VacCiencia

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VacCiencia es una publicación dirigida a investigadores y especialistas dedicados a la vacunología y temas afines, con el objetivo de serle útil. Usted puede realizar sugerencias sobre los contenidos y de esta forma crear una retroalimentación que nos permita acercarnos más a sus necesidades de información.

- Resumen de la información publicada por la OMS sobre vacunas en desarrollo contra la COVID-19 a nivel mundial.
- Noticias más recientes en la Web sobre vacunas.
- Artículos científicos más recientes de Medline sobre vacunas.
- Patentes más recientes en Patentscope sobre vacunas.

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Resumen de la información publicada por la OMS sobre los candidatos vacunales contra la COVID-19 en desarrollo a nivel mundial

Última actualización por la OMS: 30 de septiembre de 2022.

Fuente de información utilizada: World Health Organization; R&DBlueprint Powering research to prevent epidemics

172 Vacunas en evaluación clínica y 199 en evaluación preclínica

Candidatos vacunales en evaluación clínica por plataforma

Platform		Candidate vaccines (no. and %)	
PS	Protein subunit	55	32%
VVnr	Viral Vector (non-replicating)	23	13%
DNA	DNA	16	9%
IV	Inactivated Virus	22	13%
RNA	RNA	40	23%
VVr	Viral Vector (replicating)	4	2%
VLP	Virus Like Particle	6	4%
VVr + APC	VVr + Antigen Presenting Cell	2	1%
LAV	Live Attenuated Virus	2	1%
VVnr + APC	VVnr + Antigen Presenting Cell	1	1%
BacAg-SpV	Bacterial antigen-spore expression vector	1	1%
		172	

Candidatos vacunales mucosales en evaluación clínica

Desarrollador de la vacuna/fabricante/país	Plataforma de la vacuna	Vía de administración	Fase
University of Oxford/Reino Unido	Vector viral no replicativo	Intranasal	1
CanSino Biological Inc./Beijing Institute of Biotechnology/China	Vector viral no replicativo	Inhalación	4
CanSino Biological Inc./China	Vector viral no replicativo	Intranasal	3
Vaxart/Estados Unidos	Vector viral no replicativo	Oral	2
Univ. Hong Kong, Xiamen Univ./Beiging Wantai Biol. Pharm./China	Vector viral replicativo	Intranasal	3
Symvivo/Canadá	ADN	Oral	1
ImmunityBio, Inc./Estados Unidos	Vector viral no replicativo	Oral y SL	1/2
Codagenix/Serum Institute of India	Virus vivo atenuado	Intranasal	3
Center for Genetic Engineering and Biotechnology (CIGB)/Cuba	Subunidad proteica	Intranasal	1/2
Razi Vaccine and Serum Research Institute/India	Subunidad proteica	Intranasal	3
Bharat Biotech International Limited/India	Vector viral no replicativo	Intranasal	3
Meissa Vaccines, Inc./Estados Unidos	Virus vivo atenuado	Intranasal	1
Laboratorio Avi-Mex/México	Virus inactivado	Intranasal	2/3
USSF + VaxForm/Estados Unidos	Subunidad proteica	Oral	1
CyanVac LLC/Estados Unidos	Vector viral no replicativo	Intranasal	1
DreamTec Research Limited/Hong Kong	BacAg-SpV	Oral	NA
Sean Liu, Icahn School of Medicine at Mount Sinai	Vector viral replicativo	Intranasal	2/3
Hannover Medical School/Alemania	Vector viral no replicativo	Inhalación	1
ACM Biolabs/Singapur	Subunidad proteica	Intranasal	1
CanSino Biologics Inc.	Vector viral no replicativo	Intranasal	3

Candidatos vacunales más avanzados/fabricante/país	Plataforma de la vacuna	Fase
Sinovac/China	Virus Inactivado	4
Sinopharm/Beijing Institute of Biological Products/China	Virus Inactivado	4
University of Oxford/AstraZeneca/Reino Unido	Vector viral no replicativo	4
CanSino Biological Inc./Beijing Institute Biotechnology/China (IM e IH)	Vector viral no replicativo	4
Gamaleya Research Institute/Rusia	Vector viral no replicativo	3
Janssen Pharmaceutical Companies/Estados Unidos	Vector viral no replicativo	4
Novavax/Estados Unidos	Subunidad proteica	3
Moderna/NIAID/Estados Unidos	ARN	4
Pfizer/BioNTech Fosun Pharma/Estados Unidos	ARN	4
Anhui Zhifei Longcom Biopharmac./Inst. Microbiol, Chin Acad Sci/China	Subunidad proteica	3
CureVac AG/Alemania	ARN	3
Institute of Medical Biology/Chinese Academy of Medical Sciences	Virus inactivado	3
Research Institute for Biological Safety Problems, Kazakhstan	Virus inactivado	3
Inovio Pharmac. + Intern. Vacc Inst. + Advaccine Biopharm Co., Ltd	ADN	3
Zydus Cadila Healthcare Ltd./India	ADN	3
Bharat Biotech International Limited/India	Virus Inactivado	3
Sanofi Pasteur + GSK/Francia/Gran Bretaña	Subunidad proteica	3
Shenzhen Kangtai Biological Products Co., Ltd./China	Virus Inactivado	3
Clover Biopharmaceuticals Inc./GSK/Dynavax/China/Reino Unido/EE.UU	Subunidad proteica	3
Vaxine Pty Ltd. + CinnaGen Co./Australia, Irán	Subunidad proteica	3
Medigen Vaccine Biol./Dynavax/NIAID/Taiwán/EE.UU	Subunidad proteica	4
Instituto Finlay de Vacunas/Cuba	Subunidad proteica	3
Federal Budget Res Inst State Res Cent Virol Biotechnol "Vector"/Rusia	Subunidad proteica	3
West China Hospital + Sichuan University/China	Subunidad proteica	3
Vaxxinity/EE.UU	Subunidad proteica	3
Univ. Hong Kong, Xiamen Univ. & Beijing Wantai Biological Pharm./China	Vector viral replicativo	3
Acad Milit Sci (AMS) Walvax Biotechnol, Suzhou Abogen Biosci/China	ARN	3
Medicago Inc./Canadá	Partícula similar a virus	3
Codagenix/Serum Institute of India	Virus vivo atenuado	3
Center for Genetic Engineering and Biotechnology (CIGB)/Cuba	Subunidad proteica	3
Valneva, National Institute for Health Research, Reino Unido	Virus inactivado	3
Biological E. Limited/India	Subunidad proteica	3
Nanogen Pharmaceutical Biotechnology/Vietnam	Subunidad proteica	3
Shionogi/Japón	Subunidad proteica	3
Erciyes University/Turquía	Virus inactivado	3
SK Bioscience Co., Ltd./CEPI/Corea del Sur/Noruega	Subunidad proteica	3
Razi Vaccine and Serum Research Institute/Irán, India	Subunidad proteica	3
Bharat Biotech International Limited/India	Vector viral no replicativo (IN)	3
Providence Therapeutics/Canadá	ARN	3
Jiangsu Rec-Biotechnology/China	Subunidad proteica	3
Radboud University/Holanda	Partícula similar a virus	3
Arcturus Therapeutics, Inc./Estados Unidos	ARN	3
Livzon Pharmaceutical/China	Subunidad proteica	3
KM Biologics Co., Ltd.	Virus inactivado	3
Bagheiat-allah University of Medical Sciences/AmitisGen/Irán	Subunidad proteica	3
Laboratorios Hipra, S.A.	Subunidad proteica	3
Sinocelltech Ltd./China	Subunidad proteica	3
Chumakov Federal Scientific Center for Research/Rusia	Virus Inactivado	3
Airlangga University/Indonesia	Virus Inactivado	3
PT Bio Farma/Indonesia	Subunidad proteica	3
AIM Vaccine and Liverna Therapeutics/China	ARN	3
China National Biotec Group Company Limited	Virus inactivado	3

Noticias en la Web

Las nuevas vacunas contra el Covid: ¿Son más eficaces?, ¿En qué se diferencian de las actuales?

21 sep. Las nuevas y actualizadas vacunas contra el Covid, que están adaptadas para proteger contra ómicron, son eficaces contra la variante circulante (BA.5) y podrían serlo contra la siguiente. La cuarta dosis con las vacunas actualizadas de Pfizer y Moderna empezará a suministrarse en España a partir del 26 de septiembre, y se recomienda en un primer momento para personas vulnerables, mayores de 60 años y personal de centros sanitarios y sociosanitarios. El problema ahora es convencer a la gente de que se vacune.

No sólo porque la circulación del virus es baja, sino también porque hay cierta desconfianza hacia la cuarta dosis, especialmente en quienes ya se han infectado antes, y porque algunos se preguntan qué vacuna ponerse.

Cómo son las nuevas vacunas

Por ahora, están disponibles las dos vacunas bivalentes actualizadas a ómicron BA.1 (la de Pfizer y la de Moderna), pero a finales de septiembre deberían llegar también las vacunas trivalentes de las dos compañías farmacéuticas. Estas estarán dirigidas contra la variante BA.5, que es la dominante actualmente a nivel mundial.

En concreto, Pfizer y Moderna han propuesto dos versiones actualizadas de sus vacunas: la primera contiene la cepa original del virus pandémico (la de Wuhan) y la variante ómicron BA.1, la segunda es trivalente y contiene la cepa original del virus pandémico y las proteínas de las subvariantes ómicron BA.4 y BA.5.

Aumenta la eficacia de las vacunas

Desde el punto de vista de la eficacia, poco cambia: sabemos que entre cuatro y seis meses después de la última dosis, la eficacia de la vacuna disminuye, y esto afecta especialmente a las personas mayores o vulnerables, porque están menos protegidas contra la enfermedad grave o la muerte.

Por lo tanto, cualquier refuerzo aumenta las defensas. También ocurre con las vacunas "antiguas": la protección (contra la enfermedad y la muerte) pasa del 68% en los vacunados que han completado el ciclo de vacunación durante más de 120 días al 83% en los vacunados con una dosis adicional o de refuerzo. En el caso de las nuevas vacunas esta cifra del 83% aumentará. Es difícil de establecer exactamente en cuánto, pero alcanzará una buena cifra. Además, las vacunas actualizadas también deberían funcionar

contra futuras variantes.

¿Qué vacuna es mejor?

En las anteriores campañas de vacunación los ciudadanos no podían elegir qué vacuna administrarse, salvo excepciones médicas. Además, aunque las vacunas bivalentes que protegen de BA.5 están aprobadas, aún no se están administrando.

Sin embargo, desde un punto de vista científico, según los organismos médicos, por el momento todas las vacunas aumentan la protección contra las diferentes variantes del Covid. "Es más importante el momento en que se realiza la vacunación de refuerzo que la vacuna utilizada", aclara el presidente del Consiglio superiore di Sanità, Franco Locatelli. "Lo fundamental es no perseguir el último modelo de vacuna, como si fuese un teléfono móvil, sino ponerse el refuerzo independientemente de la vacuna ómicron utilizada", confirma a Ansa el virólogo Fabrizio Pregliasco, que añade: "Sobre todo, hay que proteger continuamente a las personas vulnerables".

Menos confianza en las vacunas

La campaña de la cuarta dosis no termina de convencer a los ciudadanos. Se puede pensar que muchos se han infectado este verano y están esperando los 120 días que se necesitan para la administración de una nueva dosis, o que están esperando la llegada de las vacunas basadas en la BA.5, en cualquier caso incluso las reservas para las bivalentes en la BA.1 que salieron el 12 de septiembre no son muchas.

Las propias reinfecciones que muchos han experimentado con ómicron han disminuido la confianza en las vacunas. Es cierto que las vacunas son menos eficaces contra la propagación del contagio, pero siguen evitando la enfermedad grave y la muerte, y más aún las dosis de refuerzo. Además, la exposición a diferentes versiones del virus (como ocurrirá al vacunar con los nuevos preparados) profundiza y amplía aún más el tipo de anticuerpos que se generan. Además, la vacunación también ejerce un efecto protector frente a la posibilidad de desarrollar Covid persistente posteriormente.

El freno al desarrollo de las vacunas nasales

La consideración de nuevas y mejores vacunas lleva al punto que muchos científicos están planteando: la necesidad de vacunas de nueva generación que induzcan una protección más amplia y duradera contra las variantes conocidas y futuras, los llamados pan coronavirus, pero también de vacunas inhalables de nueva generación que creen una barrera nasal que bloquee la transmisión del virus. Hasta la fecha, sólo India y China han aprobado dos nuevas vacunas sin aguja: ambas se administran por inhalación, la primera por la nariz y la segunda por vía oral, pero no está claro su eficacia.

Por otro lado, los nuevos ensayos en Estados Unidos y Europa se ven frenados por la escasez de fondos, la falta de material y los problemas en los estudios científicos. De hecho, cuando se probaron las primeras vacunas Covid, las personas no tenían una inmunidad específica contra la Covid: hoy en día, la mayoría de las personas del mundo han sido vacunadas, infectadas con el virus, o ambas cosas.

Mientras tanto, la Organización Mundial de la Salud (OMS) declaró el miércoles que "el mundo nunca ha

Fuente: EL MUNDO. Disponible en https://bit.ly/3e3WbtM

Cuba sigue liderando a nivel mundial vacunación antiCovid-19

22 sep. Tal resultado es posible gracias a una campaña realizada en el país caribeño de manera escalonada con inmunógenos creados en instituciones científicas.

"Cuba, con 400 dosis por cada 100 habitantes, lidera hoy a nivel mundial el proceso de vacunación contra el coronavirus SARS-CoV-2, causante de la COVID-19."

Recientemente, el Centro de Ingeniería Genética y Biotecnología de Cuba ratificó que la vacuna antiCovid-19 Abdala de producción nacional demostró su seguridad, eficacia y ser bien tolerada.

La isla caribeña cuenta también con los inmunógenos Soberana 02 y Soberana Plus, del Instituto Finlay de Vacunas, para combatir la pandemia de la COVID-19 y dos candidatos vacunales (Soberana 01 y Mambisa) en fase de ensayos clínicos con resultados importantes, según fuentes oficiales.

Durante la reunión del Grupo temporal de trabajo del Gobierno para la prevención y control de la COVID-19 efectuada la víspera, la directora de Ciencia e Innovación Tecnológica del Ministerio de Salud Pública, Iliana Morales explicó que el país sumará la aplicación a la ciudadanía de 42 millones de dosis de las vacunas nacionales.

Solo el 67,9 por ciento de la población mundial recibió al menos una dosis; no obstante, en los países de bajos ingresos, la inmunización solo llegó al 22,5 por ciento de sus habitantes, precisó.

Puntualizó que solo siete países, entre ellos Cuba, superan el 90 por ciento de la población completamente vacunada; al mismo tiempo, las dosis de refuerzo a nivel internacional no superan el 31 por ciento.

Morales destacó que en Cuba un millón 930 mil 357 niñas, niños y adolescentes están completamente inmunizados, el 98,8 por ciento de las personas en esas edades que son vacunables; y un millón 459 mil 392 recibió la dosis de refuerzo.

"Esto es algo que nos enorgullece, que habla del esfuerzo y consagración de quienes trabajan en nuestros centros científicos y en el sistema de Salud", sentenció la directora de Ciencia e Innovación Tecnológica del Ministerio de Salud Pública.

Fuente: Prensa Latina. Disponible en https://bit.ly/3Ct6GA2

Japan's $2-billion initiative to prep pandemic vaccines in 100 days

Sep 23. After recognizing that Japan was slow to develop vaccines for COVID-19, the government has pledged to invest US$2 billion in a vaccine-research initiative to ensure that the country is ready to respond promptly to future epidemics.

The Strategic Center of Biomedical Advanced Vaccine Research and Development for Preparedness and Response (SCARDA) will initially invest in vaccine research for eight pathogens, including coronaviruses,

monkeypox, dengue virus and Zika virus, using a range of technologies for vaccine delivery, such as mRNA technology, viral vectors and recombinant proteins.

Japan has been “too slow to catch up” with the rest of the world in making COVID-19 vaccines, says Ken Ishii, a University of Tokyo vaccinologist who is also part of the central research centre selected by SCARDA. The country’s three most advanced COVID-19 vaccine candidates are still in late-stage clinical trials and none is approved for use.

In recognition of this delay, the Japanese government established SCARDA in March; the centre will launch formally in November, says Ishii. The government has realized that developing vaccines is complicated and takes resources, and has given the field a boost, says Toshihiro Horii, a vaccinologist at Osaka University. “That is a tremendously huge amount of money,” he says.

The initiative will bring together researchers from across Japan, says Yoshihiro Kawaoka, a virologist at the University of Tokyo, and head of the SCARDA central research centre. “That is unique, at least for Japan.”

Hundred-day goal

SCARDA’s aim will be to produce diagnostic tests, treatments and vaccines ready for large-scale production within the first 100 days of a pathogen with pandemic potential being identified. This 100-day mission was first proposed by the United Kingdom in 2021, and backed by the other countries in the G7 group of wealthy nations. Similar initiatives include the US Biomedical Advanced Research and Development Agency (BARDA); this coordinates the development of vaccines, drugs and diagnostics in response to public-health emergencies, including pandemics, and invested in several COVID-19 vaccines.

“Since SCARDA is a new organization, it has much to learn from BARDA” and other initiatives funding vaccines, such as the Coalition for Epidemic Preparedness Innovations, says Michinari Hamaguchi, director-general of SCARDA.

Two of SCARDA’s first approved projects aim to develop universal coronavirus vaccines and vaccines against a group of coronaviruses related to severe acute respiratory syndrome (SARS), such as SARS-CoV-2. Another project will create a fast-track system for evaluating vaccine candidates.

Japan’s centre will operate with around 30 members of staff and funding to last 5 years. Of the allotted $2 billion, $1.2 billion will go to vaccine research and development projects, and $400 million will be used to support start-ups in drug development. Another $400 million will be spent on setting up a virtual network of centres of excellence for basic research in vaccine science, and testing vaccine candidates in early-stage trials. The goal is “to find seeds for future vaccines”, says Kawaoka.

In addition to the central research centre based in Tokyo, there will be four core institutes — Osaka University, Nagasaki University, Hokkaido University and Chiba University. Another five institutions will provide support services such as animal models.

Horii, who leads several clinical trials for malaria and is not involved with SCARDA, says that the current bottleneck in vaccine development in Japan is the translation of research into clinical practice. SCARDA will have to move beyond basic science to develop expertise in taking vaccine candidates through clinical trials, he says. “We have many vaccinologists in Japan, but the majority of them are basic researchers.”

Fuente: Nature. Disponible en https://go.nature.com/3roU6eW

Otorgará PNUD financiamiento a industria farmaceútica cubana

24 sep. El Programa de Naciones Unidas para el Desarrollo (PNUD) implementará el primer financiamiento a Cuba para el fortalecimiento de la industria biofarmaceútica, subscrito por el Banco Centroamericano de Integración Económica (BCIE), informó este viernes el organismo internacional.

Según la cuenta de Twitter de la entidad, el crédito de 46.7 millones de euros está destinado a mejorar la capacidad de respuesta nacional ante enfermedades como la COVID-19.

"PNUD implementará el primer financiamiento subscrito por el @BCIE_Org para Cuba, con la ejecución del Proyecto de fortalecimiento de la industria #biofarmacéutica, destinado a mejorar la capacidad de respuesta nacional ante enfermedades como la COVID 19".

Con este financiamiento se podrá reforzar la infraestructura para la producción de antibióticos inyectables, soluciones parenterales (sueros), medicamentos genéricos y biosimilares, diagnosticadores y equipos médicos, utilizados en el tratamiento de las personas contagiadas con la COVID 19 y otras enfermedades transmisibles, explicó una nota publicada en el sitio web del PNUD.

Facilitará, además, la adquisición de insumos de salud y material de protección médica para prevenir su contagio.

Refiere el texto que a través del fortalecimiento de la industria farmacéutica y la producción de 200 millones de dosis de vacunas, se espera alcanzar niveles más elevados de productividad económica mediante el desarrollo de medicamentos innovadores y la modernización de la tecnología, que contribuirán a la diversificación en beneficio del sistema nacional de salud y de otros países de la región.

El PNUD ejecutará las adquisiciones del proyecto conforme sus políticas y normativa de adquisiciones, mientras BioCubaFarma, en alianza con el Ministerio del Comercio Exterior y la Inversión Extranjera (Mincex), el Banco Central de Cuba (BCC), el Ministerio de Finanzas y Precios (MFP), tendrán un rol clave en la ejecución de las acciones en las 10 empresas que forman parte de ese grupo empresarial.

El préstamo se otorga bajo el mecanismo especializado establecido por el BCIE para las actividades y operaciones con la República de Cuba.

Fuente: Radio Santa Cruz. Disponible en https://bit.ly/3M3GAHl

Identifican dos genes esenciales para la entrada del SARS-CoV-2 en células pulmonares humanas

24 sep. Investigadores de la Universidad de Oviedo, en Asturias, han identificado dos genes esenciales para la entrada del virus SARS-CoV-2 en las células pulmonares humanas, hallazgo clave que los convierte en potenciales dianas para evitar el proceso infectivo.

Se trata de los genes codificantes de proteínas PLAC8 y SPNS1, dos genes que hasta ahora habían pasado desapercibidos en otros estudios sobre genes involucrados en la infección de células respiratorias e intestinales humanas relacionada con el virus SARS-CoV-2, causante de la covid-19.

El estudio, dirigido por el catedrático de Bioquímica y Biología Molecular de la Universidad de Oviedo, Carlos López-Otín, y del que son principales autores Alejandro Piñeiro y Gabriel Bretones, acaba de ser publicado en EMBO Journal.

Para la realización del trabajo los investigadores han llevado a cabo un complejo cribado genético de todo el genoma humano mediante la tecnología de edición genómica CRISPR/Cas9 hasta lograr la identificación de los genes necesarios para la infección por el coronavirus SARS-CoV-2.

Versión artificial simplificada del virus

Para ello, en primer lugar, los investigadores construyeron mediante ingeniería genética una versión artificial del virus SARS-CoV-2 carente de capacidad de replicación y, por tanto, incapaz de expandirse en el entorno. A continuación, eliminaron en células pulmonares humanas, de forma específica e individualizada, cada uno de los más de 20.000 genes humanos codificantes de proteínas e interrogaron gen a gen la susceptibilidad celular a la infección con el pseudovirus artificial.

Este trabajo condujo a la identificación, entre otros, de los genes humanos PLAC8 Y SPNS1, codificantes de proteínas implicadas en procesos biológicos como la endocitosis y la autofagia, que pueden contribuir a las infecciones víricas.

Además de la utilización de la tecnología CRISPR/Cas9, que es ya un estándar en los laboratorios, la diferencia del trabajo llevado a cabo por la Universidad de Oviedo frente a otros estudios sobre genética del SARS-CoV-2 ha sido la utilización de células pulmonares humanas y el empleo de esa versión simplificada del virus, sin capacidad de replicación.

Estos procesos les ha permitido estudiar el virus con una gran resolución, centrándose precisamente en las primeras fases de la infección del virus, en concreto, en la entrada, antes de que se produzca la replicación en el interior de la célula, según explica Alejandro Piñeiro.

Abrir la cerradura

El SARS-CoV-2 es un organismo muy sencillo, cuya partícula viral consta de una membrana y 4 proteínas, de las cuales una, la 'spike', actúa como una especie de llave capaz de identificar y abrir la cerradura del receptor ACE2, lo que en definitiva constituye la entrada del virus en el organismo humano.

"Un virus no tiene metabolismo capaz de producir proteínas, sino que requiere de la interacción con las proteínas humanas, lo que hace es secuestrar nuestros procesos", señala Piñeiro, quien subraya que por ello era importante la identificación de los genes necesarios para permitir esa entrada del virus en el organismo humano, es decir, para permitir que el virus complete su ciclo de vida.

Para corroborar sus descubrimientos, los investigadores contactaron con el Centro de Investigación en Sanidad Animal (CISA-INIA), para llevar a cabo experimentos con virus SARS-CoV-2 naturales y plenamente infecciosos.

Este centro es referencia internacional en el estudio de enfermedades infecciosas y dispone de las instalaciones de alta seguridad biológica imprescindibles para este tipo de trabajos. Allí los investigadores, con la ayuda del grupo de Enfermedades Emergentes y Transfronterizas, dirigido por el Miguel Ángel Jiménez Clavero, confirmaron los hallazgos previos utilizando una cepa del virus original (CISA/H-Ap20-1) aislada por el propio grupo durante la primera ola de la pandemia.

El resultado ha sido la identificación de genes esenciales para el proceso infectivo que hasta ahora habían pasado inadvertidos en otros estudios.

Los genes PLAC8 y SNPS1 codifican proteínas implicadas en procesos biológicos como la endocitosis, es decir, el mecanismo de entrada de partículas en las células, y la autofagia.

De este modo, este trabajo refuerza el papel importante que ya habían advertido otros trabajos de los lisosomas, y que apuntaban a que es en ellos donde se produce la activación y liberación del material genético.

Si bien algunos virus una vez endocitados se liberan rápidamente al citoplasma, "los virus SARS en general necesitan de una activación, que es llevada a cabo por unas enzimas, las proteasas, que son las que cortan la 'spike'. Y todo apunta a que en estos virus esa activación se produce en los lisosomas", según explica Piñeiro.

Gabriel Bretones enfatiza que "estos hallazgos permiten comprender mejor el mecanismo de internalización del virus y, por lo tanto, la identificación de nuevas dianas terapéuticas para el tratamiento de la covid-19 y de otras enfermedades causadas por coronavirus que puedan aparecer en el futuro".

El conocimiento del importante papel de los genes PLAC8 y SPNS1 puede permitir el desarrollo de terapias dirigidas para mejorar el tratamiento y ayudar a las vacunas a contener la expansión de la enfermedad, una vez establecidas cuales son las dianas potencialmente terapéuticas.

"LA VERDAD DE LA VULNERABILIDAD HUMANA"

El de Carlos López-Otín, director del estudio, no es un laboratorio de virología pero, en los últimos años, ha desarrollado métodos experimentales muy avanzados para el análisis genómico y funcional del cáncer y del envejecimiento, y lo que ha hecho a partir de la pandemia es poner este conocimiento al servicio del estudio del coronavirus SARS-CoV-2.

"Me siento muy orgulloso de todos los miembros de mi grupo que, por puro compromiso social, dejaron sus proyectos particulares entre paréntesis para dedicar su esfuerzo y su talento al estudio de un virus que nos ha mostrado con absoluta nitidez la gran verdad de la vulnerabilidad humana", ha indicado López-Otín.

En este estudio, financiado por el Instituto de Salud Carlos III, los ministerios de Sanidad y de Ciencia e Innovación y la Consejería de Ciencia, Innovación y Universidad del Principado de Asturias, también han participado David Rodríguez, Víctor Quesada, Francisco Llorente, Raúl Fernández-Delgado, Jesús Vázquez, Enrique Calvo, Isaac Tamargo-Gómez, Guillermo Mariño, David Roiz-Valle, Daniel Maeso, Miguel Araujo-Voces, Yaiza Español, Carles Barceló, José M.P. Freije y Alejandro López-Soto.

Los investigadores Gabriel Bretones y Alejandro Piñeiro, ambos del Departamento de Bioquímica y Biología Molecular de la Universidad de Oviedo. UNIVERSIDAD DE OVIEDO

Fuente: EL MUNDO. Disponible en https://bit.ly/3EdnE6Q

Monkeypox Appears to Recede, but Risks and Uncertainties Linger

Sep 26. Nearly four months after the first report of monkeypox in the United States, the virus is showing promising signs of retreat, easing fears that it may spill over into populations of older adults, pregnant women and young children.

Workers prepare the Jynneos monkeypox vaccine at a vaccination site in Los Angeles last month. Though cases seem to be receding, recent reports suggest that a single dose may not be protective enough. Mario Tama/Getty Images

Supplies of the vaccine have improved, and federal health officials have begun clinical trials to gain a better understanding of who benefits, and how much, from both the vaccine and the drug used to treat those who become infected.

That's the good news. But unhappily, case numbers are accelerating in a few states and jurisdictions, including Indiana, Virginia and Massachusetts. Black and Hispanic men make up nearly two-thirds of the infected, but only about one-fourth of those vaccinated so far.

"Our progress is incredibly uneven," said David Harvey, the executive director of the National Coalition of STD Directors.

"This outbreak is far from finished," he added.

Recent reports suggest that a single dose of the vaccine, Jynneos, may not be protective enough, raising fresh concerns about the Biden administration's plan to distribute fractional doses.

And federal health officials have warned that the virus could become resistant to tecovirimat, the only safe treatment for those who are infected.

"When you only have one drug in your armamentarium, that can be somewhat precarious," said Dr. Anthony S. Fauci, the Biden administration's top medical adviser. "But you've got to go with what you have at the same time as you try and develop additional drugs."

As of Friday, there were nearly 25,000 cases of monkeypox in all 50 states, the District of Columbia and Puerto Rico. The United States accounts for nearly 40 percent of the global tally.

But new cases have been decreasing steadily for weeks, to a daily average of 208 on Sept. 22 from more than 500 in early August.

The Los Angeles Department of Public Health recently confirmed the nation's first death from monkeypox, in a severely immunocompromised individual. Health officials in Texas are investigating another death that may be related to the infection.

Two cases of encephalomyelitis — inflammation in the brain and spinal cord — have been reported, both in

previously healthy gay men in their 30s.

Overall, however, federal health officials are optimistic that the epidemic is waning. While testing and vaccines will continue to be important, officials envision a future in which monkeypox is not gone, but manageable with contact tracing, vaccination and early treatment.

“I think it’s going to look a little bit more like more episodic cases, smaller clusters,” said Dr. Demetre Daskalakis, the deputy coordinator of the White House’s monkeypox response.

The recent decline is most likely the result of a combination of vaccinations, immunity gained from infection in the population most at risk, and a change in behavior in this group, Dr. Daskalakis said.

In a survey conducted by the C.D.C. in August, roughly half of men who have sex with men said they had reduced the number of their partners and one-time sexual encounters.

But falling case numbers may soon lead these men to believe that the threat has passed. “We can’t ask people to change their behavior forever,” Dr. Daskalakis said. “That didn’t really work with H.I.V., so it’s not going to work here, either.”

Vaccination is likely to be a more effective containment strategy in the long term, he added.

As of Sept. 20, health officials had administered nearly 700,000 doses of Jynneos in the 48 jurisdictions for which data were available. While that is a substantial improvement over the early weeks of the outbreak, it accounts for only 22 percent of the doses needed to protect the 1.6 million Americans estimated to be at high risk.

Even as infections decline, the proportion of cases among Black and Hispanic men has grown to 70 percent in mid-September from 37 percent in late May. Yet Black men have received less than 9 percent of the doses administered so far, and Hispanic men about 16 percent.

Federal health officials are intensifying efforts to reach high-risk groups and have vaccinated at least 11,000 attendees at large gatherings where Black and Hispanic men congregate, such as Atlanta Black Pride.

The C.D.C. has announced a new program that would make up to 10,000 vials of vaccine — or 50,000 doses, under the new dose-sparing strategy — available to communities where hesitancy, language barriers, immigration status or other obstacles prevent widespread vaccination.

Eligibility for the vaccine is scattershot by location, and the criteria often opaque, according to an analysis by the Kaiser Family Foundation. Some states, like Indiana and New Mexico, offer no information online about who qualifies. Laboratory and health care workers who may be exposed to the virus are eligible in only 18 states and cities.

Many men at high risk have opted for a single dose, which may not be sufficiently protective. Although the proportion of second doses has increased, so far 77 percent of administered doses are first doses.

Two full doses are better but still “modest,” said Dr. Marion Koopmans, the head of virology at Erasmus Medical Center in Rotterdam, the Netherlands, who led the study.

“It does raise the question how good protection will be,” she said. “Since we don’t know a whole lot about this, I do think we really need to figure out what’s going on.”

In a bid to stretch the vaccine supply, the Biden administration has embraced a dose-splitting strategy, in

which one-fifth of a regular dose is delivered into the skin — a so-called intradermal method — rather than the fat underneath. This approach has been tried in other instances of vaccine shortage.

But activists and some scientists have decried the administration's reliance on fractional dosing, noting that federal officials moved slowly to make available millions of Jynneos doses held by the manufacturer in Denmark.

"What's so bizarre about this whole thing is we should have never gotten into the situation," said James Krellenstein, a founder of PrEP4All, a group that promotes access to H.I.V. care.

There is minimal research to support fractional doses instead of the full regular doses, Mr. Krellenstein noted: "They may be equivalent, but there's a real good chance that they're not."

The Dutch team did not look at how well a one-fifth dose of Jynneos protects against monkeypox. But in an earlier study, they tested a bird flu vaccine similar to Jynneos and found that two fractional doses produced much lower levels of antibodies than two full doses.

Still, it's possible that a combination of one full dose and one fractional dose may work well, Dr. Koopmans said.

Little is known about the effectiveness of regular doses, let alone fractional doses, because Jynneos was approved mainly on the basis of animal data. But the evidence so far suggests that two doses are better than one, said Dr. Peter Marks, the Food and Drug Administration's top vaccine regulator.

"Having two doses of Jynneos was the correct way to go here, and the fact that the intradermal route allowed us to have a sufficient number of doses to move forward in that direction, I think, was a smart idea," he said.

"We're working in a public health emergency," he added. "I think we're doing our best with the data that we have in hand, and the data that we trust, and the data as it emerges."

There is some evidence that a third shot given a year after the first two doses provokes a vigorous immune response. If that turns out to be true, a three-dose regimen may be ideal to manage monkeypox infections in the long term. Dr. Marks said federal scientists are still debating whether to test third doses.

A new trial led by the National Institutes of Health, which began earlier this month, will enroll 200 adults and compare the standard dose with intradermal delivery of one-fifth and one-tenth doses.

If the fractional doses prove to be comparably effective, the dose-splitting approach would greatly expand world supply, including in countries where the vaccine is currently unavailable.

Researchers will collect information on antibody levels in the immunized participants. But they will not be tracking other immune cells that may be equally important for protection from the virus, according to Dr. John Beigel, the N.I.H. researcher leading the trial.

"This was a decision for expediency," he said.

A separate N.I.H. trial aims will test how well tecovirimat, also called Tpoxx, works in 500 adults and children infected with monkeypox.

Tecovirimat is the only drug used to treat monkeypox in the United States, as the alternatives can have toxic side effects. The drug was approved in 2018 on the basis of animal studies, and has never been tested rigorously in people.

Small clinical studies, as well as recent anecdotal observations of patients, suggest that the drug works well. A small percentage of patients experience minor side effects, such as headache and nausea.

Given the early data, the Biden administration has been sharply criticized for making it too difficult for clinicians to prescribe the drug. And the C.D.C. has urged clinicians to reserve tecovirimat for patients who are severely immunocompromised, pregnant or breastfeeding, or who have lesions in certain sensitive areas, as well as for children under 8.

The decision to limit access is rooted in the fear that indiscriminate use could lead to Tpoxx-resistant monkeypox, federal officials said. Several studies suggest that even small genetic changes could leave the virus resistant, according to the F.D.A.

The new trial should offer a clearer picture of the risk. “We want to make it much easier, and with much more confidence, to make Tpoxx available for people who are infected,” Dr. Fauci said.

Fuente: The New York Times. Disponible en https://nyti.ms/3UZDo3d

Monkeypox Appears to Recede, but Risks and Uncertainties Linger

Sep 28. A single dose of FINLAY-FR-1A, a recombinant d-RBD*-based COVID-19 vaccine, strengthens pre-existing natural immunity in patients who have recovered from asymptomatic, mild or moderate COVID-19, and has an excellent safety profile, a phase IIa/b study has shown.

“People [who have] recovered from COVID-19 might be re-infected, particularly those with low neutralizing antibody titres and facing new SARS-CoV-2 variants of concern (VoCs),” said the researchers. “[Therefore, we] aimed to study the response of memory B cells after a single dose of the vaccine in individuals with past SARS-CoV-2 infection.”

“[Our study showed that] immunization with a single dose of FINLAY-FR-1A vaccine triggered a rapid induction of high humoral immune response, suggesting protective immunity against SARS-CoV-2, and a decrease in severe re-infection by SARS-CoV-2 VoCs,” they continued.

The study comprised 450 participants. Phase IIa evaluated the safety of a single dose of FINLAY-FR-1A in 20 participants aged 60–78 years. In phase IIb, participants aged 19–78 years (n=430; mean age 46 years, 56 percent female) were randomized 4:1 to receive either a single dose of FINLAY-FR-1A or a vaccine excipient (placebo arm). [Lancet Respir Med 2022;10:785-795]

Safety, reactogenicity

In phase IIa, there were no serious adverse events (AEs) reported 28 days post-vaccination. In phase IIb, site pain was the most frequent vaccine-associated AE (29 percent) among FINLAY-FR-1A recipients. None of the vaccine-associated AEs were serious. The first 24 hours following vaccination saw higher rates of local and systemic reactions, but these were mostly mild and disappeared within the first 3 days.

“The low [AE rate] and absence of serious events confirmed the safety of the experimental vaccine,” said the researchers.

Immunogenicity

In phase IIa, all but one mounted a successful immune response. In phase IIb, the proportion of participants

achieving this endpoint was substantially higher in the FINLAY-FR-1A vs the placebo arm (81 percent vs 5 percent; p<0.0001).

RBD antibodies increased significantly 28 days post-vaccination (median, 301.0 U/mL). This was >30 times higher than the pre-vaccination concentration (9.7 U/mL) and nearly 50 times higher than that seen with placebo (6.6 U/mL; p<0.0001 for both comparisons).

"This study confirms – now in convalescent participants – the immunogenicity of FINLAY-FR-1A," said the researchers. The successful stimulation of B cells for about 5 months following discharge and the high neutralizing antibody concentrations demonstrate that "natural infection leads to the production of long-term memory B cells that respond quickly to a single dose of FINLAY-FR-1A … and that a single dose induces a strong secondary immune response".

There was also an increase in live-virus neutralizing titres against the Alpha, Beta, and Delta VoCs with FINLAY-FR-1A, with geometric mean titres jumping from 15.4 prior to vaccination to 400.3 28 days after vaccination (p<0.0001).

The verdict: safe, effective, immunogenic

"We selected a convalescent serum panel representative of the various clinical manifestations of COVID-19 to evaluate vaccine-induced immune response vs disease-acquired immunity, taking into account that during convalescence-, specific IgG antibodies contribute to immunologic protection against SARS-CoV-2," the researchers explained. "Our results were superior to those of the convalescent serum panel, supporting vaccination in COVID-19 convalescent individuals."

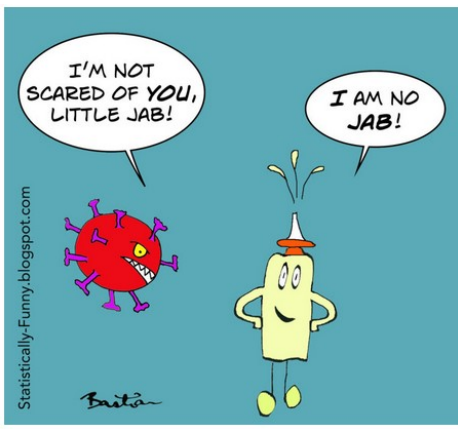
"[Overall, our results show that] FINLAY-FR-1A is a safe, effective, and immunogenic vaccine," said the researchers. The findings also augment the results of the phase I trial. [Lancet Reg Health Am 2021;doi.org/10.1016/j.lana.2021.100079]

Future trials should evaluate COVID-19 convalescents with a history of severe disease to ascertain the potential association between induced immune response and clinical severity of SARS-CoV-2 infection. The effect of FINLAY-FR-1A in younger cohorts and against the Omicron variant and future emerging VoCs should also be investigated, the researchers noted.

Produced by the Instituto Finlay de Vacunas Cuba, FINLAY-FR-1A has been approved in Cuba as a booster dose following the two first doses of FINLAY-FR-2. [covid19.trackvaccines.org/vaccines/119]

Fuente: MIMS Respirology. Disponible en https://bit.ly/3RrrjkA

Intranasal & Co: A Very Big Month for Mucosal Covid Vaccines



Sep 29. Authorization for another 2 new vaccines, a potentially critical international licensing deal, and a new phase 3 trial: This month saw a burst of major developments in the race for Covid mucosal, or "sterilizing", immunity. There's also been some new clinical and preclinical data in the last couple of months, and 3 more vaccines could reach authorization this year. So even though we still don't have the major clinical efficacy results we need, there's lots to catch up on!

Mucosal vaccines aren't injected into the blood: they enter our bodies in the

same way as the coronavirus does – through the mucosal tissues. The vaccines can be squirts or drops in the nose, inhaled through the mouth through a nebulizer (similar to an asthma medication), or in tablet, capsule, or sublingual form. The goal is to mount a stronger line of defense against SARS-CoV-2 at the virus' point of entry and so reduce transmission. The 4 mucosal Covid vaccines now authorized for use, each in a single country, are intranasal or inhaled. We'll start with those and the new licensing deal for one of them for the US, Europe, and Japan, and then check out 20 mucosal vaccines in clinical trials, and recent results:

- Update on authorizations: with 2 new authorizations and a new licensing deal.
- Clinical trial overview: with a new phase 3 trial and frontrunners.
- Recent clinical and preclinical results.
- Addendum: Table of 20 mucosal vaccines in clinical trials with links to trials, clinical results, and collected records.

Update on authorizations and licensing news

The first mucosal Covid vaccine was authorized in Iran at the end of October 2021. It's an intranasal protein unit vaccine called Razi Cov Pars, that follows 2 injections of the same vaccine. In April this year, Russia authorized a 2-dose course of Sputnik Nasal, the first viral vector component of Sputnik V. In the first week of September, they were joined by another 2 viral vector vaccines, authorized within a day of each other.

The first of the new pair, CanSino's inhaled vaccine, was authorized in China. Called Convidecia Air, it's inhaled through the mouth using a nebulizer, like an asthma medication.

Then India authorized an intranasal version of ChAd-SARS-CoV-2-S manufactured by Bharat Biotech. Called iNCOVACC, it involves several drops of vaccine in each nostril. ChAd-SARS-CoV-2-S is based on chimpanzee adenovirus, and it was developed in the US by Washington University in St Louis, with Precision Virologics and some funding from the NIH's NIAID. The US developers have published results of their tests in mice, hamsters, and macaques. There's still no full data report of any of the clinical trials from India, though there's a little in the drug product information, which I discuss later.

On September 28, the US biotech Ocugen announced that they have an exclusive license to develop, manufacture, and commercialize ChAd-SARS-CoV-2-S intranasal vaccine in the US, Europe, and Japan.

What about WHO authorization and mucosal vaccines? As of the end of September, none appear to be under evaluation there yet. The developers of the Iranian Ravi-Cov-Pars vaccine have requested evaluation. CanSino's injected version was authorized in May. Sputnik V's injections remain on hold. Medigen has requested evaluation, presumably of its injected version, with the Australian drug regulator listed as evaluator – the Australian regulator announced it was evaluating the vaccine in November 2021.

Clinical trial overview and frontrunners

Although my posts usually focus on vaccines with study results available, in this post, I'm focusing on vaccine progress by charting those in clinical trials, whether or not there are any preclinical or clinical results available. I found 20, including a vaccine that was discontinued after phase 1. This table breaks all 20 down by the furthest clinical trial phase they've reached.

Phase 1	Phase 2	Phase 3
11	3	6

The 6 vaccines in phase 3 include the 4 that have been authorized, as discussed above. Those 4 authorized vaccines could potentially be joined by another 3 vaccines this year or early next year: they're the other 2 in phase 3, as well as a vaccine that will apply for authorized based on a phase 2 trial. And a couple of US mucosal vaccines are heading into phase 3 trials, one possibly this year, and the other planning for a human challenge trial next year.

Those 3 possibly reaching authorization in 2022 or early next year are:

- An intranasal viral vector vaccine from Beijing Wantai BioPharm;
- Mambisa, an intranasal protein subunit vaccine from Cuba; and
- Patria, an intranasal viral vector vaccine from Mexico, using a vaccine developed in the US.

The influenza-based vaccine from Wantai BioPharm is the mucosal vaccine in the largest placebo-controlled phase 3 trial, planned for 40,000 participants in Colombia, the Philippines, and South Africa. Their trial registration listed the end of April 2022 as the goal for full recruitment. A news report from Vietnam in April said the company was recruiting there and in Indonesia until the end of the month. Although I couldn't find any report of how it's going, it's possible that it's fully recruited. There's also a trial for 5,400 participants registered for Ghana. Given the track record of authorizations for Covid vaccines in China based on early data, that could be on the horizon. (Results for phase 1 and 2 trials for this vaccine have been published.)

The Mambisa vaccine was developed by Cuba's Center for Genetic Engineering and Biotech (CIGB), who also developed the injected vaccine, Abdala. CIGB is reportedly currently analyzing the data from up to 3,000 tourism and healthcare workers who participated in a phase 2 trial comparing an intranasal Mambisa booster with an Abdala booster for people previously Abdala-vaxed. They plan to apply for authorization based on those results. (There was an earlier press release based on results of a phase 1/2 trial of intranasal spray or drops.)

The new phase 3 trial that started this month is for Mexico's Patria vaccine, for 3,860 people, with hopes it could be rolled out later this year for use in winter. It's a version of the non-profit viral vector vaccine (Newcastle Disease-based using Hexapro) developed by the Icahn School of Medicine in New York. In August, Avi-Mex reported that the phase 2 trial had shown that Patria worked as a booster, but data weren't included in the press release.

Behind those, come another 2 vaccines developed in the US, a live attenuated intranasal vaccine from Codagenix, and a viral vector vaccine (adenovirus-based) in tablet form from Vaxart.

According to the developer, Codagenix, the intranasal vaccine was planned to start dosing in a phase 2/3 trial in the middle of this year in the WHO Solidarity Trial for Vaccines. That is a phase 3 trial, currently underway in Colombia, Mali, and the Philippines, but there's no more information on whether the intranasal vaccine is already included. A company spokesperson has said its phase 2/3 trial is underway in Africa. There's been no new data on this vaccine that I can find since a conference presentation for the first phase 1 trial last November. A second phase 1 trial in the UK, using it as a booster, had fully recruited between February and June this year. Codagenix has partnered with the Serum Institute of India.

The other is an oral vaccine by Vaxart. They recently announced some early results for a phase trial, that's still recruiting in the US (discussed later). Vaxart isn't going straight into phase 3 trial though. They are developing and testing an Omicron-adapted version, as well as bivalent versions (original plus Omicron-

adapted), and they expect to take one of those to phase 3 trial in the second half of 2023. Although that start is around a year off, results should come quickly: it will be an Omicron challenge trial, where participants will be infected with the virus. A company in the UK is currently working on developing the Omicron challenge virus for them. The company says there will also be larger trials in the US and internationally.

Recent clinical and preclinical results

Very little clinical data has been released other than for the 2 Chinese vaccines, and most of the phase 3 trials are relatively small trials comparing signs of immunity rather than disease outcomes. The trial for the Iranian vaccine was a large one with Covid outcomes, in comparison with BBIBP, Sinopharm's Beijing vaccine (an inactivated vax), but I could only find press reports on those results.

Evaluating the vaccines in trials of manageable size is complicated, because there isn't an accepted way to reliably measure mucosal immunity. Some of the studies report measurement of antibodies in saliva, but we don't know if those levels predict the impact on virus transmission. You can dig into all the clinical trials and whatever results are available in the table for all 20 vaccines in this post's addendum.

There have been some new reports in the last 2 months:

- Some clinical reports for Bharat Biotech's iNCOVACC, Mexico's Patria, and the US Vaxart, but no full publications or agency evaluations; and
- Preclinical studies for iNCOVACC and Russia's Sputnik Nasal, as well as for 4 vaccines new to my collection (from Japan, Singapore, Spain, and Sweden).

There are brief sections on the outcomes of the clinical trials for iNCOVACC in the drug's product information. That included a small amount of neutralizing antibody data only, presumably levels in the blood – which was the trial's primary outcome – not saliva, for 3,141 people in the phase 3 trial. This trial only had a very small comparison group. Participants had never been Covid-vaccinated, and got either a 2-dose course of intranasal iNCOVACC or a 2-dose course of injections of Bharat Biotech's inactivated vaccine, Covaxin.

Levels of neutralizing antibodies were lower than for people in the comparison group on the day of administration, but higher on day 42. The vaccine's outcome was reportedly satisfactory for Beta, Delta, and Omicron, but no data was provided. The vaccine reportedly prevents infection in upper airways, but no phase 3 data was provided on this either. The rate of adverse events was reportedly very low, as it was lower than for the comparison group, but the data provided wasn't adequate.

In August, the developers of Mexico's Patria vaccine, Avi-Mex, issued a press release about the phase 2 trial. They reported that there were no safety concerns, and Patria could induce neutralizing antibodies, but didn't include any data. According to the trial's register entry, it was for 158 participants who had previously been Covid-vaxed. They got a booster of intranasal or injected Patria, or intranasal or injected placebo. People in the placebo group later got a booster dose of the AstraZeneca vaccine.

Vaxart recently announced results of the first group in their phase 2 trial (press release only). That trial is still recruiting people in the US, aiming for 896 participants. The results released included 66 people getting 2 tablets – some of them had previously been vaccinated with Moderna or Pfizer vaccine. About half had "at least a 1.5-fold increase in mucosal IgA antibodies" against original SARS-CoV-2, including those who had previously been mRNA-vaxed, with some response to Omicron.

There are also new mucosal vaccine preclinical results since the last post – all the first we've seen for those vaccines:

- From the Statens Serum Institute/Karolinska Institute of Sweden, results for injection followed by intranasal dose of a protein subunit vaccine (HexaPro, and adjuvanted).
- From EP Mediate in Japan, results for a sublingual (under the tongue) protein subunit vaccine with adjuvant.
- From Duke-National University of Singapore, results for a protein subunit vaccine with adjuvant.
- From Spain's Centro Nacional de Biotecnología (CNB), results for an intranasal viral vector vaccine (MVA-based).
- Results for Bharat Biotech's iNCOVACC intranasal vaccine as a booster after Bharat Biotech's Covaxin inactivated vaccine.
- Results for Sputnik V, intranasal doses compared to intramuscular doses.

Addendum: mucosal Covid vaccines in clinical trials

Vaccine, type, manufacturer	Mucosal version(s)	Phase 1 to 2 clinical trials	Phase 3+ trial(s)	Phase 3+ efficacy or immunogenicity results
ACM-001 *Protein subunit* *ACM Biolabs (Singapore)* (All records)	Intranasal.	Phase 1.		
Ad5-nCoV (Convidecia Air) *Viral vector (adenovirus)* *CanSino (China)* (All records)	Inhaled through the mouth using a nebulizer, as a booster.	Phase 1. **Results**. Phase 1/2. **Results** (plus **second later preprint**). Phase 2 (aged 6-17 years).	10,420 people in China (Phase 3). 1,350 people (Phase 3). 540 people, in Malaysia (Phase 3). 904 people in China (Phase 4). **Results**. 360 people (Phase 4).	Comparison after 2-dose course of inactivated vax: Convidecia injection vs inhaled, protein subunit, or CoronaVac booster (**Phase 4 results**). Both injected & inhaled Convidecia had stronger impact on signs of immunity than the others; response after inhaled version was slower but longer-lasting than injected (which peaked then declined from day 14), better for Omicron though not as good for original virus. No measure of mucosal immunity used.
Ad5-triCoV/Mac & ChAd-triCoV/Mac *Viral vector (adenovirus)* McMaster University/Canadian Institutes of Health Research (Canada)	Aerosol.	Phase 1.		

AdCOVID *Viral vector (adenovirus)* *AltImmune (USA)* (All records)	Intranasal.	Phase 1. **Results** – press release only.	*Discontinued after phase 1.*	
AdS+N *Viral vector (adenovirus)* *ImmunityBio (USA)* (All records)	Intranasal, oral capsule, or sublingual.	Phase 1 (oral). Phase 1 (sublingual).		
BBV154 (iNCOVACC) *Viral vector (adenovirus)* *Bharat Biotech (India)* (All records)	Intranasal.	Phase 1. Phase 2. Small amount of data from these trials in the drug product information. Phase 2/3.	3,160 people in India, 2-dose course of BBV154 vs 2-dose course of injected Covaxin inactivated vaccine (Phase 3 – and here). 875 people in India, booster trial (Phase 3).	Small amount of neutralizing antibody data only, presumably serum (trial primary outcome), for 3,141 people in the drug product information: lower than for Covaxin on day of administration but higher on day 42. Reportedly satisfactory for Beta, Delta, and Omicron, but no data provided. Reportedly prevents infection in upper airways, but no data provided. Adverse events rate very low – lower than for comparison group (Covaxin inactivated vaccine).
CoviLiv *Live attenuated* *Codagenix (USA)* (All records)	Intranasal.	Phase 1. Press release stating successful (without data) and progressing to phase 2/3. **Results** (conference abstract) and in press release. Phase 1 (booster).	Announcement of joining WHO Solidarity Trial – currently Colombia, Mali, Philippines. To be powered for 150 cases of Covid-19. (Protocol.)	

ChAdOx1* *Viral vector (adenovirus)* *Oxford University (UK)* *(* the AstraZeneca vax)* (All records)	Intranasal.	Phase 1. Phase 1.		
CVXGA1-001 *Viral vector (parainfluenza)* *CyanVac (USA)* (All records)	Intranasal.	Phase 1.		
DNS1-RBD *Viral vector (influenza)* *Beijing Wantai BioPharm (China)* (All records)	Intranasal.	Phase 1. Phase 2. **Joint results**.	40,000 participants in Colombia, Philippines, South Africa (Phase 3). Planned to recruit by the end of April 2022 – added Indonesia and Vietnam in April, recruiting to the end of the month. 5,400 participants in Ghana (Phase 3).	
GAM-COVID-VAC (rAd26-S – Sputnik Light) *Viral vector (adenovirus)* *Gamaleya Research Institute (Russia)*	Intranasal.	Phase 1/2	7,000 participants in Russia (Phase 3 or phase 2/3 – not clear).	
Mambisa *Protein subunit* *Centre for Genetic Engineering & Biotechnology (CIGB) (Cuba)* (All records)	Intranasal drops.	Phase 1/2. Phase 1/2. **Results** (press release only). Phase 2.		
MV-014-212 *Viral vector (RSV)* *Meissa Vaccines (USA)* (All records)	Intranasal drops or spray.	Phase 1. **Results** (press release).		

MVA-SARS-2ST *Viral vector (MVA)* German Centre for Infection Research (DZIF)/IDT Biologika (All records)	Inhalation.	Phase 1.		
Patria (NDV-HXP-S/AVX-COVID-12-HEXAPRO) *Viral vector (Newcastle Disease Virus)* *Laboratorio Avi-Mex (Mexico)* (All records on Patria, early development of NDV-HXP-S)	Intranasal.	Phase 1. **Results**. Phase 2. **Results** (press release).	Currently recruiting in Mexico, for up to 3,860 participants (press release).	
Razi Cov Pars *Protein subunit* *Razi Vaccine & Serum Research Institute (Iran)* (All records)	Intranasal (third dose after 2 injections).	Phase 1. Phase 2. Phase 1 to 2 (in 12-17 year-olds).	41,128 people in Iran, comparing the 3-dose course to 2-dose inactivated Sinopharm Beijing vax (Phase 3). (Press report of **results**, in the first 24,000 participants.)	There were no hospitalizations for Covid in the Razi Cov Pars group and 5 in the Sinopharm group. The rate of Covid was reportedly more than twice as high in the Sinopharm group.
SC-Ad6-1 *Viral vector (adenovirus)* *Tetherex (USA)* (All records)	Intranasal.	Phase 1.		
(Unnamed) *Inactivated bacteria* *DreamTec (Hong Kong)* (All records)	Oral.	Phase 1. Phase 1. Phase 1.		
VXA-CoV2-1/VXA-CoV2-1.1-S *Viral vector (adenovirus)* *Vaxart (USA)* (All records)	Tablets.	Phase 1. **Results**. Phase 2. (Recruiting: started October 1, 2021.) **Results** (press release).	Omicron adaptation being developed, Omicron challenge trial planned for second half of 2023.	

Fuente: Absolutely Maybe. Disponible en https://bit.ly/3C4FuGz

Singapore authorises use of Pfizer's COVID-19 vaccine on under-five children

Sep 30. Singapore has recently approved Pfizer's Comirnaty COVID-19 vaccine for use on children aged six months to four years.

In a statement, the Health Sciences Authority (HSA) said it had carefully considered the clinical data and assessed that the benefits outweighed the risks in administering the vaccine to children in this age group.

The vaccination regimen for the primary series in this age group will consist of three 3 microgram doses - the first two to be administered three weeks apart, followed by a third dose to be administered at least eight weeks after the second dose, said the agency.

Illustrative image (Photo: Getty Images/VNA)

Official vaccination recommendations on the use of this vaccine will be issued by the Expert Committee on COVID-19 Vaccination and the Ministry of Health when ready.

The authority also said that it had consulted experts from its Medicines Advisory Committee and Panel of Infectious Diseases Experts in making the decision.

This is the second vaccine authorised for use in Singapore by HSA for young children, after the Spikevax vaccine from Moderna.

The Spikevax vaccine was authorised for use on children aged six months to 17 years on August 24./.

Fuente: Vietnam Plus. Disponible en https://bit.ly/3SSnYfv

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Estrategia de búqueda: *Vaccine in the title or abstract AND 202209021:20220930 as the publication date 70 records*

1.4062932NEUE IMPFSTOFFIMMUNADJUVANSZUSAMMENSETZUNG MIT BAVACHIN
EP - 28.09.2022
Clasificación Internacional A61K 39/39 Nº de solicitud 20891298 Solicitante KOREA INST ORIENTAL MEDICINE Inventor/a JIN YOUNG HEE
Provided are a vaccine adjuvant composition including, as an active ingredient, bavachin capable of improving antibody titer and enhancing cellular immunity and humoral immunity when administered together with an antigen, a vaccine preparation including the bavachin and an antigen, a method of

promoting an immune response, the method including the step of administering the vaccine adjuvant composition to a subject together with a vaccine composition or before and after administration of the vaccine composition, and a vaccine adjuvant composition for promoting an immune response, the vaccine adjuvant composition including the bavachin. Since the vaccine adjuvant composition of the present invention includes bavachin isolated from an extract of Psoralea corylifolia, of which safety has been secured, it may exhibit safety and may enhance both the humoral and cellular immune responses as well as the titer of antibodies generated by antigens, and thus the vaccine adjuvant composition may be widely used in the development of effective vaccine preparations.

2.WO/2022/193553INFLUENZA VIRUS VECTOR-BASED NOVEL CORONAVIRUS VACCINE AND PREPARATION METHOD THEREFOR
WO - 22.09.2022
Clasificación Internacional A61K 39/215 Nº de solicitud PCT/CN2021/114572 Solicitante GUANGZHOU N BIOMED LTD. Inventor/a CHEN, Ling
Disclosed in the present invention are an influenza virus vector-based novel coronavirus vaccine and a preparation method therefor. The vaccine can efficiently express two antigens, i.e., an HA antigen of the vaccine and an exogenous SC2R1 antigen, such that the vaccine can induce immune response of the two antigens to achieve the purpose of preventing influenza viruses and novel coronaviruses at the same time, and reduce the influences of two infectious diseases, i.e., influenza and novel coronaviruses, on the social economy, etc. Moreover, an influenza vaccine can be prepared and produced on a large scale on the basis of existing mature influenza platform technologies, and the influenza vaccine has a long use history and good safety.

3.20220296728ROOM TEMPERATURE STABLE, SINGLE SHOT mRNA VACCINE FOR COVID-19
US - 22.09.2022
Clasificación Internacional A61K 47/69 Nº de solicitud 17699359 Solicitante Trevor Percival Castor Inventor/a Trevor Percival Castor
This disclosed technology relates to a new mRNA COVID-19 vaccine that is stable at room temperature, requires only one injection, and is less prone to patient hypersensitivity reactions. The vaccine is practical to deploy globally during vaccination campaigns for current and future coronavirus pandemics and other infectious diseases. The disclosed technology is a method and system for producing the vaccine, and also a double-encapsulated mRNA vaccine product. The method uses double nanoencapsulation of an mRNA vaccine, first in phospholipid nanosomes and then in biodegradable polymer nanospheres. The method may be carried out as a continuous flow, integral, or two-stage processes. The method and system use supercritical fluid technology for nanoencapsulating mRNA in a solvent free process that minimizes loss of potency and preserves antigenicity of the nanoencapsulated mRNA and eliminates residual organic solvents in the final product. The double-encapsulated mRNA vaccine product is stable at room temperature and can be administered in a single shot to humans.

4.4061417VACCINIA-VIREN UND VERFAHREN ZUR VERWENDUNG VON VACCINIA-VIREN
EP - 28.09.2022
Clasificación Internacional A61K 39/285 Nº de solicitud 20889840 Solicitante UNIV PITTSBURGH COMMONWEALTH SYS HIGHER EDUCATION Inventor/a BARTLETT DAVID
The disclosure relates to methods and materials for treating cancer. For example, recombinant vaccinia viruses having the ability to direct the expression of membrane-bound IL-12 polypeptides on the surface of infected cells and methods for using such recombinant vaccinia viruses to treat cancer are provided. Specifically, the disclosure provides a recombinant vaccinia virus comprising a vaccinia virus genome comprising a nucleic acid encoding an IL-12p35 polypeptide sequence and an IL-12p40 polypeptide

sequence, wherein one of the polypeptide sequences comprises a membrane anchoring polypeptide sequence.

5.WO/2022/198187EXTRACELLULAR VESICLE-BASED NANOCARRIERS
WO - 22.09.2022
Clasificación Internacional C07K 14/705 Nº de solicitud PCT/US2022/071126 Solicitante OHIO STATE INNOVATION FOUNDATION Inventor/a HIGUITA-CASTRO, Natalia
Disclosed herein is a system that engages skin-resident APCs by directly delivering a vaccine composition, and a system that turns skin cells into a vaccine dispatch center to amplify immunity via the production of engineered extracellular vesicles (EVs) functionalized with targeting ligands and loaded with the vaccine composition that can be targeted to extracutaneous APCs. In particular, disclosed herein is a vaccine composition that involves a first polynucleotide encoding or comprising a viral, bacterial, or tumor antigen, and a second polynucleotide encoding a fusion protein comprising an APC-targeting ligand and an exosomal or lysosomal transmembrane protein. Also disclosed is a method of vaccinating a subject that involves transfecting skin cells of the subject with the disclosed vaccine composition. Also disclosed herein is a method of vaccinating a subject that involves administering to the subject the disclosed EV vaccine.

6.4061414NEUARTIGER IMPFSTOFF GEGEN HEAMOPHILUS PARASUIS
EP - 28.09.2022
Clasificación Internacional A61K 39/102 Nº de solicitud 20807754 Solicitante INTERVET INT BV Inventor/a JACOBS ANTONIUS ARNOLDUS CHRISTIAAN
The invention pertains to a serine protease antigen which induces antibodies against a protein having at least 69% sequence identity with the *Heamophilus parasuis* protein according to SEQ ID No: 1, for use in a prophylactic method to protect a pig against an infection with *Haemophilus parasuis* by administering a vaccine to the pig, wherein the vaccine comprises the serine protease antigen. The invention also pertains to a vaccine, a method to manufacture such a vaccine and a method to protect a pig against *H. parasuis*.

7.4061413NEUARTIGER IMPFSTOFF GEGEN HEAMOPHILUS PARASUIS
EP - 28.09.2022
Clasificación Internacional A61K 39/102 Nº de solicitud 20807752 Solicitante INTERVET INT BV Inventor/a JACOBS ANTONIUS ARNOLDUS CHRISTIAAN
The invention pertains to a protein having at least 69% sequence identity with the protein according to SEQ ID No: 1 or an immunogenic fragment of this protein, for use in a prophylactic method to protect a pig against an infection with Haemophilus parasuis by administering a vaccine to the pig, the vaccine comprising the protein or the immunogenic fragment thereof as an antigen. The invention also pertains to a vaccine, a method to manufacture such a vaccine and a method to protect a pig against H. parasuis.

8.4061415NEUARTIGER IMPFSTOFF GEGEN HEAMOPHILUS PARASUIS
EP - 28.09.2022
Clasificación Internacional A61K 39/102 Nº de solicitud 20808413 Solicitante INTERVET INT BV Inventor/a JACOBS ANTONIUS ARNOLDUS CHRISTIAAN
The invention pertains to a protein having at least 69% sequence identity with the protein according to SEQ ID No: 1 or an immunogenic fragment of this protein, for use in a prophylactic method to protect a pig against an infection with *Haemophilus parasuis* serotype 4 and an infection with *Haemophilus parasuis* serotype 5, by administering a vaccine to the pig, the vaccine comprising the protein or the immunogenic fragment thereof as an antigen. The invention also pertains to a vaccine, a method to manufacture such a vaccine and a method to protect a pig against *H. parasuis*.

9.202011035557POLYMERIC NANOPARTICLE BASED VACCINE FORMULATION AGAINST SARS-COV2 AND RELATED DISEASES
IN - 23.09.2022
Clasificación Internacional A61K / Nº de solicitud 202011035557 Solicitante NATIONAL INSTITUTE OF IMMUNOLOGY Inventor/a Jairam Meena
POLYMERIC NANOPARTICLE-BASED VACCINE FORMULATION AGAINST SARS- COV2 AND RELATED DISEASESThe present invention relates to polymeric biodegradable nanoparticle-based Receptor Binding Domain (RBD) vaccine formulation comprising RBD antigen either alone or in combination with alum or other adjuvants for improvement of antigen specific immunity. The present invention also discloses method of preparation of said vaccine formulation and a kit.

10.WO/2022/203718HALOGENATED XANTHENES AS VACCINE ADJUVANTS
WO - 29.09.2022
Clasificación Internacional A61K 31/4178 Nº de solicitud PCT/US2021/052506 Solicitante PROVECTUS PHARMATECH, INC. Inventor/a NARENDRAN, Aru
A method of inducing a Type I interferon response in a mammalian subject that presents with a microbial infection, cancerous tumor or hematological malignancy that comprises administering an amount of a halogenated xanthene as discussed above, effective to induce the Type I interferon response. A method of enhancing a mammalian immunogen-specific immune response that comprises contacting mammalian cells, in vivo or present in a mammalian cell growth supporting medium, with an adjuvant-effective amount of a halogenated xanthene, and an immunogen to which that response is to be enhanced. A mammalian HX compound-adjuvanted vaccine composition that contains an immunogen present in a vaccine-effective amount along with an adjuvant-effective amount of a halogenated xanthene (HX) compound and one or more excipients present at about 0.001% by weight to 10% by weight of the vaccine composition dissolved or dispersed in a pharmaceutically acceptable diluent.

11.WO/2022/196851METHOD AND SYSTEM FOR PROVIDING CERTIFICATION OF VACCINE INOCULATION AND POST-INOCULATION MANAGEMENT
WO - 22.09.2022
Clasificación Internacional G06F 21/33 Nº de solicitud PCT/KR2021/003521 Solicitante BLOCKCHAIN LABS INC. Inventor/a KIM, Yong Tae
Disclosed is an inoculation management method comprising the steps in which: a medical institution device transmits to a trusted authority server an inoculation certificate issuance request comprising inoculation information, an identification authentication VC relating to a user received from a user device, a vaccine inoculation institution VC relating to the medical institution, and a digital signature of the medical institution; the trusted authority server verifies the vaccine inoculation institution VC on the basis of a VC issuer digital signature included in the vaccine inoculation institution VC and the identifier of the trusted authority stored in a public distributed ledger; the trusted authority server determines whether or not there is an authorization for the inoculation certificate issuance request, on the basis of the vaccine inoculation institution VC and a medical institution database stored in the trusted authority server; and the trusted authority server issues an inoculation authentication VC comprising the inoculation information, at least some of data included in the identification authentication VC and a digital signature of the trusted authority. Various other embodiments understood through the specification are also possible.

12.20220304787VACCINE SPRAY EQUIPMENT
US - 29.09.2022
Clasificación Internacional A61D 1/02 Nº de solicitud 17612208 Solicitante FOSHAN STANDARD BIO-TECH CO., LTD. Inventor/a Zhijian TAN A vaccine spray equipment includes a frame, a conveying device, a spray device and two liquid supply devices. The conveying device is disposed on the frame, and

is configured to support and convey a chick frame. The spray device is provided on the frame and includes two rows of spray heads provided along the conveying direction perpendicular to the conveying device, the two rows of spray heads are provided side by side above the conveying device. The two liquid supply devices are provided on the frame. The two liquid supply devices are respectively connected to the two rows of spray heads in a one-to-one correspondence, and each of the liquid supply devices is configured to provide the spray device with vaccine suspension liquid.

13.20220296700SYNTHETIC PLASMID DNA VACCINE EXPRESSING A CODON-OPTIMIZED SARS-COV-2 SPIKE PROTEIN AND METHODS FOR ITS USE
US - 22.09.2022
Clasificación Internacional A61K 39/215 Nº de solicitud 17203116 Solicitante KING ABDULAZIZ UNIVERISTY Inventor/a Anwar M. Hashem
A synthetic DNA vaccine against SARS-CoV-2 infection comprises a codon-optimized coding sequence for optimal mammalian expression of a pSARS2 spike glycoprotein (pSARS2-S). The signal peptide may be replaced with the signal peptide from the human IgG2 heavy chain. Systemic S1-specific IgG antibodies and neutralizing antibodies (nAbs) were significantly induced in mice at 2 weeks-post three injections with 100 μg of the pSARS2-S vaccine via intramuscular (IM) needle injection. IM immunization induced Th1-skewed and long-lasting IgG response in BALB/c mice. Immunogenicity and induction of nAbs were enhanced with a needle-free delivery system, wherein two doses were sufficient to elicit significant levels of systemic S1-specific IgG antibodies and nAbs via IM or intradermal immunization.

14.WO/2022/203358ATTENUATED REOVIRUS-BASED VACCINE COMPOSITION AND USE THEREOF
WO - 29.09.2022
Clasificación Internacional C07K 14/005 Nº de solicitud PCT/KR2022/003992 Solicitante VIROCURE, INC. Inventor/a YOO, Haeng Jun
The present invention relates to an attenuated reovirus-based vaccine composition and a use thereof, the attenuated reovirus, according to the present invention, having the 251st to 455th amino acids of a sigma-1 protein of a capsid truncated such that when an epitope of an antigenic protein inducing cancer or infectious disease is introduced to the truncated site of the sigma-1 protein, the epitope of the antigenic protein is stably expressed in a cell, and thus the effect is gained of exhibiting an immune response such as producing a neutralizing antibody or inducing cell-mediated immunity. As such, the present invention is expected to be usefully employable as a vaccine composition for cancer or infectious disease by introducing the epitope of the antigenic protein to the truncated site of the sigma-1 protein of the attenuated reovirus according to the present invention.

15.202111003963QUADRUPLE ANTIGEN VIRUS LIKE PARTICLE (VLP) VACCINE CANDIDATE FOR SARS COV2 AND METHOD THEREOF
IN - 23.09.2022
Clasificación Internacional A61K / Nº de solicitud 202111003963 Solicitante Inte-e-Labs Private Limited Inventor/a Dr Devanand Kumar
Quadruple Antigen Virus Like Particle (VLP) Vaccine candidate for SARS COV2 and method thereofThe present Invention relates to the development of Quadruple Antigen Virus Like Particle (VLP) Vaccine candidate for SARS COV2 in Pichia pastoris expression host.

16.WO/2022/197599CANCER VACCINE AND METHOD OF USE THEREOF
WO - 22.09.2022
Clasificación Internacional A61K 31/702 Nº de solicitud PCT/US2022/020165 Solicitante NE1 INC. Inventor/a ZHUANG, Zhengping

The present disclosure generally relates to a personalized cancer vaccine having attenuated cancer cells transfected with at least one expression construct. The expression construct is capable of secretory expression of an antigenic polypeptide that could be derived from a protein from a virus. The personalized tumor vaccine, when administered to a subject in need thereof, is effective to activate an immune response.

17.WO/2022/203404HIGH-TITER AVIAN METAPNEUMOVIRUS VACCINE USING NEWCASTLE VIRUS VECTOR
WO - 29.09.2022
Clasificación Internacional C12N 7/00 Nº de solicitud PCT/KR2022/004093 Solicitante BIOPOA, INC. Inventor/a CHO, Sun Hee
The present application pertains to a vaccine against avian metapneumovirus (aMPV), specifically, to a high-titer chimeric virus using a Newcastle virus vector and, preferably, to a chimeric virus expressing both a surface antigen of aMPV subtype A and a surface antigen of aMPV subtype B, a vaccine using the chimeric virus, and an avian immunization method. The F protein, which determines the pathogenicity of Newcastle disease virus, is safe as it is identical to the sequence of the KBNP-C4152 virus, which has been used domestically and internationally for more than 10 years and has been verified for safety and effectiveness, and has excellent antibody-forming effect against aMPV.

18.20220305109COMPOSITIONS AND METHODS RELATED TO EBOLAVIRUS VACCINES
US - 29.09.2022
Clasificación Internacional A61K 39/12 Nº de solicitud 17715658 Solicitante THE SCRIPPS RESEARCH INSTITUTE Inventor/a Linling He
The present invention provides novel engineered Ebolavirus GP proteins and polypeptides, scaffolded vaccine compositions that display the engineered proteins, and polynucleotides encoding the engineered proteins and scaffolded vaccine compositions. The invention also provides methods of using such engineered Ebolavirus GP proteins and vaccine compositions in various therapeutic applications, e.g., for preventing or treating Ebolavirus infections.

19.WO/2022/196852BLOCKCHAIN-TECHNOLOGY-BASED PEER-TO-PEER PRIVATE INFORMATION AUTHENTICATION METHOD
WO - 22.09.2022
Clasificación Internacional G06F 21/33 Nº de solicitud PCT/KR2021/003522 Solicitante BLOCKCHAIN LABS INC. Inventor/a KIM, Yong Tae
Disclosed is an electronic device comprising: a camera; a display; a communication circuit for communicating with a blockchain network and a third party electronic device; at least one memory for storing a first identifier value, a first application and instructions for performing a predetermined operation; and at least one processor operatively connected to the at least memory to execute the instructions, wherein the at least one processor is configured to: drive the first application; acquire a picture captured through the camera, the picture including a first region including the face of a user and a second region associated with a vaccine; extract information about the vaccine from the second region; generate a vaccination certificate, which includes at least a portion of the picture including the first region, the information about the vaccine, and a digital signature corresponding to the first identifier value; transmit a second identifier value corresponding to the vaccination certificate to the blockchain network; and transmit the vaccination certificate to the third party electronic device. Other various embodiments identified through the specification are possible.

20.WO/2022/199648USE OF MICROORGANISMS TO IMPROVE VACCINE EFFICACY
WO - 29.09.2022

Clasificación Internacional A61K 35/745 Nº de solicitud PCT/CN2022/082670 Solicitante THE CHINESE UNIVERSITY OF HONG KONG Inventor/a NG, Siew Chien
Provides are compositions and methods for enhancing vaccine efficacy and safety among at-risk subjects receiving vaccine to reduce the risk of developing an infectious disease.

21.WO/2022/204017IMMUNIZATION ASSESSMENTS USING SALIVA OR NASAL SPECIMEN
WO - 29.09.2022
Clasificación Internacional G01N 33/53 Nº de solicitud PCT/US2022/021129 Solicitante CURATIVE INC. Inventor/a SLEPNEV, Vladimir I.
The present disclosure provides, in some aspects, methods comprising the determination an antibody profile in a saliva or nasal sample from an individual following administration of a vaccine. In some embodiments, the antibody profile is useful for assessing an individual, such as for assessing vaccine immunogenicity and vaccine treatment needs. In other aspects, provided herein are kits and compositions useful for the methods described herein.

22.20220296701SYNTHETIC PLASMID DNA VACCINE EXPRESSING A CODON-OPTIMIZED SARS-COV-2 SPIKE PROTEIN AND METHODS FOR ITS USE
US - 22.09.2022
Clasificación Internacional A61K 39/215 Nº de solicitud 17672045 Solicitante KING ABDULAZIZ UNIVERISTY Inventor/a Anwar M. Hashem
A synthetic DNA vaccine against SARS-CoV-2 infection comprises a codon-optimized coding sequence for optimal mammalian expression of a pSARS2 spike glycoprotein (pSARS2-S). The signal peptide may be replaced with the signal peptide from the human IgG2 heavy chain. Systemic S1-specific IgG antibodies and neutralizing antibodies (nAbs) were significantly induced in mice at 2 weeks-post three injections with 100 µg of the pSARS2-S vaccine via intramuscular (IM) needle injection. IM immunization induced Th1-skewed and long-lasting IgG response in BALB/c mice. Immunogenicity and induction of nAbs were enhanced with a needle-free delivery system, wherein two doses were sufficient to elicit significant levels of systemic S1-specific IgG antibodies and nAbs via IM or intradermal immunization.

23.20220298492ATTENUATED VIRUSES USEFUL FOR VACCINES
US - 22.09.2022
Clasificación Internacional C12N 7/00 Nº de solicitud 17513032 Solicitante The Research Foundation for The State of University New York Inventor/a Eckard Wimmer
This invention provides an attenuated virus which comprises a modified viral genome containing nucleotide substitutions engineered in multiple locations in the genome, wherein the substitutions introduce synonymous deoptimized codons into the genome. The instant attenuated virus may be used in a vaccine composition for inducing a protective immune response in a subject. The invention also provides a method of synthesizing the instant attenuated virus. Further, this invention further provides a method for preventing a subject from becoming afflicted with a virus-associated disease comprising administering to the subject a prophylactically effective dose of a vaccine composition comprising the instant attenuated virus.

24.WO/2022/201035VACCINES AND IMMUNOGLOBULINS TARGETING AFRICAN SWINE FEVER VIRUS, METHODS OF PREPARING SAME, AND METHODS OF USING SAME
WO - 29.09.2022
Clasificación Internacional A61K 39/00 Nº de solicitud PCT/IB2022/052621 Solicitante IGY IMMUNE TECHNOLOGIES AND LIFE SCIENCES INC. Inventor/a NGUYEN, Huan Huu
The present disclosure provides a method of isolating and preparing live African Swine Fever (ASF) viruses (ASFV) and an ASFV vaccine composed of ASF virus particles, ASF viral components, and/or immunosuppressive protein factors. The ASFV vaccine can be used to immunize pigs and wild boars, or

can be used to immunize species other than pig or wild boar, such as fowl, bovine, goat, rabbit, donkey or horse, to generate polyclonal immunoglobulins with broad-spectrum specificity to the ASFV. The ASFV-specific immunoglobulins then can be extracted and purified. The ASFV-specific immunoglobulins can provide acute treatment of ASF-infected pigs or wild boars or preventative treatment for pigs or wild boars at risk of ASF, for example that may have been exposed to ASFV or ASFV-infected subjects.

25.20220305121N-ARYL SULFONAMIDE DERIVATIVES AS VACCINE ADJUVANT
US - 29.09.2022
Clasificación Internacional A61K 39/39 Nº de solicitud 17635983 Solicitante The Regents of the University of California Inventor/a Dennis A. Carson
Bis-aryl sulfonamide compounds and methods of using those compounds, e.g., in a method of enhancing or prolonging an immune response, are provided. For example, the compounds may be employed with a vaccine and optionally at least one other adjuvant and/or one or more TLR ligands, at least one MAP kinase inhibitor, or any combination thereof.

26.20220310221DIGITAL VACCINE SYSTEM, METHOD AND DEVICE
US - 29.09.2022
Clasificación Internacional G16H 10/60 Nº de solicitud 17705170 Solicitante VYDIANT, INC Inventor/a James Kaput
A digital vaccine system, method and device that maintains a health knowledge base, inputs user characteristics, generates health scores based on the user characteristics and provides pathogen risk recommendations based on the user characteristics, health scores and knowledge base, wherein the recommendations are indicated by the knowledge base to be likely to improve the user's health.

27.20220296704VACCINE FORMULATIONS
US - 22.09.2022
Clasificación Internacional A61K 39/39 Nº de solicitud 17619580 Solicitante EQUALY S.A. Inventor/a Jean-Marie SAINT-REMY
A pharmaceutically compatible antioxidant for use in the treatment or the prevention of an unwanted immune response, the corresponding pharmaceutical and vaccine compositions, and the corresponding clinical and ex-vivo applications.

28.WO/2022/193017ANTI-VACCINIA VIRUS ANTIGEN ANTIBODIES AND RELATED COMPOSITIONS AND METHODS
WO - 22.09.2022
Clasificación Internacional C07K 16/08 Nº de solicitud PCT/CA2022/050400 Solicitante ADMARE THERAPEUTICS SOCIETY Inventor/a CUMMINS, Emma J.
Provided are antibodies that specifically bind to Vaccinia Virus B5 antigen (VV B5). In certain embodiments, the anti-VV B5 antibodies are humanized antibodies. Fusion proteins and conjugates comprising such antibodies are also provided. Pharmaceutical compositions comprising the antibodies, fusion proteins and conjugates of the present disclosure are also provided, as are methods of using such compositions, e.g., for therapy, in vivo imaging and/or the like. In certain aspects, provided are methods that comprise administering an antibody, fusion protein or conjugate of the present disclosure to an individual, wherein the individual comprises cells infected with VV, and wherein the antibody, fusion protein or conjugate is targeted to the infected cells by VV B5 antigens expressed on the surface of the infected cells.

29.20220295912Smart Mask
US - 22.09.2022
Clasificación Internacional A41D 1/00 Nº de solicitud 17384693 Solicitante Cherackal Chacko Inventor/a Cherackal Chacko

A face mask which displays information to another person. The facemask can display medical information. Specifically, the medical information displayed can be the vaccination status of the wearer, where the vaccination status of the wearer relates to the number of doses received for a vaccine regime of the vaccine which is used to prevent the spread of an infectious disease causing a pandemic. Markings on the outer surface of the face covering structure of the face mask convey the information.

30.4061404MEDIZINISCHE VERWENDUNGEN VON MIT 4-1BBL-ADJUVIERTEM REKOMBINANTEN MODIFIZIERTEN VACCINIA-VIRUS ANKARA (MVA)
EP - 28.09.2022
Clasificación Internacional A61K 39/00 Nº de solicitud 20808119 Solicitante BAVARIAN NORDIC AS Inventor/a HINTERBERGER MARIA
The invention relates to a recombinant Modified Vaccinia Virus Ankara (MVA) expressing a TAA and the costimulatory molecule 4-1BBL for use in (i) the prevention of recurrence of a solid tumor, wherein the recombinant MVA is intratumorally administered to the solid tumor, or (ii) the treatment, prevention and/or prevention of recurrence of a tumor, wherein the recombinant MVA is intratumorally administered to another solid tumor.

31.WO/2022/204571A DIGITAL VACCINE SYSTEM, METHOD AND DEVICE
WO - 29.09.2022
Clasificación Internacional G16H 10/00 Nº de solicitud PCT/US2022/022046 Solicitante VYDIANT, INC. Inventor/a KAPUT, James
A digital vaccine system, method and device that maintains a health knowledge base, inputs user characteristics, generates health scores based on the user characteristics and provides pathogen risk recommendations based on the user characteristics, health scores and knowledge base, wherein the recommendations are indicated by the knowledge base to be likely to improve the user's health.

32.WO/2022/193552ADENOVIRUS TYPE 26 (AD26) VECTOR-BASED VACCINE FOR SARS-COV-2, AND PREPARATION METHOD THEREFOR AND APPLICATION THEREOF
WO - 22.09.2022
Clasificación Internacional C12N 15/861 Nº de solicitud PCT/CN2021/114571 Solicitante GUANGZHOU N BIOMED LTD. Inventor/a CHEN, Ling
Provided are an adenovirus type 26 (Ad26) vector-based vaccine for SARS-CoV-2, and a preparation method therefor. An optimized SARS-CoV-2 Spikes sequence as shown in SEQ ID NO. 1 is loaded on the Ad26 vector.

33.WO/2022/195427ADJUVANT FOR VACCINE DEVELOPMENT
WO - 22.09.2022
Clasificación Internacional A61K 39/00 Nº de solicitud PCT/IB2022/052241 Solicitante SHEN, Haifa Inventor/a SHEN, Haifa
The present invention provides a cell-based method for identification of an adjuvant and adjuvant combinations and a composition of a vaccine that includes the adjuvant and adjuvant combinations. The method comprises the steps: using an adjuvant or adjuvant combination to treat at least one type of antigen-presenting cells and measuring amount of at least one cytokine produced by the antigen-presenting cells.

34.20220296697PORCINE CIRCOVIRUS TYPE 2 VLP VACCINE
US - 22.09.2022
Clasificación Internacional A61K 39/12 Nº de solicitud 17634488 Solicitante KM BIOLOGICS CO., LTD. Inventor/a Takeshi ARAKAWA

Provided is PCV2 VLP that can be used as a vaccine for use in the field of animal husbandry and that has high molecular stability against physicochemical load. A fusion protein according to the present invention includes a capsid protein of porcine circovirus type 2 and an immunoglobulin-binding domain.

35.4059515HPV-MRNA EINKAPSELNDES NUKLEINSÄURE-LIPIDPARTIKEL-VAKZIN
EP - 21.09.2022
Clasificación Internacional A61K 39/12 Nº de solicitud 20887577 Solicitante DAIICHI SANKYO CO LTD Inventor/a NIWA TAKAKO
The present invention provides a vaccine for preventing and/or treating infections with human papillomavirus. The present invention relates to a lipid particle encapsulating a nucleic acid molecule capable of expressing the E6 and E7 antigens of human papillomavirus, wherein the lipid comprises a cationic lipid represented by general formula (Ia) or a pharmaceutically acceptable salt thereof:wherein R^1 and R^2 each independently represent a C_1-C_3 alkyl group;L^1 represents a C_{17}-C_{19} alkenyl group which may have one or a plurality of C_2-C_4 alkanoyloxy groups;L^2 represents a C_{10}-C_{19} alkyl group which may have one or a plurality of C_2-C_4 alkanoyloxy groups or a C_{10}-C_{19} alkenyl group which may have one or a plurality of C_2-C_4 alkanoyloxy groups; andp is 3 or 4.

36.202111003148A NOVEL METHOD TO EVALUATE THE QUALITY OF ANTIGEN-SPECIFIC T CELLS IN INFECTION AND VACCINATION
IN - 23.09.2022
Clasificación Internacional A61K / Nº de solicitud 202111003148 Solicitante NATIONAL INSTITUTE OF IMMUNOLOGY Inventor/a Nimesh Gupta
The present invention relates to the development of a novel method and/or assay to test the Bcell help quality of CD4+ T cells in establishing humoral responses and the immunologicalmemory. The method has been developed to evaluate the quality of CD4+ T cells specific toviruses, bacteria, and human vaccines. The present invention is also applicable for assessingthe vaccine efficacy in inducing B cell helping T cells (COVID-19 vaccines, Live attenuatedSA14-14-2 Japanese encephalitis vaccine, Tetanus toxoid etc.), testing the adjuvants andimmune modulators as well as to test the quality of antigen-specific CD4+ T cells inducedagainst vector-borne (dengue virus etc.), respiratory (SARS Coronavirus 2 and Mycobacteriumtuberculosis etc.) and communicable human pathogens.

37.WO/2022/199317INDUSTRIAL PRODUCTION METHOD FOR STAPHYLOCOCCUS AUREUS VACCINE
WO - 29.09.2022
Clasificación Internacional A61K 39/085 Nº de solicitud PCT/CN2022/077827 Solicitante WESTVAC BIOPHARMA CO., LTD. Inventor/a WANG, Zhenling
The present invention belongs to the field of biomedicine, and particularly relates to an industrial production method for a staphylococcus aureus vaccine.

38.202227041329MODIFIED MRNAS FOR VACCINE DEVELOPMENT
IN - 23.09.2022
Clasificación Internacional A61K / Nº de solicitud 202227041329 Solicitante BASECLICK GMBH Inventor/a FRISCHMUTH, Thomas
A modified messenger RNA (mRNA) of the present invention encodes within its ORF an antigen such as a viral protein, an immunogenically active part of such viral protein, or an anticancer protein or epitope, and contains at least one of an alkyne- or azide-modification in at least one nucleotide. A preferred viral protein encoded by the inventive mRNA is a Corona virus protein, especially nucleoprotein N of SARS-CoV-2. The modified mRNA or a pharmaceutical com position containing such mRNA is especially useful in the context of a method for vaccination against viral infection and adding an adjuvant like a STING

antagonist further enhances the immune response in an individual and accordingly the vaccination efficiency.

39.20220306721IMMUNOTHERAPY WITH B*07 RESTRICTED PEPTIDES AND COMBINATION OF PEPTIDES AGAINST CANCERS AND RELATED METHODS
US - 29.09.2022
Clasificación Internacional C07K 14/725 Nº de solicitud 17826583 Solicitante Immatics Biotechnologies GmbH Inventor/a Heiko SCHUSTER
The present invention relates to peptides, proteins, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated T-cell peptide epitopes, alone or in combination with other tumor-associated peptides that can for example serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses, or to stimulate T cells ex vivo and transfer into patients. Peptides bound to molecules of the major histocompatibility complex (MHC), or peptides as such, can also be targets of antibodies, soluble T-cell receptors, and other binding molecules.

40.20220305120MUCOSAL VACCINE FORMULATIONS
US - 29.09.2022
Clasificación Internacional A61K 39/39 Nº de solicitud 17618283 Solicitante GLAXOSMITHKLINE BIOLOGICALS SA Inventor/a Simona GALLORINI
Simian adenoviral vectors are formulated with bioadhesives and excipients that maintain immunogenicity. They can be administered mucosally to provide effective prophylaxis and therapy.

41.4061412DOSIERUNG UND VERABREICHUNG EINES BAKTERIELLEN SACCHARID-GLYKOKONJUGAT-IMPFSTOFFES
EP - 28.09.2022
Clasificación Internacional A61K 39/09 Nº de solicitud 20811456 Solicitante GLAXOSMITHKLINE BIOLOGICALS SA Inventor/a ADAMO ROBERTO
The present invention provides a glycoconjugate for administration to a subject in a method comprising the steps of: (i) administering a first dose of glycoconjugate; (ii) subsequently administering a second dose of glycoconjugate; wherein the amount of glycoconjugate in the first dose or first and second doses are atypically low, and also related aspects.

42.WO/2022/195900RECOMBINANT MEASLES VIRUS
WO - 22.09.2022
Clasificación Internacional C12N 15/45 Nº de solicitud PCT/JP2021/017632 Solicitante THE UNIVERSITY OF TOKYO Inventor/a YONEDA Misako
The present invention provides: a recombinant measles virus useful as a live vaccine against COVID-19; and a vector used for producing the recombinant measles virus. That is, the present invention is a recombinant measles virus in which a gene encoding a protein of corona virus SARS-CoV-2 is inserted between the N gene region and the P gene region in a measles virus gene; the recombinant measles virus in which the protein is the spike protein of SARS-CoV-2 or a partial protein thereof; and DNA in which a gene encoding a protein of SARS-CoV-2 is inserted into the region from the base at position 1686 to the base at position 1694 in the nucleotide sequence represented by SEQ ID NO: 2.

43.WO/2022/197940VACCINE COMPOSITIONS AND METHODS OF USE THEREOF
WO - 22.09.2022
Clasificación Internacional A61K 31/713 Nº de solicitud PCT/US2022/020774 Solicitante EXCEPGEN INC. Inventor/a MERTINS, Barbara
The present disclosure provides compositions and methods for use in vaccines, comprising polynucleotides encoding one or more viral antigen proteins and an enhancer protein, wherein the

enhancer protein is a picornavirus leader (L) or a functional variant thereof. The compositions and methods provided herein may improve the production of functional viral-like particles (VLP).

44.WO/2022/202919ADJUVANT COMPOSITION
WO - 29.09.2022
Clasificación Internacional A61K 39/39 Nº de solicitud PCT/JP2022/013631 Solicitante MEDRX CO., LTD. Inventor/a ISHIDA, Tatsuhiro
The present invention provides: an adjuvant composition comprising an organic acid and meglumine or trometamol, the adjuvant composition having excellent safety and convenience and being capable of effectively improving immunogenicity of an antigen; and a vaccine composition utilizing the adjuvant composition.

45.20220305113ANTIGENS OF BETA-CORONAVIRUSES, PREPARATION METHODS AND USES THEREOF
US - 29.09.2022
Clasificación Internacional A61K 39/215 Nº de solicitud 17827256 Solicitante INSTITUTE OF MICROBIOLOGY, CHINESE ACADEMY OF SCIENCES Inventor/a Lianpan DAI
The embodiments of the present disclosure relate to antigens of β-coronaviruses, preparation methods and uses thereof. The amino acid sequence of the antigen of the β-coronavirus includes an amino acid sequence arranged in a (A-B)-(A-B) pattern or an amino acid sequence arranged in a (A-B)-C-(A-B) pattern or an amino acid sequence arranged in a (A-B)-(A-B') pattern or an amino acid sequence arranged in a (A-B)-C-(A-B') pattern. The antigen of the β-coronavirus has a single-chain dimer structure. A single-chain dirtier expressed according to examples of the present disclosure is stable in content and has excellent immunogenicity as an antigen of a β-coronavirus, and a vaccine prepared by using the single-chain dimer as an antigen of a β-coronavirus can elicit high-titer neutralizing antibodies in mice.

46.WO/2022/197630METHODS FOR OPTIMIZING TUMOR VACCINE ANTIGEN COVERAGE FOR HETEROGENOUS MALIGNANCIES
WO - 22.09.2022
Clasificación Internacional G16B 20/20 Nº de solicitud PCT/US2022/020235 Solicitante AMAZON TECHNOLOGIES, INC. Inventor/a PRICE, Layne, Christopher
Disclosed herein are methods for selecting tumor-specific neoantigens from a tumor of a subject that are suitable for subject-specific immunogenic compositions.

47.WO/2022/197255RECOMBINANT SARS-CoV-2 IMMUNOGENIC PROTEIN PRODUCED IN PLANTS AND THE USE THEREOF
WO - 22.09.2022
Clasificación Internacional C12N 9/48 Nº de solicitud PCT/TH2021/000009 Solicitante BAIYA PHYTOPHARM CO., LTD. Inventor/a PHOOLCHAROEN, Waranyoo
The present invention demonstrates a recombinant vector for producing immunogenic substance from plants which can induce an immune response in mammals against the coronavirus disease 2019 (COVID-19). Said recombinant vector comprises at least a fragment of SARS Co V-2 receptor binding domain protein (SARS Co V-2 RBD) and a fusion protein sequence. The recombinant vector is introduced into plant cells, preferrably by means of Agrobacterium sp., thereby the plant cell can express a recombinant protein which can act as an immunogenic substance. The recombinant protein of the present invention s igruficantly demonstrates an ability to trigger immunogenicity in mammals which prevents infectious disease caused by severe acute respirato1y syndrome coronavirus 2. Further, the method of inducing an immune response against SARS- Co V- 2 in mammals is also provided herein. The present invention further demonstrates the use of such recombinant protein as a vaccine to prevent the coronavirus disease 201 9 (COVID-1 9).

48.WO/2022/197840ADENOVIRUS SARS-COV-2 VACCINE
WO - 22.09.2022
Clasificación Internacional A61P 31/14 Nº de solicitud PCT/US2022/020604 Solicitante THE WISTAR INSTITUTE Inventor/a ERTL, Hildegund, C., J.
The present invention includes methods and compositions useful for treating or preventing a coronavirus infection in a subject. In certain embodiments the treatment comprises adenoviral-based vaccines against SARS-CoV-2 viral proteins.

49.WO/2022/204491PERTUSSIS VACCINE
WO - 29.09.2022
Clasificación Internacional A61K 31/7105 Nº de solicitud PCT/US2022/021908 Solicitante MODERNATX, INC. Inventor/a HIMANSU, Sunny
The disclosure relates to pertussis nucleic acid vaccines, diphtheria nucleic acid vaccines, tetanus nucleic acid vaccines, and combination vaccines, as well as methods of using the vaccines and compositions comprising the vaccines.

50.2605040Inhibitors of influenza viral entry
GB - 21.09.2022
Clasificación Internacional A61K 31/215 Nº de solicitud 202206782 Solicitante UNIV ILLINOIS Inventor/a LIJUN RONG
Vaccination is the most prevalent prophylactic means for controlling seasonal influenza infections. However, an effective vaccine usually takes at least 6 months to develop for the circulating strains. Therefore, new therapeutic options are needed for acute treatment of influenza infections to control this virus and prevent epidemic/pandemic situations from developing. Described herein are fast-acting, orally active acylated amino-substituted heterocyclyl compounds effective to control this virus. In one aspect, described herein is a method of treating an influenza infection in a subject comprising administering to the subject the compounds described herein.

51.4058056CHOLERA-IMPFSTOFFFORMULIERUNG
EP - 21.09.2022
Clasificación Internacional A61K 39/02 Nº de solicitud 21783551 Solicitante VALNEVA SWEDEN AB Inventor/a SCREPANTI-SUNDQUIST VALENTINA
Described herein are dry compositions that can be stored at ambient temperature without major loss of potency.

52.20220296689PARASITIC NEMATODE VACCINE
US - 22.09.2022
Clasificación Internacional A61K 39/00 Nº de solicitud 17638542 Solicitante The University Court of the University of Edinburgh Inventor/a Amy Buck
There is discussed nematode antigens capable of causing an immune response in a host such that a protective effect is provided to the host in relation to the nematode. Antigens, compositions for the treatment of parasitic nematode infections, methods of prophylaxis and treatment of parasitic nematode infections, and vaccines to reduce and/or control parasitic nematode infections are provided.

53.20220296698UNIVERSAL INFLUENZA VACCINE
US - 22.09.2022
Clasificación Internacional A61K 39/12 Nº de solicitud 17750845 Solicitante Cambridge Technologies LLC Inventor/a Ben Hause
Immunogenic compositions for inducing a universal immune response to influenza, and particularly influenza A, by eliciting anti-neuraminidase antibodies which provide protection against heterologous influenza infection. Compositions comprising recombinant baculovirus expression vectors expressing

neuraminidase in cultured insect cells dispersed in a pharmaceutically-acceptable carrier comprising insect cell culture media, and optional adjuvant. Methods of inducing immune responses against influenza, and particularly influenza A, by eliciting anti-neuraminidase antibodies in a host animal susceptible to infection.

54.20220305131MODIFIED VIRUS-LIKE PARTICLES OF CMV
US - 29.09.2022
Clasificación Internacional A61K 47/64 Nº de solicitud 17714307 Solicitante SAIBA AG Inventor/a Martin BACHMANN
The present invention relates to virus-like particles of plant virus Cucumber Mosaic Virus (CMV), and in particular to modified VLPs of CMV comprising Th cell epitopes, in particular universal Th cell epitopes. Furthermore, these modified VLPs serve as, preferably, vaccine platform, for generating immune responses, in particular antibody responses, against antigens linked to said modified VLPs. The presence of the Th cell epitopes, in particular universal Th cell epitopes, led to a further increase in the generated immune response.

55.WO/2022/200590THERAPEUTIC COMBINATION FOR TREATING CANCER
WO - 29.09.2022
Clasificación Internacional A61K 39/00 Nº de solicitud PCT/EP2022/057955 Solicitante NYKODE THERAPEUTICS ASA Inventor/a FREDRIKSEN, Agnete
This invention relates to methods and kits for treating a subject having cancer, e.g. a patient, by administering to the subject an anticancer vaccine in combination with one or more checkpoint inhibitors.

56.20220296696Immunogenic Antigens
US - 22.09.2022
Clasificación Internacional A61K 39/095 Nº de solicitud 17506254 Solicitante Longhorn Vaccines and Diagnostics, LLC Inventor/a Jeffrey D. Fischer
The invention relates to composite antigens comprising an antigen obtained or derived from an antigenic epitope of one or more pathogens that induces an immune response in a mammal, an antigen obtained or derived from bacterial cell wall material that induces an immune response in a mammal such as LTA, PNG or LPS, and a T cell stimulating antigen such as CRM. Preferably the composite antigen comprises an immunogenic composition or a vaccine that is effective against the pathogen or can generate antibodies that can be collected that are protective against infection by the pathogen. In addition, the invention relates to vaccines comprising composite antigens and to method for treating and preventing an infection.

57.20220307040ARTIFICIAL NUCLEIC ACID MOLECULES FOR IMPROVED PROTEIN EXPRESSION
US - 29.09.2022
Clasificación Internacional C12N 15/67 Nº de solicitud 17713533 Solicitante CureVac AG Inventor/a Andreas THESS
The invention relates to an artificial nucleic acid molecule comprising an open reading frame and a 3'-UTR comprising at least one poly(A) sequence or a polyadenylation signal. The invention further relates to a vector comprising the artificial nucleic acid molecule comprising an open reading frame and a 3'-UTR comprising at least one poly(A) sequence or a polyadenylation signal, to a cell comprising the artificial nucleic acid molecule or the vector, to a pharmaceutical composition comprising the artificial nucleic acid molecule or the vector and to a kit comprising the artificial nucleic acid molecule, the vector and/or the pharmaceutical composition. The invention also relates to a method for increasing protein production from an artificial nucleic acid molecule and to the use of a 3'-UTR for a method for increasing protein production from an artificial nucleic acid molecule. Moreover, the invention concerns the use of the

artificial nucleic acid molecule, the vector, the kit or the pharmaceutical composition as a medicament, as a vaccine or in gene therapy.

58.3708668KUNSTIGT NUKLEINSYREMOLEKYLE TIL FORBEDRET PROTEINUDTRYKKELSE
DK - 26.09.2022
Clasificación Internacional A61K 39/00 Nº de solicitud 20157801 Solicitante CureVac AG Inventor/a SCHLAKE, Thomas
The invention relates to an artificial nucleic acid molecule comprising an open reading frame and a 3'-UTR comprising at least one poly(A) sequence or a polyadenylation signal. The invention further relates to a vector comprising the artificial nucleic acid molecule comprising an open reading frame and a 3'-UTR comprising at least one poly(A) sequence or a polyadenylation signal, to a cell comprising the artificial nucleic acid molecule or the vector, to a pharmaceutical composition comprising the artificial nucleic acid molecule or the vector and to a kit comprising the artificial nucleic acid molecule, the vector and/or the pharmaceutical composition. The invention also relates to a method for increasing protein production from an artificial nucleic acid molecule and to the use of a 3'-UTR for a method for increasing protein production from an artificial nucleic acid molecule. Moreover, the invention concerns the use of the artificial nucleic acid molecule, the vector, the kit or the pharmaceutical composition as a medicament, as a vaccine or in gene therapy.

59.WO/2022/193540PHAGE POLYPEPTIDE TARGETING SIGLEC-15
WO - 22.09.2022
Clasificación Internacional C07K 7/64 Nº de solicitud PCT/CN2021/112785 Solicitante JIANGSU YUANBEN BIOTECHNOLOGY CO., LTD. Inventor/a CAI, Jiong
Provided are a phage polypeptide targeting Siglec-15 and a use thereof, relating to the field of biotechnology. A phage polypeptide that specifically targets Siglec-15 is obtained by means of a phage display technology, and the polypeptide has relatively high affinity and specificity to Siglec-15. The phage polypeptide targeting Siglec-15 can be widely used in various fields of biomedicine, such as bioassay detection, tumor imaging, and capture and release of memory tumor cells for drug targeted therapy, and provide a prerequisite for clinical screening of patients suitable for Siglec-15 targeted therapy.

60.WO/2022/203308NOVEL RECOMBINANT STRAIN OF MYCOBACTERIUM SMEGMATIS AND USE OF SAME
WO - 29.09.2022
Clasificación Internacional C12N 15/74 Nº de solicitud PCT/KR2022/003908 Solicitante CLIPSBNC CO.,LTD. Inventor/a KIM, Bum-Joon
The present invention relates to a recombinant Mycobacterium strain co-expressing MIF and IL-7, and a composition for preventing or treating cancer, comprising same as an active ingredient. The present invention allows a stable expression of MIF and IL-7 through a mycobacteria-derived cloning plasmid, in particular, a pMyong2 shuttle vector developed by the present inventors, to induce a maximized antitumor immune response. Thus, the present invention may be advantageously utilized as an efficient anticancer live vaccine composition that induces multifaceted cellular immunity and humoral immunity through a single administration of the recombinant strain.

61.WO/2022/193539PHAGE POLYPEPTIDE TARGETING SIGLEC-15
WO - 22.09.2022
Clasificación Internacional C07K 7/06 Nº de solicitud PCT/CN2021/112784 Solicitante JIANGSU YUANBEN BIOTECHNOLOGY CO., LTD. Inventor/a CAI, Jiong
The present application relates to the field of biotechnology and provides a phage polypeptide targeting Siglec-15 and use thereof. A phage polypeptide that specifically targets Siglec-15 is obtained by a phage display technique. The phage polypeptide has higher affinity and specificity to Siglec-15. The phage

polypeptide targeting Siglec-15 can be widely used in various fields of biomedicine such as bioassay detection, tumor imaging, drug targeting therapy, and capture and release of memory tumor cells while providing a premise for clinical screening of patients suitable for Siglec-15 targeted therapy.

62.4062930NEUE ANWENDUNG EINER IMMUNOGENEN ODER IMPFSTOFFZUSAMMENSETZUNG GEGEN COVID-19
EP - 28.09.2022
Clasificación Internacional A61K 39/215 Nº de solicitud 21180476 Solicitante EYE VACC Inventor/a SCHRAGE NORBERT
La présente invention concerne une composition immunogène ou vaccinale contre le SARS-CoV-2, pour son utilisation dans le traitement de la Covid-19, caractérisée en ce qu'elle est administrée sur la muqueuse oculaire et/ou la muqueuse uro-génitale.

63.4062931NEUE ANWENDUNG EINER IMMUNOGENEN ODER IMPFSTOFFZUSAMMENSETZUNG
EP - 28.09.2022
Clasificación Internacional A61K 39/215 Nº de solicitud 21180477 Solicitante EYE VACC Inventor/a SCHRAGE NORBERT
La présente invention concerne une composition immunogène ou vaccinale comprenant un marqueur, pour son utilisation dans la prévention et/ou le traitement d'une infection causée par au moins un agent pathogène, caractérisée en ce qu'elle est administrée sur la muqueuse oculaire et/ou la muqueuse uro-génitale.

64.WO/2022/203963CORONAVIRUS VACCINE FORMULATIONS
WO - 29.09.2022
Clasificación Internacional A61K 39/215 Nº de solicitud PCT/US2022/020974 Solicitante NOVAVAX, INC. Inventor/a SMITH, Gale
Disclosed herein are coronavirus Spike (S) proteins and nanoparticles comprising the same, which are suitable for use in vaccines. The nanoparticles present antigens from pathogens surrounded to and associated with a detergent core resulting in enhanced stability and good immunogenicity. Dosages, formulations, and methods for preparing the vaccines and nanoparticles are also disclosed.

65.WO/2022/193541PHAGE POLYPEPTIDE TARGETING SIGLEC-15
WO - 22.09.2022
Clasificación Internacional C07K 7/08 Nº de solicitud PCT/CN2021/112787 Solicitante JIANGSU YUANBEN BIOTECHNOLOGY CO., LTD. Inventor/a CAI, Jiong
Provided are a phage polypeptide targeting Siglec-15 and the use thereof, which belong to the field of biotechnology. The phage polypeptide specifically targeting Siglec-15 is obtained by means of phage display technology, and the phage polypeptide has relatively high affinity and specificity to Siglec-15. The phage polypeptide targeting Siglec-15 can be widely used in various fields of biomedicine, such as biological analysis and detection, tumor imaging, and capture and release of drug-targeted therapy memory tumor cells, and also provides a prerequisite for clinical screening of patients suitable for Siglec-15 targeted therapy.

66.WO/2022/194311IL-17RA ANTIBODY FC FUSION PROTEIN, AND USE THEREOF
WO - 22.09.2022
Clasificación Internacional Nº de solicitud PCT/CN2022/100748 Solicitante NATIONAL VACCINE AND SERUM INSTITUTE Inventor/a ZHANG, Yuntao
Provided are an IL-17RA antibody Fc fusion protein, a pharmaceutical composition, an injection, and a use thereof. The IL-17RA fusion protein comprises connection-operatable, sequentially and serially connected signal peptides, an IL-17RA extracellular domain, and an IgG1 constant region. The IL-17RA fusion protein of the present invention has an extended half-life, obtains longer-acting drug activity and

lowered immunogenicity compared to antibody medications. The design of the present invention allows the IL-17RA fusion protein to eliminate ADCC, ADCP, and CDC effect, retains the in-vivo recycling mediated by Fc receptors (FcRn) in newborns, and has lower side reaction and is safer compared to current commercially available IL-17RA antibodies.

67.20220306729NEUTRALIZING ANTIBODIES THAT BIND TO THE ZIKA VIRUS DOMAIN III ENVELOPE REGION
US - 29.09.2022
Clasificación Internacional C07K 16/10 Nº de solicitud 17749044 Solicitante The Rockefeller University Inventor/a Davide ROBBIANI
Antibodies to Zika virus (ZIKV) and dengue 1 virus (DENV1) are provided. The amino acid sequences of the antibodies may be modified. Methods for prophylaxis and/or therapy by administering the antibodies and combinations thereof are provided. Immunological detection methods using the antibodies are provided. Also provided are vaccine compositions which comprise peptides derived from ZIKV and DENV1.

68.20220296695COMPOSITIONS COMPRISING STREPTOCOCCUS PNEUMONIAE POLYSACCHARIDE-PROTEIN CONJUGATES AND METHODS OF USE THEREOF
US - 22.09.2022
Clasificación Internacional A61K 39/09 Nº de solicitud 17312442 Solicitante Chitrananda ABEYGUNAWARDANA Inventor/a Chitrananda Abeygunawardana
The invention is related to multivalent immunogenic compositions comprising more than one *S. pneumoniae* polysaccharide protein conjugates, wherein each of the conjugates comprises a polysaccharide from an *S. pneumoniae* serotype conjugated to a carrier protein, wherein the serotypes of *S. pneumoniae* are as defined herein. In some embodiments, at least one of the polysaccharide protein conjugates is formed by a conjugation reaction comprising an aprotic solvent. In further embodiments, each of the polysaccharide protein conjugates is formed by a conjugation reaction comprising an aprotic solvent. Also provided are methods for inducing a protective immune response in a human patient comprising administering the multivalent immunogenic compositions of the invention to the patient. The multivalent immunogenic compositions are useful for providing protection against *S. pneumoniae* infection and/or pneumococcal diseases caused by *S. pneumoniae.* The compositions of the invention are also useful as part of treatment regimes that provide complementary protection for patients that have been vaccinated with a multivalent vaccine indicated for the prevention of pneumococcal disease.

69.WO/2022/195096PEPTIDE AND METHOD FOR DIRECT ANALYSIS OF SARS-COV-2 IMMUNE RESPONSES
WO - 22.09.2022
Clasificación Internacional G01N 33/569 Nº de solicitud PCT/EP2022/057212 Solicitante CHARITÉ - UNIVERSITÄTSMEDIZIN BERLIN Inventor/a THIEL, Andreas
The invention relates to a peptide comprising or consisting of an amino acid sequence FIEDLLFNKVT (SEQ ID NO 1) or a sequence of at least 80%, preferably at least 90%, sequence identity thereto. In embodiments, the peptide is of up to 25 amino acids, or 15-25 amino acids. The invention further relates to a nucleic acid molecule encoding the peptide of the invention, a solid phase comprising the peptide of the invention, an in vitro method for assessing the risk of a subject in developing a severe acute respiratory syndrome (SARS) or other adverse event or severe medical condition associated with SARS-CoV infection, comprising use of the peptide of the invention, the peptide of the invention for use in an immunogenic composition, such as a vaccine, a kit for performing the method, and a method for assessing the functional avidity of T cells for one or more antigens, employing the peptide of the invention.

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