consisting of: a yogurt, a cheese, a milk, a butter, a cream, an infant formula, an ice cream, a frozen custard, a cottage cheese, a cream cheese, a crème fraiche, and a curd.

FCR 34.41 (1) (c) APPELLANT'S ADDRESS FOR SERVICE

Pearce IP
Level 5, 20 Bond Street
Sydney 2000 NSW
Attention: Naomi Pearce (naomi.pearce@pearceip.law)

FCR 34.41 (1) (c) RESPONDENT'S ADDRESS FOR SERVICE

Herbert Smith Freehills
Level 22, 80 Collins Street
Melbourne VIC 3000
Attention: Emma Iles (emma.iles@hsf.com)

FCR 34.41 (1) (d) OPPOSITION

Any person intending to oppose the application who is not a party to the proceeding must, within 28 days after publication of this advertisement, give written notice of that intention to each of the Commissioner of Patents, the Appellant (Perfect Day, Inc.) and the Respondent (Fonterra Co-operative Group Limited).

2015305271 16 Dec 2022

ANNEXURE

2015305271 16 Dec 2022

~~COMPOSITIONS COMPRISING A CASEIN~~FOOD COMPOSITIONS COMPRISING RECOMBINANT MILK PROTEINS AND METHODS OF PRODUCING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Patent Application No. 62/040,393, filed on August 21, 2014, the entire contents of which are incorporated by reference.

FIELD OF THE INVENTION

The invention is directed to food compositions suitable as dairy substitutes, methods of manufacturing the same, and compositions comprising animal-free milk fats and proteins for food applications, such as milk, butter, cheese, yogurt, and cream.

BACKGROUND OF THE INVENTION

The global dairy market is estimated at $500 billion with an average annual growth rate of 4%. Bovine milk attributes to a significant portion of the market whereas plant-based alternatives account for $1 billion in the US and an estimated $700 million is estimated for lactose-intolerant milk. Bovine milk is known to have four specific caseins, α-s1-casein, α-s2-casein, β-casein, and κ-casein. Mammal- or mammalian-produced milk is a very complex fluid that includes several thousand components (e.g., if all triglycerides are identified). Mammal- or mammalin-produced milk includes water, variety of different lipids, sugar, a variety of different proteins, and a variety of different inorganic salts and compounds (see, e.g., Boland and Thompson (Eds), Milk Proteins from Expression to Food, Academic Press, 2014). Although mammal-produced milk, such as bovine milk, is considered by many to be an ideal source of nutrition, various milk alternatives to mammal- or mammalian-produced milk (e.g., bovine milk), such as plant- or nut-based milks, e.g., soy, almond, or coconut milk, have been pursued for reasons related to mammal- or mammalian-produced milk's allergenicity, lactose intolerance of certain components, personal preference, and the perceived environmental benefits of a reduced dairy industry.

For example, the environmental impact resulting from dairy effluent can result in significant levels of nitrate which has the potential to contaminate groundwater. Groundwater forms the main source of water supply for many towns and farms where surface water supplies are limited. In the US, half the population relies completely or partially on groundwater, and similar figures are available for Europe (see, e.g., https://www.vgls.vic.gov.au/client/en_AU/search/asset/1281606/0~~the Victoria State Government Department of Environment and Primary Industries website at www.depi.vic.gov.au/agriculture-and-food/dairy/managing-effluent/dairy-effluent-protecting-groundwater~~). The presence of foodborne pathogens in milk is due to direct contact with contaminated sources in the dairy farm environment and to excretion from the udder of an infected animal. Outbreaks of disease in humans have been traced to the consumption of unpasteurized milk and have also been traced back to pasteurized milk. The major contaminants usually encountered in milk and milk products include pesticide residues, heavy metals, and aflatoxin M1 (Awasthi et al., *Indian J. Public Health* 56:95-99, 2012).

Existing dairy milk alternatives, such as soy, almond, or coconut milk fall short both in flavor and in functionality; moreover, a large part of the industrial and cultural significance of dairy milk stems from its usefulness in derivative products, such as cheese, yogurt, cream, or butter. Non-dairy plant-based milks, while addressing environmental and health concerns (and while providing adequate flavor for a small segment of the population), almost universally fail to form such derivative products when subjected to the same processes used for dairy milk.

What is needed, therefore, is a food composition that is suitable as a dairy substitute ~~or composition~~ that has desirable flavor and performance characteristics, e.g., a composition that replicates dairy flavors, minimizes foodborne pathogens, and has a lower environmental impact in production, while retaining the ability to be used for derivative or downstream applications of dairy milk and while providing a similar nutritional profile as a mammal- or mammalian-produced milk.

2015305271 16 Dec 2022

SUMMARY OF THE INVENTION

The present invention is based on the discovery that only a subset of components in mammal-produced milk can be used to generate a composition that has a similar flavor, a similar appearance, a similar nutritional value, a similar aroma, and a similar mouth feel of mammal-produced milk.

Provided herein are compositions including: about 0.3 g/L to about 1.1 g/L κ-casein protein; about 1.25 g/L to about 4.9 g/L β-casein protein; a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %, where the composition does not include an animal-derived component.

Also provided are compositions that include: about 0.3 g/L to about 1.1 g/L κ-casein protein; about 1.25 g/L to about 4.9 g/L β-casein protein; a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %, where the composition: does not include at least one component found in a mammal-produced milk; includes at least one component not present in a mammal-produced milk; and/or includes a higher or lower concentration of at least one component as compared to the concentration of the at least one component in a mammal-produced milk. In some embodiments of these compositions, the composition includes a higher concentration of at least one component selected from the group of: calcium, phosphate, B complex vitamins, vitamin A, vitamin D, vitamin E, and vitamin K, as compared to the concentration of the one or more components in a mammal-produced milk. In some embodiments of these compositions, the composition does not include at least one component found in a mammal-produced milk selected from the group of: lactose, bacteria, mycobacteria, allergens, viruses, prions, yeast, growth hormones,

leukocytes, antibiotics, heavy metals, immunoglobulins, lactoferrin, lactoperoxidase, and lipase. In some embodiments of these compositions, wherein the composition includes at least one component not present in a mammal-produced milk selected from the group of an artificial sweetener, a plant-derived lipid, a β-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern.

Also provided are compositions including: about 0.3 g/L to about 1.1 g/L κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; about 1.25 g/L to about 4.9 g/L β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %.

Also provided are composition including a micelle including a κ-casein protein and a β-casein protein, where the micelle has a diameter of about 50 nm to about 350 nm, and the κ-casein protein and the β-casein protein are unglycosylated or have a non-mammalian glycosylation pattern. In some embodiments of these methods, the compositions include a final concentration of micelles of about 2.0 weight % to about 6 weight %. In some embodiments of these compositions, the ratio of the β-casein protein to the κ-casein protein in the micelle is about 3.5:1 to about 5.5:1 (e.g., about about 4:1 to about 5:1). In some embodiments of these methods, the composition further includes: a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %.

In some embodiments of any of the compositions described herein, the composition comprises about 0.27 weight % to about 0.75 weight % κ-casein protein and about 1.23 weight % to about 3.27 weight % β-casein. In some embodiments of any of

the compositions described herein, the final total concentration of one or more lipids of is about 0 weight % to about 4.5 weight %.

In some embodiments of any of the compositions described herein, the one or more lipids are selected from the group consisting of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some embodiments of any of the compositions described herein, the composition includes one of more of: a final concentration of sunflower oil of about 1 weight % to about 28 weight %; a final concentration of coconut oil of about 0.5 weight % to about 14 weight %; a final concentration of tributyrin of about 0.05 weight to about 1.0 weight %; a final total concentration of monoglycerides and diglycerides of about 0.08 weight % to about 1.2 weight %; a final total concentration of free fatty acids of about 0.02 weight % to about 0.28 weight %; and a final total concentration of phospholipids of about 0.02 weight % to about 0.3 weight percent. In some embodiments of any of the compositions described herein, the free fatty acids comprise at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some embodiments of any of the compositions described herein, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of any of the compositions described herein, the monoglycerides and diglycerides are plant-derived monoglycerides and diglycerides, or are bacteria-derived monoglycerides and diglycerides.

In some embodiments of any of the compositions described herein, the flavor compounds include at least one flavor compound selected from the group consisting of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of any of the compositions described herein, the one or more sweetening agents is a saccharide. In some embodiments of any of the compositions described herein, the saccharide is selected from the group consisting of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose. In some embodiments of any of the compositions described herein, the one or more sweetening agents is an artificial sweetener. In some embodiments of any of the compositions described herein, the artificial sweetener is selected from the group of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin,

erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000.

In some embodiments of any of the compositions described herein, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of any of the compositions described herein, the ash comprises one or more (e.g., one, two, or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. In some embodiments of any of the compositions described herein, the $CaCl_2$ has a final concentration of about 0.05 g/L to about 0.2 g/L; the KH_2PO_4 has a final concentration of about 0.2 g/L to about 0.4 g/L; and the Na_3 citrate has a final concentration of about 0.1 g/L to about 0.3 g/L.

In some embodiments of any of the compositions described herein, the κ-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. In some embodiments of any of the compositions described herein, the β-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein.

In some embodiments of any of the compositions described herein, the composition further includes: a final concentration of α-lactalbumin protein of about 0.4 ~~g/L~~ weight % to about 2.5 weight %; and/or a final concentration of β-lactoglobulin protein of about 2.5 weight % to about 4.5 weight %. In some embodiments of any of the methods described herein, the α-lactalbumin protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-lactalbumin protein. In some embodiments of any of the

compositions described herein, the β-lactoglobulin protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-lactoglobulin protein.

In some embodiments of any of the compositions described herein, the composition further includes: a final concentration of α-S1-casein protein of about 11 weight % to about 16 weight %; and/or a final concentration of α-S2-casein protein of about 2 weight % to about 5 weight %. In some embodiments of any of the compositions described herein, the α-S1-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S1-casein protein; and/or the α-S2-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S2-casein protein.

In some embodiments of any of the compositions described herein, the composition further includes one or more of: serum albumin, lactoferrin, and transferrin. In some embodiments of any of the compositions described herein, the serum albumin is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth serum albumin; the lactoferrin is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth lactoferrin; and/or the transferrin is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey,

ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth transferrin protein.

Some embodiments of any of the compositions described herein, further include one or more color balancing agents. In some embodiments of any of the compositions described herein, the one or more color balancing agents is β-carotene or annatto. In some embodiments of any of the compositions described herein, the composition has a pH of about 6.2 to about 7.2 (e.g., about 6.2 to about 6.8).

Also provided are compositions including: a mammalian-produced milk or a processed mammal-produced milk; and one or both of a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern, and a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern. In some embodiments of these methods, the final concentration of the κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern in the composition is 0.02 weight % to about 3.0 weight %. In some embodiments of these methods, the final concentration of the β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern in the composition is 0.02 weight % to about 3.0 weight %. In some embodiments of these methods, the final concentration of the κ-casein protein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is about 0.02 weight % to about 0.6 weight %; and the final concentration of the β-casein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is about 0.02 weight % to about 2.5 weight %.

Also provided are powder compositions that include: a final concentration of κ-casein protein of about 3.6 weight % to about 5.4 weight %; a final concentration of β-casein protein of about 16.3 weight % to about 24.5 weight %; a final concentration of a sweetening agent of about 35 weight % to about about 40 weight %; a final concentration of one or more lipids of about 25 weight % to about 30 weight %; a final concentration of ash of about 5 weight % to about 7 weight %; and a final concentration of water of about 2 weight % to about 5 weight %, where the κ-casein protein is an unglycosylated and/or has a non-mammalian glycosylation pattern, and/or the β-casein protein is an unglycosylated and/or has a non-mammalian glycosylation pattern.

Also provided are nucleic acids that include: a promoter; a sequence encoding a signal sequence; a sequence encoding a milk protein; and a yeast termination sequence, where the promoter is operably linked to the signal sequence, the signal sequence is operably linked to the sequence encoding the milk protein, and the terminal sequence is operably linked to the sequence encoding the milk protein. In some embodiments of these nucleic acids, the promoter is a constitutive promoter. In some embodiments of these nucleic acids, the promoter is an inducible promoter. In some embodiments of these nucleic acids, the signal sequence is a signal sequence from the encoded milk protein or a different milk protein, or is a signal sequence from a yeast mating factor. In some embodiments of these nucleic acids, the encoded milk protein is selected from the group consisting of: β-casein, κ-casein, α-S1-casein, α-S2-casein, α-lactalbumin, β-lactoglobulin, lactoferrin, or transferrin. In some embodiments of these nucleic acids, the nucleic comprises a bacterial origin of replication. In some embodiments of these nucleic acids, the nucleic acid further includes a selection marker. In some embodiments of these nucleic acids, the selection marker is an antibiotic resistance gene.

Some embodiments of these nucleic acids further include: an additional promoter sequence; an additional sequence encoding a signal sequence; a sequence encoding an additional milk protein; and an additional yeast termination sequence, where the additional promoter sequence is operably linked to the additional sequence encoding a signal sequence, the sequence encoding the signal sequence is operably linked to the sequence encoding the additional milk protein, and the sequence encoding the additional milk protein is operably linked to the additional yeast terminal sequence.

Also provided are host cells that include any of the nucleic acids described herein. In some embodiments of these host cells, the host cell is a yeast strain (e.g., a *Kluyveromyces* sp., *Pichia* sp., *Saccharomyces* sp., *Tetrahymena* sp., *Yarrowia* sp., *Hansenula* sp., *Blastobotrys* sp., *Candida* sp., *Zygosaccharomyces* sp., or *Debaryomyces* sp.).

Also provided herein are methods of producing a recombinant milk protein that is unglycosylated or has a non-mammalian glycosylation pattern, the method including: culturing any of the host cells described herein in a culture medium under conditions sufficient to allow for secretion of the milk protein that is unglycosylated or has a non-

mammalian glycosylation pattern; and harvesting the milk protein that is unglycosylated or has a non-mammalian glycosylation pattern from the culture medium.

Also provided are methods of producing a micelle including a β-casein that is unglycosylated or has a non-mammalian glycosylation pattern and a κ-casein that is unglycosylated or has a non-mammalian glycosylation pattern, that include: culturing any of the host cells provided herein in a culture medium under conditions sufficient to allow for release of the micelle from the host cell, where the host cell includes nucleic acid including a sequence that encodes a β-casein and a sequence that encodes a κ-casein.

Also provided are methods of supplementing a mammal-produced milk that include: providing a mammalian-produced milk or a processed mammalian-produced milk; and mixing into the milk at least one of: a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; and a micelle including a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern.

Also provided are methods of producing a composition that include: sonicating a liquid including a protein mixture comprising β-casein protein and casein κ protein, or comprising micelles comprising β-casein protein and κ-casein protein; mixing ash into the liquid; adding to the liquid a mixture of one or more lipids, one or more flavor compounds, and one or more color balancing agents, and sonicating the liquid; and adding to the liquid one or more sweetening agents, thereby producing the composition. In some embodiments of these methods, the β-casein protein is unglycosylated or has a non-mammalian glycosylation pattern, and/or the κ-casein protein is unglycosylated or has a non-mammalian glycosylation pattern. In some embodiments of these methods, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of these methods, the ash added includes one or more (e.g., one, two, or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. In some embodiments of these methods, the one or more lipids comprises at least one of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some embodiments of these methods, the free fatty acids comprise at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In

some embodiments of these methods, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of these methods, the monoglycerides and diglycerides are plant-derived monoglycerides and diglycerides, or are bacteria-derived monoglycerides and diglycerides. In some embodiments of these methods, the flavor compounds include at least one flavor compound selected from the group consisting of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of these methods, the one or more coloring balancing agent is β-carotene or annatto. In some embodiments of these methods, the one or more sweetening agents is a saccharide. In some embodiments of these methods, the saccharide is selected from the group consisting of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose. In some embodiments of these methods, the one or more sweetening agents is an artificial sweetener. In some embodiments of these methods, the artificial sweetener is selected from the group consisting of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000. In some embodiments of these methods, the pH of the liquid is between about 6.2 and about 7.4 (e.g., about 6.4 to about 6.8). In some embodiments of these methods, the β-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein; and/or the κ-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. In some embodiments of these methods, the protein mixture further includes one or more

proteins selected from the group of: α-lactalbumin, β-lactoglobulin, α-S1-casein, α-S2-casein, lactoferrin, transferrin, and serum albumin.

Also provided is a composition produced by any of the methods described herein.

Also provided is a method of making butter, cheese, caseinate, or yogurt that include: providing any of the compositions described herein; and producing the butter, cheese, caseinate, or yogurt using any of the compositions described herein as a starting material.

Also provided are kits that include: (a) a mixture of one or more milk proteins, one or more fats, and one or flavor compounds; and (b) a mixture of ash and at least one sweetening agent. In some embodiments of these kits, the one or more milk proteins are selected from the group of: β-casein, κ-casein, α-lactalbumin, β-lactoglobulin, α-S1-casein, α-S2-casein, lactoferrin, transferrin, and serum albumin. In some embodiments of these kits, the one or more milk proteins are cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth milk proteins. In some embodiments of these kits, the one or more fats are selected from the group consisting of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some embodiments of these kits, the free fatty acids include at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some embodiments of these kits, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of these kits, the monoglycerides and diglycerides are plant-derived monoglycerides and diglycerides, or are bacteria-derived monoglycerides and diglycerides. In some embodiments of these kits, the flavor compounds comprise at least one flavor compound selected from the group consisting of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of these kits, the mixture in (a) further includes one or more color balancing agent. In some embodiments of these kits, the one or more color balancing agent is β-carotene or annatto. In some embodiments of these kits, the one or more sweetening agents is a

saccharide (e.g., a saccharide selected from the group of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose). In some embodiments of these kits, the one or more sweetening agents is an artificial sweetener (e.g., an artificial sweetener selected from the group of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000). In some embodiments of any of these kits, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of these kits, the ash includes one or more (e.g., one, two, or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. Some embodiments of these kits further include instructions for making any of the compositions described herein.

Also provided are kits that include at least one of the nucleic acids described herein.

Also provided herein are dairy substitute food products including one or more isolated milk protein components, fats, carbohydrates, and ash. In some embodiments of these dairy substitute food products, the food product is non-animal derived. In some embodiments of these substitute food product, the food product includes milk, butter, cheese, caseinare, yogurt, and cream. In some embodiments of these dairy substitute food products, the isolated milk protein components include casein and whey proteins. In some embodiments of these dairy substitute food products, the casein protein further includes alpha-s1, alpha-s2, beta, and kappa-casein. In some embodiments of these dairy substitute food products, the casein protein further includes alpha-s1, beta, and kappa. In some embodiments of these dairy substitute food products, the casein protein further includes components for micelle formation. In some embodiments of these dairy substitute food products, the casein protein exhibits curdling properties at pH 4.0 – 6.0. In some embodiments of these dairy substitute food products, the casein protein is at least or equal to 2.5% (w/v) and less than or equal to 10% (w/v). In some embodiments of these dairy substitute food products, the whey protein further includes beta-lactoglobulin and alpha-lactalbumin. In some embodiments of these dairy substitute food products, the

whey protein forms a polymer matrix gel. In some embodiments of these dairy substitute food products, the whey protein is at least 0.1 % (w/v) and less than or equal to 1% (w/v). In some embodiments of these dairy substitute food products, the one or more milk protein components is isolated from microbes. In some embodiments of any of these dairy substitute food products, the one or more milk protein components is isolated from recombinant microbes. In some embodiments of these dairy substitute food products, the one or more milk protein components is synthesized in eukaryotic microbes. In some embodiments of these dairy substitute food products, the eukaryotic microbes include yeast. In some embodiments of these dairy substitute food products, the yeast include *Kleuyveromyces* sp., *Pichia* sp., Saccharomyces sp. and *Tetrahymena* sp.

In some embodiments of these substitute food products, the fats include triglycerides. In some embodiments of these dairy substitute food products, the fats comprise high-oleic oil. In some embodiments of these dairy substitute food products, the high-oleic oil further includes one or more of monounsaturates, oleic, linoleic, linolenic and saturates. In some embodiments of these dairy substitute food products, the fats comprise short chain fatty acids. In some embodiments of these dairy substitute food products, the short chain fatty acids include butanoic, hexanoic, octanoic, and decanoic acids. In some embodiments of these dairy substitute food products, one or more of the fats comprised trans-esterified fatty acids. In some embodiments of these dairy substitute food products, one or more of the fats are isolated from plants. In some embodiments of these dairy substitute food products, the plant is selected from one or more of the following: sunflower, corn, olive, soy, peanut, walnut, almond, sesame, cottonseed, canola, safflower, flax seed, palm, palm kernel, palm fruit, coconut, babassu, shea butter, mango butter, cocoa butter, wheat germ and rice bran oil. In some embodiments of these dairy substitute food products, the sugars comprise of galactose, sucrose, glucose, fructose and maltose. In some embodiments of these dairy substitute food products, the dairy substitute food product is essentially free of lactose. In some embodiments of these dairy substitute food products, the ash includes minerals. In some embodiments of these dairy substitute food products, the minerals further include one or more of the following: sodium, potassium, calcium, magnesium, phosphorus, iron, copper, zinc, chloride,

manganese, selenium, iodine, retinol, carotene, vitamins, vitamin D, vitamin E, vitamin B12, thiamin and riboflavin. In some embodiments of these dairy substitute food products, the ash includes anions. In some embodiments of these dairy substitute food products, the minerals further include one or more of the following: phosphate, citrate, sulfate, carbonate, and chloride.

Also provided are methods of making a dairy substitute food product including the step of contacting one or more isolated milk protein components, interesterified fats, carbohydrates and ash. Some embodiments of these methods, further include the step of isolating one or more milk protein components is from a lower eukaryote.

Also provided are methods of altering a flavor profile of a dairy substitute product that include modulating a combination of fatty acids in a mixture including milk protein components, carbohydrates, and ash. In some embodiments of these methods, the step of modulating includes triglyceride comprising three oleic acids and short-chain triglyceride comprising butyric, one hexanoic, and one octanoic acid. In some embodiments of these methods, the step of modulating comprises increasing or decreasing one or more fatty acids comprising butyric acid, caprioc acid, caprylic acid, and capric acid. In some embodiments of these methods, the flavor profile of a dairy substitute product mimics the flavor profile of one or more dairy product. In some embodiments of these methods, the flavor profile of one or more dairy food product includes bovine milk, goat milk, soy milk, almond milk and coconut milk. In some embodiments of these methods, the flavor profile includes one or more sensory impressions selected from: buttery, nutty, sweet, sour, fruity, floral, bitter, woody, earthy, beany, spicy, metallic, sweet, musty, oily and vinegary.

Disclosed herein are methods and compositions to produce dairy substitutes. In some embodiments, methods and compositions are provided for a dairy substitute food product comprising one or more isolated milk protein components, fats, carbohydrates and ash. In certain embodiments, methods and compositions are provided for dairy substitute composition comprising casein protein and whey protein wherein the composition is essentially free of animal products and wherein the casein protein to whey protein are in a preferred (w/v) ratio. In certain other embodiments, methods are provided to modulate a flavor profile of a dairy substitute food product comprising

modulating a fatty acid content in a mixture comprising milk protein components, fats, carbohydrates, and ash. Preferred steps of modulating comprises increasing or decreasing one or more fatty acids comprising butyric acid, caproic acid, caprylic acid, and capric acid. In additional embodiments, methods and compositions of the present invention provide milk protein components and fats in a desired (w/v) ratio.

In various aspects, the methods and compositions of the present invention provide for dairy substitutes that still retain their functional characteristics and organoleptic properties. In some embodiments, the core functionalities can be, but are not limited to achieving a nutritional profile similar to a conventional dairy product, and replicates one or more, if not all, of the core functionalities thereof.

In other embodiments, the core functionalities can be, but are not limited to replicating sensory characteristics that are identical or similar to the traditional dairy-based products, which include but are not limited to taste, appearance, handling and mouthfeel, desired density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification.

Preferred methods and compositions provide dairy substitute products such as milk, butter, cheese, yogurt, and cream. Provided herein are formulations for a non-dairy milk substitute comprising (3.3%) one or more isolated milk protein components, (4.0%) fats, (2.4%) carbohydrates and (0.7%) ash (w/v). Varying the fat content through modulating triglyceride levels and the fatty acid composition of the triglycerides enhances the flavor profile of the non-dairy milk substitute.

Advantages in the methods and dairy substitute compositions include reduction or removal of antibiotic residues, heavy metals, bacteria and adulterations commonly found in natural dairy products as well as reducing environmental impact.

Accordingly, certain aspects of the present invention provide animal-free dairy substitute that has desirable flavor characteristics, e.g., replicates dairy flavors, minimizes foodborne pathogens and has a lower environmental impact, while retaining the downstream applications of dairy milk.

A definition of a specific embodiment of the invention as claimed herein follows. According to an embodiment of the invention, there is provided a food composition that is suitable as a dairy substitute, said food composition comprising:

(i) a recombinant β-lactoglobulin protein and a recombinant α-lactalbumin protein, wherein one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell;

(ii) one or more sweetening agents;

(iii) ash; and

(iv) optionally, one or more lipids,

wherein:

the food composition has one or more characteristics of a dairy food product selected from the group consisting of: taste, aroma, appearance, handling, mouthfeel, density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification; and

the food composition does not comprise any other milk proteins than those in (i).

The term "comprise" and variants of the term such as "comprises" or "comprising" are used herein to denote the inclusion of a stated integer or stated integers but not to exclude any other integer or any other integers, unless in the context or usage an exclusive interpretation of the term is required.

Unless otherwise defined herein, scientific and technical terms used in connection with the present invention shall have the meanings that are commonly understood by those of ordinary skill in the art. Further, unless otherwise required by context, singular terms shall include the plural and plural terms shall include the singular. Generally, nomenclatures used in connection with, and techniques of, dairy processing, biochemistry, enzymology, molecular and cellular biology, microbiology, genetics and protein and nucleic acid chemistry and hybridization described herein are those well-known and commonly used in the art.

Methods and materials are described herein for use in the present invention; other, suitable methods and materials known in the art can also be used. The materials, methods, and examples are illustrative only and not intended to be limiting.

All publications, patents, patent applications, sequences, database entries, and other references mentioned herein are incorporated by reference to the same extent as if each individual publication, patent, patent application, sequence, database entry, or other reference was specifically and individually indicated to be incorporated by reference. In case of conflict, the present specification, including definitions, will control.

Other features and advantages of the invention will be apparent from the following detailed description and figures, and from the claims.

The terminology and description used herein is for the purpose of describing particular embodiments only and is not intended to limit the invention. As used herein, the singular forms “a,” “an,” and “the” can be intended to include the plural forms as well, unless the context clearly indicates otherwise. The terms “including,” “includes,” “having,” “has,” “with,” or variants thereof are intended to be inclusive in a manner similar to the term “comprising”.

An “isolated” RNA, DNA or a mixed polymer is one which is substantially separated from other cellular components that naturally accompany the native polynucleotide in its natural host cell, e.g., ribosomes, polymerases, and genomic sequences with which it is naturally associated.

As used herein, an “isolated” organic molecule (e.g., a fatty acid or a SCFA) is one which is substantially separated from the cellular components (membrane lipids, chromosomes, proteins) of the host cell from which it originated. As used herein, the term “isolated” with respect to protein indicates that the preparation of protein is at least 60% pure, e.g., greater than 65%, 70%, 75%, 80%, 85%, 90%, 95%, or 99% pure. The term does not require that the biomolecule has been separated from all other chemicals, although certain isolated biomolecules may be purified to near homogeneity.

The term “polynucleotide” or “nucleic acid molecule” refers to a polymeric form of nucleotides of at least 10 bases in length. The term includes DNA molecules (e.g., cDNA or genomic or synthetic DNA) and RNA molecules (e.g., mRNA or synthetic RNA), as well as analogs of DNA or RNA containing non-natural nucleotide analogs,

non-native internucleoside bonds, or both. The nucleic acid can be in any topological conformation. For instance, the nucleic acid can be single-stranded, or double-stranded, or circular.

The term "SCFA" is abbreviated for short-chain fatty acids, the term "HOSO" is abbreviated for high oleic sunflower oil, "SCTG" is abbreviated for short-chain triglycerides.

The term "milk protein component" refers to proteins or protein equivalents and variants found in milk such as casein, whey or the combination of casein and whey, including their subunits, which are derived from various sources and as further defined herein.

The term "milk protein" means a protein that is found in a mammal-produced milk or a protein having a sequence that is at least 80% identical (e.g., at least 85%, at least 90%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% identical) to the sequence of a protein that is found in a mammal-produced milk. Non-limiting examples of milk proteins include: β-casein, κ-casein, α-S1-casein, α-S2-casein, α-lactalbumin, β-lactoglobulin, lactoferrin, transferrin, and serum albumin. Additional milk proteins are known in the art.

The term "casein protein" is art-known and represents a family of proteins that is present in mammal-produced milk and is capable of self-assembling with other proteins in the family to form micelles and/or precipitate out of an aqueous solution at an acidic pH. Non-limiting examples of casein proteins include: β-casein, κ-casein, α-S1-casein, and α-S2-casein. Non-limiting examples of sequences for casein protein from different mammals are provided herein. Additional sequences for other mammalian caseins are known in the art.

The term "mammal-produced milk" is art known and means a milk produced by a mammal.

The term "processed mammal-produced milk" means a mammal-produced milk that is processed using one or more steps known in the dairy industry (e.g., homogenization, pasteurization, irradiation, or supplementation).

The term “mammal-derived component” means a molecule or compound (e.g., a protein, a lipid, or a nucleic acid) obtained from the body of a mammal or a molecule obtained from a fluid or solid produced by a mammal.

The term “component of milk” or “milk component” is a molecule, compound, element, or an ion present in a mammal-produced milk.

The term “non-mammalian glycosylation pattern” means one of a difference in one or more location(s) of glycosylation in a protein, and/or a difference in the amount of and/or type of glycosylation at one or more location(s) in a protein produced and post-translational modified in a non-mammalian cell (e.g., a yeast cell, an insect cell, or a bacterial cell) as compared to a reference protein (e.g., the same protein produced and post-translationally modified in a mammalian cell, e.g., a CHO cell, a MEK cell, or a mammalian udder cell).

The term “lipids” means one or more molecules (e.g., biomolecules) that include a fatty acyl group (e.g., saturated or unsaturated acyl chains). For example, the term lipids includes oils, phospholipids, free fatty acids, phospholipids, monoglycerides, diglycerides, and triglycerides. Non-limiting examples of lipids are described herein. Additional examples of lipids are known in the art.

The term “plant-derived lipid” means a lipid obtained from and/or produced by a plant (e.g., monocot or dicot).

The term “sweetening agent” means a saccharide (e.g., a monosaccharide, a disaccharide, or a polysaccharide) or an artificial sweetener (e.g., a small molecule artificial sweetener or a protein artificial sweetener) that, when added to a composition, makes the composition taste sweet when ingested by a mammal, such as a human. Non-limiting examples of sweetening agents are described herein. Additional examples of sweetening agents are known in the art.

The term “ash” is an art-known term and represents one or more ions, elements, minerals, and/or compounds that can be found in a mammal-produced milk. Non-limiting ions, elements, minerals, and compounds that are found in a mammal-produced milk are described herein. Additional ions, elements, minerals, and compounds that are found in a mammal-produced milk are also known in the art.

The term “color balancing agent” or “coloring agent” means an agent added to a composition to modulate the color of the composition, e.g., to make the color of the composition appear more similar to a mammalian-produced milk. Non-limiting examples of color balancing agents or coloring agents include β-carotene and annatto. Other examples of coloring balancing agents are known in the art. A color balancing agent or a coloring agent can be produced by or obtained from a plant.

The term “micelle” means is a generally (or roughly) spherical supramolecular structure that exists as a dispersion within a composition. A micelle can have, e.g., a surface that is composed of a charged outer layer. A micelle can encapsulate one or more biomolecules. For example, a micelle can encapsulate two or more proteins (e.g., a β-casein protein and a κ-casein protein). A micelle can have diameter of between about 10 nm and about 350 nm. Additional aspects and characteristics of micelles are known in the art.

The phrase “concentration of a component in a mammal-produced milk” means the concentration of a component in the milk produced by a mammal or the mean concentration of a component in milk produced by a population of mammals of the same species.

The term “attenuate” as used herein generally refers to a functional deletion, including a mutation, partial or complete deletion, insertion, or other variation made to a gene sequence or a sequence controlling the transcription of a gene sequence, which reduces or inhibits production of the gene product, or renders the gene product non-functional. In some instances a functional deletion is described as a knockout mutation. Attenuation also includes amino acid sequence changes by altering the nucleic acid sequence, placing the gene under the control of a less active promoter, down-regulation, expressing interfering RNA, ribozymes or antisense sequences that target the gene of interest, or through any other technique known in the art. In one example, the sensitivity of a particular enzyme to feedback inhibition or inhibition caused by a composition that is not a product or a reactant (non-pathway specific feedback) is lessened such that the enzyme activity is not impacted by the presence of a compound. In other instances, an enzyme that has been altered to be less active can be referred to as attenuated.

Deletion: The removal of one or more nucleotides from a nucleic acid molecule or one or more amino acids from a protein, the regions on either side being joined together.

Knock-Out: A gene whose level of expression or activity has been reduced to zero. In some examples, a gene is knocked-out via deletion of some or all of its coding sequence. In other examples, a gene is knocked-out via introduction of one or more nucleotides into its open reading frame, which results in translation of a non-sense or otherwise non-functional protein product.

The term “synthetic milk substitute” refers to a composition that resembles, is similar to, is to equivalent to, or is nearly identical to a dairy milk.

The term “flavor” refers to the taste and/or the aroma of a food or drink.

The term “recombinant” is an art known-term. When referring to a nucleic acid (e.g., a gene), the term “recombinant” can be used, e.g., to describe a nucleic acid that has been removed from its naturally occurring environment, a nucleic acid that is not associated with all or a portion of a nucleic acid abutting or proximal to the nucleic acid when it is found in nature, a nucleic acid that is operatively linked to a nucleic acid which it is not linked to in nature, or a nucleic acid that does not occur in nature. The term “recombinant” can be used, e.g., to describe cloned DNA isolates, or a nucleic acid including a chemically-synthesized nucleotide analog. When “recombinant” is used to describe a protein, it can refer to, e.g., a protein that is produced in a cell of a different species or type, as compared to the species or type of cell that produces the protein in nature.

As used herein, an endogenous nucleic acid sequence in the genome of an organism (or the encoded protein product of that sequence) is deemed “recombinant” herein if a heterologous sequence is placed adjacent to the endogenous nucleic acid sequence, such that the expression of this endogenous nucleic acid sequence is altered. In this context, a heterologous sequence is a sequence that is not naturally adjacent to the endogenous nucleic acid sequence, whether or not the heterologous sequence is itself endogenous (originating from the same host cell or progeny thereof) or exogenous (originating from a different host cell or progeny thereof). By way of example, a promoter sequence can be substituted (e.g., by homologous recombination) for the native promoter of a gene in the genome of a host cell, such that this gene has an altered

expression pattern. This gene would now become "recombinant" because it is separated from at least some of the sequences that naturally flank it.

A nucleic acid is also considered "recombinant" if it contains any modifications that do not naturally occur to the corresponding nucleic acid in a genome. For instance, an endogenous coding sequence is considered "recombinant" if it contains an insertion, deletion, or a point mutation introduced artificially, e.g., by human intervention. A "recombinant nucleic acid" also includes a nucleic acid integrated into a host cell chromosome at a heterologous site and a nucleic acid construct present as an episome.

The term "percent sequence identity" or "identical" in the context of nucleic acid sequences refers to the residues in the two sequences which are the same when aligned for maximum correspondence. The length of sequence identity comparison may be over a stretch of at least about nine nucleotides, usually at least about 20 nucleotides, more usually at least about 24 nucleotides, typically at least about 28 nucleotides, more typically at least about 32 nucleotides, and preferably at least about 36 or more nucleotides. There are a number of different algorithms known in the art which can be used to measure nucleotide sequence identity. For instance, polynucleotide sequences can be compared using FASTA, Gap, or Bestfit, which are programs in Wisconsin Package Version 10.0, Genetics Computer Group (GCG), Madison, Wis. FASTA provides alignments and percent sequence identity of the regions of the best overlap between the query and search sequences. See, e.g., Pearson, *Methods Enzymol.* 183:63-98, 1990 (hereby incorporated by reference in its entirety). For instance, percent sequence identity between nucleic acid sequences can be determined using FASTA with its default parameters (a word size of 6 and the NOPAM factor for the scoring matrix) or using Gap with its default parameters as provided in GCG Version 6.1, herein incorporated by reference. Alternatively, sequences can be compared using the computer program, BLAST (Altschul et al., *J. Mol. Biol.* 215:403-410, 1990; Gish and States, *Nature Genet.* 3:266-272, 1993; Madden et al., *Meth. Enzymol.* 266:131-141, 1996; Altschul et al., *Nucleic Acids Res.* 25:3389-3402, 1997; Zhang and Madden, *Genome Res.* 7:649-656, 1997, especially blastp or tblastn (Altschul et al., *Nucleic Acids Res.* 25:3389-3402, 1997.

The term "substantial homology" or "substantial similarity," when referring to a nucleic acid or fragment thereof, indicates that, when optimally aligned with appropriate

nucleotide insertions or deletions with another nucleic acid (or its complementary strand), there is nucleotide sequence identity in at least about 76%, 80%, 85%, preferably at least about 90%, and more preferably at least about 95%, 96%, 97%, 98% or 99% of the nucleotide bases, as measured by any well-known algorithm of sequence identity, such as FASTA, BLAST or Gap, as discussed above.

Alternatively, substantial homology or similarity exists when a nucleic acid or fragment thereof hybridizes to another nucleic acid, to a strand of another nucleic acid, or to the complementary strand thereof, under stringent hybridization conditions. "Stringent hybridization conditions" and "stringent wash conditions" in the context of nucleic acid hybridization experiments depend upon a number of different physical parameters. Nucleic acid hybridization will be affected by such conditions as salt concentration, temperature, solvents, the base composition of the hybridizing species, length of the complementary regions, and the number of nucleotide base mismatches between the hybridizing nucleic acids, as will be readily appreciated by those skilled in the art. One having ordinary skill in the art knows how to vary these parameters to achieve a particular stringency of hybridization.

In general, "stringent hybridization" is performed at about 25 °C below the thermal melting point (Tm) for the specific DNA hybrid under a particular set of conditions. "Stringent washing" is performed at temperatures about 5 °C lower than the Tm for the specific DNA hybrid under a particular set of conditions. The Tm is the temperature at which 50% of the target sequence hybridizes to a perfectly matched probe. See Sambrook et al., Molecular Cloning: A Laboratory Manual, 2d ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., page 9.51, 1989, hereby incorporated by reference. For purposes herein, "stringent conditions" are defined for solution phase hybridization as aqueous hybridization (i.e., free of formamide) in 6xSSC (where 20xSSC contains 3.0 M NaCl and 0.3 M sodium citrate), 1% SDS at 65 °C for 8-12 hours, followed by two washes in 0.2xSSC, 0.1% SDS at 65 °C. for 20 minutes. It will be appreciated by the skilled worker that hybridization at 65 °C will occur at different rates depending on a number of factors including the length and percent identity of the sequences which are hybridizing.

The nucleic acids (also referred to as polynucleotides) of this present invention may include both sense and antisense strands of RNA, cDNA, genomic DNA, and synthetic forms and mixed polymers of the above. They may be modified chemically or biochemically or may contain non-natural or derivatized nucleotide bases, as will be readily appreciated by those of skill in the art. Such modifications include, for example, labels, methylation, substitution of one or more of the naturally occurring nucleotides with an analog, internucleotide modifications such as uncharged linkages (e.g., methyl phosphonates, phosphotriesters, phosphoramidates, carbamates, etc.), charged linkages (e.g., phosphorothioates, phosphorodithioates, etc.), pendent moieties (e.g., polypeptides), intercalators (e.g., acridine, psoralen, etc.), chelators, alkylators, and modified linkages (e.g., alpha anomeric nucleic acids, etc.) Examples of modified nucleotides are described in Malyshev et al., *Nature* 509:385-388, 2014; and Li et al., *J. Am. Chem. Soc.* 136:826-829, 2014. Also included are synthetic molecules that mimic polynucleotides in their ability to bind to a designated sequence via hydrogen bonding and other chemical interactions. Such molecules are known in the art and include, for example, those in which peptide linkages substitute for phosphate linkages in the backbone of the molecule. Other modifications can include, for example, analogs in which the ribose ring contains a bridging moiety or other structure such as the modifications found in “locked” nucleic acids.

The term “mutated” when applied to nucleic acid sequences means that nucleotides in a nucleic acid sequence may be inserted, deleted, or changed compared to a reference nucleic acid sequence. A single alteration may be made at a locus (a point mutation) or multiple nucleotides may be inserted, deleted, or changed at a single locus. In addition, one or more alterations may be made at any number of loci within a nucleic acid sequence. A nucleic acid sequence may be mutated by any method known in the art including but not limited to mutagenesis techniques such as “error-prone PCR” (a process for performing PCR under conditions where the copying fidelity of the DNA polymerase is low, such that a high rate of point mutations is obtained along the entire length of the PCR product; see, e.g., Leung et al., *Technique* 1:11-15, 1989, and Caldwell and Joyce, *PCR Methods Applic.* 2:28-33, 1992); and "oligonucleotide-directed mutagenesis" (a

process which enables the generation of site-specific mutations in any cloned DNA segment of interest; see, e.g., Reidhaar-Olson and Sauer, *Science* 241:53-57, 1988).

The term "vector" as used herein is intended to refer to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. One type of vector is a "plasmid," which generally refers to a circular double stranded DNA loop into which additional DNA segments may be ligated, but also includes linear double-stranded molecules such as those resulting from amplification by the polymerase chain reaction (PCR) or from treatment of a circular plasmid with a restriction enzyme. Other vectors include cosmids, bacterial artificial chromosomes (BAC) and yeast artificial chromosomes (YAC). Another type of vector is a viral vector, wherein additional DNA segments may be ligated into the viral genome (discussed in more detail below). Certain vectors are capable of autonomous replication in a host cell into which they are introduced (e.g., vectors having an origin of replication which functions in the host cell). Other vectors can be integrated into the genome of a host cell upon introduction into the host cell, and are thereby replicated along with the host genome. Moreover, certain preferred vectors are capable of directing the expression of genes to which they are operatively linked. Such vectors are referred to herein as "recombinant expression vectors" (or simply "expression vectors").

Promoters useful for expressing the recombinant genes described herein include both constitutive and inducible/repressible promoters. Examples of inducible/repressible promoters include galactose-inducible promoters (e.g., PLAC4-PBI). Where multiple recombinant genes are expressed in an engineered yeast, the different genes can be controlled by different promoters or by identical promoters in separate operons, or the expression of two or more genes may be controlled by a single promoter as part of an operon.

The term "operably linked" expression control sequences refers to a linkage in which the expression control sequence is contiguous with the gene of interest to control the gene of interest, as well as expression control sequences that act in trans or at a distance to control the gene of interest.

The term "expression control sequence" or "regulatory sequences" are used interchangeably and as used herein refer to polynucleotide sequences which are necessary

to affect the expression of coding sequences to which they are operably linked. Expression control sequences are sequences which control the transcription, post-transcriptional events, and translation of nucleic acid sequences. Expression control sequences include appropriate transcription initiation, termination, promoter and enhancer sequences; efficient RNA processing signals, such as splicing and polyadenylation signals; sequences that stabilize cytoplasmic mRNA; sequences that enhance translation efficiency (e.g., ribosome binding sites); sequences that enhance protein stability; and when desired, sequences that enhance protein secretion. The nature of such control sequences differs depending upon the host organism; in prokaryotes, such control sequences generally include promoter, ribosomal binding site, and transcription termination sequence. The term “control sequences” is intended to include, at a minimum, all components whose presence is essential for expression, and can also include additional components whose presence is advantageous, for example, leader sequences and fusion partner sequences.

The term “transfect”, “transfection”, “transfecting,” and the like refer to the introduction of a heterologous nucleic acid into eukaryote cells, both higher and lower eukaryote cells. Historically, the term “transformation” has been used to describe the introduction of a nucleic acid into a yeast or fungal cell; however, herein the term “transfection” is used to refer to the introduction of a nucleic acid into any eukaryote cell, including yeast and fungal cells.

The term “recombinant host cell” (“expression host cell”, “expression host system”, “expression system” or simply “host cell”), as used herein, is intended to refer to a cell into which a recombinant vector has been introduced. It should be understood that such terms are intended to refer not only to the particular subject cell but to the progeny of such a cell. Because certain modifications may occur in succeeding generations due to either mutation or environmental influences, such progeny may not, in fact, be identical to the parent cell, but are still included within the scope of the term “host cell” as used herein. A recombinant host cell may be an isolated cell or cell line grown in culture or may be a cell which resides in a living tissue or organism. Preferred host cells are yeasts and fungi.

The term "yeast and filamentous fungi" include, but are not limited to any *Kluyveromyces* sp., such as *Kluyveromyces lactis*, *Kluyveromyces marxianus*, *Saccharomyces* sp., such as *Saccharomyces cerevisiae*, *Pichia* sp., such as *Pichia pastoris*, *Pichia finlandica*, *Pichia trehalophila*, *Pichia koclamae*, *Pichia membranaefaciens*, *Pichia minuta* (*Ogataea minuta*, *Pichia lindneri*), *Pichia opuntiae*, *Pichia thermotolerans*, *Pichia salictaria*, *Pichia guercuum*, *Pichia pijperi*, *Pichia stiptis*, *Pichia methanolica*, *Hansenula polymorpha*, *Candida albicans*, any *Aspergillus* sp., such as *Aspergillus nidulans*, *Aspergillus niger*, *Aspergillus oryzae*, *Trichoderma reesei*, *Chrysosporium lucknowense*, *Fusarium* sp., *Fusarium gramineum*, *Fusarium venenatum*, *Physcomitrella patens*, and *Neurospora crassa*.

As used herein, the term "predominantly" or variations thereof will be understood to mean, for instance, a) in the context of fats the amount of a particular fatty acid composition relative to the total amount of fatty acid composition; b) in the context of protein the amount of a particular protein composition (e.g., β-casein) relative to the total amount of protein composition (e.g., α-, β-, and κ-casein).

The term "about," "approximately," or "similar to" means within an acceptable error range for the particular value as determined by one of ordinary skill in the art, which can depend in part on how the value is measured or determined, or on the limitations of the measurement system. It should be understood that all ranges and quantities described below are approximations and are not intended to limit the invention. Where ranges and numbers are used these can be approximate to include statistical ranges or measurement errors or variation. In some embodiments, for instance, measurements could be plus or minus 10%.

The phrase "essentially free of" is used to indicate the indicated component, if present, is present in an amount that does not contribute, or contributes only in a *de minimus* fashion, to the properties of the composition. In various embodiments, where a composition is essentially free of a particular component, the component is present in less than a functional amount. In various embodiments, the component may be present in trace amounts. Particular limits will vary depending on the nature of the component, but may be, for example, selected from less than 10% by weight, less than 9% by weight, less than 8% by weight, less than 7% by weight, less than 6% by weight, less than 5% by

weight, less than 4% by weight, less than 3% by weight, less than 2% by weight, less than 1% by weight, or less than 0.5% by weight.

As used herein, the term "essentially free of" a particular carbohydrate, such as lactose is used to indicate that the food composition is substantially devoid of carbohydrate residues. Expressed in terms of purity, essentially free means that the amount of carbohydrate residues do not exceed 10%, and preferably is below 5%, more preferably below 1%, most preferably below 0.5%, wherein the percentages are by weight or by mole percent. Thus, substantially all of the carbohydrate residues in a food composition according to the present invention are free of, for example, lactose.

Unless indicated otherwise, percentage (%) of ingredients refer to total % by weight.

Unless otherwise indicated, and as an example for all sequences described herein under the general format "SEQ ID NO:", "nucleic acid comprising SEQ ID NO:1" refers to a nucleic acid, at least a portion of which has either (i) the sequence of SEQ ID NO:1, or (ii) a sequence complementary to SEQ ID NO:1. The choice between the two is dictated by the context. For instance, if the nucleic acid is used as a probe, the choice between the two is dictated by the requirement that the probe be complementary to the desired target.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 represents a flow diagram representative of an exemplary process to produce synthetic milk substitute.

Figure 2A represents a picture depicting precipitate of an exemplary milk protein component.

Figure 2B represents a picture depicting a pellet of an exemplary milk protein component.

Figure 3 represents an image of a silver stain SDS-PAGE gel to visualize the milk protein components.

Figure 4 is a SYPRO Ruby-stained SDS-PAGE gel showing the levels of secretion of α-lactalbumin mediated by the OST signal sequence, the native α-

lactalbumin signal sequence, and the α mating factor signal sequence as described in Example 6.

Figure 5 is shows the levels of secretion of α-lactalbumin by wildtype yeast cells or yeast cells expressing α-lactalbumin using the native α-lactalbumin signal peptide or a OST1 signal peptide (as determined by an ELISA assay as described in Example 6).

Figure 6 is shows the levels of secretion of β-lactoglobulin by wildtype yeast cells and yeast cells including a vector as described in Example 6 (using SDS-PAGE).

Figure 7 is a Western blot showing the level of secretion of β-lactoglobulin from wildtype yeast and yeast cells including a vector as described in Example 6.

Figure 8 is a graph showing the level of secreted β-casein and secreted α-S1-casein produced by wildtype yeast and yeast cells including the vectors described in Example 6.

Figure 9 is a schematic showing the steps in the process described in Example 7.

Figure 10 is an image of a composition made by a method described herein.

DETAILED DESCRIPTION OF THE INVENTION

The invention is based on the discovery that only a few components present in a mammal-produced milk provide for the texture and taste of a mammal-produced milk, and the development of compositions that have a similar taste, aroma, and mouth feel as compared to compositions produced from~~a~~ mammal-produced milk. In view of this discovery, provided herein are such compositions, methods of making the compositions, and kits including these compositions and mixtures useful for making these compositions.

The compositions provided herein provide for compositions that have a similar taste, mouth feel, aroma, and nutritional value as compared to compositions produced from ~~a~~ mammal-produced milk, but lack one or more of the components of a mammal-produced milk that may be considered to be undesirable (e.g., allergens, lactose, antibiotics, hormones (e.g., stress hormones and/or growth hormones), heavy metals, bacteria (e.g., *E. coli*), viruses, and prions). The compositions provided herein also have an improved shelf-life as compared to compositions produced from mammal-produced milk, and can have an improved aroma profile as compared to compositions produced from ~~a~~ mammal-produced milk.

Also provided herein are methods and compositions for dairy substitute food product comprising one or more isolated milk protein components, fats, carbohydrates and ash. In certain aspects the methods and compositions comprise milk or milk-like protein equivalents. Preferably, the milk protein component is essentially free of impurities. In some embodiments, the milk protein component comprises microbially derived or produced casein, whey or a combination thereof. More preferably, a method is provided to introduce an engineered nucleic acid sequence encoding one or more milk protein components. Even more preferably, the milk protein component is not animal derived. In other preferred embodiments, the recombinant milk protein component is modified to express the same phosphate groups or lack phosphate groups and/or carbohydrate groups attached to the casein proteins. By having recombinant β-casein and κ-casein having the same phosphate groups as the same proteins present in a mammal-produced milk, the recombinant β-casein and the recombinant κ-casein are able to form micelles.

The methods and techniques of the present invention are generally performed according to conventional methods well known in the art and as described in various general and more specific references that are cited and discussed throughout the present specification unless otherwise indicated. See, e.g., Sambrook et al., Molecular Cloning: A Laboratory Manual, 2d ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1989; Ausubel et al., Current Protocols in Molecular Biology, Greene Publishing Associates, 1992, and Supplements to 2002); Harlow and Lane, Antibodies: A Laboratory Manual, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1990; Taylor and Drickamer, Introduction to Glycobiology, Oxford Univ. Press, 2003; Worthington Enzyme Manual, Worthington Biochemical Corp., Freehold, N.J.; Handbook of Biochemistry: Section A Proteins, Vol I, CRC Press, 1976; Handbook of Biochemistry: Section A Proteins, Vol II, CRC Press, 1976; Essentials of Glycobiology, Cold Spring Harbor Laboratory Press, 1999.

Exemplary materials and methods for use in any of the methods and compositions are described below, and can be used in any combination. Additional materials and methods that can be used in any of the methods and compositions are also known in the art.

Casein Proteins

Casein proteins include a variety of different proteins found in mammalian milk. Non-limiting examples of casein proteins include: β-casein, κ-casein, α-S2-casein, and α-S1-casein.

As an alternative to obtaining casein proteins from mammals or mammal-produced milk for us in dairy product manufacture, the present invention provides methods and composition for the production of recombinant casein proteins. In various aspects of the present invention, methods and compositions are provided for non-animal derived casein that has similar solubility and similar turbidity, and heat stability suitable for incorporation into various food products. Preferably, the non-animal derived casein has excellent solubility similar turbidity and heat stability suitable for incorporation into various dairy substitute products. Additionally, further characterization of the protein includes less or no aggregation or precipitation during such heat treatment and is suitable for procedures such as pasteurization, concentration, etc.

Difference in function of the non-animal derived casein in milk can be characterized in terms of viscosity of the liquid; the ability of the proteins to withstand heat; the ability of the proteins to form micelles; and the ability of the proteins to hold different minerals & vitamins.

B-casein

The primary structure of human β-casein as determined by Greenberg et al. (*J. Biol. Chem.* 259:5132-5138, 1984) was shown to be a phosphorylated protein with phosphorylation sites at specific seryl and threonyl residues located near the amino terminus. A comparison of human and bovine β-caseins showed 47% identity.

Non-limiting examples of β-casein proteins are SEQ ID Nos: 25, 27, 29, 31, 33, 35, 36, 38, 40, 42, 44, and 46. Non-limiting examples of nucleic acid sequences encoding a β-casein protein are SEQ ID NOs: 26, 28, 30, 32, 34, 37, 39, 41, 43, 45, 47, and 144. A β-casein protein can be a β-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan,

mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein. Additional sequences for different β-casein proteins and nucleic acids encoding different β-casein proteins are known in the art.

A β-casein protein can also be a proteins that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-casein protein (e.g., SEQ ID Nos: 25, 27, 29, 31, 33, 35, 36, 38, 40, 42, 44, or 46). A nucleic acid encoding a β-casein protein can encode a protein that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-casein protein (e.g., SEQ ID Nos: 25, 27, 29, 31, 33, 35, 36, 38, 40, 42, 44, or 46).

Methods known for isolating β-casein from genetically engineered bacterial cells typically involve precipitating the β-casein from a supernatant derived from lysed or fractionated cells. For example, Simons, et al., *Protein Eng.* 6: 763-770 (1993), used genetically engineered *E. coli* to express bovine β-casein. The protein, which accumulated in the periplasmic spaces of the bacteria, was released into a cell suspension by osmotic shock. After centrifugation of the suspension, the β-casein in the pellet was resuspended in a cold water wash and centrifuged again. The β-casein, present in the supernatant, was precipitated by acidification with acetic acid, filtered, and further purified by HPLC. Similarly, Hansson, et al., *Protein Express. Purif.* 4:373-381, 1993, used genetically engineered *E. coli* to express β-casein. The β-casein, present in a cell lysate, was precipitated with ammonium sulfate, dissolved in ethanolamine and 6M urea, and further purified by ion-exchange chromatography. See, e.g., U.S. Patent No. 6,121,421.

Additionally, methods for isolating recombinantly produced β-casein in yeast that are simpler and more effective than known techniques are also known. Choi et al., *J. Agric. Food Chem.* 49(4):1761-1766, 2001. Expression and purification of glycosylated bovine β-casein (L70S/P71S) in *Pichia pastoris*, resulted in the observation that the

majority of bovine β-casein was not being hyperglycosylated in *P. pastoris*, and its molecular weight was estimated to be 33.6 kDa. Glycosylated bovine β-casein was normally phosphorylated to the same degree as native bovine β-casein.

K-Casein

Kappa-casein is both phosphorylated and glycosylated. The sequence of human κ-casein was determined by Brignon et al. (Fed. Eur. Biol. Soc. Lett. 188:48-54, 1985). See, e.g., U.S. Patent No. 5,710,044.

Non-limiting examples of κ-casein proteins are SEQ ID Nos: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and 23. Non-limiting examples of nucleic acid sequences encoding a κ-casein protein are SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, and 148. A κ-casein protein can be a κ-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. Additional sequences for different κ-casein proteins and nucleic acids encoding different κ-casein proteins are known in the art.

A κ-casein protein can also be a proteins that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype κ-casein protein (e.g., SEQ ID Nos: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, or 23). A nucleic acid encoding a κ-casein protein can encode a protein that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype κ-casein protein (e.g., SEQ ID Nos: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, or 23).

α-S1-Casein

Non-limiting examples of α-S1-casein proteins are SEQ ID Nos: 48, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 72, 74, and 76. Non-limiting examples of nucleic acid sequences encoding an α-S1-casein protein are SEQ ID NOs: 49, 51, 53, 55, 58, 60, 62, 65, 67, 69, 71, 73, 75, 77, and 147. A α-S1-casein protein can be an α-S1-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S1-casein protein. Additional sequences for different α-S1-casein proteins and nucleic acids encoding different α-S1-casein proteins are known in the art.

An α-S1-casein protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S1-casein protein (e.g., SEQ ID Nos: 48, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 72, 74, or 76). A nucleic acid encoding an α-S1-casein protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S1-casein protein (e.g., SEQ ID Nos: 48, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 72, 74, or 76).

α-S2-Casein

Non-limiting examples of α-S2-casein proteins are SEQ ID Nos: 78, 80, 82, 84, 86, 88, and 90. Non-limiting examples of nucleic acid sequences encoding an α-S2-casein protein are SEQ ID NOs: 79, 81, 83, 85, 87, 89, 91, 145, and 146. A α-S2-casein protein can be an α-S2-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S2-casein protein. Additional

sequences for different α-S2-casein proteins and nucleic acids encoding different α-S2-casein proteins are known in the art.

An α-S2-casein protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S2-casein protein (e.g., SEQ ID Nos: 78, 80, 82, 84, 86, 88, or 90). A nucleic acid encoding an α-S2-casein protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S2-casein protein (e.g., SEQ ID Nos: 78, 80, 82, 84, 86, 88, or 90).

Micelles including Casein Proteins

In bovine milk, casein or casein micelles usually makes up 2.5% of the entire mixture in suspension. If sufficient casein is not present the micelles, which are very important for the optimum behavior of milk, will not form. Too much protein does not go into solution properly resulting in an undesirable mixture. The casein micelle can include water and salts - mainly calcium and phosphorous. Casein micelles are easily separated and removed by centrifugation. Separation from whey is easily done by precipitating casein with an acid to lower the pH to around 4.6.

In some embodiments, a micelle can include a β-casein protein (e.g., any of the β-casein proteins described herein) and κ-casein protein (e.g., any of the κ-casein proteins described herein). In some examples, the ratio of β-casein protein to κ-casein protein in the micelle is about 2.0:1 to about 5.5:1, 2.0:1 to about 5.0:1, 2.0:1 to about 4.5:1, about 2.0:1 to about 4.0:1, about 2.0:1 to about 3.5:1, about 2.0:1 to about 3.0:1, about 2.0:1 to about 2.5:1, about 2.5:1 to about 5.0:1, about 2.5:1 to about 4.5:1, about 2.5:1 to about 4.0:1, about 2.5:1 to about 3.5:1, about 2.5:1 to about 3.0:1, 3.0:1 to about 5.0:1, about 3.0:1 to about 4.5:1, about 3.0:1 to about 4.0:1, about 3.0:1 to about 3.5:1, about 3.5:1 to about 5.0:1, about 3.5:1 to about 4.5:1, about 3.5:1 to about 4.0:1, about 4.0:1 to about 5.0:1, about 4.0:1 to about 4.5:1, or about 4.5:1 to about 5.0:1.

In some examples, the micelle has a diameter (or a population of micelles have an average diameter) of about 20 nm to about 350 nm, about 320 nm, about 300 nm, about

280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, about 100 nm, about 80 nm, about 60 nm, or about 40 nm; about 40 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, about 100 nm, about 80 nm, or about 60 nm; about 60 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, or about 100 nm; about 80 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, or about 100 nm; about 100 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, or about 120 nm; about 120 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, or about 140 nm; about 140 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, or about 160 nm; about 160 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, or about 180 nm; about 180 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, or about 200 nm; about 200 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, or about 220 nm; about 220 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, or about 240 nm; about 240 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, or about 260 nm; about 260 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, or about 280 nm; about 280 nm to about 350 nm, about 340 nm, about 320 nm, or about 300 nm; about 300 nm to about 350 nm or about 325 nm; or about 325 nm to about 350 nm.

Whey Proteins

Whey is commonly known as the by-product of cheese and is also known to be one cause for milk allergies. A typical whey composition comprises a mixture of β-lactoglobulin, α-lactalbumin, serum albumin, immunoglobulins, lactoferrin, and transferrin. Whey proteins do not contain phosphorus, and remain in solution at low pH whereas casein proteins do not. In one embodiment, a select combination of whey proteins comprising β-lactoglobulin and α-lactalbumin are used as the primary component, or at least a part of the milk protein component, ~~or~~ of a composition. Non-limiting examples of different whey proteins are provided below.

α-Lactalbumin

Non-limiting examples of α-lactalbumin proteins are SEQ ID Nos: 92, 94, 96, and 98. Non-limiting examples of nucleic acid sequences encoding an α-lactalbumin protein are SEQ ID NOs: 93, 95, 97, 99, and 157. An α-lactalbumin protein can be an α-lactalbumin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-lactalbumin protein. Additional sequences for different α-lactalbumin proteins and nucleic acids encoding different α-lactalbumin proteins are known in the art.

An α-lactalbumin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-lactalbumin protein (e.g., SEQ ID Nos: 92, 94, 96, or 98). A nucleic acid encoding an α-lactalbumin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α- lactalbumin protein (e.g., SEQ ID Nos: 92, 94, 96, or 98).

β-Lactoglobulin

Non-limiting examples of β-lactoglobulin proteins are SEQ ID Nos: 100, 102, 104, and 106. Non-limiting examples of nucleic acid sequences encoding a β-lactoglobulin protein are SEQ ID NOs: 101, 103, 105, 107, and 143. A β-lactoglobulin protein can be a β-lactoglobulin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-lactoglobulin protein. Additional sequences for different β-lactoglobulin proteins and nucleic acids encoding different β-lactoglobulin proteins are known in the art.

A β-lactoglobulin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-lactoglobulin protein (e.g., SEQ ID Nos: 100, 102, 104, or 106). A nucleic acid encoding a β-lactoglobulin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-lactoglobulin protein (e.g., SEQ ID Nos: 100, 102, 104, or 106).

Lactoferrin

Non-limiting examples of lactoferrin proteins are SEQ ID Nos: 108, 110, 112, and 114. Non-limiting examples of nucleic acid sequences encoding a lactoferrin protein are SEQ ID NOs: 109, 111, 113, and 115. A lactoferrin protein can be a lactoferrin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth lactoferrin protein. Additional sequences for different lactoferrin proteins and nucleic acids encoding different lactoferrin proteins are known in the art.

A lactoferrin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype lactoferrin protein (e.g., SEQ ID Nos: 108, 110, 112, or 114). A nucleic acid encoding a lactoferrin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype lactoferrin protein (e.g., SEQ ID Nos: 108, 110, 112, or 114).

Transferrin

Non-limiting examples of transferrin proteins are SEQ ID Nos: 116 and 118. Non-limiting examples of nucleic acid sequences encoding a transferrin protein are SEQ ID NOs: 117 and 119. A transferrin protein can be a transferrin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth transferrin protein. Additional sequences for different transferrin proteins and nucleic acids encoding different transferrin proteins are known in the art.

A transferrin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype transferrin protein (e.g., SEQ ID Nos: 116 or 118). A nucleic acid encoding a transferrin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype transferrin protein (e.g., SEQ ID Nos: 116 or 118).

Serum Albumin

Non-limiting examples of serum albumin proteins are SEQ ID Nos: 120, 122, 124, and 126. Non-limiting examples of nucleic acid sequences encoding a serum

albumin protein are SEQ ID NOs: 121, 123, 125, and 127. A serum albumin protein can be a serum albumin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth serum albumin protein. Additional sequences for different serum albumin proteins and nucleic acids encoding different serum albumin proteins are known in the art.

A serum albumin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype serum albumin protein (e.g., SEQ ID Nos: 20, 122, 124, or 126). A nucleic acid encoding a serum albumin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype serum albumin protein (e.g., SEQ ID Nos: 20, 122, 124, or 126).

Lipids in Mammal-Produced Milk

Milk fat contains approximately 400 different fatty acids, which makes it the most complex of all natural fats. The milk fatty acids are derived almost equally from two sources, the feed and the microbial activity in the rumen of the cow and the lipids in bovine milk are mainly present in globules as an oil-in-water emulsion. Fat is present in all natural dairy products and is critical for sensory characteristics such as flavor, mouthfeel and consistency. In addition, fats provide nutrition and health benefits. The milk fat consists mainly of triglycerides, approximately 98%, while other milk lipids are diacylglycerol (about 2% of the lipid fraction), cholesterol (less than 0.5%), phospholipids (about 1%) and free fatty acids (FFA) (about 0.1%) Jensen RG, Newburg DS. Bovine milk lipids, Handbook of milk composition. Jensen RG London: Academic Press; 1995. 543–75. In addition, there are trace amounts of ether lipids, hydrocarbons, fat-soluble vitamins, flavor compounds and compounds introduced by the feed (Lindmark Mansson H., Food & Nutrition Research 2008. DOI: 10.3402/fnr.v52i0.1821)

Milk fat triglycerides are synthesized from more than 400 different fatty acids, which makes milk fat the most complex of all natural fats. Nearly all fatty acids in milk are present in trace quantities and only about 15 acids at the 1% level or higher. Many factors are associated with the variations in the amount and fatty acid composition of bovine milk lipids. They may be of animal origin, i.e. related to genetics (breed and selection), stage of lactation, mastitis and ruminal fermentation, or they may be feed-related factors, i.e. related to fibre and energy intake, dietary fats, and seasonal and regional effects. The fatty acids in the milk fat are arranged in the triglycerides in accordance with a pattern that appears to be universal among ruminants. The percent unsaturated fatty acids (e.g., oleic and linolenic) in goats do not differ from the average found for cow's milk. A major difference between the milk fat of the goat and the cow is the percentage distribution among specific short chain fatty acids. Goats have an appreciably higher proportion of capric, caprylic and caproic acids. The high amounts of these specific fatty acids are responsible for the characteristic flavor and odor associated with goat's milk. John C. Bruhn, FST, UC Davis, Davis, CA 95616-8598; Seewww.drinc.ucdavis.edu/goat1.htm; www.ncbi.nlm.nih.gov/pmc/articles/ PMC2596709/# __ffn_sectitle; Food Nutr Res. 2008; 52: 10.3402/fnr.v52i0.1821. Published online Jun 11, 2008. doi: 10.3402/fnr. v52i0.1821.

The milk fatty acids are derived almost equally from two sources, the feed and the microbial activity in the rumen of the cow. The fatty acid synthesizing system in the mammary gland of the cow produces fatty acids with even number of carbons of 4–16 carbons in length and accounts for approximately 60 and 45% of the fatty acids on a molar and weight basis, respectively. This *de novo* synthesis in the mammary gland is of the 4:0–14:0 acids together with about half of the 16:0 from acetate and β-hydroxybutyrate. Acetate and butyric acid are generated in the rumen by fermentation of feed components. The butyric acid is converted to β-hydroxybutyrate during absorption through the rumen epithelium.

Medium- and long-chain fatty acids, but mainly 18:0, may be desaturated in the mammary gland to form the corresponding monosaturated acids.

Fatty acids are not randomly esterified at the three positions of the triacylglycerol molecule (MacGibbon AHK, Taylor MW. Composition and structure of bovine milk

lipidsAdvanced dairy chemistry. Fox PFMcSweeney PLHNew York: Springer; 2006. 1–42.). The short-chain acids butyric (4:0) and caproic (6:0) are esterified almost entirely at sn-3. Medium-chain fatty acids (8:0–14:0) as well as 16:0 are preferentially esterified at positions sn-1 and sn-2. Stearic acid (18:0) is selectively placed at position sn-1, whereas oleic acid (18:1) shows preference for positions sn-1 and sn-3 (Lindmark 2008).

Milk replacers with a fat component formulated to selected fatty acid profiles exist, however, such triglycerides are not interesterified into long-chain monounsaturated fatty acid triglycerides such as found in vegetable oils. U.S. Patent Appl. No. 20140147548 discloses milk replacers for young animals with by adding medium chain triglyceride, specifically caproic, caprylic, capric and lauric fatty acid or a combination thereof.

Lipids in the Present Compositions

The lipids in any of the compositions or used in any of the methods described herein can include: one or more fats, one or more oils, one or more monoglycerides, diglycerides, and/or triglycerides, one or more free fatty acids, and one or more phospholipids. Exemplary oils, monoglycerides, diglycerides, free fatty acids, and phospholipids are described below. Additional examples of fats, oils, monoglycerides, diglycerides, triglycerides, free fatty acids, and phospholipids are known in the art.

Oils

Oils used in the present compositions or methods can include, e.g., plant-derived oils. Non-limiting examples of plant-based oils include sunflower oil, coconut oil, peanut oil, corn oil, cottonseed oil, olive oil, palm oil, rapeseed oil, safflower oil, sesame oil, soybean oil, almond oil, beech nut oil, brazil nut oil, cashew oil, hazelnut oil, macadamia nut oil, mongongo nut oil, pecan oil, pine nut oil, pistachio nut oil, walnut oil, and avocado oil.

Monoglycerides and Diglycerides

Monoglycerides and diglycerides that can be used in the present invention can be plant-derived monoglycerides and diglycerides. For example, monoglycerides and

diglycerides can be derived from sunflowers, coconuts, peanuts, cottonseed, olives, palm, rapeseed, safflowers, sesame seed, soybeans, almonds, beech nuts, brazil nuts, cashews, hazelnuts, macadameia nuts, mongongo nuts, pecans, pine nuts, pistachios, walnuts, and avocados. The monoglycerides and diglycerides can include the acyl chain of any of the free fatty acids listed herein. Additional examples of monoglycerides and diglycerides are known in the art.

Free Fatty Acids

The compositions described herein can include and the methods described herein can include the use of one or more free fatty acids. Non-limiting examples of free fatty acids include butyric acid, caproic acid, caprylic acid, and capric acid. Additional examples of fatty acids include lauric acid, myristic acid, palmitic acid, stearic acid, arachidic acid, behenic acid, lignoceric acid, cerotic acid, myristoleic acid, pamitoleic acid, sapienic acid, oleic acid, elaidic acid, vaccenic acid, linoleic acid, linoelaidic acid, α-linolenic acid, arachidonic acid, eicosapentaenoic acid, erucic acid, docosahexaenoic acid, omega-3 fatty acids, and omega-6 fatty acids. In some examples, the free fatty acid is saturated. In some examples, the free fatty acid is unsaturated. In some embodiments, the free fatty acids are not derived from or produced by a mammal. Additional examples of free fatty acids are known in the art.

Phospholipids

The compositions described herein and the methods described herein can include the use of one or more phospholipids. Non-limiting examples of phospholipids include lecithin phospholipids (e.g., soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, rapeseed lecithin phospholipids. rice bran lecithin phospholipids, and corn lecithin phospholipids). In some embodiments, the phospholipids are not derived from or produced by a mammal. Additional aspects of phospholipids are known in the art.

Flavor Compounds

Any of the compositions or methods described herein can include or include the use of one or more different flavor compounds. Non-limiting examples of flavor compounds include δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. Additional examples of flavor compounds include artificial flavors, e.g., chocolate, coffee, strawberry, almond, hazelnut, vanilla, green tea, Irish cream, and coconut flavoring. Additional examples of flavor compounds are known in the art.

Ash

Any of the compositions or methods described herein can include or include the use of ash. Ash can, e.g., include one or more (two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen fifteen, sixteen, seventeen, eighteen, nineteen, or twenty) of: calcium, phosphorous, potassium, sodium, citrate, chloride, phosphate, magnesium, iron, molybdenum, manganese, copper, thiamin (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), pantothenic acid (vitamin B5), vitamin B6 (pyridoxine), vitamin B12 (cobalamin), vitamin C, folate, vitamins A, vitamin D, vitamin E, and vitamin K. In some examples, the ash includes one or more (two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. Ash can be provided as a powder or as a solution. Additional components in and aspects of ash are known in the art. In some embodiments, the ash is not derived from or produced by mammal.

Color Balancing Agents

A variety of different color balancing agents are known in the art. For example, a color balancing agent can be a compound from obtained from a plant (e.g., a monocot or a dicot). In some examples, the color balancing agent is a synthetic compound. In some examples, the color balancing agent is not obtained from or produced by a mammal or a mammalian cell. Non-limiting examples of color balancing agents include β-carotene and annatto.

Sweetening Agents

A sweetening agent can be a saccharide (e.g., a monosaccharide, a disaccharide, or a polysaccharide) or an artificial sweetener. Non-limiting examples of sweetening agents that are saccharides include glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose. Additional examples of saccharides that can be used as a sweetening agent in any of the compositions or methods described herein are known in the art.

Non-limiting examples of sweetening agents that are artificial sweeteners include stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000. Additional artificial sweeteners that can be used as sweetening agents in any of the compositions or methods described herein are known in the art.

Compositions

Provided herein are compositions including: about 0.3 g/L to about 1.1 g/L (e.g., about 0.3 g/L to about 1.0 g/L, about 0.3 g/L to about 0.9 g/L, about 0.3 g/L to about 0.8 g/L, about 0.3 g/L to about 0.7 g/L, about 0.3 g/L to about 0.6 g/L, about 0.3 g/L to about 0.5 g/L, about 0.3 g/L to about 0.4 g/L, about 0.4 g/L to about 1.1 g/L, about 0.4 g/L to about 1.0 g/L, about 0.4 g/L to about 0.9 g/L, about 0.4 g/L to about 0.8 g/L, about 0.4 g/L to about 0.7 g/L, about 0.4 g/L to about 0.6 g/L, about 0.4 g/L to about 0.5 g/L, about 0.5 g/L to about 1.1 g/L, about 0.5 g/L to about 1.0 g/L, about 0.5 g/L to about 0.9 g/L, about 0.5 g/L to about 0.8 g/L, about 0.5 g/L to about 0.7 g/L, about 0.5 g/L to about 0.6 g/L, about 0.6 g/L to about 1.1 g/L, about 0.6 g/L to about 1.0 g/L, about 0.6 g/L to about 0.9 g/L, about 0.6 g/L to about 0.8 g/L, about 0.6 g/L to about 0.7 g/L, about 0.7 g/L to about 1.1 g/L, about 0.7 g/L to about 1.0 g/L, about 0.7 g/L to about 0.9 g/L, about 0.7 g/L to about 0.8 g/L, about 0.8 g/L to about 1.1 g/L, about 0.8 g/L to about 1.0 g/L, about 0.8 g/L to about 0.9 g/L, about 0.9 g/L to about 1.1 g/L, about 0.9 g/L to about 1.0 g/L, about 1.0 g/L to about 1.1 g/L, or about 0.27 weight % to about 0.75 weight %) κ-casein

protein (e.g., any of the κ-casein proteins described herein); about 1.25 g/L to about 4.9 g/L (e.g., about 1.25 g/L to about 4.6 g/L, about 1.25 g/L to about 4.4 g/L, about 1.25 g/L to about 4.2 g/L, about 1.25 g/L to about 4.0 g/L, about 1.25 g/L to about 3.8 g/L, about 1.25 g/L to about 3.6 g/L, about 1.25 g/L to about 3.4 g/L, about 1.25 g/L to about 3.2 g/L, about 1.25 g/L to about 3.0 g/L, about 1.25 g/L to about 2.8 g/L, about 1.25 g/L to about 2.6 g/L, about 1.25 g/L to about 2.4 g/L, about 1.25 g/L to about 2.2 g/L, about 1.25 g/L to about 2.0 g/L, about 1.25 g/L to about 1.8 g/L, about 1.25 g/L to about 1.6 g/L, about 1.25 g/L to about 1.4 g/L, about 1.4 g/L to about 4.9 g/L, about 1.4 g/L to about 4.6 g/L, about 1.4 g/L to about 4.4 g/L, about 1.4 g/L to about 4.2 g/L, about 1.4 g/L to about 4.0 g/L, about 1.4 g/L to about 3.8 g/L, about 1.4 g/L to about 3.6 g/L, about 1.4 g/L to about 3.4 g/L, about 1.4 g/L to about 3.2 g/L, about 1.4 g/L to about 3.0 g/L, about 1.4 g/L to about 2.8 g/L, 1.4 g/L to about 2.6 g/L, about 1.4 g/L to about 2.4 g/L, about 1.4 g/L to about 2.2 g/L, about 1.4 g/L to about 2.0 g/L, about 1.4 g/L to about 1.8 g/L, about 1.4 g/L to about 1.6 g/L, about 1.6 g/L to about 4.9 g/L, about 1.6 g/L to about 4.6 g/L, about 1.6 g/L to about 4.4 g/L, about 1.6 g/L to about 4.2 g/L, about 1.6 g/L to about 4.0 g/L, about 1.6 g/L to about 3.8 g/L, about 1.6 g/L to about 3.6 g/L, about 1.6 g/L to about 3.4 g/L, about 1.6 g/L to about 3.2 g/L, about 1.6 g/L to about 3.0 g/L, about 1.6 g/L to about 2.8 g/L, 1.6 g/L to about 2.6 g/L, about 1.6 g/L to about 2.4 g/L, about 1.6 g/L to about 2.2 g/L, about 1.6 g/L to about 2.0 g/L, about 1.6 g/L to about 1.8 g/L, about 1.8 g/L to about 4.9 g/L, about 1.8 g/L to about 4.6 g/L, about 1.8 g/L to about 4.4 g/L, about 1.8 g/L to about 4.2 g/L, about 1.8 g/L to about 4.0 g/L, about 1.8 g/L to about 3.8 g/L, about 1.8 g/L to about 3.6 g/L, about 1.8 g/L to about 3.4 g/L, about 1.8 g/L to about 3.2 g/L, about 1.8 g/L to about 3.0 g/L, about 1.8 g/L to about 2.8 g/L, 1.8 g/L to about 2.6 g/L, about 1.8 g/L to about 2.4 g/L, about 1.8 g/L to about 2.2 g/L, about 1.8 g/L to about 2.0 g/L, about 2.0 g/L to about 4.9 g/L, about 2.0 g/L to about 4.6 g/L, about 2.0 g/L to about 4.4 g/L, about 2.0 g/L to about 4.2 g/L, about 2.0 g/L to about 4.0 g/L, about 2.0 g/L to about 3.8 g/L, about 2.0 g/L to about 3.6 g/L, about 2.0 g/L to about 3.4 g/L, about 2.0 g/L to about 3.2 g/L, about 2.0 g/L to about 3.0 g/L, about 2.0 g/L to about 2.8 g/L, 2.0 g/L to about 2.6 g/L, about 2.0 g/L to about 2.4 g/L, about 2.0 g/L to about 2.2 g/L, about 2.2 g/L to about 4.9 g/L, about 2.2 g/L to about 4.6 g/L, about 2.2 g/L to about 4.4 g/L, about 2.2 g/L to about 4.2 g/L, about 2.2 g/L to about 4.0 g/L, about 2.2

g/L to about 3.8 g/L, about 2.2 g/L to about 3.6 g/L, about 2.2 g/L to about 3.4 g/L, about 2.2 g/L to about 3.2 g/L, about 2.2 g/L to about 3.0 g/L, about 2.2 g/L to about 2.8 g/L, 2.2 g/L to about 2.6 g/L, about 2.2 g/L to about 2.4 g/L, about 2.4 g/L to about 4.9 g/L, about 2.4 g/L to about 4.6 g/L, about 2.4 g/L to about 4.4 g/L, about 2.4 g/L to about 4.2 g/L, about 2.4 g/L to about 4.0 g/L, about 2.4 g/L to about 3.8 g/L, about 2.4 g/L to about 3.6 g/L, about 2.4 g/L to about 3.4 g/L, about 2.4 g/L to about 3.2 g/L, about 2.4 g/L to about 3.0 g/L, about 2.4 g/L to about 2.8 g/L, 2.4 g/L to about 2.6 g/L, about 2.6 g/L to about 4.9 g/L, about 2.6 g/L to about 4.6 g/L, about 2.6 g/L to about 4.4 g/L, about 2.6 g/L to about 4.2 g/L, about 2.6 g/L to about 4.0 g/L, about 2.6 g/L to about 3.8 g/L, about 2.6 g/L to about 3.6 g/L, about 2.6 g/L to about 3.4 g/L, about 2.6 g/L to about 3.2 g/L, about 2.6 g/L to about 3.0 g/L, about 2.6 g/L to about 2.8 g/L, about 2.8 g/L to about 4.9 g/L, about 2.8 g/L to about 4.6 g/L, about 2.8 g/L to about 4.4 g/L, about 2.8 g/L to about 4.2 g/L, about 2.8 g/L to about 4.0 g/L, about 2.8 g/L to about 3.8 g/L, about 2.8 g/L to about 3.6 g/L, about 2.8 g/L to about 3.4 g/L, about 2.8 g/L to about 3.2 g/L, about 2.8 g/L to about 3.0 g/L, about 3.0 g/L to about 4.9 g/L, about 3.0 g/L to about 4.6 g/L, about 3.0 g/L to about 4.4 g/L, about 3.0 g/L to about 4.2 g/L, about 3.0 g/L to about 4.0 g/L, about 3.0 g/L to about 3.8 g/L, about 3.0 g/L to about 3.6 g/L, about 3.0 g/L to about 3.4 g/L, about 3.0 g/L to about 3.2 g/L, about 3.2 g/L to about 4.9 g/L, about 3.2 g/L to about 4.6 g/L, about 3.2 g/L to about 4.4 g/L, about 3.2 g/L to about 4.2 g/L, about 3.2 g/L to about 4.0 g/L, about 3.2 g/L to about 3.8 g/L, about 3.2 g/L to about 3.6 g/L, about 3.2 g/L to about 3.4 g/L, about 3.4 g/L to about 4.9 g/L, about 3.4 g/L to about 4.6 g/L, about 3.4 g/L to about 4.4 g/L, about 3.4 g/L to about 4.2 g/L, about 3.4 g/L to about 4.0 g/L, about 3.4 g/L to about 3.8 g/L, about 3.4 g/L to about 3.6 g/L, about 3.6 g/L to about 4.9 g/L, about 3.6 g/L to about 4.6 g/L, about 3.6 g/L to about 4.4 g/L, about 3.6 g/L to about 4.2 g/L, about 3.6 g/L to about 4.0 g/L, about 3.6 g/L to about 3.8 g/L, about 3.8 g/L to about 4.9 g/L, about 3.8 g/L to about 4.6 g/L, about 3.8 g/L to about 4.4 g/L, about 3.8 g/L to about 4.2 g/L, about 3.8 g/L to about 4.0 g/L, about 4.0 g/L to about 4.9 g/L, about 4.0 g/L to about 4.6 g/L, about 4.0 g/L to about 4.4 g/L, about 4.0 g/L to about 4.2 g/L, about 4.2 g/L to about 4.9 g/L, about 4.2 g/L to about 4.6 g/L, about 4.2 g/L to about 4.4 g/L, about 4.4 g/L to about 4.9 g/L, about 4.4 g/L to about 4.6 g/L, about 4,6 g/L to about 4.9 g/L, or about 1.23 weight % to about 3.27 weight %) β-casein protein (e.g., any of the

β-casein proteins described herein); a final total concentration of one or more lipids (e.g., any one or more of the lipids described herein) of about 0 weight % to about 45 weight % (e.g., 0 weight %; about 0 weight % to about 4.5 weight %; about 0.5 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, about 4 weight %, about 3 weight %, about 2 weight %, or about 1 weight %; about 1.0 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, about 4 weight %, about 3 weight %, or about 2 weight %; about 2 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, about 4 weight %, or about 3 weight %; about 3 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, or about 4 weight %; about 4 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, or about 5 weight %; about 5 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, or about 6 weight %; about 6 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, or about 8 weight %; about 8 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, or about 10 weight %; about 10 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, or about 15 weight %; about 15 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, or about 20 weight %; about 20 weight % to about 40 weight %, about 35 weight %, about 30 weight %, or about 25 weight %; about 25 weight % to about 40 weight %, about 35 weight %, or about 30 weight %; about 30 weight % to about 40 weight %, or about 35 weight %; or about 35 weight % to about 40 weight %); a final total concentration of one or more flavor compounds (e.g., any of one or more of the

flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., about 0.1 weight % to about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, about 1.0 weight %, or about 0.5 weight %; about 0.5 weight % to about 6 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, or about 1.0 weight %; about 1.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, or about 1.5 weight %; about 1.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, or about 2.0 weight %; about 2.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %; about 4.5 weight % to about 6.0 weight %, about 5.5 weight %, or about 5.0 weight %; about 5.0 weight % to about 6.0 weight % or about 5.5 weight %; or about 5.5 weight % to about 6.0 weight %); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., about 0.1 weight % to about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, about 1.0 weight %, or about 0.5 weight %; about 0.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, or about 1.0 weight %; about 1.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about

3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, or about 1.5 weight %; about 1.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, or about 2.0 weight %; about 2.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, or about 4.5 weight %; about 4.5 weight % to about 6.0 weight %, about 5.5 weight %, or about 5.0 weight %; about 5.0 weight % to about 6.0 weight %, or about 5.5 weight %; or about 5.5 weight % to about 6.0 weight %) of one or more sweetening agents (e.g., any one or more of the sweetening agents described herein); and a final total concentration of ash of about 0.15 weight % to about 1.5 weight % (e.g., about 0.15 weight % to about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, about 0.3 weight %, or about 0.2 weight %; about 0.2 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, or about 0.3 weight %; about 0.3 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, about 0.5 weight %, or about 0.4 weight %; about 0.4 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.5 weight %; about 0.5 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, or about 0.6 weight %; about 0.6 weight % to about

1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, or about 0.8 weight %; about 0.8 weight % to about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, or about 0.9 weight %; about 0.9 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, or about 1.0 weight %; about 1.0 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, or about 1.1 weight %; about 1.1 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, or about 1.2 weight %; about 1.2 weight % to about 1.5 weight %, about 1.4 weight %, or about 1.3 weight %; about 1.3 weight % to about 1.5 weight % or about 1.4 weight %; or about 1.4 weight % to about 1.5 weight %), where the composition does not comprise an animal-derived component.

Also provided are compositions including: about 0.3 g/L to about 1.1 g/L (e.g., any of the subranges of about 0.3 g/L to about 1.1 g/L described in the above paragraph) κ-casein protein (e.g., any of the κ-casein proteins described herein); about 1.25 g/L to about 4.9 g/L (e.g., any of the subranges of about 1.25 g/L to about 4.9 g/L described in the above paragraph) β-casein protein (e.g., any of the β-casein proteins described herein); a final total concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 0 weight % to about 45 weight % (e.g., any of the subranges of about 0 weight % to about 45 weight % described in the above paragraph); a final total concentration of one or more flavor compounds (e.g., any of the one or more flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., any of the subranges of about 0.01 weight % to about 6 weight % described in the above paragraph); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., any of the subranges of about 0.1 weight % to about 6 weight % described herein) of one or more sweetening agents (e.g., any one or more sweetening agents described herein); and a final total concentration of ash (e.g., any of the exemplary ash described herein) of about 0.15 weight % to about 1.5 weight % (e.g., any of the subranges of about 0.15 weight % to about 1.5 weight % described in the above paragraph), where: the composition: does not include at least one component found in a mammal-produced milk; includes at least one component not present in a mammal-produced milk; and/or includes

a higher or lower concentration of at least one component as compared to the concentration of the at least one component in a mammal-produced milk. In some examples of these compositions, the composition includes a higher concentration of at least one component selected from the group of: calcium, phosphate, B complex vitamins, vitamin A, vitamin D, vitamin E, and vitamin K, as compared to the concentration of the one or more components in a mammal-produced milk. In some embodiments of these compositions, the composition does not include at least one component found in a mammal-produced milk selected from the group of: lactose, bacteria, mycobacteria, allergens, viruses, prions, yeast, growth hormones, leukocytes, antibiotics, heavy metals, immunoglobulins, lactoferrin, lactoperoxidase, and lipase. In some examples of these compositions, the composition includes at least one component not present in a mammal-produced milk selected from the group of an artificial sweetener, a plant-derived lipid, a β-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern.

Also provided are compositions including: about 0.3 g/L to about 1.1 g/L (e.g., any of the subranges of about 0.3 g/L to about 1.1 g/L described in this section) κ-casein protein (e.g., any of the κ-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; about 1.25 g/L to about 4.9 g/L (e.g., any of the subranges of about 1.25 g/L to about 4.9 g/L described in this section) β-casein protein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; a final total concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 0 weight % to about 45 weight % (e.g., any of the subranges of about 0 weight % to about 45 weight % described in this section); a final total concentration of one or more flavor compounds (e.g., any of the one or more flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., any of the subranges of about 0.01 weight % to about 6 weight % described in this section); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., any of the subranges of about 0.1 weight % to about 6 weight % described in this section) of one or more sweetening agents (e.g., any of the one or more sweetening agents described herein); and a final total concentration of ash (e.g., any of the ash described herein) of

about 0.15 weight % to about 1.5 weight % (e.g., any of the subranges of about 0.15 weight % to about 1.5 weight % described in this section).

Also provided are compositions including a micelle including a κ-casein protein (e.g., any of the κ-casein proteins described herein) and a β-casein protein (e.g., any of the β-casein proteins described herein), where the micelle has a diameter of about 50 nm to about 350 nm (e.g., any of the subranges of the diameter of a micelle described herein), and the κ-casein protein and the β-casein protein are unglycosylated or have a non-mammalian glycosylation pattern. In some embodiments, the composition includes a final concentration of micelles of about 2.0 weight % to about 6 weight % (e.g., about 2.0 weight % to about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, or about 4.5 weight %; about 4.5 weight % to about 5.5 weight %, or about 5.0 weight %; about 5.0 weight % to about 6.0 weight % or 5.5 weight %; or about 5.5 weight % to about 6.0 weight %). In some embodiments of these compositions, the ratio of the β-casein protein to the κ-casein protein in the micelle is about 2.0:1 to about 5.5:1 (e.g., any of the subranges of the ratios about 2.0:1 to about 5.5:1 described for the micelle herein). In some embodiments, these compositions further include: a final total concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 0 weight % to about 45 weight % (e.g., any of the subranges of about 0 weight % to about 45 weight percent described in this section); a final total concentration of one or more flavor compounds (e.g., any of the one or more flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., any of the subranges of 0.01

weight % to about 6 weight % described in this section); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., any of the subranges of about 0.1 weight % to about 6 weight % described in this section) of one or more sweetening agents (e.g., any one or more of the sweetening agents described herein); and a final total concentration of ash (e.g., any of the ash described herein) of about 0.15 weight % to about 1.5 weight % (e.g., any of the subranges of about 0.15 weight % to about 1.5 weight % described in this section).

In some embodiments of any of the compositions described herein, the one or more lipids are selected from the group consisting of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. Some examples of any of the compositions described herein further include one or more of: a final concentration of sunflower oil of about 1 weight % to about 28 weight % (e.g., about 1 weight % to about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 4 weight %, or about 2 weight %; about 2 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, or about 4 weight %; about 4 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, about 8 weight %, or about 6 weight %; about 6 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, or about 8 weight %; about 8 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, or about 10 weight %; about 10 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, or about 12 weight %; about 12 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, or about 14 weight%; about 14 weight

% to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, or about 16 weight %; about 16 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %; about 18 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, or about 20 weight %; about 20 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %; about 22 weight % to about 28 weight %, about 26 weight %, about 24 weight %; about 24 weight % to about 28 weight % or about 26 weight %; or about 28 weight % to about 30 weight %); a final concentration of coconut oil of about 0.5 weight % to about 14 weight % (e.g., about 0.5 weight % to about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 4 weight %, about 2 weight %, or about 1 weight %; about 1 weight % to about 14 weight %, about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 4 weight %, or about 2 weight %; about 2 weight % to about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, or about 4 weight %; about 4 weight % to about 14 weight %, about 12 weight %, about 10 weight %, about 8 weight %, or about 6 weight %; about 6 weight % to about 14 weight %, about 12 weight %, about 10 weight %, or about 8 weight %; about 8 weight % to about 14 weight %, about 12 weight %, or about 10 weight %; about 10 weight % to about 14 weight % or 12 weight %; or about 12 weight % to about 14 weight %); a final concentration of tributyrin of about 0.05 weight to about 1.0 weight % (e.g., between about 0.05 weight % to about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, about 0.3 weight %, or about 0.2 weight %; 0.1 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, about 0.3 weight %, or about 0.2 weight %; about 0.2 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, about 0.5 weight %, or about 0.4 weight %; about 0.4 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, or about 0.5 weight %; about 0.5 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, or about 0.6 weight %; about 0.6 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, or about 0.7 weight %; about 0.7 weight % to

about 1.0 weight %, about 0.9 weight %, or about 0.8 weight %; about 0.8 weight % to about 1.0 weight % or about 0.9 weight %; or about 0.9 weight % to about 1.0 weight %); a final total concentration of monoglycerides and diglycerides (e.g., any one or more of the monoglycerides or diglycerides described herein) of about 0.08 weight % to about 1.2 weight % (e.g., 0.08 weight % to about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.4 weight % to about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, or about 0.6 weight %; about 0.6 weight % to about 1.2 weight %, about 1.0 weight %, or about 0.8 weight %; about 0.8 weight % to about 1.2 weight % or about 1.0 weight %; or about 1.0 weight % to about 1.2 weight %); and a final total concentration of free fatty acids of about 0.02 weight % to about 0.28 weight %; and a final total concentration of phospholipids (e.g., any one or more of the phospholipids described herein) of about 0.02 weight % to about 0.3 weight % (e.g., about 0.02 weight % to about 0.25 weight %, about 0.20 weight %, about 0.15 weight %, or about 0.10 weight %; about 0.05 weight % to about 0.3 weight %, about 0.25 weight %, about 0.20 weight %, about 0.15 weight %, or about 0.10 weight %; about 0.10 weight % to about 0.30 weight %, about 0.25 weight %, about 0.20 weight %, or about 0.15 weight %; about 0.15 weight % to about 0.30 weight %, about 0.25 weight %, or about 0.20 weight %; about 0.20 weight % to about 0.30 weight % or about 0.25 weight %; or about 0.25 weight % to about 0.30 weight %).

In some embodiments of any of the compositions, the free fatty acids include at least one (e.g., two, three, or four) fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some embodiments of any of the compositions, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some examples of any of the compositions described herein, the flavor compounds include at least one flavor compound selected from the group of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of any of the compositions described herein, the one or more sweetening agents is a saccharide (e.g., glucose, mannose, maltose, fructose, galactose, lactose,

sucrose, monatin, or tagatose). In some examples of any of the compositions described herein, the

one or more sweetening agents is an artificial sweetener (e.g., stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, or P-4000).

In some examples of any of the compositions described herein, the ash includes one or more (e.g., two, three, four, five, or six) of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of any of the compositions described herein, the ash comprises one or more (e.g., two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. Some embodiments of the compositions described herein include: a final concentration of $CaCl_2$ of about 0.05 g/L to about 0.2 g/L (e.g., about 0.05 g/L to about 0.15 g/L, about 0.05 g/L to about 0.10 g/L, about 0.10 g/L to about 0.20 g/L, about 0.10 g/L to about 0.15 g/L, or about 0.15 g/L to about 0.2 g/L); a final concentration of KH_2PO_4 of about 0.2 g/L to about 0.4 g/L (e.g., about 0.2 g/L to about 0.35 g/L, about 0.2 g/L to about 0.30 g/L, about 0.2 g/L to about 0.25 g/L, about 0.25 g/L to about 0.4 g/L, about 0.25 g/L to about 0.30 g/L, about 0.30 g/L to about 0.40 g/L, or about 0.30 g/L to about 0.35 g/L, or about 0.35 g/L to about 0.40 g/L); and/or a final concentration of Na_3 citrate of about 0.1 g/L to about 0.3 g/L (e.g., 0.1 g/L to about 0.25 g/L, about 0.1 g/L to about 0.20 g/L, about 0.1 g/L to about 0.15 g/L, about 0.15 g/L to about 0.30 g/L, about 0.15 g/L to about 0.25 g/L, about 0.15 g/L to about 0.20 g/L, about 0.20 g/L to about 0.30 g/L, about 0.20 g/L to about 0.25 g/L, or about 0.25 g/L to about 0.30 g/L).

In any of the composition described herein, the κ-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. In any of the compositions described herein, the β-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla,

chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein.

In some examples of any of the compositions described herein can further include: a final concentration of α-lactalbumin protein (e.g., any of the α-lactalbumin proteins described herein) of about 0.4 weight % to about 2.5 weight % (e.g., about 0.4 weight % to about 2.0 weight %, about 1.5 weight %, or about 1.0 weight %; about 1.0 weight % to about 2.5 weight %, about 2.0 weight %, or about 1.5 weight %, about 1.5 weight % to about 2.5 weight % or 2.0 weight %; or about 2.0 weight % to about 2.5 weight %), and/or a final concentration of β-lactoglobulin protein (e.g., any of the β-lactoglobulin proteins described herein) of about 2.5 weight % to about 4.5 weight %. In some embodiments of any of the compositions described herein, the α-lactalbumin protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-lactalbumin protein. In some embodiments of any of the compositions described herein, the β-lactoglobulin protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-lactoglobulin protein.

Some embodiments of any of the compositions described herein further include: a final concentration of α-S1-casein protein (e.g., any of the α-S1-casein proteins described herein) of about 11 weight % to about 16 weight % (e.g., about 11 weight % to about 15 weight %, about 14 weight %, about 13 weight %, or about 12 weight %; about 12 weight % to about 16 weight %, about 15 weight %, about 14 weight %, or about 13 weight %; about 13 weight % to about 16 weight %, about 15 weight %, or about 14 weight %; about 14 weight % to about 16 weight % or 15 weight %; or about 15 weight % to about 16 weight %); and/or a final concentration of α-S2-casein protein (e.g., any of the α-S2-casein proteins described herein) of about 2 weight % to about 5 weight % (e.g., about 2

weight % to about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 5 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 5.0 weight % or 4.5 weight %; or about 4.5 weight % to about 5.0 weight %).

In some examples of any of the compositions described herein, the α-S1-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S1-casein protein; and/or the α-S2-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S2-casein protein.

Some examples of any of the compositions described herein further include one or more (e.g., two or three) of serum albumin (e.g., any of the serum albumin proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), and transferrin (e.g., any of the transferrin proteins described herein). In some examples of any of the compositions described herein, the serum albumin can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth serum albumin; the lactoferrin can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth lactoferrin; and/or the transferrin can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur,

panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth transferrin protein.

In some examples of any of the compositions described herein, the composition further includes one or more color balancing agents (e.g., any of the coloring agents described herein, e.g., β-carotene or annatto).

Any of the compositions described herein can have a pH of about 6.2 to about 7.2 (e.g., about 6.2 to about 7.0, about 6.2 to about 6.8, about 6.2 to about 6.6, about 6.2 to about 6.4, about 6.4 to about 7.2, about 6.4 to about 7.0, about 6.4 to about 6.8, about 6.4 to about 6.6, about 6.6 to about 7.2, about 6.6 to about 7.0, about 6.6 to about 6.8, about 6.8 to about 7.2, about 6.8 to about 7.0, or about 7.0 to about 7.2).

In various embodiments, the milk protein components comprise about 0.5% about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4%, about 4.5%, about 5%, about 6% milk protein by dry weight or total weight. In some embodiments, the compositions can comprise about 0.5-2.5%, about 1-2%, about 2-3%, or about 4-10% protein by dry weight or total weight. In particular embodiments, the compositions can comprise about 10-15% protein by dry weight or total weight.

A wide range of caseins including casein with substantial homology to the wild-type casein, variants, mutants of casein are expressed and incorporated as a component of milk protein.

Dry Compositions

Also provided are powder compositions including: a final concentration of κ-casein protein (e.g., any of the α-casein proteins described herein) of about 3.6 weight % to about 5.4 weight % (e.g., about 3.6 weight % to about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6 weight %, about 4.4 weight %, about 4.2 weight %, about 4.0 weight %, or about 3.8 weight %; about 3.8 weight % to about 5.4 weight %, about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6 weight %, about 4.4 weight %, about 4.2 weight %, or about 4.0 weight %; about 4.0 weight % to about 5.4 weight %, about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6

weight %, about 4.4 weight %, or about 4.2 weight %; about 4.2 weight % to about 5.2 weight %, about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6 weight %, or about 4.4 weight %; about 4.8 weight % to about 5.4 weight %, about 5.2 weight %, or about 5.0 weight %; about 5.0 weight % to about 5.4 weight % or about 5.2 weight %; or about 5.2 weight % to about 5.4 weight %); a final concentration of β-casein protein (e.g., any of the β-casein proteins described herein) of about 16.3 weight % to about 24.5 weight %; 16.3 weight % to about 22 weight %, about 20 weight %, or about 18 weight %; about 18 weight % to about 24.5 weight %, about 22 weight %, or about 20 weight %; about 20 weight % to about 24.5 weight % to about 22 weight %; or about 22 weight % to about 24.5 weight %); a final concentration of a sweetening agent (e.g., any one or more of the sweetening agents described herein) of about 35 weight % to about 40 weight % (e..g, about 35 weight % to about 39 weight %, about 38 weight %, about 37 weight %, or about 36 weight %; about 36 weight % to about 40 weight %, about 39 weight %, about 38 weight %, or about 37 weight %; about 37 weight % to about 40 weight %, about 39 weight %, or about 38 weight %; about 38 weight % to about 40 weight % or 39 weight %; or about 39 weight % to about 40 weight %); a final concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 25 weight % to about 30 weight % (e.g., about 25 weight % to about 29 weight %, about 28 weight %, about 27 weight %, or about 26 weight %; about 26 weight % to about 30 weight %, about 29 weight %, about 28 weight %, or about 27 weight %; about 27 weight % to about 30 weight %, about 29 weight %, or about 28 weight %; about 28 weight % to about 30 weight % or about 29 weight %; or about 29 weight % to about 30 weight %); a final concentration of ash (e.g., any of the ash described herein) of about 5 weight % to about 7 weight % (e.g., about 5 weight % to about 6.5 weight %, about 6.0 weight %, or about 5.5 weight %; about 5.5 weight % to about 7.0 weight %, about 6.5 weight %, or about 6.0 weight %; about 6.0 weight % to about 7.0 weight % or about 6.5 weight %; or about 6.5 weight % to about 7.0 weight %); and a final concentration of water of about 2 weight % to about 5 weight % (e.g., about 2 weight % to about 4 weight % or about 3 weight %; about 3 weight % to about 5 weight % or about 4 weight %; or about 4 weight % to about 5 weight %), where the κ-casein protein is an unglycosylated

and/or has a non-mammalian glycosylation pattern, and/or the β-casein protein is an unglycosylated and/or has a non-mammalian glycosylation pattern.

Any of the powder compositions can contain any of the components described in any of the compositions described herein (e.g., one or more of any of the color matching agents, α-S1-casein proteins, α-S2-casein proteins, α-lactalbumin proteins, β-lactoglobulin proteins, lactoferrin proteins, transferrin proteins, and serum albumin protein described herein at any of the concentrations described herein for each component, respectively).

Supplemented Milk Compositions

Also provided herein are compositions including: a mammalian-produced milk or a processed mammal-produced milk; and one or more (e.g., two or three) of a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern; a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern; or a micelle including a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern and a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern.

In some examples, the composition includes a mammal-produced milk or a processed mammalian-produced milk and a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern. In some examples, the composition includes a mammal-produced milk or a processed mammalian-produced milk and a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern. In other examples, the composition includes a mammal-produced milk or a processed mammalian-produced milk and a micelle including a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern and a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern.

In some examples, the final concentration of the κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern or the final concentration of the β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern in the composition is: 0.02 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about

1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, about 0.2 weight %, or about 0.1 weight %; about 0.1 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, or about 1.0 weight %; about 1.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, or about 1.2 weight %; about 1.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, or about 1.4 weight %; about 1.4 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, or about 1.6 weight %; about 1.6 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, or about 1.8 weight %; about 1.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 2.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, or about 2.2 weight %; about 2.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, or about 2.4 weight %; about 2.4 weight % to about 3.0 weight %, about 2.8 weight %, or about 2.6 weight %; about 2.6 weight % to about 3.0 weight % or about 2.8 weight %; or about 2.8 weight % to about 3.0 weight % (of the final composition).

In some compositions, the final concentration of the κ-casein protein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is

about 0.02 weight % to about 0.6 weight % (e.g., about 0.02 weight % to about 0.5 weight %, about 0.02 weight % to about 0.4 weight %, about 0.02 weight % to about 0.3 weight %, about 0.02 weight % to about 0.2 weight %, about 0.02 weight % to about 0.1 weight %, about 0.1 weight % to about 0.5 weight %, about 0.1 weight %, to about 0.4 weight %, about 0.1 weight % to about 0.3 weight %, about 0.1 weight % to about 0.2 weight %, about 0.2 weight % to about 0.5 weight %, about 0.2 weight % to about 0.4 weight %, about 0.2 weight % to about 0.3 weight %, about 0.3 weight % to about 0.5 weight %, about 0.3 weight % to about 0.4 weight %, or about 0.4 weight % to about 0.5 weight %); and the final concentration of β-casein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is about 0.02 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.4 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, or about 0.6 weight %; about 0.6 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, or about 0.8 weight %; about 0.8 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about

2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, or about 1.0 weight %; about 1.0 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, or about 1.2 weight %; about 1.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, or about 1.4 weight %; about 1.4 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, or about 1.6 weight %; about 1.6 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, or about 1.8 weight %; about 1.8 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 1.8 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 2.0 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, or about 2.2 weight %; about 2.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, or about 2.4 weight %; about 2.4 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, or about 2.6 weight %; about 2.6 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, or about 2.8 weight %; about 2.8 weight % to about 4.0 weight %, about 3.8

weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, or about 3.0 weight %; about 3.0 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, or about 3.2 weight %; about 3.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, or about 3.4 weight %; about 3.4 weight % to about 4.0 weight %, about 3.8 weight %, or about 3.6 weight %; about 3.6 weight % to about 4.0 weight % or about 3.8 weight %; or about 3.8 weight % to about 4.0 weight %.

In some examples, the final concentration of micelles including a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern and a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern in the composition is: 0.02 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, about 0.2 weight %, or about 0.1 weight %; about 0.1 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, or about 1.0 weight %; about 1.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, or about 1.2 weight %; about 1.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, or about 1.4 weight %; about 1.4 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2

weight %, about 2.0 weight %, about 1.8 weight %, or about 1.6 weight %; about 1.6 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, or about 1.8 weight %; about 1.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 2.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, or about 2.2 weight %; about 2.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, or about 2.4 weight %; about 2.4 weight % to about 3.0 weight %, about 2.8 weight %, or about 2.6 weight %; about 2.6 weight % to about 3.0 weight % or about 2.8 weight %; or about 2.8 weight % to about 3.0 weight % (of the final composition).

Nucleic Acids and Vectors

Also provided are nucleic acids (e.g., vectors) that include: a promoter (e.g., a yeast, bacterial, or a mammalian promoter); a sequence encoding a signal sequence; a sequence encoding a milk protein (e.g., any of the exemplary sequences described herein); and a yeast termination sequence, where the promoter is operably linked to the signal sequence, the signal sequence is operably linked to the sequence encoding the milk protein, and the terminal sequence is operably linked to the sequence encoding the milk protein. In some examples of these nucleic acids, the promoter is a constitutive promoter or an inducible promoter. Non-limiting examples of promoters are described herein. Additional promoters that can be used in these nucleic acids are known in the art.

The signal sequence in any of the vectors described herein can be a signal sequence from the encoded milk protein or a different milk protein, or is a signal sequence from a yeast mating factor (e.g., any alpha mating factor). In some examples, the encoded milk protein is selected from the group of: β-casein (e.g., any of the β-casein proteins described herein), κ-casein (e.g., any of the κ-casein proteins described herein), α-S1-casein (e.g., any of the α-S1-casein proteins described herein), α-S2-casein (e.g., any of the α-S2-casein proteins described herein), α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described

herein), or transferrin (e.g., any of the transferrin proteins described herein). Additional signal sequences that can be used in the present vectors are known in the art.

Any of the nucleic acids described herein can further include a bacterial origin of replication. Any of the nucleic acids described herein can further include a selection marker (e.g., an antibiotic resistance gene). The sequences of bacterial origin of replication are known in the art. Non-limiting examples of antibiotic resistance genes are described herein. Additional examples of resistance genes are known in the art.

Non-limiting examples of termination sequences are described herein. Additional examples of termination sequences are known in the art.

Some embodiments of the nucleic acids provided herein further include: an additional promoter sequence (e.g., any of the exemplary promoters described herein); an additional sequence encoding a signal sequence (e.g., any of the exemplary signal sequences described herein); a sequence encoding an additional milk protein (e.g., any of the exemplary sequences encoding a milk protein described herein); and an additional yeast termination sequence (e.g.. any of the exemplary yeast termination sequences described herein), where the additional promoter sequence is operably linked to the additional sequence encoding a signal sequence, the sequence encoding the signal sequence is operably linked to the sequence encoding the additional milk protein, and the sequence encoding the additional milk protein is operably linked to the additional yeast terminal sequence. The additional milk protein can be, e.g., β-casein (e.g., any of the β-casein proteins described herein), κ-casein (e.g., any of the κ-casein proteins described herein), α-S1-casein (e.g., any of the α-S1-casein proteins described herein), α-S2-casein (e.g., any of the α-S2-casein proteins described herein), α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), or transferrin (e.g., any of the transferrin proteins described herein). In some embodiments, the nucleic acid includes a sequence encoding a β-casein and a sequence encoding a κ-casein. The promoter and the additional promoter can be the same or different. The yeast termination sequence and the additional yeast terminal sequence can be the same or different. The signal sequence and the additional signal sequence can be the same or different.

The present invention also encompasses a vector containing the isolated DNA sequence encoding casein or whey polypeptide and host cells comprising the vector. The vector may further comprise an isolated DNA sequence comprising a nucleotide sequence encoding a casein, wherein the nucleotide sequence is operably linked to a promoter, a nucleotide sequence encoding an alpha mating factor, or a variant thereof, a nucleotide sequence encoding a bacterial resistance marker and a transcription terminator. One or more of suitable promoters are utilized for expression of the genes encoding casein or whey proteins may be any promoter which is functional in the host cell and is able to elicit expression of the product encoded by the gene. Suitable promoters include, for example, $P_{LAC4\text{-}PBI}$, T7, Ptac, Pgal, λPL, λPR, bla, spa, Adh, CYC, TDH3, ADH1 and CLB1.

Introducing Nucleic Acids into a Cell

Methods of introducing nucleic acids (e.g., any of the nucleic acids described herein) into a cell to generate a host cell are well-known in the art. Non-limiting examples of techniques that can be used to introduce a nucleic acid into a cell include: calcium phosphate transfection, dendrimer transfection, liposome transfection (e.g., cationic liposome transfection), cationic polymer transfection, electroporation, cell squeezing, sonoporation, optical transfection, protoplast fusion, impalefection, hyrodynamic delivery, gene gun, magnetofection, and viral transduction.

One skilled in the art would be able to select one or more suitable techniques for introducing the nucleic acids into a cell based on the knowledge in the art that certain techniques for introducing a nucleic acid into a cell work better for different types of host cells. Exemplary methods for introducing a nucleic acid into a yeast cell are described in Kawai et al., *Bioeng. Bugs* 1:395-403, 2010.

Host Cells

Also provided herein a host cells including any of the nucleic acids (e.g., vectors) described herein. In some examples, the nucleic acid described herein is stably integrated within the genome (e.g., a chromosome) of the host cell. In other examples, the nucleic acid described herein is not stably integrated within the genome of the host cell.

In some embodiments, the host cell is a yeast strain or a bacterial strain. In some embodiments, the host cell can be, e.g., a yeast strain selected from the group of: a *Kluyveromyces* sp., *Pichia* sp., *Saccharomyces* sp., *Tetrahymena* sp., *Yarrowia* sp., *Hansenula* sp., *Blastobotrys* sp., *Candida* sp., *Zygosaccharomyces* sp., and *Debaryomyces* sp. Additional non-limiting examples of yeast strains that can be used as the host cell are *Kluyveromyces lactis*, *Kluyveromyces marxianus*, *Saccharomyces cerevisiae*, and *Pichia pastoris*. Additional species of yeast strains that can be used as host cells are known in the art.

In some examples, the host cell can be a protozoa, such as, e.g., *Tetrahymena thermophile*, *T. hegewischi*, *T. hyperangularis*, *T. malaccensis*, *T. pigmentosa*, *T. pyriformis*, and *T. vorax*.

It is an object of the invention to isolate milk protein components by recombinantly expressing them in any of the host cells provided herein.

Methods of Producing a Recombinant Milk Protein and Methods of Making a Micelle

Also provided are methods of producing a recombinant milk protein (e.g., one or more of any of the milk proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern that include: culturing any of the host cells described herein in a culture medium under conditions sufficient to allow for secretion of the milk protein that is unglycosylated or has a non-mammalian glycosylation pattern; and harvesting the milk protein that is unglycosylated or has a non-mammalian glycosylation pattern from the culture medium. Suitable culture medium for use in these methods are known in the art. Culture conditions sufficient to allow for secretion of a milk protein are also known in the art. The host cells used in these methods can be any of the host cells described herein. The host cells can include any of the nucleic acids described herein. The recombinant milk protein produced can be one or more of: β-casein (e.g., any of the β-casein proteins described herein), κ-casein (e.g., any of the κ-casein proteins described herein), α-S1-casein (e.g., any of the α-S1 caseins described herein), α-S2-casein (e.g., any of the α-S2-caseins described herein), α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins

described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), transferrin (e.g., any of the transferrin proteins described herein), and serum albumin (e.g., any of the serum albumin proteins described herein). Some of these methods further include isolating (e.g., purifying) the recombinant milk protein from the culture medium. Methods of isolating (e.g., purifying) a recombinant milk protein from a liquid are well-known in the art. Exemplary methods for isolating (e.g., purifying) recombinant milk proteins are described in Imafidon et al., *Crit. Rev. Food Sci. Nutrition* 37:663-669, 1997),

Also provided are methods of producing a micelle including a β-casein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern and a κ-casein (e.g., any of the κ-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern, that include: culturing any of the host cells described herein in a culture medium under conditions sufficient to allow for release of the micelle from the host cell, where the host cell comprises nucleic acid including a sequence that encodes a β-casein and a sequence that encodes a κ-casein; and harvesting the micelle from the culture medium. Suitable culture medium for use in these methods are known in the art. The host cells used in these methods can be any of the host cells described herein. The host cells can include any of the nucleic acids described herein. The micelles produced can be any of the micelles described herein (and can have any of the physical characteristics of micelles described herein). Some of these methods further include isolating (e.g., purifying) the micelle from the culture medium. Methods of isolating (e.g., purifying) a micelle from a liquid are well-known in the art (e.g., ultracentrifigation).

Exemplary details of culturing yeast host cells are described in Idiris et al., *Appl. Microbiol. Biotechnol.* 86:403-417, 2010; Zhang et al., *Biotechnol. Bioprocess. Eng.* 5:275-287, 2000; Zhu, *Biotechnol. Adv.* 30:1158-1170, 2012; Li et al., *MAbs* 2:466-477, 2010.

It is an object of the invention to express one or more different forms of casein for application into various types of dairy substitute products. Casein subunits such as α-s1-casein, α-s2-casein, β-casein and κ-casein differ by one or more amino acid changes. In certain embodiments, the methods and compositions comprise incorporation of bovine

casein such as α-s1-casein, α-s2-casein, β-casein and κ-casein. In other embodiments, the methods and compositions comprise incorporation of human casein such as β-casein and κ-casein. See U.S. Patent No. 5,942,274. In alternative embodiments, casein is selected from one or more following sources including but not limited to: bovine, human, buffalo, camel, goat, sheep, horse, dolphin, whale, mountain goat and pig.

Also provided are methods for producing the milk protein components that can include, e.g., using a plasmid or construct of the invention as described in Example 1. This method comprises preparing the plasmid of interest, inserting the plasmid into an appropriate host cell, culturing the host cell for a suitable time and under suitable conditions such that the protein of interest is expressed, and then purifying the protein.

Proteins can be separated on the basis of their molecular weight, for example, by size exclusion chromatography, ultrafiltration through membranes, or density centrifugation. In some embodiments, the proteins can be separated based on their surface charge, for example, by isoelectric precipitation, anion exchange chromatography, or cation exchange chromatography. Proteins also can be separated on the basis of their solubility, for example, by ammonium sulfate precipitation, isoelectric precipitation, surfactants, detergents or solvent extraction. Proteins also can be separated by their affinity to another molecule, using, for example, hydrophobic interaction chromatography, reactive dyes, or hydroxyapatite. Affinity chromatography also can include using antibodies having specific binding affinity for the protein, nickel NTA for His-tagged recombinant proteins, lectins to bind to sugar moieties on a glycoprotein, or other molecules which specifically binds the protein.

Generally, centrifugation at an optimum pH yields purification efficiency >95%. Isoelectric point for the native caseins and whey proteins are known. In nature, the pH is 4.91 for bovine α-s1-casein, pH 4.1 for bovine α-s2-casein, pH 4.5 for bovine β-casein, pH 4.1 for bovine κ-casein, pH 4.2 for bovine α-lactalbumin, and pH 5.2 for bovine β-lactoglobulin. The recombinantly produced casein and whey can differ in terms of its phosphate groups and sugar groups. Other methods for protein purification include membrane filtration to remove any potential bacteria or contaminants, followed by lyophilization for protein isolation.

Preferably, the methods and compositions provide for a production cost that is competitive at or below $1,000/kg, $500/kg, $10/kg, $1.0/kg, $0.10/kg, $0.010/kg or $0.0010/kg of milk protein component. In more preferred embodiments, the cost is below $0.009, $0.007, $0.006, $0.005/kg of milk protein component.

Methods of Supplementing a Mammal-Produced Milk

Also provided herein are methods of supplementing a mammal-produced milk that include providing a mammalian-produced milk or a processed mammalian-produced milk; and mixing into the milk at least one of: a β-casein protein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; a κ-casein protein (e.g., any of the κ-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; and a micelle (e.g., any of the micelles described herein) comprising a β-casein protein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein (e.g., any of the casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern.

One or more of the β-casein protein, the κ-casein protein, and the micelles can be mixed into the milk to achieve any of the exemplary final concentrations of the β-casein protein, the κ-casein protein, and the micelles in a composition described in the section called "Supplemented Milk Compositions" herein. Methods of mixing are well known in the art. As one of skill in the art can appreciate, additional components described herein can also be mixed into the milk (e.g., any component described herein without limitation).

Methods of Making a Composition

Also provided are methods of producing a composition that include: sonicating a liquid including a protein mixture comprising β-casein protein (e.g., any of the β-casein proteins described herein) and casein κ protein (e.g., any of the κ-casein proteins described herein), or including micelles comprising β-casein protein (e.g., any of the β-casein proteins described herein) and κ-casein protein (e.g., any of the κ-casein proteins described herein); mixing ash (e.g., any of the ash described herein) into the liquid;

adding to the liquid a mixture of one or more lipids (e.g., any of the one or more liquids described herein), one or more flavor compounds (e.g., any of the one or more flavor compounds described herein), and one or more color balancing agents (e.g., any of the one or more color balancing agents described herein), and sonicating the liquid; and adding to the liquid one or more sweetening agents (e.g., one or more of any of the sweetening agents described herein), thereby producing the composition.

In some examples of these methods, the β-casein protein is unglycosylated or has a non-mammalian glycosylation pattern, and/or the κ-casein protein is unglycosylated or has a non-mammalian glycosylation pattern. In some examples of these methods, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some examples of any of these methods, the ash added includes one or more (e.g., two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate.

In some examples of these methods, the one or more lipids comprises at least one (e.g., two, three, four, five, six, or seven) of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some examples of these methods, the free fatty acids comprise at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some examples of these methods, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of these methods, the flavor compounds include at least one (e.g., two, three, four, five, or six) flavor compound selected from the group of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone.

In some examples of these methods, the one or more coloring balancing agent is β-carotene or annatto. In some embodiments of these methods, the one or more sweetening agents is a saccharide (e.g., glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, or tagatose) or an artificial sweetener (e.g., stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, or P-4000).

The pH of the resulting composition can be between about pH 6.2 and about pH 7.4 (e.g., about 6.2 to about 7.2; about 6.2 to about 7.0, about 6.2 to about 6.8, about 6.2 to about 6.6, about 6.2 to about 6.4, about 6.4 to about 7.2, about 6.4 to about 7.0, about 6.4 to about 6.8, about 6.4 to about 6.6, about 6.6 to about 7.2, about 6.6 to about 7.0, about 6.6 to about 6.8, about 6.8 to about 7.2, about 6.8 to about 7.0, or about 7.0 to about 7.2).

In any of these methods, the β-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein; and/or the κ-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein.

In some embodiments of these methods, the protein mixture further comprises one or more proteins selected from the group of: α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins described herein), α-S1-casein (e.g., any of the α-S1-casein proteins described herein), α-S2-casein (e.g., any of the α-S2-casein proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), transferrin (e.g., any of the transferrin proteins described herein), and serum albumin (e.g., any of the serum albumin proteins described herein).

As one of skill in the art can appreciate, the amount of each component used in these methods can be calculated in order to produce any of the compositions described herein.

Methods of Making Butter, Cheese, Caseinate, or Yogurt

Also provided herein are methods of making butter, cheese, caseinate, or yogurt that include providing any of the compositions provided herein; and producing the butter,

cheese, caseinate, or yogurt using any of the composition provided herein as a starting material.

Methods for making butter, cheese, caseinate, or yogurt are well-known in the art. See, e.g., Scott, Cheesemaking Practice, Kluwer Academic/Plenum Publishers, New York, NY, 1998; U.S. Patent No. 4,360,535 (which describes methods of making creams); U.S 285,878 (which described methods of making butter);

Kits

Also provided are kits that include: (a) a mixture of one or more milk proteins (e.g., any of the milk proteins described herein, including any one or more of the β-casein proteins, κ-casein proteins, α-S1-proteins, α-S2-proteins, α-lactalbumin proteins, β-lactoglobulin proteins, lactoferrin proteins, transferrin proteins, and serum albumin proteins described herein), one or more lipids (e.g., any of one or more of the lipids described herein), and one or flavor compounds (e.g., any one or more of the flavor compounds described herein); and (b) a mixture of ash (e.g., any of the ash described herein) and at least one sweetening agent (e.g., any one or more of the sweetening agents described herein). In some examples of these kits, the one or more milk proteins are cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth milk proteins.

In some examples of these kits, the one or more fats are selected from the group of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. The fatty acids present in the kit can include at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. The phospholipids in the kit can be soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids.

The flavor compounds in the kit can include at least one flavor compound selected from the group of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone.

In some embodiments of the kit, the mixture in (a) further includes one or more color balancing agent (e.g., any of the color balancing agents described herein, e.g., β-carotene or annatto).

In some examples of the kits, the one or more sweetening agents is a saccharide (e.g., glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, or tagatose) or an artificial sweetener (e.g., stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, or P-4000).

The kits can include an ash including one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some examples, the ash in the kit includes one or more (e.g., two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate.

In some embodiments of the kits, the mixture in (a) is provided in a light-sealed and airtight package (e.g., a metal foil, e.g., an aluminum foil), and/or the mixture in (b) is provided in an airtight package (e.g., a sealed plastic bag).

Some examples of the kits further include instructions for making any of the compositions described herein.

Also provided herein are kits including at least one nucleic acid described herein.

Modulating Flavor Profiles

Sensory impressions such as “feed,” “barny,” or “unclean,” are described as flavor descriptions that are absorbed from the food ingested by the cow and from the odours in its surroundings. Others develop through microbial action due to growth of bacteria in large numbers. Chemical changes can also take place through enzyme action, contact with metals (such as copper), or exposure to sunlight or strong fluorescent light. Quality-control directors are constantly striving to avoid off-flavors in milk and other dairy foods. It is, therefore, an object of the invention to reduce, eliminate or even mask the undesirable flavors and odor of various dairy products.

In certain preferred aspects of the present invention, varying the fat content can alter the flavors and odor of various dairy substitute products. For example, increasing the butyric acid content can change a flavor profile of a non-dairy cheese to a flavor profile similar to parmesan cheese. In other embodiments, modulating the triglycerides such caproic, capric, and/or caprylic acid results in a flavor profile similar to goat cheese. Accordingly, modulating the triglycerides with the ratios of fatty acid components provides different flavor profiles that can be fine-tuned to resemble those of various desirable dairy-food products.

Similarly, the methods and compositions provide for minimizing one or more undesirable aromas by modulating various triglycerides incorporated into the dairy substitute products.

In certain aspects flavor profile is modulated by incorporating synthetic short-chain triglycerides combined with plant-based oils e.g., sunflower oil, in desired combinations. For example a mixture of [C18 C18 C6] and [C18 C6 C18] provides a different flavor profile than a mixture of [C18 C4 C4] and [C18 C10 C10].

Dairy Substitute Products

A wide variety of dairy substitute products can be made using the methods and compositions of the present invention. Such products include without limitation, milk, whole milk, buttermilk, skim milk, infant formula, condensed milk, dried milk, evaporated milk, butter, clarified butter, cream and various types of cheese.

The dairy substitute products can also be incorporated into various food applications as a replacement for dairy products, which include the following ice cream, frozen custard, frozen yogurt, cookies, cakes, cottage cheese, cream cheese, crème fraiche, curds and yogurt.

In certain aspects, the present invention provides one or more subunits of casein selected from α-s1-casein, α-s2-casein, β-casein and κ-casein for the milk protein component in a dairy substitute product. A select combination of casein subunits are used as the primary or at least a part of the milk protein component. In preferred embodiments, the casein composition comprises the following amounts of casein subunits

such that about 12-15g/L α-s1-casein, about 3-4g/L α-s2-casein, about 9-11g/L β-casein and about 2-4g/L κ-casein represent the total casein in a synthetic milk product..

In various embodiments, the casein compositions can comprise about 0.5% about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4%, about 4.5%, about 5%, about 6%, protein by dry weight or total weight. In some embodiments, the casein compositions can comprise about 0.5-2.5%, about 1-2%, about 2-3%, or about 4-10% casein protein by dry weight or total weight. In particular embodiments, the casein compositions can comprise about 1.5-10% protein by dry weight or total weight.

In certain aspects, the methods and compositions of the dairy substitute products are essentially free of one or more serum proteins. Serum proteins typically comprise, among other proteins, enzymes, hormones, growth factors, nutrient transporters and disease resistance factors. In additional embodiments, the methods and compositions of the dairy substitute products are essentially free of one or more immunoglobulins, which may induce an undesirable immune response.

In some embodiments, whey compositions can comprise about 0.001%, about 0.05%, about 0.1%, about 0.5%, about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4% whey protein by dry weight or total weight. In some embodiments, the compositions can comprise about 0.1-1%, about 1-2%, about 2-3%, or about 0.1-2.3% protein by dry weight or total weight. In particular embodiments, the compositions can comprise about 10-15% protein by dry weight or total weight.

In various embodiments, carbohydrates are incorporated into the dairy substitute products. These carbohydrates provide a bland sweetness to the flavor profile of the product and additionally serve as a fast-acting energy and nutrition source. Carbohydrates include but are not limited to sugars such as galactose, sucrose, glucose, fructose and maltose. Dairy-free sources of sugars include but are not limited to sugar beet and other plants such as celery, basil, honey, cherries, corn, spinach, plums, kiwis and peas.

Lactose intolerance is common for many milk consumers. Accordingly, in preferred embodiments, carbohydrates such as lactose are omitted from the dairy substitute composition. In preferred embodiments, methods and compositions of the dairy substitute composition essentially free of lactose.

In some embodiments, the carbohydrate compositions can comprise about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4%, about 4.5%, about 5% carbohydrate by dry weight or total weight. In some embodiments, the compositions can comprise about 1-3%, about 2-4%, or about 10-30% carbohydrate by dry weight or total weight. In particular embodiments, the compositions can comprise about 2-5% carbohydrate by dry weight or total weight.

Ash attributes to the structure and stability of casein micelles. Ash is important for holding the emulsion that is milk or cream together. The calcium and phosphate present in the ash interact with the fat globules and the casein micelles to maintain an emulsified mixture.

The ash also affects the sensory characteristics such as mouthfeel, consistency, and to a certain extent, the flavor of the milk.

In some embodiments, the ash compositions can comprise about 0.1%, about 0.2%, about 0.3%, about 0.4%, about 0.5%, about 0.6%, about 0.7%, about 0.8%, about 0.9%, about 1%, about 2% or about 3% ash by dry weight or total weight. In some embodiments, the compositions can comprise about 0.1-0.3%, about 0.5-0.7%, about 0.7-1%, or about 1-2% ash by dry weight or total weight. In particular embodiments, the compositions can comprise about 0.6-0.8% protein by dry weight or total weight.

Additional ingredients for various animal-free dairy products include vitamins, flavoring agents, natural or artificial sweeteners, coloring agents, salt, pH adjustment agents, binders, buffers, stabilizers, essential amino acids, anti-caking agents, anti-foaming agents, and mixtures thereof.

In some embodiments, the remaining ingredient compositions can comprise about 0%, about 0.01%, about 0.1%, about 0.5%, about 1%, about 2%, about 3%, about 4% or about 5% additives by dry weight or total weight. In some embodiments, the compositions can comprise about 0.001-0.01%, about 0.01-1%, about 0.01-2%, or about 1-5% additives by dry weight or total weight. In particular embodiments, the compositions can comprise about 0-10% additives by dry weight or total weight.

In some aspects, the present invention provides methods and compositions for dairy substitutes with fat comprising varying levels of triglyceride content. In preferred embodiments, isolated triglycerides from various plant sources are incorporated with milk

protein components, carbohydrates and ash. It is an object of the present invention to modulate the fatty acids isolated in plants and transesterified in a dairy substitute to resemble the percentage of fatty acids found in natural dairy products, and/or to develop novel flavor profiles with improved flavor not found in nature. In some embodiments, modulating specific short-to-medium chain fatty acids including but not limited to s butyric, capric, caprylic, caproic and lauric acids provides the desired flavor profile in a dairy substitute.

In some embodiments, the fat compositions in synthetic milk comprises about 0%, about 1%, about 2%, about 3%, about 3.5%, about 4% fat by dry weight or total weight. In some embodiments, the compositions can comprise about 1-2%, about 2-3%, about 3-4% fat by dry weight or total weight. In particular embodiments, the compositions can comprise about 3-4% fat by dry weight or total weight. In alternative embodiments, fat compositions in cream can comprise about 10%, about 20%, about 30%, about 40%, about 50% or even 60%. Preferably, fat compositions in cream is typically about 40 to about 50%.

In some aspects, the short-chain triglycerides are combined with longer chain oil to produce transesterified fatty acid esters. Preferably, the longer chain oils are selected from: sunflower, corn, olive, soy, peanut, walnut, almond, sesame, cottonseed, canola, safflower, flax seed, palm, palm kernel, palm fruit, coconut, babassu, shea butter, mango butter, cocoa butter, wheat germ and rice bran oil. More preferably, the longer chain oils comprise engineered sunflower varieties, which overexpress oleic acid by 400%.

Longer chain oil can also provide to the flavor profile, for example, reduce or even remove sharpness and mellow out the overall flavor profile of the desired end product.

In some embodiments, the fat component of the dairy substitute comprises select triglycerides that are transesterified into longer chain oil such as high-oleic sunflower oil (Example 2). It is contemplated that the same four short chain fatty acids give milk and derivative products such as cheese their particular flavors such as robustness and richness. Various combinations of triglycerides and longer chain oils are incorporated to create a number of different flavor profiles. In one embodiment, triglyceride with three oleic acids and synthetic short-chain triglyceride with, in this case, one butyric, one

hexanoic, and one octanoic acid, yields a desired synthetic "milk fat" triglyceride. Additional embodiments include incorporating various short-chain triglycerides to tune slightly different flavor profiles, for instance, short-chain triglyceride comprising hexanoic acid; short-chain triglyceride comprising hexanoic acid and butyric acid; short-chain triglyceride comprising hexanoic acid and decanoic acid. Accordingly, methods and compositions provide for various combinations of synthetic short-chain triglycerides with the sunflower oil triglycerides resulting in different flavor profiles.

Synthetic Milk

An exemplary embodiment of synthetic milk formulation comprising microbially derived proteins of the present invention is illustrated in Example 4. For example, the present formulation incorporates all four subunits of bovine casein: α-s1-casein, α-s2-casein, β-casein and κ-casein and two whey proteins α-lactalbumin and β-lactoglobulin as the predominant milk protein components in the formulation. The exemplary synthetic milk formulation further comprises plant-based interesterified fats as shown in Figure 1. Additional components include carbohydrates and ash. The resulting milk substitute exhibits characteristics that looks, functions, tastes, smells, and feels like natural milk. As one of key facets of the present invention, modifying the formulations for synthetic milk can exhibit different sensory impressions such as flavoring by modulating the oil content, namely the types of triglycerides added to mimic milk of different flavors.

As described in Young W. Park, Bioactive Components in Milk and Dairy Products, Technology & Engineering, pp 60, 2009, sterols are a minor fraction of total lipids in milk, the main sterol being cholesterol (300 mg/100 g fat, equivalent to 10 mg/100 mL bovine milk) (Park et al., *Small Rumin. Res.* 68: 88-113, 2007). Goat milk has been shown to contain less cholesterol than other milk but generally contains higher total fat than cow milk. See, Posati et al., 1976. Composition of Foods. Agric. Handbook No. 8 - 1. ARS, USDA, Washington, D.C., 1976; Jenness, *J. Dairy Sci.* 63:1605 – 1630, 1980; and Juarez et al., Intl. Dairy Fed. Bull. No. 202. pp. 54-67, 1986, have shown that goat milk has greater palmitic and oleic acid fractions than cows. Cholesterol content was significantly varied among different breeds and most cholesterol in goat milk was in

free state, with only a small fraction in ester form 52 mg/100 g fat. See, e.g., Arora et al., Ind. J. Dairy Sci. 29: 191.

In certain embodiments, the methods and composition of the present invention provide synthetic milk product that has less cholesterol, or is cholesterol free or has the same cholesterol content in comparison to the dairy milk by modulating the oil content, namely the types of triglycerides. In other embodiments, the amount of saturated and unsaturated fats is also modulated in dairy substitutes to at least less or the same amount of fats in comparison to the dairy milk. In preferred embodiments the synthetic milk product of the present invention is very low in saturated fat but smells and tastes like dairy milk. The long chain fatty acids, which are typically saturated fatty acids in milk, are instead monounsaturated acids such as oleic acid, in the preferred embodiments of the invention.

The present invention may not require or at least minimizes pasteurization, as each component can be rendered sterile separately, before combining through the formulation process. In other embodiments of the invention, synthetic milk product of the present invention can undergo pasteurization.

Homogenization is optional for the methods and compositions of the present invention as is the case for natural milk. When sold as a standalone liquid beverage, the synthetic milk product of the present invention can be sold in homogenized form.

Differences between the milk substitute of the present invention with dairy milk include flavor, nutritional value and storage stability. Flavorings can be adjusted to a desired sensory impression based on triglycerides as well as other natural or artificial flavors that can impart in blandness or sharpness or a different aroma such as cow, goat, coconut, almond or soy.

Synthetic Cheese

In other aspects of the present invention, methods and compositions comprising one or more isolated milk protein components, fats, carbohydrates and ash are provided to produce various types of cheese products. Generally, the cheese is made from the milk protein components of the present invention. One or more sensory impressions are incorporated into the cheese product through modulating the triglycerides. Accordingly,

cheese with desired organoleptic characteristics with distinct appearance, aroma, taste and texture can be produced. For some cheese varieties, in addition to modulating the triglycerides, one or more bacteria is employed in the cheese making process for fermentation where fermentative products and by-products such as lactic acid, carbon dioxide, alcohols, aldehydes and ketones are produced. Types of cheese include whey cheese such as ricotta and mozzarella, semi-soft cheese include Havarti and Munster, medium-hard cheese such as Swiss and Jarlsberg, hard cheese such as Cheddar and soft ripened cheese such as Brie and Camembert.

Synthetic Cream

Directly usable cream substitutes should preferably comprise from about 50 to 90% by weight water, and more preferably from about 65 to 80% by weight water, with the base being dispersed within the water. The base for a substitute cream should advantageously contain (all percentages computed using the total weight of the base taken as 100%) from about 22 to 87% by weight carbohydrate (more preferably from about 30 to 64%), from about 12 to 70% by weight of particulate fat (most preferably from about 28 to 60%), and from about 0.4 to 8% by weight of a selected emulsifier or group thereof (most preferably from about 1 to 4%).

In preferred embodiments, the products of the invention are stable in aqueous emulsion. As used herein, a dried, liquid fat-containing non-dairy food product is said to be “stable” when the following minimum criteria are met: reconstituted emulsion stability, whitening capability, oiling or oil separation, feathering-precipitation. See U.S. Patent No. 4,310,561.

Synthetic Butter

Commercial butter is 80–82 % milk fat, 16–17 % water, and 1–2 % milk solids other than fat (sometimes referred to as curd).

Advantages of Dairy Substitute Products or the Compositions Provided Herein

Desirable advantages of the present invention are environmental in nature such as 8 times more energy efficient, 260 times more water efficient than conventional milk

product. Other environmental advantages include less water usage than conventional milk production, which is estimated to be about 1000 L/L and reduced land usage for conventional milk production typically requires grazing, crop land, ability to reduce the 600 billion kg of carbon dioxide per year that is emitted from conventional milk production. The present invention also provides reduction or elimination of costs of feed, operations, labor, animal and marketing. Preferably, substantially reduce feed cost by a factor of 8.

Advantages in food safety include reduction or removal of antibiotic residues, heavy metals, bacteria, adulterations. Accordingly, certain aspects of the present invention provide animal-free milk that is bacteria-free, requires no pasteurization or cold shipping yet has an increased shelf-life and exhibit a number of characteristics such as taste, appearance, handling and mouth feel properties which are identical or at least closely similar to their traditional dairy counterparts. Preferably, the dairy substitute products are essentially free of bacteria such as *Brucella, Camplyobacter, Listeria, Mycobacterium, Salmonella, Shigella, Yersinia, Giardia* and noroviruses, and, thus are safer for consumption. Further advantage include minimal or no pasteurization and/or homogenization. More preferably, the dairy substitute is shelf stable for relatively long periods (e.g., at least three weeks and preferably longer) for production and distribution. Even more preferably, the dairy substitute products has a lower environmental impact.

Several aspects of the invention are described below with reference to example applications for illustration. It should be understood that numerous specific details, relationships, and methods are set forth to provide a full understanding of the invention. One having ordinary skill in the relevant art, however, will readily recognize that the invention can be practiced without one or more of the specific details or with other methods.

EXAMPLES

Example 1

Vectors

Protein sequences bovine α-S1 casein (UniProt accession #P02662), bovine α-2 casein (UniProt accession #P02663), bovine β-casein (UniProt accession #P02666), bovine κ-casein (UniProt accession #P02668), bovine α-lactalbumin (UniProt accession #B6V3I5) and bovine β-lactoglobulin (UniProt accession #P02754) were obtained on Uniprot.org and altered with the following changes: removed 15 or 21-residue signal peptide from N-terminal end; added *XhoI* (CTC GAG) endonuclease recognition sequence and KEX endopeptidase recognition sequence (AAA AGA) to 5' end of DNA; and added *SalI* (GTC GAC) endonuclease recognition sequence to 3' end of DNA. An additional combination sequence was made by combining the sequences for the four caseins in the order shown above, separating each sequence with the following DNA phrase:

[0001] GGC TCA GGA TCA GGG TCG <u>AAA AGA</u> GGC TCA GGA TCA GGG TCG (SEQ ID NO: 128).

[0002] Here the non-underlined segments encode a $(GS)_6$ linker sequence for adequate posttranslational spacing and accessibility to the KEX protease, and the underlined segment encodes the KEX endopeptidase sequence which cleaves the proteins apart post-translation. As above, the entire cassette is flanked on the 5' end by *XhoI* and on the 3' end by *SalI* for ligation into pKLAC2 (New England Biolabs, Beverly, MA). DNA was synthesized by either Gen9, Inc. (Cambridge, MA) or IDT (Coralville, IA). The plasmid used had, among other things, a multiple cloning site, a Lac promoter, an Acetamide based reporter gene and the alpha-mating factor gene, used as a fusion protein for secretion of exogenous proteins.

Yeast Transfection

Transfection of the yeast was accomplished by thawing a tube of 0.5 mL competent cells containing 25% glycerol on ice and adding 0.62 mL yeast transfection reagent. The mixture was then warmed at 30°C for 30 minutes, heat shocked at 37°C for 1 hour. The cells were then pelleted at 7000 rpm & washed twice with 1.0mL of YPGal medium. The cell mixture was then transferred to a sterile culture tube and incubated at

30°C for 3 hours, with constant shaking at 300 rpm. The cell mixture was then transferred to a sterile 1.5mL microcentrifuge tube and pelleted the cells at 7000 rpm for 2 minutes, and resuspended in 1 mL sterile 1X PBS. 10, 50 and 100 µL of the cell suspension was placed into separate fresh sterile 1.5 mL microcentrifuge tubes each containing 50 µL of sterile deionized water. Tubes were mixed briefly and spread onto separate yeast carbon base agar (YCB Agar) plates containing 5 mM acetamide for selection. Plates were then incubated, inverted, at 30°C for 4 days until colonies form. 15 individual colonies were then streaked onto fresh YCB Agar plates containing 5 mM acetamide and incubated at 30°C for 2 days.

DNA encoding alpha-lactalbumin and beta-lactoglobulin, two key whey proteins, was designed in-house and ordered for synthesis from IDT and was transfected into competent *K. lactis* cells from the New England Biolabs kit (Catalog #E1000S) according to the vendor-supplied protocol.

High-Throughput Transfectant Selection

From each YCB Agar plate, once the colonies had grown sufficiently, each of the 30 plates was tested for successful integration of the vector plasmid. This was followed by PCR analysis of each plate to test for special cells with multiple integrants of the vector. Once isolated, the highest producing individual culture was used for scale up. This process can be iterated with successively higher concentrations of selective pressure in order to force colonies to develop higher copy numbers of our engineered plasmid.

Five transfection events were performed and plated on 5 separate plates consisting of nitrogen-free yeast carbon base medium. (Any observed growth on these plates therefore implied successful uptake of the plasmid, if not uptake of the exogenous DNA itself). Of these 5 plates, 100% showed positive growth. 30 individual colonies from the 5 plates were chosen for scale-up, and each was grown in a separate YCB agar plate to create a homozygous culture plate to allow for easy characterization and management. After a 3 day growth period, a single colony from each plate was initially added to a 10 ml glass culture tube, containing 2ml YPGal media, to test for protein expression. After a growth period of two days, the cells were pelleted out and the supernatant was run on an SDS PAGE gel to check for protein expression. The strains which provided the best protein expression were scaled up to a 10 ml, 100 ml, 500 ml,

and ultimately 1L culture vessel. From each whey protein, two liters of culture were grown. Approximately one gram of protein was harvested from the total, suggesting a non-optimized yield/productivity of 0.5 g/L.

Scale-Up in 1L Shake Flask Culture

Cultures are scaled up and seeded in a 1L shake flask at split ratios of at least 1:10. Prior to seeding, inoculation flasks are grown for 24 hours in production media without acetamide supplementation. On the starting day of a fedbatch production run, the reactor is charged with 90% of the target starting volume and heated to the run temperature. For now, the temperature is set at 30°C in order to save on energy costs associated with heating the reactor. Additional parameters can be explored in the process optimization phase. When the reactor reaches 30°C, the inoculation flask is added to the reaction vessel dropwise using a peristaltic pump. The reactor is maintained using vendor supplied software at a target pH. Twice daily samples are taken of the reactor broth in order to quantify the amount of glucose and electrolyte usage by the cells, and as a doublecheck for the reactor's pH and dissolved gas measurements. After each measurement, bolus glucose is added to maintain a target glucose concentration 10% to start, although this may also be altered in process development. When cells reach maximum density, protein production is triggered by the addition of galactose, which triggers the promoter on our pKLAC2 plasmid. Galactose is supplemented until the end of the run. Optimum run length can be determined in process development as well, but is set as a 5-day fedbatch. After a full run, yeast cells are removed from the reactor and the proteins are purified as discussed below.

Casein Protein Purification

The following casein proteins α-s1casein, α-s2casein, and β-casein are inherently hydrophobic, which precipitate out when secreted from the yeast and come into contact with water. Purification from the reactor media involves collection of the protein from the surface of the media, followed by drying to isolate pure protein. Kappa-casein is inherently hydrophilic and purification of the κ-caseins involves the change in pH of the solution to 4.6, followed by centrifugation at 10,000 rcf. Combined casein cassette works the same way as κ-casein.

Whey Protein Purification

Alpha-lactalbumin: The isoelectric point of alpha-lactalbumin is 4.2. When the pH of the bioreactor media solution is lowered to 4.2, the solubility of the protein is at its lowest. This knocks the protein out of solution and allows for collection by centrifugation. Beta-lactoglobulin: Similar to the purification of the alpha-lactalbumin, the pH of the solution is lowered to 5.2 the isoelectric point of beta-lactoglobulin. This neutralizes the charge of the protein and allows its collection by centrifugation at 14,000 rcf.

Protein Purification

The 2L of culture media was spun at 3,000g in a floor centrifuge to pellet out the yeast cells. The pellet was discarded, and the supernatant was transferred into a new vessel & the pH of the solution was lowered to 4.2 for the alpha-lactalbumin and 5.2 for the beta-lactoglobulin (Figure 2A). This was followed by incubation of the supernatant at 35°C for 30 mins in a shaker flask, centrifugation at 14,000g in a floor centrifuge to pellet out the protein mixture (Figure 2B).

Protein Characterization

After separation of the protein by centrifugation, the solid pellet and the supernatant solution were run on a 14% SDA-PAGE gel to check for protein expression. A positive band was observed at 14 kDa and at 18 kDa (Figure 3), which correlates to the size of alpha-lactalbumin and beta-lactoglobulin of bovine origin, respectively. Further characterization is done to confirm equivalence in terms of primary sequence, glycosylation and phosphorylation.

Example 2

Triglyceride Synthesis

Milk fat triglycerides were made by transesterifying short-chain triglycerides into high oleic sunflower oil, the oil from a custom engineered variant of sunflowers which express the following ratios of fatty acid esters as described in Table 1:

Table 1:

Fatty Acids	Sunflower†	NuSun Mid-Oleic Sunflower‡	High-Oleic Sunflower†
C6:0	ND	ND	ND
C8:0	ND	ND	ND
C10:0	ND	ND	ND
C12:0	ND-0.1	ND	ND
C14:0	ND-0.2	0.4-0.8	ND-0.1
C16:0	2.0-7.6	4.0-5.5	2.6-5.0
C16:1	ND-0.3	ND-0.05	ND-0.1
C17:0	ND-0.2	ND-0.05	ND-0.1
C17:1	ND-0.1	ND-0.06	ND-0.1
C18:0	1.0-6.5	2.1-5.0	2.9-6.2
C18:1	14-39.4	43.1-71.8	75-90.7
C18:2	48.3-74.0	18.7-45.3	2.1-17.0
C18:3	ND-0.3	ND-0.1	ND-0.3
C20:0	0.1-0.5	0.2-0.4	0.2-0.5
C20:1	ND-0.3	0.2-0.3	0.1-0.5
C20:2	ND	ND	ND
C22:0	0.3-1.5	0.6-1.1	0.5-1.6
C22:1	ND-0.3	ND	ND-0.3
C22:2	ND-0.3	ND-0.09	ND
C24:0	ND-0.5	0.3-0.4	ND-0.5
C24:1	ND	ND	ND
ND=not detectable (ND defined as <0.05%)			

† From Codex Alimentarius (2001)
‡ From Table 3

www.sunflowernsa.com/uploads/resources/51/warner_.pdf

Short-chain triglyceride preparation

The short-chain fatty acids which are principally responsible for rich flavor in milk and cream are the molecules with even numbers of carbons between 4 and 10, and are mixed in the following ratios as described in Table 2:

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Table 2:

Table 1. Fatty acid composition expressed as percent by weight of total fatty acids in Swedish dairy milk in 2001, given as weighted means with standard deviations (SD) and as the minimum and maximum weighted means. The estimation of the weighted mean values was based on the proportion of milk delivered to each dairy or dairy company at each sampling occasion (seven dairies at four sampling occasions during 2001). The lowest and highest values observed and *p*-values for geographical and seasonal variation are also given

Fatty acid	Weighted mean 2001	SD	Lowest value observed	Highest value observed	Seasonal variation
4:0	4.4	0.1	4.0	5.1	n.s.
6:0	2.4	0.1	2.1	2.9	n.s.
8:0	1.4	0.1	1.2	1.9	n.s.
10:0	2.7	0.2	2.4	3.5	*
12:0	3.3	0.2	3.0	4.1	**
14:0	10.9	0.5	10.0	12.1	***
15:0	0.9	0.0	0.8	1.1	n.s.
16:0	30.6	0.9	28.7	34.1	**
17:0	0.4	0.0	0.4	0.5	**
18:0	12.2	0.4	10.3	13.3	n.s.
20:0	0.2	0.0	0.2	0.2	n.s.
Saturated fatty acids total	*69.4*	*1.7*	*67.1*	*74.4*	***
10:1	0.3	0.0	0.2	0.4	n.s.
14:1	0.8	0.4	0.4	1.3	**
16:1	1.0	0.0	0.9	1.8	n.s.
17:1	0.1	0.0	<0.1	0.3	n.s.
18:1	22.8	1.0	19.7	24.7	***
Mono-unsaturated faty acids, cis, total	*25.0*	*1.0*	*22.2*	*26.7*	**
18:2	1.6	0.1	1.4	1.8	n.s.
18:3	0.7	0.0	0.6	0.9	**
Poly-unsaturated fatty acids, cis, total	*2.3*	*0.1*	*2.0*	*2.5*	n.s.
16:1t	0.4	0.1	0.3	0.4	***
18:1t	2.1	0.7	2.0	3.3	***
18:2t	0.2	0.0	0.1	0.5	n.s.
Trans fatty acids total	*2.7*	*0.7*	*0.6*	*3.9*	***
CLA	0.4	0.1	0.3	0.5	***

n.s.: Not significant; *$p<0.05$; **$p<0.01$; ***$p<0.001$.

www.ncbi.nlm.nih.gov/pmc/articles/PMC2596709/pdf/FNR-52-1821.pdf

Table 3:

Chain Length	Names	Mass Fraction in Mixture (%)
4	Butanoic / butyric acid	40
6	Hexanoic / caproic acid	26
8	Octanoic / caprylic acid	11
10	Decanoic / capric acid	22

The fractions in Table 3 are based upon the relative prevalence of these species in cow's milk, but can be altered during process development both in order to design a better tasting product and in order to design milks of other species, such as buffalo or goat. Short-chain fatty acids in the mass ratios shown above are combined with toluene, paratoluenesulfonic acid, and glycerol in a Dean-Stark water trap, commonly used for esterification reactions in order to remove water produced in the condensation reaction. The reaction is carried out in a fume hood for several hours, until the level of water entering the water trap is observed as unchanging for more than 30 minutes. The vessel is allowed to cool and the mixture is removed from the reaction flask. The mixture is washed twice with a 5% sodium carbonate solution and five times with plain water. Brine (a 10% solution of NaCl in water) is added periodically in order to disrupt an emulsion which forms in the separating funnel. The washed mixture of short-chain triglycerides, water, toluene, and impurities is dried in a rotary evaporator at 90°C and under a 54 mbar atmosphere for one hour, until it has proceeded well past excess in order to minimize the chance of food contamination.

Transesterification

The short-chain triglyceride mixture is combined with high-oleic sunflower oil at a volumetric ratio of 1:8. A mass of sodium methoxide equal to 1% of the oil mixture mass is added in order to catalyze the transesterification, and the reaction vessel is heated to 65°C, stirring continuously, under an inert Argon atmosphere, for six hours. A 5% acetic acid mixture is added to quench the reaction, then the oil is washed five times with deionized water and dried in a rotary evaporator for one hour at >90°C. The finished milk

fat is autoclaved to ensure sterility and is thence suitable for use in milk or cream as described above.

Example 3

Milk Formulation

One non-limiting milk composition formulation is described below.

Table 4:

Components	% (w/v) Range	Amount (g/L)
Casein proteins	1 – 10	10 – 100
Whey proteins	0 – 1	0 – 10
Plant-based milk fats	0 – 8	0 – 80 ml/L
Sugar	0 – 5	0 – 50
Ash	0.1 – 1	1 – 10
Calcium	0.1 – 0.5	1 – L
X (Functional additive)	0 - 1	0 – 10L

Following Table 4, milk formulation is achieved through the following procedure, per 1 liter of milk. 26 grams of casein, 3.5 grams of whey and 5 grams of ash are combined and mixed well. 40 mL of triglycerides are thawed & heated to 55°C. Protein mixture is poured slowly into triglycerides and vortexed at high speed for five minutes. In the meantime, 3.5 grams of whey and 24 grams of galactose are added to 850 mL deionized water; mixture is heated to 37°C. Triglyceride/protein/ash mixture is moved into Waring commercial blender and blended at low speed. Whey/galactose/water mixture is poured slowly into blender; cap placed on blender. Mixture is blended at high speed for ten minutes. Deionized water is added to a final volume of 1000 mL. Milk can optionally be homogenized using existing methods. The above protocol can be altered for cream or arbitrary milk formulations by altering the ratios of solids; however, our preliminary research suggests that the presence of ash in the protein mixture and the separation of a significant proportion of the whey can greatly affect the quality of the emulsion.

Example 4

Synthetic Milk Formulation

As a preliminary proof of concept, in order to determine whether the key components of milk could be recombined to form milk, dry food-grade purified casein and research grade whey was purchased. Irish cream was obtained from a local source and pure fat was isolated from it by centrifuging the cream at 14,000g. Finally, all minerals used were purchased from Sigma Aldrich.

Terms:

C-roux= roux made by mixing casein proteins & fat together while maintaining the temperature of the mixture at 37°C.

W-roux= roux made by mixing whey proteins & fat together while maintaining the temperature of the mixture at 37°C.

CW-roux= roux made by mixing casein & whey proteins together in a mixture first, adding fat and mixing at 37°C.

Table 5:

Experiment	Result
Casein + Fat + Water	A pale yellow liquid with bad taste, precipitation of protein, and bad mouthfeel (watery).
Casein + Water + Fat	A pale yellow liquid with bad taste, precipitation of protein, and bad mouthfeel (watery).
(Casein + Fat) to make a roux. roux + Water	A pale yellow liquid with average taste and bad mouthfeel (watery). Low protein precipitation was observed.

Hypothesized that the bad mouthfeel (e.g., wateriness) was due to the lack of whey protein.

Table 6:

Experiment	Result

Casein + Whey + Fat + Water	Pale yellow-white liquid with bad taste, precipitation of protein, and bad mouthfeel.
C-roux + Whey + Water	Pale yellow-white liquid with average taste, low precipitation of protein, and bad mouthfeel
W-roux + Casein + Water	Pale yellow-white liquid with average taste, low precipitation of protein, and bad mouthfeel.
CW-roux + Water	Pale yellow-white liquid with average taste and bad mouthfeel. Zero protein precipitation.

Hypothesized that bad mouth feel was because of bad casein micelle formation, that addition of Ca would allow the micelle to reform.

Table 7:

Experiment	**Result**
CW-roux + Water + Calcium phosphate (optimum amount of Ca was figured out by trial & error)	White liquid with normal mouth feel. Zero protein precipitation. Average taste

To improve taste, different sugars were added in different concentrations to the above mixture.

Table 8:

Sugar	**2.4%**	**3.0%**	**3.6%**	**4.2%**	**4.8%**
Glucose	Good	Too Sweet	Too Sweet	Too Sweet	Too Sweet
Galactose	Bland	Excellent	Average	Excellent	Too Sweet
Sucrose	Bad	Bad	Bad	Bad	Bad
Maltose	Bland	Excellent	Excellent	Too Sweet	Too Sweet

All additional ions found in cow milk was incorporated to recreate the ionic environment found in nature.

Reference: R. Rosmaninho, L.F. Melo / Journal of Food Engineering 73 (2006) 379–387

Table 9:

Reagent	Composition (mM)
KH_2PO_4	11.60
K_3 Citrate H_2O^a	3.7
Na_3 Citrate $2H_2O$	6.1
K_2SO_4	1.03
K_2CO_3	2.17
KCL	8.0
$CaCL_2$. $2H_2O$	8.98

End result was a liquid which was bright white in color, likely because the ionic environment kept the solids present in milk from joining together and increased the overall refractive index of the solution. Taste was excellent, but it had an average mouthfeel (e.g., a certain amount of chalkiness was observed in the liquid). Exact mineral composition as described in Table 9 can provide excellent mouthfeel.

Milk Fat Synthesis

Synthetic milk fat was made by interesterifying short-chain fatty acids among the large-chain fatty acids present in high-oleic sunflower oil triglycerides. The four short-chains used were:

40% C4: Butyric acid. found in milk, especially goat, sheep and buffalo milk, butter, Parmesan cheese, and as a product of anaerobic fermentation (including in the colon and as body odor). It has an unpleasant smell and acrid taste, with a sweetish aftertaste (similar to ether). Butyric acid is present in, and is the main distinctive smell of, human vomit.

26% C6: Caproic acid. a colorless oily liquid with an odor that is fatty, cheesy, waxy, and like that of goats or other barnyard animals.

11% C8: Caprylic acid. It is an oily liquid that is minimally soluble in water with a slightly unpleasant rancid-like smell and taste.

22% C10: Capric acid. Not much said about the flavor, and with longer carbon chains you start to get less flavors. This is in coconut oil so it is not a milk fat flavor *per se* as much as the other ones.

Iterations include lauric acid (C12), as it is present at 2.9% of total fatty acid content in cow's milk (Beare-Rogers, J.; Dieffenbacher, A.; Holm, J.V. (2001). "Lexicon of lipid nutrition (IUPAC Technical Report)". Pure and Applied Chemistry 73 (4): 685–744. doi:10.1351/pac200173040685.)

The following procedure as described Yu et al., The modification an analysis of vegetable oil for cheese making. *J. Am. Oil Chem. Soc*., 77:911 (2000) was followed in, at quarter of the amounts specified below:

A mixture of butyric, caproic, caprylic, and capric acids (Sigma Chemical Co., St. Louis, MO) at the same ratios found for a milk fat sample [see above] and totaling 7.26 mol, 21.42 g of p-toluenesulfonic acid (Sigma Chemical Co.), 2.305 mol of glycerol (Sigma Chemical Co.), and 458 mL of toluene (Fisher Scientific) was refluxed with a Dean-Stark water trap for 6 h. The reaction was considered complete when no more water dripped into the trap. The SCTG were washed once with 5% sodium carbonate solution and several times with water. Then, the SCTG were heated at 85°C in a rotary evaporator to remove water and toluene.

SCTG from both commercial and natural sources are interesterified with HOSO (Trisun 80, RBD; AC Humko, Memphis, TN) at a SCTG/HOSO ratio of 1:8.82 in order to produce a fat that has the same percentage of SCFA as that of milk fat. SCTG from the commercial source are also interesterified at a SCTG/HOSO ratio of 1:7.19 to produce a fat that has a level of SCFA equal to 120% of that in milk fat. Sodium methoxide (Aldrich Chemical Company, St. Louis, MO) is used as a catalyst at 0.5% of total oil weight. The reaction is carried out at 65°C under nitrogen with stirring for 6 h. Next, 5% acetic acid (Fisher Scientific) is added to neutralize the catalyst, and the oil is then washed several times with distilled water and dried on a rotary evaporator for 30 min at 90°C.

A pilot-scale continuous deodorizer similar to the one described by Smouse (Smouse, T.H., A Laboratory Continuous Deodorizer, inform 8:1176–1181 (1997).) is used to deodorize the interesterified oils. The oil flow rate is 600 mL/h, the column

temperature is 180°C, pressure at 0.5 Torr, and the steam rate 12.6 mL/h. Each batch of deodorized oil is tasted by to ensure the flavor. The deodorized oil is stored at 4°C until used for cheese making.

Example 5

Modulation of Fatty Acids

Sunflower oil triglycerides with three oleic acids are transesterified with four short chain fatty acids containing one butyric acid, one hexanoic acid, and one octanoic acid as part of the fat composition in a mixture of synthetic milk product. This array or combination of fat is expected to result in a synthetic milk fat providing its rich flavor as compared to natural dairy milk. The ability to control the composition of one or more triglycerides is likely to enhance or change flavor profiles of synthetic dairy products. Accordingly, a matrix of long-chain and short-chain can yield in flavor profiles including, but not limited to, multiple aromatic compounds associated with buttery, nutty, sweet, sour, fruity, floral, bitter, woody, earthy, beany, spicy, metallic, sweet, musty, oily and vinegary sensory impressions. Additionally, increase in texture such as creaminess, improvements in melting characteristics or tolerance and increase in stretching ability relative to a corresponding dairy product can be exhibited.

Example 6. Recombinant Production of Milk Proteins

Alpha-lactalbumin, β-lactoglobulin, α-S1-casein, α-S2-casein, β-casein, and κ-casein were produced in recombinant yeast strain (*Pichia pastoris*) strains. As the glycosylation enzymes in yeast are different than mammalian cells, the proteins producted by the yeast will either be non-glucosylated or have a non-mammalian glycosylation pattern. The produced proteins can be used as a component in any of the compositions described herein.

Plasmids

Plasmids were constructed for the expression of each protein. Each plasmid included the following components: an inducible promoter (e.g., AOX1 promoter) or a constuitive (GAP promoter or PGK promoter) promoter, for each protein being

expressed; a sequence encoding a signal peptide for each protein being expressed, derived either from the native bovine protein sequence or one from a yeast protein sequence (alpha mating factor or OST1); a sequence encoding the milk protein(s) to be expressed; a yeast transcription terminator sequence (e.g., AOX1, AOD, or CYC1) for each protein being expressed; a bacterial origin of replication from pUC19 to enable replication of the plasmid in *E. coli*; and a selectable marker cassette (e.g., kanR or zeocinR) to enable selection in bacteria and yeast with antibiotics.

The different plasmids used to produce the different proteins are listed in Table 10 below.

Table 10. Expression Plasmids (SEQ ID NO)

Plasmid name	Selectable marker	Promoter 1	Signal peptide 1	ORF 1	Terminator 1	Promoter 2	Signal peptide 2	ORF 2	Terminator 2
pJAG-nat-LAA	Amp (bacteria), G418 (yeast) (159)[1]	P_AOX1 (153)	SP_lactalbumin (156)	α-lactalbumin (157)	TT_AOX1 (158)				
pJAG-MFa-LAA	Ampicillin (bacteria), G418 (yeast) (159)	P_AOX1 (153)	SP_MFα (154)	α-lactalbumin (157)	TT_AOX1 (158)				
pJAG-OST-LAA	Ampicillin (bacteria), G418 (yeast) (159)	P_AOX1 (153)	SP_OST (155)	α-lactalbumin (157)	TT_AOX1 (158)				
pLH37	Zeocin (151)	P_AOX1 (129)	SP_MFαT (132)	β-lactoglobulin (143)	TT_AOX1 (149)				
pLH0044	Zeocin (151)	P_GAP1 (130)	SP_MFαT (132)	β-lactoglobulin (143)	TT_AOX1 (149)				
pLH0045	Zeocin (151)	P_PGK1 (131)	SP_MFalphaT (132)	β-lactoglobulin (143)	TT_AOX1 (149)				

pLH46	Zeocin (151)	P_GAP1 (130)	SP_β_casein (135)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_αS1_casein (137)	αS1-casein (147)	TT_AOX1 (149)
pLH47	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_αS2_casein (133)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_κ_casein (138)	κ-casein (148)	TT_AOX1 (149)
pLH48	Zeocin (151)	P_GAP1 (130)	SP_OST (134)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	αS1-casein (147)	TT_AOX1 (149)
pLH49	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_OST (136)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	κ-casein (148)	TT_AOX1 (149)
pLH50	Zeocin (151)	P_GAP1 (130)	SP_OST (136)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_αS1_casein (137)	αS1-casein (147)	TT_AOX1 (149)
pLH51	Zeocin (151)	P_GAP1 (130)	SP_β_casein (135)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	αS1-casein (147)	TT_AOX1 (149)
pLH52	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_αS2_casein (133)	αS2-casein K113E (146)	TT_CYC1 (150)	P_PGK1 (131)	SP κ_casein (138)	κ-casein (148)	TT_AOX1 (149)
pLH53	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_OST (136)	αS2-casein K113E (146)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	κ-casein (148)	TT_AOX1 (149)
pLH54	Kanamycin (bacteri	P_GAP1 (130)	SP_OST (136)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_κ_casein (138)	κ-casein	TT_AOX1 (149)

	a), G418 (yeast) (152)							(148)	
pLH55	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_αS2_casein (133)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST1 (134)	κ-casein (148)	TT_AOX1 (149)

[1]SEQ ID NO: 159 (Synthetic)

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ATGGGTAAGGAAAAGACTCACGTTTCCAGACCAAGATTGAACTCTAACATGGACGCTGACTTGTA
CGGTTACAAGTGGGCTAGAGACAACGTTGGTCAATCTGGTGCTACTATTTACAGATTGTACGGTA
AGCCAGACGCTCCAGAGTTGTTCTTGAAGCACGGTAAGGGTTCTGTTGCTAACGACGTTACTGAC
GAGATGGTTAGATTGAACTGGTTGACTGAGTTCATGCCATTGCCAACTATTAAGCACTTCATTAG
AACTCCAGACGACGCTTGGTTGTTGACTACTGCTATTCCAGGTAAGACTGCTTTCCAAGTTTTGG
AGGAGTACCCAGACTCTGGTGAGAACATTGTTGACGCTTTGGCTGTTTTCTTGAGAAGATTGCAC
TCTATTCCAGTTTGTAACTGTCCATTCAACTCTGACAGAGTTTTCAGATTGGCTCAAGCTCAATC
CAGAATGAACAACGGTTTGGTTGACGCTTCTGACTTCGACGACGAGAGAAACGGTTGGCCAGTTG
AGCAAGTTTGGAAGGAGATGCACAAGTTGTTGCCATTCTCTCCAGACTCTGTTGTTACTCACGGT
GACTTCTCTTTGGACAACTTGATTTTCGACGAGGGTAAGTTGATTGGTTGTATTGACGTTGGTAG
AGTTGGTATTGCTGACAGATACCAAGACTTGGCTATTTTGTGGAACTGTTTGGGTGAGTTCTCTC
CATCTTTGCAAAAGAGATTGTTCCAAAAGTACGGTATTGACAACCCAGACATGAACAAGTTGCAA
TTCCACTTGATGTTGGACGAGTTCTTCTAA
```

These plasmids were then integrated into wildtype *P. pastoris* for expression. The production of the proteins was detected by SDS-PAGE, ELISA, and Western blot.

Alpha-Lactalbumin

Strain Construction

Three plasmids were created, placing the expression of bovine alpha-lactalbumin (bvLAA) under the control of the methanol-induced promoter P_{AOX1}, with either the native LAA signal peptide (pJAG-nat-LAA), the full length alpha mating factor signal peptide (pJAG-aMF-LAA), or the OST1 signal peptide (pJAG-OST-LAA).

Prior to transformation, 20 µg each plasmid was linearized by digestion with the restriction enzyme SacI. The digested plasmids were then concentrated by ethanol precipitation, and resuspended in 10 µl distilled water.

Competent *Pichia pastoris* cells were prepared as follows: A culture of *P. pastoris* was grown to log phase (OD600 ~1.0) in YPD media (10 g/L yeast extract, 20

g/L peptone, 20 g/L dextrose). A 1.5 mL aliquot was harvested by centrifugation, then resuspended in 1 mL of a 1:1 mixture of YPD+20 mM HEPES (pH 8):1M lithium acetate. After adding 10 µL 1 M dithiothreitol, the cells were incubated for 15 min at 30°C in a shaker at 300 rpm. The cells were pelleted by centrifugation and washed three times in 1 mL ice cold 1 M sorbitol. After the final wash, the cells were resuspended in 50 µL 1 M sorbitol.

The cells were combined with the linearized plasmid DNA in a chilled 2 mm electroporation cuvette, and subjected to a 1.5 kV pulse (25 µF, 200 Ω). The cells were transferred to a culture tube with 200 µL cold 1:1 YPD:1 M sorbitol, and allowed to recover for 2 hours at 30°C (300 rpm). Finally, the cells were plated onto YPD agar plates containing zeocin and grown for two days at 30°C.

Protein Expression

Colonies were picked from the agar plates and grown in 750 µL BMD1% (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml biotin, 1.1% glucose) at 30°C, 300 rpm. After 48 hours, 900 µL of culture was used to inoculate 750 µL BMM2 (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 1% methanol). After 24 hours, 150 µL BMM10 (BMM10: 0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 5% methanol), and samples were harvested for analysis after one additional day.

Analysis

Protein expression was analyzed in samples of culture that were centrifuged to remove the cell mass. The clarified supernatant was then evaluated by SDS-PAGE, ELISA, and western blot.

To visualize total protein via SDS-PAGE, cell-free supernatant was treated with SDS-PAGE sample buffer, boiled, and run on a 10% polyacrylamide gel. The gel was stained with SYPRO Ruby stain (Life Technologies). The resulting gel shows that secretion of α-lactalbumin occurs using the OST1 or the native lactalbumin signal peptide (Figure 4).

To measure protein titers via ELISA, 25 µL of each sample were placed in a half-area 96 well microtiter plate, and allowed to bind overnight at 4°C. After removing the samples, the binding surface was blocked by filling each well with 1% (w/v) bovine serum albumin (BSA) dissolved in Tris Buffered Saline (50 mM Tris, pH 7.6, 150 mM NaCl) and incubating for 1 hour at room temperature. The samples were then incubated for 1.5 hr in primary antibody that was diluted in 1% BSA/TBS + 0.1% (v/v) Tween-20. Following three washes in TBS + Tween, the samples were incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (TMB Single Solution, Life Technologies) was added, and the absorbance at 650 nm was measured. The resulting data show that α-lactalbumin was secreted using the native α-lactalbumin signal peptide or the OST1 signal peptide (Figure 5).

To analyze samples via Western blot, one volume of sample was combined with an equal volume of SDS-PAGE sample buffer and run on a 10% polyacrylamide gel. The proteins were transferred to a nitrocellulose membrane, which was blocked by treating with 1% BSA/TBS for 1 hr. After incubating for 1.5 hr with primary antibody diluted in 1% BSA/TBS+Tween, the blot was washed three times in TBS+Tween. The blot was then incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (1-Step Ultra TMB Blotting Solution, Thermo Fisher) was added. After staining was completed, the blot was washed in distilled water.

Beta-Lactoglobulin

Strain Constructions

Three plasmids were assembled, placing the expression of bovine beta-lactoglobulin (bvLGB) under the control of either a methanol-induced promoter (P_{AOX1} in pLH37) or one of two constitutive promoters (P_{GAP} in pLH44, or P_{PGK} in pLH45).

Prior to transformation, 20 µg pLH37 was linearized by digestion with the restriction enzyme SacI. The same amounts of pLH44 and pLH45 were linearized with

the enzyme ApaLI. The digested plasmids were then concentrated by ethanol precipitation, and resuspended in 10 µl distilled water.

Competent *Pichia pastoris* cells were prepared as follows: A culture of *P. pastoris* was grown to log phase (OD600 ~1.0) in YPD media (10 g/L yeast extract, 20 g/L peptone, 20 g/L dextrose). A 1.5 mL aliquot was harvested by centrifugation, then resuspended in 1 mL of a 1:1 mixture of YPD+20 mM HEPES (pH 8):1M lithium acetate. After adding 10 µL 1 M dithiothreitol, the cells were incubated for 15 min at 30°C in a shaker at 300 rpm. The cells were pelleted by centrifugation and washed three times in 1 mL ice cold 1 M sorbitol. After the final wash, the cells were resuspended in 50 µL 1 M sorbitol.

The cells were combined with the linearized plasmid DNA in a chilled 2 mm electroporation cuvette, and subjected to a 1.5 kV pulse (25 µF, 200 Ω). The cells were transferred to a culture tube with 200 µL cold 1:1 YPD:1 M sorbitol, and allowed to recover for 2 hours at 30°C (300 rpm). Finally, the cells were plated onto YPD agar plates containing zeocin and grown for two days at 30°C.

Protein Expression

To evaluate expression in clones transformed with the plasmid containing a methanol-inducible promoter (pLH37), individual clones were grown in 750 µL BMD1% (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml biotin, 1.1% glucose) at 30°C, 300 rpm. After 48 hours, 900 µL of culture was used to inoculate 750 µL BMM2 (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 1% methanol). After 24 hours, 150 µL BMM10 (BMM10: 0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 5% methanol), and samples were harvested for analysis after one additional day.

To evaluate expression in clones transformed with a plasmid supporting constitutive expression (pLH44 or pLH45), individual clones were grown overnight in PG media (20 g/L peptone, 2% glycerol) at 30°C with shaking at 300 rpm. The cultures were diluted 1:10 in minimal sulfate media:

Glucose 20 g/L
Calcium Chloride (CaCl2) 1 g/L

Sodium phosphate (Na2PO4) 24 g/L
Potassium sulfate (K2SO4) 18.2 g/L
Magnesium sulfate (MgSO4-7H2O) 14.9 g/L
Ammonium sulfate (NH4)2SO4 9 g/L
EDTA (Ethylenediaminetetraacetic acid) 65.25 mg/L
FeSO4-7H2O (Iron Sulfate heptahydrate) 12.18 g/L
ZnSO4-7H2O (Zinc sulfate heptahydrate) 25.0125 g/L
CaCl2-2H2O (Calcium chloride dihydrate) 12.615 g/L
CuSO4-5H2O (Copper sulfate pentahydrate) 2.175 g/L
NaMoO4-2H2O (Sodium molybdate dihydrate) 2.088 g/L
CoCl2-6H2O (Cobalt chloride hexahydrate) 2.0445 g/L
MnCl2-4H2O (Manganese chloride tetrahydrate) 1.392 g/L
Biotin 0.2175 g/L

After 48 hours, samples were harvested for analysis.

Analysis

Protein expression was analyzed in samples of culture that were centrifuged to remove the cell mass. The clarified supernatant was then evaluated by ELISA and Western blot.

To measure protein titers via ELISA, 25 µL of each sample were placed in a half-area 96 well microtiter plate, and allowed to bind overnight at 4°C. After removing the samples, the binding surface was blocked by filling each well with 1% (w/v) bovine serum albumin (BSA) dissolved in Tris Buffered Saline (50 mM Tris, pH 7.6, 150 mM NaCl) and incubating for 1 hour at room temperature. The samples were then incubated for 1.5 hr in primary antibody that was diluted in 1% BSA/TBS + 0.1% (v/v) Tween-20. Following three washes in TBS + Tween, the samples were incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (TMB Single Solution, Life Technologies) was added, and the absorbance at 650 nm was measured. The resulting data show the secretion of β-lactoglobulin (Figure 6).

To analyze samples via western blot, one volume of sample was combined with an equal volume of SDS-PAGE sample buffer and run on a 10% polyacrylamide gel. The proteins were transferred to a nitrocellulose membrane, which was blocked by treating with 1% BSA/TBS for 1 hr. After incubating for 1.5 hr with primary antibody

diluted in 1% BSA/TBS+Tween, the blot was washed three times in TBS+Tween. The blot was then incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (1-Step Ultra TMB Blotting Solution, Thermo Fisher) was added. After staining was completed, the blot was washed in distilled water. The resulting Western blot shows that β-lactoglobulin was secreted from the recombinant yeast (Figure 7).

Bovine Caseins

Dual expression plasmids were built, to support expression of α-S1-casein with β-casein in one plasmid, and α-S2-casein with kappa-casein in another plasmid. These pairings were chosen because the molar ratio of α-S1:α-S2:β:κ in fluid milk is approximately 5.5 : 1.5 : 4.0 : 1.5; it is therefore desirable to have a similar number of copies of α-S1-casein and beta-casein, and a similar number of copies of α-S2-casein and kappa-casein.

Beta-casein and α-S2-casein were placed under the control of the constitutive PGAP promoter in their respective plasmids, while α-S1-casein and κ-casein were placed under the control of the constitutive PPGK promoter.

In order to direct the proteins into the secretory pathway, the proteins were expressed with either their native signal peptide (pLH46 and pLH47), or the OST1 signal peptide (pLH48 and pLH49). In addition, plasmids were made in which one protein was expressed with its native signal peptide, and the other protein with the OST1 signal peptide:

pLH0050	OST1-beta, native-α-S1
pLH0051	native-β, OST1-α-S1
pLH0054	OST1-α-S2, native-κ
pLH0055	native-α-S2, OST1-κ

To generate strains expressing all four casein proteins, yeast cells were first transformed with the plasmid encoding beta-casein and α-S1-casein. Prior to transformation, 20 µg of each plasmid was linearized with the enzyme ApaLI. The

digested plasmids were then concentrated by ethanol precipitation, and resuspended in 10 µl distilled water.

Competent *Pichia pastoris* cells were prepared as follows: A culture of P. pastoris was grown to log phase (OD600 ~1.0) in YPD media (10 g/L yeast extract, 20 g/L peptone, 20 g/L dextrose). A 1.5 mL aliquot was harvested by centrifugation, then resuspended in 1 mL of a 1:1 mixture of YPD+20 mM HEPES (pH 8):1M lithium acetate. After adding 10 µL 1 M dithiothreitol, the cells were incubated for 15 min at 30°C in a shaker at 300 rpm. The cells were pelleted by centrifugation and washed three times in 1 mL ice cold 1 M sorbitol. After the final wash, the cells were resuspended in 50 µL 1 M sorbitol.

The cells were combined with the linearized plasmid DNA in a chilled 2 mm electroporation cuvette, and subjected to a 1.5 kV pulse (25 µF, 200 Ω). The cells were transferred to a culture tube with 200 µL cold 1:1 YPD:1 M sorbitol, and allowed to recover for 2 hours at 30°C (300 rpm). Finally, the cells were plated onto PG agar (20 g/L peptone, 2% (v/v) glycerol, 2% agar) plates containing zeocin and grown for two days at 30°C.

Six clones from the beta+alphaS1 plates were then grown in culture, and made competent for DNA uptake using the procedure described above. They were then transformed with the linearized alphaS2+kappa plasmids, and grown for two days at 30°C on PG plates containing G418.

Expression

To evaluate the production of bovine casein proteins, five clones expressing casein and a wildtype yeast negative control were grown overnight in PG media (20 g/L peptone, 2% glycerol) at 30°C with shaking at 300 rpm. All five of the casein-expressing clones expressed alphaS2- and κ-casein with the respective native casein signal peptides. Clones sLH115, 116, 117, and 118 expressed β-casein and α-S1-casein with the respective native signal peptides; clone sLH122 expressed beta-casein and α-S1-casein with the OST1 signal peptide. The cultures were diluted 1:10 in minimal sulfate media:

Glucose 20 g/L
Calcium Chloride (CaCl2) 1 g/L

Sodium phosphate (Na2PO4) 24 g/L
Potassium sulfate (K2SO4) 18.2 g/L
Magnesium sulfate (MgSO4-7H2O) 14.9 g/L
Ammonium sulfate (NH4)2SO4 9 g/L
EDTA (Ethylenediaminetetraacetic acid) 65.25 mg/L
FeSO4-7H2O (Iron Sulfate heptahydrate) 12.18 g/L
ZnSO4-7H2O (Zinc sulfate heptahydrate) 25.0125 g/L
CaCl2-2H2O (Calcium chloride dihydrate) 12.615 g/L
CuSO4-5H2O (Copper sulfate pentahydrate) 2.175 g/L
NaMoO4-2H2O (Sodium molybdate dihydrate) 2.088 g/L
CoCl2-6H2O (Cobalt chloride hexahydrate) 2.0445 g/L
MnCl2-4H2O (Manganese chloride tetrahydrate) 1.392 g/L
Biotin 0.2175 g/L

After 48 hours, samples were harvested for analysis.

Analysis

Protein expression was analyzed in samples of culture that were centrifuged to remove the cell mass. The clarified supernatant was then evaluated by ELISA and western blot.

To measure protein titers via ELISA, 25 µL of each sample were placed in a half-area 96 well microtiter plate, and allowed to bind overnight at 4°C. After removing the samples, the binding surface was blocked by filling each well with 1% (w/v) bovine serum albumin (BSA) dissolved in Tris Buffered Saline (50 mM Tris, pH 7.6, 150 mM NaCl) and incubating for 1 hour at room temperature. The samples were then incubated for 1.5 hr in primary antibody that was diluted in 1% BSA/TBS + 0.1% (v/v) Tween-20. Following three washes in TBS + Tween, the samples were incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (TMB Single Solution, Life Technologies) was added, and the absorbance at 650 nm was measured. The ELISA data show that the different yeast strains can secrete α-S1 casein and β-casein into the culture medium (Figure 8).

To analyze samples via western blot, one volume of sample was combined with an equal volume of SDS-PAGE sample buffer and run on a 10% polyacrylamide gel.

The proteins were transferred to a nitrocellulose membrane, which was blocked by treating with 1% BSA/TBS for 1 hr. After incubating for 1.5 hr with primary antibody diluted in 1% BSA/TBS+Tween, the blot was washed three times in TBS+Tween. The blot was then incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (1-Step Ultra TMB Blotting Solution, Thermo Fisher) was added. After staining was completed, the blot was washed in distilled water.

The data in this Example show that the different expression vectors described herein can be used to generate transgenic yeast strains that secrete the different milk proteins.

Example 7. Method of Making a Composition

An exemplary composition described herein was generated using the specific method described below. A schematic diagram of this method is shown in Figure 9.

To prepare the milk product, laboratory equipment such as mixers, stirring plates, and sonicators are employed. For large scale production, standard fluid milk processing equipment should be used.

As Figure 9 shows, there are three main components to this method of making a composition. These steps include:

A. Preparation of the protein solution
B. Preparation of the oil mixture
C. Reconstitution of the milk solids

In step A, powdered micellar casein protein and whey protein are combined and blended (step 1) and subsequently mixed with deionized (DI) water (step 2) to obtain the protein solution **1**. Typically, this contains 2.8% powered micellar casein, 0.7% powered whey protein, and 85.5% water in this solution. The mixing vessel is covered to prevent evaporation of water. This mixing is performed by mixers, stirring plates, or a sonicator in a sufficient period of time (approximately 30 minutes). This mixing time ensures all

proteins are dispersed in the water. The mixing speed has been optimized as medium which provides enough force to disperse the proteins and avoids the entrapment of air in the solution. The water content can be adjusted according to the usage of other ingredients.

In step 3, separate solutions of $CaCl_2$, KH_2PO_4, and Na_3 citrate in water are the mineral sources utilized to prepare similar mineral profile as native bovine milk. In a typical instance, $CaCl_2$ solution concentration is 0.1 g/mL, KH_2PO_4 is 0.27 g/mL, and Na_3citrate solution is 0.21 g/ml Na_3citrate. The water used to prepare KH_2PO_4 with Na_3citrate solution is usually warm to make sure the complete dissolution of KH_2PO_4. During the mixing of protein solution **1**, 0.015% $CaCl_2$ is added slowly (step 4). The volume of $CaCl_2$ solution used is adjusted according to the weight percent of $CaCl_2$ needed. The mixing continues for approximately 30 minutes to allow the complete interaction between proteins and Ca^{2+} ions. Subsequently, 0.27% KH_2PO_4 and 0.21% Na_3citrate are divided to 5 portions and each portion is added slowly into the mixing solution at an interval time of 5 to 10 minutes (step 5). 0.085% $CaCl_2$ is divided to 4 portions and each portion is added slowly into the mixing solution at an interval time of 5-10 minutes (step 6). The mixing continues for at least 30 minutes, preferably 1-2 hours, to obtain the protein solution 2.

In the process B, low speed mixing is sufficient to achieve the homogeneous mixing of different oil ingredients. The percent of each component used below for preparing the oil mixture 1 is based on the total oil mixture 1 weight. Initially, 65% sunflower oil, 29% coconut oil, and 2% tributyrin are mixed together form the oil base (step 7). The sunflower oil and coconut oil is deodorized to prevent an unwanted aroma. The combination of sunflower oil, coconut oil, and tributyrin can mimic a similar fatty acid profile as the native milk. The oil base ingredient and its content can be adjusted according to different needs (different types of products). The aroma mixture is prepared by mixing different the aroma components in the sunflower oil (step 8). The compounds used to mimic the aroma contain, but are not limited to ethyl butyrate, δ-decalactone, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, δ-undecalactone, acetoin, furfuryl alcohol, furfural, 2-methylfurfural, and 2-methylpyrazine. Their contents can be adjusted by different applications and preference. 2.5% mono- and di-glycerides, 0.6%

free fatty acids, 0.5% phospholipids, and 0.4% aroma mixture are added to prepare the oil mixture **1** with mixing (step 9). In a typical instance, free fatty acids contain 0.15% butyric acid and 0.45% hexanoic acid. Soy lecithin is used as the phospholipid source. Soy lecithin is readily available and is inexpensive. A β-carotene solution is prepared in sunflower oil at a concentration of 0.5 mg/g (step 10). 4% of oil mixture 1 and 0.06% the β-carotene solution are mixed together to obtain the oil mixture 2 (step 11). The usage of β-carotene is adjusted to achieve different color levels of the milk. The usage of oil mixture 1 can also be adjusted according to different milk product applications.

In the process C, oil mixture 2 is added slowly to protein solution 2 and mixed thoroughly to prepare product mixture 1 (step 12). The mixing can be performed by mixers or sonicators. In a typical instance, oil mixture 2 and protein solution 2 are mixed under medium to high speed to ensure sure the oil is uniformly dispersed in the aqueous solution. Subsequently, sonication is applied to break down the oil globules into smaller size, which leads to an increase of their stability in the solution. It is necessary to prevent the entrapment of air bubbles in the solution during mixing. A mixing time of least 20 minutes is utilized to stir the oil mixture 2 into the aqueous solution and allow the thorough dispersion. A 4% maltose solution is added into product mixture 1 and was mixed continuously for an additional 30 minutes to yield product mixture 2 (step 13). The sweetness can be adjusted by the sugar content according to different applications. The source of the sugar can also be adjusted according to requests. Extra DI water may be required to make up the final total weight to 100%.

No intensive homogenization, pasteurization, and sterilization is included in this process. However, it will be necessary to apply these steps to prepare the product mixture in the process C for a scale-up production.

Equipment Used

Mixer: IKA-Labortechnik RW16 Basic, speed level (4-6)
Tip sonicator: Qsonica Model CL-188, Amplitude 70%
Water bath sonicator: Bransonic Model 1510R-MT

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Example 8. Example Formulations

Example formulations compositions that have a similar taste and texture profile as whole milk, cream, high protein milk, fat-free milk, and sugar-free milk are provided in Tables 11-15 below.

As can be appreciated in the art, the compositions listed in Tables 11-15 are made by making the necessary modifications to the process described in Example 7.

Table 11. Composition like Whole Milk

Total Sample Weight 100 g

Protein Component 3 g	Wt%	Amount in Section	Weight Percent in 100 g Sample
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Fat 3.9 g			
Sunflower Oil	65%	2.54 g	2.54%
Coconut Oil	29%	1.13 g	1.13%
Tributyrin	2%	0.08 g	0.08%
Mono and Di Glycerides	2.50%	0.098 g	0.098%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.023 g	0.023%
Phospholipids	0.50%	0.020 g	0.02%
Aroma Compounds 0.4 %	0.40%	0.016 g	0.016%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		88.56 g	88.56%
Aroma Compounds List			
δ–Decalactone			
Ethyl butyrate			
2-furyl methyl ketone			
2,3-pentanedione			
γ–Undecalactone			
δ–Undecalactone			

Table 12. Composition like Cream

Total Sample Weight 100 g

Protein Component 3 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Fat 40 g			
Sunflower Oil	65%	26 g	26.0%
Coconut Oil	29%	11.6 g	11.6%
Tributyrin	2%	0.8 g	0.8%
Mono and Di Glycerides	2.50%	1 g	1.0%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.24 g	0.24%
Phospholipids	0.50%	0.2 g	0.2%
Aroma Compounds 0.4 %	0.40%	0.16 g	0.16%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		52.46 g	52.46%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

Table 13. Composition like Protein Rich Milk

Total Sample Weight 100 g

Protein Component 6 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	4.8 g	4.80%
Whey Protein	20%	1.2 g	1.20%
Fat 3.9 g			
Sunflower Oil	65%	2.54 g	2.54%
Coconut Oil	29%	1.13 g	1.13%
Tributyrin	2%	0.08 g	0.08%
Mono and Di Glycerides	2.50%	0.098 g	0.098%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.023 g	0.023%
Phospholipids	0.50%	0.020 g	0.02%
Aroma Compounds 0.4 %	0.40%	0.016 g	0.016%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		85.56 g	85.56%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

Table 14. Composition like Fat-Free Milk

Total Sample Weight 100 g

Protein Component 3 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		92.46 g	92.46%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

Table 15. Composition like Sugar Free Milk

Total Sample Weight 100 g

Protein Component 3 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Fat 3.9 g			
Sunflower Oil	65%	2.54 g	2.54%
Coconut Oil	29%	1.13 g	1.13%
Tributyrin	2%	0.08 g	0.08%
Mono and Di Glycerides	2.50%	0.098 g	0.098%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.023 g	0.023%
Phospholipids	0.50%	0.020 g	0.02%
Aroma Compounds 0.4 %	0.40%	0.016 g	0.016%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Stevia		4 g	4%
Water		88.56 g	88.56%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

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Example 9. Exemplary Composition

An exemplary composition made by the presently described methods is shown in Figure 10. The composition in Figure 10 has a similar look (color), viscosity, foaming property, flavor, and nutritional value as a mammal-produced milk. The composition shown in Figure 10 comprises mammal-derived proteins.

CLAIMS

1. A food composition that is suitable as a dairy substitute-, said food composition comprising:

(i) a recombinant β-lactoglobulin protein and a recombinant α-lactalbumin protein, wherein one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell;

(ii) one or more sweetening agents;

(iii) ash; and

(iv) optionally, one or more lipids,

wherein:

the food composition has one or more characteristics of a dairy food product selected from the group consisting of: taste, aroma, appearance, handling, mouthfeel, density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification; and the food composition does not comprise any other milk proteins than those in (i).

2. The food composition of claim 1, wherein:

the recombinant β-lactoglobulin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell; and

the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell.

3. The food composition of claim 1 or 2, wherein the composition comprises:

a final concentration of α-lactalbumin protein of about 0.4 weight % to about 2.5 weight %; and

a final concentration of β-lactoglobulin protein of about 2.5 weight % to about 4.5 weight %.

~~3~~4. The food composition of claim 1, wherein the fungal cell is selected from the group consisting of: a strain of *Aspergillus nidulans*, a strain of *Aspergillus niger*, a strain of *Aspergillus oryzae*, a strain of *Candida albicans*, a strain of *Trichoderma reesei*, a strain of *Chrysosporium lucknowense*, a strain of *Fusarium gramineum*, a strain of *Fusarium venenatum*, a strain of *Physcomitrella patens*, ~~and~~ a strain of *Neurospora crassa*, a strain of *Pichia pastoris*, a strain of *Pichia flnlandica*, a strain of *Pichia trehalophila*, a strain of *Pichia koclamae*, a strain of *Pichia membranaefaciens*, a strain of *Pichia minuta* (*Ogataea minuta*, *Pichia lindneri*), a strain of *Pichia opuntiae*, a strain of *Pichia thermotolerans*, a strain of *Pichia salictaria*, a strain of *Pichia guercuum*, a strain of *Pichia pijperi*, a strain of *Pichia stiptis*, a strain of *Pichia methanolica*, and a strain of *Hansenula polymorpha*.

~~4~~5. The food composition of claim 1, wherein one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein has been secreted by a fungal cell.

~~5~~6. The food composition of claim 1, wherein the food composition does not include an animal-derived compound.

~~6~~7. The food composition of claim 1, wherein the food composition does not include any compound isolated from a milk produced by a mammal.

~~7~~8. The food composition of claim 1, wherein the food composition does not include at least one compound otherwise present in a mammal-produced milk.

~~8~~9. The food composition of claim 1, wherein the food composition comprises a plurality of micelles.

~~9~~10. The food composition of claim 8, wherein the plurality of micelles comprises one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein.

~~10~~11. The food composition of claim 1, wherein the food composition comprises one or more lipids selected from the group consisting of: plant-derived oils, plant-derived monoglycerides, plant-derived diglycerides, plant-derived triglycerides, plant-derived free fatty acids, and plant-derived phospholipids.

12. The food composition of claim 11, wherein the total concentration of one or more lipids is up to about 45 weight %.

~~11~~13. The food composition of claim 1, wherein the one or more sweetening agents are saccharides selected from the group consisting of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose.

~~12~~14. The food composition of claim 1, wherein the one or more sweetening agents are artificial sweeteners selected from the group consisting of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihydrochalcone, neotame, and P-4000.

~~13~~15. The food composition of claim 1, wherein the ash comprises one or more of:

calcium, phosphorous, phosphate, potassium, sodium, citrate, sulfate, carbonate, chloride, magnesium, iron, copper, zinc, manganese, selenium, iodine, retinol, carotene, vitamins, vitamin D, vitamin E, vitamin B12, thiamin, and riboflavin, or a salt(s) thereof.

~~14~~16. The food composition of claim 1, wherein the ash has a final concentration in the food composition of about 5% w/w to about 7% w/w.

17. The food composition of claim 1, wherein the ash comprises one or more of:

$CaCl_2$ at a final concentration of about 0.005% w/w to about 0.02% w/w; KH_2PO_4 at a final concentration of about 0.02% w/w to about 0.04% w/w; or Na_3citrate at a final concentration of about 0.01% w/w to about 0.03% w/w.

~~15~~18. The food composition of claim 1, wherein the food composition is a dairy substitute selected from the group consisting of: a yogurt, a cheese, a milk, a butter~~, a caseinate~~, a cream, an infant formula, an ice cream, a frozen custard, a cottage cheese, a cream cheese, a crème fraiche, and a curd.

~~16~~19. The food composition of claim 1, wherein the food composition is a powder composition.

~~17~~20. The food composition of claim ~~15~~ 18 wherein the food composition is a yogurt.

~~18~~21. The food composition of claim ~~15~~18, wherein the food composition is a butter.

~~19. The food composition of claim 15, wherein the food composition is a caseinate.~~

~~20~~22. The food composition of claim ~~15~~18, wherein the food composition is a cream.

~~21~~23. The food composition of claim ~~15~~18, wherein the food composition is an ice cream.

~~22~~24. The food composition of claim ~~15~~18, wherein the food composition is a frozen custard.

~~23~~25. The food composition of claim ~~15~~18, wherein the food composition is a cottage cheese.

~~24~~26. The food composition of claim ~~15~~18, wherein the food composition is a cream cheese.

~~25~~27. The food composition of claim ~~15~~18, wherein the food composition is a crème fraiche.

~~26~~28. The food composition of claim ~~15~~18, wherein the food composition is a curd.

~~27~~29. The food composition of claim ~~7~~8, wherein the food composition does not include lactose.

~~28~~30. The food composition of claim ~~7~~8, wherein the food composition does not include a hormone.

~~29~~31. The food composition of claim ~~15~~18, wherein the food composition is a milk.

~~30~~32. The food composition of claim ~~15~~18, wherein the food composition is a cheese.

33. The food composition of claim 1, wherein the α-lactalbumin protein comprises an amino acid sequence that is at least 90% identical to SEQ ID NO: 92.

34. The food composition of claim 1, wherein the β-lactoglobulin protein comprises an amino acid sequence that is at least 90% identical to SEQ ID NO: 100.

35. The food composition that is a dairy substitute according to claim 2, wherein:

the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to SEQ ID NO: 92; and the recombinant β-lactoglobulin protein comprises a sequence that is at least 90% identical to SEQ ID NO: 100;

the composition comprises one or more lipids; and

the dairy substitute is selected from the group consisting of: a yogurt, a cheese, a milk, a butter, a cream, an infant formula, an ice cream, a frozen custard, a cottage cheese, a cream cheese, a crème fraiche, and a curd.

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FOOD COMPOSITIONS COMPRISING RECOMBINANT MILK PROTEINS AND METHODS OF PRODUCING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Patent Application No. 62/040,393, filed on August 21, 2014, the entire contents of which are incorporated by reference.

FIELD OF THE INVENTION

The invention is directed to food compositions suitable as dairy substitutes, methods of manufacturing the same, and compositions comprising animal-free milk fats and proteins for food applications, such as milk, butter, cheese, yogurt, and cream.

BACKGROUND OF THE INVENTION

The global dairy market is estimated at $500 billion with an average annual growth rate of 4%. Bovine milk attributes to a significant portion of the market whereas plant-based alternatives account for $1 billion in the US and an estimated $700 million is estimated for lactose-intolerant milk. Bovine milk is known to have four specific caseins, α-s1-casein, α-s2-casein, β-casein, and κ-casein. Mammal- or mammalian-produced milk is a very complex fluid that includes several thousand components (e.g., if all triglycerides are identified). Mammal- or mammalin-produced milk includes water, variety of different lipids, sugar, a variety of different proteins, and a variety of different inorganic salts and compounds (see, e.g., Boland and Thompson (Eds), Milk Proteins from Expression to Food, Academic Press, 2014). Although mammal-produced milk, such as bovine milk, is considered by many to be an ideal source of nutrition, various milk alternatives to mammal- or mammalian-produced milk (e.g., bovine milk), such as plant- or nut-based milks, e.g., soy, almond, or coconut milk, have been pursued for reasons related to mammal- or mammalian-produced milk's allergenicity, lactose intolerance of certain components, personal preference, and the perceived environmental benefits of a reduced dairy industry.

For example, the environmental impact resulting from dairy effluent can result in significant levels of nitrate which has the potential to contaminate groundwater.

Groundwater forms the main source of water supply for many towns and farms where surface water supplies are limited. In the US, half the population relies completely or partially on groundwater, and similar figures are available for Europe (see, e.g., https://www.vgls.vic.gov.au/client/en_AU/search/asset/1281606/0). The presence of foodborne pathogens in milk is due to direct contact with contaminated sources in the dairy farm environment and to excretion from the udder of an infected animal. Outbreaks of disease in humans have been traced to the consumption of unpasteurized milk and have also been traced back to pasteurized milk. The major contaminants usually encountered in milk and milk products include pesticide residues, heavy metals, and aflatoxin M1 (Awasthi et al., *Indian J. Public Health* 56:95-99, 2012).

Existing dairy milk alternatives, such as soy, almond, or coconut milk fall short both in flavor and in functionality; moreover, a large part of the industrial and cultural significance of dairy milk stems from its usefulness in derivative products, such as cheese, yogurt, cream, or butter. Non-dairy plant-based milks, while addressing environmental and health concerns (and while providing adequate flavor for a small segment of the population), almost universally fail to form such derivative products when subjected to the same processes used for dairy milk.

What is needed, therefore, is a food composition that is suitable as a dairy substitute that has desirable flavor and performance characteristics, e.g., a composition that replicates dairy flavors, minimizes foodborne pathogens, and has a lower environmental impact in production, while retaining the ability to be used for derivative or downstream applications of dairy milk and while providing a similar nutritional profile as a mammal- or mammalian-produced milk.

SUMMARY OF THE INVENTION

The present invention is based on the discovery that only a subset of components in mammal-produced milk can be used to generate a composition that has a similar flavor, a similar appearance, a similar nutritional value, a similar aroma, and a similar mouth feel of mammal-produced milk.

Provided herein are compositions including: about 0.3 g/L to about 1.1 g/L κ-casein protein; about 1.25 g/L to about 4.9 g/L β-casein protein; a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %, where the composition does not include an animal-derived component.

Also provided are compositions that include: about 0.3 g/L to about 1.1 g/L κ-casein protein; about 1.25 g/L to about 4.9 g/L β-casein protein; a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %, where the composition: does not include at least one component found in a mammal-produced milk; includes at least one component not present in a mammal-produced milk; and/or includes a higher or lower concentration of at least one component as compared to the concentration of the at least one component in a mammal-produced milk. In some embodiments of these compositions, the composition includes a higher concentration of at least one component selected from the group of: calcium, phosphate, B complex vitamins, vitamin A, vitamin D, vitamin E, and vitamin K, as compared to the concentration of the one or more components in a mammal-produced milk. In some embodiments of these compositions, the composition does not include at least one component found in a mammal-produced milk selected from the group of: lactose, bacteria, mycobacteria, allergens, viruses, prions, yeast, growth hormones, leukocytes, antibiotics, heavy metals, immunoglobulins, lactoferrin, lactoperoxidase, and lipase. In some embodiments of these compositions, wherein the composition includes at least one component not present in a mammal-produced milk selected from the group of an artificial sweetener, a plant-derived lipid, a β-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern.

Also provided are compositions including: about 0.3 g/L to about 1.1 g/L κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; about 1.25 g/L to about 4.9 g/L β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %.

Also provided are composition including a micelle including a κ-casein protein and a β-casein protein, where the micelle has a diameter of about 50 nm to about 350 nm, and the κ-casein protein and the β-casein protein are unglycosylated or have a non-mammalian glycosylation pattern. In some embodiments of these methods, the compositions include a final concentration of micelles of about 2.0 weight % to about 6 weight %. In some embodiments of these compositions, the ratio of the β-casein protein to the κ-casein protein in the micelle is about 3.5:1 to about 5.5:1 (e.g., about about 4:1 to about 5:1). In some embodiments of these methods, the composition further includes: a final total concentration of one or more lipids of about 0 weight % to about 45 weight %; a final total concentration of one or more flavor compounds of about 0.01 weight % to about 6 weight %; a final total concentration of about 0.1 weight % to about 6 weight % of one or more sweetening agents; and a final total concentration of ash of about 0.15 weight % to about 1.5 weight %.

In some embodiments of any of the compositions described herein, the composition comprises about 0.27 weight % to about 0.75 weight % κ-casein protein and about 1.23 weight % to about 3.27 weight % β-casein. In some embodiments of any of the compositions described herein, the final total concentration of one or more lipids of is about 0 weight % to about 45 weight %.

In some embodiments of any of the compositions described herein, the one or more lipids are selected from the group consisting of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some embodiments of any of the compositions described herein, the composition includes one of more of: a final concentration of sunflower oil of about 1 weight % to about 28 weight

%; a final concentration of coconut oil of about 0.5 weight % to about 14 weight %; a final concentration of tributyrin of about 0.05 weight to about 1.0 weight %; a final total concentration of monoglycerides and diglycerides of about 0.08 weight % to about 1.2 weight %; a final total concentration of free fatty acids of about 0.02 weight % to about 0.28 weight %; and a final total concentration of phospholipids of about 0.02 weight % to about 0.3 weight percent. In some embodiments of any of the compositions described herein, the free fatty acids comprise at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some embodiments of any of the compositions described herein, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of any of the compositions described herein, the monoglycerides and diglycerides are plant-derived monoglycerides and diglycerides, or are bacteria-derived monoglycerides and diglycerides.

In some embodiments of any of the compositions described herein, the flavor compounds include at least one flavor compound selected from the group consisting of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of any of the compositions described herein, the one or more sweetening agents is a saccharide. In some embodiments of any of the compositions described herein, the saccharide is selected from the group consisting of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose. In some embodiments of any of the compositions described herein, the one or more sweetening agents is an artificial sweetener. In some embodiments of any of the compositions described herein, the artificial sweetener is selected from the group of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000.

In some embodiments of any of the compositions described herein, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of any of the compositions described herein, the ash comprises one

or more (e.g., one, two, or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. In some embodiments of any of the compositions described herein, the $CaCl_2$ has a final concentration of about 0.05 g/L to about 0.2 g/L; the KH_2PO_4 has a final concentration of about 0.2 g/L to about 0.4 g/L; and the Na_3 citrate has a final concentration of about 0.1 g/L to about 0.3 g/L.

In some embodiments of any of the compositions described herein, the κ-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. In some embodiments of any of the compositions described herein, the β-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein.

In some embodiments of any of the compositions described herein, the composition further includes: a final concentration of α-lactalbumin protein of about 0.4 weight % to about 2.5 weight %; and/or a final concentration of β-lactoglobulin protein of about 2.5 weight % to about 4.5 weight %. In some embodiments of any of the methods described herein, the α-lactalbumin protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-lactalbumin protein. In some embodiments of any of the compositions described herein, the β-lactoglobulin protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-lactoglobulin protein.

In some embodiments of any of the compositions described herein, the composition further includes: a final concentration of α-S1-casein protein of about 11

weight % to about 16 weight %; and/or a final concentration of α-S2-casein protein of about 2 weight % to about 5 weight %. In some embodiments of any of the compositions described herein, the α-S1-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S1-casein protein; and/or the α-S2-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S2-casein protein.

In some embodiments of any of the compositions described herein, the composition further includes one or more of: serum albumin, lactoferrin, and transferrin. In some embodiments of any of the compositions described herein, the serum albumin is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth serum albumin; the lactoferrin is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth lactoferrin; and/or the transferrin is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth transferrin protein.

Some embodiments of any of the compositions described herein, further include one or more color balancing agents. In some embodiments of any of the compositions described herein, the one or more color balancing agents is β-carotene or annatto. In

some embodiments of any of the compositions described herein, the composition has a pH of about 6.2 to about 7.2 (e.g., about 6.2 to about 6.8).

Also provided are compositions including: a mammalian-produced milk or a processed mammal-produced milk; and one or both of a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern, and a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern. In some embodiments of these methods, the final concentration of the κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern in the composition is 0.02 weight % to about 3.0 weight %. In some embodiments of these methods, the final concentration of the β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern in the composition is 0.02 weight % to about 3.0 weight %. In some embodiments of these methods, the final concentration of the κ-casein protein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is about 0.02 weight % to about 0.6 weight %; and the final concentration of the β-casein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is about 0.02 weight % to about 2.5 weight %.

Also provided are powder compositions that include: a final concentration of κ-casein protein of about 3.6 weight % to about 5.4 weight %; a final concentration of β-casein protein of about 16.3 weight % to about 24.5 weight %; a final concentration of a sweetening agent of about 35 weight % to about about 40 weight %; a final concentration of one or more lipids of about 25 weight % to about 30 weight %; a final concentration of ash of about 5 weight % to about 7 weight %; and a final concentration of water of about 2 weight % to about 5 weight %, where the κ-casein protein is an unglycosylated and/or has a non-mammalian glycosylation pattern, and/or the β-casein protein is an unglycosylated and/or has a non-mammalian glycosylation pattern.

Also provided are nucleic acids that include: a promoter; a sequence encoding a signal sequence; a sequence encoding a milk protein; and a yeast termination sequence, where the promoter is operably linked to the signal sequence, the signal sequence is operably linked to the sequence encoding the milk protein, and the terminal sequence is operably linked to the sequence encoding the milk protein. In some embodiments of these nucleic acids, the promoter is a constitutive promoter. In some embodiments of

these nucleic acids, the promoter is an inducible promoter. In some embodiments of these nucleic acids, the signal sequence is a signal sequence from the encoded milk protein or a different milk protein, or is a signal sequence from a yeast mating factor. In some embodiments of these nucleic acids, the encoded milk protein is selected from the group consisting of: β-casein, κ-casein, α-S1-casein, α-S2-casein, α-lactalbumin, β-lactoglobulin, lactoferrin, or transferrin. In some embodiments of these nucleic acids, the nucleic comprises a bacterial origin of replication. In some embodiments of these nucleic acids, the nucleic acid further includes a selection marker. In some embodiments of these nucleic acids, the selection marker is an antibiotic resistance gene.

Some embodiments of these nucleic acids further include: an additional promoter sequence; an additional sequence encoding a signal sequence; a sequence encoding an additional milk protein; and an additional yeast termination sequence, where the additional promoter sequence is operably linked to the additional sequence encoding a signal sequence, the sequence encoding the signal sequence is operably linked to the sequence encoding the additional milk protein, and the sequence encoding the additional milk protein is operably linked to the additional yeast terminal sequence.

Also provided are host cells that include any of the nucleic acids described herein. In some embodiments of these host cells, the host cell is a yeast strain (e.g., a *Kluyveromyces* sp., *Pichia* sp., *Saccharomyces* sp., *Tetrahymena* sp., *Yarrowia* sp., *Hansenula* sp., *Blastobotrys* sp., *Candida* sp., *Zygosaccharomyces* sp., or *Debaryomyces* sp.).

Also provided herein are methods of producing a recombinant milk protein that is unglycosylated or has a non-mammalian glycosylation pattern, the method including: culturing any of the host cells described herein in a culture medium under conditions sufficient to allow for secretion of the milk protein that is unglycosylated or has a non-mammalian glycosylation pattern; and harvesting the milk protein that is unglycosylated or has a non-mammalian glycosylation pattern from the culture medium.

Also provided are methods of producing a micelle including a β-casein that is unglycosylated or has a non-mammalian glycosylation pattern and a κ-casein that is unglycosylated or has a non-mammalian glycosylation pattern, that include: culturing any of the host cells provided herein in a culture medium under conditions sufficient to allow

for release of the micelle from the host cell, where the host cell includes nucleic acid including a sequence that encodes a β-casein and a sequence that encodes a κ-casein.

Also provided are methods of supplementing a mammal-produced milk that include: providing a mammalian-produced milk or a processed mammalian-produced milk; and mixing into the milk at least one of: a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern; and a micelle including a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern.

Also provided are methods of producing a composition that include: sonicating a liquid including a protein mixture comprising β-casein protein and casein κ protein, or comprising micelles comprising β-casein protein and κ-casein protein; mixing ash into the liquid; adding to the liquid a mixture of one or more lipids, one or more flavor compounds, and one or more color balancing agents, and sonicating the liquid; and adding to the liquid one or more sweetening agents, thereby producing the composition. In some embodiments of these methods, the β-casein protein is unglycosylated or has a non-mammalian glycosylation pattern, and/or the κ-casein protein is unglycosylated or has a non-mammalian glycosylation pattern. In some embodiments of these methods, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of these methods, the ash added includes one or more (e.g., one, two, or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. In some embodiments of these methods, the one or more lipids comprises at least one of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some embodiments of these methods, the free fatty acids comprise at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some embodiments of these methods, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of these methods, the monoglycerides and diglycerides are plant-derived monoglycerides and diglycerides, or are bacteria-derived monoglycerides and diglycerides. In some embodiments of these methods, the flavor compounds include at least one flavor compound selected from the group consisting of:

δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of these methods, the one or more coloring balancing agent is β-carotene or annatto. In some embodiments of these methods, the one or more sweetening agents is a saccharide. In some embodiments of these methods, the saccharide is selected from the group consisting of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose. In some embodiments of these methods, the one or more sweetening agents is an artificial sweetener. In some embodiments of these methods, the artificial sweetener is selected from the group consisting of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000. In some embodiments of these methods, the pH of the liquid is between about 6.2 and about 7.4 (e.g., about 6.4 to about 6.8). In some embodiments of these methods, the β-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein; and/or the κ-casein protein is a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. In some embodiments of these methods, the protein mixture further includes one or more proteins selected from the group of: α-lactalbumin, β-lactoglobulin, α-S1-casein, α-S2-casein, lactoferrin, transferrin, and serum albumin.

Also provided is a composition produced by any of the methods described herein.

Also provided is a method of making butter, cheese, caseinate, or yogurt that include: providing any of the compositions described herein; and producing the butter, cheese, caseinate, or yogurt using any of the compositions described herein as a starting material.

Also provided are kits that include: (a) a mixture of one or more milk proteins, one or more fats, and one or flavor compounds; and (b) a mixture of ash and at least one sweetening agent. In some embodiments of these kits, the one or more milk proteins are selected from the group of: β-casein, κ-casein, α-lactalbumin, β-lactoglobulin, α-S1-casein, α-S2-casein, lactoferrin, transferrin, and serum albumin. In some embodiments of these kits, the one or more milk proteins are cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth milk proteins. In some embodiments of these kits, the one or more fats are selected from the group consisting of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some embodiments of these kits, the free fatty acids include at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some embodiments of these kits, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of these kits, the monoglycerides and diglycerides are plant-derived monoglycerides and diglycerides, or are bacteria-derived monoglycerides and diglycerides. In some embodiments of these kits, the flavor compounds comprise at least one flavor compound selected from the group consisting of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of these kits, the mixture in (a) further includes one or more color balancing agent. In some embodiments of these kits, the one or more color balancing agent is β-carotene or annatto. In some embodiments of these kits, the one or more sweetening agents is a saccharide (e.g., a saccharide selected from the group of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose). In some embodiments of these kits, the one or more sweetening agents is an artificial sweetener (e.g., an artificial sweetener selected from the group of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium

cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000). In some embodiments of any of these kits, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of these kits, the ash includes one or more (e.g., one, two, or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. Some embodiments of these kits further include instructions for making any of the compositions described herein.

Also provided are kits that include at least one of the nucleic acids described herein.

Also provided herein are dairy substitute food products including one or more isolated milk protein components, fats, carbohydrates, and ash. In some embodiments of these dairy substitute food products, the food product is non-animal derived. In some embodiments of these substitute food product, the food product includes milk, butter, cheese, caseinare, yogurt, and cream. In some embodiments of these dairy substitute food products, the isolated milk protein components include casein and whey proteins. In some embodiments of these dairy substitute food products, the casein protein further includes alpha-s1, alpha-s2, beta, and kappa-casein. In some embodiments of these dairy substitute food products, the casein protein further includes alpha-s1, beta, and kappa. In some embodiments of these dairy substitute food products, the casein protein further includes components for micelle formation. In some embodiments of these dairy substitute food products, the casein protein exhibits curdling properties at pH 4.0 – 6.0. In some embodiments of these dairy substitute food products, the casein protein is at least or equal to 2.5% (w/v) and less than or equal to 10% (w/v). In some embodiments of these dairy substitute food products, the whey protein further includes beta-lactoglobulin and alpha-lactalbumin. In some embodiments of these dairy substitute food products, the whey protein forms a polymer matrix gel. In some embodiments of these dairy substitute food products, the whey protein is at least 0.1 % (w/v) and less than or equal to 1% (w/v). In some embodiments of these dairy substitute food products, the one or more milk protein components is isolated from microbes. In some embodiments of any of these dairy substitute food products, the one or more milk protein components is isolated from recombinant microbes. In some embodiments of these dairy substitute food products,

the one or more milk protein components is synthesized in eukaryotic microbes. In some embodiments of these dairy substitute food products, the eukaryotic microbes include yeast. In some embodiments of these dairy substitute food products, the yeast include *Kleuyveromyces* sp., *Pichia* sp., Saccharomyces sp. and *Tetrahymena* sp.

In some embodiments of these substitute food products, the fats include triglycerides. In some embodiments of these dairy substitute food products, the fats comprise high-oleic oil. In some embodiments of these dairy substitute food products, the high-oleic oil further includes one or more of monounsaturates, oleic, linoleic, linolenic and saturates. In some embodiments of these dairy substitute food products, the fats comprise short chain fatty acids. In some embodiments of these dairy substitute food products, the short chain fatty acids include butanoic, hexanoic, octanoic, and decanoic acids. In some embodiments of these dairy substitute food products, one or more of the fats comprised trans-esterified fatty acids. In some embodiments of these dairy substitute food products, one or more of the fats are isolated from plants. In some embodiments of these dairy substitute food products, the plant is selected from one or more of the following: sunflower, corn, olive, soy, peanut, walnut, almond, sesame, cottonseed, canola, safflower, flax seed, palm, palm kernel, palm fruit, coconut, babassu, shea butter, mango butter, cocoa butter, wheat germ and rice bran oil. In some embodiments of these dairy substitute food products, the sugars comprise of galactose, sucrose, glucose, fructose and maltose. In some embodiments of these dairy substitute food products, the dairy substitute food product is essentially free of lactose. In some embodiments of these dairy substitute food products, the ash includes minerals. In some embodiments of these dairy substitute food products, the minerals further include one or more of the following: sodium, potassium, calcium, magnesium, phosphorus, iron, copper, zinc, chloride, manganese, selenium, iodine, retinol, carotene, vitamins, vitamin D, vitamin E, vitamin B12, thiamin and riboflavin. In some embodiments of these dairy substitute food products, the ash includes anions. In some embodiments of these dairy substitute food products, the minerals further include one or more of the following: phosphate, citrate, sulfate, carbonate, and chloride.

Also provided are methods of making a dairy substitute food product including the step of contacting one or more isolated milk protein components, interesterified fats, carbohydrates and ash. Some embodiments of these methods, further include the step of isolating one or more milk protein components is from a lower eukaryote.

Also provided are methods of altering a flavor profile of a dairy substitute product that include modulating a combination of fatty acids in a mixture including milk protein components, carbohydrates, and ash. In some embodiments of these methods, the step of modulating includes triglyceride comprising three oleic acids and short-chain triglyceride comprising butyric, one hexanoic, and one octanoic acid. In some embodiments of these methods, the step of modulating comprises increasing or decreasing one or more fatty acids comprising butyric acid, caprioc acid, caprylic acid, and capric acid. In some embodiments of these methods, the flavor profile of a dairy substitute product mimics the flavor profile of one or more dairy product. In some embodiments of these methods, the flavor profile of one or more dairy food product includes bovine milk, goat milk, soy milk, almond milk and coconut milk. In some embodiments of these methods, the flavor profile includes one or more sensory impressions selected from: buttery, nutty, sweet, sour, fruity, floral, bitter, woody, earthy, beany, spicy, metallic, sweet, musty, oily and vinegary.

Disclosed herein are methods and compositions to produce dairy substitutes. In some embodiments, methods and compositions are provided for a dairy substitute food product comprising one or more isolated milk protein components, fats, carbohydrates and ash. In certain embodiments, methods and compositions are provided for dairy substitute composition comprising casein protein and whey protein wherein the composition is essentially free of animal products and wherein the casein protein to whey protein are in a preferred (w/v) ratio. In certain other embodiments, methods are provided to modulate a flavor profile of a dairy substitute food product comprising modulating a fatty acid content in a mixture comprising milk protein components, fats, carbohydrates, and ash. Preferred steps of modulating comprises increasing or decreasing one or more fatty acids comprising butyric acid, caproic acid, caprylic acid, and capric acid. In additional embodiments, methods and compositions of the present invention provide milk protein components and fats in a desired (w/v) ratio.

In various aspects, the methods and compositions of the present invention provide for dairy substitutes that still retain their functional characteristics and organoleptic properties. In some embodiments, the core functionalities can be, but are not limited to achieving a nutritional profile similar to a conventional dairy product, and replicates one or more, if not all, of the core functionalities thereof.

In other embodiments, the core functionalities can be, but are not limited to replicating sensory characteristics that are identical or similar to the traditional dairy-based products, which include but are not limited to taste, appearance, handling and mouthfeel, desired density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification.

Preferred methods and compositions provide dairy substitute products such as milk, butter, cheese, yogurt, and cream. Provided herein are formulations for a non-dairy milk substitute comprising (3.3%) one or more isolated milk protein components, (4.0%) fats, (2.4%) carbohydrates and (0.7%) ash (w/v). Varying the fat content through modulating triglyceride levels and the fatty acid composition of the triglycerides enhances the flavor profile of the non-dairy milk substitute.

Advantages in the methods and dairy substitute compositions include reduction or removal of antibiotic residues, heavy metals, bacteria and adulterations commonly found in natural dairy products as well as reducing environmental impact.

Accordingly, certain aspects of the present invention provide animal-free dairy substitute that has desirable flavor characteristics, e.g., replicates dairy flavors, minimizes foodborne pathogens and has a lower environmental impact, while retaining the downstream applications of dairy milk.

A definition of a specific embodiment of the invention as claimed herein follows. According to an embodiment of the invention, there is provided a food composition that is suitable as a dairy substitute, said food composition comprising:

(i) a recombinant β-lactoglobulin protein and a recombinant α-lactalbumin protein, wherein one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell;

(ii) one or more sweetening agents;

(iii) ash; and

(iv) optionally, one or more lipids,

wherein:

the food composition has one or more characteristics of a dairy food product selected from the group consisting of: taste, aroma, appearance, handling, mouthfeel, density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification; and

the food composition does not comprise any other milk proteins than those in (i).

The term "comprise" and variants of the term such as "comprises" or "comprising" are used herein to denote the inclusion of a stated integer or stated integers but not to exclude any other integer or any other integers, unless in the context or usage an exclusive interpretation of the term is required.

Unless otherwise defined herein, scientific and technical terms used in connection with the present invention shall have the meanings that are commonly understood by those of ordinary skill in the art. Further, unless otherwise required by context, singular terms shall include the plural and plural terms shall include the singular. Generally, nomenclatures used in connection with, and techniques of, dairy processing, biochemistry, enzymology, molecular and cellular biology, microbiology, genetics and protein and nucleic acid chemistry and hybridization described herein are those well-known and commonly used in the art.

Methods and materials are described herein for use in the present invention; other, suitable methods and materials known in the art can also be used. The materials, methods, and examples are illustrative only and not intended to be limiting.

All publications, patents, patent applications, sequences, database entries, and other references mentioned herein are incorporated by reference to the same extent as if each individual publication, patent, patent application, sequence, database entry, or other reference was specifically and individually indicated to be incorporated by reference. In case of conflict, the present specification, including definitions, will control.

Other features and advantages of the invention will be apparent from the following detailed description and figures, and from the claims.

The terminology and description used herein is for the purpose of describing particular embodiments only and is not intended to limit the invention. As used herein, the singular forms “a,” “an,” and “the” can be intended to include the plural forms as well, unless the context clearly indicates otherwise. The terms “including,” “includes,” “having,” “has,” “with,” or variants thereof are intended to be inclusive in a manner similar to the term “comprising”.

An “isolated” RNA, DNA or a mixed polymer is one which is substantially separated from other cellular components that naturally accompany the native polynucleotide in its natural host cell, e.g., ribosomes, polymerases, and genomic sequences with which it is naturally associated.

As used herein, an “isolated” organic molecule (e.g., a fatty acid or a SCFA) is one which is substantially separated from the cellular components (membrane lipids, chromosomes, proteins) of the host cell from which it originated. As used herein, the term “isolated” with respect to protein indicates that the preparation of protein is at least 60% pure, e.g., greater than 65%, 70%, 75%, 80%, 85%, 90%, 95%, or 99% pure. The term does not require that the biomolecule has been separated from all other chemicals, although certain isolated biomolecules may be purified to near homogeneity.

The term “polynucleotide” or “nucleic acid molecule” refers to a polymeric form of nucleotides of at least 10 bases in length. The term includes DNA molecules (e.g., cDNA or genomic or synthetic DNA) and RNA molecules (e.g., mRNA or synthetic RNA), as well as analogs of DNA or RNA containing non-natural nucleotide analogs,

non-native internucleoside bonds, or both. The nucleic acid can be in any topological conformation. For instance, the nucleic acid can be single-stranded, or double-stranded, or circular.

The term "SCFA" is abbreviated for short-chain fatty acids, the term "HOSO" is abbreviated for high oleic sunflower oil, "SCTG" is abbreviated for short-chain triglycerides.

The term "milk protein component" refers to proteins or protein equivalents and variants found in milk such as casein, whey or the combination of casein and whey, including their subunits, which are derived from various sources and as further defined herein.

The term "milk protein" means a protein that is found in a mammal-produced milk or a protein having a sequence that is at least 80% identical (e.g., at least 85%, at least 90%, at least 95%, at least 96%, at least 97%, at least 98%, or at least 99% identical) to the sequence of a protein that is found in a mammal-produced milk. Non-limiting examples of milk proteins include: β-casein, κ-casein, α-S1-casein, α-S2-casein, α-lactalbumin, β-lactoglobulin, lactoferrin, transferrin, and serum albumin. Additional milk proteins are known in the art.

The term "casein protein" is art-known and represents a family of proteins that is present in mammal-produced milk and is capable of self-assembling with other proteins in the family to form micelles and/or precipitate out of an aqueous solution at an acidic pH. Non-limiting examples of casein proteins include: β-casein, κ-casein, α-S1-casein, and α-S2-casein. Non-limiting examples of sequences for casein protein from different mammals are provided herein. Additional sequences for other mammalian caseins are known in the art.

The term "mammal-produced milk" is art known and means a milk produced by a mammal.

The term "processed mammal-produced milk" means a mammal-produced milk that is processed using one or more steps known in the dairy industry (e.g., homogenization, pasteurization, irradiation, or supplementation).

The term "mammal-derived component" means a molecule or compound (e.g., a protein, a lipid, or a nucleic acid) obtained from the body of a mammal or a molecule obtained from a fluid or solid produced by a mammal.

The term "component of milk" or "milk component" is a molecule, compound, element, or an ion present in a mammal-produced milk.

The term "non-mammalian glycosylation pattern" means one of a difference in one or more location(s) of glycosylation in a protein, and/or a difference in the amount of and/or type of glycosylation at one or more location(s) in a protein produced and post-translational modified in a non-mammalian cell (e.g., a yeast cell, an insect cell, or a bacterial cell) as compared to a reference protein (e.g., the same protein produced and post-translationally modified in a mammalian cell, e.g., a CHO cell, a MEK cell, or a mammalian udder cell).

The term "lipids" means one or more molecules (e.g., biomolecules) that include a fatty acyl group (e.g., saturated or unsaturated acyl chains). For example, the term lipids includes oils, phospholipids, free fatty acids, phospholipids, monoglycerides, diglycerides, and triglycerides. Non-limiting examples of lipids are described herein. Additional examples of lipids are known in the art.

The term "plant-derived lipid" means a lipid obtained from and/or produced by a plant (e.g., monocot or dicot).

The term "sweetening agent" means a saccharide (e.g., a monosaccharide, a disaccharide, or a polysaccharide) or an artificial sweetener (e.g., a small molecule artificial sweetener or a protein artificial sweetener) that, when added to a composition, makes the composition taste sweet when ingested by a mammal, such as a human. Non-limiting examples of sweetening agents are described herein. Additional examples of sweetening agents are known in the art.

The term "ash" is an art-known term and represents one or more ions, elements, minerals, and/or compounds that can be found in a mammal-produced milk. Non-limiting ions, elements, minerals, and compounds that are found in a mammal-produced milk are described herein. Additional ions, elements, minerals, and compounds that are found in a mammal-produced milk are also known in the art.

The term "color balancing agent" or "coloring agent" means an agent added to a composition to modulate the color of the composition, e.g., to make the color of the composition appear more similar to a mammalian-produced milk. Non-limiting examples of color balancing agents or coloring agents include β-carotene and annatto. Other examples of coloring balancing agents are known in the art. A color balancing agent or a coloring agent can be produced by or obtained from a plant.

The term "micelle" means is a generally (or roughly) spherical supramolecular structure that exists as a dispersion within a composition. A micelle can have, e.g., a surface that is composed of a charged outer layer. A micelle can encapsulate one or more biomolecules. For example, a micelle can encapsulate two or more proteins (e.g., a β-casein protein and a κ-casein protein). A micelle can have diameter of between about 10 nm and about 350 nm. Additional aspects and characteristics of micelles are known in the art.

The phrase "concentration of a component in a mammal-produced milk" means the concentration of a component in the milk produced by a mammal or the mean concentration of a component in milk produced by a population of mammals of the same species.

The term "attenuate" as used herein generally refers to a functional deletion, including a mutation, partial or complete deletion, insertion, or other variation made to a gene sequence or a sequence controlling the transcription of a gene sequence, which reduces or inhibits production of the gene product, or renders the gene product non-functional. In some instances a functional deletion is described as a knockout mutation. Attenuation also includes amino acid sequence changes by altering the nucleic acid sequence, placing the gene under the control of a less active promoter, down-regulation, expressing interfering RNA, ribozymes or antisense sequences that target the gene of interest, or through any other technique known in the art. In one example, the sensitivity of a particular enzyme to feedback inhibition or inhibition caused by a composition that is not a product or a reactant (non-pathway specific feedback) is lessened such that the enzyme activity is not impacted by the presence of a compound. In other instances, an enzyme that has been altered to be less active can be referred to as attenuated.

Deletion: The removal of one or more nucleotides from a nucleic acid molecule or one or more amino acids from a protein, the regions on either side being joined together.

Knock-Out: A gene whose level of expression or activity has been reduced to zero. In some examples, a gene is knocked-out via deletion of some or all of its coding sequence. In other examples, a gene is knocked-out via introduction of one or more nucleotides into its open reading frame, which results in translation of a non-sense or otherwise non-functional protein product.

The term "synthetic milk substitute" refers to a composition that resembles, is similar to, is to equivalent to, or is nearly identical to a dairy milk.

The term "flavor" refers to the taste and/or the aroma of a food or drink.

The term "recombinant" is an art known-term. When referring to a nucleic acid (e.g., a gene), the term "recombinant" can be used, e.g., to describe a nucleic acid that has been removed from its naturally occurring environment, a nucleic acid that is not associated with all or a portion of a nucleic acid abutting or proximal to the nucleic acid when it is found in nature, a nucleic acid that is operatively linked to a nucleic acid which it is not linked to in nature, or a nucleic acid that does not occur in nature. The term "recombinant" can be used, e.g., to describe cloned DNA isolates, or a nucleic acid including a chemically-synthesized nucleotide analog. When "recombinant" is used to describe a protein, it can refer to, e.g., a protein that is produced in a cell of a different species or type, as compared to the species or type of cell that produces the protein in nature.

As used herein, an endogenous nucleic acid sequence in the genome of an organism (or the encoded protein product of that sequence) is deemed "recombinant" herein if a heterologous sequence is placed adjacent to the endogenous nucleic acid sequence, such that the expression of this endogenous nucleic acid sequence is altered. In this context, a heterologous sequence is a sequence that is not naturally adjacent to the endogenous nucleic acid sequence, whether or not the heterologous sequence is itself endogenous (originating from the same host cell or progeny thereof) or exogenous (originating from a different host cell or progeny thereof). By way of example, a promoter sequence can be substituted (e.g., by homologous recombination) for the native promoter of a gene in the genome of a host cell, such that this gene has an altered

expression pattern. This gene would now become "recombinant" because it is separated from at least some of the sequences that naturally flank it.

A nucleic acid is also considered "recombinant" if it contains any modifications that do not naturally occur to the corresponding nucleic acid in a genome. For instance, an endogenous coding sequence is considered "recombinant" if it contains an insertion, deletion, or a point mutation introduced artificially, e.g., by human intervention. A "recombinant nucleic acid" also includes a nucleic acid integrated into a host cell chromosome at a heterologous site and a nucleic acid construct present as an episome.

The term "percent sequence identity" or "identical" in the context of nucleic acid sequences refers to the residues in the two sequences which are the same when aligned for maximum correspondence. The length of sequence identity comparison may be over a stretch of at least about nine nucleotides, usually at least about 20 nucleotides, more usually at least about 24 nucleotides, typically at least about 28 nucleotides, more typically at least about 32 nucleotides, and preferably at least about 36 or more nucleotides. There are a number of different algorithms known in the art which can be used to measure nucleotide sequence identity. For instance, polynucleotide sequences can be compared using FASTA, Gap, or Bestfit, which are programs in Wisconsin Package Version 10.0, Genetics Computer Group (GCG), Madison, Wis. FASTA provides alignments and percent sequence identity of the regions of the best overlap between the query and search sequences. See, e.g., Pearson, *Methods Enzymol.* 183:63-98, 1990 (hereby incorporated by reference in its entirety). For instance, percent sequence identity between nucleic acid sequences can be determined using FASTA with its default parameters (a word size of 6 and the NOPAM factor for the scoring matrix) or using Gap with its default parameters as provided in GCG Version 6.1, herein incorporated by reference. Alternatively, sequences can be compared using the computer program, BLAST (Altschul et al., *J. Mol. Biol.* 215:403-410, 1990; Gish and States, *Nature Genet.* 3:266-272, 1993; Madden et al., *Meth. Enzymol.* 266:131-141, 1996; Altschul et al., *Nucleic Acids Res.* 25:3389-3402, 1997; Zhang and Madden, *Genome Res.* 7:649-656, 1997, especially blastp or tblastn (Altschul et al., *Nucleic Acids Res.* 25:3389-3402, 1997.

The term "substantial homology" or "substantial similarity," when referring to a nucleic acid or fragment thereof, indicates that, when optimally aligned with appropriate

nucleotide insertions or deletions with another nucleic acid (or its complementary strand), there is nucleotide sequence identity in at least about 76%, 80%, 85%, preferably at least about 90%, and more preferably at least about 95%, 96%, 97%, 98% or 99% of the nucleotide bases, as measured by any well-known algorithm of sequence identity, such as FASTA, BLAST or Gap, as discussed above.

Alternatively, substantial homology or similarity exists when a nucleic acid or fragment thereof hybridizes to another nucleic acid, to a strand of another nucleic acid, or to the complementary strand thereof, under stringent hybridization conditions. "Stringent hybridization conditions" and "stringent wash conditions" in the context of nucleic acid hybridization experiments depend upon a number of different physical parameters. Nucleic acid hybridization will be affected by such conditions as salt concentration, temperature, solvents, the base composition of the hybridizing species, length of the complementary regions, and the number of nucleotide base mismatches between the hybridizing nucleic acids, as will be readily appreciated by those skilled in the art. One having ordinary skill in the art knows how to vary these parameters to achieve a particular stringency of hybridization.

In general, "stringent hybridization" is performed at about 25 °C below the thermal melting point (Tm) for the specific DNA hybrid under a particular set of conditions. "Stringent washing" is performed at temperatures about 5 °C lower than the Tm for the specific DNA hybrid under a particular set of conditions. The Tm is the temperature at which 50% of the target sequence hybridizes to a perfectly matched probe. See Sambrook et al., Molecular Cloning: A Laboratory Manual, 2d ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., page 9.51, 1989, hereby incorporated by reference. For purposes herein, "stringent conditions" are defined for solution phase hybridization as aqueous hybridization (i.e., free of formamide) in 6xSSC (where 20xSSC contains 3.0 M NaCl and 0.3 M sodium citrate), 1% SDS at 65 °C for 8-12 hours, followed by two washes in 0.2xSSC, 0.1% SDS at 65 °C. for 20 minutes. It will be appreciated by the skilled worker that hybridization at 65 °C will occur at different rates depending on a number of factors including the length and percent identity of the sequences which are hybridizing.

The nucleic acids (also referred to as polynucleotides) of this present invention may include both sense and antisense strands of RNA, cDNA, genomic DNA, and synthetic forms and mixed polymers of the above. They may be modified chemically or biochemically or may contain non-natural or derivatized nucleotide bases, as will be readily appreciated by those of skill in the art. Such modifications include, for example, labels, methylation, substitution of one or more of the naturally occurring nucleotides with an analog, internucleotide modifications such as uncharged linkages (e.g., methyl phosphonates, phosphotriesters, phosphoramidates, carbamates, etc.), charged linkages (e.g., phosphorothioates, phosphorodithioates, etc.), pendent moieties (e.g., polypeptides), intercalators (e.g., acridine, psoralen, etc.), chelators, alkylators, and modified linkages (e.g., alpha anomeric nucleic acids, etc.) Examples of modified nucleotides are described in Malyshev et al., *Nature* 509:385-388, 2014; and Li et al., *J. Am. Chem. Soc.* 136:826-829, 2014. Also included are synthetic molecules that mimic polynucleotides in their ability to bind to a designated sequence via hydrogen bonding and other chemical interactions. Such molecules are known in the art and include, for example, those in which peptide linkages substitute for phosphate linkages in the backbone of the molecule. Other modifications can include, for example, analogs in which the ribose ring contains a bridging moiety or other structure such as the modifications found in “locked” nucleic acids.

The term “mutated” when applied to nucleic acid sequences means that nucleotides in a nucleic acid sequence may be inserted, deleted, or changed compared to a reference nucleic acid sequence. A single alteration may be made at a locus (a point mutation) or multiple nucleotides may be inserted, deleted, or changed at a single locus. In addition, one or more alterations may be made at any number of loci within a nucleic acid sequence. A nucleic acid sequence may be mutated by any method known in the art including but not limited to mutagenesis techniques such as “error-prone PCR” (a process for performing PCR under conditions where the copying fidelity of the DNA polymerase is low, such that a high rate of point mutations is obtained along the entire length of the PCR product; see, e.g., Leung et al., *Technique* 1:11-15, 1989, and Caldwell and Joyce, *PCR Methods Applic.* 2:28-33, 1992); and "oligonucleotide-directed mutagenesis" (a

process which enables the generation of site-specific mutations in any cloned DNA segment of interest; see, e.g., Reidhaar-Olson and Sauer, *Science* 241:53-57, 1988).

The term "vector" as used herein is intended to refer to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. One type of vector is a "plasmid," which generally refers to a circular double stranded DNA loop into which additional DNA segments may be ligated, but also includes linear double-stranded molecules such as those resulting from amplification by the polymerase chain reaction (PCR) or from treatment of a circular plasmid with a restriction enzyme. Other vectors include cosmids, bacterial artificial chromosomes (BAC) and yeast artificial chromosomes (YAC). Another type of vector is a viral vector, wherein additional DNA segments may be ligated into the viral genome (discussed in more detail below). Certain vectors are capable of autonomous replication in a host cell into which they are introduced (e.g., vectors having an origin of replication which functions in the host cell). Other vectors can be integrated into the genome of a host cell upon introduction into the host cell, and are thereby replicated along with the host genome. Moreover, certain preferred vectors are capable of directing the expression of genes to which they are operatively linked. Such vectors are referred to herein as "recombinant expression vectors" (or simply "expression vectors").

Promoters useful for expressing the recombinant genes described herein include both constitutive and inducible/repressible promoters. Examples of inducible/repressible promoters include galactose-inducible promoters (e.g., PLAC4-PBI). Where multiple recombinant genes are expressed in an engineered yeast, the different genes can be controlled by different promoters or by identical promoters in separate operons, or the expression of two or more genes may be controlled by a single promoter as part of an operon.

The term "operably linked" expression control sequences refers to a linkage in which the expression control sequence is contiguous with the gene of interest to control the gene of interest, as well as expression control sequences that act in trans or at a distance to control the gene of interest.

The term "expression control sequence" or "regulatory sequences" are used interchangeably and as used herein refer to polynucleotide sequences which are necessary

to affect the expression of coding sequences to which they are operably linked. Expression control sequences are sequences which control the transcription, post-transcriptional events, and translation of nucleic acid sequences. Expression control sequences include appropriate transcription initiation, termination, promoter and enhancer sequences; efficient RNA processing signals, such as splicing and polyadenylation signals; sequences that stabilize cytoplasmic mRNA; sequences that enhance translation efficiency (e.g., ribosome binding sites); sequences that enhance protein stability; and when desired, sequences that enhance protein secretion. The nature of such control sequences differs depending upon the host organism; in prokaryotes, such control sequences generally include promoter, ribosomal binding site, and transcription termination sequence. The term "control sequences" is intended to include, at a minimum, all components whose presence is essential for expression, and can also include additional components whose presence is advantageous, for example, leader sequences and fusion partner sequences.

The term "transfect", "transfection", "transfecting," and the like refer to the introduction of a heterologous nucleic acid into eukaryote cells, both higher and lower eukaryote cells. Historically, the term "transformation" has been used to describe the introduction of a nucleic acid into a yeast or fungal cell; however, herein the term "transfection" is used to refer to the introduction of a nucleic acid into any eukaryote cell, including yeast and fungal cells.

The term "recombinant host cell" ("expression host cell", "expression host system", "expression system" or simply "host cell"), as used herein, is intended to refer to a cell into which a recombinant vector has been introduced. It should be understood that such terms are intended to refer not only to the particular subject cell but to the progeny of such a cell. Because certain modifications may occur in succeeding generations due to either mutation or environmental influences, such progeny may not, in fact, be identical to the parent cell, but are still included within the scope of the term "host cell" as used herein. A recombinant host cell may be an isolated cell or cell line grown in culture or may be a cell which resides in a living tissue or organism. Preferred host cells are yeasts and fungi.

The term "yeast and filamentous fungi" include, but are not limited to any *Kluyveromyces* sp., such as *Kluyveromyces lactis*, *Kluyveromyces marxianus, Saccharomyces* sp., such as *Saccharomyces cerevisiae*, *Pichia* sp., such as *Pichia pastoris*, *Pichia finlandica*, *Pichia trehalophila*, *Pichia koclamae*, *Pichia membranaefaciens*, *Pichia minuta* (*Ogataea minuta*, *Pichia lindneri*), *Pichia opuntiae*, *Pichia thermotolerans*, *Pichia salictaria*, *Pichia guercuum*, *Pichia pijperi, Pichia stiptis*, *Pichia methanolica*, *Hansenula polymorpha*, *Candida albicans*, any *Aspergillus* sp., such as *Aspergillus nidulans*, *Aspergillus niger*, *Aspergillus oryzae*, *Trichoderma reesei*, *Chrysosporium lucknowense*, *Fusarium* sp., *Fusarium gramineum*, *Fusarium venenatum*, *Physcomitrella patens*, and *Neurospora crassa*.

As used herein, the term "predominantly" or variations thereof will be understood to mean, for instance, a) in the context of fats the amount of a particular fatty acid composition relative to the total amount of fatty acid composition; b) in the context of protein the amount of a particular protein composition (e.g., β-casein) relative to the total amount of protein composition (e.g., α-, β-, and κ-casein).

The term "about," "approximately," or "similar to" means within an acceptable error range for the particular value as determined by one of ordinary skill in the art, which can depend in part on how the value is measured or determined, or on the limitations of the measurement system. It should be understood that all ranges and quantities described below are approximations and are not intended to limit the invention. Where ranges and numbers are used these can be approximate to include statistical ranges or measurement errors or variation. In some embodiments, for instance, measurements could be plus or minus 10%.

The phrase "essentially free of" is used to indicate the indicated component, if present, is present in an amount that does not contribute, or contributes only in a *de minimus* fashion, to the properties of the composition. In various embodiments, where a composition is essentially free of a particular component, the component is present in less than a functional amount. In various embodiments, the component may be present in trace amounts. Particular limits will vary depending on the nature of the component, but may be, for example, selected from less than 10% by weight, less than 9% by weight, less than 8% by weight, less than 7% by weight, less than 6% by weight, less than 5% by

weight, less than 4% by weight, less than 3% by weight, less than 2% by weight, less than 1% by weight, or less than 0.5% by weight.

As used herein, the term "essentially free of" a particular carbohydrate, such as lactose is used to indicate that the food composition is substantially devoid of carbohydrate residues. Expressed in terms of purity, essentially free means that the amount of carbohydrate residues do not exceed 10%, and preferably is below 5%, more preferably below 1%, most preferably below 0.5%, wherein the percentages are by weight or by mole percent. Thus, substantially all of the carbohydrate residues in a food composition according to the present invention are free of, for example, lactose.

Unless indicated otherwise, percentage (%) of ingredients refer to total % by weight.

Unless otherwise indicated, and as an example for all sequences described herein under the general format "SEQ ID NO:", "nucleic acid comprising SEQ ID NO:1" refers to a nucleic acid, at least a portion of which has either (i) the sequence of SEQ ID NO:1, or (ii) a sequence complementary to SEQ ID NO:1. The choice between the two is dictated by the context. For instance, if the nucleic acid is used as a probe, the choice between the two is dictated by the requirement that the probe be complementary to the desired target.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 represents a flow diagram representative of an exemplary process to produce synthetic milk substitute.

Figure 2A represents a picture depicting precipitate of an exemplary milk protein component.

Figure 2B represents a picture depicting a pellet of an exemplary milk protein component.

Figure 3 represents an image of a silver stain SDS-PAGE gel to visualize the milk protein components.

Figure 4 is a SYPRO Ruby-stained SDS-PAGE gel showing the levels of secretion of α-lactalbumin mediated by the OST signal sequence, the native α-

lactalbumin signal sequence, and the α mating factor signal sequence as described in Example 6.

Figure 5 is shows the levels of secretion of α-lactalbumin by wildtype yeast cells or yeast cells expressing α-lactalbumin using the native α-lactalbumin signal peptide or a OST1 signal peptide (as determined by an ELISA assay as described in Example 6).

Figure 6 is shows the levels of secretion of β-lactoglobulin by wildtype yeast cells and yeast cells including a vector as described in Example 6 (using SDS-PAGE).

Figure 7 is a Western blot showing the level of secretion of β-lactoglobulin from wildtype yeast and yeast cells including a vector as described in Example 6.

Figure 8 is a graph showing the level of secreted β-casein and secreted α-S1-casein produced by wildtype yeast and yeast cells including the vectors described in Example 6.

Figure 9 is a schematic showing the steps in the process described in Example 7.

Figure 10 is an image of a composition made by a method described herein.

DETAILED DESCRIPTION OF THE INVENTION

The invention is based on the discovery that only a few components present in a mammal-produced milk provide for the texture and taste of a mammal-produced milk, and the development of compositions that have a similar taste, aroma, and mouth feel as compared to compositions produced from mammal-produced milk. In view of this discovery, provided herein are such compositions, methods of making the compositions, and kits including these compositions and mixtures useful for making these compositions.

The compositions provided herein provide for compositions that have a similar taste, mouth feel, aroma, and nutritional value as compared to compositions produced from mammal-produced milk, but lack one or more of the components of a mammal-produced milk that may be considered to be undesirable (e.g., allergens, lactose, antibiotics, hormones (e.g., stress hormones and/or growth hormones), heavy metals, bacteria (e.g., *E. coli*), viruses, and prions). The compositions provided herein also have an improved shelf-life as compared to compositions produced from mammal-produced milk, and can have an improved aroma profile as compared to compositions produced from mammal-produced milk.

Also provided herein are methods and compositions for dairy substitute food product comprising one or more isolated milk protein components, fats, carbohydrates and ash. In certain aspects the methods and compositions comprise milk or milk-like protein equivalents. Preferably, the milk protein component is essentially free of impurities. In some embodiments, the milk protein component comprises microbially derived or produced casein, whey or a combination thereof. More preferably, a method is provided to introduce an engineered nucleic acid sequence encoding one or more milk protein components. Even more preferably, the milk protein component is not animal derived. In other preferred embodiments, the recombinant milk protein component is modified to express the same phosphate groups or lack phosphate groups and/or carbohydrate groups attached to the casein proteins. By having recombinant β-casein and κ-casein having the same phosphate groups as the same proteins present in a mammal-produced milk, the recombinant β-casein and the recombinant κ-casein are able to form micelles.

The methods and techniques of the present invention are generally performed according to conventional methods well known in the art and as described in various general and more specific references that are cited and discussed throughout the present specification unless otherwise indicated. See, e.g., Sambrook et al., Molecular Cloning: A Laboratory Manual, 2d ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1989; Ausubel et al., Current Protocols in Molecular Biology, Greene Publishing Associates, 1992, and Supplements to 2002); Harlow and Lane, Antibodies: A Laboratory Manual, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1990; Taylor and Drickamer, Introduction to Glycobiology, Oxford Univ. Press, 2003; Worthington Enzyme Manual, Worthington Biochemical Corp., Freehold, N.J.; Handbook of Biochemistry: Section A Proteins, Vol I, CRC Press, 1976; Handbook of Biochemistry: Section A Proteins, Vol II, CRC Press, 1976; Essentials of Glycobiology, Cold Spring Harbor Laboratory Press, 1999.

Exemplary materials and methods for use in any of the methods and compositions are described below, and can be used in any combination. Additional materials and methods that can be used in any of the methods and compositions are also known in the art.

Casein Proteins

Casein proteins include a variety of different proteins found in mammalian milk. Non-limiting examples of casein proteins include: β-casein, κ-casein, α-S2-casein, and α-S1-casein.

As an alternative to obtaining casein proteins from mammals or mammal-produced milk for us in dairy product manufacture, the present invention provides methods and composition for the production of recombinant casein proteins. In various aspects of the present invention, methods and compositions are provided for non-animal derived casein that has similar solubility and similar turbidity, and heat stability suitable for incorporation into various food products. Preferably, the non-animal derived casein has excellent solubility similar turbidity and heat stability suitable for incorporation into various dairy substitute products. Additionally, further characterization of the protein includes less or no aggregation or precipitation during such heat treatment and is suitable for procedures such as pasteurization, concentration, etc.

Difference in function of the non-animal derived casein in milk can be characterized in terms of viscosity of the liquid; the ability of the proteins to withstand heat; the ability of the proteins to form micelles; and the ability of the proteins to hold different minerals & vitamins.

B-casein

The primary structure of human β-casein as determined by Greenberg et al. (*J. Biol. Chem.* 259:5132-5138, 1984) was shown to be a phosphorylated protein with phosphorylation sites at specific seryl and threonyl residues located near the amino terminus. A comparison of human and bovine β-caseins showed 47% identity.

Non-limiting examples of β-casein proteins are SEQ ID Nos: 25, 27, 29, 31, 33, 35, 36, 38, 40, 42, 44, and 46. Non-limiting examples of nucleic acid sequences encoding a β-casein protein are SEQ ID NOs: 26, 28, 30, 32, 34, 37, 39, 41, 43, 45, 47, and 144. A β-casein protein can be a β-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan,

mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein. Additional sequences for different β-casein proteins and nucleic acids encoding different β-casein proteins are known in the art.

A β-casein protein can also be a proteins that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-casein protein (e.g., SEQ ID Nos: 25, 27, 29, 31, 33, 35, 36, 38, 40, 42, 44, or 46). A nucleic acid encoding a β-casein protein can encode a protein that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-casein protein (e.g., SEQ ID Nos: 25, 27, 29, 31, 33, 35, 36, 38, 40, 42, 44, or 46).

Methods known for isolating β-casein from genetically engineered bacterial cells typically involve precipitating the β-casein from a supernatant derived from lysed or fractionated cells. For example, Simons, et al., *Protein Eng.* 6: 763-770 (1993), used genetically engineered *E. coli* to express bovine β-casein. The protein, which accumulated in the periplasmic spaces of the bacteria, was released into a cell suspension by osmotic shock. After centrifugation of the suspension, the β-casein in the pellet was resuspended in a cold water wash and centrifuged again. The β-casein, present in the supernatant, was precipitated by acidification with acetic acid, filtered, and further purified by HPLC. Similarly, Hansson, et al., *Protein Express. Purif.* 4:373-381, 1993, used genetically engineered *E. coli* to express β-casein. The β-casein, present in a cell lysate, was precipitated with ammonium sulfate, dissolved in ethanolamine and 6M urea, and further purified by ion-exchange chromatography. See, e.g., U.S. Patent No. 6,121,421.

Additionally, methods for isolating recombinantly produced β-casein in yeast that are simpler and more effective than known techniques are also known. Choi et al., *J. Agric. Food Chem.* 49(4):1761-1766, 2001. Expression and purification of glycosylated bovine β-casein (L70S/P71S) in *Pichia pastoris*, resulted in the observation that the

majority of bovine β-casein was not being hyperglycosylated in *P. pastoris*, and its molecular weight was estimated to be 33.6 kDa. Glycosylated bovine β-casein was normally phosphorylated to the same degree as native bovine β-casein.

K-Casein

Kappa-casein is both phosphorylated and glycosylated. The sequence of human κ-casein was determined by Brignon et al. (Fed. Eur. Biol. Soc. Lett. 188:48-54, 1985). See, e.g., U.S. Patent No. 5,710,044.

Non-limiting examples of κ-casein proteins are SEQ ID Nos: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and 23. Non-limiting examples of nucleic acid sequences encoding a κ-casein protein are SEQ ID NOs: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, and 148. A κ-casein protein can be a κ-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. Additional sequences for different κ-casein proteins and nucleic acids encoding different κ-casein proteins are known in the art.

A κ-casein protein can also be a proteins that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype κ-casein protein (e.g., SEQ ID Nos: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, or 23). A nucleic acid encoding a κ-casein protein can encode a protein that is at least 50% (e.g., at least 55%, at least 60%, at least 65%, at least 70%, at least 75%, at least 80%, at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype κ-casein protein (e.g., SEQ ID Nos: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, or 23).

α-S1-Casein

Non-limiting examples of α-S1-casein proteins are SEQ ID Nos: 48, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 72, 74, and 76. Non-limiting examples of nucleic acid sequences encoding an α-S1-casein protein are SEQ ID NOs: 49, 51, 53, 55, 58, 60, 62, 65, 67, 69, 71, 73, 75, 77, and 147. A α-S1-casein protein can be an α-S1-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S1-casein protein. Additional sequences for different α-S1-casein proteins and nucleic acids encoding different α-S1-casein proteins are known in the art.

An α-S1-casein protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S1-casein protein (e.g., SEQ ID Nos: 48, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 72, 74, or 76). A nucleic acid encoding an α-S1-casein protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S1-casein protein (e.g., SEQ ID Nos: 48, 50, 52, 54, 56, 57, 59, 61, 63, 64, 66, 68, 70, 72, 74, or 76).

α-S2-Casein

Non-limiting examples of α-S2-casein proteins are SEQ ID Nos: 78, 80, 82, 84, 86, 88, and 90. Non-limiting examples of nucleic acid sequences encoding an α-S2-casein protein are SEQ ID NOs: 79, 81, 83, 85, 87, 89, 91, 145, and 146. A α-S2-casein protein can be an α-S2-casein protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S2-casein protein. Additional

sequences for different α-S2-casein proteins and nucleic acids encoding different α-S2-casein proteins are known in the art.

An α-S2-casein protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S2-casein protein (e.g., SEQ ID Nos: 78, 80, 82, 84, 86, 88, or 90). A nucleic acid encoding an α-S2-casein protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-S2-casein protein (e.g., SEQ ID Nos: 78, 80, 82, 84, 86, 88, or 90).

Micelles including Casein Proteins

In bovine milk, casein or casein micelles usually makes up 2.5% of the entire mixture in suspension. If sufficient casein is not present the micelles, which are very important for the optimum behavior of milk, will not form. Too much protein does not go into solution properly resulting in an undesirable mixture. The casein micelle can include water and salts - mainly calcium and phosphorous. Casein micelles are easily separated and removed by centrifugation. Separation from whey is easily done by precipitating casein with an acid to lower the pH to around 4.6.

In some embodiments, a micelle can include a β-casein protein (e.g., any of the β-casein proteins described herein) and κ-casein protein (e.g., any of the κ-casein proteins described herein). In some examples, the ratio of β-casein protein to κ-casein protein in the micelle is about 2.0:1 to about 5.5:1, 2.0:1 to about 5.0:1, 2.0:1 to about 4.5:1, about 2.0:1 to about 4.0:1, about 2.0:1 to about 3.5:1, about 2.0:1 to about 3.0:1, about 2.0:1 to about 2.5:1, about 2.5:1 to about 5.0:1, about 2.5:1 to about 4.5:1, about 2.5:1 to about 4.0:1, about 2.5:1 to about 3.5:1, about 2.5:1 to about 3.0:1, 3.0:1 to about 5.0:1, about 3.0:1 to about 4.5:1, about 3.0:1 to about 4.0:1, about 3.0:1 to about 3.5:1, about 3.5:1 to about 5.0:1, about 3.5:1 to about 4.5:1, about 3.5:1 to about 4.0:1, about 4.0:1 to about 5.0:1, about 4.0:1 to about 4.5:1, or about 4.5:1 to about 5.0:1.

In some examples, the micelle has a diameter (or a population of micelles have an average diameter) of about 20 nm to about 350 nm, about 320 nm, about 300 nm, about

280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, about 100 nm, about 80 nm, about 60 nm, or about 40 nm; about 40 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, about 100 nm, about 80 nm, or about 60 nm; about 60 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, or about 100 nm; about 80 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, about 120 nm, or about 100 nm; about 100 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, about 140 nm, or about 120 nm; about 120 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, about 160 nm, or about 140 nm; about 140 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, about 180 nm, or about 160 nm; about 160 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, about 200 nm, or about 180 nm; about 180 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, about 220 nm, or about 200 nm; about 200 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, about 240 nm, or about 220 nm; about 220 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, about 260 nm, or about 240 nm; about 240 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, about 280 nm, or about 260 nm; about 260 nm to about 350 nm, about 340 nm, about 320 nm, about 300 nm, or about 280 nm; about 280 nm to about 350 nm, about 340 nm, about 320 nm, or about 300 nm; about 300 nm to about 350 nm or about 325 nm; or about 325 nm to about 350 nm.

Whey Proteins

Whey is commonly known as the by-product of cheese and is also known to be one cause for milk allergies. A typical whey composition comprises a mixture of β-lactoglobulin, α-lactalbumin, serum albumin, immunoglobulins, lactoferrin, and transferrin. Whey proteins do not contain phosphorus, and remain in solution at low pH whereas casein proteins do not. In one embodiment, a select combination of whey proteins comprising β-lactoglobulin and α-lactalbumin are used as the primary component, or at least a part of the milk protein component, of a composition. Non-limiting examples of different whey proteins are provided below.

α-Lactalbumin

Non-limiting examples of α-lactalbumin proteins are SEQ ID Nos: 92, 94, 96, and 98. Non-limiting examples of nucleic acid sequences encoding an α-lactalbumin protein are SEQ ID NOs: 93, 95, 97, 99, and 157. An α-lactalbumin protein can be an α-lactalbumin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-lactalbumin protein. Additional sequences for different α-lactalbumin proteins and nucleic acids encoding different α-lactalbumin proteins are known in the art.

An α-lactalbumin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α-lactalbumin protein (e.g., SEQ ID Nos: 92, 94, 96, or 98). A nucleic acid encoding an α-lactalbumin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype α- lactalbumin protein (e.g., SEQ ID Nos: 92, 94, 96, or 98).

β-Lactoglobulin

Non-limiting examples of β-lactoglobulin proteins are SEQ ID Nos: 100, 102, 104, and 106. Non-limiting examples of nucleic acid sequences encoding a β-lactoglobulin protein are SEQ ID NOs: 101, 103, 105, 107, and 143. A β-lactoglobulin protein can be a β-lactoglobulin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-lactoglobulin protein. Additional sequences for different β-lactoglobulin proteins and nucleic acids encoding different β-lactoglobulin proteins are known in the art.

A β-lactoglobulin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-lactoglobulin protein (e.g., SEQ ID Nos: 100, 102, 104, or 106). A nucleic acid encoding a β-lactoglobulin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype β-lactoglobulin protein (e.g., SEQ ID Nos: 100, 102, 104, or 106).

Lactoferrin

Non-limiting examples of lactoferrin proteins are SEQ ID Nos: 108, 110, 112, and 114. Non-limiting examples of nucleic acid sequences encoding a lactoferrin protein are SEQ ID NOs: 109, 111, 113, and 115. A lactoferrin protein can be a lactoferrin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth lactoferrin protein. Additional sequences for different lactoferrin proteins and nucleic acids encoding different lactoferrin proteins are known in the art.

A lactoferrin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype lactoferrin protein (e.g., SEQ ID Nos: 108, 110, 112, or 114). A nucleic acid encoding a lactoferrin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype lactoferrin protein (e.g., SEQ ID Nos: 108, 110, 112, or 114).

Transferrin

Non-limiting examples of transferrin proteins are SEQ ID Nos: 116 and 118. Non-limiting examples of nucleic acid sequences encoding a transferrin protein are SEQ ID NOs: 117 and 119. A transferrin protein can be a transferrin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth transferrin protein. Additional sequences for different transferrin proteins and nucleic acids encoding different transferrin proteins are known in the art.

A transferrin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype transferrin protein (e.g., SEQ ID Nos: 116 or 118). A nucleic acid encoding a transferrin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype transferrin protein (e.g., SEQ ID Nos: 116 or 118).

Serum Albumin

Non-limiting examples of serum albumin proteins are SEQ ID Nos: 120, 122, 124, and 126. Non-limiting examples of nucleic acid sequences encoding a serum

albumin protein are SEQ ID NOs: 121, 123, 125, and 127. A serum albumin protein can be a serum albumin protein from any mammalian species, e.g., a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth serum albumin protein. Additional sequences for different serum albumin proteins and nucleic acids encoding different serum albumin proteins are known in the art.

A serum albumin protein can also be a proteins that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype serum albumin protein (e.g., SEQ ID Nos: 20, 122, 124, or 126). A nucleic acid encoding a serum albumin protein can encode a protein that is at least 80% (e.g., at least 85%, at least 90%, at least 91%, at least 92%, at least 93%, at least 94%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or at least 99.5%) identical to a wildtype serum albumin protein (e.g., SEQ ID Nos: 20, 122, 124, or 126).

Lipids in Mammal-Produced Milk

Milk fat contains approximately 400 different fatty acids, which makes it the most complex of all natural fats. The milk fatty acids are derived almost equally from two sources, the feed and the microbial activity in the rumen of the cow and the lipids in bovine milk are mainly present in globules as an oil-in-water emulsion. Fat is present in all natural dairy products and is critical for sensory characteristics such as flavor, mouthfeel and consistency. In addition, fats provide nutrition and health benefits. The milk fat consists mainly of triglycerides, approximately 98%, while other milk lipids are diacylglycerol (about 2% of the lipid fraction), cholesterol (less than 0.5%), phospholipids (about 1%) and free fatty acids (FFA) (about 0.1%) Jensen RG, Newburg DS. Bovine milk lipids, Handbook of milk composition. Jensen RG London: Academic Press; 1995. 543–75. In addition, there are trace amounts of ether lipids, hydrocarbons, fat-soluble vitamins, flavor compounds and compounds introduced by the feed (Lindmark Mansson H., Food & Nutrition Research 2008. DOI: 10.3402/fnr.v52i0.1821)

Milk fat triglycerides are synthesized from more than 400 different fatty acids, which makes milk fat the most complex of all natural fats. Nearly all fatty acids in milk are present in trace quantities and only about 15 acids at the 1% level or higher. Many factors are associated with the variations in the amount and fatty acid composition of bovine milk lipids. They may be of animal origin, i.e. related to genetics (breed and selection), stage of lactation, mastitis and ruminal fermentation, or they may be feed-related factors, i.e. related to fibre and energy intake, dietary fats, and seasonal and regional effects. The fatty acids in the milk fat are arranged in the triglycerides in accordance with a pattern that appears to be universal among ruminants. The percent unsaturated fatty acids (e.g., oleic and linolenic) in goats do not differ from the average found for cow's milk. A major difference between the milk fat of the goat and the cow is the percentage distribution among specific short chain fatty acids. Goats have an appreciably higher proportion of capric, caprylic and caproic acids. The high amounts of these specific fatty acids are responsible for the characteristic flavor and odor associated with goat's milk. John C. Bruhn, FST, UC Davis, Davis, CA 95616-8598; Seewww.drinc.ucdavis.edu/goat1.htm; www.ncbi.nlm.nih.gov/pmc/articles/ PMC2596709/# __ffn_sectitle; Food Nutr Res. 2008; 52: 10.3402/fnr.v52i0.1821. Published online Jun 11, 2008. doi: 10.3402/fnr. v52i0.1821.

The milk fatty acids are derived almost equally from two sources, the feed and the microbial activity in the rumen of the cow. The fatty acid synthesizing system in the mammary gland of the cow produces fatty acids with even number of carbons of 4–16 carbons in length and accounts for approximately 60 and 45% of the fatty acids on a molar and weight basis, respectively. This *de novo* synthesis in the mammary gland is of the 4:0–14:0 acids together with about half of the 16:0 from acetate and β-hydroxybutyrate. Acetate and butyric acid are generated in the rumen by fermentation of feed components. The butyric acid is converted to β-hydroxybutyrate during absorption through the rumen epithelium.

Medium- and long-chain fatty acids, but mainly 18:0, may be desaturated in the mammary gland to form the corresponding monosaturated acids.

Fatty acids are not randomly esterified at the three positions of the triacylglycerol molecule (MacGibbon AHK, Taylor MW. Composition and structure of bovine milk

lipidsAdvanced dairy chemistry. Fox PFMcSweeney PLHNew York: Springer; 2006. 1–42.). The short-chain acids butyric (4:0) and caproic (6:0) are esterified almost entirely at sn-3. Medium-chain fatty acids (8:0–14:0) as well as 16:0 are preferentially esterified at positions sn-1 and sn-2. Stearic acid (18:0) is selectively placed at position sn-1, whereas oleic acid (18:1) shows preference for positions sn-1 and sn-3 (Lindmark 2008).

Milk replacers with a fat component formulated to selected fatty acid profiles exist, however, such triglycerides are not interesterified into long-chain monounsaturated fatty acid triglycerides such as found in vegetable oils. U.S. Patent Appl. No. 20140147548 discloses milk replacers for young animals with by adding medium chain triglyceride, specifically caproic, caprylic, capric and lauric fatty acid or a combination thereof.

Lipids in the Present Compositions

The lipids in any of the compositions or used in any of the methods described herein can include: one or more fats, one or more oils, one or more monoglycerides, diglycerides, and/or triglycerides, one or more free fatty acids, and one or more phospholipids. Exemplary oils, monoglycerides, diglycerides, free fatty acids, and phospholipids are described below. Additional examples of fats, oils, monoglycerides, diglycerides, triglycerides, free fatty acids, and phospholipids are known in the art.

Oils

Oils used in the present compositions or methods can include, e.g., plant-derived oils. Non-limiting examples of plant-based oils include sunflower oil, coconut oil, peanut oil, corn oil, cottonseed oil, olive oil, palm oil, rapeseed oil, safflower oil, sesame oil, soybean oil, almond oil, beech nut oil, brazil nut oil, cashew oil, hazelnut oil, macadamia nut oil, mongongo nut oil, pecan oil, pine nut oil, pistachio nut oil, walnut oil, and avocado oil.

Monoglycerides and Diglycerides

Monoglycerides and diglycerides that can be used in the present invention can be plant-derived monoglycerides and diglycerides. For example, monoglycerides and

diglycerides can be derived from sunflowers, coconuts, peanuts, cottonseed, olives, palm, rapeseed, safflowers, sesame seed, soybeans, almonds, beech nuts, brazil nuts, cashews, hazelnuts, macadameia nuts, mongongo nuts, pecans, pine nuts, pistachios, walnuts, and avocados. The monoglycerides and diglycerides can include the acyl chain of any of the free fatty acids listed herein. Additional examples of monoglycerides and diglycerides are known in the art.

Free Fatty Acids

The compositions described herein can include and the methods described herein can include the use of one or more free fatty acids. Non-limiting examples of free fatty acids include butyric acid, caproic acid, caprylic acid, and capric acid. Additional examples of fatty acids include lauric acid, myristic acid, palmitic acid, stearic acid, arachidic acid, behenic acid, lignoceric acid, cerotic acid, myristoleic acid, pamitoleic acid, sapienic acid, oleic acid, elaidic acid, vaccenic acid, linoleic acid, linoelaidic acid, α-linolenic acid, arachidonic acid, eicosapentaenoic acid, erucic acid, docosahexaenoic acid, omega-3 fatty acids, and omega-6 fatty acids. In some examples, the free fatty acid is saturated. In some examples, the free fatty acid is unsaturated. In some embodiments, the free fatty acids are not derived from or produced by a mammal. Additional examples of free fatty acids are known in the art.

Phospholipids

The compositions described herein and the methods described herein can include the use of one or more phospholipids. Non-limiting examples of phospholipids include lecithin phospholipids (e.g., soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, rapeseed lecithin phospholipids. rice bran lecithin phospholipids, and corn lecithin phospholipids). In some embodiments, the phospholipids are not derived from or produced by a mammal. Additional aspects of phospholipids are known in the art.

Flavor Compounds

Any of the compositions or methods described herein can include or include the use of one or more different flavor compounds. Non-limiting examples of flavor compounds include δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. Additional examples of flavor compounds include artificial flavors, e.g., chocolate, coffee, strawberry, almond, hazelnut, vanilla, green tea, Irish cream, and coconut flavoring. Additional examples of flavor compounds are known in the art.

Ash

Any of the compositions or methods described herein can include or include the use of ash. Ash can, e.g., include one or more (two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen fifteen, sixteen, seventeen, eighteen, nineteen, or twenty) of: calcium, phosphorous, potassium, sodium, citrate, chloride, phosphate, magnesium, iron, molybdenum, manganese, copper, thiamin (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), pantothenic acid (vitamin B5), vitamin B6 (pyridoxine), vitamin B12 (cobalamin), vitamin C, folate, vitamins A, vitamin D, vitamin E, and vitamin K. In some examples, the ash includes one or more (two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. Ash can be provided as a powder or as a solution. Additional components in and aspects of ash are known in the art. In some embodiments, the ash is not derived from or produced by mammal.

Color Balancing Agents

A variety of different color balancing agents are known in the art. For example, a color balancing agent can be a compound from obtained from a plant (e.g., a monocot or a dicot). In some examples, the color balancing agent is a synthetic compound. In some examples, the color balancing agent is not obtained from or produced by a mammal or a mammalian cell. Non-limiting examples of color balancing agents include β-carotene and annatto.

Sweetening Agents

A sweetening agent can be a saccharide (e.g., a monosaccharide, a disaccharide, or a polysaccharide) or an artificial sweetener. Non-limiting examples of sweetening agents that are saccharides include glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose. Additional examples of saccharides that can be used as a sweetening agent in any of the compositions or methods described herein are known in the art.

Non-limiting examples of sweetening agents that are artificial sweeteners include stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, and P-4000. Additional artificial sweeteners that can be used as sweetening agents in any of the compositions or methods described herein are known in the art.

Compositions

Provided herein are compositions including: about 0.3 g/L to about 1.1 g/L (e.g., about 0.3 g/L to about 1.0 g/L, about 0.3 g/L to about 0.9 g/L, about 0.3 g/L to about 0.8 g/L, about 0.3 g/L to about 0.7 g/L, about 0.3 g/L to about 0.6 g/L, about 0.3 g/L to about 0.5 g/L, about 0.3 g/L to about 0.4 g/L, about 0.4 g/L to about 1.1 g/L, about 0.4 g/L to about 1.0 g/L, about 0.4 g/L to about 0.9 g/L, about 0.4 g/L to about 0.8 g/L, about 0.4 g/L to about 0.7 g/L, about 0.4 g/L to about 0.6 g/L, about 0.4 g/L to about 0.5 g/L, about 0.5 g/L to about 1.1 g/L, about 0.5 g/L to about 1.0 g/L, about 0.5 g/L to about 0.9 g/L, about 0.5 g/L to about 0.8 g/L, about 0.5 g/L to about 0.7 g/L, about 0.5 g/L to about 0.6 g/L, about 0.6 g/L to about 1.1 g/L, about 0.6 g/L to about 1.0 g/L, about 0.6 g/L to about 0.9 g/L, about 0.6 g/L to about 0.8 g/L, about 0.6 g/L to about 0.7 g/L, about 0.7 g/L to about 1.1 g/L, about 0.7 g/L to about 1.0 g/L, about 0.7 g/L to about 0.9 g/L, about 0.7 g/L to about 0.8 g/L, about 0.8 g/L to about 1.1 g/L, about 0.8 g/L to about 1.0 g/L, about 0.8 g/L to about 0.9 g/L, about 0.9 g/L to about 1.1 g/L, about 0.9 g/L to about 1.0 g/L, about 1.0 g/L to about 1.1 g/L, or about 0.27 weight % to about 0.75 weight %) κ-casein

protein (e.g., any of the κ-casein proteins described herein); about 1.25 g/L to about 4.9 g/L (e.g., about 1.25 g/L to about 4.6 g/L, about 1.25 g/L to about 4.4 g/L, about 1.25 g/L to about 4.2 g/L, about 1.25 g/L to about 4.0 g/L, about 1.25 g/L to about 3.8 g/L, about 1.25 g/L to about 3.6 g/L, about 1.25 g/L to about 3.4 g/L, about 1.25 g/L to about 3.2 g/L, about 1.25 g/L to about 3.0 g/L, about 1.25 g/L to about 2.8 g/L, about 1.25 g/L to about 2.6 g/L, about 1.25 g/L to about 2.4 g/L, about 1.25 g/L to about 2.2 g/L, about 1.25 g/L to about 2.0 g/L, about 1.25 g/L to about 1.8 g/L, about 1.25 g/L to about 1.6 g/L, about 1.25 g/L to about 1.4 g/L, about 1.4 g/L to about 4.9 g/L, about 1.4 g/L to about 4.6 g/L, about 1.4 g/L to about 4.4 g/L, about 1.4 g/L to about 4.2 g/L, about 1.4 g/L to about 4.0 g/L, about 1.4 g/L to about 3.8 g/L, about 1.4 g/L to about 3.6 g/L, about 1.4 g/L to about 3.4 g/L, about 1.4 g/L to about 3.2 g/L, about 1.4 g/L to about 3.0 g/L, about 1.4 g/L to about 2.8 g/L, 1.4 g/L to about 2.6 g/L, about 1.4 g/L to about 2.4 g/L, about 1.4 g/L to about 2.2 g/L, about 1.4 g/L to about 2.0 g/L, about 1.4 g/L to about 1.8 g/L, about 1.4 g/L to about 1.6 g/L, about 1.6 g/L to about 4.9 g/L, about 1.6 g/L to about 4.6 g/L, about 1.6 g/L to about 4.4 g/L, about 1.6 g/L to about 4.2 g/L, about 1.6 g/L to about 4.0 g/L, about 1.6 g/L to about 3.8 g/L, about 1.6 g/L to about 3.6 g/L, about 1.6 g/L to about 3.4 g/L, about 1.6 g/L to about 3.2 g/L, about 1.6 g/L to about 3.0 g/L, about 1.6 g/L to about 2.8 g/L, 1.6 g/L to about 2.6 g/L, about 1.6 g/L to about 2.4 g/L, about 1.6 g/L to about 2.2 g/L, about 1.6 g/L to about 2.0 g/L, about 1.6 g/L to about 1.8 g/L, about 1.8 g/L to about 4.9 g/L, about 1.8 g/L to about 4.6 g/L, about 1.8 g/L to about 4.4 g/L, about 1.8 g/L to about 4.2 g/L, about 1.8 g/L to about 4.0 g/L, about 1.8 g/L to about 3.8 g/L, about 1.8 g/L to about 3.6 g/L, about 1.8 g/L to about 3.4 g/L, about 1.8 g/L to about 3.2 g/L, about 1.8 g/L to about 3.0 g/L, about 1.8 g/L to about 2.8 g/L, 1.8 g/L to about 2.6 g/L, about 1.8 g/L to about 2.4 g/L, about 1.8 g/L to about 2.2 g/L, about 1.8 g/L to about 2.0 g/L, about 2.0 g/L to about 4.9 g/L, about 2.0 g/L to about 4.6 g/L, about 2.0 g/L to about 4.4 g/L, about 2.0 g/L to about 4.2 g/L, about 2.0 g/L to about 4.0 g/L, about 2.0 g/L to about 3.8 g/L, about 2.0 g/L to about 3.6 g/L, about 2.0 g/L to about 3.4 g/L, about 2.0 g/L to about 3.2 g/L, about 2.0 g/L to about 3.0 g/L, about 2.0 g/L to about 2.8 g/L, 2.0 g/L to about 2.6 g/L, about 2.0 g/L to about 2.4 g/L, about 2.0 g/L to about 2.2 g/L, about 2.2 g/L to about 4.9 g/L, about 2.2 g/L to about 4.6 g/L, about 2.2 g/L to about 4.4 g/L, about 2.2 g/L to about 4.2 g/L, about 2.2 g/L to about 4.0 g/L, about 2.2

g/L to about 3.8 g/L, about 2.2 g/L to about 3.6 g/L, about 2.2 g/L to about 3.4 g/L, about 2.2 g/L to about 3.2 g/L, about 2.2 g/L to about 3.0 g/L, about 2.2 g/L to about 2.8 g/L, 2.2 g/L to about 2.6 g/L, about 2.2 g/L to about 2.4 g/L, about 2.4 g/L to about 4.9 g/L, about 2.4 g/L to about 4.6 g/L, about 2.4 g/L to about 4.4 g/L, about 2.4 g/L to about 4.2 g/L, about 2.4 g/L to about 4.0 g/L, about 2.4 g/L to about 3.8 g/L, about 2.4 g/L to about 3.6 g/L, about 2.4 g/L to about 3.4 g/L, about 2.4 g/L to about 3.2 g/L, about 2.4 g/L to about 3.0 g/L, about 2.4 g/L to about 2.8 g/L, 2.4 g/L to about 2.6 g/L, about 2.6 g/L to about 4.9 g/L, about 2.6 g/L to about 4.6 g/L, about 2.6 g/L to about 4.4 g/L, about 2.6 g/L to about 4.2 g/L, about 2.6 g/L to about 4.0 g/L, about 2.6 g/L to about 3.8 g/L, about 2.6 g/L to about 3.6 g/L, about 2.6 g/L to about 3.4 g/L, about 2.6 g/L to about 3.2 g/L, about 2.6 g/L to about 3.0 g/L, about 2.6 g/L to about 2.8 g/L, about 2.8 g/L to about 4.9 g/L, about 2.8 g/L to about 4.6 g/L, about 2.8 g/L to about 4.4 g/L, about 2.8 g/L to about 4.2 g/L, about 2.8 g/L to about 4.0 g/L, about 2.8 g/L to about 3.8 g/L, about 2.8 g/L to about 3.6 g/L, about 2.8 g/L to about 3.4 g/L, about 2.8 g/L to about 3.2 g/L, about 2.8 g/L to about 3.0 g/L, about 3.0 g/L to about 4.9 g/L, about 3.0 g/L to about 4.6 g/L, about 3.0 g/L to about 4.4 g/L, about 3.0 g/L to about 4.2 g/L, about 3.0 g/L to about 4.0 g/L, about 3.0 g/L to about 3.8 g/L, about 3.0 g/L to about 3.6 g/L, about 3.0 g/L to about 3.4 g/L, about 3.0 g/L to about 3.2 g/L, about 3.2 g/L to about 4.9 g/L, about 3.2 g/L to about 4.6 g/L, about 3.2 g/L to about 4.4 g/L, about 3.2 g/L to about 4.2 g/L, about 3.2 g/L to about 4.0 g/L, about 3.2 g/L to about 3.8 g/L, about 3.2 g/L to about 3.6 g/L, about 3.2 g/L to about 3.4 g/L, about 3.4 g/L to about 4.9 g/L, about 3.4 g/L to about 4.6 g/L, about 3.4 g/L to about 4.4 g/L, about 3.4 g/L to about 4.2 g/L, about 3.4 g/L to about 4.0 g/L, about 3.4 g/L to about 3.8 g/L, about 3.4 g/L to about 3.6 g/L, about 3.6 g/L to about 4.9 g/L, about 3.6 g/L to about 4.6 g/L, about 3.6 g/L to about 4.4 g/L, about 3.6 g/L to about 4.2 g/L, about 3.6 g/L to about 4.0 g/L, about 3.6 g/L to about 3.8 g/L, about 3.8 g/L to about 4.9 g/L, about 3.8 g/L to about 4.6 g/L, about 3.8 g/L to about 4.4 g/L, about 3.8 g/L to about 4.2 g/L, about 3.8 g/L to about 4.0 g/L, about 4.0 g/L to about 4.9 g/L, about 4.0 g/L to about 4.6 g/L, about 4.0 g/L to about 4.4 g/L, about 4.0 g/L to about 4.2 g/L, about 4.2 g/L to about 4.9 g/L, about 4.2 g/L to about 4.6 g/L, about 4.2 g/L to about 4.4 g/L, about 4.4 g/L to about 4.9 g/L, about 4.4 g/L to about 4.6 g/L, about 4,6 g/L to about 4.9 g/L, or about 1.23 weight % to about 3.27 weight %) β-casein protein (e.g., any of the

β-casein proteins described herein); a final total concentration of one or more lipids (e.g., any one or more of the lipids described herein) of about 0 weight % to about 45 weight % (e.g., 0 weight %; about 0 weight % to about 4.5 weight %; about 0.5 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, about 4 weight %, about 3 weight %, about 2 weight %, or about 1 weight %; about 1.0 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, about 4 weight %, about 3 weight %, or about 2 weight %; about 2 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, about 4 weight %, or about 3 weight %; about 3 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 5 weight %, or about 4 weight %; about 4 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, about 6 weight %, or about 5 weight %; about 5 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, about 8 weight %, or about 6 weight %; about 6 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, about 10 weight %, or about 8 weight %; about 8 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, about 15 weight %, or about 10 weight %; about 10 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, about 20 weight %, or about 15 weight %; about 15 weight % to about 40 weight %, about 35 weight %, about 30 weight %, about 25 weight %, or about 20 weight %; about 20 weight % to about 40 weight %, about 35 weight %, about 30 weight %, or about 25 weight %; about 25 weight % to about 40 weight %, about 35 weight %, or about 30 weight %; about 30 weight % to about 40 weight %, or about 35 weight %; or about 35 weight % to about 40 weight %); a final total concentration of one or more flavor compounds (e.g., any of one or more of the

flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., about 0.1 weight % to about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, about 1.0 weight %, or about 0.5 weight %; about 0.5 weight % to about 6 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, or about 1.0 weight %; about 1.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, or about 1.5 weight %; about 1.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, or about 2.0 weight %; about 2.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %; about 4.5 weight % to about 6.0 weight %, about 5.5 weight %, or about 5.0 weight %; about 5.0 weight % to about 6.0 weight % or about 5.5 weight %; or about 5.5 weight % to about 6.0 weight %); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., about 0.1 weight % to about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, about 1.0 weight %, or about 0.5 weight %; about 0.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, about 1.5 weight %, or about 1.0 weight %; about 1.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about

3.5 weight %, about 3.0 weight %, about 2.5 weight %, about 2.0 weight %, or about 1.5 weight %; about 1.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, about 2.5 weight %, or about 2.0 weight %; about 2.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, or about 4.5 weight %; about 4.5 weight % to about 6.0 weight %, about 5.5 weight %, or about 5.0 weight %; about 5.0 weight % to about 6.0 weight %, or about 5.5 weight %; or about 5.5 weight % to about 6.0 weight %) of one or more sweetening agents (e.g., any one or more of the sweetening agents described herein); and a final total concentration of ash of about 0.15 weight % to about 1.5 weight % (e.g., about 0.15 weight % to about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, about 0.3 weight %, or about 0.2 weight %; about 0.2 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, or about 0.3 weight %; about 0.3 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, about 0.5 weight %, or about 0.4 weight %; about 0.4 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.5 weight %; about 0.5 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, or about 0.6 weight %; about 0.6 weight % to about

1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, about 0.9 weight %, or about 0.8 weight %; about 0.8 weight % to about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, about 1.0 weight %, or about 0.9 weight %; about 0.9 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, about 1.1 weight %, or about 1.0 weight %; about 1.0 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, about 1.2 weight %, or about 1.1 weight %; about 1.1 weight % to about 1.5 weight %, about 1.4 weight %, about 1.3 weight %, or about 1.2 weight %; about 1.2 weight % to about 1.5 weight %, about 1.4 weight %, or about 1.3 weight %; about 1.3 weight % to about 1.5 weight % or about 1.4 weight %; or about 1.4 weight % to about 1.5 weight %), where the composition does not comprise an animal-derived component.

Also provided are compositions including: about 0.3 g/L to about 1.1 g/L (e.g., any of the subranges of about 0.3 g/L to about 1.1 g/L described in the above paragraph) κ-casein protein (e.g., any of the κ-casein proteins described herein); about 1.25 g/L to about 4.9 g/L (e.g., any of the subranges of about 1.25 g/L to about 4.9 g/L described in the above paragraph) β-casein protein (e.g., any of the β-casein proteins described herein); a final total concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 0 weight % to about 45 weight % (e.g., any of the subranges of about 0 weight % to about 45 weight % described in the above paragraph); a final total concentration of one or more flavor compounds (e.g., any of the one or more flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., any of the subranges of about 0.01 weight % to about 6 weight % described in the above paragraph); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., any of the subranges of about 0.1 weight % to about 6 weight % described herein) of one or more sweetening agents (e.g., any one or more sweetening agents described herein); and a final total concentration of ash (e.g., any of the exemplary ash described herein) of about 0.15 weight % to about 1.5 weight % (e.g., any of the subranges of about 0.15 weight % to about 1.5 weight % described in the above paragraph), where: the composition: does not include at least one component found in a mammal-produced milk; includes at least one component not present in a mammal-produced milk; and/or includes

a higher or lower concentration of at least one component as compared to the concentration of the at least one component in a mammal-produced milk. In some examples of these compositions, the composition includes a higher concentration of at least one component selected from the group of: calcium, phosphate, B complex vitamins, vitamin A, vitamin D, vitamin E, and vitamin K, as compared to the concentration of the one or more components in a mammal-produced milk. In some embodiments of these compositions, the composition does not include at least one component found in a mammal-produced milk selected from the group of: lactose, bacteria, mycobacteria, allergens, viruses, prions, yeast, growth hormones, leukocytes, antibiotics, heavy metals, immunoglobulins, lactoferrin, lactoperoxidase, and lipase. In some examples of these compositions, the composition includes at least one component not present in a mammal-produced milk selected from the group of an artificial sweetener, a plant-derived lipid, a β-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein that is non-glycosylated or has a non-mammalian glycosylation pattern.

Also provided are compositions including: about 0.3 g/L to about 1.1 g/L (e.g., any of the subranges of about 0.3 g/L to about 1.1 g/L described in this section) κ-casein protein (e.g., any of the κ-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; about 1.25 g/L to about 4.9 g/L (e.g., any of the subranges of about 1.25 g/L to about 4.9 g/L described in this section) β-casein protein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; a final total concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 0 weight % to about 45 weight % (e.g., any of the subranges of about 0 weight % to about 45 weight % described in this section); a final total concentration of one or more flavor compounds (e.g., any of the one or more flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., any of the subranges of about 0.01 weight % to about 6 weight % described in this section); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., any of the subranges of about 0.1 weight % to about 6 weight % described in this section) of one or more sweetening agents (e.g., any of the one or more sweetening agents described herein); and a final total concentration of ash (e.g., any of the ash described herein) of

about 0.15 weight % to about 1.5 weight % (e.g., any of the subranges of about 0.15 weight % to about 1.5 weight % described in this section).

Also provided are compositions including a micelle including a κ-casein protein (e.g., any of the κ-casein proteins described herein) and a β-casein protein (e.g., any of the β-casein proteins described herein), where the micelle has a diameter of about 50 nm to about 350 nm (e.g., any of the subranges of the diameter of a micelle described herein), and the κ-casein protein and the β-casein protein are unglycosylated or have a non-mammalian glycosylation pattern. In some embodiments, the composition includes a final concentration of micelles of about 2.0 weight % to about 6 weight % (e.g., about 2.0 weight % to about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.5 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 6.0 weight %, about 5.5 weight %, about 5.0 weight %, or about 4.5 weight %; about 4.5 weight % to about 5.5 weight %, or about 5.0 weight %; about 5.0 weight % to about 6.0 weight % or 5.5 weight %; or about 5.5 weight % to about 6.0 weight %). In some embodiments of these compositions, the ratio of the β-casein protein to the κ-casein protein in the micelle is about 2.0:1 to about 5.5:1 (e.g., any of the subranges of the ratios about 2.0:1 to about 5.5:1 described for the micelle herein). In some embodiments, these compositions further include: a final total concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 0 weight % to about 45 weight % (e.g., any of the subranges of about 0 weight % to about 45 weight percent described in this section); a final total concentration of one or more flavor compounds (e.g., any of the one or more flavor compounds described herein) of about 0.01 weight % to about 6 weight % (e.g., any of the subranges of 0.01

weight % to about 6 weight % described in this section); a final total concentration of about 0.1 weight % to about 6 weight % (e.g., any of the subranges of about 0.1 weight % to about 6 weight % described in this section) of one or more sweetening agents (e.g., any one or more of the sweetening agents described herein); and a final total concentration of ash (e.g., any of the ash described herein) of about 0.15 weight % to about 1.5 weight % (e.g., any of the subranges of about 0.15 weight % to about 1.5 weight % described in this section).

In some embodiments of any of the compositions described herein, the one or more lipids are selected from the group consisting of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. Some examples of any of the compositions described herein further include one or more of: a final concentration of sunflower oil of about 1 weight % to about 28 weight % (e.g., about 1 weight % to about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 4 weight %, or about 2 weight %; about 2 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, or about 4 weight %; about 4 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, about 8 weight %, or about 6 weight %; about 6 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, about 10 weight %, or about 8 weight %; about 8 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, about 12 weight %, or about 10 weight %; about 10 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, about 14 weight%, or about 12 weight %; about 12 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, about 16 weight %, or about 14 weight%; about 14 weight

% to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %, or about 16 weight %; about 16 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, about 20 weight %, about 18 weight %; about 18 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %, or about 20 weight %; about 20 weight % to about 28 weight %, about 26 weight %, about 24 weight %, about 22 weight %; about 22 weight % to about 28 weight %, about 26 weight %, about 24 weight %; about 24 weight % to about 28 weight % or about 26 weight %; or about 28 weight % to about 30 weight %); a final concentration of coconut oil of about 0.5 weight % to about 14 weight % (e.g., about 0.5 weight % to about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 4 weight %, about 2 weight %, or about 1 weight %; about 1 weight % to about 14 weight %, about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, about 4 weight %, or about 2 weight %; about 2 weight % to about 12 weight %, about 10 weight %, about 8 weight %, about 6 weight %, or about 4 weight %; about 4 weight % to about 14 weight %, about 12 weight %, about 10 weight %, about 8 weight %, or about 6 weight %; about 6 weight % to about 14 weight %, about 12 weight %, about 10 weight %, or about 8 weight %; about 8 weight % to about 14 weight %, about 12 weight %, or about 10 weight %; about 10 weight % to about 14 weight % or 12 weight %; or about 12 weight % to about 14 weight %); a final concentration of tributyrin of about 0.05 weight to about 1.0 weight % (e.g., between about 0.05 weight % to about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, about 0.3 weight %, or about 0.2 weight %; 0.1 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, about 0.5 weight %, about 0.4 weight %, about 0.3 weight %, or about 0.2 weight %; about 0.2 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, about 0.5 weight %, or about 0.4 weight %; about 0.4 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, about 0.6 weight %, or about 0.5 weight %; about 0.5 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, about 0.7 weight %, or about 0.6 weight %; about 0.6 weight % to about 1.0 weight %, about 0.9 weight %, about 0.8 weight %, or about 0.7 weight %; about 0.7 weight % to

about 1.0 weight %, about 0.9 weight %, or about 0.8 weight %; about 0.8 weight % to about 1.0 weight % or about 0.9 weight %; or about 0.9 weight % to about 1.0 weight %); a final total concentration of monoglycerides and diglycerides (e.g., any one or more of the monoglycerides or diglycerides described herein) of about 0.08 weight % to about 1.2 weight % (e.g., 0.08 weight % to about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.4 weight % to about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, or about 0.6 weight %; about 0.6 weight % to about 1.2 weight %, about 1.0 weight %, or about 0.8 weight %; about 0.8 weight % to about 1.2 weight % or about 1.0 weight %; or about 1.0 weight % to about 1.2 weight %); and a final total concentration of free fatty acids of about 0.02 weight % to about 0.28 weight %; and a final total concentration of phospholipids (e.g., any one or more of the phospholipids described herein) of about 0.02 weight % to about 0.3 weight % (e.g., about 0.02 weight % to about 0.25 weight %, about 0.20 weight %, about 0.15 weight %, or about 0.10 weight %; about 0.05 weight % to about 0.3 weight %, about 0.25 weight %, about 0.20 weight %, about 0.15 weight %, or about 0.10 weight %; about 0.10 weight % to about 0.30 weight %, about 0.25 weight %, about 0.20 weight %, or about 0.15 weight %; about 0.15 weight % to about 0.30 weight %, about 0.25 weight %, or about 0.20 weight %; about 0.20 weight % to about 0.30 weight % or about 0.25 weight %; or about 0.25 weight % to about 0.30 weight %).

In some embodiments of any of the compositions, the free fatty acids include at least one (e.g., two, three, or four) fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some embodiments of any of the compositions, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some examples of any of the compositions described herein, the flavor compounds include at least one flavor compound selected from the group of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone. In some embodiments of any of the compositions described herein, the one or more sweetening agents is a saccharide (e.g., glucose, mannose, maltose, fructose, galactose, lactose,

sucrose, monatin, or tagatose). In some examples of any of the compositions described herein, the

one or more sweetening agents is an artificial sweetener (e.g., stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, or P-4000).

In some examples of any of the compositions described herein, the ash includes one or more (e.g., two, three, four, five, or six) of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some embodiments of any of the compositions described herein, the ash comprises one or more (e.g., two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate. Some embodiments of the compositions described herein include: a final concentration of $CaCl_2$ of about 0.05 g/L to about 0.2 g/L (e.g., about 0.05 g/L to about 0.15 g/L, about 0.05 g/L to about 0.10 g/L, about 0.10 g/L to about 0.20 g/L, about 0.10 g/L to about 0.15 g/L, or about 0.15 g/L to about 0.2 g/L); a final concentration of KH_2PO_4 of about 0.2 g/L to about 0.4 g/L (e.g., about 0.2 g/L to about 0.35 g/L, about 0.2 g/L to about 0.30 g/L, about 0.2 g/L to about 0.25 g/L, about 0.25 g/L to about 0.4 g/L, about 0.25 g/L to about 0.30 g/L, about 0.30 g/L to about 0.40 g/L, or about 0.30 g/L to about 0.35 g/L, or about 0.35 g/L to about 0.40 g/L); and/or a final concentration of Na_3 citrate of about 0.1 g/L to about 0.3 g/L (e.g., 0.1 g/L to about 0.25 g/L, about 0.1 g/L to about 0.20 g/L, about 0.1 g/L to about 0.15 g/L, about 0.15 g/L to about 0.30 g/L, about 0.15 g/L to about 0.25 g/L, about 0.15 g/L to about 0.20 g/L, about 0.20 g/L to about 0.30 g/L, about 0.20 g/L to about 0.25 g/L, or about 0.25 g/L to about 0.30 g/L).

In any of the composition described herein, the κ-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein. In any of the compositions described herein, the β-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla,

chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein.

In some examples of any of the compositions described herein can further include: a final concentration of α-lactalbumin protein (e.g., any of the α-lactalbumin proteins described herein) of about 0.4 weight % to about 2.5 weight % (e.g., about 0.4 weight % to about 2.0 weight %, about 1.5 weight %, or about 1.0 weight %; about 1.0 weight % to about 2.5 weight %, about 2.0 weight %, or about 1.5 weight %, about 1.5 weight % to about 2.5 weight % or 2.0 weight %; or about 2.0 weight % to about 2.5 weight %), and/or a final concentration of β-lactoglobulin protein (e.g., any of the β-lactoglobulin proteins described herein) of about 2.5 weight % to about 4.5 weight %. In some embodiments of any of the compositions described herein, the α-lactalbumin protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-lactalbumin protein. In some embodiments of any of the compositions described herein, the β-lactoglobulin protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-lactoglobulin protein.

Some embodiments of any of the compositions described herein further include: a final concentration of α-S1-casein protein (e.g., any of the α-S1-casein proteins described herein) of about 11 weight % to about 16 weight % (e.g., about 11 weight % to about 15 weight %, about 14 weight %, about 13 weight %, or about 12 weight %; about 12 weight % to about 16 weight %, about 15 weight %, about 14 weight %, or about 13 weight %; about 13 weight % to about 16 weight %, about 15 weight %, or about 14 weight %; about 14 weight % to about 16 weight % or 15 weight %; or about 15 weight % to about 16 weight %); and/or a final concentration of α-S2-casein protein (e.g., any of the α-S2-casein proteins described herein) of about 2 weight % to about 5 weight % (e.g., about 2

weight % to about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, about 3.0 weight %, or about 2.5 weight %; about 2.5 weight % to about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, about 3.5 weight %, or about 3.0 weight %; about 3.0 weight % to about 5.0 weight %, about 4.5 weight %, about 4.0 weight %, or about 3.5 weight %; about 3.5 weight % to about 5 weight %, about 4.5 weight %, or about 4.0 weight %; about 4.0 weight % to about 5.0 weight % or 4.5 weight %; or about 4.5 weight % to about 5.0 weight %).

In some examples of any of the compositions described herein, the α-S1-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S1-casein protein; and/or the α-S2-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth α-S2-casein protein.

Some examples of any of the compositions described herein further include one or more (e.g., two or three) of serum albumin (e.g., any of the serum albumin proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), and transferrin (e.g., any of the transferrin proteins described herein). In some examples of any of the compositions described herein, the serum albumin can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth serum albumin; the lactoferrin can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth lactoferrin; and/or the transferrin can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur,

panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth transferrin protein.

In some examples of any of the compositions described herein, the composition further includes one or more color balancing agents (e.g., any of the coloring agents described herein, e.g., β-carotene or annatto).

Any of the compositions described herein can have a pH of about 6.2 to about 7.2 (e.g., about 6.2 to about 7.0, about 6.2 to about 6.8, about 6.2 to about 6.6, about 6.2 to about 6.4, about 6.4 to about 7.2, about 6.4 to about 7.0, about 6.4 to about 6.8, about 6.4 to about 6.6, about 6.6 to about 7.2, about 6.6 to about 7.0, about 6.6 to about 6.8, about 6.8 to about 7.2, about 6.8 to about 7.0, or about 7.0 to about 7.2).

In various embodiments, the milk protein components comprise about 0.5% about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4%, about 4.5%, about 5%, about 6% milk protein by dry weight or total weight. In some embodiments, the compositions can comprise about 0.5-2.5%, about 1-2%, about 2-3%, or about 4-10% protein by dry weight or total weight. In particular embodiments, the compositions can comprise about 10-15% protein by dry weight or total weight.

A wide range of caseins including casein with substantial homology to the wild-type casein, variants, mutants of casein are expressed and incorporated as a component of milk protein.

Dry Compositions

Also provided are powder compositions including: a final concentration of κ-casein protein (e.g., any of the α-casein proteins described herein) of about 3.6 weight % to about 5.4 weight % (e.g., about 3.6 weight % to about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6 weight %, about 4.4 weight %, about 4.2 weight %, about 4.0 weight %, or about 3.8 weight %; about 3.8 weight % to about 5.4 weight %, about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6 weight %, about 4.4 weight %, about 4.2 weight %, or about 4.0 weight %; about 4.0 weight % to about 5.4 weight %, about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6

weight %, about 4.4 weight %, or about 4.2 weight %; about 4.2 weight % to about 5.2 weight %, about 5.2 weight %, about 5.0 weight %, about 4.8 weight %, about 4.6 weight %, or about 4.4 weight %; about 4.8 weight % to about 5.4 weight %, about 5.2 weight %, or about 5.0 weight %; about 5.0 weight % to about 5.4 weight % or about 5.2 weight %; or about 5.2 weight % to about 5.4 weight %); a final concentration of β-casein protein (e.g., any of the β-casein proteins described herein) of about 16.3 weight % to about 24.5 weight %; 16.3 weight % to about 22 weight %, about 20 weight %, or about 18 weight %; about 18 weight % to about 24.5 weight %, about 22 weight %, or about 20 weight %; about 20 weight % to about 24.5 weight % to about 22 weight %; or about 22 weight % to about 24.5 weight %); a final concentration of a sweetening agent (e.g., any one or more of the sweetening agents described herein) of about 35 weight % to about 40 weight % (e..g, about 35 weight % to about 39 weight %, about 38 weight %, about 37 weight %, or about 36 weight %; about 36 weight % to about 40 weight %, about 39 weight %, about 38 weight %, or about 37 weight %; about 37 weight % to about 40 weight %, about 39 weight %, or about 38 weight %; about 38 weight % to about 40 weight % or 39 weight %; or about 39 weight % to about 40 weight %); a final concentration of one or more lipids (e.g., any of the one or more lipids described herein) of about 25 weight % to about 30 weight % (e.g., about 25 weight % to about 29 weight %, about 28 weight %, about 27 weight %, or about 26 weight %; about 26 weight % to about 30 weight %, about 29 weight %, about 28 weight %, or about 27 weight %; about 27 weight % to about 30 weight %, about 29 weight %, or about 28 weight %; about 28 weight % to about 30 weight % or about 29 weight %; or about 29 weight % to about 30 weight %); a final concentration of ash (e.g., any of the ash described herein) of about 5 weight % to about 7 weight % (e.g., about 5 weight % to about 6.5 weight %, about 6.0 weight %, or about 5.5 weight %; about 5.5 weight % to about 7.0 weight %, about 6.5 weight %, or about 6.0 weight %; about 6.0 weight % to about 7.0 weight % or about 6.5 weight %; or about 6.5 weight % to about 7.0 weight %); and a final concentration of water of about 2 weight % to about 5 weight % (e.g., about 2 weight % to about 4 weight % or about 3 weight %; about 3 weight % to about 5 weight % or about 4 weight %; or about 4 weight % to about 5 weight %), where the κ-casein protein is an unglycosylated

and/or has a non-mammalian glycosylation pattern, and/or the β-casein protein is an unglycosylated and/or has a non-mammalian glycosylation pattern.

Any of the powder compositions can contain any of the components described in any of the compositions described herein (e.g., one or more of any of the color matching agents, α-S1-casein proteins, α-S2-casein proteins, α-lactalbumin proteins, β-lactoglobulin proteins, lactoferrin proteins, transferrin proteins, and serum albumin protein described herein at any of the concentrations described herein for each component, respectively).

Supplemented Milk Compositions

Also provided herein are compositions including: a mammalian-produced milk or a processed mammal-produced milk; and one or more (e.g., two or three) of a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern; a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern; or a micelle including a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern and a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern.

In some examples, the composition includes a mammal-produced milk or a processed mammalian-produced milk and a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern. In some examples, the composition includes a mammal-produced milk or a processed mammalian-produced milk and a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern. In other examples, the composition includes a mammal-produced milk or a processed mammalian-produced milk and a micelle including a κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern and a β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern.

In some examples, the final concentration of the κ-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern or the final concentration of the β-casein protein that is unglycosylated or has a non-mammalian glycosylation pattern in the composition is: 0.02 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about

1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, about 0.2 weight %, or about 0.1 weight %; about 0.1 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, or about 1.0 weight %; about 1.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, or about 1.2 weight %; about 1.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, or about 1.4 weight %; about 1.4 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, or about 1.6 weight %; about 1.6 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, or about 1.8 weight %; about 1.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 2.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, or about 2.2 weight %; about 2.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, or about 2.4 weight %; about 2.4 weight % to about 3.0 weight %, about 2.8 weight %, or about 2.6 weight %; about 2.6 weight % to about 3.0 weight % or about 2.8 weight %; or about 2.8 weight % to about 3.0 weight % (of the final composition).

In some compositions, the final concentration of the κ-casein protein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is

about 0.02 weight % to about 0.6 weight % (e.g., about 0.02 weight % to about 0.5 weight %, about 0.02 weight % to about 0.4 weight %, about 0.02 weight % to about 0.3 weight %, about 0.02 weight % to about 0.2 weight %, about 0.02 weight % to about 0.1 weight %, about 0.1 weight % to about 0.5 weight %, about 0.1 weight %, to about 0.4 weight %, about 0.1 weight % to about 0.3 weight %, about 0.1 weight % to about 0.2 weight %, about 0.2 weight % to about 0.5 weight %, about 0.2 weight % to about 0.4 weight %, about 0.2 weight % to about 0.3 weight %, about 0.3 weight % to about 0.5 weight %, about 0.3 weight % to about 0.4 weight %, or about 0.4 weight % to about 0.5 weight %); and the final concentration of β-casein that is unglycosylated and/or has a non-mammalian glycosylation pattern in the composition is about 0.02 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.4 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, or about 0.6 weight %; about 0.6 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, or about 0.8 weight %; about 0.8 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about

2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, or about 1.0 weight %; about 1.0 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, or about 1.2 weight %; about 1.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, or about 1.4 weight %; about 1.4 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, or about 1.6 weight %; about 1.6 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, or about 1.8 weight %; about 1.8 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 1.8 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 2.0 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, or about 2.2 weight %; about 2.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, or about 2.4 weight %; about 2.4 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, about 2.8 weight %, or about 2.6 weight %; about 2.6 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, about 3.0 weight %, or about 2.8 weight %; about 2.8 weight % to about 4.0 weight %, about 3.8

weight %, about 3.6 weight %, about 3.4 weight %, about 3.2 weight %, or about 3.0 weight %; about 3.0 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, about 3.4 weight %, or about 3.2 weight %; about 3.2 weight % to about 4.0 weight %, about 3.8 weight %, about 3.6 weight %, or about 3.4 weight %; about 3.4 weight % to about 4.0 weight %, about 3.8 weight %, or about 3.6 weight %; about 3.6 weight % to about 4.0 weight % or about 3.8 weight %; or about 3.8 weight % to about 4.0 weight %.

In some examples, the final concentration of micelles including a κ-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern and a β-casein protein that is unglycosylated or has an non-mammalian glycosylation pattern in the composition is: 0.02 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, about 0.2 weight %, or about 0.1 weight %; about 0.1 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, about 0.4 weight %, or about 0.2 weight %; about 0.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, about 1.0 weight %, about 0.8 weight %, about 0.6 weight %, or about 0.4 weight %; about 0.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, about 1.2 weight %, or about 1.0 weight %; about 1.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, about 1.4 weight %, or about 1.2 weight %; about 1.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, about 1.8 weight %, about 1.6 weight %, or about 1.4 weight %; about 1.4 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2

weight %, about 2.0 weight %, about 1.8 weight %, or about 1.6 weight %; about 1.6 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, about 2.0 weight %, or about 1.8 weight %; about 1.8 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, about 2.2 weight %, or about 2.0 weight %; about 2.0 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, about 2.4 weight %, or about 2.2 weight %; about 2.2 weight % to about 3.0 weight %, about 2.8 weight %, about 2.6 weight %, or about 2.4 weight %; about 2.4 weight % to about 3.0 weight %, about 2.8 weight %, or about 2.6 weight %; about 2.6 weight % to about 3.0 weight % or about 2.8 weight %; or about 2.8 weight % to about 3.0 weight % (of the final composition).

Nucleic Acids and Vectors

Also provided are nucleic acids (e.g., vectors) that include: a promoter (e.g., a yeast, bacterial, or a mammalian promoter); a sequence encoding a signal sequence; a sequence encoding a milk protein (e.g., any of the exemplary sequences described herein); and a yeast termination sequence, where the promoter is operably linked to the signal sequence, the signal sequence is operably linked to the sequence encoding the milk protein, and the terminal sequence is operably linked to the sequence encoding the milk protein. In some examples of these nucleic acids, the promoter is a constitutive promoter or an inducible promoter. Non-limiting examples of promoters are described herein. Additional promoters that can be used in these nucleic acids are known in the art.

The signal sequence in any of the vectors described herein can be a signal sequence from the encoded milk protein or a different milk protein, or is a signal sequence from a yeast mating factor (e.g., any alpha mating factor). In some examples, the encoded milk protein is selected from the group of: β-casein (e.g., any of the β-casein proteins described herein), κ-casein (e.g., any of the κ-casein proteins described herein), α-S1-casein (e.g., any of the α-S1-casein proteins described herein), α-S2-casein (e.g., any of the α-S2-casein proteins described herein), α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described

herein), or transferrin (e.g., any of the transferrin proteins described herein). Additional signal sequences that can be used in the present vectors are known in the art.

Any of the nucleic acids described herein can further include a bacterial origin of replication. Any of the nucleic acids described herein can further include a selection marker (e.g., an antibiotic resistance gene). The sequences of bacterial origin of replication are known in the art. Non-limiting examples of antibiotic resistance genes are described herein. Additional examples of resistance genes are known in the art.

Non-limiting examples of termination sequences are described herein. Additional examples of termination sequences are known in the art.

Some embodiments of the nucleic acids provided herein further include: an additional promoter sequence (e.g., any of the exemplary promoters described herein); an additional sequence encoding a signal sequence (e.g., any of the exemplary signal sequences described herein); a sequence encoding an additional milk protein (e.g., any of the exemplary sequences encoding a milk protein described herein); and an additional yeast termination sequence (e.g.. any of the exemplary yeast termination sequences described herein), where the additional promoter sequence is operably linked to the additional sequence encoding a signal sequence, the sequence encoding the signal sequence is operably linked to the sequence encoding the additional milk protein, and the sequence encoding the additional milk protein is operably linked to the additional yeast terminal sequence. The additional milk protein can be, e.g., β-casein (e.g., any of the β-casein proteins described herein), κ-casein (e.g., any of the κ-casein proteins described herein), α-S1-casein (e.g., any of the α-S1-casein proteins described herein), α-S2-casein (e.g., any of the α-S2-casein proteins described herein), α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), or transferrin (e.g., any of the transferrin proteins described herein). In some embodiments, the nucleic acid includes a sequence encoding a β-casein and a sequence encoding a κ-casein. The promoter and the additional promoter can be the same or different. The yeast termination sequence and the additional yeast terminal sequence can be the same or different. The signal sequence and the additional signal sequence can be the same or different.

The present invention also encompasses a vector containing the isolated DNA sequence encoding casein or whey polypeptide and host cells comprising the vector. The vector may further comprise an isolated DNA sequence comprising a nucleotide sequence encoding a casein, wherein the nucleotide sequence is operably linked to a promoter, a nucleotide sequence encoding an alpha mating factor, or a variant thereof, a nucleotide sequence encoding a bacterial resistance marker and a transcription terminator. One or more of suitable promoters are utilized for expression of the genes encoding casein or whey proteins may be any promoter which is functional in the host cell and is able to elicit expression of the product encoded by the gene. Suitable promoters include, for example, $P_{LAC4\text{-}PBI}$, T7, Ptac, Pgal, λPL, λPR, bla, spa, Adh, CYC, TDH3, ADH1 and CLB1.

Introducing Nucleic Acids into a Cell

Methods of introducing nucleic acids (e.g., any of the nucleic acids described herein) into a cell to generate a host cell are well-known in the art. Non-limiting examples of techniques that can be used to introduce a nucleic acid into a cell include: calcium phosphate transfection, dendrimer transfection, liposome transfection (e.g., cationic liposome transfection), cationic polymer transfection, electroporation, cell squeezing, sonoporation, optical transfection, protoplast fusion, impalefection, hyrodynamic delivery, gene gun, magnetofection, and viral transduction.

One skilled in the art would be able to select one or more suitable techniques for introducing the nucleic acids into a cell based on the knowledge in the art that certain techniques for introducing a nucleic acid into a cell work better for different types of host cells. Exemplary methods for introducing a nucleic acid into a yeast cell are described in Kawai et al., *Bioeng. Bugs* 1:395-403, 2010.

Host Cells

Also provided herein a host cells including any of the nucleic acids (e.g., vectors) described herein. In some examples, the nucleic acid described herein is stably integrated within the genome (e.g., a chromosome) of the host cell. In other examples, the nucleic acid described herein is not stably integrated within the genome of the host cell.

In some embodiments, the host cell is a yeast strain or a bacterial strain. In some embodiments, the host cell can be, e.g., a yeast strain selected from the group of: a *Kluyveromyces* sp., *Pichia* sp., *Saccharomyces* sp., *Tetrahymena* sp., *Yarrowia* sp., *Hansenula* sp., *Blastobotrys* sp., *Candida* sp., *Zygosaccharomyces* sp., and *Debaryomyces* sp. Additional non-limiting examples of yeast strains that can be used as the host cell are *Kluyveromyces lactis*, *Kluyveromyces marxianus, Saccharomyces cerevisiae*, and *Pichia pastoris*. Additional species of yeast strains that can be used as host cells are known in the art.

In some examples, the host cell can be a protozoa, such as, e.g., *Tetrahymena thermophile*, *T. hegewischi*, *T. hyperangularis*, *T. malaccensis*, *T. pigmentosa*, *T. pyriformis*, and *T. vorax*.

It is an object of the invention to isolate milk protein components by recombinantly expressing them in any of the host cells provided herein.

Methods of Producing a Recombinant Milk Protein and Methods of Making a Micelle

Also provided are methods of producing a recombinant milk protein (e.g., one or more of any of the milk proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern that include: culturing any of the host cells described herein in a culture medium under conditions sufficient to allow for secretion of the milk protein that is unglycosylated or has a non-mammalian glycosylation pattern; and harvesting the milk protein that is unglycosylated or has a non-mammalian glycosylation pattern from the culture medium. Suitable culture medium for use in these methods are known in the art. Culture conditions sufficient to allow for secretion of a milk protein are also known in the art. The host cells used in these methods can be any of the host cells described herein. The host cells can include any of the nucleic acids described herein. The recombinant milk protein produced can be one or more of: β-casein (e.g., any of the β-casein proteins described herein), κ-casein (e.g., any of the κ-casein proteins described herein), α-S1-casein (e.g., any of the α-S1 caseins described herein), α-S2-casein (e.g., any of the α-S2-caseins described herein), α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins

described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), transferrin (e.g., any of the transferrin proteins described herein), and serum albumin (e.g., any of the serum albumin proteins described herein). Some of these methods further include isolating (e.g., purifying) the recombinant milk protein from the culture medium. Methods of isolating (e.g., purifying) a recombinant milk protein from a liquid are well-known in the art. Exemplary methods for isolating (e.g., purifying) recombinant milk proteins are described in Imafidon et al., *Crit. Rev. Food Sci. Nutrition* 37:663-669, 1997),

Also provided are methods of producing a micelle including a β-casein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern and a κ-casein (e.g., any of the κ-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern, that include: culturing any of the host cells described herein in a culture medium under conditions sufficient to allow for release of the micelle from the host cell, where the host cell comprises nucleic acid including a sequence that encodes a β-casein and a sequence that encodes a κ-casein; and harvesting the micelle from the culture medium. Suitable culture medium for use in these methods are known in the art. The host cells used in these methods can be any of the host cells described herein. The host cells can include any of the nucleic acids described herein. The micelles produced can be any of the micelles described herein (and can have any of the physical characteristics of micelles described herein). Some of these methods further include isolating (e.g., purifying) the micelle from the culture medium. Methods of isolating (e.g., purifying) a micelle from a liquid are well-known in the art (e.g., ultracentrifigation).

Exemplary details of culturing yeast host cells are described in Idiris et al., *Appl. Microbiol. Biotechnol.* 86:403-417, 2010; Zhang et al., *Biotechnol. Bioprocess. Eng.* 5:275-287, 2000; Zhu, *Biotechnol. Adv.* 30:1158-1170, 2012; Li et al., *MAbs* 2:466-477, 2010.

It is an object of the invention to express one or more different forms of casein for application into various types of dairy substitute products. Casein subunits such as α-s1-casein, α-s2-casein, β-casein and κ-casein differ by one or more amino acid changes. In certain embodiments, the methods and compositions comprise incorporation of bovine

casein such as α-s1-casein, α-s2-casein, β-casein and κ-casein. In other embodiments, the methods and compositions comprise incorporation of human casein such as β-casein and κ-casein. See U.S. Patent No. 5,942,274. In alternative embodiments, casein is selected from one or more following sources including but not limited to: bovine, human, buffalo, camel, goat, sheep, horse, dolphin, whale, mountain goat and pig.

Also provided are methods for producing the milk protein components that can include, e.g., using a plasmid or construct of the invention as described in Example 1. This method comprises preparing the plasmid of interest, inserting the plasmid into an appropriate host cell, culturing the host cell for a suitable time and under suitable conditions such that the protein of interest is expressed, and then purifying the protein.

Proteins can be separated on the basis of their molecular weight, for example, by size exclusion chromatography, ultrafiltration through membranes, or density centrifugation. In some embodiments, the proteins can be separated based on their surface charge, for example, by isoelectric precipitation, anion exchange chromatography, or cation exchange chromatography. Proteins also can be separated on the basis of their solubility, for example, by ammonium sulfate precipitation, isoelectric precipitation, surfactants, detergents or solvent extraction. Proteins also can be separated by their affinity to another molecule, using, for example, hydrophobic interaction chromatography, reactive dyes, or hydroxyapatite. Affinity chromatography also can include using antibodies having specific binding affinity for the protein, nickel NTA for His-tagged recombinant proteins, lectins to bind to sugar moieties on a glycoprotein, or other molecules which specifically binds the protein.

Generally, centrifugation at an optimum pH yields purification efficiency >95%. Isoelectric point for the native caseins and whey proteins are known. In nature, the pH is 4.91 for bovine α-s1-casein, pH 4.1 for bovine α-s2-casein, pH 4.5 for bovine β-casein, pH 4.1 for bovine κ-casein, pH 4.2 for bovine α-lactalbumin, and pH 5.2 for bovine β-lactoglobulin. The recombinantly produced casein and whey can differ in terms of its phosphate groups and sugar groups. Other methods for protein purification include membrane filtration to remove any potential bacteria or contaminants, followed by lyophilization for protein isolation.

Preferably, the methods and compositions provide for a production cost that is competitive at or below $1,000/kg, $500/kg, $10/kg, $1.0/kg, $0.10/kg, $0.010/kg or $0.0010/kg of milk protein component. In more preferred embodiments, the cost is below $0.009, $0.007, $0.006, $0.005/kg of milk protein component.

Methods of Supplementing a Mammal-Produced Milk

Also provided herein are methods of supplementing a mammal-produced milk that include providing a mammalian-produced milk or a processed mammalian-produced milk; and mixing into the milk at least one of: a β-casein protein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; a κ-casein protein (e.g., any of the κ-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern; and a micelle (e.g., any of the micelles described herein) comprising a β-casein protein (e.g., any of the β-casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern, and a κ-casein protein (e.g., any of the casein proteins described herein) that is unglycosylated or has a non-mammalian glycosylation pattern.

One or more of the β-casein protein, the κ-casein protein, and the micelles can be mixed into the milk to achieve any of the exemplary final concentrations of the β-casein protein, the κ-casein protein, and the micelles in a composition described in the section called "Supplemented Milk Compositions" herein. Methods of mixing are well known in the art. As one of skill in the art can appreciate, additional components described herein can also be mixed into the milk (e.g., any component described herein without limitation).

Methods of Making a Composition

Also provided are methods of producing a composition that include: sonicating a liquid including a protein mixture comprising β-casein protein (e.g., any of the β-casein proteins described herein) and casein κ protein (e.g., any of the κ-casein proteins described herein), or including micelles comprising β-casein protein (e.g., any of the β-casein proteins described herein) and κ-casein protein (e.g., any of the κ-casein proteins described herein); mixing ash (e.g., any of the ash described herein) into the liquid;

adding to the liquid a mixture of one or more lipids (e.g., any of the one or more liquids described herein), one or more flavor compounds (e.g., any of the one or more flavor compounds described herein), and one or more color balancing agents (e.g., any of the one or more color balancing agents described herein), and sonicating the liquid; and adding to the liquid one or more sweetening agents (e.g., one or more of any of the sweetening agents described herein), thereby producing the composition.

In some examples of these methods, the β-casein protein is unglycosylated or has a non-mammalian glycosylation pattern, and/or the κ-casein protein is unglycosylated or has a non-mammalian glycosylation pattern. In some examples of these methods, the ash includes one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some examples of any of these methods, the ash added includes one or more (e.g., two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate.

In some examples of these methods, the one or more lipids comprises at least one (e.g., two, three, four, five, six, or seven) of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. In some examples of these methods, the free fatty acids comprise at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. In some examples of these methods, the phospholipids are soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids. In some embodiments of these methods, the flavor compounds include at least one (e.g., two, three, four, five, or six) flavor compound selected from the group of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone.

In some examples of these methods, the one or more coloring balancing agent is β-carotene or annatto. In some embodiments of these methods, the one or more sweetening agents is a saccharide (e.g., glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, or tagatose) or an artificial sweetener (e.g., stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, or P-4000).

The pH of the resulting composition can be between about pH 6.2 and about pH 7.4 (e.g., about 6.2 to about 7.2; about 6.2 to about 7.0, about 6.2 to about 6.8, about 6.2 to about 6.6, about 6.2 to about 6.4, about 6.4 to about 7.2, about 6.4 to about 7.0, about 6.4 to about 6.8, about 6.4 to about 6.6, about 6.6 to about 7.2, about 6.6 to about 7.0, about 6.6 to about 6.8, about 6.8 to about 7.2, about 6.8 to about 7.0, or about 7.0 to about 7.2).

In any of these methods, the β-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth β-casein protein; and/or the κ-casein protein can be a cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth κ-casein protein.

In some embodiments of these methods, the protein mixture further comprises one or more proteins selected from the group of: α-lactalbumin (e.g., any of the α-lactalbumin proteins described herein), β-lactoglobulin (e.g., any of the β-lactoglobulin proteins described herein), α-S1-casein (e.g., any of the α-S1-casein proteins described herein), α-S2-casein (e.g., any of the α-S2-casein proteins described herein), lactoferrin (e.g., any of the lactoferrin proteins described herein), transferrin (e.g., any of the transferrin proteins described herein), and serum albumin (e.g., any of the serum albumin proteins described herein).

As one of skill in the art can appreciate, the amount of each component used in these methods can be calculated in order to produce any of the compositions described herein.

Methods of Making Butter, Cheese, Caseinate, or Yogurt

Also provided herein are methods of making butter, cheese, caseinate, or yogurt that include providing any of the compositions provided herein; and producing the butter,

cheese, caseinate, or yogurt using any of the composition provided herein as a starting material.

Methods for making butter, cheese, caseinate, or yogurt are well-known in the art. See, e.g., Scott, Cheesemaking Practice, Kluwer Academic/Plenum Publishers, New York, NY, 1998; U.S. Patent No. 4,360,535 (which describes methods of making creams); U.S 285,878 (which described methods of making butter);

Kits

Also provided are kits that include: (a) a mixture of one or more milk proteins (e.g., any of the milk proteins described herein, including any one or more of the β-casein proteins, κ-casein proteins, α-S1-proteins, α-S2-proteins, α-lactalbumin proteins, β-lactoglobulin proteins, lactoferrin proteins, transferrin proteins, and serum albumin proteins described herein), one or more lipids (e.g., any of one or more of the lipids described herein), and one or flavor compounds (e.g., any one or more of the flavor compounds described herein); and (b) a mixture of ash (e.g., any of the ash described herein) and at least one sweetening agent (e.g., any one or more of the sweetening agents described herein). In some examples of these kits, the one or more milk proteins are cow, human, sheep, goat, buffalo, camel, horse, donkey, lemur, panda, guinea pig, squirrel, bear, macaque, gorilla, chimpanzee, mountain goat, monkey, ape, cat, dog, wallaby, rat, mouse, elephant, opossum, rabbit, whale, baboons, gibbons, orangutan, mandrill, pig, wolf, fox, lion, tiger, echidna, or woolly mammoth milk proteins.

In some examples of these kits, the one or more fats are selected from the group of: sunflower oil, coconut oil, tributyrin, mono- and di-glycerides, free fatty acids, and phospholipids. The fatty acids present in the kit can include at least one fatty acid selected from the group of: butyric acid, caproic acid, caprylic acid, and capric acid. The phospholipids in the kit can be soy lecithin phospholipids, sunflower lecithin phospholipids, cotton lecithin phospholipids, or rapeseed lecithin phospholipids.

The flavor compounds in the kit can include at least one flavor compound selected from the group of: δ-decalactone, ethyl butyrate, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, and δ-undecalactone.

In some embodiments of the kit, the mixture in (a) further includes one or more color balancing agent (e.g., any of the color balancing agents described herein, e.g., β-carotene or annatto).

In some examples of the kits, the one or more sweetening agents is a saccharide (e.g., glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, or tagatose) or an artificial sweetener (e.g., stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihyrdochalcone, neotame, or P-4000).

The kits can include an ash including one or more of: calcium, phosphorus, potassium, sodium, citrate, and chloride. In some examples, the ash in the kit includes one or more (e.g., two or three) of $CaCl_2$, KH_2PO_4, and Na_3 citrate.

In some embodiments of the kits, the mixture in (a) is provided in a light-sealed and airtight package (e.g., a metal foil, e.g., an aluminum foil), and/or the mixture in (b) is provided in an airtight package (e.g., a sealed plastic bag).

Some examples of the kits further include instructions for making any of the compositions described herein.

Also provided herein are kits including at least one nucleic acid described herein.

Modulating Flavor Profiles

Sensory impressions such as “feed,” “barny,” or “unclean,” are described as flavor descriptions that are absorbed from the food ingested by the cow and from the odours in its surroundings. Others develop through microbial action due to growth of bacteria in large numbers. Chemical changes can also take place through enzyme action, contact with metals (such as copper), or exposure to sunlight or strong fluorescent light. Quality-control directors are constantly striving to avoid off-flavors in milk and other dairy foods. It is, therefore, an object of the invention to reduce, eliminate or even mask the undesirable flavors and odor of various dairy products.

In certain preferred aspects of the present invention, varying the fat content can alter the flavors and odor of various dairy substitute products. For example, increasing the butyric acid content can change a flavor profile of a non-dairy cheese to a flavor profile similar to parmesan cheese. In other embodiments, modulating the triglycerides such caproic, capric, and/or caprylic acid results in a flavor profile similar to goat cheese. Accordingly, modulating the triglycerides with the ratios of fatty acid components provides different flavor profiles that can be fine-tuned to resemble those of various desirable dairy-food products.

Similarly, the methods and compositions provide for minimizing one or more undesirable aromas by modulating various triglycerides incorporated into the dairy substitute products.

In certain aspects flavor profile is modulated by incorporating synthetic short-chain triglycerides combined with plant-based oils e.g., sunflower oil, in desired combinations. For example a mixture of [C18 C18 C6] and [C18 C6 C18] provides a different flavor profile than a mixture of [C18 C4 C4] and [C18 C10 C10].

Dairy Substitute Products

A wide variety of dairy substitute products can be made using the methods and compositions of the present invention. Such products include without limitation, milk, whole milk, buttermilk, skim milk, infant formula, condensed milk, dried milk, evaporated milk, butter, clarified butter, cream and various types of cheese.

The dairy substitute products can also be incorporated into various food applications as a replacement for dairy products, which include the following ice cream, frozen custard, frozen yogurt, cookies, cakes, cottage cheese, cream cheese, crème fraiche, curds and yogurt.

In certain aspects, the present invention provides one or more subunits of casein selected from α-s1-casein, α-s2-casein, β-casein and κ-casein for the milk protein component in a dairy substitute product. A select combination of casein subunits are used as the primary or at least a part of the milk protein component. In preferred embodiments, the casein composition comprises the following amounts of casein subunits

such that about 12-15g/L α-s1-casein, about 3-4g/L α-s2-casein, about 9-11g/L β-casein and about 2-4g/L κ-casein represent the total casein in a synthetic milk product..

In various embodiments, the casein compositions can comprise about 0.5% about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4%, about 4.5%, about 5%, about 6%, protein by dry weight or total weight. In some embodiments, the casein compositions can comprise about 0.5-2.5%, about 1-2%, about 2-3%, or about 4-10% casein protein by dry weight or total weight. In particular embodiments, the casein compositions can comprise about 1.5-10% protein by dry weight or total weight.

In certain aspects, the methods and compositions of the dairy substitute products are essentially free of one or more serum proteins. Serum proteins typically comprise, among other proteins, enzymes, hormones, growth factors, nutrient transporters and disease resistance factors. In additional embodiments, the methods and compositions of the dairy substitute products are essentially free of one or more immunoglobulins, which may induce an undesirable immune response.

In some embodiments, whey compositions can comprise about 0.001%, about 0.05%, about 0.1%, about 0.5%, about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4% whey protein by dry weight or total weight. In some embodiments, the compositions can comprise about 0.1-1%, about 1-2%, about 2-3%, or about 0.1-2.3% protein by dry weight or total weight. In particular embodiments, the compositions can comprise about 10-15% protein by dry weight or total weight.

In various embodiments, carbohydrates are incorporated into the dairy substitute products. These carbohydrates provide a bland sweetness to the flavor profile of the product and additionally serve as a fast-acting energy and nutrition source. Carbohydrates include but are not limited to sugars such as galactose, sucrose, glucose, fructose and maltose. Dairy-free sources of sugars include but are not limited to sugar beet and other plants such as celery, basil, honey, cherries, corn, spinach, plums, kiwis and peas.

Lactose intolerance is common for many milk consumers. Accordingly, in preferred embodiments, carbohydrates such as lactose are omitted from the dairy substitute composition. In preferred embodiments, methods and compositions of the dairy substitute composition essentially free of lactose.

In some embodiments, the carbohydrate compositions can comprise about 1%, about 1.5%, about 2%, about 2.5%, about 3%, about 3.5%, about 4%, about 4.5%, about 5% carbohydrate by dry weight or total weight. In some embodiments, the compositions can comprise about 1-3%, about 2-4%, or about 10-30% carbohydrate by dry weight or total weight. In particular embodiments, the compositions can comprise about 2-5% carbohydrate by dry weight or total weight.

Ash attributes to the structure and stability of casein micelles. Ash is important for holding the emulsion that is milk or cream together. The calcium and phosphate present in the ash interact with the fat globules and the casein micelles to maintain an emulsified mixture.

The ash also affects the sensory characteristics such as mouthfeel, consistency, and to a certain extent, the flavor of the milk.

In some embodiments, the ash compositions can comprise about 0.1%, about 0.2%, about 0.3%, about 0.4%, about 0.5%, about 0.6%, about 0.7%, about 0.8%, about 0.9%, about 1%, about 2% or about 3% ash by dry weight or total weight. In some embodiments, the compositions can comprise about 0.1-0.3%, about 0.5-0.7%, about 0.7-1%, or about 1-2% ash by dry weight or total weight. In particular embodiments, the compositions can comprise about 0.6-0.8% protein by dry weight or total weight.

Additional ingredients for various animal-free dairy products include vitamins, flavoring agents, natural or artificial sweeteners, coloring agents, salt, pH adjustment agents, binders, buffers, stabilizers, essential amino acids, anti-caking agents, anti-foaming agents, and mixtures thereof.

In some embodiments, the remaining ingredient compositions can comprise about 0%, about 0.01%, about 0.1%, about 0.5%, about 1%, about 2%, about 3%, about 4% or about 5% additives by dry weight or total weight. In some embodiments, the compositions can comprise about 0.001-0.01%, about 0.01-1%, about 0.01-2%, or about 1-5% additives by dry weight or total weight. In particular embodiments, the compositions can comprise about 0-10% additives by dry weight or total weight.

In some aspects, the present invention provides methods and compositions for dairy substitutes with fat comprising varying levels of triglyceride content. In preferred embodiments, isolated triglycerides from various plant sources are incorporated with milk

protein components, carbohydrates and ash. It is an object of the present invention to modulate the fatty acids isolated in plants and transesterified in a dairy substitute to resemble the percentage of fatty acids found in natural dairy products, and/or to develop novel flavor profiles with improved flavor not found in nature. In some embodiments, modulating specific short-to-medium chain fatty acids including but not limited to s butyric, capric, caprylic, caproic and lauric acids provides the desired flavor profile in a dairy substitute.

In some embodiments, the fat compositions in synthetic milk comprises about 0%, about 1%, about 2%, about 3%, about 3.5%, about 4% fat by dry weight or total weight. In some embodiments, the compositions can comprise about 1-2%, about 2-3%, about 3-4% fat by dry weight or total weight. In particular embodiments, the compositions can comprise about 3-4% fat by dry weight or total weight. In alternative embodiments, fat compositions in cream can comprise about 10%, about 20%, about 30%, about 40%, about 50% or even 60%. Preferably, fat compositions in cream is typically about 40 to about 50%.

In some aspects, the short-chain triglycerides are combined with longer chain oil to produce transesterified fatty acid esters. Preferably, the longer chain oils are selected from: sunflower, corn, olive, soy, peanut, walnut, almond, sesame, cottonseed, canola, safflower, flax seed, palm, palm kernel, palm fruit, coconut, babassu, shea butter, mango butter, cocoa butter, wheat germ and rice bran oil. More preferably, the longer chain oils comprise engineered sunflower varieties, which overexpress oleic acid by 400%.

Longer chain oil can also provide to the flavor profile, for example, reduce or even remove sharpness and mellow out the overall flavor profile of the desired end product.

In some embodiments, the fat component of the dairy substitute comprises select triglycerides that are transesterified into longer chain oil such as high-oleic sunflower oil (Example 2). It is contemplated that the same four short chain fatty acids give milk and derivative products such as cheese their particular flavors such as robustness and richness. Various combinations of triglycerides and longer chain oils are incorporated to create a number of different flavor profiles. In one embodiment, triglyceride with three oleic acids and synthetic short-chain triglyceride with, in this case, one butyric, one

hexanoic, and one octanoic acid, yields a desired synthetic "milk fat" triglyceride. Additional embodiments include incorporating various short-chain triglycerides to tune slightly different flavor profiles, for instance, short-chain triglyceride comprising hexanoic acid; short-chain triglyceride comprising hexanoic acid and butyric acid; short-chain triglyceride comprising hexanoic acid and decanoic acid. Accordingly, methods and compositions provide for various combinations of synthetic short-chain triglycerides with the sunflower oil triglycerides resulting in different flavor profiles.

Synthetic Milk

An exemplary embodiment of synthetic milk formulation comprising microbially derived proteins of the present invention is illustrated in Example 4. For example, the present formulation incorporates all four subunits of bovine casein: α-s1-casein, α-s2-casein, β-casein and κ-casein and two whey proteins α-lactalbumin and β-lactoglobulin as the predominant milk protein components in the formulation. The exemplary synthetic milk formulation further comprises plant-based interesterified fats as shown in Figure 1. Additional components include carbohydrates and ash. The resulting milk substitute exhibits characteristics that looks, functions, tastes, smells, and feels like natural milk. As one of key facets of the present invention, modifying the formulations for synthetic milk can exhibit different sensory impressions such as flavoring by modulating the oil content, namely the types of triglycerides added to mimic milk of different flavors.

As described in Young W. Park, Bioactive Components in Milk and Dairy Products, Technology & Engineering, pp 60, 2009, sterols are a minor fraction of total lipids in milk, the main sterol being cholesterol (300 mg/100 g fat, equivalent to 10 mg/100 mL bovine milk) (Park et al., *Small Rumin. Res.* 68: 88-113, 2007). Goat milk has been shown to contain less cholesterol than other milk but generally contains higher total fat than cow milk. See, Posati et al., 1976. Composition of Foods. Agric. Handbook No. 8 - 1. ARS, USDA, Washington, D.C., 1976; Jenness, *J. Dairy Sci.* 63:1605 – 1630, 1980; and Juarez et al., Intl. Dairy Fed. Bull. No. 202. pp. 54-67, 1986, have shown that goat milk has greater palmitic and oleic acid fractions than cows. Cholesterol content was significantly varied among different breeds and most cholesterol in goat milk was in

free state, with only a small fraction in ester form 52 mg/100 g fat. See, e.g., Arora et al., Ind. J. Dairy Sci. 29: 191.

In certain embodiments, the methods and composition of the present invention provide synthetic milk product that has less cholesterol, or is cholesterol free or has the same cholesterol content in comparison to the dairy milk by modulating the oil content, namely the types of triglycerides. In other embodiments, the amount of saturated and unsaturated fats is also modulated in dairy substitutes to at least less or the same amount of fats in comparison to the dairy milk. In preferred embodiments the synthetic milk product of the present invention is very low in saturated fat but smells and tastes like dairy milk. The long chain fatty acids, which are typically saturated fatty acids in milk, are instead monounsaturated acids such as oleic acid, in the preferred embodiments of the invention.

The present invention may not require or at least minimizes pasteurization, as each component can be rendered sterile separately, before combining through the formulation process. In other embodiments of the invention, synthetic milk product of the present invention can undergo pasteurization.

Homogenization is optional for the methods and compositions of the present invention as is the case for natural milk. When sold as a standalone liquid beverage, the synthetic milk product of the present invention can be sold in homogenized form.

Differences between the milk substitute of the present invention with dairy milk include flavor, nutritional value and storage stability. Flavorings can be adjusted to a desired sensory impression based on triglycerides as well as other natural or artificial flavors that can impart in blandness or sharpness or a different aroma such as cow, goat, coconut, almond or soy.

Synthetic Cheese

In other aspects of the present invention, methods and compositions comprising one or more isolated milk protein components, fats, carbohydrates and ash are provided to produce various types of cheese products. Generally, the cheese is made from the milk protein components of the present invention. One or more sensory impressions are incorporated into the cheese product through modulating the triglycerides. Accordingly,

cheese with desired organoleptic characteristics with distinct appearance, aroma, taste and texture can be produced. For some cheese varieties, in addition to modulating the triglycerides, one or more bacteria is employed in the cheese making process for fermentation where fermentative products and by-products such as lactic acid, carbon dioxide, alcohols, aldehydes and ketones are produced. Types of cheese include whey cheese such as ricotta and mozzarella, semi-soft cheese include Havarti and Munster, medium-hard cheese such as Swiss and Jarlsberg, hard cheese such as Cheddar and soft ripened cheese such as Brie and Camembert.

Synthetic Cream

Directly usable cream substitutes should preferably comprise from about 50 to 90% by weight water, and more preferably from about 65 to 80% by weight water, with the base being dispersed within the water. The base for a substitute cream should advantageously contain (all percentages computed using the total weight of the base taken as 100%) from about 22 to 87% by weight carbohydrate (more preferably from about 30 to 64%), from about 12 to 70% by weight of particulate fat (most preferably from about 28 to 60%), and from about 0.4 to 8% by weight of a selected emulsifier or group thereof (most preferably from about 1 to 4%).

In preferred embodiments, the products of the invention are stable in aqueous emulsion. As used herein, a dried, liquid fat-containing non-dairy food product is said to be “stable” when the following minimum criteria are met: reconstituted emulsion stability, whitening capability, oiling or oil separation, feathering-precipitation. See U.S. Patent No. 4,310,561.

Synthetic Butter

Commercial butter is 80–82 % milk fat, 16–17 % water, and 1–2 % milk solids other than fat (sometimes referred to as curd).

Advantages of Dairy Substitute Products or the Compositions Provided Herein

Desirable advantages of the present invention are environmental in nature such as 8 times more energy efficient, 260 times more water efficient than conventional milk

product. Other environmental advantages include less water usage than conventional milk production, which is estimated to be about 1000 L/L and reduced land usage for conventional milk production typically requires grazing, crop land, ability to reduce the 600 billion kg of carbon dioxide per year that is emitted from conventional milk production. The present invention also provides reduction or elimination of costs of feed, operations, labor, animal and marketing. Preferably, substantially reduce feed cost by a factor of 8.

Advantages in food safety include reduction or removal of antibiotic residues, heavy metals, bacteria, adulterations. Accordingly, certain aspects of the present invention provide animal-free milk that is bacteria-free, requires no pasteurization or cold shipping yet has an increased shelf-life and exhibit a number of characteristics such as taste, appearance, handling and mouth feel properties which are identical or at least closely similar to their traditional dairy counterparts. Preferably, the dairy substitute products are essentially free of bacteria such as *Brucella, Camplyobacter, Listeria, Mycobacterium, Salmonella, Shigella, Yersinia, Giardia* and noroviruses, and, thus are safer for consumption. Further advantage include minimal or no pasteurization and/or homogenization. More preferably, the dairy substitute is shelf stable for relatively long periods (e.g., at least three weeks and preferably longer) for production and distribution. Even more preferably, the dairy substitute products has a lower environmental impact.

Several aspects of the invention are described below with reference to example applications for illustration. It should be understood that numerous specific details, relationships, and methods are set forth to provide a full understanding of the invention. One having ordinary skill in the relevant art, however, will readily recognize that the invention can be practiced without one or more of the specific details or with other methods.

EXAMPLES

Example 1

Vectors

Protein sequences bovine α-S1 casein (UniProt accession #P02662), bovine α-2 casein (UniProt accession #P02663), bovine β-casein (UniProt accession #P02666), bovine κ-casein (UniProt accession #P02668), bovine α-lactalbumin (UniProt accession #B6V3I5) and bovine β-lactoglobulin (UniProt accession #P02754) were obtained on Uniprot.org and altered with the following changes: removed 15 or 21-residue signal peptide from N-terminal end; added *XhoI* (CTC GAG) endonuclease recognition sequence and KEX endopeptidase recognition sequence (AAA AGA) to 5' end of DNA; and added *SalI* (GTC GAC) endonuclease recognition sequence to 3' end of DNA. An additional combination sequence was made by combining the sequences for the four caseins in the order shown above, separating each sequence with the following DNA phrase:

[0001] GGC TCA GGA TCA GGG TCG <u>AAA AGA</u> GGC TCA GGA TCA GGG TCG (SEQ ID NO: 128).

[0002] Here the non-underlined segments encode a $(GS)_6$ linker sequence for adequate posttranslational spacing and accessibility to the KEX protease, and the underlined segment encodes the KEX endopeptidase sequence which cleaves the proteins apart post-translation. As above, the entire cassette is flanked on the 5' end by *XhoI* and on the 3' end by *SalI* for ligation into pKLAC2 (New England Biolabs, Beverly, MA). DNA was synthesized by either Gen9, Inc. (Cambridge, MA) or IDT (Coralville, IA). The plasmid used had, among other things, a multiple cloning site, a Lac promoter, an Acetamide based reporter gene and the alpha-mating factor gene, used as a fusion protein for secretion of exogenous proteins.

Yeast Transfection

Transfection of the yeast was accomplished by thawing a tube of 0.5 mL competent cells containing 25% glycerol on ice and adding 0.62 mL yeast transfection reagent. The mixture was then warmed at 30°C for 30 minutes, heat shocked at 37°C for 1 hour. The cells were then pelleted at 7000 rpm & washed twice with 1.0mL of YPGal medium. The cell mixture was then transferred to a sterile culture tube and incubated at

30°C for 3 hours, with constant shaking at 300 rpm. The cell mixture was then transferred to a sterile 1.5mL microcentrifuge tube and pelleted the cells at 7000 rpm for 2 minutes, and resuspended in 1 mL sterile 1X PBS. 10, 50 and 100 µL of the cell suspension was placed into separate fresh sterile 1.5 mL microcentrifuge tubes each containing 50 µL of sterile deionized water. Tubes were mixed briefly and spread onto separate yeast carbon base agar (YCB Agar) plates containing 5 mM acetamide for selection. Plates were then incubated, inverted, at 30°C for 4 days until colonies form. 15 individual colonies were then streaked onto fresh YCB Agar plates containing 5 mM acetamide and incubated at 30°C for 2 days.

DNA encoding alpha-lactalbumin and beta-lactoglobulin, two key whey proteins, was designed in-house and ordered for synthesis from IDT and was transfected into competent *K. lactis* cells from the New England Biolabs kit (Catalog #E1000S) according to the vendor-supplied protocol.

High-Throughput Transfectant Selection

From each YCB Agar plate, once the colonies had grown sufficiently, each of the 30 plates was tested for successful integration of the vector plasmid. This was followed by PCR analysis of each plate to test for special cells with multiple integrants of the vector. Once isolated, the highest producing individual culture was used for scale up. This process can be iterated with successively higher concentrations of selective pressure in order to force colonies to develop higher copy numbers of our engineered plasmid.

Five transfection events were performed and plated on 5 separate plates consisting of nitrogen-free yeast carbon base medium. (Any observed growth on these plates therefore implied successful uptake of the plasmid, if not uptake of the exogenous DNA itself). Of these 5 plates, 100% showed positive growth. 30 individual colonies from the 5 plates were chosen for scale-up, and each was grown in a separate YCB agar plate to create a homozygous culture plate to allow for easy characterization and management. After a 3 day growth period, a single colony from each plate was initially added to a 10 ml glass culture tube, containing 2ml YPGal media, to test for protein expression. After a growth period of two days, the cells were pelleted out and the supernatant was run on an SDS PAGE gel to check for protein expression. The strains which provided the best protein expression were scaled up to a 10 ml, 100 ml, 500 ml,

and ultimately 1L culture vessel. From each whey protein, two liters of culture were grown. Approximately one gram of protein was harvested from the total, suggesting a non-optimized yield/productivity of 0.5 g/L.

Scale-Up in 1L Shake Flask Culture

Cultures are scaled up and seeded in a 1L shake flask at split ratios of at least 1:10. Prior to seeding, inoculation flasks are grown for 24 hours in production media without acetamide supplementation. On the starting day of a fedbatch production run, the reactor is charged with 90% of the target starting volume and heated to the run temperature. For now, the temperature is set at 30°C in order to save on energy costs associated with heating the reactor. Additional parameters can be explored in the process optimization phase. When the reactor reaches 30°C, the inoculation flask is added to the reaction vessel dropwise using a peristaltic pump. The reactor is maintained using vendor supplied software at a target pH. Twice daily samples are taken of the reactor broth in order to quantify the amount of glucose and electrolyte usage by the cells, and as a doublecheck for the reactor's pH and dissolved gas measurements. After each measurement, bolus glucose is added to maintain a target glucose concentration 10% to start, although this may also be altered in process development. When cells reach maximum density, protein production is triggered by the addition of galactose, which triggers the promoter on our pKLAC2 plasmid. Galactose is supplemented until the end of the run. Optimum run length can be determined in process development as well, but is set as a 5-day fedbatch. After a full run, yeast cells are removed from the reactor and the proteins are purified as discussed below.

Casein Protein Purification

The following casein proteins α-s1casein, α-s2casein, and β-casein are inherently hydrophobic, which precipitate out when secreted from the yeast and come into contact with water. Purification from the reactor media involves collection of the protein from the surface of the media, followed by drying to isolate pure protein. Kappa-casein is inherently hydrophilic and purification of the κ-caseins involves the change in pH of the solution to 4.6, followed by centrifugation at 10,000 rcf. Combined casein cassette works the same way as κ-casein.

Whey Protein Purification

Alpha-lactalbumin: The isoelectric point of alpha-lactalbumin is 4.2. When the pH of the bioreactor media solution is lowered to 4.2, the solubility of the protein is at its lowest. This knocks the protein out of solution and allows for collection by centrifugation. Beta-lactoglobulin: Similar to the purification of the alpha-lactalbumin, the pH of the solution is lowered to 5.2 the isoelectric point of beta-lactoglobulin. This neutralizes the charge of the protein and allows its collection by centrifugation at 14,000 rcf.

Protein Purification

The 2L of culture media was spun at 3,000g in a floor centrifuge to pellet out the yeast cells. The pellet was discarded, and the supernatant was transferred into a new vessel & the pH of the solution was lowered to 4.2 for the alpha-lactalbumin and 5.2 for the beta-lactoglobulin (Figure 2A). This was followed by incubation of the supernatant at 35°C for 30 mins in a shaker flask, centrifugation at 14,000g in a floor centrifuge to pellet out the protein mixture (Figure 2B).

Protein Characterization

After separation of the protein by centrifugation, the solid pellet and the supernatant solution were run on a 14% SDA-PAGE gel to check for protein expression. A positive band was observed at 14 kDa and at 18 kDa (Figure 3), which correlates to the size of alpha-lactalbumin and beta-lactoglobulin of bovine origin, respectively. Further characterization is done to confirm equivalence in terms of primary sequence, glycosylation and phosphorylation.

Example 2

Triglyceride Synthesis

Milk fat triglycerides were made by transesterifying short-chain triglycerides into high oleic sunflower oil, the oil from a custom engineered variant of sunflowers which express the following ratios of fatty acid esters as described in Table 1:

Table 1:

Fatty Acids	Sunflower†	NuSun Mid-Oleic Sunflower‡	High-Oleic Sunflower†
C6:0	ND	ND	ND
C8:0	ND	ND	ND
C10:0	ND	ND	ND
C12:0	ND-0.1	ND	ND
C14:0	ND-0.2	0.4-0.8	ND-0.1
C16:0	2.0-7.6	4.0-5.5	2.6-5.0
C16:1	ND-0.3	ND-0.05	ND-0.1
C17:0	ND-0.2	ND-0.05	ND-0.1
C17:1	ND-0.1	ND-0.06	ND-0.1
C18:0	1.0-6.5	2.1-5.0	2.9-6.2
C18:1	14-39.4	43.1-71.8	75-90.7
C18:2	48.3-74.0	18.7-45.3	2.1-17.0
C18:3	ND-0.3	ND-0.1	ND-0.3
C20:0	0.1-0.5	0.2-0.4	0.2-0.5
C20:1	ND-0.3	0.2-0.3	0.1-0.5
C20:2	ND	ND	ND
C22:0	0.3-1.5	0.6-1.1	0.5-1.6
C22:1	ND-0.3	ND	ND-0.3
C22:2	ND-0.3	ND-0.09	ND
C24:0	ND-0.5	0.3-0.4	ND-0.5
C24:1	ND	ND	ND
ND=not detectable (ND defined as <0.05%)			

† From Codex Alimentarius (2001)
‡ From Table 3

www.sunflowernsa.com/uploads/resources/51/warner_.pdf

Short-chain triglyceride preparation

The short-chain fatty acids which are principally responsible for rich flavor in milk and cream are the molecules with even numbers of carbons between 4 and 10, and are mixed in the following ratios as described in Table 2:

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Table 2:

Table 1. Fatty acid composition expressed as percent by weight of total fatty acids in Swedish dairy milk in 2001, given as weighted means with standard deviations (SD) and as the minimum and maximum weighted means. The estimation of the weighted mean values was based on the proportion of milk delivered to each dairy or dairy company at each sampling occasion (seven dairies at four sampling occasions during 2001). The lowest and highest values observed and *p*-values for geographical and seasonal variation are also given

Fatty acid	Weighted mean 2001	SD	Lowest value observed	Highest value observed	Seasonal variation
4:0	4.4	0.1	4.0	5.1	n.s.
6:0	2.4	0.1	2.1	2.9	n.s.
8:0	1.4	0.1	1.2	1.9	n.s.
10:0	2.7	0.2	2.4	3.5	*
12:0	3.3	0.2	3.0	4.1	**
14:0	10.9	0.5	10.0	12.1	***
15:0	0.9	0.0	0.8	1.1	n.s.
16:0	30.6	0.9	28.7	34.1	**
17:0	0.4	0.0	0.4	0.5	**
18:0	12.2	0.4	10.3	13.3	n.s.
20:0	0.2	0.0	0.2	0.2	n.s.
Saturated fatty acids total	*69.4*	*1.7*	*67.1*	*74.4*	***
10:1	0.3	0.0	0.2	0.4	n.s.
14:1	0.8	0.4	0.4	1.3	**
16:1	1.0	0.0	0.9	1.8	n.s.
17:1	0.1	0.0	<0.1	0.3	n.s.
18:1	22.8	1.0	19.7	24.7	***
Mono-unsaturated faty acids, cis, total	*25.0*	*1.0*	*22.2*	*26.7*	**
18:2	1.6	0.1	1.4	1.8	n.s.
18:3	0.7	0.0	0.6	0.9	**
Poly-unsaturated fatty acids, cis, total	*2.3*	*0.1*	*2.0*	*2.5*	n.s.
16:1t	0.4	0.1	0.3	0.4	***
18:1t	2.1	0.7	2.0	3.3	***
18:2t	0.2	0.0	0.1	0.5	n.s.
Trans fatty acids total	*2.7*	*0.7*	*0.6*	*3.9*	***
CLA	0.4	0.1	0.3	0.5	***

n.s.: Not significant; *$p<0.05$; **$p<0.01$; ***$p<0.001$.

www.ncbi.nlm.nih.gov/pmc/articles/PMC2596709/pdf/FNR-52-1821.pdf

Table 3:

Chain Length	Names	Mass Fraction in Mixture (%)
4	Butanoic / butyric acid	40
6	Hexanoic / caproic acid	26
8	Octanoic / caprylic acid	11
10	Decanoic / capric acid	22

The fractions in Table 3 are based upon the relative prevalence of these species in cow's milk, but can be altered during process development both in order to design a better tasting product and in order to design milks of other species, such as buffalo or goat. Short-chain fatty acids in the mass ratios shown above are combined with toluene, paratoluenesulfonic acid, and glycerol in a Dean-Stark water trap, commonly used for esterification reactions in order to remove water produced in the condensation reaction. The reaction is carried out in a fume hood for several hours, until the level of water entering the water trap is observed as unchanging for more than 30 minutes. The vessel is allowed to cool and the mixture is removed from the reaction flask. The mixture is washed twice with a 5% sodium carbonate solution and five times with plain water. Brine (a 10% solution of NaCl in water) is added periodically in order to disrupt an emulsion which forms in the separating funnel. The washed mixture of short-chain triglycerides, water, toluene, and impurities is dried in a rotary evaporator at 90°C and under a 54 mbar atmosphere for one hour, until it has proceeded well past excess in order to minimize the chance of food contamination.

Transesterification

The short-chain triglyceride mixture is combined with high-oleic sunflower oil at a volumetric ratio of 1:8. A mass of sodium methoxide equal to 1% of the oil mixture mass is added in order to catalyze the transesterification, and the reaction vessel is heated to 65°C, stirring continuously, under an inert Argon atmosphere, for six hours. A 5% acetic acid mixture is added to quench the reaction, then the oil is washed five times with deionized water and dried in a rotary evaporator for one hour at >90°C. The finished milk

fat is autoclaved to ensure sterility and is thence suitable for use in milk or cream as described above.

Example 3

Milk Formulation

One non-limiting milk composition formulation is described below.

Table 4:

Components	% (w/v) Range	Amount (g/L)
Casein proteins	1 – 10	10 – 100
Whey proteins	0 – 1	0 – 10
Plant-based milk fats	0 – 8	0 – 80 ml/L
Sugar	0 – 5	0 – 50
Ash	0.1 – 1	1 – 10
Calcium	0.1 – 0.5	1 – L
X (Functional additive)	0 - 1	0 – 10L

Following Table 4, milk formulation is achieved through the following procedure, per 1 liter of milk. 26 grams of casein, 3.5 grams of whey and 5 grams of ash are combined and mixed well. 40 mL of triglycerides are thawed & heated to 55°C. Protein mixture is poured slowly into triglycerides and vortexed at high speed for five minutes. In the meantime, 3.5 grams of whey and 24 grams of galactose are added to 850 mL deionized water; mixture is heated to 37°C. Triglyceride/protein/ash mixture is moved into Waring commercial blender and blended at low speed. Whey/galactose/water mixture is poured slowly into blender; cap placed on blender. Mixture is blended at high speed for ten minutes. Deionized water is added to a final volume of 1000 mL. Milk can optionally be homogenized using existing methods. The above protocol can be altered for cream or arbitrary milk formulations by altering the ratios of solids; however, our preliminary research suggests that the presence of ash in the protein mixture and the separation of a significant proportion of the whey can greatly affect the quality of the emulsion.

Example 4

Synthetic Milk Formulation

As a preliminary proof of concept, in order to determine whether the key components of milk could be recombined to form milk, dry food-grade purified casein and research grade whey was purchased. Irish cream was obtained from a local source and pure fat was isolated from it by centrifuging the cream at 14,000g. Finally, all minerals used were purchased from Sigma Aldrich.

Terms:

C-roux= roux made by mixing casein proteins & fat together while maintaining the temperature of the mixture at 37°C.

W-roux= roux made by mixing whey proteins & fat together while maintaining the temperature of the mixture at 37°C.

CW-roux= roux made by mixing casein & whey proteins together in a mixture first, adding fat and mixing at 37°C.

Table 5:

Experiment	Result
Casein + Fat + Water	A pale yellow liquid with bad taste, precipitation of protein, and bad mouthfeel (watery).
Casein + Water + Fat	A pale yellow liquid with bad taste, precipitation of protein, and bad mouthfeel (watery).
(Casein + Fat) to make a roux. roux + Water	A pale yellow liquid with average taste and bad mouthfeel (watery). Low protein precipitation was observed.

Hypothesized that the bad mouthfeel (e.g., wateriness) was due to the lack of whey protein.

Table 6:

Experiment	Result

Casein + Whey + Fat + Water	Pale yellow-white liquid with bad taste, precipitation of protein, and bad mouthfeel.
C-roux + Whey + Water	Pale yellow-white liquid with average taste, low precipitation of protein, and bad mouthfeel
W-roux + Casein + Water	Pale yellow-white liquid with average taste, low precipitation of protein, and bad mouthfeel.
CW-roux + Water	Pale yellow-white liquid with average taste and bad mouthfeel. Zero protein precipitation.

Hypothesized that bad mouth feel was because of bad casein micelle formation, that addition of Ca would allow the micelle to reform.

Table 7:

Experiment	**Result**
CW-roux + Water + Calcium phosphate (optimum amount of Ca was figured out by trial & error)	White liquid with normal mouth feel. Zero protein precipitation. Average taste

To improve taste, different sugars were added in different concentrations to the above mixture.

Table 8:

Sugar	**2.4%**	**3.0%**	**3.6%**	**4.2%**	**4.8%**
Glucose	Good	Too Sweet	Too Sweet	Too Sweet	Too Sweet
Galactose	Bland	Excellent	Average	Excellent	Too Sweet
Sucrose	Bad	Bad	Bad	Bad	Bad
Maltose	Bland	Excellent	Excellent	Too Sweet	Too Sweet

All additional ions found in cow milk was incorporated to recreate the ionic environment found in nature.

Reference: R. Rosmaninho, L.F. Melo / Journal of Food Engineering 73 (2006) 379–387

Table 9:

Reagent	Composition (mM)
KH_2PO_4	11.60
K_3 Citrate H_2O^a	3.7
Na_3 Citrate $2H_2O$	6.1
K_2SO_4	1.03
K_2CO_3	2.17
KCL	8.0
$CaCL_2$. $2H_2O$	8.98

End result was a liquid which was bright white in color, likely because the ionic environment kept the solids present in milk from joining together and increased the overall refractive index of the solution. Taste was excellent, but it had an average mouthfeel (e.g., a certain amount of chalkiness was observed in the liquid). Exact mineral composition as described in Table 9 can provide excellent mouthfeel.

Milk Fat Synthesis

Synthetic milk fat was made by interesterifying short-chain fatty acids among the large-chain fatty acids present in high-oleic sunflower oil triglycerides. The four short-chains used were:

40% C4: Butyric acid. found in milk, especially goat, sheep and buffalo milk, butter, Parmesan cheese, and as a product of anaerobic fermentation (including in the colon and as body odor). It has an unpleasant smell and acrid taste, with a sweetish aftertaste (similar to ether). Butyric acid is present in, and is the main distinctive smell of, human vomit.

26% C6: Caproic acid. a colorless oily liquid with an odor that is fatty, cheesy, waxy, and like that of goats or other barnyard animals.

11% C8: Caprylic acid. It is an oily liquid that is minimally soluble in water with a slightly unpleasant rancid-like smell and taste.

22% C10: Capric acid. Not much said about the flavor, and with longer carbon chains you start to get less flavors. This is in coconut oil so it is not a milk fat flavor *per se* as much as the other ones.

Iterations include lauric acid (C12), as it is present at 2.9% of total fatty acid content in cow's milk (Beare-Rogers, J.; Dieffenbacher, A.; Holm, J.V. (2001). "Lexicon of lipid nutrition (IUPAC Technical Report)". Pure and Applied Chemistry 73 (4): 685–744. doi:10.1351/pac200173040685.)

The following procedure as described Yu et al., The modification an analysis of vegetable oil for cheese making. *J. Am. Oil Chem. Soc*., 77:911 (2000) was followed in, at quarter of the amounts specified below:

A mixture of butyric, caproic, caprylic, and capric acids (Sigma Chemical Co., St. Louis, MO) at the same ratios found for a milk fat sample [see above] and totaling 7.26 mol, 21.42 g of p-toluenesulfonic acid (Sigma Chemical Co.), 2.305 mol of glycerol (Sigma Chemical Co.), and 458 mL of toluene (Fisher Scientific) was refluxed with a Dean-Stark water trap for 6 h. The reaction was considered complete when no more water dripped into the trap. The SCTG were washed once with 5% sodium carbonate solution and several times with water. Then, the SCTG were heated at 85°C in a rotary evaporator to remove water and toluene.

SCTG from both commercial and natural sources are interesterified with HOSO (Trisun 80, RBD; AC Humko, Memphis, TN) at a SCTG/HOSO ratio of 1:8.82 in order to produce a fat that has the same percentage of SCFA as that of milk fat. SCTG from the commercial source are also interesterified at a SCTG/HOSO ratio of 1:7.19 to produce a fat that has a level of SCFA equal to 120% of that in milk fat. Sodium methoxide (Aldrich Chemical Company, St. Louis, MO) is used as a catalyst at 0.5% of total oil weight. The reaction is carried out at 65°C under nitrogen with stirring for 6 h. Next, 5% acetic acid (Fisher Scientific) is added to neutralize the catalyst, and the oil is then washed several times with distilled water and dried on a rotary evaporator for 30 min at 90°C.

A pilot-scale continuous deodorizer similar to the one described by Smouse (Smouse, T.H., A Laboratory Continuous Deodorizer, inform 8:1176–1181 (1997).) is used to deodorize the interesterified oils. The oil flow rate is 600 mL/h, the column

temperature is 180°C, pressure at 0.5 Torr, and the steam rate 12.6 mL/h. Each batch of deodorized oil is tasted by to ensure the flavor. The deodorized oil is stored at 4°C until used for cheese making.

Example 5

Modulation of Fatty Acids

Sunflower oil triglycerides with three oleic acids are transesterified with four short chain fatty acids containing one butyric acid, one hexanoic acid, and one octanoic acid as part of the fat composition in a mixture of synthetic milk product. This array or combination of fat is expected to result in a synthetic milk fat providing its rich flavor as compared to natural dairy milk. The ability to control the composition of one or more triglycerides is likely to enhance or change flavor profiles of synthetic dairy products. Accordingly, a matrix of long-chain and short-chain can yield in flavor profiles including, but not limited to, multiple aromatic compounds associated with buttery, nutty, sweet, sour, fruity, floral, bitter, woody, earthy, beany, spicy, metallic, sweet, musty, oily and vinegary sensory impressions. Additionally, increase in texture such as creaminess, improvements in melting characteristics or tolerance and increase in stretching ability relative to a corresponding dairy product can be exhibited.

Example 6. Recombinant Production of Milk Proteins

Alpha-lactalbumin, β-lactoglobulin, α-S1-casein, α-S2-casein, β-casein, and κ-casein were produced in recombinant yeast strain (*Pichia pastoris*) strains. As the glycosylation enzymes in yeast are different than mammalian cells, the proteins producted by the yeast will either be non-glucosylated or have a non-mammalian glycosylation pattern. The produced proteins can be used as a component in any of the compositions described herein.

Plasmids

Plasmids were constructed for the expression of each protein. Each plasmid included the following components: an inducible promoter (e.g., AOX1 promoter) or a constuitive (GAP promoter or PGK promoter) promoter, for each protein being

expressed; a sequence encoding a signal peptide for each protein being expressed, derived either from the native bovine protein sequence or one from a yeast protein sequence (alpha mating factor or OST1); a sequence encoding the milk protein(s) to be expressed; a yeast transcription terminator sequence (e.g., AOX1, AOD, or CYC1) for each protein being expressed; a bacterial origin of replication from pUC19 to enable replication of the plasmid in *E. coli*; and a selectable marker cassette (e.g., kanR or zeocinR) to enable selection in bacteria and yeast with antibiotics.

The different plasmids used to produce the different proteins are listed in Table 10 below.

Table 10. Expression Plasmids (SEQ ID NO)

Plasmid name	Selectable marker	Promoter 1	Signal peptide 1	ORF 1	Terminator 1	Promoter 2	Signal peptide 2	ORF 2	Terminator 2
pJAG-nat-LAA	Amp (bacteria), G418 (yeast) (159)[1]	P_AOX1 (153)	SP_lactalbumin (156)	α-lactalbumin (157)	TT_AOX1 (158)				
pJAG-MFa-LAA	Ampicillin (bacteria), G418 (yeast) (159)	P_AOX1 (153)	SP_MFα (154)	α-lactalbumin (157)	TT_AOX1 (158)				
pJAG-OST-LAA	Ampicillin (bacteria), G418 (yeast) (159)	P_AOX1 (153)	SP_OST (155)	α-lactalbumin (157)	TT_AOX1 (158)				
pLH37	Zeocin (151)	P_AOX1 (129)	SP_MFαT (132)	β-lactoglobulin (143)	TT_AOX1 (149)				
pLH0044	Zeocin (151)	P_GAP1 (130)	SP_MFαT (132)	β-lactoglobulin (143)	TT_AOX1 (149)				
pLH0045	Zeocin (151)	P_PGK1 (131)	SP_MFalphaT (132)	β-lactoglobulin (143)	TT_AOX1 (149)				

pLH46	Zeocin (151)	P_GAP1 (130)	SP_β_casein (135)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_αS1_casein (137)	αS1-casein (147)	TT_AOX1 (149)
pLH47	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_αS2_casein (133)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_κ_casein (138)	κ-casein (148)	TT_AOX1 (149)
pLH48	Zeocin (151)	P_GAP1 (130)	SP_OST (134)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	αS1-casein (147)	TT_AOX1 (149)
pLH49	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_OST (136)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	κ-casein (148)	TT_AOX1 (149)
pLH50	Zeocin (151)	P_GAP1 (130)	SP_OST (136)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_αS1_casein (137)	αS1-casein (147)	TT_AOX1 (149)
pLH51	Zeocin (151)	P_GAP1 (130)	SP_β_casein (135)	β-casein (144)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	αS1-casein (147)	TT_AOX1 (149)
pLH52	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_αS2_casein (133)	αS2-casein K113E (146)	TT_CYC1 (150)	P_PGK1 (131)	SP κ_casein (138)	κ-casein (148)	TT_AOX1 (149)
pLH53	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_OST (136)	αS2-casein K113E (146)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST (134)	κ-casein (148)	TT_AOX1 (149)
pLH54	Kanamycin (bacteri	P_GAP1 (130)	SP_OST (136)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_κ_casein (138)	κ-casein	TT_AOX1 (149)

	a), G418 (yeast) (152)							(148)	
pLH55	Kanamycin (bacteria), G418 (yeast) (152)	P_GAP1 (130)	SP_αS2_casein (133)	αS2-casein (145)	TT_CYC1 (150)	P_PGK1 (131)	SP_OST1 (134)	κ-casein (148)	TT_AOX1 (149)

[1]SEQ ID NO: 159 (Synthetic)

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ATGGGTAAGGAAAAGACTCACGTTTCCAGACCAAGATTGAACTCTAACATGGACGCTGACTTGTA
CGGTTACAAGTGGGCTAGAGACAACGTTGGTCAATCTGGTGCTACTATTTACAGATTGTACGGTA
AGCCAGACGCTCCAGAGTTGTTCTTGAAGCACGGTAAGGGTTCTGTTGCTAACGACGTTACTGAC
GAGATGGTTAGATTGAACTGGTTGACTGAGTTCATGCCATTGCCAACTATTAAGCACTTCATTAG
AACTCCAGACGACGCTTGGTTGTTGACTACTGCTATTCCAGGTAAGACTGCTTTCCAAGTTTTGG
AGGAGTACCCAGACTCTGGTGAGAACATTGTTGACGCTTTGGCTGTTTTCTTGAGAAGATTGCAC
TCTATTCCAGTTTGTAACTGTCCATTCAACTCTGACAGAGTTTTCAGATTGGCTCAAGCTCAATC
CAGAATGAACAACGGTTTGGTTGACGCTTCTGACTTCGACGACGAGAGAAACGGTTGGCCAGTTG
AGCAAGTTTGGAAGGAGATGCACAAGTTGTTGCCATTCTCTCCAGACTCTGTTGTTACTCACGGT
GACTTCTCTTTGGACAACTTGATTTTCGACGAGGGTAAGTTGATTGGTTGTATTGACGTTGGTAG
AGTTGGTATTGCTGACAGATACCAAGACTTGGCTATTTTGTGGAACTGTTTGGGTGAGTTCTCTC
CATCTTTGCAAAAGAGATTGTTCCAAAAGTACGGTATTGACAACCCAGACATGAACAAGTTGCAA
TTCCACTTGATGTTGGACGAGTTCTTCTAA
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These plasmids were then integrated into wildtype *P. pastoris* for expression. The production of the proteins was detected by SDS-PAGE, ELISA, and Western blot.

Alpha-Lactalbumin

Strain Construction

Three plasmids were created, placing the expression of bovine alpha-lactalbumin (bvLAA) under the control of the methanol-induced promoter P_{AOX1}, with either the native LAA signal peptide (pJAG-nat-LAA), the full length alpha mating factor signal peptide (pJAG-aMF-LAA), or the OST1 signal peptide (pJAG-OST-LAA).

Prior to transformation, 20 µg each plasmid was linearized by digestion with the restriction enzyme SacI. The digested plasmids were then concentrated by ethanol precipitation, and resuspended in 10 µl distilled water.

Competent *Pichia pastoris* cells were prepared as follows: A culture of *P. pastoris* was grown to log phase (OD600 ~1.0) in YPD media (10 g/L yeast extract, 20

g/L peptone, 20 g/L dextrose). A 1.5 mL aliquot was harvested by centrifugation, then resuspended in 1 mL of a 1:1 mixture of YPD+20 mM HEPES (pH 8):1M lithium acetate. After adding 10 µL 1 M dithiothreitol, the cells were incubated for 15 min at 30°C in a shaker at 300 rpm. The cells were pelleted by centrifugation and washed three times in 1 mL ice cold 1 M sorbitol. After the final wash, the cells were resuspended in 50 µL 1 M sorbitol.

The cells were combined with the linearized plasmid DNA in a chilled 2 mm electroporation cuvette, and subjected to a 1.5 kV pulse (25 µF, 200 Ω). The cells were transferred to a culture tube with 200 µL cold 1:1 YPD:1 M sorbitol, and allowed to recover for 2 hours at 30°C (300 rpm). Finally, the cells were plated onto YPD agar plates containing zeocin and grown for two days at 30°C.

Protein Expression

Colonies were picked from the agar plates and grown in 750 µL BMD1% (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml biotin, 1.1% glucose) at 30°C, 300 rpm. After 48 hours, 900 µL of culture was used to inoculate 750 µL BMM2 (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 1% methanol). After 24 hours, 150 µL BMM10 (BMM10: 0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 5% methanol), and samples were harvested for analysis after one additional day.

Analysis

Protein expression was analyzed in samples of culture that were centrifuged to remove the cell mass. The clarified supernatant was then evaluated by SDS-PAGE, ELISA, and western blot.

To visualize total protein via SDS-PAGE, cell-free supernatant was treated with SDS-PAGE sample buffer, boiled, and run on a 10% polyacrylamide gel. The gel was stained with SYPRO Ruby stain (Life Technologies). The resulting gel shows that secretion of α-lactalbumin occurs using the OST1 or the native lactalbumin signal peptide (Figure 4).

To measure protein titers via ELISA, 25 µL of each sample were placed in a half-area 96 well microtiter plate, and allowed to bind overnight at 4°C. After removing the samples, the binding surface was blocked by filling each well with 1% (w/v) bovine serum albumin (BSA) dissolved in Tris Buffered Saline (50 mM Tris, pH 7.6, 150 mM NaCl) and incubating for 1 hour at room temperature. The samples were then incubated for 1.5 hr in primary antibody that was diluted in 1% BSA/TBS + 0.1% (v/v) Tween-20. Following three washes in TBS + Tween, the samples were incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (TMB Single Solution, Life Technologies) was added, and the absorbance at 650 nm was measured. The resulting data show that α-lactalbumin was secreted using the native α-lactalbumin signal peptide or the OST1 signal peptide (Figure 5).

To analyze samples via Western blot, one volume of sample was combined with an equal volume of SDS-PAGE sample buffer and run on a 10% polyacrylamide gel. The proteins were transferred to a nitrocellulose membrane, which was blocked by treating with 1% BSA/TBS for 1 hr. After incubating for 1.5 hr with primary antibody diluted in 1% BSA/TBS+Tween, the blot was washed three times in TBS+Tween. The blot was then incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (1-Step Ultra TMB Blotting Solution, Thermo Fisher) was added. After staining was completed, the blot was washed in distilled water.

Beta-Lactoglobulin

Strain Constructions

Three plasmids were assembled, placing the expression of bovine beta-lactoglobulin (bvLGB) under the control of either a methanol-induced promoter (P_{AOX1} in pLH37) or one of two constitutive promoters (P_{GAP} in pLH44, or P_{PGK} in pLH45).

Prior to transformation, 20 µg pLH37 was linearized by digestion with the restriction enzyme SacI. The same amounts of pLH44 and pLH45 were linearized with

the enzyme ApaLI. The digested plasmids were then concentrated by ethanol precipitation, and resuspended in 10 µl distilled water.

Competent *Pichia pastoris* cells were prepared as follows: A culture of *P. pastoris* was grown to log phase (OD600 ~1.0) in YPD media (10 g/L yeast extract, 20 g/L peptone, 20 g/L dextrose). A 1.5 mL aliquot was harvested by centrifugation, then resuspended in 1 mL of a 1:1 mixture of YPD+20 mM HEPES (pH 8):1M lithium acetate. After adding 10 µL 1 M dithiothreitol, the cells were incubated for 15 min at 30°C in a shaker at 300 rpm. The cells were pelleted by centrifugation and washed three times in 1 mL ice cold 1 M sorbitol. After the final wash, the cells were resuspended in 50 µL 1 M sorbitol.

The cells were combined with the linearized plasmid DNA in a chilled 2 mm electroporation cuvette, and subjected to a 1.5 kV pulse (25 µF, 200 Ω). The cells were transferred to a culture tube with 200 µL cold 1:1 YPD:1 M sorbitol, and allowed to recover for 2 hours at 30°C (300 rpm). Finally, the cells were plated onto YPD agar plates containing zeocin and grown for two days at 30°C.

Protein Expression

To evaluate expression in clones transformed with the plasmid containing a methanol-inducible promoter (pLH37), individual clones were grown in 750 µL BMD1% (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml biotin, 1.1% glucose) at 30°C, 300 rpm. After 48 hours, 900 µL of culture was used to inoculate 750 µL BMM2 (0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 1% methanol). After 24 hours, 150 µL BMM10 (BMM10: 0.2M Potassium Phosphate buffer, 13.4 g/l Yeast Nitrogen Base, 0.4 mg/ml Biotin, 5% methanol), and samples were harvested for analysis after one additional day.

To evaluate expression in clones transformed with a plasmid supporting constitutive expression (pLH44 or pLH45), individual clones were grown overnight in PG media (20 g/L peptone, 2% glycerol) at 30°C with shaking at 300 rpm. The cultures were diluted 1:10 in minimal sulfate media:

Glucose 20 g/L
Calcium Chloride (CaCl2) 1 g/L

Sodium phosphate (Na2PO4) 24 g/L
Potassium sulfate (K2SO4) 18.2 g/L
Magnesium sulfate (MgSO4-7H2O) 14.9 g/L
Ammonium sulfate (NH4)2SO4 9 g/L
EDTA (Ethylenediaminetetraacetic acid) 65.25 mg/L
FeSO4-7H2O (Iron Sulfate heptahydrate) 12.18 g/L
ZnSO4-7H2O (Zinc sulfate heptahydrate) 25.0125 g/L
CaCl2-2H2O (Calcium chloride dihydrate) 12.615 g/L
CuSO4-5H2O (Copper sulfate pentahydrate) 2.175 g/L
NaMoO4-2H2O (Sodium molybdate dihydrate) 2.088 g/L
CoCl2-6H2O (Cobalt chloride hexahydrate) 2.0445 g/L
MnCl2-4H2O (Manganese chloride tetrahydrate) 1.392 g/L
Biotin 0.2175 g/L

After 48 hours, samples were harvested for analysis.

Analysis

Protein expression was analyzed in samples of culture that were centrifuged to remove the cell mass. The clarified supernatant was then evaluated by ELISA and Western blot.

To measure protein titers via ELISA, 25 μL of each sample were placed in a half-area 96 well microtiter plate, and allowed to bind overnight at 4°C. After removing the samples, the binding surface was blocked by filling each well with 1% (w/v) bovine serum albumin (BSA) dissolved in Tris Buffered Saline (50 mM Tris, pH 7.6, 150 mM NaCl) and incubating for 1 hour at room temperature. The samples were then incubated for 1.5 hr in primary antibody that was diluted in 1% BSA/TBS + 0.1% (v/v) Tween-20. Following three washes in TBS + Tween, the samples were incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (TMB Single Solution, Life Technologies) was added, and the absorbance at 650 nm was measured. The resulting data show the secretion of β-lactoglobulin (Figure 6).

To analyze samples via western blot, one volume of sample was combined with an equal volume of SDS-PAGE sample buffer and run on a 10% polyacrylamide gel. The proteins were transferred to a nitrocellulose membrane, which was blocked by treating with 1% BSA/TBS for 1 hr. After incubating for 1.5 hr with primary antibody

diluted in 1% BSA/TBS+Tween, the blot was washed three times in TBS+Tween. The blot was then incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (1-Step Ultra TMB Blotting Solution, Thermo Fisher) was added. After staining was completed, the blot was washed in distilled water. The resulting Western blot shows that β-lactoglobulin was secreted from the recombinant yeast (Figure 7).

Bovine Caseins

Dual expression plasmids were built, to support expression of α-S1-casein with β-casein in one plasmid, and α-S2-casein with kappa-casein in another plasmid. These pairings were chosen because the molar ratio of α-S1:α-S2:β:κ in fluid milk is approximately 5.5 : 1.5 : 4.0 : 1.5; it is therefore desirable to have a similar number of copies of α-S1-casein and beta-casein, and a similar number of copies of α-S2-casein and kappa-casein.

Beta-casein and α-S2-casein were placed under the control of the constitutive PGAP promoter in their respective plasmids, while α-S1-casein and κ-casein were placed under the control of the constitutive PPGK promoter.

In order to direct the proteins into the secretory pathway, the proteins were expressed with either their native signal peptide (pLH46 and pLH47), or the OST1 signal peptide (pLH48 and pLH49). In addition, plasmids were made in which one protein was expressed with its native signal peptide, and the other protein with the OST1 signal peptide:

pLH0050	OST1-beta, native-α-S1
pLH0051	native-β, OST1-α-S1
pLH0054	OST1-α-S2, native-κ
pLH0055	native-α-S2, OST1-κ

To generate strains expressing all four casein proteins, yeast cells were first transformed with the plasmid encoding beta-casein and α-S1-casein. Prior to transformation, 20 μg of each plasmid was linearized with the enzyme ApaLI. The

digested plasmids were then concentrated by ethanol precipitation, and resuspended in 10 µl distilled water.

Competent *Pichia pastoris* cells were prepared as follows: A culture of P. pastoris was grown to log phase (OD600 ~1.0) in YPD media (10 g/L yeast extract, 20 g/L peptone, 20 g/L dextrose). A 1.5 mL aliquot was harvested by centrifugation, then resuspended in 1 mL of a 1:1 mixture of YPD+20 mM HEPES (pH 8):1M lithium acetate. After adding 10 µL 1 M dithiothreitol, the cells were incubated for 15 min at 30°C in a shaker at 300 rpm. The cells were pelleted by centrifugation and washed three times in 1 mL ice cold 1 M sorbitol. After the final wash, the cells were resuspended in 50 µL 1 M sorbitol.

The cells were combined with the linearized plasmid DNA in a chilled 2 mm electroporation cuvette, and subjected to a 1.5 kV pulse (25 µF, 200 Ω). The cells were transferred to a culture tube with 200 µL cold 1:1 YPD:1 M sorbitol, and allowed to recover for 2 hours at 30°C (300 rpm). Finally, the cells were plated onto PG agar (20 g/L peptone, 2% (v/v) glycerol, 2% agar) plates containing zeocin and grown for two days at 30°C.

Six clones from the beta+alphaS1 plates were then grown in culture, and made competent for DNA uptake using the procedure described above. They were then transformed with the linearized alphaS2+kappa plasmids, and grown for two days at 30°C on PG plates containing G418.

Expression

To evaluate the production of bovine casein proteins, five clones expressing casein and a wildtype yeast negative control were grown overnight in PG media (20 g/L peptone, 2% glycerol) at 30°C with shaking at 300 rpm. All five of the casein-expressing clones expressed alphaS2- and κ-casein with the respective native casein signal peptides. Clones sLH115, 116, 117, and 118 expressed β-casein and α-S1-casein with the respective native signal peptides; clone sLH122 expressed beta-casein and α-S1-casein with the OST1 signal peptide. The cultures were diluted 1:10 in minimal sulfate media:

Glucose 20 g/L
Calcium Chloride (CaCl2) 1 g/L

Sodium phosphate (Na2PO4) 24 g/L
Potassium sulfate (K2SO4) 18.2 g/L
Magnesium sulfate (MgSO4-7H2O) 14.9 g/L
Ammonium sulfate (NH4)2SO4 9 g/L
EDTA (Ethylenediaminetetraacetic acid) 65.25 mg/L
FeSO4-7H2O (Iron Sulfate heptahydrate) 12.18 g/L
ZnSO4-7H2O (Zinc sulfate heptahydrate) 25.0125 g/L
CaCl2-2H2O (Calcium chloride dihydrate) 12.615 g/L
CuSO4-5H2O (Copper sulfate pentahydrate) 2.175 g/L
NaMoO4-2H2O (Sodium molybdate dihydrate) 2.088 g/L
CoCl2-6H2O (Cobalt chloride hexahydrate) 2.0445 g/L
MnCl2-4H2O (Manganese chloride tetrahydrate) 1.392 g/L
Biotin 0.2175 g/L

After 48 hours, samples were harvested for analysis.

Analysis

Protein expression was analyzed in samples of culture that were centrifuged to remove the cell mass. The clarified supernatant was then evaluated by ELISA and western blot.

To measure protein titers via ELISA, 25 μL of each sample were placed in a half-area 96 well microtiter plate, and allowed to bind overnight at 4°C. After removing the samples, the binding surface was blocked by filling each well with 1% (w/v) bovine serum albumin (BSA) dissolved in Tris Buffered Saline (50 mM Tris, pH 7.6, 150 mM NaCl) and incubating for 1 hour at room temperature. The samples were then incubated for 1.5 hr in primary antibody that was diluted in 1% BSA/TBS + 0.1% (v/v) Tween-20. Following three washes in TBS + Tween, the samples were incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (TMB Single Solution, Life Technologies) was added, and the absorbance at 650 nm was measured. The ELISA data show that the different yeast strains can secrete α-S1 casein and β-casein into the culture medium (Figure 8).

To analyze samples via western blot, one volume of sample was combined with an equal volume of SDS-PAGE sample buffer and run on a 10% polyacrylamide gel.

The proteins were transferred to a nitrocellulose membrane, which was blocked by treating with 1% BSA/TBS for 1 hr. After incubating for 1.5 hr with primary antibody diluted in 1% BSA/TBS+Tween, the blot was washed three times in TBS+Tween. The blot was then incubated with secondary antibody conjugated with horseradish peroxidase (HRP) for an additional hour. After three final washes in TBS + Tween, a chromogenic substrate (1-Step Ultra TMB Blotting Solution, Thermo Fisher) was added. After staining was completed, the blot was washed in distilled water.

The data in this Example show that the different expression vectors described herein can be used to generate transgenic yeast strains that secrete the different milk proteins.

Example 7. Method of Making a Composition

An exemplary composition described herein was generated using the specific method described below. A schematic diagram of this method is shown in Figure 9.

To prepare the milk product, laboratory equipment such as mixers, stirring plates, and sonicators are employed. For large scale production, standard fluid milk processing equipment should be used.

As Figure 9 shows, there are three main components to this method of making a composition. These steps include:

A. Preparation of the protein solution
B. Preparation of the oil mixture
C. Reconstitution of the milk solids

In step A, powdered micellar casein protein and whey protein are combined and blended (step 1) and subsequently mixed with deionized (DI) water (step 2) to obtain the protein solution **1**. Typically, this contains 2.8% powered micellar casein, 0.7% powered whey protein, and 85.5% water in this solution. The mixing vessel is covered to prevent evaporation of water. This mixing is performed by mixers, stirring plates, or a sonicator in a sufficient period of time (approximately 30 minutes). This mixing time ensures all

proteins are dispersed in the water. The mixing speed has been optimized as medium which provides enough force to disperse the proteins and avoids the entrapment of air in the solution. The water content can be adjusted according to the usage of other ingredients.

In step 3, separate solutions of $CaCl_2$, KH_2PO_4, and Na_3 citrate in water are the mineral sources utilized to prepare similar mineral profile as native bovine milk. In a typical instance, $CaCl_2$ solution concentration is 0.1 g/mL, KH_2PO_4 is 0.27 g/mL, and Na_3citrate solution is 0.21 g/ml Na_3citrate. The water used to prepare KH_2PO_4 with Na_3citrate solution is usually warm to make sure the complete dissolution of KH_2PO_4. During the mixing of protein solution **1**, 0.015% $CaCl_2$ is added slowly (step 4). The volume of $CaCl_2$ solution used is adjusted according to the weight percent of $CaCl_2$ needed. The mixing continues for approximately 30 minutes to allow the complete interaction between proteins and Ca^{2+} ions. Subsequently, 0.27% KH_2PO_4 and 0.21% Na_3citrate are divided to 5 portions and each portion is added slowly into the mixing solution at an interval time of 5 to 10 minutes (step 5). 0.085% $CaCl_2$ is divided to 4 portions and each portion is added slowly into the mixing solution at an interval time of 5-10 minutes (step 6). The mixing continues for at least 30 minutes, preferably 1-2 hours, to obtain the protein solution 2.

In the process B, low speed mixing is sufficient to achieve the homogeneous mixing of different oil ingredients. The percent of each component used below for preparing the oil mixture 1 is based on the total oil mixture 1 weight. Initially, 65% sunflower oil, 29% coconut oil, and 2% tributyrin are mixed together form the oil base (step 7). The sunflower oil and coconut oil is deodorized to prevent an unwanted aroma. The combination of sunflower oil, coconut oil, and tributyrin can mimic a similar fatty acid profile as the native milk. The oil base ingredient and its content can be adjusted according to different needs (different types of products). The aroma mixture is prepared by mixing different the aroma components in the sunflower oil (step 8). The compounds used to mimic the aroma contain, but are not limited to ethyl butyrate, δ-decalactone, 2-furyl methyl ketone, 2,3-pentanedione, γ-undecalactone, δ-undecalactone, acetoin, furfuryl alcohol, furfural, 2-methylfurfural, and 2-methylpyrazine. Their contents can be adjusted by different applications and preference. 2.5% mono- and di-glycerides, 0.6%

free fatty acids, 0.5% phospholipids, and 0.4% aroma mixture are added to prepare the oil mixture **1** with mixing (step 9). In a typical instance, free fatty acids contain 0.15% butyric acid and 0.45% hexanoic acid. Soy lecithin is used as the phospholipid source. Soy lecithin is readily available and is inexpensive. A β-carotene solution is prepared in sunflower oil at a concentration of 0.5 mg/g (step 10). 4% of oil mixture 1 and 0.06% the β-carotene solution are mixed together to obtain the oil mixture 2 (step 11). The usage of β-carotene is adjusted to achieve different color levels of the milk. The usage of oil mixture 1 can also be adjusted according to different milk product applications.

In the process C, oil mixture 2 is added slowly to protein solution 2 and mixed thoroughly to prepare product mixture 1 (step 12). The mixing can be performed by mixers or sonicators. In a typical instance, oil mixture 2 and protein solution 2 are mixed under medium to high speed to ensure sure the oil is uniformly dispersed in the aqueous solution. Subsequently, sonication is applied to break down the oil globules into smaller size, which leads to an increase of their stability in the solution. It is necessary to prevent the entrapment of air bubbles in the solution during mixing. A mixing time of least 20 minutes is utilized to stir the oil mixture 2 into the aqueous solution and allow the thorough dispersion. A 4% maltose solution is added into product mixture 1 and was mixed continuously for an additional 30 minutes to yield product mixture 2 (step 13). The sweetness can be adjusted by the sugar content according to different applications. The source of the sugar can also be adjusted according to requests. Extra DI water may be required to make up the final total weight to 100%.

No intensive homogenization, pasteurization, and sterilization is included in this process. However, it will be necessary to apply these steps to prepare the product mixture in the process C for a scale-up production.

Equipment Used

Mixer: IKA-Labortechnik RW16 Basic, speed level (4-6)
Tip sonicator: Qsonica Model CL-188, Amplitude 70%
Water bath sonicator: Bransonic Model 1510R-MT

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Example 8. Example Formulations

Example formulations compositions that have a similar taste and texture profile as whole milk, cream, high protein milk, fat-free milk, and sugar-free milk are provided in Tables 11-15 below.

As can be appreciated in the art, the compositions listed in Tables 11-15 are made by making the necessary modifications to the process described in Example 7.

Table 11. Composition like Whole Milk

Total Sample Weight 100 g

Protein Component 3 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Fat 3.9 g			
Sunflower Oil	65%	2.54 g	2.54%
Coconut Oil	29%	1.13 g	1.13%
Tributyrin	2%	0.08 g	0.08%
Mono and Di Glycerides	2.50%	0.098 g	0.098%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.023 g	0.023%
Phospholipids	0.50%	0.020 g	0.02%
Aroma Compounds 0.4 %	0.40%	0.016 g	0.016%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		88.56 g	88.56%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

Table 12. Composition like Cream

Total Sample Weight 100 g

Protein Component 3 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Fat 40 g			
Sunflower Oil	65%	26 g	26.0%
Coconut Oil	29%	11.6 g	11.6%
Tributyrin	2%	0.8 g	0.8%
Mono and Di Glycerides	2.50%	1 g	1.0%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.24 g	0.24%
Phospholipids	0.50%	0.2 g	0.2%
Aroma Compounds 0.4 %	0.40%	0.16 g	0.16%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		52.46 g	52.46%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

Table 13. Composition like Protein Rich Milk

Total Sample Weight 100 g

Protein Component 6 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	4.8 g	4.80%
Whey Protein	20%	1.2 g	1.20%
Fat 3.9 g			
Sunflower Oil	65%	2.54 g	2.54%
Coconut Oil	29%	1.13 g	1.13%
Tributyrin	2%	0.08 g	0.08%
Mono and Di Glycerides	2.50%	0.098 g	0.098%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.023 g	0.023%
Phospholipids	0.50%	0.020 g	0.02%
Aroma Compounds 0.4 %	0.40%	0.016 g	0.016%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		85.56 g	85.56%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

Table 14. Composition like Fat-Free Milk

Total Sample Weight 100 g

Protein Component 3 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Maltose		4 g	4%
Water		92.46 g	92.46%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

Table 15. Composition like Sugar Free Milk

Total Sample Weight 100 g

Protein Component 3 g	**Wt%**	**Amount in Section**	**Weight Percent in 100 g Sample**
Micellular Casein	80%	2.4 g	2.40%
Whey Protein	20%	0.6 g	0.60%
Fat 3.9 g			
Sunflower Oil	65%	2.54 g	2.54%
Coconut Oil	29%	1.13 g	1.13%
Tributyrin	2%	0.08 g	0.08%
Mono and Di Glycerides	2.50%	0.098 g	0.098%
Free fatty acids (butyric and hexanoic acid)	0.60%	0.023 g	0.023%
Phospholipids	0.50%	0.020 g	0.02%
Aroma Compounds 0.4 %	0.40%	0.016 g	0.016%
Minerals 0.54 g			
Calcium		0.1005g	0.1005%
Phosphorus		0.09 g	0.090%
Potassium		0.078 g	0.078%
Sodium		0.0545 g	0.0545%
Citrate		0.1493 g	0.1493%
Chloride		0.064 g	0.064%
Sugar 4 g			
Stevia		4 g	4%
Water		88.56 g	88.56%

Aroma Compounds List

δ–Decalactone
Ethyl butyrate
2-furyl methyl ketone
2,3-pentanedione
γ–Undecalactone
δ–Undecalactone

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Example 9. Exemplary Composition

An exemplary composition made by the presently described methods is shown in Figure 10. The composition in Figure 10 has a similar look (color), viscosity, foaming property, flavor, and nutritional value as a mammal-produced milk. The composition shown in Figure 10 comprises mammal-derived proteins.

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CLAIMS

1. A food composition that is suitable as a dairy substitute, said food composition comprising:

(i) a recombinant β-lactoglobulin protein and a recombinant α-lactalbumin protein, wherein one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell;

(ii) one or more sweetening agents;

(iii) ash; and

(iv) optionally, one or more lipids,

wherein:

the food composition has one or more characteristics of a dairy food product selected from the group consisting of: taste, aroma, appearance, handling, mouthfeel, density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification; and the food composition does not comprise any other milk proteins than those in (i).

2. The food composition of claim 1, wherein:

the recombinant β-lactoglobulin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell; and

the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to the bovine protein amino acid sequence and has been produced by a fungal cell.

3. The food composition of claim 1 or 2, wherein the composition comprises:

a final concentration of α-lactalbumin protein of about 0.4 weight % to about 2.5 weight %; and

a final concentration of β-lactoglobulin protein of about 2.5 weight % to about 4.5 weight %.

4. The food composition of claim 1, wherein the fungal cell is selected from the group consisting of: a strain of *Aspergillus nidulans*, a strain of *Aspergillus niger*, a strain of *Aspergillus oryzae*, a strain of *Candida albicans*, a strain of *Trichoderma reesei*, a strain of *Chrysosporium lucknowense*, a strain of *Fusarium gramineum*, a strain of *Fusarium venenatum*, a strain of *Physcomitrella patens*, a strain of *Neurospora crassa*, a strain of *Pichia pastoris*, a strain of *Pichia flnlandica*, a strain of *Pichia trehalophila*, a strain of *Pichia koclamae*, a strain of *Pichia membranaefaciens*, a strain of *Pichia minuta* (*Ogataea minuta*, *Pichia lindneri*), a strain of *Pichia opuntiae*, a strain of *Pichia thermotolerans*, a strain of *Pichia salictaria*, a strain of *Pichia guercuum*, a strain of *Pichia pijperi*, a strain of *Pichia stiptis*, a strain of *Pichia methanolica*, and a strain of *Hansenula polymorpha*.

5. The food composition of claim 1, wherein one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein has been secreted by a fungal cell.

6. The food composition of claim 1, wherein the food composition does not include an animal-derived compound.

7. The food composition of claim 1, wherein the food composition does not include any compound isolated from a milk produced by a mammal.

8. The food composition of claim 1, wherein the food composition does not include at least one compound otherwise present in a mammal-produced milk.

9. The food composition of claim 1, wherein the food composition comprises a plurality of micelles.

10. The food composition of claim 8, wherein the plurality of micelles comprises one or both of the recombinant β-lactoglobulin protein and the recombinant α-lactalbumin protein.

11. The food composition of claim 1, wherein the food composition comprises one or more lipids selected from the group consisting of: plant-derived oils, plant-derived monoglycerides, plant-derived diglycerides, plant-derived triglycerides, plant-derived free fatty acids, and plant-derived phospholipids.

12. The food composition of claim 11, wherein the total concentration of one or more lipids is up to about 45 weight %.

13. The food composition of claim 1, wherein the one or more sweetening agents are saccharides selected from the group consisting of: glucose, mannose, maltose, fructose, galactose, lactose, sucrose, monatin, and tagatose.

14. The food composition of claim 1, wherein the one or more sweetening agents are artificial sweeteners selected from the group consisting of: stevia, aspartame, cyclamate, saccharin, sucralose, mogrosides, brazzein, curculin, erythritol, glycyrrhizin, inulin, isomalt, lacititol, mabinlin, malititol, mannitol, miraculin, monatin, monelin, osladin, pentadin, sorbitol, thaumatin, xylitol, acesulfame potassium, advantame, alitame, aspartame-acesulfame, sodium cyclamate, dulcin, glucin, neohesperidin dihydrochalcone, neotame, and P-4000.

15. The food composition of claim 1, wherein the ash comprises one or more of:

calcium, phosphorous, phosphate, potassium, sodium, citrate, sulfate, carbonate, chloride, magnesium, iron, copper, zinc, manganese, selenium, iodine, retinol, carotene, vitamins, vitamin D, vitamin E, vitamin B12, thiamin, and riboflavin, or a salt(s) thereof.

16. The food composition of claim 1, wherein the ash has a final concentration in the food composition of about 5% w/w to about 7% w/w.

17. The food composition of claim 1, wherein the ash comprises one or more of:

$CaCl_2$ at a final concentration of about 0.005% w/w to about 0.02% w/w;

KH_2PO_4 at a final concentration of about 0.02% w/w to about 0.04% w/w; or

Na_3citrate at a final concentration of about 0.01% w/w to about 0.03% w/w.

18. The food composition of claim 1, wherein the food composition is a dairy substitute selected from the group consisting of: a yogurt, a cheese, a milk, a butter, a cream, an infant formula, an ice cream, a frozen custard, a cottage cheese, a cream cheese, a crème fraiche, and a curd.

19. The food composition of claim 1, wherein the food composition is a powder composition.

20. The food composition of claim 18 wherein the food composition is a yogurt.

21. The food composition of claim 18, wherein the food composition is a butter.

22. The food composition of claim 18, wherein the food composition is a cream.

23. The food composition of claim 18, wherein the food composition is an ice cream.

24. The food composition of claim 18, wherein the food composition is a frozen custard.

25. The food composition of claim 18, wherein the food composition is a cottage cheese.

26. The food composition of claim 18, wherein the food composition is a cream cheese.

27. The food composition of claim 18, wherein the food composition is a crème fraiche.

28. The food composition of claim 18, wherein the food composition is a curd.

29. The food composition of claim 8, wherein the food composition does not include lactose.

30. The food composition of claim 8, wherein the food composition does not include a hormone.

31. The food composition of claim 18, wherein the food composition is a milk.

32. The food composition of claim 18, wherein the food composition is a cheese.

33. The food composition of claim 1, wherein the α-lactalbumin protein comprises an amino acid sequence that is at least 90% identical to SEQ ID NO: 92.

34. The food composition of claim 1, wherein the β-lactoglobulin protein comprises an amino acid sequence that is at least 90% identical to SEQ ID NO: 100.

35. The food composition that is a dairy substitute according to claim 2, wherein:

the recombinant α-lactalbumin protein comprises a sequence that is at least 90% identical to SEQ ID NO: 92; and the recombinant β-lactoglobulin protein comprises a sequence that is at least 90% identical to SEQ ID NO: 100;

the composition comprises one or more lipids; and

the dairy substitute is selected from the group consisting of: a yogurt, a cheese, a milk, a butter, a cream, an infant formula, an ice cream, a frozen custard, a cottage cheese, a cream cheese, a crème fraiche, and a curd.