



## EN ESTE NÚMERO

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.

- COVID-19: El fin de la emergencia sanitaria internacional.
- Noticias más recientes en la Web sobre vacunas.
- Artículos científicos más recientes de Medline sobre vacunas.
- Patentes más recientes en Patentscope sobre vacunas.



## COVID-19: El fin de la emergencia sanitaria internacional

El 30 de enero de 2020, la Organización Mundial de la Salud (OMS) decidió que el brote de neumonía causada por un nuevo virus (inicialmente 2019-nCoV, ahora SARS-CoV-2) originado en Wuhan (China) un mes antes y ya extendido a otros países, constituía una "emergencia de salud pública de interés internacional" (PHEIC, *Public Health Emergency of International Concern*).

Después, el 11 de marzo de 2020, el doctor Tedros Adhanom Gebreyesus director general de la OMS, ante la rápida extensión y la gravedad de la infección, afirmó que el mundo se encontraba amenazado por la nueva enfermedad y declaró el estado de **PANDEMIA**.

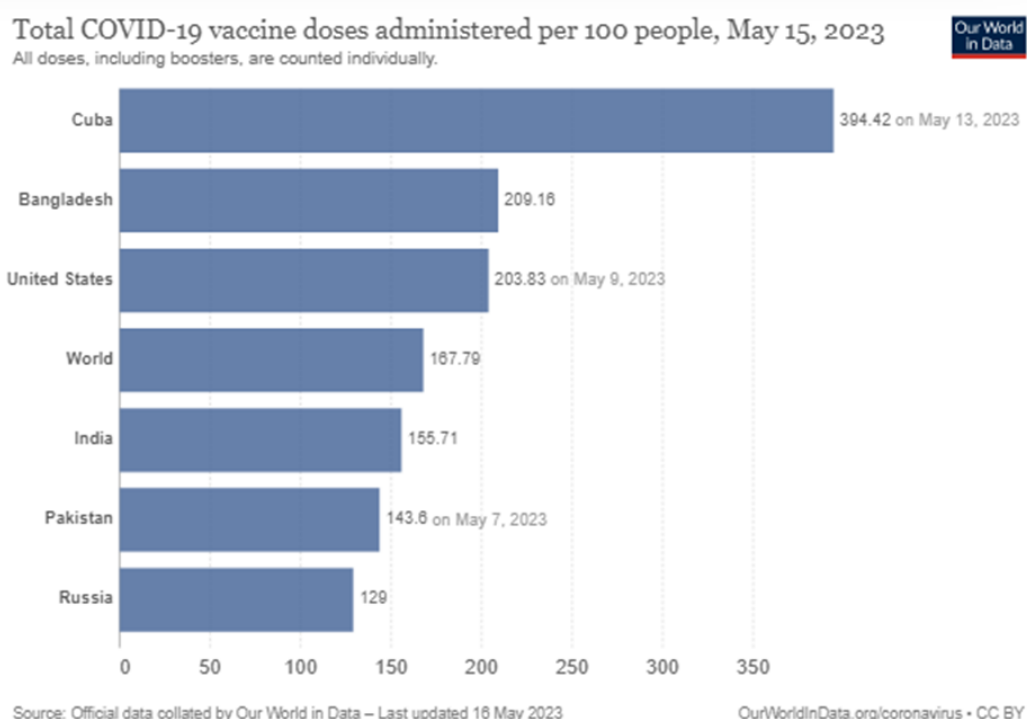
### Vacunas

A raíz de esta situación mundial, diversas instituciones científicas y compañías farmacéuticas se dieron a la tarea de desarrollar vacunas contra la enfermedad. Fueron utilizadas diferentes plataformas tales como, virus inactivado, vector viral (replicativo y no replicativo), subunidad proteica, ARNm, ADN, partículas similares a virus y virus vivo atenuado.

Las primeras vacunaciones a gran escala comenzaron el 8 de diciembre de 2020, menos de un año después de que se notificara a la OMS el primer caso de la enfermedad, un extraordinario triunfo de la ciencia. Pero al proceso colaborativo de desarrollo de las vacunas le siguió un periodo sombrío de acaparamiento y nacionalismo; un año entero después, cuando la población de los países industrializados estaba recibiendo la segunda y tercera dosis de las vacunas, solo el cinco por ciento de la población del África subsahariana había sido vacunada, por ejemplo.

Cuba no estuvo ajena a la situación y en aras de obtener su soberanía tecnológica, creó sus propias vacunas contra la enfermedad, basadas en la plataforma de subunidad proteica. Estas fueron Soberana 01, Soberana 02 y Soberana Plus, desarrolladas por el Instituto Finlay de Vacunas y Abdala y Mambisa, desarrolladas por el Centro de Ingeniería Genética y Biotecnología, ambos centros pertenecientes al Grupo de las Industrias Biotecnológica y Farmacéutica de Cuba (BioCubaFarma).

Gracias a la alta cobertura de vacunación lograda tanto en población adulta como pediátrica, el país caribeño se posicionó en un lugar privilegiado a nivel internacional. Según el sitio *Our World in Data*, hasta el 13 de mayo de 2023 Cuba se encuentra en la primera posición en cuanto a dosis totales de vacuna contra la COVID-19 administradas por cada 100 personas, lo cual se muestra en el siguiente gráfico.



## Seguimiento del desarrollo de vacunas contra COVID-19

Para dar información detallada del desarrollo de estas vacunas, a la comunidad científica y población mundial en general, la OMS implementó el reporte *COVID-19 vaccine tracker and landscape* que incluye:

- ◆ Tablas de resumen de candidatos vacunales contra la COVID-19 tanto en desarrollo clínico como preclínico;
- ◆ Análisis y visualización para varias categorías de candidatos vacunales contra la COVID-19;
- ◆ Seguimiento del progreso de cada vacuna desde los estudios de eficacia preclínicos, de fase 1, fase 2 hasta la fase 3 e incluye la fase 4 registrada como estudios de intervención;
- ◆ Enlaces a informes publicados sobre datos de seguridad, inmunogenicidad y eficacia de los candidatos vacunales;
- ◆ Incluye información sobre los atributos clave de cada vacuna candidata; y
- ◆ Permite a los usuarios buscar vacunas contra la COVID-19 a través de varios criterios, como la plataforma de vacunas, el programa de vacunación, la vía de administración, el desarrollador, la fase de prueba y los criterios de valoración clínicos.

Este reporte está actualizado hasta el 30 de marzo de 2023.

## La fase de emergencia ha terminado, pero la COVID-19 no

Ahora, el pasado 5 de mayo, el Comité de Emergencias de la COVID-19 declaró el fin de la emergencia sanitaria internacional por dicha enfermedad. No obstante, el director general de la OMS advirtió que eso no significa que la COVID-19 haya dejado de ser una amenaza para la salud mundial, aún sigue siendo una prioridad de salud pública global.

La declaración de que la COVID-19 ya no constituye una emergencia de salud pública de importancia internacional (ESPII) implica que es el momento que los países transiten del modo de emergencia al manejo y control de la COVID-19 de conjunto con otras enfermedades infecciosas, es decir, que la COVID-19 es ahora un problema de salud establecido y persistente.

Es por ello que plantean cuatro aspectos fundamentales a tener cuenta a partir de este momento y son:

- ◆ Mantener y reforzar la vigilancia epidemiológica y virológica para anticipar la evolución de la pandemia.
- ◆ Volver la mirada a objetivos desatendidos por la presión de la pandemia (con la correspondiente reasignación de recursos) y hacer los preparativos reales para dotarse de herramientas de protección ante nuevas crisis sanitarias.



- ◆ Revisar en profundidad las estrategias de control del nuevo coronavirus y las medidas para paliar sus consecuencias. En línea con esta propuesta se sitúa la reevaluación de las prioridades de la investigación, marcando los efectos a largo plazo sobre la salud mental como una de ellas, entre otras.
- ◆ Revisar las respuestas dadas para evitar la vergonzosa e inadmisibles falta de equidad en el acceso a las medidas de control, la vacunación, por ejemplo, de las poblaciones y lugares del planeta con menos recursos.

El 3 de mayo, la OMS publicó un plan actualizado de gestión de la COVID-19, cuyo objetivo es orientar a los países sobre cómo lidiar con la enfermedad en los próximos dos años, en la transición de la respuesta de emergencia a la prevención y el control de la COVID-19 a largo plazo.

### Mucho más que una crisis sanitaria

El doctor Tedros explicó que la pandemia ha causado graves trastornos económicos, borrando billones de dólares del PIB, perturbando los viajes, el turismo, y el comercio, cerrando empresas y sumiendo a millones de personas en la pobreza.

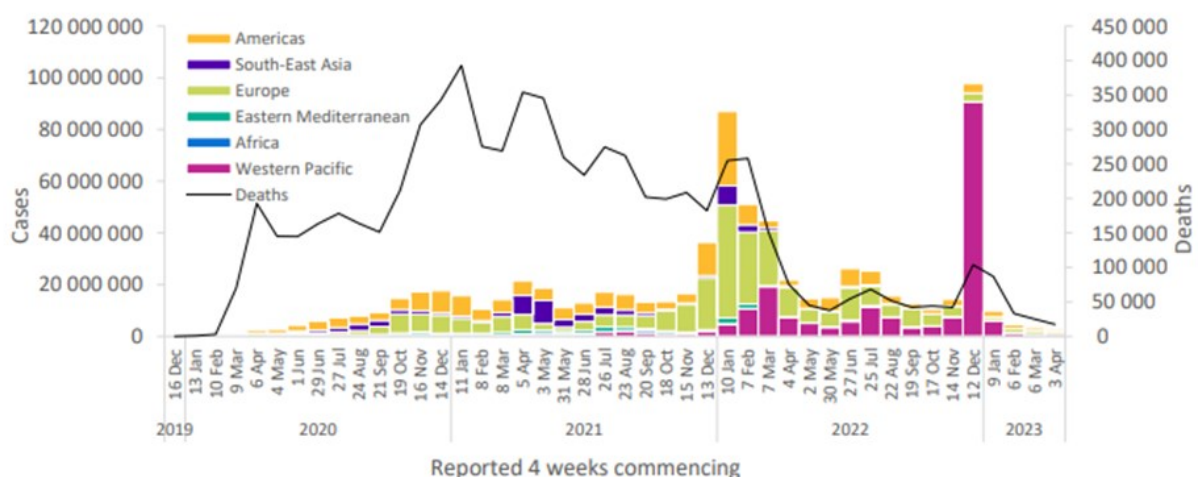
Otros graves trastornos sociales se produjeron con el cierre de fronteras, la restricción de movimientos, el cierre de escuelas y otros muchos continúan, como los millones de personas que sufren soledad, aislamiento, ansiedad y depresión, además de la COVID persistente.

También agregó que, la COVID-19 ha dejado al descubierto y ha exacerbado las divisiones políticas dentro de las naciones y entre ellas. Ha erosionado la confianza entre las personas, los gobiernos y las instituciones, alimentado por un torrente de desinformación. Y ha dejado al descubierto las desigualdades más acuciantes de nuestro mundo, siendo las comunidades más pobres y vulnerables las más afectadas, y las últimas en recibir acceso a vacunas y otras herramientas.

La pandemia ha seguido una tendencia descendente, con un aumento de la inmunidad de la población gracias a la vacunación y la infección, una disminución de la mortalidad y una reducción de la presión sobre los sistemas sanitarios. Esto ha permitido a la mayoría de los países volver a la “normalidad”.

### Estado actual de la COVID-19 a nivel mundial

Hasta finales de abril de 2023 han sido más de 765 millones de casos y más de 6,9 millones de muertes registradas, aunque se acepta que las cifras reales deben ser al menos 3 veces más. En el mes de abril de 2023 se registraron 2,8 millones de casos nuevos y cerca de 17.000 muertes, un 17 % y 30 % menos, respectivamente, que en las cuatro semanas anteriores.





*Estado mundial de la COVID-19 hasta el 3 de mayo de 2023.*

La vacunación de la COVID-19 ha jugado, sin lugar a dudas, un papel muy importante en la evolución de la pandemia y la mejor situación actual.

En cuanto a las coberturas de vacunación:

- ◆ El 70 % de la población mundial ha recibido al menos una dosis de una vacuna contra la COVID-19.
- ◆ Se han administrado 13.380 millones de dosis en todo el mundo y ahora se administran 117.952 cada día.
- ◆ El 29,9 % de las personas en países de bajos ingresos han recibido al menos una dosis.

Anticipándose al paso dado ahora por la OMS, en el pasado mes de febrero, la propia OMS perfilaba las consideraciones prácticas, aunque provisionales, que debían orientar las siguientes fases de la vacunación de la COVID-19, y que son, básicamente: la integración de la vacunación de la COVID-19 en los programas de vacunación nacionales y en el núcleo estructural de los sistemas sanitarios, en particular, la Atención Primaria.

En la nueva situación que ahora se abre, la vacunación frente a la COVID-19 aún seguirá jugando un papel primordial. La inmunidad híbrida proporcionada por las infecciones naturales y la vacunación brinda una oportunidad inmejorable para investigar y evaluar sin urgencias el papel que pueden jugar las distintas vacunas disponibles y las que, previsiblemente, vendrán en el futuro.

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## Noticias en la Web

### Continuará en Cuba campaña de vacunación antipoliomielítica oral

**1 may.** Cuba continúa del 2 al 6 de mayo la segunda etapa de la 62 Campaña Nacional de Vacunación Antipoliomielítica Oral, un periodo de recuperación para niños que no recibieron la dosis la semana anterior.

En esta ocasión se inmunizará a los infantes desde un mes de nacidos hasta menores de tres años de edad con la primera dosis en la etapa del 27 de febrero al 4 de marzo y que por enfermedad u otra causa no hayan podido vacunarse en la semana de la campaña (del 26 al 29 de abril), informó el Ministerio de Salud Pública (Minsap).

Se incorporan en esta fase los niños de nueve años que van a recibir su reactivación como parte de la estrategia nacional, regional y mundial de mantener erradicada la poliomielitis.

La poliomielitis es una enfermedad infecto-contagiosa que afecta el sistema nervioso central, principalmente en niños, y puede provocar atrofia muscular, parálisis, deformidad y en algunos casos la muerte.

Cuba es el primer país de Latinoamérica en lograr la eliminación de esta enfermedad y en 1995 recibió de la Organización Panamericana de la Salud (OPS) la Certificación de Erradicación de la Poliomielitis.

La jefa nacional del Programa de Inmunización del Minsap, Lena López, recientemente comunicó que en Cuba se administran como promedio anual unos cuatro millones 800 mil dosis de 13 tipos diferentes de vacunas simples o combinadas, dirigidas a la prevención de igual número de enfermedades.

De los inmunobiológicos, precisó, ocho son de producción nacional, cuatro importados: BCG, OVP, Influenza estacional y PRS (los dos últimos con apoyo del Fondo de las Naciones Unidas para la Infancia) y una donación (IPV, por la Alianza Global de Vacunas).

Además, se administran en el país otras vacunas preventivas dirigidas a grupos de riesgo, como la Influenza estacional de adulto, la Hepatitis B de adulto, la Antiamarilica (contra la fiebre amarilla) y la Antileptospirosis.

Resaltó que, fruto de la ciencia cubana durante la proliferación de la pandemia, tres vacunas de producción nacional contra la Covid-19 (Soberana 02, Soberana Plus y Abdala) permitieron, junto a otras medidas, el control de la enfermedad en la isla.

López exaltó el impacto del Programa Nacional de Inmunización, tras seis décadas de implementado, periodo en el cual permitió la eliminación de seis enfermedades (Poliomielitis, Difteria, Sarampión, Tosferina, Rubéola y Parotiditis).

También permitió erradicar dos formas clínicas severas en menores de un año (tétanos neonatal y meningitis tuberculosa) y dos complicaciones clínicas graves (síndrome de rubéola congénita y meningitis posparotiditis).

Asimismo, agregó, se controlaron cinco enfermedades, con tasa de incidencia menor de 0,1 por cada 100 mil habitantes: Tétanos, Fiebre Tifoidea, Enfermedad Meningocócica, Meningitis por Haemophilus Influenzae tipo b y Hepatitis B.

Actualmente, subrayó, Cuba mantiene coberturas de inmunización por encima del 95 por ciento para todas las vacunas del esquema.

Fuente: Sierra Maestra. Disponible en <https://bit.ly/3nXMqm0>

## Los virus propagados por mosquitos, los principales candidatos a originar la próxima pandemia

**1 may.** La pandemia de COVID-19 ha puesto de manifiesto la vulnerabilidad de la humanidad ante un brote a gran escala de patógenos emergentes. El cambio climático global y la naturaleza en continua evolución del genoma del ARN, entre otros factores, dan pistas a los científicos y profesionales implicados en la vigilancia de enfermedades con potencial epidémico de que la próxima pandemia podría ser ocasionada por los arbovirus- virus propagados por artrópodos como los mosquitos- como el virus Chikungunya (CHIKV), el virus del dengue, el virus del Nilo Occidental y el virus Zika.

"Dado su potencial epidémico ya demostrado, encontrar tratamientos eficaces de amplio espectro contra estos virus es de suma importancia, ya que se convierten en agentes potenciales de pandemias", señaló Gustavo García, del Departamento de Farmacología Molecular y Médica de la Universidad de California Los Ángeles (UCLA), en Estados Unidos, según informa Europa Press.



Este investigador ha liderado un nuevo estudio que ha logrado identificar posibles agentes antivirales de amplio espectro que inhiben estos arbovirus en distintos grados. El trabajo, publicado en la revista Cell Reports Medicine, probó una biblioteca de agonistas inmunitarios innatos que actúan dirigiéndose a receptores de reconocimiento de patógenos, y halló varios agentes prometedores, entre ellos uno que mostraba una potente actividad antivírica contra miembros de familias virales de ARN.

El estudio concluye que los agonistas STING -una proteína esencial para la respuesta inmunitaria contra las infecciones y el cáncer- mostraron una actividad antiviral de amplio espectro contra virus transmitidos por artrópodos y respiratorios, incluidos el SARS-CoV-2 y el enterovirus D68- es uno de más de 100 tipos de enterovirus que causa resfriados comunes- en modelos de cultivo celular.

"Una sólida respuesta antivírica del huésped inducida por una dosis única del agonista STING es eficaz para prevenir y mitigar la artritis vírica debilitante causada por el virus Chikungunya (CHIKV) en un modelo de ratón. Se trata de una modalidad de tratamiento muy prometedora, ya que las personas afectadas por el virus Chikungunya sufren artritis vírica años y décadas después de la infección inicial", indicó el autor principal Vaithi Arumugaswami, profesor asociado del Departamento de Farmacología Molecular y Médica de la UCLA.

"A nivel molecular, el CHIKV contribuye a fuertes desequilibrios transcripcionales (y químicos) en las células cutáneas infectadas (fibroblastos) en comparación con el virus del Nilo Occidental y el virus ZIKA, lo que refleja una posible diferencia en los mecanismos de lesión mediada por parte de virus que pertenecen a familias diferentes, a pesar de ser todos ellos virus transmitidos por mosquitos", destacó por su parte Arunachalam Ramaiah, científico principal del Departamento de Salud de la ciudad de Milwaukee.

García avanzó que "el siguiente paso es desarrollar estos antivirales de amplio espectro en combinación con otros antivirales existentes y que estén disponibles en caso de futuros brotes de enfermedades respiratorias y arbovirales".



## La bacteria "salvadora"

Dada la gravedad de la amenaza que suponen para la salud las enfermedades transmitidas por mosquitos- una sola especie de este tipo de insecto, el *Aedes aegypti*, es capaz de transmitir el dengue, el Zika y el Chikungunya- hay muchas vías de investigación abiertas para ofrecer soluciones (vacunas en distinto punto de desarrollo, fármacos para tratar los síntomas, etc).

Pero una de ellas merece ser reseñada porque supone un acercamiento distinto y revolucionario frente a esta amenaza. "Resulta que una bacteria completamente inocua para el ser humano, la *Wolbachia pipientis*, es capaz de infectar una gran variedad de insectos. Unos investigadores se dieron cuenta de que los mosquitos *A. aegypti* normalmente no presentan esta bacteria dentro de su cuerpo. Al examinarlo con detenimiento, observaron que la bacteria compite con los distintos virus por infectar al mosquito. Como consecuencia, un mosquito con *Wolbachia* es menos probable que pueda transmitir dengue o Zika", señalaba el virólogo Javier Cantón en su perfil de Twitter hace unos días.

Basándose en esta premisa, se han liberado mosquitos portadores de la bacteria en distintas ciudades de Brasil e Indonesia y se ha visto una disminución de infecciones por virus."Una de las ventajas de este sistema es que los mosquitos liberados transmiten *Wolbachia* a mosquitos de la ciudad, expandiendo 'la cura' a la población salvaje de estos insectos", añadía el experto. La iniciativa se llama World Mosquito Program (WMP) y va a liberar grandes cantidades de mosquitos portadores de la bacteria *Wolbachia* en Australia, Brasil, Colombia, Indonesia y Vietnam durante los próximos 10 años.

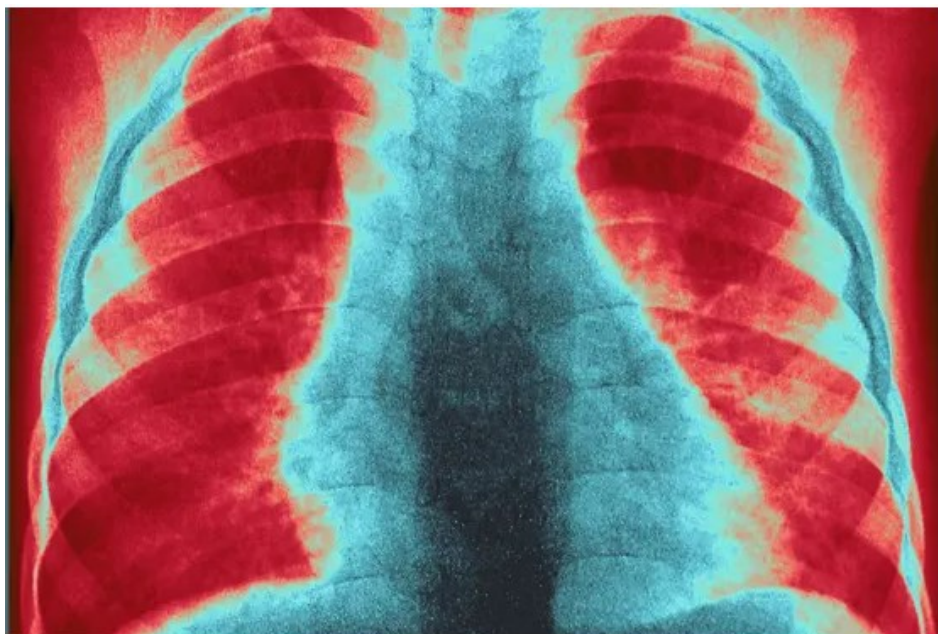
Fuente: La Razón. Disponible en <https://bit.ly/3MsVN6p>

## Pneumonia vaccine delays kill thousands needlessly in Africa

**May 2.** Delays in rolling out a vaccine against childhood pneumonia in four of the world's poorest countries have been blamed for thousands of unnecessary deaths.

South Sudan, Somalia, Guinea and Chad are four of the last African nations without the pneumococcal conjugate vaccine (PCV), one of the most powerful tools against pneumonia in children.

Estimates from the Global Burden of Disease suggest 40,000 children died from the illness in the four countries in 2019, which are all off track to meet UN targets to reduce deaths of children under five by 2030.



*A chest x-ray of a child with pneumonia, which is the world's biggest infectious killer of children worldwide. The PCV vaccine targets the leading bacterial cause of pneumonia. Photograph: BSIP/ Universal Images/Getty*

Childhood pneumonia is the biggest infectious killer of children worldwide, claiming 700,000 lives annually. It is a disease of poverty, with almost all deaths occurring in low- and middle-income countries, and most of them are preventable.

“It’s unfair that this vaccine is not yet available because every child has a right to survive and thrive,” said Dr Ubah Farah, an adviser to Somalia’s health ministry.

She said pneumonia was a “big killer” in the country, and noted that the Covid vaccine had been rolled out quickly by comparison. “Why can’t we do the same for children?” she said. “It’s double standards.”

Prof Fiona Russell, a vaccinologist from the University of Melbourne and the Murdoch Children’s Research Institute, called the delays “a failure”.

“How many thousands of children have died while waiting to get this vaccine?” she asked.



The PCV targets the leading bacterial cause of pneumonia and was introduced in the US in 2000 and to South Africa in 2009. Most African states now have the vaccine, and studies show that hospitalisations and deaths fall significantly after rollout, including in Rwanda, South Africa and Kenya.

At the second Global Forum on Childhood Pneumonia, held in Madrid last week, delegates from South Sudan, Somalia, Guinea and Chad announced plans to roll out the vaccine in 2024 with the help of Gavi, a global health alliance that shares the cost that countries pay for vaccines.

The four countries first planned to introduce the vaccine three years ago but struggled to meet Gavi’s co-financing requirements. Gavi pays for most of the initial rollout, but countries must make a contribution, with a plan to eventually meet all the costs.

Last year, Gavi was urged to be more flexible with how much it expects countries to pay.

The rollouts were also delayed by Covid, and Guinea faced two outbreaks of Ebola, which hit the country and its health system hard, while South Sudan and Somalia are in the grip of a humanitarian crises caused by conflict and drought.

Gavi announced at the forum that South Sudan and Somalia, as fragile states facing massive humanitarian crises, would now not have to pay for the vaccine introduction.

“This is a revolution. Up until now, we never waived [the cost] for new [vaccine] programmes,” said Veronica Denti, a senior programme manager at Gavi. “The principle of Gavi is that we want [governments] to find a way to pay for it because that’s how you build sustainability.”

Chad and Guinea still have to find \$200,000 to \$300,000 (£160,000-£240,000) a year to receive Gavi support, added Denti.

Russell said: “In these countries that are so troubled and so poor, the desire is there from the government but they can’t find that extra bit of money. That means they don’t have the vaccine, under-five mortality will still be huge, and it will be much more challenging for them to meet their Sustainable Development Goal target [to reduce child mortality by 2030].”

Fuente: The Guardian. Disponible en <https://bit.ly/3Og34Ic>

## La vacuna Patria mexicana contra el Covid-19 está lista y comenzará a producirse en diciembre

**3 may.** Tras más de dos años en proceso de desarrollo, el Consejo Nacional de Ciencia y Tecnología (Conacyt) anunció que la vacuna Patria contra el Covid-19 consiguió la aprobación para utilizarse como refuerzo contra el coronavirus que cobró la vida de millones de personas en el mundo.

María Elena Álvarez-Buylla Rocés, directora general del Conacyt, aseguró en conferencia de prensa que la vacuna Patria superó la fase 3 de estudios clínicos y cumplió con los requisitos establecidos por la Organización Mundial de la Salud (OMS) para utilizarse como refuerzo en el esquema de vacunación.



“Contar con esta plataforma nos abre el camino para la recuperación en la soberanía de vacunas que es tan importante para la prevención de enfermedades. Esto se dio gracias a la conjunción de capacidades de varias universidades públicas, el IMSS y también en alianza con una empresa mexicana, honesta”, comentó la directora del Conacyt.

La vacuna Patria fue desarrollada por el laboratorio Avimex con fondos gubernamentales y tuvo un costo de producción cercano a los 973 millones de pesos. A decir de las autoridades de gobierno, esta cifra es considerablemente menor a los recursos invertidos por otros laboratorios para el desarrollo de fármacos similares.

Según datos compartidos por el gobierno federal, la vacuna Moderna tuvo un costo de desarrollo de 19,000 millones de pesos. Esta opción de inmunización estuvo disponible en el mercado un año después del inicio de la pandemia y fue utilizada en México para acelerar el proceso de vacunación en el país.

En septiembre de este año, la vacuna Patria comenzará el proceso de autorización de emergencia frente a la Comisión Federal para la Protección contra Riesgos Sanitarios (Cofepris), mientras que será a finales de 2023 cuando comience su producción en masa.

Fue en 2021, cuando el presidente de México, Andrés Manuel López Obrador, delegó al Conacyt la tarea de desarrollar una vacuna mexicana contra el Covid-19 para reducir la dependencia del país alrededor de inmunizadores extranjeros.

### ¿La vacuna Patria llega a tiempo?

A finales del año pasado, estimaciones de la Secretaría de Salud indicaban que el 84% de la población en México tenía al menos una vacuna contra Covid-19. De este total, la mayoría de las personas tenía el esquema completo de tres aplicaciones.

Por grupo de edad, las autoridades de salud estimaron que 91% de la población mayor de edad, el 64% de los adolescentes entre 12 y 17 años, así como el 60% de los infantes entre 5 y 11 años fueron inmunizados al menos una vez.

Las marcas que se han usado con autorización por la Cofepris para su uso de emergencia son Pfizer/Biontech (en su presentación para adultos y pediátrica), Sputnik V, AstraZeneca, Sinovac, Cansino, Moderna y Abdala.

Si la ruta de aprobación y producción presentada por el Conacyt se cumple sin retrasos, la vacuna Patria estaría disponible en el mercado a más tardar a principios de 2024, momento en el que estas cifras seguramente habrán crecido.

El cumplimiento de los requisitos de la OMS por parte de la vacuna Patria llegan justo en un momento en el que el organismo internacional de salud recomendó ajustar los esquemas de vacunación para aplicar refuerzos, únicamente, a los grupos de alto riesgo entre los que se encuentran la personas de la tercera edad, adultos jóvenes con comorbilidades significativas, personas con condiciones inmunocomprometidas, personas embarazadas y trabajadores sanitarios.

A finales de marzo, la doctora Hanna Nohynek, presidenta del Grupo de Expertos en Asesoramiento Estratégico (SAGE) sobre inmunización de la OMS, aseguró que “los países deben tener en cuenta su contexto particular cuando decidan si siguen vacunando a los grupos de riesgo bajo, como los niños y adolescentes sanos, sin que ello suponga comprometer la administración de las vacunas rutinarias, que tan importantes son para la salud y el bienestar de este grupo de edad”.

Fuente: Wired. Disponible en <https://bit.ly/42ZlrFp>

## Se acaba la emergencia por la pandemia, pero la COVID-19 continúa

**6 may.** La Organización Mundial de la Salud acogió la recomendación del Comité de Emergencia de declarar el fin de la emergencia de salud pública de emergencia internacional por la COVID-19.

El anuncio fue hecho por el doctor Tedros Adhanom Gebreyesus, director general de la Organización Mundial de la Salud, OMS. “Ayer, el Comité de Emergencias se reunió por decimoquinta vez y me recomendó que declarara el fin de la emergencia de salud pública de importancia internacional. He aceptado ese consejo. Por lo tanto, declaro con gran esperanza el fin de COVID-19 como emergencia sanitaria internacional”, declaró este 5 de mayo de 2023.

Sin embargo, el máximo responsable de velar por la salud pública mundial advirtió que “esto no significa que COVID-19 haya dejado de ser una amenaza para la salud mundial”. La COVID-19 sigue siendo una prioridad de salud pública global.

La declaración de que la COVID-19 ya no constituye una emergencia de salud pública de importancia internacional (ESPII) implica que es el momento que los países pasen del modo de emergencia al manejo y control de la COVID-19 con otras enfermedades infecciosas. La COVID-19 no ha terminado. El riesgo continúa. Por esa razón, los países, ni sus sistemas de salud, al igual que sus poblaciones, pueden bajar la guardia.

El final de una ESPII significa que la COVID-19 es ahora un problema de salud establecido y persistente, y



ya no constituye una emergencia de salud pública de importancia internacional (ESPII).

Sin embargo, el virus llegó para quedarse, y los países deben integrar las actividades de vigilancia y respuesta a la COVID-19 en los programas de salud regulares.

La OMS aconseja a los países que continúen siguiendo las recomendaciones emitidas:

- Conservar lo ganado en términos de capacidad nacional y prepararse para eventos futuros, a fin de evitar un ciclo de pánico y descuido.
- Integrar la vacunación contra la COVID-19 en los programas de vacunación a lo largo del curso de vida, y mantener las medidas para aumentar la cobertura de la vacunación contra la COVID-19 para todas las personas de los grupos de alta prioridad.
- Integrar la vigilancia de los agentes patógenos respiratorios y continuar la notificación de los datos a la OMS.
- Prepararse para que se autoricen las vacunas, los medios de diagnóstico y los tratamientos dentro de los marcos regulatorios nacionales, con objeto de garantizar la disponibilidad y el suministro a largo plazo.
- Seguir trabajando con las comunidades para lograr programas sólidos, resilientes e inclusivos en materia de comunicación de riesgos y participación de la comunidad y de gestión de la infodemia.
- Seguir eliminando las medidas de salud relacionadas con las COVID-19 aplicables a los viajes internacionales, en función de las evaluaciones de riesgos.
- Seguir apoyando la investigación para mejorar las vacunas y comprender mejor la afección posterior a la COVID-19.

Fuente: Organización Panamericana de la Salud OPS. Disponible en <https://bit.ly/3OcQvgz>

## En Cuba no se han detectado casos de la nueva variante de coronavirus Ómicron xbb.1.16

**6 may.** Según confirmó Francisco Durán García, director nacional de Epidemiología del Ministerio de Salud Pública, en Cuba no se han detectado casos de la nueva variante de coronavirus Ómicron xbb.1.16 (llamada también Arcturus), la cual circula en más de 30 países, con una mayoría de casos en la India.

El experto precisó que el país mantiene la vigilancia en fronteras para detectar, de manera oportuna, todo caso sospechoso y sigue con atención el comportamiento de la xbb.1.16 en el mundo.



*Ómicron xbb.1.16 (llamada también Arcturus) circula en más de 30 países, con una mayoría de casos en la India. Foto: EFE*

La Organización Mundial de la Salud (OMS) la calificó recientemente como una nueva variante de interés, al tener en consideración su rápida propagación a nivel internacional, al superar a la variante xbb.1, 5, que era la dominante en muchas regiones.

Identificada por primera vez en enero último, esta variante tiene una mutación adicional en la proteína de espiga y muestra un alto grado de evidencia de mayor riesgo de transmisión y un moderado grado de escape

inmunológico, es decir, parece ser más contagiosa que las anteriores y moderadamente resistente al sistema inmunitario.

A pesar de expandirse más rápido que las anteriores, la OMS considera que no parece estar causando una enfermedad más grave, por lo que el riesgo es bajo.

Entre los síntomas más comunes están la fiebre muy alta, tos, decaimiento y conjuntivitis, aunque aún no existe total consenso en que la provoque.

Un informe de la OMS advierte que, por sus características, la xbb.1.16 puede propagarse globalmente y provocar un aumento en la incidencia de casos, pero la evidencia disponible no sugiere la adopción de medidas sanitarias adicionales.

Fuente: Cubadebate. Disponible en <https://bit.ly/42ySwlp>

## Canada And PAHO Collaborate to Strengthen Vaccine Manufacturing in Latin America And the Caribbean

**May 9.** The Government of Canada and the Pan American Health Organization (PAHO) are collaborating to strengthen manufacturing capacities to increase the safe and timely access to vaccines in countries of Latin America and the Caribbean.

Through C\$ 15 million (US\$ 11.1 million) funding provided by Global Affairs Canada (GAC), PAHO will reinforce its current work to enhance the existing regional vaccine production capacities, including the manufacturing of messenger RNA (mRNA) vaccines against COVID-19 and other diseases.

“The COVID-19 pandemic underscored the severe impact of unequal access to vaccines and other health technologies,” PAHO Director, Dr. Jarbas Barbosa, said. “We thank Canada for supporting PAHO in this effort to expand and develop regional production capacities for medical products – an objective that is at the heart of our strategy to end the acute phase of the COVID-19 pandemic and a key step towards achieving universal access to health.”

Dr. Barbosa discussed the collaboration during a visit to PAHO headquarters by Mr. Jason Tolland, Director General for South America and Inter-American Affairs at GAC.

“Canada is looking forward to the implementation of its \$15M support to PAHO’s COVID-19 Vaccine Manufacturing Platform to strengthen vaccine production capacities in Latin America and the Caribbean,” Mr. Tolland said. “Canada is committed to addressing barriers to equitable access of vaccines by supporting regional manufacturing initiatives in low- and middle-income countries. We recognize the enormous potential of initiatives that promote local ownership and enable regions to address their own needs, not only for COVID-19 but also for other diseases.”

The Latin American and Caribbean region imports six times more pharmaceuticals than it exports, leaving it vulnerable to fluctuations in global supply, particularly during emergencies. During the first years of the pandemic, severe shortages of COVID-19 vaccines heightened the need to rapidly increase regional production.

The new initiative supported by the Government of Canada will promote activities to foster an enabling environment for regional vaccine production, including the promotion of greater coordination across countries and public and private partners, and the strengthening of national regulatory systems and policies.

The project will support PAHO's Regional Platform for Advancing the Production of Vaccines and Other Health Technologies for COVID-19 in the Americas, including ongoing work with the mRNA Vaccine Technology Transfer Program. This multilateral collaboration by the World Health Organization, the Medicines Patent Pool and other partners aims to facilitate mRNA vaccine manufacturing technology transfer to low- and middle-income countries. Currently, it includes two institutions in the region, Sinergium Biotech of Argentina and the Institute of Technology in Immunobiological Bio-Manguinhos of Brazil.

In the next two years, PAHO will assist Bio-Manguinhos in planning and implementing clinical trials for vaccine development and will support Sinergium Biotech in technology transfer and the acquisition of necessary equipment for vaccine production.

The organization will produce a guide for the establishment of vaccine manufacturing pilot facilities, including key inputs for the development of business plans, technical brochures, and equipment and supply needs.

PAHO is also working on the selection of a regional training center and is developing a tool to assess country readiness for vaccine development, as well as conducting several studies on topics such as COVID-19 mRNA vaccine patents in the region, and health technology production value chain.

Canada's overall support to boosting manufacturing capacities for vaccines and medicines in low- and middle-income countries was announced last year by Prime Minister Justin Trudeau during the G20 Summit. It adds to the wider support provided by Canada since 2021 to increase access to COVID-19 vaccines for populations in situations of vulnerability in the Americas through two contributions of C\$ 50 million and C\$ 45 million, delivered to PAHO in 2021 and 2023, respectively.

In the past years, PAHO has assisted 37 countries and territories in increasing access to COVID-19 vaccines, including in the development and implementation of national plans for their deployment and use. PAHO has also supported 32 countries and territories in expanding cold chain storage and transportation capacities, mainstreaming gender equality in all its work.

As part of these efforts, 13 countries have implemented activities with a specific focus on gender and ethnicity, including actions to bring vaccines to remote communities. These included workshops and knowledge dialogues to identify local perceptions about vaccines, explain the benefits of vaccines to communities, and empower women, girls, Indigenous and Afro-descendant people and LGBT groups to communicate effectively about this issue through science-based and culturally appropriate content.

Fuente: Periódico Digital Centroamericano y del Caribe. Disponible en <https://bit.ly/3oamoM8>

## Fin de emergencia internacional por viruela símica, declara OMS

**9 may.** La Organización Mundial de la Salud (OMS) anunció este jueves el fin de la emergencia internacional por la viruela del mono, denominada oficialmente como "mpox", y que ha afectado a alrededor de 87 000 personas en el mundo.

El director general del organismo sanitario internacional, Tedros Adhanom Ghebreyesus, comunicó la decisión en rueda de prensa luego de que en la víspera se reuniera el comité de emergencia que analizaba trimestralmente el brote de la enfermedad.

"Ayer, el comité de emergencia para el mpox se reunió y me recomendó que el brote multinacional de mpox ya no representa una emergencia de salud pública de importancia internacional", señaló el titular.

“Me complace declarar que la mpox ya no es una emergencia internacional, pero como ocurre con la COVID-19, eso no significa que haya dejado de ser un desafío para la salud pública”, añadió.

De acuerdo con las autoridades sanitarias, los casos positivos a la viruela, que ha dejado un saldo de 140 fallecidos, se han reducido en un 90 % en los últimos tres meses.

“En particular, la labor de las organizaciones comunitarias, junto con las autoridades de salud pública, ha sido fundamental para informar a la población de los riesgos de la viruela símica, fomentar y apoyar el cambio de comportamiento y abogar por que el acceso a las pruebas, las vacunas y los tratamientos esté al alcance de los más necesitados”, resaltó Tedros.

Durante los diez meses del brote, el continente americano resultó ser el de mayor cantidad de contagios con más de 59 000 casos, seguido por Europa con 25 000 y África con 1 500.

En julio del año pasado, la OMS decidió declarar a la enfermedad como una “emergencia de salud pública de interés internacional” (PHEIC, por sus siglas en inglés).

Fuente: Cubadebate. Disponible en <https://bit.ly/3ljozEe>



## Comité de Cofepris emite opinión favorable sobre la vacuna Abdala

**13 may.** El Comité de Moléculas Nuevas (CMN) de la Comisión Federal para la Protección contra Riesgos Sanitarios (Cofepris) emitió una opinión favorable sobre la vacuna de proteína recombinante del dominio de unión al receptor del virus SARS-CoV-2, conocida como Abdala.

La vacuna, desarrollada por el Centro de Ingeniería Genética y Biotecnología (CIGB) de la República de Cuba, está indicada para la inmunización activa específica contra la infección por covid-19 en niños y niñas a partir de los cinco años, con eficacia a las formas clínicas leves, moderadas y graves de 92.13, 88.99 y 92.33 por ciento, respectivamente.

Indicó que la opinión emitida por el CMN forma parte del proceso para obtener la autorización de uso de emergencia que expide la Comisión de Autorización Sanitaria de Cofepris, una vez que se haya evaluado la información presentada.

En un comunicado, recordó que el 3 de abril el Comité Nacional de Ciencia, Tecnología e Innovación en Salud Pública, del Consejo Nacional de Humanidades, Ciencias y Tecnologías, recomendó ampliar el uso por emergencia de la vacuna Abdala para población pediátrica de cinco a 17 años.

Fuente: La Jornada. Disponible en <https://bit.ly/3WcAtoQ>



## Cuánto tiempo tomó desarrollar estas 13 importantes vacunas

**14 may.** En todo el mundo, los científicos trabajaron a una velocidad récord para desarrollar una vacuna exitosa para el covid-19, que ha infectado a más de 670 millones de personas y ha matado a más de 6.8 millones.

En Estados Unidos, el desarrollo de vacunas se somete a un conjunto específico de pasos que incluyen fases exploratorias, ensayos preclínicos, aplicación de nuevos medicamentos, cuatro fases de ensayos de vacunas y una investigación exhaustiva de los Centros de Control y Prevención de Enfermedades y la Administración de Alimentos y Medicamentos.

Todo eso combinado podría tomar varios años por lo que podría no ser tan efectiva como se esperaba. Pero debido a la gravedad de la pandemia, los fabricantes y los principales científicos pudieron acelerar el proceso para obtener resultados lo más rápido posible.

Para obtener una perspectiva de las complejidades del desarrollo de vacunas, a continuación se muestra cuánto tiempo llevó desarrollarlas para otras enfermedades infecciosas a lo largo de la historia.

### Viruela

La erradicación de la viruela a través de una vacuna se considera uno de los mayores logros en la historia de la salud pública, pero llevó varios siglos llegar allí.

Se desconocen los orígenes de la viruela, aunque los científicos creen que se remonta al Imperio egipcio del siglo III a. C. En el siglo XVIII, la colonización propagó la enfermedad por todo el mundo. Tenía una tasa de mortalidad devastadora de hasta 30%.

En 1796, Edward Jenner en el Reino Unido creó la primera vacuna exitosa contra la viruela, pero no fue hasta la década de 1950 que los tratamientos con vacunas comenzaron a erradicar la enfermedad de manera efectiva en algunas partes del mundo.

Luego, en 1967, un esfuerzo global que proporcionó un mayor nivel de producción de vacunas y el avance en la tecnología de las agujas finalmente condujo a la erradicación de la enfermedad en 1980.

Hasta la fecha, la viruela sigue siendo la única enfermedad que se ha eliminado por completo en todo el mundo gracias a los esfuerzos de vacunación.

### Peste

La peste es una de las enfermedades más antiguas y letales del mundo; culminó con casi 200 millones de muertes a lo largo de la historia humana. Pero hasta la fecha, no hay ninguna vacuna autorizada disponible.

La peste es quizás más notoria por matar a millones de personas durante la Edad Media, pero la enfermedad



*Un adolescente es vacunado contra la viruela por un médico escolar y una enfermera de salud del condado, Gasport, Nueva York, 15 de marzo de 1938 | Harry Chamberlain/FPG/Hulton Archive/Getty Images*

todavía está activa en áreas de todo el mundo. En 2017, un brote de peste en Madagascar atrajo la atención y el pánico generalizados.

Sin embargo, dado que la peste es una enfermedad propagada por bacterias, la llegada de los antibióticos modernos se usan como tratamiento. Aun así, los investigadores creen que el desarrollo de vacunas es la opción más viable para prevenir la propagación de enfermedades a largo plazo.

Se han hecho muchos intentos fallidos para crear una vacuna contra la peste en el pasado, incluido uno que se hizo en Estados Unidos para inocular a los soldados durante la guerra de Vietnam.

Pero en 2018, la OMS creó un Perfil de producto objetivo de la vacuna contra la peste, que enumera 17 posibles candidatos para la aprobación de la vacuna; se están sometiendo a ensayos clínicos y avanzando hacia la aprobación de la FDA.

### Fiebre tifoidea

La fiebre tifoidea es una enfermedad mortal que se puede propagar ampliamente a través de los alimentos y el agua. Aunque es relativamente poco común en las áreas industrializadas, aún es una amenaza importante en los países en desarrollo del sudeste asiático, África y Latinoamérica.

Hay dos vacunas disponibles comercialmente para prevenir la fiebre tifoidea. Después de que se descubriera la bacteria responsable de la enfermedad en 1880, los científicos alemanes comenzaron a investigar estos esfuerzos por primera vez en 1896.

En 1909, el médico del ejército estadounidense Frederick F. Russell, desarrolló la primera vacuna contra la fiebre tifoidea en ese país. Durante los siguientes años, la vacuna se usaría con fines militares hasta que, en 1914, estuvo disponible para su población en general.

### Fiebre amarilla

En 1951, Max Theiler se convirtió en el primer y único científico en recibir un Premio Nobel por el desarrollo de una vacuna. Sus esfuerzos para controlar la fiebre amarilla son ampliamente elogiados por la comunidad científica. Además, ayudó a corregir años de investigación equivocada.

La fiebre amarilla ha causado epidemias mortales a lo largo de la historia de la humanidad durante más de 500 años y, a fines del siglo XIX, era bien sabido que era una amenaza en todo el mundo. Sin embargo se sabía poco sobre la enfermedad en sí, y los primeros esfuerzos de vacunación a finales de siglo se centraron erróneamente en la transmisión bacteriana cuando en realidad es causada por un virus.

En 1918, los investigadores que trabajaban para el Instituto Rockefeller desarrollaron lo que pensaron que era la primera vacuna exitosa contra la fiebre amarilla, pero en 1926 Theiler demostró lo contrario y la



*Mary Mallon (1870?-1938), conocida como «Typhoid Mary», en Nueva York. Fue la primera persona identificada como portadora del bacilo de la fiebre tifoidea en Estados Unidos|Getty Images*

vacuna defectuosa dejó de producirse.

Más de una década después, en 1937, Theiler creó la primera vacuna segura y eficaz contra la fiebre amarilla, que desde entonces se convirtió en el estándar universal.

## Influenza

La influenza tiene una larga y trágica historia de matar a millones de personas en todo el mundo. Durante la pandemia de influenza de 1918, no se conocían curas ni vacunas para el virus.

A partir de la década de 1930, se necesitaron décadas de investigación para comprender las complejidades del virus de la influenza. No fue hasta 1945 que se aprobó la primera vacuna para su uso en Estados Unidos.

Pero solo dos años después, en 1947, los investigadores concluyeron que los cambios estacionales en la composición del virus hacían que las vacunas existentes fueran ineficaces.

Los investigadores se dieron cuenta de que ocurren dos tipos principales de virus de la influenza: la influenza A y la influenza B, junto con múltiples cepas nuevas del virus cada año. Debido a esto, los científicos tienen que modificar la vacuna contra la influenza todos los años.

Hoy en día, la OMS diseña las vacunas contra la gripe estacional utilizando los datos recopilados de los centros de vigilancia de la gripe para desarrollar una nueva vacuna basada en las tres cepas que tienen más probabilidades de circular en la próxima temporada.

## Polio

Si bien es probable que la poliomielitis haya afectado a las poblaciones humanas durante miles de años, no fue sino hasta fines del siglo XIX que la enfermedad alcanzó proporciones epidémicas. A principios de siglo, la poliomielitis se extendió por Estados Unidos y dejó a muchos pacientes infectados paralizados o discapacitados de por vida.

La investigación para comprender la poliomielitis fue gradual durante las primeras décadas del siglo XX. En 1935 se intentó una vacunación, primero en monos y luego en niños en California. Aunque esta vacuna arrojó malos resultados, dos décadas más de investigación allanaron el camino para el desarrollo de vacunas por parte de Jonas Salk en 1953 y Albert Sabin en 1956.

Después de un ensayo de más de 1.6 millones de niños, la vacuna de Salk se adoptó en México en 1956. La investigación continua durante la década de 1980 dio paso a una producción de vacunas aún más eficaz y eficiente, y en 1994 se eliminó la poliomielitis en América.

Recientemente, en 1988, 350,000 personas tenían la enfermedad debilitante; la mayoría eran niños. Para 2018, solo había 33 casos de polio en todo el mundo.

Un estudio estimó que la vacuna contra la poliomielitis evitó que 24 millones de personas contrajeran la



*Enfermeras voluntarias de la Cruz Roja atienden a personas con gripe en el Auditorio de Oakland en Oakland, California, durante la pandemia de influenza de 1918|Edward A. «Doc» Rogers*

enfermedad entre 1988 y 2021.

La poliomielitis podría convertirse en la segunda enfermedad humana que eliminamos del planeta.

## Ántrax

Se cree que el ántrax existió desde el año 700 a. C., pero el primer informe clínico de la enfermedad se registró en el siglo XVIII.

A lo largo de la década de 1800, una serie de estudios para determinar de dónde se originó la enfermedad, cuánto tiempo podría sobrevivir la bacteria y cómo se transmitía la enfermedad a través de los animales allanaron el camino para los primeros intentos de una vacuna en 1881.

En 1937, el científico Max Sterne creó una exitosa vacuna contra el ántrax para ser utilizada en el ganado, una versión de la que todavía se usa actualmente, con el fin de reducir la transmisión de animales a humanos. 13 años después, se creó la primera vacuna humana y se puso a disposición de las personas que trabajaban en plantas procesadoras de animales.

En 1970 se desarrolló una vacuna actualizada contra el ántrax, que es en gran medida lo que se usa para prevenir la enfermedad en los humanos en la actualidad.

## Sarampión, paperas y rubéola (MMR)

El sarampión, las paperas y la rubéola son infecciones virales que han causado brotes de enfermedades mortales y generalizadas. A lo largo de la década de 1960, se desarrollaron vacunas individuales para cada uno de ellos, pero una década más tarde, se combinaron en una sola.

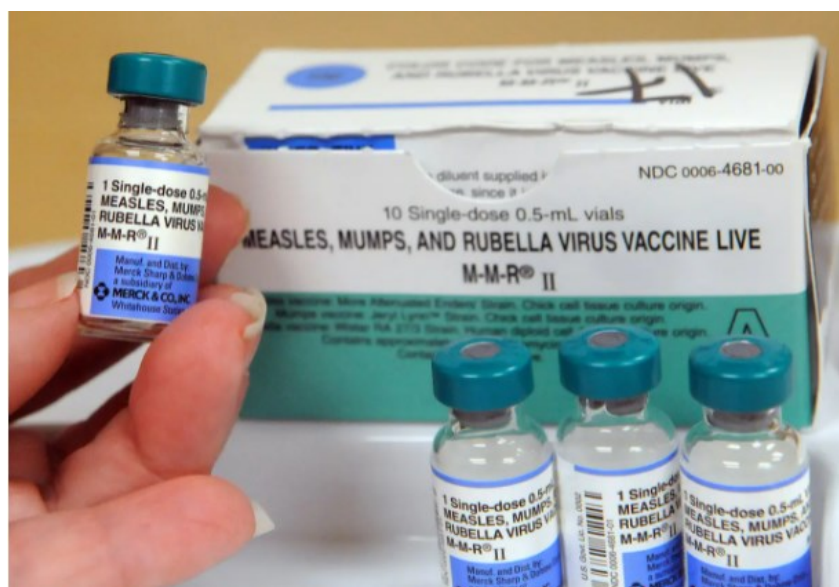
El sarampión fue el primero de los tres en recibir su propia vacuna en 1963, seguido de las paperas en 1967 y la rubéola en 1969. Dos años después, en 1971, Maurice Hilleman del Instituto Merck de Investigación Terapéutica desarrolló una vacuna combinada que proporcionaría inmunidad para los tres virus.

A Hilleman se le atribuyó la creación de la primera vacuna contra el sarampión y las paperas y comenzó a investigar formas de incorporar un sistema de inmunidad para cada virus. Usando su investigación anterior y una vacuna contra la rubéola desarrollada por Stanley Plotkin en 1969, creó la primera vacuna MMR exitosa en solo dos años.

Según los CDC, «una dosis de la vacuna MMR tiene una eficacia de 93% contra el sarampión, de 78% contra las paperas y de 97% contra la rubeola».

«Dos dosis de la vacuna MMR tienen una eficacia de 97% contra el sarampión y 88% contra las paperas».

## Varicela (Chicken Pox)



*Una enfermera muestra ampollas de la vacuna contra el sarampión en el Departamento de Salud del Condado de Orange el 6 de mayo de 2019 en Orlando, Florida|NurPhoto/Paul Hennessy via Getty Images*

La infección primaria por varicela fue mal diagnosticada como viruela hasta finales del siglo XIX.

En la década de 1950, los científicos distinguieron la varicela del herpes zóster (culebrilla), y las investigaciones posteriores condujeron al desarrollo de la primera vacuna contra la varicela en Japón en la década de 1970.

### Herpes (herpes zoster)

La culebrilla, o herpes zóster, proviene del mismo virus que causa la varicela. Las únicas dos formas en que se puede desarrollar el herpes zóster es después de una infección inicial de varicela o (poco común) la exposición a una vacuna contra la varicela.

La conexión entre el herpes zóster y la varicela se observó por primera vez en 1953 y, a lo largo de la década de 1960, los estudios indicaron que el herpes zóster era mucho más común en las poblaciones de mayor edad.



Frank Bienewald/LightRocket via Getty Images

### Hepatitis B

El equipo de HEP proporcionó vacunas para ayudar a prevenir la hepatitis A y B a los interesados sin costo alguno |Carlos Chavez/Los Angeles Times via Getty Images

La hepatitis B es un virus más reciente y fue descubierto por el doctor Baruch Blumberg en 1965. Solo cuatro años después, creó la primera vacuna contra la hepatitis B utilizando una forma del virus tratada térmicamente.

Doce años más tarde, en 1981, la FDA aprobó la primera vacuna comercial contra la hepatitis B, que incluía muestras de sangre de donantes infectados.

Luego, en 1986, una nueva vacuna preparada sintéticamente que no utiliza productos sanguíneos reemplazó al modelo original.

Dado que la hepatitis B puede causar cáncer de hígado, la vacuna también se consideró la primera vacuna contra el cáncer.

### Virus del papiloma humano (VPH)

Los estudios muestran que más del 80% de las mujeres habrán contraído el Virus del Papiloma Humano (VPH) en algún momento de sus vidas.

Se cree que dos cepas del VPH causan hasta 70% de los casos de cáncer de cuello uterino, lo que puede provocar cientos de miles de muertes cada año. El vínculo entre el VPH y el cáncer de cuello uterino se estableció por primera vez en 1981, y siguieron más de dos décadas de investigación antes de que una vacuna viable llegara al mercado.

La primera vacuna contra el VPH se desarrolló en Estados Unidos en 2006 y, desde entonces, la investigación posterior ha llevado al desarrollo de dos vacunas más.

Hoy en día, las recomendaciones sobre qué tipo de vacuna recibir dependen en gran medida de la edad.

## COVID-19

Pfizer, junto con BioNTech, utilizó tecnología revolucionaria de ARNm para crear su vacuna contra la COVID-19. El potencial de esta nueva tecnología podría transformar la ciencia, dijeron los líderes de la compañía.

El brote de COVID-19 provocó que miles de millones de personas en todo el mundo se encerraran, cuestionando la vida cotidiana, para frenar la propagación del virus altamente contagioso.

El coronavirus resultó en hospitales superpoblados, trabajadores de la salud estresados y presión sobre los funcionarios que fueron presionados para crear una vacuna para acabar con la pandemia.

Durante las primeras etapas de la pandemia, el doctor Anthony Fauci, el principal experto en enfermedades del país, dijo frente al Congreso que se podría desarrollar una vacuna para fines de 2020 o que estaría disponible para su uso en 2021.

En diciembre de 2020, Sandra Lindsay, enfermera de cuidados intensivos, se convirtió en la primera persona en recibir la inyección fuera de los ensayos clínicos.

«Como minoría, quería infundir confianza en mi gente que se parece a mí para decir que es seguro, guiarse por la ciencia, no tener miedo», dijo Lindsay a Insider en ese momento.

Según los Centros para el Control y la Prevención de Enfermedades , se ha dado luz verde a cuatro vacunas incluidas Pfizer-BioNTech, Moderna, Johnson & Johnson y Novavax .

Fuente: Business Insider. Disponible en <https://bit.ly/430Rp42>

## China comienza a utilizar la primera vacuna de ARN mensajero de producción propia

**15 may.** La primera vacuna contra la covid-19 basada en ARN mensajero desarrollada por China comenzó a emplearse este domingo en la provincia nortea de Hebei, recogen hoy medios estatales.

El primer lugar donde comenzó a administrarse la fórmula fue en Shijiazhuang, donde la población puede recibir la vacuna creada por el grupo CSPC Pharmaceutical, informa el diario oficialista Global Times.

Las autoridades sanitarias chinas aprobaron el uso de emergencia de este fármaco a finales de marzo y recomendaron su uso como refuerzo de inmunizaciones previas, en especial frente a las variantes ómicron del virus.

Según la compañía farmacéutica, su vacuna de ARN mensajero induce una buena protección cruzada contra las citadas variantes, responsables en el pasado invierno del mayor brote de coronavirus vivido en China desde que comenzó la pandemia y que llevó al rápido contagio de un alto porcentaje de la población.



*Pfizer, junto con BioNTech, utilizó tecnología revolucionaria de ARNm para crear su vacuna contra el covid-19. El potencial de esta nueva tecnología podría transformar la ciencia, dijeron los líderes de la compañía.*

El Grupo Central para la Prevención y Control del Nuevo Coronavirus también recomendó el uso alternativo como refuerzo de otra vacuna desarrollada en plataforma tradicional, la SCTV01E, de la empresa Sino Cell Tech, que acaba de finalizar la tercera y última fase de ensayos clínicos.

De acuerdo al rotativo, un número creciente de personas ha asegurado en las redes sociales chinas que se ha contagiado por segunda vez de COVID-19 en los últimos días, aunque en general con síntomas más suaves que en la primera ocasión.

El Centro para el Control de Enfermedades de China informó a finales de abril pasado de que las variantes predominantes del virus en el país asiático son las de ómicron, que suponían en ese momento un 74,4 % de los casos locales y un 97,5 % de los importados.

La campaña de vacunación en China continental se había basado hasta ahora en vacunas producidas por las empresas nacionales Sinovac, Sinopharm y CanSino, que emplean vectores inactivados del adenovirus, una de las plataformas vacunales más tradicionales y seguras que existen pero cuya eficacia es menor que la de las basadas en ARN mensajero.

China ha rechazado usar vacunas de ARN mensajero procedentes del extranjero, decisión que le ha valido al país asiático críticas por parte de expertos internacionales.

El pasado 8 de enero, las autoridades redujeron de la categoría A -nivel de máximo peligro- a la B la gestión de la covid-19, marcando así en la práctica el final de la política de 'cero covid'.

A la retirada de las restricciones le siguió una oleada de infecciones en todo el país, durante la cual se registraron momentos de gran presión hospitalaria.

En aquellas fechas, algunas voces criticaron una posible falta de preparación por parte de las autoridades antes de relajar las medidas.

Entre el 8 de diciembre y el pasado 9 de febrero, período que cubre la retirada de las medidas de prevención más estrictas y la posterior ola de contagios, se registraron oficialmente en China 83.150 muertes en hospitales relacionadas con la COVID-19.

Fuente: SWI swissinfo. Disponible en <https://bit.ly/3Mz9ZuJ>



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## Patentes registradas en Patentscope

Estrategia de búsqueda: *Vaccine in the title or abstract AND 20230501:20230515 as the publication date 81 records*

1. [WO/2023/070223](#) SYNTHETIC GLYCOCONJUGATE VACCINE PROTOTYPE AGAINST STREPTOCOCCUS SUIS

WO - 04.05.2023

Clasificación Internacional [C07H 15/04](#) N° de solicitud PCT/CA2022/051600 Solicitante UNIVERSITÉ DE MONTRÉAL Inventor/a SEGURA, Mariela

The invention provides for a vaccine against S. suis serotype 2. The vaccine comprises chemically synthesized fragments and thus may be made widely commercially available. The vaccine is used in the livestock production and may be adapted for use against other serotypes of S. suis such as serotypes 1, 1/2, 3, 9, and 14. Also, the vaccine may be adapted for use in humans.

2. [4174183](#)FUSIONSGEN, REKOMBINANTER NEUARTIGER HOCHEFFIZIENTER CORONAVIRUS-IMMUN-DNA-IMPfstoff, HERSTELLUNGSVERFAHREN DAFÜR UND VERWENDUNG DAVON EP - 03.05.2023

Clasificación Internacional [C12N 15/62](#) N° de solicitud 21894027 Solicitante AURORA GENEVAC BIOTECH CO LTD Inventor/a YU JIYUN

A fusion gene, a recombinant novel coronavirus high-efficiency immune DNA vaccine, a construction method and use thereof are provided. The immune DNA vaccine ZD-nCor19 provided herein uses RBD protein, residues 301-538 in the S2 subunit and residues 138-369 in the N protein of the novel coronavirus as target antigens, and has specific immune synergism molecules introduced at suitable positions, and thus can simultaneously efficiently induce humoral immunity and cellular immunity, and can avoid safety problems associated with ADE that may be generated by the full-length S protein and the full-length N protein, thereby achieving dual effects of prevention and treatment. The vaccine can be used as a safe, efficient and stable vaccine variety against novel coronavirus infection.

3. [20230133364](#)NOVEL CORONAVIRUS VACCINE BASED ON INFLUENZA VIRUS VECTOR AND PREPARATION METHOD THEREOF

US - 04.05.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud 17770521 Solicitante GUANGZHOU N BIOMED LTD. Inventor/a Ling Chen

Disclosed are a novel coronavirus vaccine based on an influenza virus vector and a preparation method thereof. The vaccine can efficiently express two antigens, i.e., its own HA antigen and an exogenous SC2R1 antigen, enabling the vaccine to induce immune responses to the two antigens, thus achieving the purpose of preventing both influenza virus and novel coronavirus, thereby eliminating the impacts of the two major infectious diseases of influenza and novel coronavirus on social economy, etc. at one time. In addition, based on existing mature influenza platform techniques, the influenza vaccine can be prepared and produced on a large scale, and the use of influenza vaccines has a long history and good safety.

4. [20230137174](#)NOVEL SALMONELLA-BASED CORONAVIRUS VACCINE

US - 04.05.2023

Clasificación Internacional [A61K 39/215](#) N° de solicitud 17907619 Solicitante NEC ONCOIMMUNITY AS Inventor/a Heinz LUBENAU

The present invention relates to a DNA vaccine comprising a *Salmonella typhi* Ty21a strain comprising a DNA molecule comprising a eukaryotic expression cassette encoding at least a COVID-19 coronavirus (SARS-CoV-2) spike (S) protein or a portion thereof. In particular, the present invention relates to the DNA vaccine for use in the prevention and/or the treatment of coronavirus disease 2019 (COVID-19) or a SARS-CoV-2 infection.

5. [WO/2023/076180](#)COMPOSITIONS AND METHODS FOR THERAPEUTIC OR VACCINE DELIVERY

WO - 04.05.2023

Clasificación Internacional [C12N 15/86](#) N° de solicitud PCT/US2022/047599 Solicitante GENVIVO, INC. Inventor/a FISCHER-LOUGHEED, Jacqueline

Described herein are compositions for delivering a therapeutic or vaccine. Also described herein are methods for using the compositions described herein for delivering a therapeutic or a vaccine.

6. [4173635](#)NEUARTIGES IMMUNSTIMULANS UND IMPfstoffZUSAMMENSETZUNG DAMIT

EP - 03.05.2023

Clasificación Internacional [A61K 39/39](#) N° de solicitud 20942169 Solicitante REPUBLIC KOREA ANIMAL & PLANT QUARANTINE AGENCY Inventor/a LEE MINJA

The present inventors have found that innate immune response and T cell exhaustion pathway are more greatly over-expressed in pigs than cattle, such that the pigs are less likely to form adaptive and humoral



immune responses than cattle. It would be suggested herein an innovative strategy for improvement of abnormal immune responses in pigs by simultaneously inducing potent cellular and humoral immune responses and applying T cell agonists as a new vaccine adjuvant. This result may provide an important clue for understanding a difference in the immune response between the cattle and pigs, while suggesting a method for maximizing the immune response and vaccine efficacy, which are less expressed in pigs than cattle.

7. [20230136960](#) Novel mRNA-Based COVID-19 Multi-Valent Vaccine and Methods of Scaled Production of the Same

US - 04.05.2023

Clasificación Internacional [C12N 15/88](#) N° de solicitud 17912741 Solicitante Nature's Toolbox, Inc. Inventor/a Michael Humbert

The inventive technology includes a novel immunostimulatory RNA vaccine for the COVID-19 coronavirus. In one preferred aspect, the inventive technology includes a novel mRNA sequence encoding at least one antigenic peptide or protein comprising or consisting of a COVID-19 coronavirus protein or a fragment or variant thereof.

8. [4171630](#) PRÄERYTHROZYTÄRE MALARIAIMPFFSTOFFE

EP - 03.05.2023

Clasificación Internacional [A61K 39/39](#) N° de solicitud 20943397 Solicitante PATH Inventor/a KING C RICHTER

Pre-erythrocytic malaria vaccines with good preservation stability and immunostimulatory action are provided. According the present invention, combination use of a pharmaceutical composition comprising (4E,8E,12E,16E,20E)-N-{2-[[4-[(2-amino-4-[[[(3S)-1-hydroxyhexan-3-yl]amino]-6-methylpyrimidin-5-yl)methyl]benzyl](methyl)amino]ethyl]-4,8,12,17,21,25-hexamethylhexacosan-4,8,12,16,20,24-hexaeneamide, or a pharmaceutically acceptable salt thereof, as a vaccine adjuvant with enhanced specific immune response against antigens and good preservation stability and a malaria vaccine with biological activity allow for the provision of pre-erythrocytic malaria vaccines with good preservation stability and immunostimulatory action.

9. [WO/2023/072805](#) A VACCINE FOR THE PROTECTION OF PIGLETS AGAINST SWINE INFLUENZA A VIRUS INFECTION

WO - 04.05.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/EP2022/079532 Solicitante INTERVET INTERNATIONAL B.V. Inventor/a NAGARAJ, Basav, Hangalapura

The present invention pertains to the use of a vaccine based on an alphavirus RNA replicon particle ( $\alpha$ RP) vector encoding an antigen of an IAV-S for the passive vaccination of piglets against a pathogenic infection with swine influenza virus.

10. [4171619](#) BRUSTKREBSIMPFFSTOFF

EP - 03.05.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud 21828216 Solicitante NAT BREAST CANCER COALITION Inventor/a KNUTSON KEITH L

The invention relates to vaccines for breast cancer therapy. The invention also relates to methods of preventing and treating breast cancer using a breast cancer vaccine.

11. [WO/2023/076977](#) NOROVIRUS VACCINE AND METHODS OF USE

WO - 04.05.2023

Clasificación Internacional [A61K 39/125](#) N° de solicitud PCT/US2022/078753 Solicitante THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA Inventor/a ATOCHINA-VASSERMAN, Elena

Provided is a Norovirus vaccine comprising mRNA molecules encoding Norovirus VP1 antigens and methods of use thereof to treat or prevent a disease or disorder associated with Norovirus infection.

12. [4172897](#) ADAPTIVE IMPFSTOFF-STOCKWERK

EP - 03.05.2023

Clasificación Internacional [G06Q 10/06](#) N° de solicitud 21745874 Solicitante SEQIRUS UK LTD

Inventor/a BOLLANDS ALLEN

A method of selectively providing access to an inventory of pre-pandemic vaccines is disclosed. The method includes identifying at least two Influenza Viruses of Pandemic Potential (IVPP) to provide available vaccines; determining a stockpile requirement for vaccines against selected IVPPs among the at least two IVPPs; obtaining finished vaccines against each of the selected IVPPs; storing an inventory of finished vaccines against each of the selected IVPPs; providing the finished vaccines against at least one of the selected IVPPs in response to an access request; and periodically obtaining further finished vaccines against one or more of the selected IVPPs and adding the further finished vaccines to the inventory of finished vaccines. Additionally disclosed are methods of selecting the inventory of finished vaccines for an adaptive vaccine stockpile.

13. [20230140549](#) EXPRESSION SYSTEM FOR EXPRESSING HERPESVIRUS GLYCOPROTEIN COMPLEXES

US - 04.05.2023

Clasificación Internacional [A61K 39/245](#) N° de solicitud 17806157 Solicitante CITY OF HOPE Inventor/a Felix WUSSOW

An expression system for expressing a herpesvirus glycoprotein complex including a vector inserted with two or more nucleic acid sequences that encode two or more subunits of a herpesvirus glycoprotein complex linked by one or more linking sequences such that the subunits are co-expressed simultaneously and self-processed to assemble into a glycoprotein complex. The expression system or the vector can be included in a vaccine composition. The vaccine composition can be used for preventing or treating herpesvirus infections.

14. [20230133188](#) MODIFIED MRNAS FOR VACCINE DEVELOPMENT

US - 04.05.2023

Clasificación Internacional [A61K 39/215](#) N° de solicitud 17912402 Solicitante BASECLICK GMBH

Inventor/a Thomas FRISCHMUTH

A modified messenger RNA (mRNA) of the present invention encodes within its ORF an antigen such as a viral protein, an immunogenically active part of such viral protein, or an anticancer protein or epitope, and contains at least one of an alkyne- or azide-modification in at least one nucleotide. A preferred viral protein encoded by the inventive mRNA is a Corona vims protein, especially nucleoprotein N of SARS-CoV-2. The modified mRNA or a pharmaceutical composition containing such mRNA is especially useful in the context of a method for vaccination against viral infection and adding an adjuvant like a STING antagonist further enhances the immune response in an individual and accordingly the vaccination efficiency.

15. [20230138274](#) Body Fluids Sampling Device and Method of using the Same

US - 04.05.2023

Clasificación Internacional [A61B 5/15](#) N° de solicitud 17915497 Solicitante Preci Health SA Inventor/a

Lucien Vouillamoz

A fluid sampling device and a method is provided for collecting body fluid samples such as blood without the intervention of medically trained personnel. The body fluid sampling device having a sample containment chamber made of a material having a thermal inertia permitting the maintenance of sample temperature over a known period of time. Optionally an isolating cover or sleeve may slide in place by a

mechanism triggered by thermal contraction of an element after the device has reached a sufficiently low temperature in a patients refrigerator. Associated methods are provided to ensure hermetic transport of the collected body fluid sample to an analysis lab. Also disclosed is a device and app combination for drug or vaccine injection, the app including means to allow for verification of the patient's ID and/or the particular device used. The device may be equipped with geo-localization and long-range communication capabilities.

16. [301248](#) MULTIVALENT VACCINE COMPOSITIONS AND USES THEREOF

IL - 01.05.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud 301248 Solicitante JANSSEN PHARMACEUTICALS, INC Inventor/a

17. [20230134033](#) IMMUNOGENIC COMPLEX FOR ELICITING PROTECTIVE IMMUNITY AGAINST GROUP B STREPTOCOCCUS

US - 04.05.2023

Clasificación Internacional [A61K 39/09](#) N° de solicitud 18048148 Solicitante Minervax APS Inventor/a Per Bo PEDERSEN FISCHER

The present invention relates to an immunogenic complex comprising an amino acid sequence having at least 80% sequence identity with the amino acid sequence of the N-terminal region of a group B *Streptococcus* surface protein, and a capsular polysaccharide. The immunogenic complex is capable of eliciting protective immunity against group B *Streptococcus*. The invention further pertains to an immunogenic product comprising the immunogenic complex and an immunogenic fusion protein, the vaccine, the immunogenic complex, or the immunogenic product for use in a method of preventing or treating a group B *Streptococcus* infection, as well as a method of preventing or treating a group B *Streptococcus* infection.

18. [20230139366](#) BRARTEMICIN ANALOGUES

US - 04.05.2023

Clasificación Internacional [A61K 39/39](#) N° de solicitud 18047708 Solicitante VICTORIA LINK LTD Inventor/a Amy Jane FOSTER

The invention relates to brartemicin analogues of Formula IV and their uses. These compounds are potent Mincle agonists and Th1-stimulating vaccine adjuvants.

19. [20230136745](#) AN ANTITHROMBIC MOLECULE HAVING APAC ACTIVITY FOR THE PREVENTION AND/OR TREATMENT OF THROMBOCYTOPENIA

US - 04.05.2023

Clasificación Internacional [A61K 47/64](#) N° de solicitud 17918391 Solicitante Aplagon OY Inventor/a Riitta Lassila

The invention relates to an anti-thrombotic molecule having both anti-platelet and anti-coagulant (APAC) activity and, in particular, its use as a medicament to prevent and/or treat heparin-induced thrombocytopenia (HIT) type I or II; and/or heparin-induced thrombocytopenia and thrombosis (HITT); and/or heparin-independent thrombocytopenia autoimmune HIT (aHIT); and/or vaccine-induced thrombocytopenia and thrombosis (VITT). The invention has use in both the medical and veterinary industries.

20. [301224](#) ALPHA-SYNUCLEIN VACCINE FOR THE TREATMENT OF SYNUCLEINOPATHIES

IL - 01.05.2023

Clasificación Internacional [A61K 38/00](#) N° de solicitud 301224 Solicitante PROTHENA BIOSCIENCES LIMITED Inventor/a

21. [WO/2023/070873](#) METHOD FOR PREPARING SARS-COV-2 VIRUS-LIKE PARTICLES AND USE OF SARS-COV-2 VIRUS-LIKE PARTICLES

WO - 04.05.2023

Clasificación Internacional [C07K 14/165](#) N° de solicitud PCT/CN2021/138037 Solicitante SHENZHEN INSTITUTES OF ADVANCED TECHNOLOGY CHINESE ACADEMY OF SCIENCES Inventor/a DAI, Junbiao

A composition for preparing SARS-CoV-2 virus-like particles. The composition comprises a first plasmid containing a Stru  $\Delta$ S fragment, and any one or two selected from a second plasmid containing an S fragment and a third plasmid containing a packaging signal fragment of the SARS-CoV-2 virus. The method for preparing the composition comprises: respectively splitting a Stru  $\Delta$ S fragment, an S fragment and/or an ORF1ab packaging signal fragment into short DNA fragments having homologous sequences between adjacent fragments, and performing homologous recombination on the short DNA fragments and a linear plasmid vector in a yeast cell. The present invention further relates to a method for preparing SARS-CoV-2 virus-like particles using the composition, the obtained SARS-CoV-2 virus-like particles, and the use of the composition in the preparation of a vaccine for preventing or treating SARS-CoV-2 virus infections and in the in-vitro research on cells infected by the SARS-CoV-2 virus.

22. [301262](#) MULTIEPITOPE VACCINE FOR THE TREATMENT OF ALZHEIMER'S DISEASE

IL - 01.05.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud 301262 Solicitante OTHAIR PROTHENA LIMITED Inventor/a

23. [4171514](#) KALTFILTRATION VON ÖL-IN-WASSER-EMULSIONSADJUVANTIEN

EP - 03.05.2023

Clasificación Internacional [A61K 9/107](#) N° de solicitud 21752737 Solicitante SEQIRUS UK LTD Inventor/a HUNN STEPHEN

The present disclosure relates to the method of filtering emulsions at cold temperatures. Specifically, cold filtration of emulsion adjuvants for vaccine manufacture is discussed.

24. [4171625](#) KLEBSIELLA PNEUMONIAE O-ANTIGEN IMPFSTOFF

EP - 03.05.2023

Clasificación Internacional [A61K 39/108](#) N° de solicitud 21731535 Solicitante GLAXOSMITHKLINE BIOLOGICALS SA Inventor/a CARRANZA SANDMEIER MARIA PAULA

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.

25. [WO/2023/076539A](#) SUBUNIT CRYPTOCOCCUS VACCINE

WO - 04.05.2023

Clasificación Internacional [A61K 39/02](#) N° de solicitud PCT/US2022/048142 Solicitante UNIVERSITY OF MASSACHUSETTS Inventor/a LEVITZ, Stuart

Provided herein are subunit vaccines against Cryptococcus.

26. [4174074](#) MULTIANTENNÄRE GLYCOLIPIDMIMETIKA

EP - 03.05.2023

Clasificación Internacional [C07D 498/04](#) N° de solicitud 21382980 Solicitante CONSEJO SUPERIOR INVESTIGACION Inventor/a GARCÍA FERNÁNDEZ JOSÉ MANUEL

The invention relates to a multiantennary glycolipid mimetics of formula I, wherein X, Y, Z and R<sup>1</sup> are defined in the description, or a pharmaceutical composition thereof and their use as a medicament, particularly, for the treatment and/or prevention of an immune disease caused by Th1/Th2 imbalance. Further the invention relates to a vaccine which comprises a compound of formula I.

27. [WO/2023/072816](#)MULTIANTENNARY GLYCOLIPID MIMETICS

WO - 04.05.2023

Clasificación Internacional [C07D 498/04](#) N° de solicitud PCT/EP2022/079553 Solicitante CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS (CSIC) Inventor/a GARCÍA FERNÁNDEZ, José Manuel

The invention relates to a multiantennary glycolipid mimetics of formula (I), wherein X, Y, Z and R1 are defined in the description, or a pharmaceutical composition thereof and their use as a medicament, particularly, for the treatment and/or prevention of an immune disease caused by Th1/Th2 imbalance. Further the invention relates to a vaccine which comprises a compound of formula (I).

28. [4171628](#)PHARMAZEUTISCHE ZUSAMMENSETZUNG ZUR BEHANDLUNG VON COVID-19 UND VERWANDTEN ERKRANKUNGEN

EP - 03.05.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud 21734243 Solicitante UNTHREADT B V Inventor/a KHAN NISAR AHMED

The invention relates to a method and to a medicament for use in the treatment of COVID-19 and related pathologies, the medicament comprising or interacting with one or more conserved regions of at least 4 consecutive amino acids with a 100% match present in both the SARS-CoV-2 proteome and the human proteome, wherein the one or more conserved regions are preferably selected by: a. identification of one or more conserved regions of at least 4 consecutive amino acids with a 100% match between the SARS-CoV-2 proteome and the human proteome; b. identification of at least one pathway class from a systematic database comprising a plurality of human physiological pathway classes, each class comprising a plurality of human proteins that are functionally related to the said physiological pathway, wherein the said at least one pathway class shares at least one pathology and/or complication of the COVID-19 infection as a result of dysfunction in the said pathway and comprises at least one human protein comprising one or more conserved regions of at least 4 consecutive amino acids that have a 100% match with the SARS-CoV-2 proteome; and c. selecting the said identified one or more conserved regions for the preparation of the medicament. Based on this approach peptides were selected for the treatment of COVID-19 and several pathologies and complications that can occur in the context of COVID-19, but also as a separate disease, pathology, or complication. The invention also relates to a vaccine comprising one or more agents interacting with at least one region of at least 4 consecutive amino acids present in the SARS-CoV-2 proteome, not conserved between the SARS-CoV-2 proteome and the human proteome. Finally, the invention can provide a molecular and cellular explanation for the deviant infectivity, clinical behaviour, and pathology of emerging SARS-CoV-2 variants over time, to design vaccines to specifically prevent these complications, and to select peptides as therapeutic modality to treat these clinical manifestations and complications.

29. [20230134571](#)ENGINEERED ANTIBODIES TO HIV ENV

US - 04.05.2023

Clasificación Internacional [C07K 16/10](#) N° de solicitud 17772561 Solicitante International AIDS Vaccine Initiative Inventor/a Devin SOK

The present disclosure relates to anti-HIV Env antibodies and their use in the treatment or prevention of HIV/AIDS. In one aspect, provided herein are enhanced engineered anti-HIV Env antibodies that were derived from the PGDM1400 parent antibody using directed-evolution and yeast display. In one aspect, provided herein are pharmaceutical compositions comprising the enhanced engineered anti-HIV Env antibodies disclosed herein.

30. [301223](#) $\beta$ -AMYLOID VACCINE FOR THE TREATMENT OF ALZHEIMER'S DISEASE

IL - 01.05.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud 301223 Solicitante OTHAIR PROTHENA LIMITED  
Inventor/a

31. [301406](#) VARIANT STAPHYLOCOCCUS AUREUS LUKA AND LUKB POLYPEPTIDES AND VACCINE COMPOSITIONS

IL - 01.05.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud 301406 Solicitante JANSSEN PHARMACEUTICALS, INC Inventor/a

32. [202301400471](#) 1H-PYRAZOLO[4,3-d]PYRIMIDINE COMPOUNDS AS TOLL-LIKE RECEPTOR 7 (TLR7) AGONISTS AND METHODS AND USES THEREFOR

US - 04.05.2023

Clasificación Internacional [A61K 31/519](#) N° de solicitud 18081558 Solicitante BRISTOL-MYERS SQUIBB COMPANY Inventor/a YAM B. POUDEL

Compounds according to formula I are useful as agonists of Toll-like receptor 7 (TLR7).

Such compounds can be used in cancer treatment, especially in combination with an anti-cancer immunotherapy agent, or as a vaccine adjuvant.

33. [4171627](#) IMPFSTOFFKOMBINATION GEGEN RESPIRATORISCHE SYNZYTIALVIRUSINFEKTION  
EP - 03.05.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud 21733702 Solicitante JANSSEN VACCINES & PREVENTION BV Inventor/a CALLENDRET BENOIT C S

Methods of safely inducing a protective immune response against respiratory syncytial virus (RSV) and methods of preventing infection and/or replication of RSV in human subjects are described. The methods include administering to the subjects (a) an effective amount of an adenoviral vector encoding a recombinant RSV F protein that is stabilized in a pre-fusion conformation, and (b) an effective amount of an RSV F protein that is stabilized in a pre-fusion conformation.

34. [4172633](#) VERFAHREN, ZUSAMMENSETZUNGEN UND SYSTEME ZUM NACHWEIS VON CORONAVIRUSNEUTRALISIERENDEN ANTIKÖRPERN

EP - 03.05.2023

Clasificación Internacional [G01N 33/68](#) N° de solicitud 21745569 Solicitante LABORATORY CORP AMERICA HOLDINGS Inventor/a PETROPOULOS CHRISTOS J

The present disclosure relates to methods, compositions, and systems for detecting whether a subject exposed to a coronavirus has developed a neutralizing antibody response. Also disclosed are methods for determining whether a patient infected by a coronavirus is likely to respond to treatment with an antibody preparation. Also disclosed are methods for detecting the level of neutralizing antibody response in a sample of serum from a subject exposed to a coronavirus or to a coronavirus vaccine.

35. [WO/2023/070317](#) BIFUNCTIONAL NANOBODY BASED ON DC, AND CONSTRUCTION METHOD THEREFOR AND USE THEREOF

WO - 04.05.2023

Clasificación Internacional [C07K 16/28](#) N° de solicitud PCT/CN2021/126429 Solicitante JIANGSU ACADEMY OF AGRICULTURAL SCIENCES Inventor/a CHENG, Haiwei

Disclosed in the present invention are a bifunctional nanobody based on DC, and a construction method therefor and the use thereof. The bifunctional nanobody is a target protein, wherein a target protein specific nanobody based on DC is linked to a gene encoding a virus antigen specific nanobody with a particle size of 150 nm or less using a linker element to obtain a target gene fragment, and the obtained target protein is subjected to recombinant expression. According to the method of the present invention, specific nanobodies for different pathogens are screened, and a corresponding porcine DC targeted bifunctional nanobody is constructed and is used for preparing a vaccine for pigs.

36. [4171626](#) STABILISIERTE CORONAVIRUS-SPIKE (S)-PROTEINIMMUNOGENE UND VERWANDTE IMPFSTOFFE

EP - 03.05.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud 20943768 Solicitante SCRIPPS RESEARCH INST Inventor/a HE LINLING

The present invention provides redesigned soluble coronavirus S protein derived immunogens that are stabilized via specific modifications in the wildtype soluble S sequences. Also provided in the invention are nanoparticle vaccines that contain the redesigned soluble S immunogens displayed on self-assembling nanoparticles. Polynucleotide sequences encoding the redesigned immunogens and the nanoparticle vaccines are also provided in the invention. The invention further provides methods of using the vaccine compositions in various therapeutic applications, e.g., for preventing or treating coronaviral infections.

37. [WO/2023/077147](#) T-CELL VACCINES FOR PATIENTS WITH REDUCED HUMORAL IMMUNITY

WO - 04.05.2023

Clasificación Internacional [A61K 39/145](#) N° de solicitud PCT/US2022/079034 Solicitante PELLIS THERAPEUTICS, INC. Inventor/a KUPPER, Thomas S.

Administration of intact, non-replicating or replication-deficient poxvirus, in combination with a T cell antigen, to disrupted epithelial tissue induces antigen-specific T cell mediated immunity in a subject with reduced humoral immunity such as those undergoing B cell depletion therapies. Compositions and methods for inducing T cell mediated immune responses to antigen in epithelial tissues of a subject are provided. The methods include administering to disrupted epithelial tissue intact, non-replicating or replication-impaired poxvirus including one or more T cell antigens. The epithelial tissue may be mechanically disrupted by a device such as a scarification needle or an abrader device prior to, at the same time, or immediately after the administration of the vaccine composition.

38. [WO/2023/076907](#) MALARIA VACCINE FORMULATIONS

WO - 04.05.2023

Clasificación Internacional [A61K 39/015](#) N° de solicitud PCT/US2022/078665 Solicitante NOVAVAX AB Inventor/a REIMER, Jenny M.

Disclosed herein are immunogenic compositions comprising an antigen of a Plasmodium parasite. Methods of administering the aforementioned compositions are also disclosed.

39. [20230140430](#) 1H-PYRAZOLO[4,3-d]PYRIMIDINE COMPOUNDS AS TOLL-LIKE RECEPTOR 7 (TLR7) AGONISTS

US - 04.05.2023

Clasificación Internacional [C07D 519/00](#) N° de solicitud 17792887 Solicitante BRISTOL-MYERS SQUIBB COMPANY Inventor/a Matthew COX

Compounds according to formula I are useful as agonists of Toll-like receptor 7 (TLR7). Such compounds can be used in cancer treatment, especially in combination with an anti-cancer immunotherapy agent, or as a vaccine adjuvant.

40. [4171243](#) ZUSAMMENSETZUNGEN UND VERFAHREN ZUR BEREITSTELLUNG VON GESUNDHEITSVORTEILEN BEI EINEM TIER

EP - 03.05.2023

Clasificación Internacional [A23C 9/20](#) N° de solicitud 21758162 Solicitante NESTLE SA Inventor/a YU PING

A method of enhancing vaccine efficacy, treating or preventing an allergy, or treating or preventing an autoimmune disease in an animal can comprise administering to the animal a composition comprising colostrum.

41. [WO/2023/073672](#) THERAPEUTIC AND VACCINE CANDIDATES AGAINST SARS-COV-2

WO - 04.05.2023

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/IB2022/060499 Solicitante GENEONE LIFE SCIENCE, INC. Inventor/a MUTHUMANI, Kar

Provided herein is an immunogenic composition comprising a synthetic antigen to COVID spike proteins, particularly the chimeric intermediate structure C-A Complex. Also disclosed herein is a method of preventing and/or treating a COVID infection in a subject in need thereof, by administering the immunogenic composition to the subject.

## 1.20230142894 VACCINE FOR PREVENTION OF NECROTIC ENTERITIS IN POULTRY

US - 11.05.2023

Clasificación Internacional A61K 39/08 N° de solicitud 18089056 Solicitante ARIZONA BOARD OF REGENTS ON BEHALF OF ARIZONA STATE UNIVERSITY Inventor/a Kenneth ROLAND

In certain embodiments, the present invention provides a poultry vaccine comprising an antigenic protein comprising a PlcC protein unit that is operably linked to a peptide linker that is operably linked to a NetB protein unit, where the vaccine is effective in stimulating a protective cellular and/or humoral immune response to *C. perfringens*. Methods are also provided for making the vaccine and for vaccinating poultry by administering such a vaccine.

## 2.20230145774 TREATMENT INVOLVING NON-IMMUNOGENIC RNA FOR ANTIGEN VACCINATION

US - 11.05.2023

Clasificación Internacional A61K 39/00 N° de solicitud 17907013 Solicitante BIONTECH SE Inventor/a Ugur SAHIN

The present disclosure relates to methods and agents for antigen vaccination and inducing effective antigen-specific immune effector cell responses such as T cell responses. Specifically, the present disclosure relates to methods comprising administering to a subject (i) non-immunogenic RNA encoding a peptide or protein comprising an epitope for inducing an immune response against an antigen in the subject, i.e., non-immunogenic RNA encoding vaccine antigen; and (ii) an immunostimulant or RNA encoding an immunostimulant. Administering to the subject non-immunogenic RNA encoding vaccine antigen may provide (following expression of the RNA by appropriate target cells) vaccine antigen for stimulation, priming and/or expansion of immune effector cells and, thus, may induce an immune response against vaccine antigen (and disease-associated antigen) in the subject.

3. [WO/2023/080501](#) METHOD OF PROVIDING INFORMATION FOR PREDICTING IMMUNE RESPONSE TO SARS-COV-2 VACCINE THROUGH GUT MICROBIOTA AND FUNCTIONAL BIOMARKER PROFILES, AND METHOD OF PROVIDING SUBJECT-CUSTOMIZED VACCINE INFORMATION

WO - 11.05.2023

Clasificación Internacional C12Q 1/6883 N° de solicitud PCT/KR2022/016100 Solicitante KOREA UNIVERSITY RESEARCH AND BUSINESS FOUNDATION Inventor/a SEONG, Hye

The present invention relates to a method of providing information for predicting immune response to SARS-CoV-2 vaccination and a method of providing customized vaccine information, and more specifically, the present invention verifies that the taxonomic composition of a gut microbiota, metabolites produced thereby, and functional profiles thereof are significantly correlated with the immune response after vaccination, and thus can be used to predict the immune response to SARS-CoV-2 vaccination or provide subject-customized vaccine information. According to the present invention, by identifying the taxonomic composition and functional biomarkers of a subject's gut microbiota prior to vaccination, the subject's humoral immune response level after vaccination can be predicted and information can be provided for vaccine administration that would induce an effective immune response and fewer side effects in the subject.



4.20230146516PRECISION-BASED IMMUNO-MOLECULAR AUGMENTATION (PBIMA)  
COMPUTERIZED SYSTEM, METHOD, AND THERAPEUTIC VACCINE  
US - 11.05.2023

Clasificación Internacional G16H 10/60 N° de solicitud 17944335 Solicitante Neo7Logix, LLC Inventor/a Shamsuddin Sultan Khan

As disclosed herein a precision based immunomolecular augmentation (PBIMA) high specificity patient profiling networked computer system, rapid therapeutic vaccine design method, and personalized vaccine, which utilizes immuno-molecular biopathway HLA affinity mapping and selection prediction ranking tools. This PBIMA approach comprises: Strategic-Selection, Molecular-Mapping, Antigen-Alignment, Receptor-Recognition, and Tactical Technology (SMART). The platform obtains data from a patient's genes and proteins as input. NGS data, including WES, WGS, ctDNA and cfDNA, RNAseq uses as input. PBIMA comprises a gene-protein-cell Cloud-based sequence editing interface to select the high confidence peptides. The PBIMA vaccine is a solution-based multi-purpose vaccine design strategy. PBIMA technology can produce therapeutic vaccines for cancer, autoimmune, neurodegenerative, inflammation-driven disease, and novel pathogen infection treatment. PBIMA therapeutic design is multi-mechanistic and broad-spectrum.

5.WO/2023/077395VESICULAR STOMATITIS VIRUS-BASED EBV VACCINE, PREPARATION  
METHOD THEREFOR, AND USE THEREOF  
WO - 11.05.2023

Clasificación Internacional C12N 15/86 N° de solicitud PCT/CN2021/128848 Solicitante SUN YAT-SEN UNIVERSITY CANCER CENTER (SYSUCC) Inventor/a ZENG, Musheng

A vesicular stomatitis virus-based EBV vaccine, a preparation method therefor, and a use thereof. For the first time, the key EBV glycoproteins gB and gHgL are displayed on the VSV surface, and the modified VSV is used for animal immunization. A new type of EBV vaccine is provided and is expected to induce bodies to generate sufficiently strong immune responses to prevent EBV from infecting host cells, thereby reducing the incidence of EBV-related tumor and non-tumor diseases. It is found that the modified VSV can produce significant specific antibodies against EBV surface glycoproteins gB and gHgL. Moreover, it is proved that the specific antibodies produced can inhibit EBV from infecting epithelial cells and B lymphocytes. It is also shown that a VSV-based EBV vaccine can be used for preventing EBV infections and related tumor and non-tumor diseases among people with good immune effects.

6.WO/2023/080408PRIMER SET, COMPOSITION AND KIT FOR DETECTING VACCINIA VIRUS AND  
ANALYSIS METHOD USING SAME  
WO - 11.05.2023

Clasificación Internacional C12Q 1/70 N° de solicitud PCT/KR2022/012714 Solicitante KOLON INDUSTRIES, INC. Inventor/a CHOI, Heon Sik

The present invention relates to a primer set, a composition and a kit for detecting vaccinia virus to detect and quantify vaccinia virus, and an analysis method using same. The primer set for detecting vaccinia virus has a short analysis period and excellent sensitivity and specificity compared to conventional virus quantification methods, and thus, when real-time PCR using such a primer set is performed, vaccinia virus can be detected and quantified more rapidly and accurately in real time.

7.20230146932MULTI-EPILOPE PAN-CORONAVIRUS VACCINE COMPOSITIONS  
US - 11.05.2023

Clasificación Internacional A61K 39/12 N° de solicitud 18046862 Solicitante THE REGENTS OF THE UNIVERSITY OF CALIFORNIA Inventor/a Lbachir BenMohamed

Multi-epitope, pan-coronavirus recombinant vaccine compositions featuring a combination of highly conserved B cell epitopes, highly conserved CD4+ T cell epitopes, and highly conserved CD8+ T cell epitopes, at least one of which is derived from a non-spike protein. The present invention uses several

immuno-informatics and sequence alignment approaches and multiple immunological assays in vitro using human blood and saliva samples from COVID patients and healthy patients to identify several human B cells, CD4+ and CD8+ T cell epitopes that are highly conserved and antigenic in vitro. The Invention also used an in vivo unique mouse model of ACE2/HLA-A0201/HLA-DR triple transgenic mouse model to test the immunogenicity and the protective efficacy against SARS-CoV-2 infection and COVID-Like symptoms, of the identified B and T cell epitopes and of the resulting multi-epitope-pan-Coronavirus vaccine candidates. The vaccine compositions herein have the potential to provide long-lasting B and T cell immunity regardless of Coronaviruses mutations.

8.WO/2023/080718VACCINE COMPOSITION FOR PREVENTION OR TREATMENT OF SARS-CORONAVIRUS-2 INFECTION

WO - 11.05.2023

Clasificación Internacional A61K 39/215 N° de solicitud PCT/KR2022/017256 Solicitante SK BIOSCIENCE CO., LTD. Inventor/a HONG, Seung-Hye

The present invention relates to a vaccine composition for prevention or treatment of SARS-Coronavirus-2 infection, comprising: RBD nanoparticles comprising a trimer and a pentamer, the trimer being formed by assembling three first polypeptide monomers comprising the amino acid sequence of SEQ ID NO: 1 or an amino acid sequence having at least 75% identity thereto, and the pentamer being formed by assembling five second polypeptide monomers comprising the amino acid sequence of SEQ ID NO: 2 or an amino acid sequence having at least 75% identity thereto; and an adjuvant. The vaccine composition, according to the present invention, exhibits excellent immunogenicity when inoculated, and thus the vaccine composition of the present invention may be usefully employed for the purpose of preventing SARS-Coronavirus-2 infection or alleviating symptoms when infected therewith.

9.20230144060MERS-CoV VACCINE

US - 11.05.2023

Clasificación Internacional A61K 39/215 N° de solicitud 17918244 Solicitante Sumagen Canada Inc. Inventor/a Chil-Yong KANG

A recombinant vesicular stomatitis virus (rVSV) carrying at least one gene that encodes for a MERS-CoV structural protein or modifications thereof. Vaccines or immunogenic compositions against MERS-CoV, and prime boost immunization platforms a prime boost immunization combination against MERS-CoV including: (a) a prime vaccine or immunogenic composition comprising a rVSV carrying at least one gene that encodes for a MERS-CoV structural protein or modifications thereof, and (b) a boost vaccine or immunogenic composition comprising a rVSV carrying the same at least one gene that encodes for a MERS-CoV structural protein or modifications thereof. The at least one gene can be genetically modified to encode a modified MERS-CoV structural protein that elevates glycoprotein synthesis and trigger efficient humoral immune response.

10.WO/2023/079507RESPIRATORY SYNCYTIAL VIRUS RNA VACCINE

WO - 11.05.2023

Clasificación Internacional A61K 39/12 N° de solicitud PCT/IB2022/060639 Solicitante SANOFI Inventor/a CASIMIRO, Danilo

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.

11.WO/2023/081471HUMAN BROADLY CROSSREACTIVE INFLUENZA MONOCLONAL ANTIBODIES AND METHODS OF USE THEREOF

WO - 11.05.2023

Clasificación Internacional C07K 16/10 N° de solicitud PCT/US2022/049142 Solicitante DANA-FARBER CANCER INSTITUTE, INC. Inventor/a MARASCO, Wayne A.

The present invention provides structural determinants important for binding to the stem domain of the HA protein of influenza virus, and methods of use thereof for production of high affinity neutralizing influenza virus antibodies based upon these determinants. The present invention further provides tools for determining the efficacy of an influenza virus vaccine. The present invention further provides a molecular signature useful for determining the efficacy of an influenza virus vaccine in a subject, or for predicting prior immunologic exposure or antigen responsiveness to vaccine or influenza virus infection.

12.20230147269METHOD FOR PRODUCING INACTIVATED INFLUENZA VACCINE AND VACCINE COMPOSITION THEREOF

US - 11.05.2023

Clasificación Internacional A61K 39/145 N° de solicitud 17905040 Solicitante DENKA COMPANY LIMITED Inventor/a Ryotaro MITSUMATA

An inactivated influenza vaccine may have high immunogenicity and may be produced by method including performing inactivation treatment using formaldehyde including treating a virus solution containing an influenza virus collected from a host with  $\beta$ -propiolactone in advance. The inactivation treatment using formaldehyde may be performed by adding formalin to the virus solution at a final concentration of 0.005 to 0.015 vol %.

13.WO/2023/080328VACCINE ADJUVANT COMPOSITION COMPRISING AGRIMONIA PILOSA EXTRACT AND GALLA RHOIS EXTRACT

WO - 11.05.2023

Clasificación Internacional A61K 39/39 N° de solicitud PCT/KR2021/018808 Solicitante APRG CO., LTD. Inventor/a KANG, Se Chan

The present invention relates to a vaccine adjuvant composition comprising an Agrimonia pilosa extract and a Galla rhois extract, wherein the vaccine adjuvant composition can increase the effect of virus vaccines and can thus be effectively used as an adjuvant for increasing the immune response of various vaccines, such as SARS-CoV-2 virus and influenza virus vaccines.

14.WO/2023/077206GENETICALLY MODIFIED EPITOPES AND MULTIEPITOPE PROTEINS, IMMUNOGENIC COMPOSITIONS AND USE THEREOF

WO - 11.05.2023

Clasificación Internacional C07K 14/44 N° de solicitud PCT/BR2022/050425 Solicitante UNIVERSIDADE FEDERAL DO RIO DE JANEIRO - UFRJ Inventor/a ALINE, Aline Silva Barreto

This invention consists of genetically modified epitopes and multiepitope proteins composed of these genetically modified epitopes to avoid the formation of neoepitopes. The multiAAA protein is composed of genetically modified epitopes by addition of three alanine residues. The multiGPGPG protein is composed of genetically modified epitopes by addition of glycine-proline-glycine-proline-glycine residues. Both proteins are formulated as immunogenic compositions. This invention aims at optimising the vaccinal efficacy and immunological potency of a vaccine against leishmaniasis through the use of its more potent and promiscuous epitopes, having a wider world population coverage, and further aims at solving the problem of the absence of a vaccine against human visceral leishmaniasis, a lethal disease that is spreading in Brazil and the world.

15.WO/2023/078279IMMUNOGENIC COMPOSITION AND USE THEREOF

WO - 11.05.2023

Clasificación Internacional C07K 14/195 N° de solicitud PCT/CN2022/129153 Solicitante FECULA BIOTECH CO., LTD. Inventor/a CHEN, Chih-Ming

Provided are an immunogenic composition and the use thereof. Provided is an immunogenic composition comprising a glycosylated chaperonin 60 derived from *Lactobacillus reuteri* and an immunogen, an oral vaccine comprising the immunogenic composition, and the anti-cancer use of the oral vaccine.

16.20230145860METHODS TO GENERATE VACCINE COMPOSITIONS THAT PRIME HUMAN LEUKOCYTE ANTIGEN CLASS I RESTRICTED CD8 T-CELL RESPONSES AGAINST VIRAL NON-VIRION-INTEGRAL DERIVED EPITOPES

US - 11.05.2023

Clasificación Internacional A61K 39/12 N° de solicitud 17907532 Solicitante Genovie AB Inventor/a Reagan Micheal Jarvis

Method for providing a vaccine composition capable of effectively inducing a systemic immune response and/or a localised immune response upon administration, wherein the composition comprises human leukocyte antigen class I (HLAI)-restricted epitopes selected from viral pathogen non-virion-integral proteins (non-VIP) and thus prime a CD8 T-cell response specifically directed against virally infected cells.

17.WO/2023/080246BETACORONAVIRUS ATTENUATED STRAIN

WO - 11.05.2023

Clasificación Internacional C12N 7/01 N° de solicitud PCT/JP2022/041445 Solicitante THE RESEARCH FOUNDATION FOR MICROBIAL DISEASES OF OSAKA UNIVERSITY Inventor/a TAKEKAWA, Shiro

The purpose of the present invention is to provide a strain that is useful as a new betacoronavirus vaccine. A novel betacoronavirus, according to the present invention, having, in combination, a prescribed substitution mutation relating to temperature sensitivity, and a prescribed deletion mutation relating to attenuation, is found to be useful as a betacoronavirus vaccine strain having excellent attenuated characteristics.

18.20230145957A VACCINE TO PROTECT AGAINST MYCOPLASMA HYOPNEUMONIAE

US - 11.05.2023

Clasificación Internacional A61K 39/295 N° de solicitud 17917987 Solicitante Intervet Inc. Inventor/a Johanna Jacoba Elisabeth Bijlsma

A vaccine comprising nanoparticles in association with a Mycoplasma hyopneumoniae bacterin, wherein the nanoparticles comprise a cationic polysaccharide and an anionic phospholipid.

19.20230143494METHODS OF INACTIVATION OF VIRUSES USING N-METHYLGLUCAMIDE AND ITS DERIVATIVES

US - 11.05.2023

Clasificación Internacional A01N 37/20 N° de solicitud 17975645 Solicitante BAYER HEALTHCARE LLC Inventor/a SHENGJIANG LIU

This disclosure relates to methods for use in inactivating viruses. The methods of inactivating viruses with N-methylglucamides is applicable to the purification process of biologically-active drugs such as protein subunits, proteins (enzymes, factors, etc.), recombinant proteins, antibodies, vaccine or gene therapeutic products. The detergents used in this method are based on multiple N-methylglucamide homologs, consisting of a hydrophilic glucose moiety and hydrophobic fatty acid tail, linked by an amide bond.

Additionally, these sugar-based detergents are nonionic by nature, which do not disrupt the drug protein, plasma biologics, non-enveloped viral vaccine or adeno associated viral particles.

A method of purifying a biological product solution of interest having an unidentified enveloped virus contaminant, including incubating a biological product solution of interest with a standard solution, inactivating any potential enveloped virus contaminant present in the biological product solution of step (a), measuring the inactivated virus present in the final solution of step (b), incubating a separate biological product solution of interest with a N-methylglucamide solution, measuring the inactivated virus present in the final solution of step (d), and comparing the results of the final solutions of step (c) and step (e).

20.WO/2023/081798MULTIVALENT INFLUENZA VACCINES COMPRISING RECOMBINANT HEMAGGLUTININ AND NEURAMINIDASE AND METHODS OF USING THE SAME

WO - 11.05.2023

Clasificación Internacional A61K 39/12 N° de solicitud PCT/US2022/079274 Solicitante SANOFI PASTEUR INC. Inventor/a ALEFANTIS, Timothy

Disclosed herein are multivalent vaccine or immunogenic compositions comprising one or more recombinant influenza virus hemagglutinin (HA), one or more recombinant influenza virus neuraminidase (NA), and an optional adjuvant. Also disclosed are methods of using the vaccine or immunogenic composition.

21.WO/2023/079113HYBRID MULTIVALENT INFLUENZA VACCINES COMPRISING HEMAGGLUTININ AND NEURAMINIDASE AND METHODS OF USING THE SAME

WO - 11.05.2023

Clasificación Internacional A61K 39/12 N° de solicitud PCT/EP2022/080875 Solicitante SANOFI Inventor/a ALEFANTIS, Timothy

Disclosed herein are hybrid multivalent vaccine or immunogenic compositions comprising (i) one or more influenza virus proteins selected from one or more influenza virus hemagglutinin (HA) proteins, one or more influenza virus neuraminidase (NA) proteins, or a combination thereof; and (ii) one or more ribonucleic acid molecules encoding one or more influenza virus proteins selected from one or more influenza virus HA proteins, one or more influenza virus NA proteins, or a combination thereof. Also disclosed are methods of using the vaccine or immunogenic compositions.

22.20230145817Neopeptide vaccine and immune stimulant combinations and methods

US - 11.05.2023

Clasificación Internacional A61K 39/00 N° de solicitud 18150136 Solicitante NantCell, Inc. Inventor/a Shahrooz Rabizadeh

Cancer is treated via a coordinated treatment regimen that use various compounds and compositions that employ prime-boost vaccination in combination with immune modulatory treatment and biasing of an immune response towards a Th1 profile.

23.WO/2023/078946LIPID NANOPARTICLES FOR OLIGONUCLEOTIDE DELIVERY

WO - 11.05.2023

Clasificación Internacional A61K 9/51 N° de solicitud PCT/EP2022/080576 Solicitante ZIPHIUS VACCINES NV Inventor/a VALEMBOIS, Sophie

The current invention relates to ionizable lipid-like compound according to Formula (I) or pharmaceutically acceptable salt, tautomer, or stereoisomer thereof. The present invention also provides a lipid nanoparticle comprising an ionizable lipid-like compound according to Formula (I) and one or more RNA molecules, as well as a pharmaceutical composition or vaccine, comprising such lipid nanoparticles.

24.20230148332VACCINE ADJUVANTS

US - 11.05.2023

Clasificación Internacional A61K 39/39 N° de solicitud 17918249 Solicitante VIROVAX LLC Inventor/a Sunil Abraham David

A compound comprising a structure of Compound 1, or prodrug thereof, salt thereof, or tautomer, polymorph, solvate, or combination thereof, can be used as an adjuvant in vaccines. The Compound 1 can be used in: methods of performing a vaccination; methods of agonizing a TLR 7 and/or TLR 8; and/or methods of activating an immune system.

25.WO/2023/079529RE-FOCUSING PROTEIN BOOSTER IMMUNIZATION COMPOSITIONS AND METHODS OF USE THEREOF

WO - 11.05.2023

Clasificación Internacional A61K 39/215 N° de solicitud PCT/IB2022/060700 Solicitante KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY Inventor/a RUEPING, Magnus Albert

Booster immunization compositions and methods of use thereof, are provided. The disclosed compositions use adjuvanted proteins as a booster vaccine targeting functionally relevant pathogen B and

T cell epitopes to re-focus a patient's adaptive antibody and cytotoxic T-cell response. The pharmaceutically active ingredient of the re-focusing boost vaccines include of one or several recombinant protein molecules in a full-length or truncated yet functional (meaning the overall antigenic tertiary structure is retained) version of disease-related protein or protein domain, a smaller subunit or specific or modified epitope or combination of shorter epitopes derived from that initial prime antigen sequence. Methods for re-focusing an immune response in a subject, to augment an existing (not sufficiently protective immune response) and effectively neutralize a pathogen of interest in a mammalian host organism include administering to a subject whose immune system has been primed by a previous infection/ vaccination against the pathogen.

26.WO/2023/077924VACCINE AGAINST PANCREATIC CANCER, AND MEDICAL USE THEREOF  
WO - 11.05.2023

Clasificación Internacional A61K 47/64 N° de solicitud PCT/CN2022/114956 Solicitante YUANBEN (ZHUHAI HENGQIN) BIOTECHNOLOGY CO., LTD. Inventor/a CAI, Jiong

An anti-tumor fusion protein, wherein the fusion protein can inhibit the growth of MUC1-positive tumor cells, and can inhibit the growth of pancreatic cancer tumor cells. The fusion protein has broad application prospects for the prevention and/or treatment of pancreatic cancer.

27.WO/2023/079472MULTICISTRON EXPRESSION VECTOR FOR COVID-19 VACCINE  
WO - 11.05.2023

Clasificación Internacional C12N 15/85 N° de solicitud PCT/IB2022/060586 Solicitante KASHIV BIOSCIENCES, LLC Inventor/a GUPTA, Sudharti

The present invention provides an expression vector comprises gene of interest encode more than one structural protein to enhance immune responses against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and its variants. Furthermore, the expression vector to produce mRNA expresses more than one structural protein to generate immune response against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and its variants.

28.WO/2023/081936SARS-COV-2 VACCINES  
WO - 11.05.2023

Clasificación Internacional C12N 15/86 N° de solicitud PCT/US2022/079510 Solicitante GRITSTONE BIO, INC. Inventor/a GITLIN, Leonid

Disclosed herein are vaccine compositions that include SARS-CoV-2 MHC epitope-encoding cassettes and/or full-length SARS-CoV-2 proteins. Also disclosed are nucleotides, cells, and methods associated with the compositions including their use as vaccines.

29.WO/2023/081861ENHANCED EXPRESSION VIA AUTOTRANSPORTERS  
WO - 11.05.2023

Clasificación Internacional C07K 19/00 N° de solicitud PCT/US2022/079351 Solicitante UNIVERSITY OF VIRGINIA PATENT FOUNDATION Inventor/a ZEICHNER, Steven, L.

Provided are expression cassettes that include coding sequences encoding at least one polar amino acid or at least one expression enhancement peptide that includes one or more polar amino acids, a polypeptide of interest, and a bacterial autotransporter  $\beta$ -barrel polypeptide. In some embodiments, the coding sequences are in frame with each other such that transcription and translation of the expression cassette in a host cell produces a fusion protein with the polar amino acid and/or the expression enhancement peptide, the polypeptide of interest, and the bacterial autotransporter  $\beta$ -barrel polypeptide expressed on the surface of the host cell. Also provided are expression vectors and host cells that include the expression cassettes, vaccine compositions based on the presently disclosed compositions, and methods for inducing immune responses, enhancing expression of the polypeptides of interest, for preventing or treating viral infections such as but not limited to coronavirus infections.

30.WO/2023/078954LIPID NANOPARTICLES FOR OLIGONUCLEOTIDE DELIVERY

WO - 11.05.2023

Clasificación Internacional A61K 9/51 N° de solicitud PCT/EP2022/080590 Solicitante ZIPHIUS VACCINES NV Inventor/a VALEMBOIS, Sophie

The current invention relates to ionizable lipid-like compounds according to Formula (I) or pharmaceutically acceptable salt, tautomer, or stereoisomer thereof. The present invention also provides a lipid nanoparticle comprising an ionizable lipid-like compound according to Formula (I) and one or more RNA molecules, as well as a pharmaceutical composition or vaccine, comprising such lipid nanoparticles.

31.20230141404BFS INJECTION AND CONNECTION ASSEMBLIES

US - 11.05.2023

Clasificación Internacional A61M 5/178 N° de solicitud 18055103 Solicitante Koska Family Limited Inventor/a Jeff Price

A pre-filled medical delivery system assembled and configured to allow delivery of a single dose of a therapeutic agent (e.g., vaccine, drug, medicament, etc.) from a Blow-Fill-Seal (BFS) bottle to a patient utilizing one or more BFS injection or connection assemblies.

32.20230142621EXOSOMAL NUCLEIC ACID VACCINE MODULARLY CONFIGURED TO HARNESS MULTIPLE ANTIGEN PRESENTATION MECHANISMS

US - 11.05.2023

Clasificación Internacional A61K 39/12 N° de solicitud 17909610 Solicitante The Johns Hopkins University Inventor/a Stephen John Gould

The present invention relates to modular systems for vaccination against infectious agents that involves the delivery of, e.g., exosome-loaded, antigen-encoding mRNAs to and into cells and tissues of the immunized subject. The present invention also relates to compositions and methods for the design, preparation, manufacture, formulation, and/or use of vaccines, e.g., nucleic acid vaccines, loaded into extracellular vesicles, e.g., exosomes loaded with synthetic mRNAs encoding multiple surface and cytoplasmic antigens of interest, e.g., antigenic polypeptides derived from an infectious virus, e.g., SARS-CoV-2, designed to elicit strong humoral and cellular immune responses due to the simultaneous expression of antigens in their native state and as exosome-associated antigens.

33.WO/2023/077925DRUG FOR TREATING AND/OR PREVENTING CANCER AND USE THEREOF

WO - 11.05.2023

Clasificación Internacional A61K 39/395 N° de solicitud PCT/CN2022/114957 Solicitante YUANBEN (ZHUHAI HENGQIN) BIOTECHNOLOGY CO., LTD. Inventor/a CAI, Jiong

The present invention provides a drug for treating and/or preventing cancer and a use thereof. The drug in the present invention comprises a recombinant MBP-MUC1-N fusion protein vaccine, a PD-1 antibody and/or oxaliplatin, and the drug can enhance an MUC1-specific anti-tumor immune response.

34.WO/2023/078950LIPID NANOPARTICLES FOR OLIGONUCLEOTIDE DELIVERY

WO - 11.05.2023

Clasificación Internacional A61K 9/51 N° de solicitud PCT/EP2022/080581 Solicitante ZIPHIUS VACCINES NV Inventor/a HAQUE, AKM, Ashiqul

The current invention relates to ionizable lipid-like compound according to Formula (I) or pharmaceutically acceptable salt, tautomer, or stereoisomer thereof. The present invention also provides a lipid nanoparticle comprising an ionizable lipid-like compound according to Formula (I) and one or more RNA molecules, as well as a pharmaceutical composition or vaccine, comprising such lipid nanoparticles.

35.202301448241H-PYRAZOLO[4,3-d]PYRIMIDINE COMPOUNDS AS TOLL-LIKE RECEPTOR 7 (TLR7) AGONISTS

US - 11.05.2023

Clasificación Internacional C07D 487/04 N° de solicitud 17793248 Solicitante BRISTOL-MYERS SQUIBB COMPANY Inventor/a Liqi HE

Compounds according to formula I or II are useful as agonists of Toll-like receptor 7 (TLR7). Such compounds can be used in cancer treatment, especially in combination with an anti-cancer immunotherapy agent, or as a vaccine adjuvant.

36.WO/2023/078574A PHARMACEUTICAL KIT FOR ONCOLYTIC VIROTHERAPY OF BREAST CANCER, ITS PREPARATION AND USE

WO - 11.05.2023

Clasificación Internacional A61P 35/00 N° de solicitud PCT/EP2021/080992 Solicitante SVEUCILISTE U ZAGREBU Inventor/a HALASSY, Beata

The present invention discloses a pharmaceutical kit consisting of composition I and composition II. Composition I comprises a viable Measles virus (MeV), Edmonston Zagreb vaccine strain with one or more pharmaceutical excipients. Composition II comprises a viable, Vesicular stomatitis virus (VSV) Indiana strain according to ATCC, with one or more pharmaceutical excipients. The final dosage forms are a suspension or a lyophilized powder for reconstitution of injectable suspension. The compositions I and II from the said kit are administered by a specific dosage regimen as a therapy complementing surgical excision. The dosage regimen in combination with surgery enables effective therapeutical treatment of carcinomas, in particularly the treatment of early-stage breast cancers, including locally recurrent breast cancer.

37.20230148369NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST LUNG CANCER, INCLUDING NSCLC, SCLC AND OTHER CANCERS US - 11.05.2023

Clasificación Internacional C07K 14/47 N° de solicitud 17820821 Solicitante Immatics Biotechnologies GmbH Inventor/a Colette SONG

The present invention relates to peptides, proteins, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated T-cell peptide epitopes, alone or in combination with other tumor-associated peptides that can for example serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses, or to stimulate T cells ex vivo and transfer into patients. Peptides bound to molecules of the major histocompatibility complex (MHC), or peptides as such, can also be targets of antibodies, soluble T-cell receptors, and other binding molecules.

38.WO/2023/079528COMPOSITIONS SUITABLE FOR USE IN A METHOD FOR ELICITING CROSS-PROTECTIVE IMMUNITY AGAINST CORONAVIRUSES

WO - 11.05.2023

Clasificación Internacional A61K 39/215 N° de solicitud PCT/IB2022/060699 Solicitante KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY Inventor/a CHAHAL, Jasdave

Immunogenic compositions and methods of use thereof, for eliciting an immune response against multiple coronaviruses, using a single vaccine composition are described. The compositions include an antigen from more than one pathogen, for example, more than one member of the  $\beta$ -coronavirus family, for example, SARS-CoV and MERS-CoV. Exemplary antigens include the receptor binding domain (RBD) of the coronavirus spike protein or a fragment thereof. The disclosed compositions are administered to a subject in need therefore, to generate an immune response against more than one pathogen, represented by the source of the antigens in the construct.

39.20230142780USE OF VIRAL VECTORS FOR CORONAVIRUS VACCINE PRODUCTION US - 11.05.2023

Clasificación Internacional A61K 39/215 N° de solicitud 17918000 Solicitante 4MVac LLC Inventor/a Hansell Hall Stedman



Provided herein are compositions that includes AAVs and AAV vectors that include a sequence encoding a SARS-CoV-2 polypeptide or a fragment thereof. Also provided herein are methods and materials for making and using AAVs and AAV vectors to generate immunity to a coronavirus in a subject.

40.20230145121NEOANTIGEN VACCINES FOR TRIPLE NEGATIVE BREAST CANCER

US - 11.05.2023

Clasificación Internacional C07K 14/47 N° de solicitud 17823937 Solicitante Washington University  
Inventor/a William Gillanders

The present disclosure is directed to compositions and methods of treating Triple Negative Breast Cancer (TNBC) in a human subject. A method of treating TNBC in a human subject includes administering a therapeutically effective amount of a neoantigen vaccine composition comprising a fusion protein comprising at least one TNBC-associated neoantigen epitope joined to a mutant ubiquitin protein, or a nucleic acid molecule encoding such a protein.

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