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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.

- Organizaciones de Desarrollo y Fabricación por Contrato (CDMO) a nivel mundial.
- Noticias más recientes en la Web sobre vacunas.
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Organizaciones de Desarrollo y Fabricación por Contrato a nivel mundial

Las Organizaciones de Desarrollo y Fabricación por Contrato (CDMO, por sus siglas en inglés), son empresas que prestan una amplia gama de servicios integrales a compañías de la industria biofarmacéutica. Estos servicios incluyen el desarrollo de procesos, el escalado y la fabricación de ingredientes farmacéuticos activos (IFA) y formas farmacéuticas acabadas, a partir de la subcontratación a las empresas farmacéuticas y de biotecnología, ayudándolas a hacer avanzar sus medicamentos desde el laboratorio hasta la clínica. Este tipo de empresa está evolucionando continuamente, con el objetivo de alcanzar altos estándares de calidad en sus producciones, que exigen los organismos reguladores.

Antes de 1996, la existencia de fabricantes de productos farmacéuticos por contrato era muy poco frecuente. El punto de inflexión clave fue en ese año, cuando la compañía farmacéutica Patheon comenzó a comprar varias instalaciones, mientras que Lonza aseguró Celltech y consolidó su posición en Contract Biologics. Con estas adquisiciones, Patheon y Lonza alertaron a otras organizaciones sobre la oportunidad que podría brindar la subcontratación del desarrollo y la fabricación de productos. A su vez, las CDMO individuales comenzaron a aparecer e impulsaron el desarrollo de la industria. Esto fue posible debido a que en sus inicios comenzaron a dar respuesta a las ineficiencias en las grandes empresas farmacéuticas.

La crisis financiera del año 2008, tuvo efectos mixtos en la industria de CDMO. Varias organizaciones se vieron obligadas a cerrar, mientras que otras se beneficiaron de las inversiones de empresas de capital privado. Las inversiones a bajo interés y las perspectivas a largo plazo fueron muy persuasivas para atraer inversiones, y muchos pudieron comprar instalaciones de producción que las empresas farmacéuticas estaban vendiendo. Por lo general, estas instalaciones se obtuvieron a precios muy razonables y, a cambio, se firmaron contratos exclusivos que proporcionaron a las empresas farmacéuticas métodos de producción más baratos.

En ocasiones, la falta de financiación provocó que las CDMO se financiaran con capital privado y público. Esto también potenció su crecimiento, ya que permitió a la industria capitalizar la avalancha de proyectos de productos de compañías biofarmacéuticas emergentes y los cambios regulatorios destinados a fomentar el desarrollo de medicamentos, como la aprobación acelerada, la designación de terapia innovadora, la designación de medicamento huérfano y la revisión prioritaria.

Este sector ha florecido en los últimos años, a medida que la industria biotecnológica ha redirigido su atención fundamentalmente a sus actividades principales de I+D y subcontratado otros components de la cadena de suministro, incluida la fabricación, a CDMO independientes.

Son varios los factores que motivan a una empresa a subcontratar los servicios de CDMO:

- No cuenta con instalaciones propias para desarrollar su proyecto a una mayor escala.
- Sus instalaciones no cumplen estrictamente con las buenas prácticas de fabricación (GMP, por sus siglas en inglés).
- Tiene su propia capacidad saturada con otros proyectos y quiere desarrollar un mayor número de proyectos.
- No ha generado suficiente conocimiento técnico internamente y preferir contratar a una empresa experta con más experiencia en el proyecto en cuestión.
- Quiere centrarse únicamente en el desarrollo inicial y la comercialización de medicamentos.
- Quiere limitar o controlar el riesgo financiero de que el proyecto no sea aprobado por la autoridad sanitaria correspondiente.

CDMO: un sector con mucho que ofrecer

El número de compañías biofarmacéuticas medianas o pequeñas es cada vez más significativo en el sector pues implica una menor inversión inicial. Estas compañías generalmente no disponen de su propia capacidad y necesitan de los servicios que ofrecen las organizaciones CDMO para desarrollar sus productos de manera ágil y rápida. Entre otros servicios, se pueden ofrecer:

- Desarrollo, transferencia y cualificación de métodos analíticos.
- Procesos de transferencia tecnológica.
- Desarrollo de procesos "*Upstream*" y "*Downstream*".
- Lotes de demostración.
- Estudios de comparabilidad/biosimilitud.
- Estudios de estabilidad.
- Optimización de procesos a distintas escalas.
- Campañas de lotes Pre-PPQ y PPQ (Process Performance Qualification).
- Fabricación a escala industrial.
- Soporte Regulatorio.

CDMO líderes a nivel mundial. Distribución geográfica

Esta modalidad de empresa está medianamente extendida a nivel mundial y tiene una fuerte presencia en Estados Unidos, Canadá, Alemania, Francia, Suiza, Reino Unido, China, Suecia, Japón, entre otros, en su mayoría, países con un alto nivel de desarrollo en el sector biofarmacéutico.

Entre las más grandes compañías de este tipo se encuentran:

Fundada en 1897 en Suiza, inicialmente producía electricidad para la fabricación de productos químicos. Durante el siglo siguiente, se expandió a diversas industrias, incluidas la farmacéutica y la biotecnología. En 2020, Lonza escindió su segmento de ingredientes especiales para centrarse en sus negocios biofarmacéuticos, pasando de la fabricación de productos químicos a convertirse en una CDMO líder.

Con un legado envidiable que abarca más de 125 años, Lonza ha solidificado su posición como potencia mundial en la industria farmacéutica y de ciencias biológicas. La diversa cartera de productos de Lonza, que demuestra una impresionante solidez financiera con unos ingresos anuales de 4.500 millones de CHF a partir de 2022, abarca más de 1.000 productos. Operando en tres segmentos principales (farmacéutico y biotecnológico, ingredientes especiales y corporativo), la huella global de Lonza se ve reforzada por una fuerza laboral de más de 16,000 empleados. El reciente inicio de un programa de recompra de acciones es una prueba más de su sólida situación financiera.

Esta compañía estadounidense se ha hecho un espacio único en la industria, aporta más de 80 años de experiencia en tecnología de geles blandos. La empresa ha desempeñado un papel decisivo en la configuración del panorama del desarrollo y la fabricación de fármacos biológicos, contribuyendo a siete de los diez principales fármacos biológicos actualmente en el mercado. Con una red global de más de 50 ubicaciones, Catalent se erige como un pilar de la industria y ofrece servicios integrales de desarrollo, lanzamiento y suministro de productos durante todo el ciclo de vida.

Sin embargo, Catalent ha estado experimentando varias dificultades financieras y espera reducir tanto sus ingresos para todo el año como sus pronósticos de ganancias principales en más de $400 millones, lo que ha resultado en una caída del 27% en el precio de sus acciones.

Se estableció en abril de 2011 como parte de la estrategia de diversificación de Samsung hacia negocios de alta tecnología y alto valor. La empresa se creó como CDMO para atender a la industria biofarmacéutica mundial.

Desde su creación, Samsung Biologics ha crecido y ampliado rápidamente sus capacidades y capacidades. En 2016, se había convertido en uno de los mayores productores de productos biofarmacéuticos del mundo por capacidad de producción.

Samsung Biologics, que opera desde su sede en Incheon, Corea del Sur, es una CDMO reconocida mundialmente y conocida por sus servicios integrales para productos biofarmacéuticos. Con una fuerza laboral dedicada de más de 4400 empleados que atienden a más de 100 clientes globales, la destreza de producción de la empresa se evidencia en su asombrosa capacidad de 604 KL. Consolidando aún más su lugar como líder en la industria, Samsung Biologics ha salido victorioso repetidamente en los premios CDMO Leadership Awards durante una década, un testimonio de su compromiso inquebrantable con la calidad y la excelencia.

Es una plataforma líder mundial de tecnología biológica de acceso abierto, que se fundó en el año 2000 en China.

Ofrece soluciones integrales para el descubrimiento, desarrollo y fabricación de productos biológicos, incluidos anticuerpos, proteínas y vacunas. A lo largo de los años, ha

ampliado significativamente sus capacidades de fabricación, convirtiéndose en un actor clave en la industria biofarmacéutica global.

WuXi Biologics, con su amplia presencia global, actúa como una CDMO global innovadora. Con un grupo de más de 12.000 profesionales en todo el mundo, la organización es un soporte crucial para 588 proyectos integrados de clientes, incluidos 17 en fabricación comercial. La incursión de WuXi en el mercado norteamericano, marcada por el establecimiento de su instalación de biofabricación en Cranbury, Nueva Jersey, que recibió la certificación GMP en 2022, subraya aún más su posición de liderazgo en el mercado global.

Boehringer Ingelheim BioXcellence es una división de Boehringer Ingelheim, una compañía farmacéutica global con sede en Alemania, fundada en 1885 por Albert Boehringer en Ingelheim am Rhein, Alemania.

La empresa es de propiedad familiar desde sus inicios y es una de las 20 empresas farmacéuticas líderes del mundo.

Como filial bien establecida de Boehringer Ingelheim, BioXcellence es un experto en desarrollo por contrato y servicios de fabricación para diversos bioprocesos. Con una red de instalaciones de fabricación globales y una fuerza laboral experta de más de 5000 personas, BioXcellence inauguró recientemente una instalación de producción de vanguardia en Viena, Austria, lo que marca un paso significativo en su crecimiento.

En 2017, Thermo Fisher Scientific, líder mundial en servicios de investigación científica, adquirió Patheon. Esta adquisición integró las capacidades de Patheon en el segmento de productos y servicios de laboratorio de Thermo Fisher, lo que permitió a Thermo Fisher brindar una gama aún más amplia de servicios a sus clientes en la industria de las ciencias biológicas.

Patheon marca tendencias en la prestación de servicios de fabricación y desarrollo de contratos farmacéuticos y biofarmacéuticos. Al ofrecer soluciones integrales de extremo a extremo, Patheon mantiene una amplia presencia con operaciones en América del Norte, Europa y Australia, constantemente comprometidos con mantener los más altos estándares de calidad y eficiencia en el desarrollo de fármacos.

Comportamiento del mercado global de CDMO

Según reportes globales de mercado, se pronostica un incremento significativo de 11.51 % de su tasa de crecimiento anual para el periodo 2023-2028, siendo América del Norte la región con mayor crecimiento y Asia-Pacífico, la región de más rápido aumento.

Liderando la industria CDMO está Lonza, con ingresos de 5,62 mil millones de dólares en 2021. Su directora global de productos biológicos para mamíferos, Jennifer Cannon, considera que el ascenso de la industria está estrechamente relacionado con el crecimiento exponencial de la cantidad y los tipos de moléculas desarrolladas por empresas farmacéuticas.

La industria biofarmacéutica global se está moviendo cada vez más hacia los medicamentos biológicos, que prometen un mayor impacto en la vida de los pacientes que los medicamentos de molécula pequeña que los precedieron, pero que conllevan costos y complejidad adicionales significativos. En este contexto, los desarrolladores de fármacos biológicos se apoyan cada vez más en las CDMO.

Con un número cada vez mayor de empresas dentro del sector farmacéutico que considera la subcontratación de servicios, aumentará la demanda de servicios de las organizaciones de fabricación por contrato y de desarrollo por contrato.

La industria farmacéutica está creciendo exponencialmente, impulsada por el crecimiento económico global, una población en crecimiento y envejecimiento y el lanzamiento de nuevos productos. Aunque las moléculas pequeñas siguen dominando una parte importante del mercado, se espera que las moléculas grandes, como los productos biológicos, biosimilares y las terapias celulares y genéticas, experimenten el crecimiento más rápido durante el período previsto.

Aunque los volúmenes de las moléculas grandes tienden a ser más pequeños, el segmento está creciendo más rápidamente. Se espera que el crecimiento absoluto en el mercado de moléculas grandes, incluidos los productos biológicos originales, biosimilares y terapias celulares y genéticas, impulse el mercado a 133 mil millones de dólares para 2023. Se espera que el tamaño del mercado de productos biológicos originales alcance los 371 mil millones de dólares para 2023, según reportes publicados.

Impacto de la COVID-19 en las CDMO

La pandemia de COVID-19 fue una emergencia de salud pública global sin precedentes que afectó a casi todas las industrias, y se prevé que los impactos a largo plazo se reflejen en el crecimiento de varias de ellas. A medida que aumentaba el número de casos de COVID-19, también aumentaba la necesidad de nuevas vacunas y terapias contra la enfermedad, como lo ilustran los esfuerzos de los gobiernos y las organizaciones no gubernamentales (ONG) para financiar el desarrollo y la producción.

De repente, la industria biofarmacéutica se enfrentó al desafío de producir los muchos millones de dosis que probablemente se necesitarían. Para ampliar su capacidad de fabricación, algunas farmacéuticas formaron colaboraciones con empresas similares y otras instituciones, como la colaboración entre Pfizer y BioNTech o entre AstraZeneca y la Universidad de Oxford. Otros transfirieron productos biológicos que no eran de COVID-19 fuera de sus redes de fabricación patentadas para dejar espacio a las nuevas vacunas. Algunas empresas comenzaron a repensar su huella de fabricación para planificar los años venideros.

Sin embargo, la mayor fuente de capacidad adicional fueron las CDMO. Las empresas farmacéuticas reservaron, y en ocasiones incluso duplicaron, cantidades significativas de espacio de fábrica con fabricantes contratados. Pfizer, Moderna y AstraZeneca anunciaron públicamente sus grandes asociaciones con varias CDMO, incluidas Emergent Biosolutions, Catalent y Lonza, entre otras.

Se hizo evidente que la falta de capacidad es un elemento muy limitante en las organizaciones que desarrollan medicamentos complejos como los biológicos, en especial los inyectables y estériles.

Todo esto dejó una cosa muy clara: la pandemia mejoró la posición de las CDMO.

A modo de conclusiones

A pesar de ser una industria relativamente joven, las CDMO han logrado un desarrollo significativo y han demostrado que están a la altura de los máximos requerimientos de calidad, suministro y seriedad que exige la industria biofarmacéutica.

A medida que la demanda global de productos biofarmacéuticos continúe con un crecimiento exponencial, las CDMO se convertirán cada vez más en un importante eslabón de la infraestructura de los suministros biofarmacéuticos a nivel mundial. Estas cuentan con instalaciones equipadas con la última y mejor

tecnología, procesos y medidas de control de calidad, capaces de lograr el rendimiento necesario para satisfacer la demanda y garantizar la satisfacción de los organismos reguladores.

Este tipo de empresa ha traído consigo ventajas en el desarrollo y fabricación de medicamentos como la reducción en los tiempos de producción, la utilización de capacidades instaladas personalizadas según los clientes.

Han tenido también, un gran impacto para las compañías biofarmacéuticas de mediano y pequeño alcance en el cumplimiento de las regulaciones propias de esta industria.

Se espera que esta modalidad de empresa siga en ascenso gradualmente a medida que continúen aumentado los tipos de moléculas que están desarrollando las empresas biofarmacéuticas y, por lo tanto, que sean aún más importantes durante la próxima década. Por lo que las CDMO están estableciendo un rumbo claro hacia el liderazgo tecnológico.

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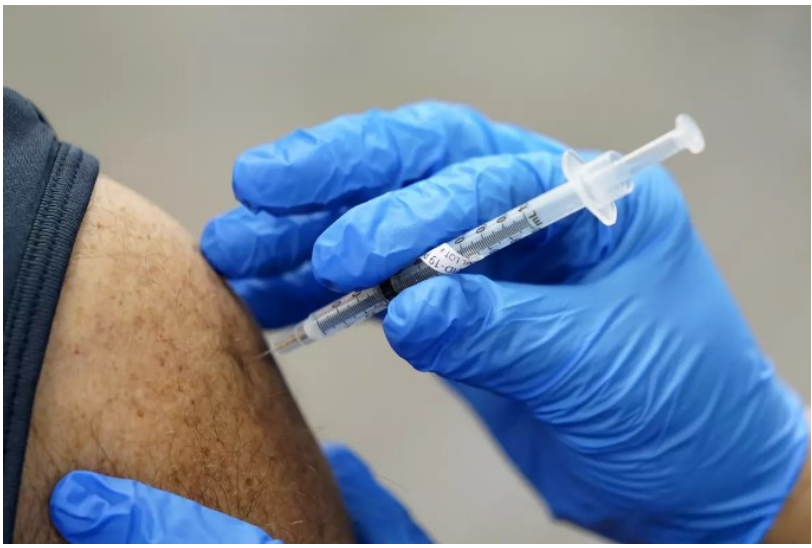
Noticias en la Web

Por qué los CDC recomiendan el nuevo refuerzo contra COVID-19 para todos

16 sep. Un panel federal de expertos recomendó el martes 12 de septiembre que todas las personas desde los 6 meses en adelante reciban el nuevo refuerzo contra COVID-19. Estiman que la vacunación universal podría prevenir 100,000 hospitalizaciones adicionales cada año, en comparación con vacunar solo a las personas de edad avanzada.



En esta foto de archivo del 5 de enero de 2021, un trabajador sanitario recibe la segunda dosis de la vacuna Pfizer-BioNTech contra el COVID-19 en Beaumont Health en Southfield, Michigan. (ASSOCIATED PRESS)

El Comité Asesor sobre Prácticas de Inmunización (ACIP) de los Centros para el Control y Prevención de Enfermedades (CDC) votó 13-1 a favor de la moción después de meses de debate sobre si limitar los refuerzos a grupos de alto riesgo.

Un día antes, la Administración de Alimentos y Medicamentos (FDA) aprobó la nueva dosis de refuerzo, afirmando que era segura y eficaz para proteger contra las variantes de COVID-19 que circulan actualmente en los Estados Unidos.

Después de que se lanzara el refuerzo anterior en 2022, solo el 17% de la población lo recibió, en comparación con aproximadamente la mitad de la nación que recibió la primera dosis de refuerzo en el otoño de 2021.

El cansancio pandémico y la evidencia de que las vacunas no siempre evitan las infecciones por COVID-19 jugaron un rol.

Sin embargo, aquellos que se vacunaron tuvieron mucho menos riesgo de enfermarse gravemente o morir, según los datos presentados en la reunión del martes.

El virus a veces causa enfermedad grave incluso en personas sin afecciones subyacentes, provocando más muertes en niños que otras enfermedades prevenibles por vacunas como la varicela, antes de que se recomendara universalmente la vacuna contra este patógeno.

Los datos de los CDC muestran que el número de pacientes hospitalizados con COVID-19 ha aumentado un poco en las últimas semanas, y los expertos en enfermedades infecciosas anticipan un alza más adelante en el otoño y el invierno.

Moderna y Pfizer junto con su socio alemán, BioNTech, fabrican las dosis, que costarán hasta $130. Han lanzado campañas de marketing nacionales para fomentar la vacunación. El comité asesor pospuso una decisión sobre una tercera dosis de refuerzo, producida por Novavax, porque la FDA aún no la ha aprobado.

Esto es lo que hay que saber:

¿Quién debe recibir la dosis de refuerzo contra COVID-19?

Los CDC aconsejan que todos, desde los 6 meses, la reciban, por el beneficio común. Aquellos con mayor riesgo de enfermedad grave incluyen a bebés y niños pequeños, adultos mayores, mujeres embarazadas y personas con afecciones de salud crónicas, incluyendo la obesidad.

Los riesgos son menores, aunque no nulos, para todos los demás. Se sabe que las vacunas tienden a prevenir la infección en la mayoría de las personas solo durante unos meses. Pero hacen un buen trabajo al prevenir la hospitalización y la muerte, y, disminuyendo las infecciones, pueden frenar la propagación de la enfermedad entre los más vulnerables, cuyos sistemas inmunes pueden ser demasiado débiles para generar una buena respuesta a la vacuna.

Pablo Sánchez, profesor de pediatría en la Universidad Estatal de Ohio y el único disidente en el panel de los CDC, dijo que le preocupaba que las dosis de refuerzo no se hubieran probado lo suficiente, especialmente en niños.

La cepa de la vacuna en las nuevas dosis de refuerzo se aprobó solo en junio, por lo que casi todas las pruebas se hicieron en ratones o monos. Sin embargo, vacunas casi idénticas se han administrado de manera segura a miles de millones de personas en todo el mundo.

¿Funcionará esta nueva dosis de refuerzo contra las variantes actuales de COVID-19?

Debería. Más del 90% de las cepas que circulan actualmente están estrechamente relacionadas con la variante seleccionada para la dosis de refuerzo a principios de este año, y los estudios mostraron que las vacunas producían suficientes anticuerpos contra la mayoría de ellas.

Las dosis también parecieron generar una buena respuesta inmune contra una cepa divergente que inicialmente preocupaba a las personas, llamada BA.2.86. En la actualidad, esa cepa representa menos del 1% de los casos.

Pfizer y Moderna están probando vacunas combinadas, con la primera vacuna contra la gripe y COVID-19 disponible a partir del próximo año.

¿Se ha utilizado esta versión de la dosis de refuerzo en otras partes del mundo?

No, aunque la vacuna de Pfizer ha sido aprobada en la Unión Europea, Japón y Corea del Sur, y Moderna ha obtenido la aprobación en Japón y Canadá. Los lanzamientos comenzarán en Estados Unidos y otros países esta semana.

A diferencia de períodos anteriores de la pandemia, es poco probable que haya mandatos para la dosis de refuerzo. Pero “es importante que las personas tengan acceso a la vacuna si la quieren”, dijo Beth Bell, miembro del panel y profesora de salud pública en la Universidad de Washington. “Dicho esto, está claro que el riesgo no es igual, y el mensaje debe aclarar que muchas personas mayores y personas con afecciones subyacentes están muriendo y realmente necesitan una dosis de refuerzo”, dijo.

Sarah Long, miembro del ACIP y pediatra en el Hospital Infantil de Philadelphia, votó a favor de una recomendación universal pero dijo que le preocupaba que no fuera suficiente. “Creo que la recomendaremos y nadie la recibirá”, dijo. “Las personas que más la necesitan no la recibirán”.

Fuente: The San Diego Union Tribune. Disponible en https://encr.pw/TyerB

Farmacéuticas de Argentina y Brasil desafían a Pfizer y Moderna por la vacuna de ARNm

17 sep. Las Big Pharma estadounidenses han presentado numerosos pedidos de patentes para los diferentes procesos involucrados en la producción de las vacunas de ARN mensajero (ARNm) contra la COVID-19. Dos laboratorios de Brasil y Argentina desafían a los gigantes farmacéuticos con el objetivo de crear una vacuna de ARN mensajero (ARNm) para la covid. Por ejemplo, solo Moderna, por ejemplo, presentó 21 solicitudes en todo el mundo, 13 de las cuales fueron en América Latina.

Un reportaje de la Red de Periodistas de América Latina para la Transparencia y la Anticorrupción (Palta), coordinada por OjoPúblico, y en la que participaron ocho medios de la región.

Con la pandemia aún en la memoria colectiva, dos laboratorios de América Latina están desafiando a los gigantes farmacéuticos Pfizer y Moderna y a sus innumerables patentes con el objetivo de crear una vacuna de ARN mensajero (ARNm) para la COVID-19.

Brasil y Argentina lideran los esfuerzos para formar un polo productivo regional, con el respaldo de la Organización Mundial de la Salud (OMS). Sin embargo, la disputa entre las empresas estadounidenses por la propiedad intelectual de las tecnologías empleadas en el desarrollo de las dosis amenaza el proyecto.

Las vacunas de ARNm utilizan una parte del código genético del virus para llevar a las células una “receta” que enseña al sistema inmunológico cómo producir anticuerpos contra la infección. Esta tecnología es diferente a la utilizada en las vacunas tradicionales, que contienen al virus completo inactivado (como la vacuna contra la gripe) o atenuado (como las vacunas contra el sarampión y la polio), para provocar la respuesta defensiva del cuerpo.

Aunque existen proyectos vinculados a esta nueva tecnología en Argentina, la principal investigación con sello sudamericano es liderada por Bio-Manguinhos, un laboratorio de la Fundación Oswaldo Cruz (Fiocruz) de Brasil, que forma parte de la red del Ministerio de Salud de este país, pero se maneja de manera autónoma.

Antes de que se decretara la pandemia del SARS-CoV2, un grupo de sus científicos estaba desarrollando una vacuna de ARNm. Su fin era tratar el cáncer. Frente a la crisis sanitaria mundial, el proyecto fue rediseñado para la COVID-19, pero las numerosas solicitudes de patentes de propiedad intelectual, presentadas en todo el mundo, traban su desarrollo.

El problema de las patentes se repite a escala mundial. Pfizer y Moderna han presentado varias solicitudes de patentamiento relacionadas con la tecnología de ARNm y se acusan mutuamente de violaciones a la propiedad intelectual. Si bien el principal escenario de la disputa es en Estados Unidos y en Europa, la lucha se refleja en América Latina, pues ambas farmacéuticas también han solicitado varias patentes en la región.

La patente es un título que protege la propiedad intelectual de una invención, otorgando al creador la

exclusividad para producir y vender el producto en un país determinado, generalmente durante 15 o 20 años. Sin embargo, incluso antes de que se conceda una patente, la mera presentación de la solicitud puede alejar a otros desarrolladores, debido a los riesgos económicos que afrontarían si pierden la disputa.

En el campo farmacéutico también es posible patentar técnicas y moléculas necesarias para la fabricación de un medicamento o una vacuna. En otras palabras, una misma vacuna puede tener varias patentes en su proceso de elaboración.

Tan solo Moderna, por ejemplo, presentó 21 solicitudes en todo el mundo, 13 de las cuales fueron en América Latina, según informó el laboratorio Fiocruz para este reportaje de la Red de Periodistas de América Latina para la Transparencia y la Anticorrupción (Palta), coordinada por OjoPúblico, y en la que participaron ocho medios de la región, entre ellos Reporter Brasil y Perfil, de Argentina.

De esta solicitudes, una ya fue aceptada en Brasil y otras nueve están en análisis en ese país. De acuerdo a la misma fuente, Pfizer solicitó otras 13 patentes en Brasil, de las cuales una fue aceptada, otra fue rechazada, y las 11 restantes están bajo análisis del Instituto Nacional de Propiedad Intelectual (INPI), responsable de la verificación.

Este elevado número de solicitudes de patentes es visto por algunos expertos como una forma de evitar la entrada de nuevos productores al mercado farmacéutico. Así lo entiende la investigadora Ximena Benavides, de la Universidad de Yale. Ella, junto al investigador Matthew Herder, forma parte de un grupo de investigación sobre innovación en enfermedades infecciosas enfocado, en este momento, en el proyecto global de transferencia de tecnología ARNm de la OMS.

El desafío de los científicos sudamericanos que trabajaban en los proyectos locales de investigación no es, precisamente, romper las patentes, sino sortearlas. Es decir, tratan de encontrar sustancias y técnicas análogas a las utilizadas por las gigantes farmacéuticas de Estados Unidos, pero que aún no estén patentadas.

Un caso ilustra cómo las patentes de Pfizer y Moderna dificultan la investigación brasileña. Las vacunas de ARNm contra la COVID-19 adoptan en su fórmula varios tipos de lípidos que permiten que la partícula viral con la “receta” llegue a las células sin desintegrarse.

FIOCRUZ. El laboratorio de la fundación tiene previsto fabricar los primeros lotes de la vacuna brasileña de ARNm, destinados a ensayos clínicos, a fines de año.
Foto: Bernardo Portella / Bio-Manguinhos

Pfizer y Moderna, sin embargo, han presentado patentes para algunos de los lípidos utilizados en la formulación. Incluso la proporción de cada lípido está sujeta a patentes. Esto llevó a Bio-Manguinhos a buscar partículas equivalentes para aplicar en la vacuna brasileña.

“Nuestro desarrollo quedó paralizado, al menos, seis meses porque no encontrábamos un lugar que pudiera producir estos lípidos con buenas prácticas de fabricación para nuestros estudios clínicos y que estuviera libre para su utilización", explicó Patrícia Neves, investigadora de Bio-Manguinhos/Fiocruz, durante un seminario web, realizado en agosto, sobre el proyecto.

El investigador brasileño Jorge Bermudez, de la Escuela Nacional de Salud Pública, también vinculada a Fiocruz, explica que las vacunas COVID-19 revelaron un escenario aún más complejo sobre el tema de propiedad intelectual. Para un mismo producto, además de las patentes de las propias empresas, hay una serie de nanopartículas patentadas y materiales utilizados en la vacuna que no pertenecen a la empresa que la está produciendo.

“Pfizer no es propietaria de todas las patentes de su vacuna. Es una red de patentes que permite a Pfizer fabricar la vacuna", dice Bermudez, que también es especialista en acceso a medicamentos y consultor de la Organización Panamericana de la Salud (OPS)/OMS, en conversación con Perfil, Repórter Brasil y la Red Palta.

Para el vicepresidente de Innovación de Bio-Manguinhos, Sotiris Missailidis, quien coordina el desarrollo de la vacuna brasileña, "estas barreras de patentes son comunes en el desarrollo de vacunas y biofármacos". Sin embargo, el caso de la vacuna de ARNm es "especial", debido a la cantidad de patentes presentadas. "Todas las empresas intentan asegurarse una parte de la tecnología para garantizar que puedan avanzar, pero también para bloquear el avance de los demás", dice.

Pfizer y Moderna fueron consultadas sobre la disputa por las patentes en América Latina en el contexto de este reportaje. Pfizer declaró que no registra patentes "con el objetivo de limitar la competencia" y que sus solicitudes reflejan una "innovación genuina". En el caso de Moderna, no hubo respuesta.

Salud versus ganancia

Las vacunas de ARNm son consideradas un hito en la historia de la ciencia por su alta eficacia y la facilidad con la que se pueden adaptar a variantes del coronavirus —incluida la nueva subvariante Eris, que ya registró sus primeros casos, tanto en Brasil como en Argentina— y, también, a otras enfermedades, como el cáncer.

La clave de su efectividad es que, en este tipo de vacunas, no se inyectan virus inactivados para que el organismo genere anticuerpos, sino la información genética (ARNm) para que el cuerpo produzca la proteína del virus y, así, se desencadene la respuesta inmunológica.

Durante la pandemia, las vacunas con esta tecnología dominaron el mercado global y se volvieron las preferidas en países como Brasil, Argentina, Chile y Perú, donde la población las reclamaba para que se las aplique.

Los primeros cargamentos de estas marcas de vacunas de ARNm llegaron a la región a partir de diciembre de 2020. Pero sus versiones más actualizadas —como las bivalentes, que protegen contra la cepa original y también contra las nuevas variantes de la COVID-19— ingresaron al mercado latinoamericano hace, aproximadamente, un año, y todavía no están en todos los países de la región.

Según la OPS, sólo seis de los 51 países y territorios de América pudieron adquirir las dosis bivalentes de Pfizer contra las subvariantes ómicron BA.4/BA.5, y sólo uno accedió a las de Moderna. Las bivalentes de Pfizer contra la cepa original y la subvariante ómicron BA.1 llegaron tan solo a tres países de la región. Mientras que la equivalente de Moderna llegó a una nación, y la genérica para ómicron de la misma marca llegó a solo una más.

Esas dosis más avanzadas de la tecnología de ARNm tuvieron como mercado inicial a los países de ingresos más altos, como ocurrió con las dosis monovalentes al inicio de la pandemia.

Estas naciones, generalmente del norte global, también fueron capaces de pagar más por cada dosis: en 2021, por ejemplo, cuando en Estados Unidos se pagaba entre 19,50 y 24 dólares por cada vacuna de Pfizer, en Brasil la negociación era por 10 dólares, según información reportada por la prensa de ambos países. Eso contribuyó a que las farmacéuticas alcanzaran ingresos récord en los últimos años.

En 2020, la utilidad neta de Pfizer fue de 9.159 millones de dólares. En 2021 y 2022, mientras tanto, sumaron más de 53.000 millones de dólares.

Asimismo, solo el año pasado, los ingresos de la compañía superaron los 100.000 millones de dólares.

Por otro lado, Moderna, que hasta 2020 era solo una start-up, alcanzó el estatus de Big Pharma con su vacuna de ARNm para la COVID-19. Ese año, la empresa reportó ingresos por ventas de tan solo 803 millones de dólares. Sin embargo, luego, estos aumentaron de manera considerable, alcanzando los 18.413 millones de dólares, en 2021, y los 19.109 millones de dólares, en 2022. En cuanto a los beneficios netos, la empresa registró pérdidas en 2018, 2019 y 2020, pero obtuvo utilidades netas consolidadas superiores a los 20.000 millones de dólares en los últimos dos años.

Pfizer afirmó que se ha comprometido con el acceso equitativo a su vacuna desde el inicio de la pandemia y ha trabajado con gobiernos y organizaciones internacionales, como Unicef y el mecanismo Covax, "para apoyar programas de suministro y donación de vacunas". La compañía destacó que ya ha entregado 1.800 millones de dosis a 112 países de bajos y medianos ingresos, lo que representa el 39% de las 4.600 millones de dosis entregadas hasta el momento.

La reacción latinoamericana

La pandemia de COVID-19 dejó en evidencia la dificultad del acceso a las vacunas de gran parte de la población mundial. En América Latina, la capacidad productiva local era limitada al momento de declararse la emergencia. En julio de 2021 —auge de la pandemia—, la misma representaba el 4,3% de la producción mundial, según un informe de Repórter Brasil. Esa cantidad era insuficiente para atender a la región.

Tampoco funcionó la promesa del mecanismo Covax de distribuir dosis de forma igualitaria durante la pandemia. La iniciativa de la OMS, la Alianza para las Vacunas (GAVI) y la Coalición para las Innovaciones en Preparación para Epidemias (CEPI) distribuyó una escasa proporción de las vacunas recibidas en países de la región —entre ellos Brasil y Argentina—, según información gubernamental a la que accedió la Red Palta.

En ese escenario de limitada producción local, acceso escaso a través de Covax y monopolización de vacunas por parte de los países más ricos, los gobiernos locales se vieron en la obligación de comprar directamente a laboratorios extranjeros. Además, ante la falta de dosis por la alta demanda, debieron iniciar la vacunación con demora y lentitud.

América Latina y el Caribe fue una de las regiones más afectadas por la COVID-19 durante la emergencia sanitaria. En julio de 2022, la región aglutinaba al 13% de los casos de coronavirus documentados y al 27% de las muertes registradas hasta entonces, de acuerdo a un análisis del Banco Mundial, a pesar de tener el 8,5% de la población mundial.

Ante la necesidad de vacunas por la pandemia, algunos laboratorios de Argentina y Brasil —que habían mantenido su capacidad de investigación y producción— lograron reaccionar, en gran medida gracias al apoyo estatal.

En Argentina se firmaron, inicialmente, dos acuerdos para que laboratorios locales produjeran la Sputnik V del laboratorio ruso Gamaleya y de Oxford/Astrazeneca, respectivamente. Además, se desarrolló una vacuna propia, llamada ARVAC Cecilia Grierson —actualmente en la última etapa del ensayo clínico— producida en colaboración con un grupo de científicos de la Universidad de San Martín, un laboratorio privado, Cassará, y con el apoyo del Estado argentino en diferentes etapas del proyecto, sin tener el monto final confirmado para esta publicación.

“La vacuna es de las llamadas de proteína recombinante o subunidad, es una proteína del virus reducida en un sistema in vitro, o sea, no es infectiva; pero no es material genético, como en el caso de las ARNm. Se forma con un ayudante, hidróxido de aluminio, que es uno de los más usados y es tan seguro que permite que la vacuna sea usada en recién nacidos y en embarazadas”, explicó Karina Pasquevich, científica que integra el grupo de investigación de la vacuna ARVAC Cecilia Grierson.

En Brasil, las principales apuestas fueron por la vacuna Oxford/Astrazeneca, producida por Fiocruz, y la vacuna Coronavac/Sinovac, de Butantan.

En agosto de 2020, a través de Fiocruz, el gobierno brasileño invirtió 243 millones de dólares para adquirir la tecnología de Astrazeneca. El acuerdo de Encomienda Tecnológica (Etec) incluía la transferencia completa de la tecnología por parte de la farmacéutica anglo-sueca y la compra de suficiente materia prima para completar 100 millones de dosis de la vacuna en Brasil. Otros 112 millones de dólares se destinaron a la adaptación de la infraestructura de Bio-Manguinhos, la fábrica de vacunas de Fiocruz.

Por otro lado, el Instituto Butantan, que también es una institución pública brasileña, pero vinculada al gobierno del estado de São Paulo, no reveló cuánto pagó por adquirir la vacuna de la china Sinovac.

El laboratorio paulista informó que invirtió 39 millones de dólares en la fabricación de la vacuna, y todos los recursos provinieron de donaciones de la iniciativa privada. Sin embargo, hasta la fecha, la transferencia de tecnología no se ha completado y la fábrica de São Paulo sigue dependiendo del envío de materia prima desde la sede matriz en China para completar las dosis en Brasil. Los valores estimados en dólares para Fiocruz y Butantan han sido convertidos desde reales, considerando el tipo de cambio en la fecha de los anuncios.

Si bien los cuatro proyectos -—Sputnik y Astrazeneca, en Argentina, y Astrazeneca y Coronavac, en Brasil— fueron fundamentales para controlar la propagación del coronavirus y salvar miles de vidas en los primeros años de vacunación, estas dosis perdieron protagonismo en ambos países frente a la vacuna de Pfizer, considerada más eficaz.

“Estas vacunas fueron fundamentales. Pero la vacuna de Pfizer dominó el mercado después. Esta es una evolución natural de las tecnologías de vacunas”, explicó José David Urbaez, presidente de la Sociedad de Infectología del Distrito Federal de Brasil. Por eso, la posibilidad de producción por parte de laboratorios locales de vacunas de ARNm representa una salida a la falta de oferta a nivel nacional y también regional.

Hubs de la OMS

En 2021, tras el primer año de la pandemia de COVID-19, la OMS lanzó un modelo de transferencia de tecnología de norte a sur. El mecanismo consistió en elegir laboratorios de países emergentes para que produzcan la vacuna con la tecnología en disputa. Pfizer y Moderna no aceptaron unirse al proyecto.

Consultada, Pfizer confirmó que no está involucrada en el hub de la OMS, pero afirma "acoger con

satisfacción las iniciativas voluntarias" para promover el acceso equitativo a las vacunas y terapias contra la COVID-19. Moderna no hizo declaraciones.

Sudáfrica fue seleccionada para liderar la iniciativa de la OMS a través del laboratorio Afrigen Biologics. En paralelo, el Centro de Transferencia de Tecnología de Vacunas de ARNm de la OMS llegó a acuerdos con laboratorios en 15 países, incluyendo Brasil y Argentina.

El centro sudafricano se inauguró en julio de 2021 y, en abril de 2023, anunciaron la producción de los primeros lotes de vacunas de ARNm contra la COVID-19, según informes de prensa.

El laboratorio elegido, Afrigen Biologics, utilizó la secuencia disponible públicamente de la vacuna de ARNm COVID-19 de Moderna para fabricar su propia versión: AfriVac 2121. Esta vacuna fue la primera de ARNm diseñada, desarrollada y producida en el continente africano. Su importancia radicó en que, en una próxima etapa de fabricación, puede ser utilizada para otras enfermedades, como VIH/Sida o malaria.

Los avances en América del Sur fueron más lentos. Fiocruz y el laboratorio argentino Sinergium fueron elegidos para crear una vacuna libre de regalías y cuya tecnología sea compartida con otros productores regionales. Fiocruz tenía sus estudios más avanzados, mientras Sinergium comenzó el desarrollo "desde cero", según indicó la empresa argentina ante la consulta para este informe.

En este contexto, el laboratorio argentino dispuso el acondicionamiento de una planta en la provincia de Buenos Aires, a través de una inversión de 3'500.000 dólares para la etapa inicial y la preclínica, según informó la compañía. El mismo tiene un equipo de 12 personas destinado a realizar actividades de síntesis y purificación del ARNm.

Ante la consulta sobre el plazo de finalización del proyecto, el laboratorio afirmó que es difícil estimar cuándo estará lista la vacuna local “porque es un desarrollo desde cero, que llevará varios años incluyendo pruebas clínicas”. Como en el caso de Sudáfrica, una vez lograda la vacuna puede modificarse “para tratar diferentes cepas u otros patógenos de interés regional”, aseguraron desde la compañía a Red Palta.

En cuanto a la vacuna brasileña, actualmente, se encuentra en fase de estudios preclínicos. Pronto se realizarán pruebas en hámsters y exámenes toxicológicos. Si la vacuna supera estas etapas, se espera que los ensayos en humanos comiencen a principios de 2024. La fabricación de los primeros lotes para las pruebas clínicas está prevista para fines de 2023.

Sin embargo, la falta de colaboración entre los proyectos genera dudas sobre si habrá una transferencia real de tecnología, señala Benavides, investigadora de Yale. "No está claro si el proyecto de transferencia de tecnología tendrá éxito, ya que ha sido modificado más de una vez, redirigiendo sus esfuerzos a medida que se desarrollaba la pandemia".

Los expertos advierten que dominar esta tecnología es fundamental para combatir diversas enfermedades, como el tratamiento del cáncer. "Traerá varios productos nuevos al mercado que, hasta ahora, no han sido posibles con las tecnologías disponibles", dice Misailidis, de Bio-Manguinhos/Fiocruz.

"Es importante dominar la producción porque nos brinda ventajas en términos de preparación para epidemias o pandemias y la capacidad de actualizar rápidamente vacunas, como las de COVID-19 y la influenza", agrega. Además, destaca que una vacuna latinoamericana podría costar hasta 10 veces menos que los precios establecidos por Pfizer y Moderna.

Hay una nueva vacuna contra COVID-19 (y no se llama refuerzo)

18 sep. Una nueva vacuna contra COVID-19, recomendada para todas las personas a partir de 6 meses de edad, estará disponible en Arizona a partir de esta semana.

Se extrae una dosis de la vacuna Pfizer COVID-19 de un vial durante una clínica en la oficina de Promise Arizona en Phoenix el 26 de enero de 2022. Michael Chow/The Republic.

Los Centros para el Control y la Prevención de Enfermedades de Estados Unidos (CDC por sus siglas en inglés) emitieron su recomendación el martes y se espera que las nuevas vacunas de la COVID-19 de inyección única de Pfizer-BioNTech y Moderna estén ampliamente disponibles a partir del lunes.

"Si no ha recibido la vacuna contra la COVID-19 en los últimos dos meses, se puede obtener una vacuna actualizada para protegerse este otoño e invierno", señalaron los funcionarios de los CDC en un comunicado.

Las hospitalizaciones y muertes por COVID-19 están aumentando en todo el país, incluso en algunas partes de Arizona, según datos de los Centros para el Control y la Prevención de Enfermedades de Estados Unidos. El Condado Mohave informó un aumento de casi el 60 por ciento en las hospitalizaciones por COVID-19 durante la semana que finalizó el 9 de septiembre, que fue el aumento más alto en el estado, según muestran los datos de los CDC. Otros seis condados de Arizona tuvieron aumentos del 10por ciento o más, según los CDC: Maricopa, Yavapai, Navajo, Coconino, Pinal y Gila.

Se reportaron 18 muertes en Arizona por el COVID-19 durante la semana que terminó el 9 de septiembre, en comparación con dos muertes reportadas la semana anterior, según el panel del Departamento de Servicios de Salud de Arizona. Los casos reportados también han aumentado en todo el estado.

Aquí hay cinco cosas que los arizonenses deben saber sobre la nueva vacuna de COVID-19.

La vacuna se recomienda para mayores de 6 meses

Los CDC recomiendan que todas las personas de 6 meses en adelante reciban una vacuna contra la COVID-19 actualizada para la temporada 2023-24 para protegerse contra enfermedades graves.

La razón principal para vacunarse es protegerse contra enfermedades graves, hospitalización y muerte, aseguraron los funcionarios de los CDC. Las vacunas contra la COVID-19 también reducen la posibilidad de tener COVID prolongado. La agencia federal apunta que se espera que las nuevas vacunas brinden una mejor protección contra las variantes que actualmente enferman a las personas.

La vacuna actualizada es similar a vacunas de ARNm COVID-19 anteriores contra que se administraron de forma segura a cientos de millones de estadounidenses durante la pandemia, afirman los CDC.

La Administración de Alimentos y Medicamentos de Estados Unidos, los CDC y las investigaciones basadas

en evidencia muestran que los beneficios de la vacuna contra la COVID-19 siguen superando cualquier riesgo potencial. Las reacciones graves después de la vacuna COVID-19 son raras, afirman los CDC.

Los funcionarios federales se refirieron a la vacuna del año pasado como un "refuerzo", pero esta temporada han estado llamando vacuna a la nueva inyección.

Si bien la evidencia indica que las personas que recibieron el refuerzo bivalente de COVID-19 actualizado la temporada pasada tuvieron más protección contra la enfermedad y la muerte que las personas que no lo recibieron, la mayoría de los arizonenses y la mayoría de los estadounidenses no lo recibieron. Solo el 17 por ciento de todos los estadounidenses y el 15.8 por ciento de los arizonenses recibieron el refuerzo actualizado la temporada pasada.

COVID-19 ya no está provocando el volumen de muertes y enfermedades que antes causaba

Los CDC afirman que la carga de COVID-19 es menor en este momento que en momentos anteriores de la pandemia.

"Sin embargo, el número absoluto de hospitalizaciones y muertes sigue siendo alto", dice el sitio de Internet de los CDC. "Los adultos mayores y las personas con sistemas inmunológicos debilitados tienen el mayor (riesgo) de sufrir una enfermedad grave. Además, los niños y adultos sin afecciones médicas subyacentes aún pueden experimentar una enfermedad grave debido a la COVID-19".

Se espera que las cadenas de farmacias nacionales tengan la nueva vacuna COVID-19 esta semana

La cadena de farmacias Walgreens, con sede en Illinois, destacó que las personas pueden programar citas para la nueva vacuna del COVID-19 de inmediato, y estará disponible a partir del lunes. Es posible que se agreguen citas más tempranas de forma continua a medida que las tiendas reciban vacunas esta semana, dijeron los funcionarios en un comunicado de prensa.

Las farmacias CVS, con sede en Rhode Island, detallaron que sus farmacias comenzarían a recibir la nueva vacuna el miércoles y continuarían recibiendo inventario de forma continua durante toda la semana. Se espera que todas las ubicaciones de CVS Pharmacy tengan la vacuna disponible a principios de la próxima semana, según un comunicado de prensa de la compañía.

Se espera que la nueva vacuna del COVID-19 sea gratuita para la mayoría de las personas

Este otoño e invierno marca la primera temporada en la que se comercializará la vacuna del COVID-19, lo que significa que no está cubierta universalmente por el gobierno federal. Pero la vacuna debería ser gratuita a través de la mayoría de los planes de seguro médico y seguros gubernamentales.

Según la Ley de Atención Médica Asequible, todas las compañías de seguros deben cubrir las vacunas recomendadas por el Comité Asesor sobre Prácticas de Inmunización, incluidas las vacunas del COVID-19 actualizadas.

Un vial de la vacuna Pfizer-BioNTech COVID-19 durante el evento de vacunación infantil de Adelante Healthcare en la escuela primaria Joseph Zito en Phoenix el sábado 6 de noviembre de 2021. Alex Gould/Special To The Republic.

Todos los niños sin seguro pueden recibir la vacuna COVID-19 bajo el Programa de Vacunas para Niños.

El Programa Bridge Access de los CDC proporcionará vacunas COVID-19 gratuitas a adultos sin seguro o con seguro insuficiente. Tanto CVS como Walgreens participan en el programa.

Los adultos sin seguro o con seguro insuficiente pueden visitar vacunas.gov para encontrar vacunas contra la COVID-19 sin costo alguno para ellos.

Los funcionarios del Departamento de Salud Pública del Condado Maricopa dijeron el miércoles que están esperando saber cuándo estará disponible la nueva vacuna.

"Planeamos ofrecerla a través de nuestras clínicas y eventos de vacunación en ese momento. Estamos trabajando para crear una página en nuestro sitio de Internet que ayudará a las personas a encontrar vacunas para la COVID-19 y la gripe, ya sea a través de nosotros o no", explicó la portavoz del departamento Sonia Singh en un correo electrónico.

"Estas vacunas ayudarán a reducir la gravedad de la enfermedad si las personas quedan expuestas y enferman, y dado que esta es la temporada de enfermedades respiratorias, tomar medidas como vacunarse, lavarse las manos y quedarse en casa cuando están enfermos puede ayudar a que todos tengan una temporada más saludable con menos estrés en el sistema de salud".

El Departamento de Servicios de Salud de Arizona no respondió de inmediato a una solicitud de información sobre la vacuna COVID-19 el miércoles.

Autoridades dicen que algunos necesitarán 3 inyecciones contra los virus respiratorios de otoño e invierno

El VRS, o virus respiratorio sincitial, es un problema grave tanto en personas muy mayores como en personas muy jóvenes. Es la principal causa de hospitalización entre bebés en el país, según los CDC. Ya está disponible una vacuna contra el VSR recomendada para adultos de 60 años o más, basada en la toma de decisiones compartida con su proveedor.

Es seguro para quienes reciben la vacuna RSV recibir la vacuna contra la gripe y la COVID-19 al mismo tiempo.

"Está absolutamente bien recibir las tres vacunas al mismo tiempo", señaló Nicole Henry, farmacéutica y líder de distrito de CVS Health en Phoenix, que ya está administrando inyecciones contra el VSR a adultos mayores. "También es una preferencia del paciente. Si los pacientes quieren adquirirlas, pueden hacerlo, no hay ningún daño en ello. O pueden recibirlas una a la vez".

Henry mencionó que los meses de otoño e invierno ya no son la "temporada de gripe" sino la "temporada de enfermedades respiratorias".

Se esperan pronto herramientas de prevención del VSR para personas embarazadas y bebés. Ambos han recibido la aprobación de la FDA.

Fuente: Azcentral. Disponible en https://encr.pw/6BzkR

El tipo de COVID persistente que preocupa a los expertos: estos son los motivos

18 sep. Desde el arranque de la pandemia de coronavirus el pasado marzo de 2020, millones de personas en todo el mundo se contagiaron con el virus SARS-CoV-2, provocando millones de muertos y colapsando los hospitales. Asimismo, de las personas que sobrevivieron a la enfermedad, entre un 10 y un 20% sufren de lo conocido como COVID persistente, según datos de la Organización Mundial de la Salud (OMS).

¿Qué es la COVID persistente?

La COVID persistente o de larga duración "hace referencia a una variedad de síntomas prolongados que algunas personas presentan después de haber padecido la enfermedad", confirma la OMS. Aunque todavía se desconoce el alcance de los mismos.

Cómo afecta al cuerpo haber pasado la COVID-19

Por su parte, un estudio de la Universidad de California en San Francisco (UCSF) ha analizado la activación persistente de los linfocitos T en muchas partes del cuerpo hasta dos años y medio después de la infección aguda por SARS-CoV-2. "El equipo encontró activación de células T en el tronco del encéfalo, la médula espinal, la médula ósea, el tejido linfoide nasofaríngeo e hiliar, los tejidos cardiopulmonares y la pared intestinal", que se encuentran por encima de los niveles prepandémicos y que podrían presentar síntomas todavía desconocidos, lo qur alarma a los expertos.

Los expertos asocian la activación de las células T en la médula espinal y la pared intestinal con la presencia de síntomas de covid persistente, "pero se encontró activación de células T incluso en aquellos que no experimentaban ningún síntoma de COVID prolongado en el momento de la toma de imágenes".

De hecho, indican que la activación de las células T en el pulmón la relacionan con síntomas pulmonares notablemente mayores. Además hallaron "ARN del SARS-CoV-2 en el tejido rectal de todos los participantes sintomáticos".

Según concluyen en el estudio, el coronavirus es una enfermedad que tiene una fase aguda y una crónica, que pueden ser asintomáticas o sintomáticas y cuya gravedad y síntomas dependen de varios factores, como la "respuesta inmune del huésped, el inóculo viral y la ubicación de la infección".

En la fase crónica, lo conocido como covid persistente, "muchas más personas que las que presentan síntomas de covid prolongado, o quizás todas las personas que han sido infectadas por COVID-19, se encuentran en el mismo espectro de activación de células T y pueden compartir síntomas aún no descubiertos".

"Las características de persistencia viral o disfunción inmune, independientemente de si experimentan síntomas de covid prolongado o no, y la experiencia de esos síntomas, que pueden estar asociados con una mayor perturbación inmune en la reinfección, pueden estar relacionadas con la ubicación y/o la cantidad de

ARN viral /proteína/virus replicante en reservorios persistentes", confirman.

Es decir, que el estudio indica que es posible que tanto las personas que padecen de COVID persistente con síntomas, como aquellas que han superado la infección y no presentan ningún síntoma (COVID persistente asintomático), pueden experimentar la misma activación de las células T.

¿Qué son las células T?

Las células T son un tipo de glóbulos blancos, aquellos que activa el propio cuerpo, liberándolos en la sangre para defenderse de una infección externa de bacterias y virus.

Fuente: Onda Cero. Disponible en https://l1nq.com/pspDv

Cuba offers the world its experience to respond to pandemics

Sep 20. Cuba makes its technological and scientific capabilities, and its human resources, available to everyone to help in the prevention, preparation and response to present and future pandemics, President Miguel Díaz-Canel stated here on Wednesday.

In his second appearance of the day at the High-Level Segment of the 78th regular session of the United Nations General Assembly, this time at the meeting on Prevention, Preparedness and Response to Pandemics, the head of State recalled that “COVID-19 imposed a sad and bitter lesson on us from which we are forced to learn.”

The health emergency “revealed the fragility of healthcare systems and laid bare the cruelty of the inequalities that characterize the world,” he said.

“During the COVID-19 pandemic, the Government of the United States implemented temporary humanitarian exemptions to countries that were victims of its unilateral coercive measures,” denounced the president, who recalled that Cubans were “excluded from this temporary humanitarian relief.”

Even worse, while the pandemic claimed millions of lives on the planet, the criminal blockade against Cuba was intensified to unprecedented levels and generated difficulties and delays in the arrival of essential medical supplies and equipment to confront it, in particular, for the industrialization of Cuban vaccines, he stressed.

The acquisition of medicinal oxygen in third countries and the supply of lung ventilators were even hindered, Díaz-Canel added.

The Cuban president noted that “despite adversities, our biopharmaceutical industry and the potential of Cuban scientists allowed us to create, in record time, three vaccines and two vaccine candidates against COVID-19.”

President Díaz-Canel emphasized that while at the worst moment of the pandemic, transnational corporations and the richest states in the West monopolized the necessary means to fight the disease, Cuba collaborated by sending 58 medical brigades to 42 countries and territories, where they joined more than 28,000 of our healthcare professionals who were providing their services in 59 nations at the time.

That is why he confirmed that Covid-19 “showed that global cooperation is necessity, not a choice.”

In that regard, Díaz-Canel pointed out that “Cuba advocates the adoption of a robust international instrument for the prevention, response and recovery from pandemics, under the leadership of the World Health Organization.”

“We call for the adoption of universal, redistributive and solidarity policies, with the commitment to leaving no one behind,” the president stated.

We are ready to develop scientific and medical exchanges with interested countries, and provide advice to promote international collaboration, he added.

The Cuban President noted that in this mission, Cuba also makes available to everyone its epidemiological, clinical and laboratory protocols, and the results of research in the development of innovative next-generation medicines, as well as those of scientific research.

“Each country can and must contribute what is within its reach,” because “the benefits must be universally accessible to all,” said President Díaz-Canel, who added that “to advance along that path, always count on Cuba.”

Fuente: Prensa Latina English Edition. Disponible en https://acesse.dev/iV9DZ

Vacunación 2023 contra la covid: qué vacunas se van a utilizar en España

22 sep. La campaña de vacunación 2023/24 contra la COVID-19 se iniciará a partir de la última semana de septiembre y durante el próximo mes de octubre. Irá destinada a determinados grupos de riesgo, como los mayores de 60 años, las personas en condiciones de riesgo, las embarazadas, el personal sanitario y sociosanitario.

El documento "Recomendaciones de vacunación frente a gripe y COVID-19 en la temporada 2023-2024 en España" aprobado el pasado 12 de septiembre por la Comisión Publica recoge que se inocularán preferentemente las vacunas covid adaptadas a las nuevas variantes, "salvo circunstancias particulares". "En las personas que tienen contraindicadas las vacunas de ARNm se administrarán las vacunas de proteínas disponibles", añade el documento.

El Ministerio de Sanidad ha informado este viernes de que ya se han distribuido a las comunidades autónomas las primeras dosis de la nueva vacuna de Pfizer actualizada a la subvariante XBB.1.5. de ómicron y las de la española Hipra.

¿Cómo son estas vacunas?

La vacuna adaptada Pfizer, Comirnaty omicron XBB.1.5, se presenta en tres formulaciones, de 30, 10 y 3 mg/dosis indicadas para personas de 12 años en adelante, de 5 a 11 años y de 6 a 59 meses, respectivamente.

Por su parte, la vacuna de Hipra, de nombre Bimervax, es la única disponible en España que no es de ARNm. Se trata de una vacuna de proteína S de las variantes alfa y beta -es decir, las anteriores a ómicron- con adyuvante SQBA5, si bien "ha demostrado capacidad de neutralización frente a cepas SARS-CoV-2 beta, delta, ómicron BA.1 y XBB.1.5", señala el citado documento. Esta vacuna está autorizada únicamente como refuerzo para mayores de 16 años.

Sanidad recomienda que los grupos diana se vacunen frente a la covid independientemente del número de dosis recibidas con anterioridad, incluso si no se han puesto ninguna, con un intervalo de al menos 3 meses desde el último pinchazo o infección.

Solo los grupos diana porque, según deja claro la Comisión de Salud Pública, "en estos momentos, considerando la situación epidemiológica y la inmunidad adquirida por la población, no se justifica la vacunación frente a la COVID-19 en personas no incluidas" en los mismos.

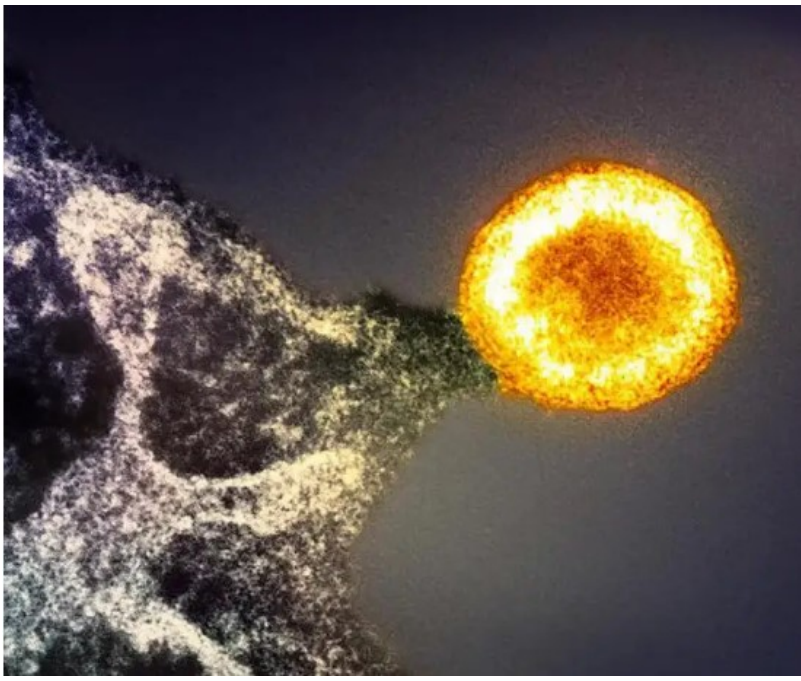
Esta recomendación contrasta con la de los Centros de Control de Enfermedades de EEUU, la red de salud pública del país. De cara a la temporada de otoño e invierno, precisaron que “todas las personas de seis meses o más” deben ponerse la vacuna adpatada.

“La vacunación sigue siendo fundamental para la salud pública y la protección continua contra las consecuencias graves del COVID-19, como la hospitalización y la muerte”, dijo el director de vacunación de la FDA, doctor Peter Marks, en un comunicado. “Alentamos a todos aquellos que sean elegibles a tomar en cuenta la posibilidad de vacunarse”.

Fuente: La Razón. Disponible en https://l1nq.com/6udel

VIR-1388: Clinical Trial of Preventive HIV Vaccine Begins

Sep 23. A trial of a preventive HIV vaccine candidate has begun enrollment in the United States and South Africa. The Phase 1 trial will evaluate a novel vaccine known as VIR-1388 for its safety and ability to induce an HIV-specific immune response in people. The National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health, has provided scientific and financial support throughout the lifecycle of this HIV vaccine concept and is contributing funding for this study.



Colorized transmission electron micrograph of an HIV-1 virus particle (yellow/gold) budding from the plasma membrane of an infected H9 T cell (purple/green). Credit: NIAID/NIH

Understanding VIR-1388

VIR-1388 is designed to instruct the immune system to produce T cells that can recognize HIV and signal an immune response to prevent the virus from establishing chronic infection. VIR-1388 uses a cytomegalovirus (CMV) vector, meaning a weakened version of CMV delivers the HIV vaccine material to the immune system without causing disease in the study participants. CMV has been present in much of the global population for centuries. Most people living with CMV experience no symptoms and are unaware that

they are living with the virus. CMV remains detectable in the body for life, which suggests it has the potential to deliver and then safely help the body retain HIV vaccine material for a long period, potentially overcoming the waning immunity observed with more short-lived vaccine vectors.

Funding and Collaboration

NIAID has funded the discovery and development of the CMV vaccine vector since 2004 and is funding this trial with the Bill & Melinda Gates Foundation and Vir Biotechnology, based in San Francisco. The trial is sponsored by Vir and conducted through the NIAID-funded HIV Vaccine Trials Network (HVTN) as study HVTN 142.

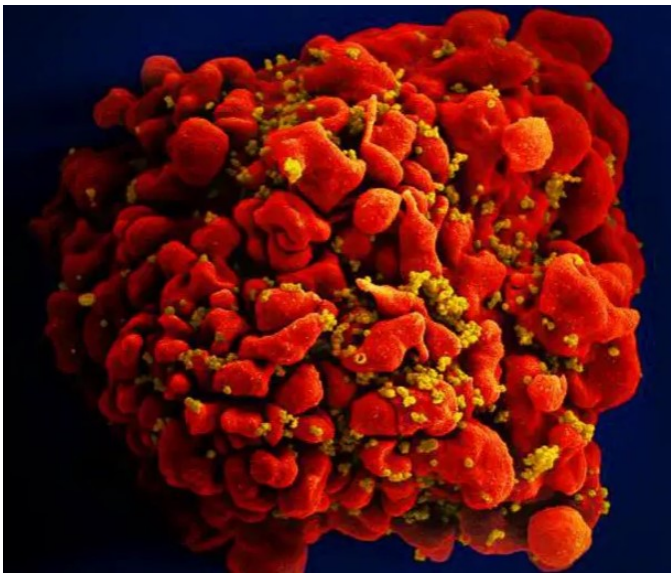
Trial Details

HVTN 142 is taking place at six sites in the United States and four in South Africa and will enroll 95 HIV-negative participants. Participants will be randomly assigned to one of four study arms: three arms will each receive a different dose of the vaccine, and one will receive a placebo. To optimize participant safety, this study will only enroll people already living with asymptomatic CMV. Initial results are expected in late 2024, and an optional long-term sub-study will continue to follow volunteers for up to three years after their first vaccine dose.

Additional information about the trial is available on ClinicalTrials.gov under study identifier NCT05854381.

More About HIV

HIV continues to be a major global health issue with significant ramifications for public health and global economies. According to data from the World Health Organization (WHO) in 2019, an estimated 38 million people worldwide were living with HIV. In the same year, approximately 1.7 million new HIV infections were recorded, with children under 15 constituting 95,000 of these new cases. Tragically, HIV-related deaths in 2019 amounted to about 690,000.



An immune cell infected with HIV. Credit: National Institute of Allergy and Infectious Diseases (NIAID)

In terms of treatment access, as we closed 2019, 81% of HIV-positive individuals were aware of their status. Among this informed group, 82% had access to antiretroviral therapy (ART). Impressively, of those undergoing ART, 88% had managed to suppress their viral loads, showcasing the efficacy of the treatment.

Focusing on the United States, the Centers for Disease Control and Prevention (CDC) reported that over 34,800 new HIV diagnoses occurred in 2019. By the end of 2018, the U.S. had an estimated 1.2 million people aged 13 and older living with HIV. Alarmingly, 14% of these individuals were unaware of their infection. It's worth noting that among the new diagnoses in 2019, gay and bisexual men accounted for a significant 69%.

Prevention and mitigation strategies have evolved over the years, with condom use, needle exchange programs, and robust HIV awareness campaigns leading the frontlines in the battle against HIV spread. Moreover, Pre-exposure prophylaxis (PrEP), when taken with diligence, has shown remarkable efficacy,

reducing the risk of contracting HIV from sexual encounters by nearly 99%. In the pursuit of global health improvement, leaders have set an ambitious goal for 2030: 95% of all HIV-positive individuals should be aware of their status, 95% of those diagnosed should be on ART, and 95% on treatment should have suppressed viral loads.

However, challenges persist. Stigmatization and discrimination remain potent barriers to effective HIV prevention, treatment, and broader support. Moreover, while some regions have made notable progress, disparities in access to critical services remain. Sub-Saharan Africa, for instance, was home to a staggering 67% of the global HIV-positive population in 2019, underscoring the regional variations in the pandemic. As the world grapples with these challenges, continued vigilance, funding, and innovative approaches remain essential to curbing the HIV epidemic.

Fuente: SciTechDaily. Disponible en https://l1nq.com/9OelQ

New vaccine technology could protect from future viruses and variants

Sep 25. Studies of a 'future-proof' vaccine candidate have shown that just one antigen can be modified to provide a broadly protective immune response in animals. The studies suggest that a single vaccine with combinations of these antigens – a substance that causes the immune system to produce antibodies against it – could protect against an even greater range of current and future coronaviruses.

The vaccine antigen technology, developed by the University of Cambridge and spin-out DIOSynVax in early 2020, provided protection against all known variants of SARS-CoV-2 – the virus that causes COVID-19 – as well as other major coronaviruses, including those that caused the first SARS epidemic in 2002.

The studies in mice, rabbits and guinea pigs – an important step before beginning human clinical trials, currently underway in Southampton and Cambridge – found that the vaccine candidate provided a strong immune response against a range of coronaviruses by targeting the parts of the virus that are required for replication. The vaccine candidate is based on a single digitally designed and immune-optimised antigen.

Even though the vaccine was designed before the emergence of the Alpha, Beta, Gamma, Delta and Omicron variants of SARS-CoV-2, it provided a strong protection against all of these and against more recent variants, suggesting that vaccines based on DIOSynVax antigens may also protect against future SARS-CoV-2 variants.

DIOSynVax (Digitally Immune Optimised Synthetic Vaccines) uses a combination of computational biology, protein structure, immune optimisation, and synthetic biology to maximise and widen the spectrum of protection that vaccines can provide against global threats including existing and future virus outbreaks. Its vaccine candidates can be deployed in a variety of vaccine delivery and manufacturing platforms. The results are reported in the journal Nature Biomedical Engineering.

Since the SARS outbreak in 2002, coronavirus 'spillovers' from animals to humans have been a threat to public health, and require vaccines that provide broad-based protection. "In nature, there are lots of these viruses just waiting for an accident to happen," said Professor Jonathan Heeney from Cambridge's Department of Veterinary Medicine, who led the research. "We wanted to come up with a vaccine that wouldn't only protect against SARS-CoV-2, but all its relatives."

All currently available vaccines, such as the seasonal flu vaccine and existing Covid-19 vaccines, are based on virus strains or variants that arose at some point in the past. “However, viruses are mutating and changing all the time,” said Heeney. “Current vaccines are based on a specific isolate or variant that occurred in the past, it’s possible that a new variant will have arisen by the time we get to the point that the vaccine is manufactured, tested and can be used by people.”

Heeney’s team has been developing a new approach to coronavirus vaccines, by targeting their ‘Achilles heel’. Instead of targeting just the spike proteins on the virus that change to evade our immune system, the Cambridge vaccine targets the critical regions of the virus that it needs to complete its virus life cycle. The team identifies these regions through computer simulations and selecting conserved structurally engineered antigens. “This approach allows us to have a vaccine with a broad effect that viruses will have trouble getting around,” said Heeney.

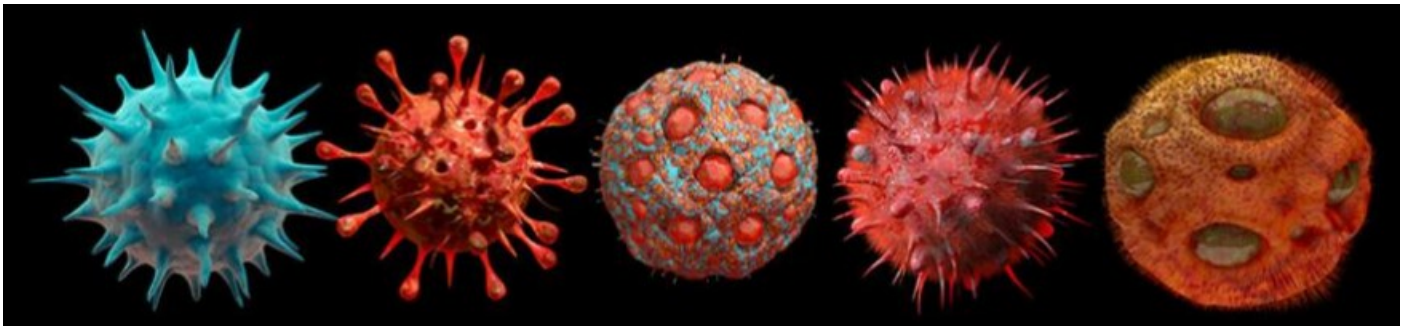
Using this approach, the team identified a unique antigen structure that gave a broad-based immune responses against different Sarbeco coronaviruses, the large group of SARS and SARS-CoV-2 related viruses that occur in nature. The optimised antigen is compatible with all vaccine delivery systems: the team administered it as a DNA immunogen (in collaboration with the University of Regensburg), a weakened version of a virus (Modified Vaccinia Ankara, supported by ProBiogen), and as an mRNA vaccine (in collaboration with Ethris). In all cases, the optimised antigen generated a strong immune response in mice, rabbits and guinea pigs against a range of coronaviruses. Based on a strong safety profile, the "first-in-human" clinical trials are ongoing at Southampton and Cambridge NIHR Clinical Research Facilities. The last booster immunisations will conclude by the end of September.

“Unlike current vaccines that use wild-type viruses or parts of viruses that have caused trouble in the past, this technology combines lessons learned from nature’s mistakes and aims to protect us from the future,” said Heeney. “These optimised synthetic antigens generate broad immune responses, targeted to the key sites of the virus that can’t change easily. It opens the door for vaccines against viruses that we don’t yet know about. This is an exceptionally different vaccine technology – it’s a real turning point.”

The research was initially funded by the DHSC UK Vaccine Network programme and later in part by the Innovate UK DIOS-CoVax programme. The DIOSynVax pipeline includes vaccine candidates for influenza viruses, haemorrhagic fever viruses, and coronaviruses including SARS-CoV-2, the latter of which is currently in clinical trials.

DIOSynVax is a spin-out company from the University of Cambridge, established in 2017 with the support of Cambridge Enterprise, the University’s commercialisation arm. Jonathan Heeney is the Professor of Comparative Pathology at the University of Cambridge, and a Fellow at Darwin College.

Fuente: University of Cambridge. Disponible en https://encr.pw/SSzWa



Hipra, de «hito histórico» a vacuna de uso residual

27 sep. Ni para personal sanitario ni para alguno de los grupos etarios dentro de la población de riesgo. La vacuna de la gerundese Hipra,en la que el Gobierno invirtió 31 millones de euros, queda relegada a un papel totalmente residual en la actual campaña de vacunación. Así se especifica en el documento «Recomendaciones de vacunación frente a gripe y COVID-19 en la temporada 2023-2024», que marca las directrices a seguir.

Imagen del laboratorio de laboratorio de IRTA-CReSA donde la vacuna de Hipra hizo sus ensayos en animales Toni AlbirEFE

En él se establece que «la vacunación frente a covid se realizará con las nuevas vacunas adaptadas, salvo circunstancias particulares.En las personas que tienen contraindicadas las vacunas de ARNm frente a la covid, se podrán administrar las vacunas de proteínas disponibles». Y es que, pese a que el ministro de Sanidad en funciones, José Miñones, anunció a bombo y platillo el pasado 4 de julio que vacunaría con el suero de Hipra –«Bimervax»– a los profesionales sanitarios, finalmente ha tenido que «agachar la cabeza» frente a la recomendación de los organismos sanitarios nacionales e internacionales (Ponencia de Vacunas, Organización Mundial de la Salud, FDA, EMA, CDC y ECDC) de que la campaña de inmunización frente a la covid de otoño en población de riesgo debía hacerse, de manera prioritaria, con vacunas de ARNm actualizadas a las nuevas variantes circulantes del virus (Ómicron XBB.1.5, XBB.1.6 y EG.5), con el fin de ofrecer una protección robusta.

Desfasada desde el inicio

La de Hipra siempre ha ido una o dos fases por detrás de las vacunas de «primera división». Fue aprobada por la Agencia Europea del Medicamento (EMA, por sus siglas en inglés) en abril de este año como dosis de recuerdo en personas de 16 y más años que hubieran recibido previamente una vacuna de ARNm frente a la covid. El suero contiene una proteína que combina las variantes Alfa y Beta del SARS-CoV-2, ya casi extintas, y ha demostrado capacidad de neutralización frente a las cepas Delta y Ómicron BA.1. Según un estudio publicado en The Lancet en julio, la vacuna también ofrece protección frente a las subvariantes BA.2/.4 y.5., pero no frente a las derivadas de XBB.

La plataforma de proteína recombinante en la que se basa este suero – diseñada para optimizar la seguridad e inducir una potente respuesta inmunitaria neutralizadora del virus– no puede actualizarse con tanta rapidez como la que se usa para las de ARNm y, por ello, Bimervax quedó desfasada antes siquiera de que llegara al mercado.

Relegada a un uso residual

En un contexto de aumento de la transmisión, Sanidad ha tenido que rectificar y relegar el uso de la vacuna de Hipra a aquellos casos –muy excepcionales– en los que exista una historia clínica de reacción alérgica grave (anafilaxia) por parte del paciente a alguno de los excipientes de los sueros de Pfizer y Moderna. La pregunta «del millón» es qué pasará entonces con los 3,2 millones de dosis que el Gobierno adquirió en

abril y, sobre todo, cuál va a ser su destino final. Recordemos que España ha sido el único país de la Unión Europea que ha hecho efectiva la compra, pese a que «los 17» habían acordado con Hipra adquirir hasta 250 millones de vacunas.

A partir del lunes de la semana que viene se comenzarán a administrar los nuevos sueros a los grupos de población con mayor riesgo. La mayoría de las comunidades autónomas han anunciado ya sus fechas de inicio. Por su parte, Sanidad confirmó el pasado viernes la llegada de las primeras dosis de Comirnaty, la vacuna monovalente de Pfizer actualizada a la subvariante XBB.1.5. de Ómicron, que se presenta en tres formulaciones, de 30, 10 y 3 mg/dosis indicadas para personas de 12 años en adelante, de 5 a 11 años y de 6 a 59 meses.

Fuente: La Razón. Disponible en https://l1nq.com/XtyDO

Cuba y Uruguay unen fuerzas en la investigación de vacunas

29 sep. El Instituto de Higiene, en su Sala Gezuele, fue el escenario elegido para llevar a cabo el evento académico titulado "Desarrollo y Producción Nacional de Vacunas: la experiencia del Instituto Finlay", el pasado 15 de setiembre. Este encuentro estuvo enmarcado en el acuerdo de cooperación y complementación para Investigación y Desarrollo de Vacunas establecido entre Uruguay y Cuba.

El Dr. Yuri Valdés y la Dra. Dagmar García, destacados científicos cubanos, fueron los encargados de ofrecer la conferencia sobre el desarrollo de vacunas en el Instituto Finlay, así como compartir la extensa trayectoria y experiencia acumulada a lo largo de décadas en áreas de investigación, ciencia, industria y comercialización de vacunas.

En la gráfica de correlación entre el Índice de Desarrollo Humano (IDH) y el ingreso per cápita en América Latina, destaca Cuba como un caso excepcional al tener un IDH elevado a pesar de un ingreso per cápita relativamente bajo. Así comenzó su intervención el Dr. Valdés, quien puso de relieve la importancia de llevar la evidencia científica más allá de los laboratorios y aplicarla en la vida cotidiana, especialmente en el ámbito de la salud.

En este sentido el experto resaltó que el sistema de salud cubano se basa en cuatro componentes, la atención primaria de salud, los policlínicos comunitarios, la atención hospitalaria y el desarrollo biotecnológico y farmacéutico. En Cuba, se cree que la salud no debe ser un lujo, sino un derecho universal al que todos deben acceder.

Valdés destacó la importancia de la medicina preventiva, donde las vacunas desempeñan un papel crucial. Precisamente, el Instituto Finlay proporciona a Cuba y a otras naciones vacunas de alta calidad y asequibles.

La experiencia del Instituto Finlay de Vacunas

El Instituto Finlay de Vacunas no se considera simplemente una entidad que produce vacunas, sino una parte integral de un sistema más amplio que abarca desde la investigación hasta la producción y la distribución. Esta institución, que lleva el nombre del ilustre epidemiólogo cubano Carlos J. Finlay, opera desde 1980 y es fundamental para el desarrollo de diversas vacunas, incluyendo la vacuna Meningocócica y la vacuna contra el Haemophilus influenzae tipo B (Hib).

Una de las contribuciones más notables del Instituto Finlay ha sido justamente la creación de una vacuna conjugada contra el Hib a partir de un antígeno completamente sintético, un logro que es ampliamente reconocido a nivel mundial.

Esta vacuna ha demostrado su eficacia y sigue siendo esencial para la salud pública en Cuba y más allá.

Otro logro significativo del Instituto Finlay es la creación de una vacuna conjugada contra el Streptococcus pneumoniae (neumococo) con múltiples serotipos. Este desarrollo representa un avance importante en la lucha contra las enfermedades neumocócicas y es un ejemplo de cómo la innovación científica puede tener un impacto positivo en la salud global.

Vacunas cubanas contra la COVID-19

Cuba desarrolló y produjo la primera vacuna anticovid en América Latina. Fue el primer país en inmunizar a su población pediátrica entre dos y 18 años y ello marcó un hito no solo para la nación del Caribe, sino para el mundo.

El Instituto Finlay desarrolló dos prototipos de vacunas, la vacuna Soberana 02, que es una vacuna conjugada que combina el RBD con toxoide tetánico, y la vacuna Soberana Plus, que es una versión mejorada de la anterior.

La Dra. Dagmar García explicó cómo lograron conjugar el RBD de manera específica para crear una presentación epitópica al sistema inmunitario y cómo encontraron que la cisteína libre en la molécula permitía la formación de un dímero natural, mejorando aún más la respuesta inmunológica.

El desarrollo clínico de estas vacunas incluyó ensayos en adultos jóvenes, pero la Dra. García se centró en los resultados en población pediátrica, destacando que esta era una de las partes más cruciales. Señaló que la vacuna Soberana demostró una eficacia del 92% en la prevención de la enfermedad sintomática causada por el SARS-CoV-2.

Uno de los aspectos fundamentales del trabajo del Instituto Finlay fue demostrar la seguridad, la inmunogenicidad, la eficacia, la efectividad y el impacto de la vacuna. García explicó que la investigación clínica no termina con el registro de la vacuna, y que se han realizado múltiples estudios y ensayos para respaldar su efectividad a lo largo del tiempo.

Durante su intervención la experta también abordó la seguridad de la vacuna en niños, destacando que más del 90% de los eventos adversos fueron leves y consistieron principalmente en dolor local en el lugar de la inyección. Se compararon estos resultados con las vacunas de Pfizer y Moderna, destacando las diferencias en términos de seguridad entre las vacunas de ARNm y las vacunas proteicas desarrolladas en el Instituto Finlay.

La doctora también presentó datos sobre la respuesta inmunitaria en niños, destacando la importancia de la vacunación en esta población y cómo la vacuna Soberana 02 indujo una inmunidad de larga duración.

La Dra. García enfatizó el importante logro del Instituto Finlay al obtener la autorización de uso de emergencia para vacunar a la población pediátrica el 4 de septiembre de 2021. Esta autorización marcó el inicio de una campaña masiva de vacunación en Cuba, en la que se inmunizó a 1,8 millones de niños, con edades comprendidas entre los dos y los 18 años. El objetivo principal de esta campaña era preparar el terreno para la reapertura segura de las escuelas, con una cobertura de vacunación del 95%.

Además, se llevó a cabo un estudio de casos que demostró la efectividad de la vacunación en la prevención de la enfermedad sintomática causada por el virus.

Los datos recopilados indicaron que la vacunación pediátrica en Cuba tuvo una alta efectividad en la

prevención de la enfermedad sintomática, con un efecto aún más impresionante en la prevención de la enfermedad severa, con un 95% de efectividad. También se observó que la respuesta inmunitaria de los niños vacunados era similar a la de los adultos jóvenes, con altos títulos de anticuerpos neutralizantes incluso contra las variantes de preocupación.

El Instituto Finlay de Vacunas es un ejemplo destacado de cómo la ciencia, la investigación y la colaboración pueden marcar una diferencia significativa en la salud de la población. Su compromiso con la calidad, la accesibilidad y la innovación continúa siendo un faro de esperanza en el campo de la medicina y la salud pública, no solo en Cuba, sino en todo el mundo.

Cuba y Uruguay: cooperación en desarrollo de vacunas

El Departamento de Desarrollo Biotecnológico del Instituto de Higiene de la Universidad de la República (Udelar) de Uruguay y el Instituto Finlay de Vacunas de Cuba formalizaron esta importante alianza el pasado 20 de junio durante el evento VacciPharma2023, celebrado en La Habana, Cuba.

Los signatarios de este Memorando de Entendimiento son el Dr. José Alejandro Chabalgoity, director del Departamento de Desarrollo Biotecnológico de Udelar, y el Dr. Vicente Verez Bencomo, director general del Instituto Finlay de Vacunas.

El principal objetivo de este acuerdo es fomentar y fortalecer la cooperación entre estas dos prestigiosas instituciones en el ámbito de la investigación y desarrollo de vacunas. La colaboración entre el Departamento de Desarrollo Biotecnológico de Udelar y el Instituto Finlay de Vacunas de Cuba promete dar lugar a avances significativos en la lucha contra diversas enfermedades y la mejora de la salud pública en ambas naciones.

Este acuerdo representa un paso importante en la promoción de la investigación científica y la innovación médica en la región, y se espera que tenga un impacto positivo en la salud de la población en un momento en que las vacunas desempeñan un papel crucial en la mitigación de la propagación de enfermedades infecciosas.

Con esta iniciativa de colaboración, Cuba y Uruguay demuestran su compromiso con la ciencia, la salud pública y la solidaridad internacional en la lucha contra las enfermedades a través de la investigación y el desarrollo de vacunas.

Cuba y Uruguay se hermanan para el desarrollo y la investigación de vacunas.

Fuente: Caras&Caretas. Disponible en https://encr.pw/fEoE6

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Patentes registradas en Patentscope

Estrategia de búqueda: *Vaccine in the title or abstract AND 20230916:20230930 as the publication date 81 records*

1.4249596NEUES GENREKOMBINANTES VACCINIAVIRUS UND VERWENDUNG DAVON
EP - 27.09.2023
Clasificación Internacional C12N 15/24 Nº de solicitud 21894579 Solicitante NAT UNIV CORP TOTTORI UNIV Inventor/a NAKAMURA TAKAFUMI
The present invention provides a vaccinia virus into which a therapeutic gene has been introduced as an exogenous gene and a therapeutic composition comprising the same. The vaccinia virus comprises at least one immune regulating gene as an exogenous gene.

2.WO/2023/183458CONTROLLED RELEASE VACCINE FORMULATIONS
WO - 28.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud PCT/US2023/016019 Solicitante MERCK SHARP & DOHME LLC Inventor/a BHAMBHANI, Akhilesh

The present disclosure provides, among other things, a vaccine composition that includes HPV virus-like particles (VLPs) of at least one type of human papillomavirus (HPV) selected from the group consisting of HPV types: 6, 11, 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 55, 56, 58, 59, 66, 68, 73, and 82, where the vaccine composition provides enhanced or comparable HPV vaccine response in comparison to a similar multiple-dose vaccine.

3.20230293650INDIVIDUALIZED THERAPEUTIC ANTICANCER VACCINE
US - 21.09.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 17995780 Solicitante Nykode Therapeutics ASA Inventor/a Agnete Brunsvik Fredriksen
The present invention relates to an individualized therapeutic anticancer vaccine, methods of treatment of cancer wherein such an anticancer vaccine is used as well as methods for producing the vaccine.

4.20230302112RESPIRATORY SYNCTIAL VIRUS RNA VACCINE
US - 28.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud 18052600 Solicitante SANOFI Inventor/a Danilo Casimiro
The present disclosure provides a respiratory syncytial virus (RSV) vaccine comprising a messenger RNA (mRNA) comprising an open reading frame (ORF) encoding an RSV F protein antigen, and methods of eliciting an immune response by administering said vaccine.

5.20230293692CELLULAR VACCINE PLATFORM AND METHODS OF USE
US - 21.09.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 18048230 Solicitante Intima Bioscience, Inc. Inventor/a Thomas HENLEY
Cellular vaccine platforms, such as vaccine immune viral opsonization platforms, for eliciting host immune responses are disclosed. Also disclosed are the methods of making and using the cellular vaccine platforms in stimulating host immune responses.

6.WO/2023/177655HETEROLOGOUS PRIME BOOST VACCINE COMPOSITIONS AND METHODS OF USE
WO - 21.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud PCT/US2023/015170 Solicitante GENERATION BIO CO. Inventor/a SAMAYOA, Phillip
The application describes methods of inducing an immune response in a subject, comprising administering a prime-boost vaccine, wherein the priming vaccine comprises DNA (e.g., ceDNA) encoding a first peptide, and the boosting vaccine comprises (i) a ribonucleic acid (RNA), or (ii) a second peptide. Also provided are vaccine regimens, comprising a priming vaccine comprising DNA, wherein the DNA encodes a first peptide; and a boosting vaccine comprising (i) a ribonucleic acid (RNA), or (ii) a second peptide, wherein the RNA encodes the second peptide.

7.20230293679CONSTRUCTION AND APPLICATION OF FUSION PROTEIN VACCINE PLATFORM
US - 21.09.2023
Clasificación Internacional A61K 39/395 Nº de solicitud 18003872 Solicitante INSTITUTE OF BIOPHYSICS, CHINESE ACADEMY OF SCIENCES Inventor/a Yangxin FU
The present invention relates to the construction and application of a fusion protein vaccine platform. The present invention provides a vaccine, comprising a fusion protein containing an interferon-target antigen-immunoglobulin Fc region (or antibody) and a Th cell helper epitope. The present invention also relates to use of a fusion protein containing an interferon-target antigen-immunoglobulin Fc region (or antibody) and a Th cell helper epitope in the preparation of prophylactic or therapeutic compositions. The vaccine of the

present invention can be produced by eukaryotic cell expression systems to prepare wild-type and various mutant antigen vaccines, and vaccination by means of subcutaneous/muscular or nasal or other routes can lead to a strong immune response to a body. The vaccine of the present invention can be used as a prophylactic or therapeutic vaccine.

8.4243867MULTIVALENTE TRÄGER UND ENTSPRECHENDE IMPFSTOFFZUSAMMENSETZUNGEN
EP - 20.09.2023
Clasificación Internacional A61K 39/215 Nº de solicitud 21892767 Solicitante CALIFORNIA INST OF TECHN Inventor/a COHEN ALEXANDER A
Disclosed herein include multivalent carriers comprising a plurality of heterologous coronavirus proteins antigens derived from different coronaviruses. The multivalent carriers herein described can elicit heterologous binding and neutralization properties against coronaviruses that differ from the coronaviruses from which the coronavirus antigens are derived to produce the multivalent carriers. Also provided herein include vaccine compositions comprising the multivalent carriers and related methods using the vaccine compositions in various therapeutic and prophylactic applications.

9.WO/2023/177620LIVE MYCOPLASMA SYNOVIAE VACCINE
WO - 21.09.2023
Clasificación Internacional A61K 35/74 Nº de solicitud PCT/US2023/015103 Solicitante UNIVERSITY OF GEORGIA RESEARCH FOUNDATION, INC. Inventor/a FERGUSON-NOEL, Naola, M.
The present invention provides Mycoplasma synoviae strain K5885 as deposited at the ATCC under Patent Designation PTA-127167, and progeny and derivatives thereof, for use as a vaccine for the prevention of virulent Mycoplasma synoviae infections in the birds of the order Galliformes. Also provided are coppositions and methods for administration to birds of the order Galliformes.

10.4243865NANOPARTIKELIMPFSTOFF AUF PROTEINBASIS FÜR METAPNEUMOVIRUS
EP - 20.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud 21820055 Solicitante ICOSAVAX INC Inventor/a FELDHAUS ANDREW LAWRENCE
Provided are virus-like particle vaccines for human metapneumovirus (hMPV) in which the ectodomain of hMPV F protein is linked to, and thereby displayed on, a symmetric protein-based virus-like particle. For example, the vaccine antigen may be a N-terminal fusion of the ectodomain of hMPV F protein to a protein having a multimerization domain for a one- or two-component virus-like particle, such as a two-component icosahedral virus-like particle. Further provided are vaccine compositions, methods of manufacturing, and methods of use, *e.g.*, immunizing a subject to generate a protective immune response to hMPV.

11.20230293672CORONAVIRUS VACCINE
US - 21.09.2023
Clasificación Internacional A61K 39/215 Nº de solicitud 18179339 Solicitante CureVac SE Inventor/a Susanne RAUCH
The present invention is directed to a nucleic acid suitable for use in treatment or prophylaxis of an infection with a coronavirus, preferably with a Coronavirus SARS-CoV-2, or a disorder related to such an infection, preferably COVID-19. The present invention is also directed to compositions, polypeptides, and vaccines. The compositions and vaccines preferably comprise at least one of said nucleic acid sequences, preferably nucleic acid sequences in association a lipid nanoparticle (LNP). The invention is also directed to first and second medical uses of the nucleic acid, the composition, the polypeptide, the combination, the vaccine, and the kit, and to methods of treating or preventing a coronavirus infection, preferably a Coronavirus infection.

12.20230302122CORONAVIRUS VACCINE
US - 28.09.2023
Clasificación Internacional A61K 39/215 Nº de solicitud 18327882 Solicitante CureVac SE Inventor/a Susanne RAUCH
The present invention is directed to a nucleic acid suitable for use in treatment or prophylaxis of an infection with a coronavirus, preferably with a Coronavirus SARS-CoV-2, or a disorder related to such an infection, preferably COVID-19. The present invention is also directed to compositions, polypeptides, and vaccines. The compositions and vaccines preferably comprise at least one of said nucleic acid sequences, preferably nucleic acid sequences in association a lipid nanoparticle (LNP). The invention is also directed to first and second medical uses of the nucleic acid, the composition, the polypeptide, the combination, the vaccine, and the kit, and to methods of treating or preventing a coronavirus infection, preferably a Coronavirus infection.

13.4248993NEUER MERS-COV-IMPFSTOFF
EP - 27.09.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 22164013 Solicitante UNIV BERLIN CHARITE Inventor/a DE LA ROSA KATHRIN
The present invention relates to a mutant receptor-binding domain (MERS-mRBD) of MERS-CoV (middle east respiratory syndrome coronavirus) or a fragment thereof and a mutant spike protein (MERS-mSpike) of MERS-CoV or a fragment thereof.Furthermore, the present invention relates to a mutant spike protein (MERS-mSpike) of MERS-CoV or a fragment thereof comprising the MERS-mRBD or the fragment thereof.Furthermore, the present invention relates to a polypeptide or protein comprising the MERS-mRBD or the fragment thereof or MERS-mSpike or the fragment thereof and a nucleic acid comprising a nucleotide sequence encoding for the MERS-mRBD or the fragment thereof or the MERS-mSpike or the fragment thereof.Furthermore, the present invention relates to a vaccine composition comprising one or more MERS-mRBDs or fragments thereof, one or more MERS -mSpikes, one or more polypeptides or proteins and/or one or more nucleic acids according to the present invention.Furthermore, the present invention relates to the one or more MERS-mRBDs or fragments thereof, the one or more MERS-mSpikes, the one or more polypeptides or proteins, the one or more nucleic acids and/or the vaccine composition according to the present invention for use in the prevention and/or treatment of diseases caused by MERS-CoV in a subject.

14.WO/2023/180394MRNA VACCINE COMPOSITIONS AND THEIR USE
WO - 28.09.2023
Clasificación Internacional A61K 31/7105 Nº de solicitud PCT/EP2023/057359 Solicitante OSIVAX Inventor/a LE VERT, Alexandre
The invention relates to immunogenic or vaccine compositions and their use in particular in the prevention or treatment of infectious or cancer disorders. More specifically, the immunogenic or vaccine compositions of the present invention comprises a ribonucleic acid (RNA) molecule comprising an open-reading frame encoding a fusion protein, wherein said fusion protein comprises or essentially consists of: (i) a first polypeptide domain comprising either a. an antigen or a fragment thereof comprising at least one epitope of said antigen, b. a peptide moiety comprising a single epitope of an antigen, or c. a plurality of peptide moieties, wherein each peptide moiety comprises an epitope of an antigen and wherein said peptide moieties are fused together, optionally via peptide linker, said first polypeptide domain being fused to (ii) a second polypeptide domain comprising a C4bp-derived oligomerization domain and a positively charged tail.

15.WO/2023/180458NEW MERS-COV VACCINE
WO - 28.09.2023

Clasificación Internacional A61K 39/215 Nº de solicitud PCT/EP2023/057501 Solicitante MAX-DELBRÜCK-CENTRUM FÜR MOLEKULARE MEDIZIN IN DER HELMHOLTZ-GEMEINSCHAFT Inventor/a DE LA ROSA, Kathrin
The present invention relates to a mutant receptor-binding domain (MERS-mRBD) of MERS-CoV (middle east respiratory syndrome coronavirus) or a fragment thereof and a mutant spike protein (MERS-mSpike) of MERS-CoV or a fragment thereof. Furthermore, the present invention relates to a mutant spike protein (MERS-mSpike) of MERS-CoV or a fragment thereof comprising the MERS-mRBD or the fragment thereof. Furthermore, the present invention relates to a polypeptide or protein comprising the MERS-mRBD or the fragment thereof or MERS-mSpike or the fragment thereof and a nucleic acid comprising a nucleotide sequence encoding for the MERS-mRBD or the fragment thereof or the MERS-mSpike or the fragment thereof. Furthermore, the present invention relates to a vaccine composition comprising one or more MERS-mRBDs or fragments thereof, one or more MERS -mSpikes, one or more polypeptide or proteins and/or one or more nucleic acids according to the present invention. Furthermore, the present invention relates to the one or more MERS-mRBDs or fragments thereof, the one or more MERS-mSpikes, the one or more polypeptides or proteins, the one or more nucleic acids and/or the vaccine composition according to the present invention for use in the prevention and/or treatment of diseases caused by MERS-CoV in a subject.

16.WO/2023/179513CORONAVIRUS VACCINE COMPOSITION, METHOD, AND USE THEREOF WO - 28.09.2023
Clasificación Internacional C07K 19/00 Nº de solicitud PCT/CN2023/082377 Solicitante SICHUAN CLOVER BIOPHARMACEUTICALS , INC. Inventor/a LIANG, Peng
The present invention relates to an immunogenic composition comprising a recombinant peptide and a protein, the recombinant peptide and the protein comprising a coronavirus antigen and an immunogen, such as SARS-CoV -2 coronavirus omicron (omicron, B1.1. 529 or BA. 5) variant strain S protein peptide, or a fragment, variant or mutant thereof. The variant or mutant is, for example, a chimeric antigen and immunogen containing an omicron variant strain receptor binding domain and a Hu-1 or other variant strain S protein peptide sequence. In some aspects, the immunogenic composition comprises a secretory fusion protein. The secretory fusion protein comprises a soluble coronavirus antigen. The soluble coronavirus antigen protein is fused by intra-frame fusion to a C-terminal portion capable of self-trimerization, so as to form a disulfide bond-linked trimer fusion protein. In some aspects, the provided immunogenic composition may be used to produce an immune response, e.g. as a vaccine for the prevention of coronavirus infection, such as infection of SARS-CoV-2 Hu-1, alpha, beta, gamma, omicron, mu, omicron, and/or other strains. In some aspects, the provided immunogenic composition can be used in a vaccine composition, for example, as part of a prophylactic and/or therapeutic vaccine. Further provided are a method for producing the recombinant peptide and the protein, a prophylactic, therapeutic and/or diagnostic method, and a related kit.

17.WO/2023/179514CORONAVIRUS VACCINE COMPOSITION, METHOD, AND USE THEREOF WO - 28.09.2023
Clasificación Internacional C07K 19/00 Nº de solicitud PCT/CN2023/082378 Solicitante SICHUAN CLOVER BIOPHARMACEUTICALS , INC. Inventor/a LIANG, Peng
Provided are an immunogenic composition comprising a recombinant peptide and a protein, the recombinant peptide and the protein comprising a coronavirus antigen and an immunogen, such as SARS-CoV -2 coronavirus delta (delta, B.1.617.2) variant strain S protein peptide, or a fragment, variant or mutant thereof, such as a chimeric antigen and immunogen containing a delta variant strain receptor binding domain and a Hu-1 or other variant strain S protein peptide sequence. In some aspects, the immunogenic composition comprises a secretory fusion protein. The secretory fusion protein comprises a

soluble coronavirus antigen. The soluble coronavirus antigen protein is fused by intra-frame fusion to a C-terminal portion capable of self-trimerization, so as to form a disulfide bond-linked trimer fusion protein. In some aspects, the provided immunogenic composition may be used to produce an immune response, e.g. as a vaccine for the prevention of coronavirus infection, such as infection of SARS-CoV-2 Hu-1, alpha, beta, gamma, delta, mu, omicron, and/or other strains. In some aspects, the provided immunogenic composition can be used in a vaccine composition, for example, as part of a prophylactic and/or therapeutic vaccine. Further provided are a method for producing the recombinant peptide and the protein, a prophylactic, therapeutic and/or diagnostic method, and a related kit.

18.4243861HOCHDOSIERTES SHIGELLA-IMPFSTOFFPRÄPARAT
EP - 20.09.2023
Clasificación Internacional A61K 39/02 Nº de solicitud 21782552 Solicitante EVELIQURE BIOTECHNOLOGIES GMBH Inventor/a NAGY ESZTER
A Shigella vaccine preparation comprising 10E8-10E12 CFU of a live, genetically attenuated *Shigella flexneri* strain that comprises a chromosomal deletion of *setBA* and which is non-invasive as determined by the Sereny test and an *in vitro* invasion assay using HeLa cells, wherein the strain comprises an endogenous invasion plasmid that is genetically engineered to incorporate a heterologous expression construct expressing a pathogen-specific antigen.

19.WO/2023/179009ADENOVIRUS VECTOR RECOMBINANT NOVEL CORONAVIRUS B.1.1.529 VARIANT VACCINE AND USE THEREOF
WO - 28.09.2023
Clasificación Internacional C12N 15/50 Nº de solicitud PCT/CN2022/127097 Solicitante ACADEMY OF MILITARY MEDICAL SCIENCE, PLA Inventor/a CHEN, Wei
The present invention provides a novel coronavirus B.1.1.529 variant vaccine using human type-5 replication-defective adenovirus as a vector. Given that the predominantly expressed protein is still a spike protein of the novel coronavirus B.1.1.529 variant, a recombinant virus vector vaccine prepared with an empirically optimized nucleic acid sequence can effectively stimulate an organism to generate a binding antibody, a neutralizing antibody, and a cellular immune response against the B.1.1.529 variant virus after immunization, showing good immunogenicity.

20.WO/2023/183080TRIPLE VACCINE PROTECTS AGAINST BACTERIAL AND FUNGAL PATHOGENS VIA TRAINED IMMUNITY
WO - 28.09.2023
Clasificación Internacional A61K 39/39 Nº de solicitud PCT/US2023/011209 Solicitante UNIVERSITY OF SOUTHERN CALIFORNIA Inventor/a SPELLBERG, Brad
An optimized protein-free tripartite vaccine that protects against lethal blood and lung infections caused by a variety of nosocomial pathogens across taxonomic kingdoms, including Gram -positive bacteria, Gram-negative bacteria, and fungi.

21.4245315NEUARTIGER CORONAVIRUS-IMPFSTOFF AUF BASIS DER STEUERBAREN SEKRETORISCHEN EXPRESSION VON ABGESCHWÄCHTER SALMONELLA, HERSTELLUNGSVERFAHREN DAFÜR UND ANWENDUNG DAVON
EP - 20.09.2023
Clasificación Internacional A61K 39/215 Nº de solicitud 20959019 Solicitante JIANGSU TARGET BIOMEDICAL RES INSTITUTE CO LTD Inventor/a HUA ZICHUN
A new coronavirus vaccine based on controllable secretory expression of attenuated Salmonella, a preparation method therefor, and use thereof. The method comprises constructing controllable and stable expression plasmids for secretory expression of different antigenic structural domain proteins of the new coronaviruses and their attenuated Salmonella expression strains, and then mixing various attenuated

Salmonella antigen-presenting strains that can achieve controllable intracellular secretory expression in antigen-presenting cells. With the aid of a unique secretion system, a variety of different antigenic proteins can be secretory-expressed efficiently in antigen-presenting cells after oral gavaging. The secretory-expressed antigenic proteins can be efficiently processed and presented by the antigen-presenting cells, and finally activate/regulate the immune system to produce more potent antibodies to make the vaccine work.

22.20230293670NOVEL CORONAVIRUS RECOMBINANT SPIKE PROTEIN, POLYNUCLEOTIDE ENCODING SAME, VECTOR COMPRISING POLYNUCLEOTIDE, AND VACCINE FOR PREVENTING OR TREATING CORONAVIRUS INFECTION, COMPRISING VECTOR
US - 21.09.2023
Clasificación Internacional A61K 39/215 Nº de solicitud 18042913 Solicitante CELLID CO., LTD. Inventor/a Chang-Yuil KANG
The present invention relates to a novel coronavirus recombinant spike protein, a polynucleotide encoding the same, a vector comprising the polynucleotide, and a vaccine for preventing or treating coronavirus infection, comprising the vector. The coronavirus recombinant spike protein of the present invention is stable and thereby not easily decomposed in cells, and effectively activates immune cells thereby resulting in a high antibody production amount and T cell reactivity. It was confirmed that the vector of the present invention exhibits a high antigen expression level and thereby has a high antibody production amount and T cell reactivity, has a long antibody production period and expression period, and does not show liver toxicity. Accordingly, the vector of the present invention can be helpfully used as a vaccine for preventing or treating coronavirus infection.

23.20230293665VACCINE COMPOSITION COMPRISING PLANT-EXPRESSED RECOMBINANT ZIKA VIRUS ENVELOPE PROTEIN AND PREPARATION METHOD THEREFOR
US - 21.09.2023
Clasificación Internacional A61K 39/145 Nº de solicitud 18041703 Solicitante BIOAPPLICATIONS INC. Inventor/a Tae-Wook Hahn
The present invention relates to a vaccine composition including, as active ingredients, a recombinant Zika virus envelope protein including an amino acid sequence of SEQ ID NO: 1, and an adjuvant selected from alum, monophosphoryl lipid A (MPL), or a combination thereof, a recombinant vector for producing the recombinant Zika virus envelope protein in a plant, a transformant transformed with the vector, and a method for producing the recombinant Zika virus envelope protein.

24.WO/2023/177577MACHINE-LEARNING TECHNIQUES IN PROTEIN DESIGN FOR VACCINE GENERATION
WO - 21.09.2023
Clasificación Internacional G16B 15/30 Nº de solicitud PCT/US2023/014962 Solicitante SANOFI PASTEUR INC. Inventor/a DAVIDSON, Philip
A discrete-data object is received and may include a plurality of first discrete values, the discrete-data object may include one or more amino acid sequences. The discrete-data object is converted into a continuous-data object that may include a plurality of first continuous values. To the continuous-data object, a continuous-data algorithm is applied to generate a continuous-result object that may include a plurality of second continuous values. The continuous-result object is converted into a discrete-result object which may include a plurality of second discrete values. A vaccine is manufactured which may include at least one of the group that may include i) a protein defined by the discrete-result object, ii) a nucleic acid capable of producing the protein defined by the discrete-result object, and iii) a delivery vehicle capable of producing the protein defined by the discrete-result object.

25.WO/2023/177579MACHINE-LEARNING TECHNIQUES IN PROTEIN DESIGN FOR VACCINE GENERATION
WO - 21.09.2023
Clasificación Internacional G16B 15/30 Nº de solicitud PCT/US2023/014965 Solicitante SANOFI PASTEUR INC. Inventor/a DAVIDSON, Philip
One or more data objects are received defining a plurality of wild-type amino acid sequences. From the one or more data objects, a plurality of reduced-dimension sequences are generated in a reduced-dimension space. A plurality of candidate sequences are generated in the reduced-dimension space using the plurality of reduced-dimension sequences. One or more data objects defining a viral amino acid sequence are received. Viral sequences in the reduced-dimension space are received. As input to a titer-predictor, each of the candidate sequences and at least one of the reduced-dimension viral sequences are provided. As output from the titer-predictor, a candidate-score for each of the candidate sequences is received. At least one candidate sequence from among the candidate sequences are selected. At least one new amino acid sequence is generated. Each of the generated amino acid sequences is suitable for manufacturing a respective vaccine.

26.WO/2023/174124ATOMIZATION DRUG DELIVERY DEVICE AND USE THEREOF IN INHALATION VACCINE
WO - 21.09.2023
Clasificación Internacional A61M 11/00 Nº de solicitud PCT/CN2023/080323 Solicitante CANSINO BIOLOGICS INC. Inventor/a SI, Weixue
An atomization drug delivery device, which has a high degree of automation, is capable of accurately performing drug delivery and can be used for large-scale vaccine inoculation, comprising a power unit (2), a transmission module (3), a drug storage unit (4), and an atomization module (6), the power unit (2) being connected to the transmission module (3), and the drug storage unit (4) being connected to the atomization module (6). The drug storage unit (4) comprises a push rod (4-1) and a drug storage cylinder (4-2), the push rod (4-1) being connected to the drug storage cylinder (4-2) in a sliding sealing manner. The power unit (2), by means of the transmission module (3), actuates the push rod (4-1). The push rod (4-1) discharges a drug liquid in the drug storage cylinder (4-2) and conveys same to the atomization module (6), and the atomization module (6) atomizes the drug liquid.

27.WO/2023/178404COMBINATION OF EPITOPES AND USE THEREOF, VACCINE CONSTRUCT, METHOD OF INDUCING AN IMMUNE RESPONSE, METHOD FOR THE IDENTIFICATION OF EPITOPES
WO - 28.09.2023
Clasificación Internacional C07K 7/06 Nº de solicitud PCT/BR2023/050101 Solicitante FUNDAÇÃO ZERBINI Inventor/a FILHO, Jorge Elias Kalil
COMBINATION OF EPITOPES AND USE THEREOF, VACCINE CONSTRUCT, METHOD OF INDUCING AN IMMUNE RESPONSE, METHOD FOR THE IDENTIFICATION OF EPITOPES The present invention refers to a combination of epitopes comprising at least eight T cell epitopes from the SARS-CoV-2, as well as the use of said combination ("set of epitopes"). Said epitopes are widely recognized by CD4+ T- lymphocytes of the overwhelming majority of COVID-19 convalescent individuals.

28.4244253AN DIE REZEPTORBINDUNGSDOMÄNE DES SARS-COV-2-SPIKEPROTEINS KONJUGIERTE ODER FUSIONIERTE ANTIKÖRPER UND VERWENDUNGEN DAVON FÜR IMPFSTOFFZWECKE
EP - 20.09.2023
Clasificación Internacional C07K 16/28 Nº de solicitud 21806276 Solicitante INST NAT SANTE RECH MED Inventor/a LEVY YVES

SARS-CoV-2 vaccines will be essential to reduce morbidity and mortality. The inventors produced an antibody that is directed against a surface antigen (i.e. CD40) of an antigen presenting cell (i.e. dendritic cell) wherein the heavy chain was conjugated to the receptor-binding domain of the Sars-Cov-2 spike protein for its use as vaccine. In particular, the inventors show that said vaccine induces circulating Ab-secreting hu-B cells, elicits S-specific IgG+ hu-B cells, elicits the expansion of central memory CD4+ hu-T cells and the emergence of effector memory CD4+ T cells, elicits the expansion of central memory CD8+ hu-T cells at and the emergence of effector memory CD8+ T cells at and finally induces Stem-cell like memory hu-CD8+ T cells. The present invention thus relates to antibodies that are directed against a surface antigen of an antigen presenting cell wherein the heavy chain and/or the light chain is conjugated or fused to the receptor-binding domain of the Sars-Cov-2 spike protein.

29.WO/2023/183136COMPOSITION COMPRISING ANTIGEN AND DNA AND USE THEREOF
WO - 28.09.2023
Clasificación Internacional A61K 39/215 Nº de solicitud PCT/US2023/014783 Solicitante NATIONAL HEALTH RESEARCH INSTITUTES Inventor/a LIU, Shih-Jen
A composition is provided, wherein the composition includes a subunit vaccine including a first amount of a subunit, and a nucleic acid vaccine including a second amount of a vector.

30.20230302118ORAL RECOMBINANT YEAST FOR EXPRESSING S PROTEIN OF NOVEL CORONAVIRUS, PREPARATION THEREFOR, AND APPLICATION THEREOF
US - 28.09.2023
Clasificación Internacional A61K 39/215 Nº de solicitud 18001576 Solicitante TIANJIN UNIVERSITY Inventor/a Jinhai HUANG
The present disclosure discloses an oral SARS-CoV-2 vaccine for expressing an S protein of a SARS-CoV-2 and preparation and application thereof. The oral SARS-CoV-2 vaccine contains 16 to 1035 amino acids of the S protein, and contains an RBD domain and an FP fusion peptide. A complete transcriptional unit GPD-S(RBD-FP)-TU of a truncated S protein constructed in vitro is integrated into a yeast genome through homologous recombination, the S protein is displayed on a surface of a yeast cell by an Aga1-Aga2 surface display system; a S protein surface display type SARS-CoV-2 vaccine strain ST1814G-S(RBD-FP) is obtained, and the obtained strain is used for preparing the oral SARS-CoV-2 vaccine.

31.WO/2023/177913NOVEL RNA AND DNA TECHNOLOGY FOR VACCINATION AGAINST ALPHAVIRUSES AND OTHER EMERGING AND EPIDEMIC VIRUSES
WO - 21.09.2023
Clasificación Internacional A61K 31/7105 Nº de solicitud PCT/US2023/015581 Solicitante MEDIGEN, INC. Inventor/a PUSHKO, Peter
Various vaccine systems or platforms have been proposed. Because these vaccine systems or platforms are not optimal, there is a need in the field for improved systems or platforms, including effective, safe and economical systems or platforms.

32.20230295278MONOCLONAL ANTIBODIES DIRECTED AGAINST TRIMERIC FORMS OF THE HIV-1 ENVELOPE GLYCOPROTEIN WITH BROAD AND POTENT NEUTRALIZING ACTIVITY
US - 21.09.2023
Clasificación Internacional C07K 16/10 Nº de solicitud 18150957 Solicitante Theraclone Sciences, Inc. Inventor/a Po-Ying Chan-Hui
The invention provides a method for obtaining a broadly neutralizing antibody (bNab), including screening memory B cell cultures from a donor PBMC sample for neutralization activity against a plurality of HIV-1 species, cloning a memory B cell that exhibits broad neutralization activity; and rescuing a monoclonal antibody from that memory B cell culture. The resultant monoclonal antibodies are characterized by their ability to selectively bind epitopes from the Env proteins in native or monomeric form, as well as to inhibit

infection of HIV-1 species from a plurality of clades. Compositions containing human monoclonal anti-HIV antibodies used for prophylaxis, diagnosis and treatment of HIV infection are provided. Methods for generating such antibodies by immunization using epitopes from conserved regions within the variable loops of gp120 are provided. Immunogens for generating anti-HIV1 bNAbs are also provided. Furthermore, methods for vaccination using suitable epitopes are provided.

33.20230293657VACCINE
US - 21.09.2023
Clasificación Internacional A61K 39/108 Nº de solicitud 18001525 Solicitante GlaxoSmithKline Biologicals SA Inventor/a Maria Paula CARRANZA SANDMEIER
The present invention relates to the field of immunogenic compositions and vaccines, their manufacture, host cells which can be used in their manufacture and the use of such immunogenic compositions and vaccines in medicine. More particularly, it relates to *Klebsiella pneumoniae* O-antigens, conjugates comprising a *K. pneumoniae* O-antigen, host cells suitable for their production and immunogenic compositions or vaccines containing at least one *Klebsiella pneumoniae* O-antigen.

34.20230295655RECOMBINANT VACCINIA VIRUS
US - 21.09.2023
Clasificación Internacional C12N 15/86 Nº de solicitud 18018442 Solicitante TOKYO METROPOLITAN INSTITUTE OF MEDICAL SCIENCE Inventor/a Michinori KOHARA
The present invention provides a recombinant vaccinia virus serving as a clinically usable preventive vaccine for COVID-19 (vaccine for SARS-CoV-2), etc. The recombinant vaccinia virus of the present invention is characterized by comprising the whole or part of cDNA encoding nonstructural proteins or structural protein derived from SARS-CoV-2, and an expression promoter.

35.2616690Method for monitoring stability of polysaccharide-protein conjugate vaccines
GB - 20.09.2023
Clasificación Internacional G01N 30/46 Nº de solicitud 202212836 Solicitante SERUM INSTITUTE OF INDIA PVT LTD Inventor/a GAIROLA SUNIL JAGDISHPRASAD
A method for determining the stability of a polysaccharide-protein conjugate vaccine comprising: a) performing high performance size exclusion liquid chromatography (HPLC-SEC, HPSEC, SEC-HPLC, SEC) on the vaccine, wherein the SEC (gel filtration, molecular sieve) comprises a set of three chromatography columns in series to obtain an eluate; b) passing the eluate through detectors to obtain the molecular weight (MW) distribution; and c) analysing the molecular weight and/or molar mass profile based on the percentage of high molecular weight (HMW), average molecular weight (AMW), and low molecular weight (LMW). The set of three chromatography columns may be connected with a guard column. The columns may have different particle sizes. The detector may be an ultraviolet (UV) detector, refractive index detector (RI), or multiangle light scattering (MALS) detector. The polysaccharide may be a bacterial capsular polysaccharide, such as a bacterial polysaccharide from Neisseria meningitidis (N. meningitidis) for example. The protein may be a carrier protein, such as CRM197, diphtheria toxin/toxoid (DT), or tetanus toxin/toxoid (TT) for example. The vaccine may be multivalent or monovalent. The invention uses HPLC-SEC to analyse a multivalent meningitidis vaccine (MenFive), wherein high molecular weights indicate aggregation and low molecular weights indicate degradation into free saccharides or protein/peptides.

36.4244237GERÜSTANTIGENE UND MANIPULIERTE SARS-COV-2-REZEPTOR-BINDUNGSDOMÄNEN (RBD)-POLYPEPTIDE
EP - 20.09.2023
Clasificación Internacional C07K 14/165 Nº de solicitud 21893025 Solicitante UNIV FLORIDA Inventor/a FARZAN MICHAEL

The present invention provides scaffolded antigens that have demonstrated improved biochemical and immunogenic properties. The invention also provides engineered SARS-CoV-2 immunogens that contain a modified receptor¬ binding domain (RBD) sequence. Also provided in the invention are vaccine compositions that contain the scaffolded antigens, including the engineered RBD polypeptides that are fused to the scaffold proteins described herein. The invention also provides methods of using such vaccine compositions in various therapeutic applications, e.g., for preventing or treating SARS-CoV-2 infections.

37.20230295581RECOMBINANT VIRUSES EXPRESSING ALPHA-1, 3-GALACTOSYLTRANSFERASE AND USES THEREOF
US - 21.09.2023
Clasificación Internacional C12N 7/00 Nº de solicitud 17791678 Solicitante The University of Hong Kong Inventor/a Lit Man Poon
Disclosed are viruses, and vaccines comprised of and made from such viruses, that include a heterologous nucleic acid segment encoding α-1,3-galactosyltransferase (α-1,3-GT) such that the nucleic acid segment expresses α-1,3-GT when the virus infects a host cell. Such viruses produce proteins having α-1,3-galactose. The presence of α-1,3-galactose on proteins of infected cells can powerfully stimulate the immune response of the host against the viral proteins of the virus, thus enhancing the effect of the virus as a vaccine. Also disclosed are vaccines that include and/or are produced by such viruses. Also disclosed are methods of making and using such viruses and vaccines, such as administering to a subject in need thereof a vaccine as disclosed and such as making a vaccine that includes one or more viral proteins expressed by a virus as disclosed.

38.20230293653WT1 VACCINE
US - 21.09.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 18162104 Solicitante The Trustees of the University of Pennsylvania Inventor/a David B. Weiner
Disclosed herein are nucleic acid molecules comprising one or more nucleic acid sequences that encode a mutated WT1 antigen. Vectors, compositions and vaccines comprising one or more nucleic acid sequences that encode a mutated WT1 antigen are disclosed. Methods of treating an individual who has a WT1-expressing tumor and methods of preventing a WT1-expressing tumor are disclosed. Mutated WT1 antigen is disclosed.

39.4244363HEFEPLATTFORM ZUR HERSTELLUNG VON IMPFSTOFFEN
EP - 20.09.2023
Clasificación Internacional C12N 15/81 Nº de solicitud 21806751 Solicitante SERYMUN YEAST GMBH Inventor/a MEHLGARTEN CONSTANCE
The invention relates to the provision of recombinant yeast cells for the efficient and stable expression of transgenes, preferably for the expression of one or more immunogenic polypeptide(s) derived from a pathogen. The invention further relates to vaccine compositions comprising said recombinant yeast cells, uses of said recombinant yeast cells in methods for vaccination and5 methods for the production of a whole yeast vaccine comprising at least one diploid recombinant yeast cell of the invention. Further encompassed are methods for the provision of a diploid yeast cell from a wild type yeast strain.

40.20230293675GENETICALLY STABLE RECOMBINANT MODIFIED VACCINIA ANKARA (RMVA) VACCINES AND METHODS OF PREPARATION THEREOF
US - 21.09.2023
Clasificación Internacional A61K 39/285 Nº de solicitud 18059117 Solicitante CITY OF HOPE Inventor/a Don J. DIAMOND

A vaccine comprising an immunologically effective amount of recombinant modified vaccinia Ankara (rMVA) virus which is genetically stable after serial passage and produced by a) constructing a transfer plasmid vector comprising a modified H5 (mH5) promoter operably linked to a DNA sequence encoding a heterologous foreign protein antigen, wherein the expression of said DNA sequence is under the control of the mH5 promoter; b) generating rMVA virus by transfecting one or more plasmid vectors obtained from step a) into wild type MVA virus; c) identifying rMVA virus expressing one or more heterologous foreign protein antigens using one or more selection methods for serial passage; d) conducting serial passage; e) expanding an rMVA virus strain identified by step d); and f) purifying the rMVA viruses from step e) to form the vaccine. One embodiment is directed to a fusion cytomegalovirus (CMV) protein antigen comprising a nucleotide sequence encoding two or more antigenic portions of Immediate-Early Gene-1 or Immediate-Early Gene-2 (IEfusion), wherein the antigenic portions elicit an immune response when expressed by a vaccine.

41.4247421ENTWURF OPTIMIERTER UNIVERSELLER INFLUENZAIMPFSTOFFE, DEREN DESIGNS UND VERWENDUNGEN
EP - 27.09.2023
Clasificación Internacional A61K 39/145 Nº de solicitud 21895596 Solicitante GREFFEX INC Inventor/a STAERZ UWE D
The present disclosure provides a universal influenza virus vaccine. A composition for a universal influenza virus vaccine comprises at least two, preferably more than two, different influenza hemagglutinin (HA) derived antigens. The HA proteins from which the antigens are derived have a hypervariable region located between conserved cysteines at positions 52 and 277, and the hypervariable region is deleted in the antigens. The at least two antigens each have a similarity with HA molecules of more than one influenza serotype in excess of 60, or 70, or 80, as calculated by the emboss explorer cons program.

42.4249061IMMUNOGENE ZUSAMMENSETZUNGEN GEGEN DARMERKRANKUNGEN UND VERFAHREN ZU IHRER HERSTELLUNG
EP - 27.09.2023
Clasificación Internacional A61P 31/04 Nº de solicitud 23184552 Solicitante SERUM INSTITUTE OF INDIA PVT LTD Inventor/a DHERE RAJEEV MHALASAKANT
The present disclosure relates to novel immunogenic monovalent and multivalent polysaccharide-protein conjugate vaccine compositions comprising a polysaccharide selected from Salmonella serovar strains S. typhi; S. paratyphi A; S. typhimurium and S. enteritidis and alternative improved methods of polysaccharide fermentation, polysaccharide purification, polysaccharide-protein conjugation and stable formulation. The present disclosure further relates to methods for inducing an immune response in subjects against Salmonella typhi and non-typhi related diseases and/or for reducing or preventing Salmonella typhi and non-typhi related diseases in subjects using the compositions disclosed herein. The vaccine elicits bactericidal antibodies and is useful for prevention of gastroenteritis, enteric and typhoid fever.

43.20230293674HSV-2-DELTA-gD VACCINES AND METHODS FOR THEIR PRODUCTION AND USE
US - 21.09.2023
Clasificación Internacional A61K 39/245 Nº de solicitud 18071109 Solicitante Albert Einstein College of Medicine Inventor/a William Jacobs, JR.
Recombinant herpes simplex virus 2 (HSV-2) vaccine vectors, compositions and vaccines comprising such, and methods of use thereof are each provided.

44.WO/2023/177629POLYMER NANOAGGREGATE PHARMACEUTICAL COMPOSITION AND USE THEREOF
WO - 21.09.2023

Clasificación Internacional A61K 47/50 Nº de solicitud PCT/US2023/015121 Solicitante ANP TECHNOLOGIES, INC. Inventor/a YIN, Ray
This disclosure is directed to a pharmaceutical composition for treating or preventing a disease. The pharmaceutical composition can comprise a polymer-drug nanoaggregate having a polymer and at least one bioactive agent that is water insoluble or poorly water soluble. The polymer is water soluble and comprises at least one first terminal group modified with H or a hydrophobic moiety and a second terminal group modified with a hydrophilic moiety and can be a modified symmetrically or asymmetrically branched polymers. This disclosure is also directed to a method for treating or preventing a disease including one or more immune disorders, infectious diseases and cancers using the pharmaceutical composition disclosed herein. The pharmaceutical composition can be a vaccine or an adjuvant for a vaccine.

45.WO/2023/183781LEGIONAMINIC ACID GLYCOSYLTRANSFERASES FOR CHEMOENZYMATIC SYNTHESIS OF GLYCANS AND GLYCOCONJUGATES
WO - 28.09.2023
Clasificación Internacional C12P 21/02 Nº de solicitud PCT/US2023/064726 Solicitante THE REGENTS OF THE UNIVERSITY OF CALIFORNIA Inventor/a CHEN, Xi
Provided herein are methods for preparing a glycan product containing legionaminic acid moieties and other nonulosonic acids. Also provided herein are legionaminic acid transferase fusion proteins and vaccine compositions containing glycan products prepared according to the described methods.

46.20230295283N-TERMINAL TRUNCATED PROTOFIBRILS/ OLIGOMERS FOR USE IN THERAPEUTIC AND DIAGNOSTIC METHODS FOR ALZHEIMER'S
US - 21.09.2023
Clasificación Internacional C07K 16/18 Nº de solicitud 18066998 Solicitante BioArctic Neruoscience AB Inventor/a Par Gellerfors
A vaccine for delaying onset of or for treatment of Alzheimer's disease or an Alzheimer-related disorder in an individual comprises a therapeutically effective amount of a physiologically acceptable protofibril/oligomer comprising N-terminal truncated Aβ. An antibody for delaying an onset of or for treatment of Alzheimer's disease or an Alzheimer-related disorder in an individual hinds one or more truncated Aβ protofibrils/oligomers, but exhibits no or substantially no cross-reactivity with full length Aβ monomers, and optionally said antibody shows cross-reactivity to N-terminal truncated Aβ monomers. Methods for delaying an onset of or for treatment of Alzheimer's disease or an Alzheimer-related disorder employ the vaccine or antibody. Methods of detecting soluble N-terminal truncated amyloid-beta (Aβ) protofibrils/oligomers and N-terminal truncated Aβ monomers employ the antibody.

47.20230293448NANOPARTICLE IMMUNOGENIC COMPOSITIONS AND VACCINATION METHODS
US - 21.09.2023
Clasificación Internacional A61K 9/51 Nº de solicitud 18063582 Solicitante Yale University Inventor/a Akiko Iwasaki
Compositions and methods for inducing a protective mucosal immunity against an antigen in a subject include the step of administering to a mucosal tissue an effective amount of a vaccine composition including the antigen or polynucleotide encoding an antigen associated or encapsulated within carriers such as poly(amine-co-ester) polymers in the form of particles (e.g., solid nanoparticles formed of PACE) or PACE copolymers and/or blends. Typically, the subject has previously been exposed to the antigen, for example, by administering to the same subject via a systemic or mucosal route of administration a priming antigen. In some embodiments, the polynucleotides-based vaccines are messenger RNAs encoding a viral antigen such as a coronavirus spike protein sequence, or a portion thereof. In preferred embodiments, the vaccine composition is administered intranasally.

48.20230293652IMMUNOSTIMULATORY ADJUVANTS

US - 21.09.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 18014581 Solicitante Orionis Biosciences, Inc. Inventor/a Nikolai KLEY
The present invention relates, in part, to vaccine compositions, adjuvants, chimeric proteins, or chimeric protein complexes and their use as vaccines or therapeutic agents. The present invention further relates to methods of vaccination or treatment of various diseases.

49.WO/2023/178038NANOENCAPSULATED PHARMACEUTICAL COMPOSITION AND USE THEREOF
WO - 21.09.2023
Clasificación Internacional A61K 38/19 Nº de solicitud PCT/US2023/064235 Solicitante FULGENT GENETICS, INC. Inventor/a LU, Lu
This disclosure is directed to a pharmaceutical composition for treating or preventing a disease. The pharmaceutical composition can comprise a polymer-drug nanoaggregate having a polymer and at least one bioactive agent that can comprise STING polypeptide, a nucleic acid encoding said STING polypeptide, a STING inhibitor, a STING activator, a STING agonist, a STING antagonist, a STING modulating molecule, or a combination thereof. The pharmaceutical composition can be a vaccine or an adjuvant for a vaccine. This disclosure is also directed to a method for treating or preventing a disease using the pharmaceutical composition. The disease can include infectious diseases caused by viruses or other pathogens, for example, influenza, rabies, or respiratory illnesses such as severe acute respiratory syndrome (SARS) caused by coronaviruses, such as MERS-CoV, SARS-CoV, and Coronavirus Disease 2019 (COVID-19) caused by the virus SARS-CoV-2 and its variants.

50.20230293440SINGLE VIAL VACCINE FORMULATIONS
US - 21.09.2023
Clasificación Internacional A61K 9/19 Nº de solicitud 18180801 Solicitante ACCESS TO ADVANCED HEALTH INSTITUTE Inventor/a Christopher B. FOX
The invention provides for thermostable lyophilized formulations, including vaccines and pharmaceutical compositions for inducing or enhancing an immune response, and methods of use thereof. The lyophilized formulations generally comprise an antigen and/or an adjuvant, a metabolizable oil, and a cake-forming excipient.

51.4247397BEHANDLUNG UND PRÄVENTION VON NEUROPATHOLOGIE IM ZUSAMMENHANG MIT NEURODEGENERATIVEN ERKRANKUNGEN
EP - 27.09.2023
Clasificación Internacional A61K 35/74 Nº de solicitud 21895467 Solicitante ILIAD BIOTECHNOLOGIES LLC Inventor/a RUBIN KEITH
Administering a live, attenuated *Bordetella pertussis*-based vaccine to a subject at risk for developing a neurodegenerative disease featuring Aβ brain plaques can prevent or reduce the amount of Aβ brain plaques that would have developed in the subject without such treatment.

52.20230303614CAPPING COMPOUNDS, COMPOSITIONS AND METHODS OF USE THEREOF
US - 28.09.2023
Clasificación Internacional C07H 21/02 Nº de solicitud 18048407 Solicitante Gritstone bio, Inc. Inventor/a Karin Jooss
The present disclosure includes, among other things, non-natural nucleotides useful as 5' caps for RNA nucleotides. The present disclosure also includes, among other things, compositions and methods using delivery and vaccine RNA nucleotide compositions that include non-natural nucleotides as 5' caps.

53.20230293654VACCINE FOR FALCIPARUM MALARIA
US - 21.09.2023

Clasificación Internacional A61K 39/015 Nº de solicitud 18154642 Solicitante Rhode Island Hospital Inventor/a Jonathan KURTIS
The invention provides compositions and methods for preventing or reducing the severity of malaria.

54.20230303659INTRATUMORAL VACCINATION
US - 28.09.2023
Clasificación Internacional C07K 14/705 Nº de solicitud 18062146 Solicitante Heat Biologics, Inc. Inventor/a Suresh DE SILVA
The present disclosure relates to, inter alia, a method for treating a tumor by intratumorally delivering an effective amount of a composition comprising an expression vector that comprises a first nucleotide sequence encoding a secretable vaccine protein, and a second nucleotide sequence encoding a T cell costimulatory fusion protein.

55.4243847IMMUNOGENE PROBIOTISCHE ZUSAMMENSETZUNGEN UND VERFAHREN ZUR VERWENDUNG BEI DER IMPFUNG
EP - 20.09.2023
Clasificación Internacional A61K 35/747 Nº de solicitud 21892725 Solicitante ELANCO US INC Inventor/a GANGAIAH DHARANESH MAHIMAPURA
The present invention provides probiotic compositions and methods for improving animal health, particularly improving and enhancing vaccine response. The probiotic compositions include one or more isolated strains of *Lactobacillus* species bacteria which colonizes the gastrointestinal tract to increase the health and enhance the immune system and immune response of an animal.

56.20230304042Adenoviral Vectors Comprising Partial Deletions of E3
US - 28.09.2023
Clasificación Internacional C12N 15/86 Nº de solicitud 18203818 Solicitante THE WISTAR INSTITUTE Inventor/a Hildegund C.J. Ertl
This disclosure provides replication-incompetent adenoviral vectors useful in vaccine development and gene therapy. The disclosed vectors comprise a selective deletion of E3 and are particularly useful for preparation of vaccines development and for gene therapy using toxic transgene products that result in vector instability that occurs when the entire E3 domain is deleted.

57.20230295281NATURAL ANTIBODIES IN PROPHYLAXIS AND THERAPY
US - 21.09.2023
Clasificación Internacional C07K 16/18 Nº de solicitud 17917894 Solicitante VANUDIS GMBH Inventor/a Rudolf ÜBELHART
Described is a human or humanized natural IgM and/or IgA antibody recognizing oxidized phospholipids and/or oxidation-specific epitopes for use in a method of treating or preventing a disorder or a disease associated with/related to/caused by a natural IgM/IgA antibody deficiency (NAD) in a subject. Moreover, described is a human or humanized natural IgM and/or IgA antibody recognizing oxidized phospholipids and/or oxidation-specific epitopes for use in a method of treating or preventing a disorder or a disease associated with/related to/caused by a natural IgM/IgA antibody deficiency (NAD) in a subject, wherein said natural IgM and/or IgA is derived from IgM and/or IgA enriched plasma pools from healthy individuals. Further, described is a human or humanized natural IgM and/or IgA antibody recognizing oxidized phospholipids and/or oxidation-specific epitopes for use in a method of treating or preventing a disorder or a disease associated with/related to/caused by a natural IgM/IgA antibody deficiency (NAD) in a subject, wherein said antibody is a recombinant human monoclonal natural IgM antibody. Moreover, described is a vaccine comprising a compound that induces the generation of natural IgM and/or IgA antibodies for use in a method of reducing or preventing the clinical signs or disease associated with/related to/caused by natural IgM/IgA antibody deficiency (NAD) in a subject, wherein said vaccine

comprises a pharmaceutically acceptable carrier or excipient. Further, described is such a vaccine for use in a method of reducing or preventing the clinical signs or disease associated with/related to/caused by natural IgM/IgA antibody deficiency (NAD) in a subject, wherein said compound induces human natural IgM and/or IgA antibody recognizing oxidized phospholipids and/or oxidation-specific epitopes.

58.20230293660CHIMERIC RSV, IMMUNOGENIC COMPOSITIONS, AND METHODS OF USE
US - 21.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud 17575829 Solicitante EMORY UNIVERSITY Inventor/a Martin L. Moore
This disclosure relates to chimeric respiratory syncytial virus (RSV), live attenuated vaccine and immunogenic compositions, and methods of use. In certain embodiments, the chimeric respiratory syncytial virus has a mutated gene pattern encoding an RSV F protein having M at position 79, R at position 191, K at position 357, and/or Y at position 371.

59.4247420INFLUENZAVIRUS, DAS FÜR EIN VERKÜRZTES NS1-PROTEIN UND EINE SARS-COV-REZEPTOR-BINDUNGSDOMÄNE CODIERT
EP - 27.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud 21824227 Solicitante VIVALDI BIOSCIENCES INC Inventor/a ASPELUND AMY
The present invention refers to a recombinant influenza virus encoding a fusion protein comprising a truncated NS1 protein and a SARS-CoV receptor binding domain, specifically a SARS-CoV-2 RBD, and its use for prophylactic treatment, a pharmaceutical preparation comprising said virus for use in prime boost vaccination and a two-component vaccine for prime boost vaccination.

60.WO/2023/178390METHODS OF DIAGNOSING VITT AND AT-RISK INDIVIDUALS
WO - 28.09.2023
Clasificación Internacional G01N 33/564 Nº de solicitud PCT/AU2023/050219 Solicitante THE FLINDERS UNIVERSITY OF SOUTH AUSTRALIA Inventor/a GORDON, Thomas, Paul
Methods for diagnosing individuals with vaccine-induced immune thrombotic thrombocytopenia (VITT) or for identifying individuals at risk of VITT are disclosed. The methods involve genotyping and/or the detection of peptide "barcode" sequences characteristic of anti-platelet factor 4 (PF4) antibody clonotypes which mediate the VITT syndrome. Methods of treatment of individuals with VITT and for monitoring treatment responses are also disclosed.

61.4248992IMPFSTOFFS GEGEN MAUL- UND KLAUENSEUCHE
EP - 27.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud 23177533 Solicitante ZOETIS SERVICES LLC Inventor/a DOMINOWSKI PAUL JOSEPH
Compositions for prevention of Foot and Mouth Disease (FM D) are provided, comprising an antigen component in the amount equivalent to 0.5-20 μg FM D virus and an adjuvant component comprising oil, an immunostimulatory oligonucleotide, and a polycationic carrier. Methods of using the composition, as well as the methods of reducing FM D persistence are also provided.

62.WO/2023/183827LOW-DOSE NEOANTIGEN VACCINE THERAPY
WO - 28.09.2023
Clasificación Internacional C12N 15/86 Nº de solicitud PCT/US2023/064791 Solicitante GRITSTONE BIO, INC. Inventor/a JOOSS, Karin
Disclosed herein are compositions that include antigen-encoding nucleic acid sequences and/or antigen peptides. Also disclosed are nucleotides, cells, and methods associated with the compositions including

their use as vaccines, including vectors and methods for a heterologous prime/boost vaccincation strategy.

63.4243866NEUER KATZENHERPESVIRUS-IMPFSTOFF
EP - 20.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud 21848283 Solicitante BOEHRINGER INGELHEIM VETMEDICA GMBH Inventor/a VISEK CALLIE ANN
The present invention relates i.a. to an EHV (Equine Herpesvirus) comprising a Feline Herpes Virus (FHV) Antigen encoding sequence inserted into ORF70 (US4) and/or ORF1/3. Furthermore, the present invention relates to methods for immunizing a feline comprising administering to such feline an immunogenic composition of the present invention. Moreover, the present invention relates to methods for the treatment or prophylaxis of clinical signs caused by Feline Herpes Virus in a feline.

64.20230293676Pharmaceutical Composition Comprising Hepatitis B Virus-Derived Polypeptide for Prevention or Treatment of Cancer
US - 21.09.2023
Clasificación Internacional A61K 39/29 Nº de solicitud 18021262 Solicitante SEOUL NATIONAL UNIVERSITY R&DB FOUNDATION Inventor/a Bum Joon Kim
One aspect relates to a pharmaceutical composition for the prevention or treatment of cancer or an anticancer immune vaccine composition, including a polypeptide consisting of the amino acid sequence of SEQ ID NO: 1. The composition can enhance anticancer immunity by activating dendritic cells and T cells, and furthermore, can exhibit a remarkably excellent synergistic anticancer immune effect through administration in combination with an immune checkpoint inhibitor.

65.WO/2023/183889COMPOSITIONS AND METHODS FOR PROTEIN EXPRESSION WITH RNA
WO - 28.09.2023
Clasificación Internacional C12N 15/79 Nº de solicitud PCT/US2023/064883 Solicitante EXCEPGEN INC. Inventor/a MERTINS, Barbara
The compositions and methods provided herein include a ribonucleic acid (RNA) encoding a nuclear cytoplasmic transport (NCT) inhibitor protein to improve target protein expression, *e.g.*, target protein expression encoded by a DNA vector, an mRNA, a self-amplifying RNA or an RNA comprising an unmodified uridine nucleotide. The compositions and methods provided herein may be used to improve the expression of any target protein, for example a viral protein antigen, *e.g.,* for use in a vaccine.

66.3200820BROAD-SPECTRUM VACCINE AGAINST AVIAN REOVIRUS
PL - 18.09.2023
Clasificación Internacional A61K 39/15 Nº de solicitud 15771652 Solicitante Inventor/a HENK POUWELS

67.20230303633METHODS OF DETECTION AND REMOVAL OF RHABDOVIRUSES FROM CELL LINES
US - 28.09.2023
Clasificación Internacional C07K 14/005 Nº de solicitud 18334022 Solicitante Takeda Vaccines, Inc. Inventor/a Joel R. HAYNES
The present disclosure relates to compositions, methods, mixtures, and kits for detecting the presence of, and for removing, a virus from a product produced in an insect cell. The disclosure also relates to proteins, peptides, polypeptides, drug substances, biological products, vaccine antigens, and virus-like particles that are produced in an insect cell and that are free or substantially free of a virus. The disclosure also relates to compositions, methods, assays, and kits for detecting a rhabdovirus in a sample.

68.WO/2023/179592RECOMBINANT FUSION PROTEIN E35 SPECIFIC TO MYCOBACTERIUM TUBERCULOSIS AND USE THEREOF
WO - 28.09.2023
Clasificación Internacional C07K 19/00 Nº de solicitud PCT/CN2023/082738 Solicitante A & B BIOTECHNOLOGY LIMITED (BEIJING) Inventor/a ZHAO, Yanlin
Provided is a recombinant fusion protein E35 specific to Mycobacterium tuberculosis, which comprises a protein ESAT6 and a protein PE35, and can sensitively and specifically detect Mycobacterium tuberculosis infections and can effectively distinguish Mycobacterium tuberculosis infections from the inoculation of a Bacillus Calmette-Guérin vaccine. A Mycobacterium tuberculosis infection detection reagent developed by means of using the recombinant fusion protein can have the specificity of IGRA detection, the sensitivity of traditional TST detection and the simplicity and convenience of adapting to large-scale screening, and can be used for performing LTBI screening and diagnosis.

69.4247158SYSTEME UND VERFAHREN ZUR LAGERUNG VON LIPIDPARTIKELN BEI UMGEBUNGSTEMPERATUR
EP - 27.09.2023
Clasificación Internacional A61K 9/50 Nº de solicitud 21895699 Solicitante UPKARA INC Inventor/a MOHANTY PRAVANSU
Disclosed are methods for non-cryogenic vitrification of particles, lipid particles, lipid particle compositions and mRNA vaccine compositions that include a lipid particle, the processes including the steps of providing a lipid particle within a vitrification medium on a capillary network within a desiccation chamber and providing both a heat energy and a lowered atmospheric pressure to provide for rapid vitrification without the vitrification medium or lipid particles experiencing cryogenic temperature or boiling as a result of lowered atmospheric pressure. The lipid particle can be later reconstituted after long term storage at ambient or higher temperature and still retain structural integrity and activity.

70.20230293731RNA ENCODING AN ANTIBODY
US - 21.09.2023
Clasificación Internacional A61K 48/00 Nº de solicitud 18147365 Solicitante CureVac SE Inventor/a Mariola FOTIN-MLECZEK
The present invention relates to a RNA encoding an antibody or a fragment or variant thereof and a composition, in particular a passive vaccine, comprising such an RNA. The present invention further relates to the use of such an RNA or of such a composition for treatment of tumours and cancer diseases, cardiovascular diseases, infectious diseases, autoimmune diseases, virus diseases and monogenetic diseases, e.g. also in gene therapy. The present invention also relates to a combination of at least two modified RNA's, in particular wherein one RNA encodes a heavy chain variable region of an antibody and another RNA encodes the corresponding light chain variable region of said antibody.

71.20230293686COMPOSITIONS AND METHODS FOR MODULATION OF SIRPALPHA-MEDIATED SIGNALING
US - 21.09.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 18006119 Solicitante The Board of Trustees of the Leland Stanford Junior University Inventor/a Kenan Christopher GARCIA
The present disclosure relates generally to compositions and methods for modulating cell surface receptor signaling by specifically recruiting membrane phosphatases, in cis, to a spatial proximity of a signal regulatory protein Î± (SIRPÎ±) molecule. More particularly, the disclosure provides novel multivalent protein-binding molecules that specifically bind SIRPÎ± and antagonize the SIRPÎ±-mediated signaling through recruitment of a phosphatase activity to dephosphorylate the intracellular domain of SIRPÎ±. Also provided are compositions and methods useful for producing such molecules, methods for promoting

maturation dendritic cells and for production of vaccine, as well as methods for the prevention and/or treatment of health conditions associated with the inhibition of signal transduction mediated by SIRPÎ± and/or CD47.

72.20230302127TAU VACCINE FOR THE TREATMENT OF ALZHEIMER'S DISEASE
US - 28.09.2023
Clasificación Internacional A61K 39/395 Nº de solicitud 18020037 Solicitante OTHAIR PROTHENA LIMITED Inventor/a Robin Barbour
The disclosure provides peptides, peptide compositions, immunotherapy compositions, pharmaceutical compositions and nucleic acids comprising one or more tau peptides. The disclosure also provides methods of treating or effecting prophylaxis of Alzheimer's disease or other diseases characterized at least in part by aberrant tau pathology (e.g., aggregation in neurofibrillary tangles) in a subject, including methods of clearing deposits, inhibiting or reducing aggregation of tau, blocking the uptake by neurons, clearing tau, and inhibiting propagation of tau seeds in a subject having or at risk of developing Alzheimer's disease or other diseases containing tau accumulations. The methods include administering to such patients the compositions comprising one or more tau peptides.

73.20230295254Multi-Epitope Vaccine for the Treatment of Alzheimer's Disease
US - 21.09.2023
Clasificación Internacional C07K 14/47 Nº de solicitud 18328544 Solicitante OTHAIR PROTHENA LIMITED Inventor/a Robin Barbour
The disclosure provides peptide compositions and immunotherapy compositions comprising an amyloid-beta (Aβ) peptide and a tau peptide. The disclosure also provides methods of treating or effecting prophylaxis of Alzheimer's disease or other diseases with beta-amyloid deposition in a subject, including methods of clearing deposits, inhibiting or reducing aggregation of Aβ and/or tau, blocking the uptake by neurons, clearing amyloid, and inhibiting propagation of tau seeds in a subject having or at risk of developing Alzheimer's disease or other diseases containing tau and/or amyloid-beta accumulations. The methods include administering to such patients the compositions comprising an amyloid-beta (Aβ) peptide and a tau peptide.

74.4248983ANTIGENSPEZIFISCHE IMMUNTHERAPIE FÜR COVID-19-FUSIONSPROTEINE UND VERWENDUNGSVERFAHREN
EP - 27.09.2023
Clasificación Internacional A61K 38/00 Nº de solicitud 23176042 Solicitante AKSTON BIOSCIENCES CORP Inventor/a ZION TODD C
The present disclosure provides recombinantly manufactured fusion proteins comprising a SARS-CoV-2 Receptor Binding Domain (SARS-CoV-2-RBD) fragment or an analog thereof linked to a human Fc fragment for use in relation to the 2019 Novel Coronavirus (COVID-19). Embodiments include the administration of the fusion proteins to patients that have recovered from COVID-19 as a booster vaccination, to antibody naive patients to produce antibodies to the SARS-CoV-2 virus to enable the patients to become convalescent plasma donors, to patients who have been infected by the SARS-CoV-2 virus and have contracted COVID-19 in order to limit the scope of the infection and ameliorate the disease, and as a prophylactic COVID-19 vaccine. Exemplary Fc fusion proteins and pharmaceutical formulations of exemplary Fc fusion proteins are provided, in addition to methods of use and preparation.

75.WO/2023/177632GERMICIDAL UV LIGHT DEVICE
WO - 21.09.2023
Clasificación Internacional A61N 5/06 Nº de solicitud PCT/US2023/015124 Solicitante PALMIERI, Herman, David Inventor/a PALMIERI, Herman, David

A device for capturing momentarily an exhaled breath of a C0VID19 patient containing active SARS-CoV-2 virions within an accessible compartment of said device and converting said active SARS-CoV-2 virions into far-UVC inactivated SARS-CoV-2 virions by exposure to an activated 222 nm far-UVC lamp mounted in said accessible compartment and with the next inhaled breath of said C0VID19 patient said far-UVC inactivated SARS-CoV-2 virions are positioned within the respiratory system ready to be captured by an antigen-presenting cells such as the Dendritic cells (DCs) which are antigen-presenting cells that capture, process, and present antigens to lymphocytes to initiate and regulate the adaptive immune response. Said far-UVC inactivated SARS-CoV- 2 virions can be collected from said accessible compartment of said device and processed into viable vaccine that can be administered to front-line workers.

76.20230302131MPC INHIBITION FOR PRODUCING T-CELLS WITH A MEMORY PHENOTYPE
US - 28.09.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 18021506 Solicitante UNIVERSITÉ DE LAUSANNE Inventor/a Pedro ROMERO
The present invention relates to an in vitro cell culture method comprising a step of contacting T-cells with an MPC inhibitor, and further to a cell population comprising T-cells with a memory phenotype obtained by said method, preferably, wherein the T-cells are human cells. The present invention also relates to a method for generating and/or maintaining T-cells and/or B-cells with a memory phenotype comprising the steps of culturing T-cells and or B-cells in vitro and adding an MPC inhibitor to the culture. The invention furthermore relates to a population of T-cells and/or B-cells obtained by the methods of the invention. Also provided are immunotherapies using the cells of the invention. Furthermore, provided is an MPC inhibitor for use in immunotherapy and/or as a vaccine co-adjuvant.

77.20230302123REPLICATION-DEFICIENT ADENOVIRUS
US - 28.09.2023
Clasificación Internacional A61K 39/235 Nº de solicitud 18007364 Solicitante HEINRICH-PETTE-INSTITUT LEIBNIZ-INSTITUT FÜR EXPERIMENTELLE VIROLOGIE Inventor/a Jana Boddin
The present invention generally relates to the field of adenoviruses and adenoviral vectors that can be used as vaccines and gene therapy vectors. More specifically, the present invention relates to an adenovirus or an adenoviral vector that comprises a mutated DNA-binding protein that inhibits adenoviral DNA replication in a cell infected with a virus expressing said protein. The invention further relates to a nucleotide sequence encoding the mutated DNA-binding protein. In another aspect, the invention provides pharmaceutical compositions, vaccines and cells that comprise the mutated protein, a nucleotide sequence encoding same, or a modified adenovirus or adenoviral vector comprising any of those. The invention also relates to the use of the mutated protein, a nucleotide sequence encoding the same, or an adenovirus or recombinant adenoviral vector comprising any of those for the preparation of a vaccine.

78.20230298694NON-ANIMAL HUMAN RELEVANT WORKSTATION SYSTEM AND METHOD FOR TESTING NEUROVIRULENCE AND NEUROTOXICITY IN VACCINES
US - 21.09.2023
Clasificación Internacional G16B 20/50 Nº de solicitud 17722528 Solicitante Subhadra Dravida Inventor/a Subhadra Dravida
A system and method for test predicting human neurovirulence and neurotoxicity risks is disclosed. The system comprises a real-time platform or TRANS-MSC (Configured Human induced Pluripotent Stem Cells) unit and a trained digital platform. The TRANS-MSC incubates the vaccine/biologic, drug/API, cosmetic/ingredient, anti-venom aliquots collected from the produced batches in the manufacturing system. The digital platform is embedded with artificial intelligence (AI) and machine learning (ML) modules, augmented with a robotic process automation framework. The AI modules predict human neurovirulence, human neurotoxicity patterns along with any adventitious microbial contaminants in the

process. The AI and ML modules are trained with a plurality of TRANS-MSC acquired phenotype micrographs and a plurality of neurotoxic genes involved in viral, bacterial, fungal infections. Further, the test is customized to a genetically distinct population, userâ™s library of research-grade, ingredients, intermittents, final products, etc. that are at the risk of causing neurovirulence or neurotoxicity in the clinics.

79.20230293844GERMICIDAL UV LIGHT DEVICE
US - 21.09.2023
Clasificación Internacional A61M 16/10 Nº de solicitud 18120795 Solicitante HERMAN DAVID PALMIERI Inventor/a HERMAN DAVID PALMIERI
A device for capturing momentarily an exhaled breath of a COVID 19 patient containing active SARS-CoV-2 virions within an accessible compartment of said device and converting said active SARS-CoV-2 virions into far-UVC inactivated SARS-CoV-2 virions by exposure to an activated 222 nm far-UVC lamp mounted in said accessible compartment and with the next inhaled breath of said COVID 19 patient said far-UVC inactivated SARS-CoV-2 virions are positioned within the respiratory system ready to be captured by an antigen-presenting cells such as the Dendritic cells (DCs) which are antigen-presenting cells that capture, process, and present antigens to lymphocytes to initiate and regulate the adaptive immune response. Said far-UVC inactivated SARS-CoV-2 virions can be collected from said accessible compartment of said device and processed into viable vaccine that can be administered to front-line workers.

80.WO/2023/175044MULTIVALENT MOPEVAC-BASED IMMUNOGENIC COMPOSITION FOR VACCINATION AGAINST NEW WORLD ARENAVIRUSES AND THERAPEUTIC USE(S) THEREOF
WO - 21.09.2023
Clasificación Internacional A61K 39/12 Nº de solicitud PCT/EP2023/056673 Solicitante INSTITUT PASTEUR Inventor/a BAIZE, Sylvain
The invention concerns a multivalent immunogenic composition comprising recombinant live attenuated Mopeia viruses (MOPV), wherein each valence is constituted by a recombinant live attenuated Mopeia virus in which the MOPV nucleoprotein (NP) has attenuated exonuclease activity and the encoded glycoprotein precursor (GPC) is from a New World arenavirus selected from one of the following arenaviruses: Machupo virus (MACV), Sabia virus (SABV), Chapare virus (CHAPV), Junin virus (JUNV) and Guanarito virus (GTOV). The invention also concerns a combination of active ingredients, a composition or vaccine, or a therapeutically effective composition, comprising such recombinant live attenuated Mopeia viruses (MOPV) for use in eliciting a protective immune response in a mammalian host against a New World arenavirus infection. The invention also concerns a method of preparing such recombinant live attenuated Mopeia viruses (MOPV) in a eukaryotic host cell and a method of preparing a multivalent, in particular a pentavalent, immunogenic composition comprising recombinant live attenuated Mopeia viruses (MOPV) expressing a GPC protein of a New World arenavirus selected among: Machupo virus (MACV), Sabia virus (SABV), Chapare virus (CHAPV), Junin virus (JUNV) and Guanarito virus (GTOV).

81.WO/2023/178395COMBINATION OF EPITOPES AND USE THEREOF, VACCINE CONSTRUCT, METHOD OF INDUCING AN IMMUNE RESPONSE, METHOD FOR THE IDENTIFICATION OF EPITOPES
WO - 28.09.2023
Clasificación Internacional C07K 7/06 Nº de solicitud PCT/BR2022/050108 Solicitante FUNDAÇÃO ZERBINI Inventor/a FILHO, Jorge Elias Kalil

The present invention refers to a combination of epitopes comprising at least eight T cell epitopes from the SARS-CoV-2, as well as the use of said combination ("set of epitopes"). Said epitopes are widely recognized by CD4+ T-lymphocytes of the overwhelming majority of COVID-19 convalescent individuals.

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