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VacCiencia es una publicación dirigida a investigadores y especialistas dedicados a la vacunología y temas afines, con el objetivo de serle útil.

Usted puede realizar sugerencias sobre los contenidos y de esa forma crear una retroalimentación que nos permita acercarnos más a sus necesidades de información.

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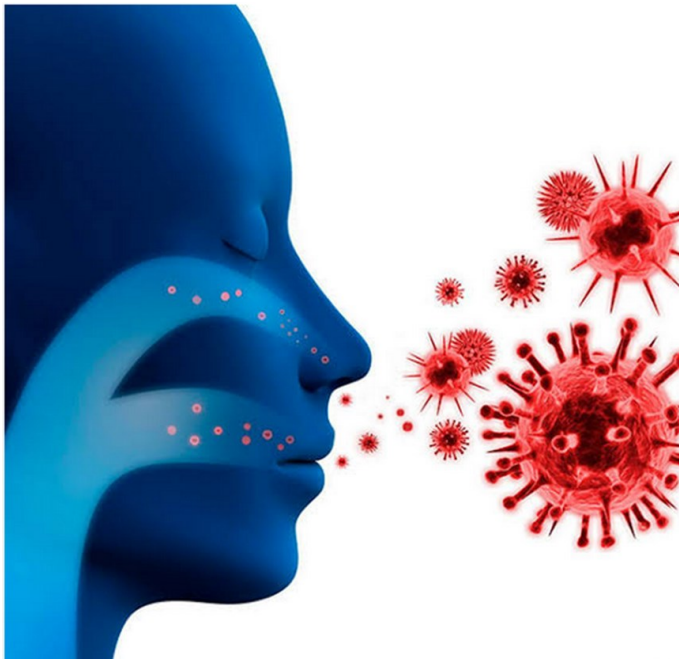
Virus respiratorio sincitial: de la biología estructural a las vacunas de próxima generación



El virus respiratorio sincitial (VRS) es una de las principales causas de infección respiratoria grave a nivel mundial, afectando especialmente a niños menores de 5 años y adultos mayores. Durante décadas, no existió una vacuna eficaz. Sin embargo, 2023 marcó un hito con la aprobación de las primeras vacunas contra el VRS para adultos mayores y, más recientemente, para embarazadas (inmunización materna). El desarrollo de nuevas plataformas (proteínas recombinantes, ARNm, vectores virales) y la expansión a poblaciones pediátricas hacen de este un tema de máxima relevancia.

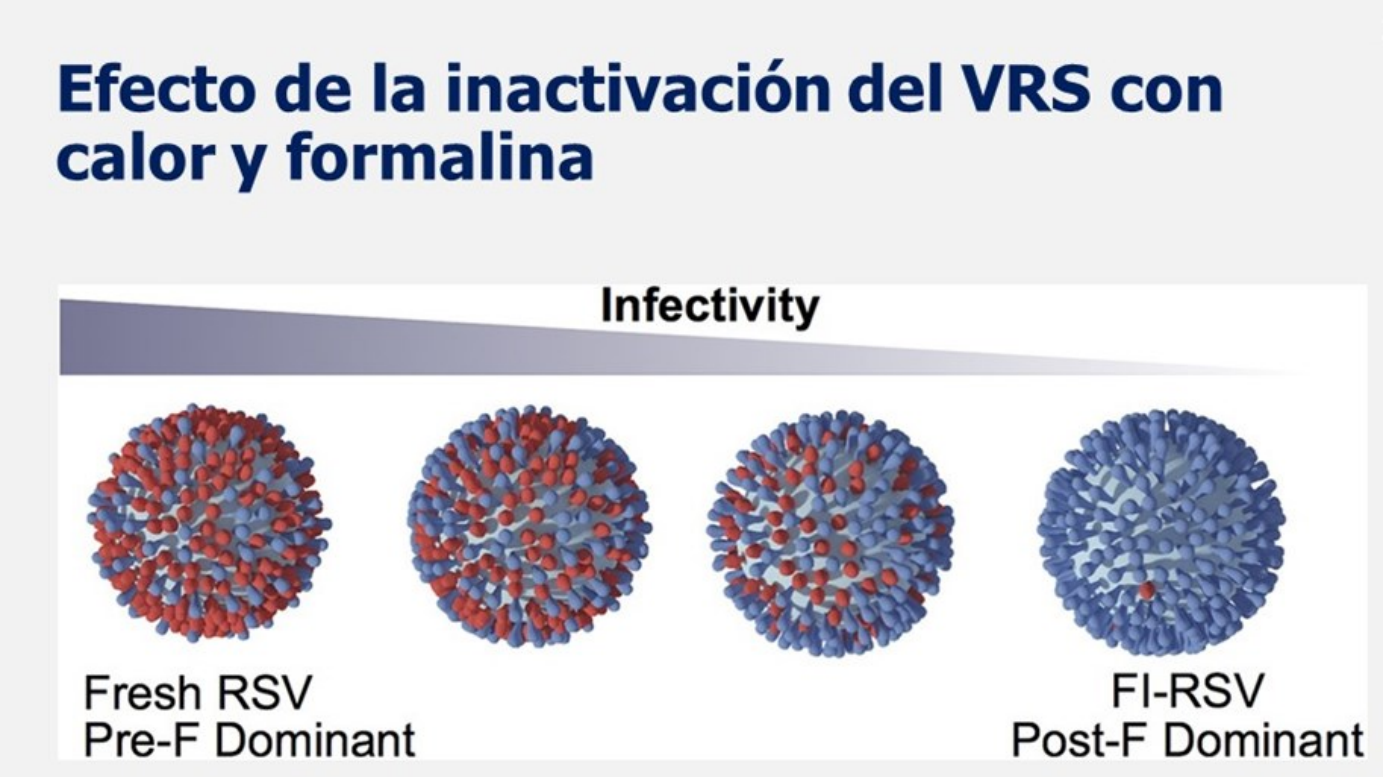
Carga de la enfermedad y epidemiología

El VRS afecta de manera desproporcionada a los extremos de la vida: niños menores de 5 años y adultos mayores, especialmente aquellos de 75 años o más y residentes en centros de cuidados prolongados. Su impacto en la salud pública es considerable, pues se estima que, cada año este virus causa aproximadamente 3,6 millones de hospitalizaciones asociadas y unas 100 000 muertes atribuibles al virus en niños menores de 5 años en todo el mundo. Aproximadamente la mitad de las muertes por VRS en niños ocurren en lactantes menores de 6 meses. La mayoría de las muertes pediátricas por VRS (97 %) ocurren en países de ingresos bajos y medios, donde el acceso a la atención médica de apoyo es limitado.

Aunque el virus fue aislado en 1955, durante mucho tiempo no se contaba con una vacuna para contrarrestarlo. El desarrollo de una vacuna segura y efectiva se convirtió en uno de los mayores desafíos de la inmunología moderna, hasta que los avances en biología estructural y el éxito de las plataformas de ARN mensajero durante la pandemia de COVID-19 catalizaron un cambio de paradigma.

El desafío histórico: fracasos iniciales

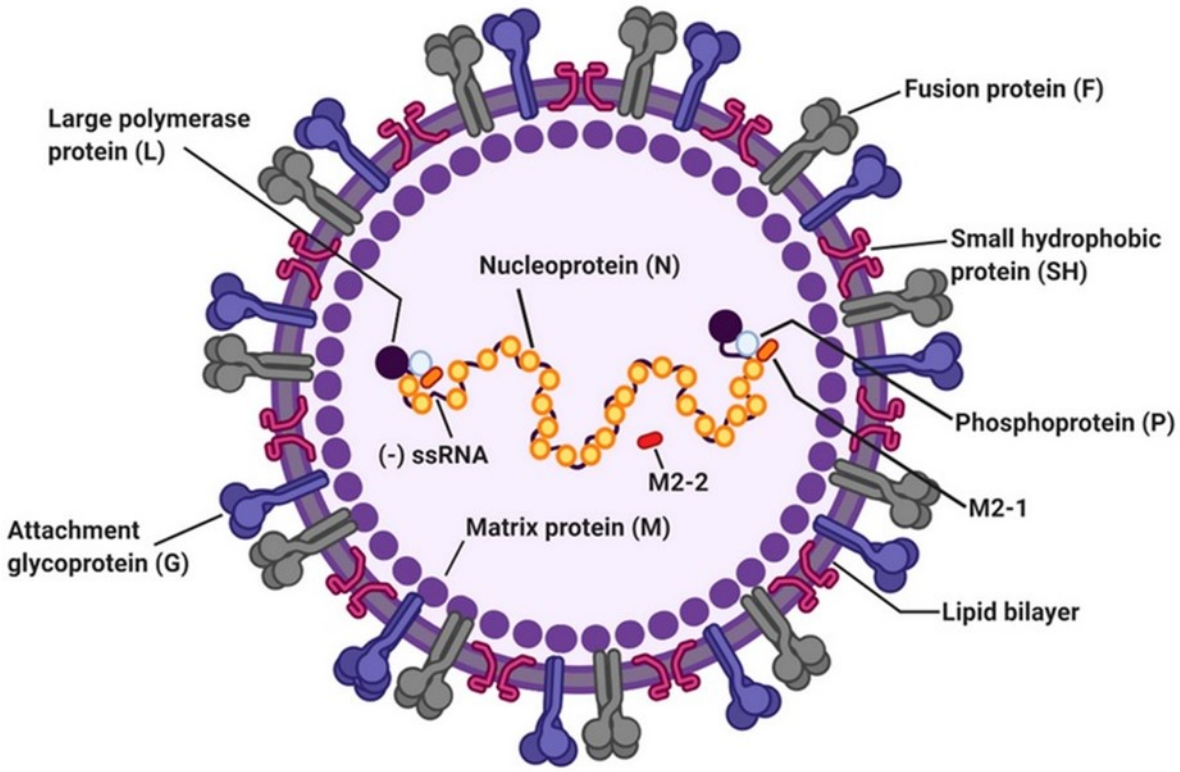
El camino hacia una vacuna segura contra el VRS estuvo marcado por un revés trágico en la década de 1960, cuando una vacuna inactivada con formalina (FI-RSV) no solo fue ineficaz, sino que provocó un fenómeno de enfermedad respiratoria potenciada (ERD) en niños vacunados que posteriormente se infectaron de forma natural, debido a que los anticuerpos frente a la proteína F posfusión carecen de capacidad neutralizante. De hecho, un estudio reciente ha demostrado que la inactivación del VRS con formalina y alcohol hace que todas las moléculas de la proteína F prefusión de la superficie del virus cambien a la configuración posfusión, perdiendo la capacidad de generar anticuerpos neutralizantes.



Este fracaso histórico detuvo el desarrollo de vacunas durante décadas y puso de manifiesto la complejidad inmunológica del VRS, estableciendo una advertencia crucial sobre los riesgos de una inmunización mal diseñada.

El avance estructural: la estabilización de la proteína F

El punto de inflexión en el desarrollo de vacunas contra el VRS llegó gracias a los avances en biología estructural, con la determinación de la estructura de la proteína de fusión (F) del virus. Esta glicoproteína es esencial para la entrada del virus en la célula huésped y es el principal antígeno contra el cual se dirigen los anticuerpos neutralizantes.



La proteína F experimenta un cambio conformacional dramático desde una forma de pre-fusión (preF) a una forma estable de post-fusión (postF) durante el proceso de entrada viral. Los anticuerpos neutralizantes más potentes se dirigen contra la conformación de preF. Un avance fundamental fue la estabilización de la proteína F en su conformación de preF mediante la introducción de mutaciones específicas, lograda por los equipos de científicos financiados por el NIAID, como Jason McLellan y Barney Graham. Esto permitió la generación de inmunógenos estables capaces de inducir una respuesta de anticuerpos neutralizantes de alta potencia, sentando las bases para el desarrollo de vacunas seguras y efectivas.

Vacunas aprobadas: Arexvy, Abrysvo y mResvia

El año 2023 marcó un antes y un después con la aprobación de las primeras vacunas contra el VRS. La FDA (Administración de Alimentos y Medicamentos de EE. UU.) autorizó tres vacunas de subunidades proteicas para adultos mayores: Arexvy (GSK), Abrysvo (Pfizer) y mResvia (Moderna).

La siguiente tabla muestra las características principales de estas vacunas.

Característica	Arexvy (GSK)	Abrysvo (Pfizer)	mResvia (Moderna)
Plataforma	Proteína recombinante preF + adyuvante AS01E	Proteína recombinante preF bivalente (subgrupos A y B)	ARN mensajero (ARNm) en nanopartículas lipídicas
Eficacia	82.6 % contra enfermedad del tracto respiratorio inferior (ETRI) con 2 o más síntomas; 94.1 % contra ETRI grave	66.7 % contra ETRI 2 o más síntomas; 85.7 % contra ETRI con 3 síntomas	83.7 % contra ETRI con 3 o más síntomas en adultos ≥60 años
Vía de administración	Intramuscular	Intramuscular	Intramuscular
Población aprobada	Adultos ≥60 años	Adultos ≥60 años; embarazadas (32-36 semanas)	≥18 años
Aprobación	FDA, EMA (2023)	FDA, EMA (2023)	FDA, EMA (2024)

Estas vacunas indujeron un aumento de 5 a 7 veces en los títulos de anticuerpos neutralizantes, con respuestas sostenidas hasta por 12 meses.

Es importante tener en cuenta que los ensayos clínicos midieron la eficacia con criterios ligeramente distintos. Una comparación directa "cabeza a cabeza" no está disponible.

Las tres tienen perfiles de seguridad aceptables. Arexvy y mResvia muestran una reactogenicidad (efectos secundarios como dolor, fatiga) más alta en adultos jóvenes.

En el caso de Abrysvo, su indicación en mujeres embarazadas se hace con el objetivo de proteger al bebé desde el nacimiento hasta los 6 meses de edad. No obstante, tiene una advertencia sobre un posible riesgo de síndrome de Guillain-Barré y parto prematuro. Ni Arexvy ni mResvia están aprobados para este uso.

Nuevas plataformas: ARNm, vectores virales y VLP

Las vacunas de proteína recombinante son el estándar actual, pero otras plataformas tecnológicas están en desarrollo. La tecnología de ARN mensajero (ARNm), famosa por su éxito en la pandemia de COVID-19, ha sido aplicada exitosamente al VRS, como lo demuestra la propia mResvia. Además, se exploran otras plataformas como las basadas en vectores virales y las de partículas similares a virus (VLP). Todas estas estrategias tienen como objetivo mejorar la inmunogenicidad y la duración de la protección.

Vacunas de ARN mensajero (mRNA)

mRNA-1345 (Moderna) utiliza la proteína preF estabilizada codificada en mRNA encapsulado en nanopartículas lipídicas. En un ensayo de fase 3 (ConquerRSV), demostró una eficacia del 83.7 % contra ETRI con tres o más síntomas en adultos ≥60 años y un perfil de seguridad favorable. La FDA le ha otorgado la designación de *Breakthrough Therapy*. Otras vacunas de mRNA de ARN autoadyuvante (como las de GSK) también se encuentran en ensayos clínicos.

Vacunas de vector viral no replicativo

La vacuna **Ad26.RSV.preF** (Janssen) utiliza un vector de adenovirus 26 (Ad26) para expresar la proteína preF estabilizada. Aunque un ensayo de fase 2b mostró una eficacia del 80 % en adultos mayores, el desarrollo se suspendió parcialmente por razones estratégicas. **MV-012-501** (Meissa) es una vacuna de vector viral atenuado (MVA) para administración intranasal, actualmente en fase 2.

Vacunas de partículas similares a virus (VLP)

El candidato vacunal **Roussan®/AB01** (R-Pharm, AstraZeneca) utiliza tecnología de partículas similares a virus, que presentan múltiples copias de la proteína preF, mejorando la inmunogenicidad. La NIAID también ha desarrollado candidatos basados en VLP en fase 2 para niños y adultos.

Expansión a poblaciones pediátricas y vacunación materna

La vacunación materna ha emergido como una estrategia clave para proteger a los lactantes, quienes son los más vulnerables a la infección grave. Abrysvo fue aprobada para su administración

en embarazadas, demostrando una eficacia significativa en la transferencia de anticuerpos protectores al feto y, por ende, en la reducción de la infección grave por VRS en los primeros meses de vida. Esta estrategia, junto con la profilaxis pasiva con anticuerpos monoclonales de larga duración como nirsevimab (Beyfortus®, Sanofi/AstraZeneca), representa un avance fundamental para reducir la carga de la enfermedad en los lactantes, para quienes aún no hay una vacuna aprobada de administración directa.

En el desarrollo de vacunas para niños, se están explorando estrategias en múltiples frentes:

Vacunas de subunidad proteica para niños ≥ 6 meses (como la de GSK).
Vacunas de ARNm en desarrollo para niños pequeños (Moderna ha iniciado ensayos pediátricos).
Vacunas de vector viral atenuado para administración intranasal en niños, imitando la infección natural y potencialmente induciendo inmunidad mucosa.

Perspectivas futuras y desafíos

El futuro de la vacunación contra el VRS apunta hacia varias direcciones prometedoras:

Vacunas combinadas: Se están desarrollando vacunas que combinan VRS con otros patógenos respiratorios (influenza, SARS-CoV-2). Moderna está desarrollando una vacuna de mRNA combinada (mRNA-1230) contra VRS, influenza y COVID-19.

Mejora de la respuesta inmune en adultos mayores: La inmunosenescencia (el deterioro del sistema inmune asociado a la edad) sigue siendo un desafío, por lo que se investigan adyuvantes más potentes y formulaciones específicas para esta población.

Acceso global y equidad: La implementación de estas vacunas en países de ingresos bajos y medios enfrenta barreras de costo, infraestructura de cadena de frío, y necesidad de programas de inmunización materna robustos. Es crucial garantizar un acceso equitativo a estas tecnologías preventivas.

Vigilancia de nuevas variantes: La vigilancia continua de nuevos genotipos de VRS sigue siendo importante para garantizar que las vacunas mantengan su efectividad.

Vacunas intranasales: Las vacunas de administración mucosa (intranasal) podrían ofrecer una ventaja al inducir inmunidad de las mucosas en el tracto respiratorio superior, bloqueando la transmisión temprana del virus.

Consideraciones finales

La historia de las vacunas contra el VRS es un ejemplo de resiliencia e innovación científica. El fracaso de la vacuna inactivada con formalina en la década de 1960 fue una lección dolorosa, pero impulsó la investigación fundamental que, décadas después, permitió comprender la estructura del virus y diseñar vacunas seguras y efectivas. La aprobación de Arexvy, Abrysvo y mResvia en 2023 representa un hito, y el desarrollo de vacunas de ARNm y la vacunación materna abren un futuro esperanzador.

Los desafíos que persisten incluyen garantizar la equidad en el acceso global, el seguimiento de la duración de la inmunidad y la adaptación a la evolución del virus. Sin embargo, la convergencia de la inmunología estructural, la biotecnología avanzada y las lecciones de la pandemia de COVID-19 sitúa a las vacunas contra el VRS como un modelo de éxito en la lucha contra las enfermedades respiratorias globales.

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Noticias en la Web

La Revolución de la Inteligencia Artificial en la Vacunología: hacia una nueva era en la prevención de enfermedades infecciosas

22 jun. La prestigiosa revista *The Lancet Infectious Diseases* ha publicado recientemente una serie de artículos fundamentales que analizan el papel transformador de la inteligencia artificial (IA) en el ámbito de las enfermedades infecciosas.

Esta serie de trabajos propone un marco conceptual que abarca desde la práctica clínica y la salud pública hasta la investigación más avanzada, subrayando cómo la IA está redefiniendo no solo el diagnóstico y el tratamiento, sino de manera muy especial, el ciclo completo de vida de las vacunas.

Sin embargo, el gran reto sigue siendo la calidad y diversidad de los datos, junto con cuestiones éticas y regulatorias.

Como conclusión, la IA no sustituirá al criterio humano, pero será clave para crear vacunas más rápidas, precisas y accesibles si se usa con supervisión y responsabilidad.

Un Cambio de Paradigma

La prevención y el manejo de las enfermedades infecciosas han estado históricamente marcados por innovaciones disruptivas, como el descubrimiento de los antimicrobianos y el desarrollo de las primeras vacunas. Hoy nos encontramos ante una nueva frontera: la IA, definida como la capacidad de los sistemas informáticos para replicar procesos de la inteligencia humana como el razonamiento, la resolución de problemas y el aprendizaje.

En el campo de la vacunología, la IA tiene el potencial de transformar cada fase, desde el descubrimiento inicial de antígenos hasta la fabricación y el seguimiento post-comercialización. Aunque en algunas áreas, como la investigación temprana, la transformación ya es una realidad, en otras, como el desarrollo clínico, la tecnología aún se encuentra en sus primeras etapas de maduración.

El Impacto de la IA en el Ciclo de la Vacuna

1. Descubrimiento y Diseño de Antígenos

Esta es quizás el área donde la IA ha logrado su mayor éxito hasta la fecha. La vacunología inversa, iniciada hace tres décadas con la secuencia genómica de *Neisseria meningitidis* grupo B, ha sido potenciada exponencialmente por algoritmos modernos.

Un hito fundamental es el uso de AlphaFold, un sistema capaz de predecir la estructura tridimensional de las proteínas en cuestión de minutos, una tarea que antes requería años de experimentación. Gracias a la combinación de datos genómicos masivos (como los más de 17 millones de secuencias de SARS-CoV-2 disponibles) y estructuras predichas en silico, los científicos pueden ahora identificar antígenos más estables y capaces de inducir respuestas inmunitarias más potentes, como se ha visto en el diseño de nanopartículas para vacunas contra el propio coronavirus y el virus respiratorio sincitial (VRS).

2. Predicción de la Respuesta Inmune

Simular el sistema inmunitario humano es un desafío colosal debido a su complejidad extrema; se estima que una descripción completa requeriría generar un trillón de terabytes de datos. Sin embargo, la IA ya permite analizar subconjuntos de datos inmunológicos tras la vacunación para identificar firmas moleculares predictivas. Mediante enfoques de "sistemática de las vacunas" (*systems vaccinology*), se pueden integrar datos de citocinas, proteínas y respuestas de anticuerpos para predecir no solo la eficacia de una vacuna, sino también su perfil de seguridad y protección.

3. Optimización de Ensayos Clínicos y Fabricación

La IA está agilizando la gestión de los ensayos clínicos mediante la generación automática de documentos, como protocolos y planes de análisis estadístico, y la identificación de candidatos de alto riesgo para reclutamientos dirigidos. Pero donde su utilidad brilla de forma crítica es en la vigilancia de seguridad.

En ensayos de fase 3 con decenas de miles de participantes, identificar cúmulos inusuales de síntomas puede ser un proceso lento y propenso a errores humanos. La IA permite analizar estos eventos en tiempo real, detectando señales de alerta que de otro modo pasarían inadvertidas. En la fase de fabricación, el uso de "gemelos digitales" (modelos de software que replican procesos reales) permite optimizar la producción, reducir costes y asegurar una mayor reproducibilidad a través de estaciones robóticas controladas por algoritmos.

4. Más allá de la vacuna: Vigilancia y Una Sola Salud

La IA no solo ayuda a crear vacunas, sino también a predecir cuándo serán necesarias. Bajo el enfoque de "*One Health*" (Una Sola Salud), se están utilizando modelos de aprendizaje automático para predecir el "spillover" o salto de patógenos de animales a humanos, analizando datos climáticos, de movilidad animal y de uso del suelo. Además, herramientas de metagenómica potenciadas por IA permiten explorar la "materia oscura" de los datos genómicos, identificando virus y bacterias con potencial pandémico antes de que causen un brote a gran escala.

Desafíos y Barreras: el "Cuello de Botella" de los Datos

A pesar de estas promesas, el éxito de la IA está estrictamente ligado a la calidad de los datos ("*garbage in, garbage out*"). Actualmente, la mayoría de los modelos se entrenan con datos procedentes de países de ingresos altos, lo que genera un sesgo algorítmico que puede perjudicar a las poblaciones de países de bajos recursos, donde la carga de enfermedades suele ser mayor.

Además, existen barreras éticas y regulatorias significativas. La opacidad de los modelos de "caja negra" dificulta que los profesionales sanitarios confíen plenamente en sus recomendaciones si no entienden cómo se han generado. La privacidad de los datos, protegida por normativas como el RGPD de la UE, sigue siendo un reto para el intercambio global de información genómica y clínica necesaria para entrenar estas herramientas.

Conclusiones

La inteligencia artificial no es una solución mágica que reemplazará el juicio clínico, pero ya es un motor imparable en la innovación biomédica. En el ámbito del desarrollo de vacunas, su capacidad para acelerar el descubrimiento de antígenos, optimizar los procesos industriales y monitorizar la seguridad en tiempo real promete un futuro con vacunas más precisas, baratas y rápidas de producir.

Sin embargo, para que esta revolución sea efectiva y equitativa, la comunidad de especialistas en enfermedades infecciosas y vacunas debe liderar este cambio. No podemos ser meros adoptantes pasivos; es esencial que los profesionales participen en el desarrollo y validación de estos modelos, garantizando que el "ser humano siga en el bucle" (*human in the loop*) para supervisar la ética, la transparencia y la equidad de las soluciones adoptadas.

Como señala la serie de *The Lancet*, la dirección que tome esta tecnología y el valor que aporte a la salud pública dependen de las decisiones y el compromiso que asumamos hoy.

Fuente: COMITÉ ASESOR DE VACUNAS E INMUNIZACIONES. Disponible en https://n9.cl/jperz

Manufacturing Matters: Why Rapid Biologics Production Must Become a Cornerstone of Global Pandemic Preparedness

Jun 22. The COVID-19 pandemic demonstrated that scientific discovery can move at extraordinary speed, but it also exposed the limitations of global manufacturing infrastructure. As the world prepares for future threats ranging from avian influenza and Ebola to the next Disease X, the ability to rapidly produce and distribute life-saving biologics is emerging as a critical component of preparedness. In an exclusive conversation with BioSpectrum Asia during BIO 2026, Mark Emalfarb, CEO of Dyadic Applied Biosolutions, discusses the role of next-generation manufacturing technologies, monoclonal antibodies, and scalable biologics production in strengthening global outbreak response

Why do you believe monoclonal antibody manufacturing remains an underrepresented topic in global pandemic preparedness discussions?

Much of the pandemic preparedness discussion focuses on prevention through vaccines, which are critically important. However, for individuals who are already infected, vaccines are often too late. Monoclonal antibodies (mAbs) can serve as an important first line of defense by neutralizing a virus in the body and reducing severe disease or death.

While significant attention has been devoted to discovering new antibodies, far less attention has been paid to how they can be manufactured rapidly, affordably, and at scale during an outbreak.

Most mAbs today are produced in mammalian cell systems such as CHO cells, which typically require more than 20 hours to double, lengthy cell line development timelines, long scale-up activities, expensive media, and additional viral clearance steps before release. These factors can significantly delay patient access during a rapidly evolving outbreak.

COVID-19 had an approximate 1% lethality rate, yet it caused millions of deaths worldwide. If a future airborne virus spreads as efficiently as Omicron but has the lethality of Ebola, Hantavirus, or avian influenza, the potential death toll could increase dramatically. Rising vaccine hesitancy further compounds this risk, making rapid access to therapeutic antibodies even more important. The world does not just have a discovery problem—it also has a manufacturing problem.

What are the biggest barriers preventing rapid deployment of monoclonal antibody therapies during outbreaks such as Ebola, H5N1, and other emerging infectious diseases?

The primary barriers are manufacturing speed, production capacity, cost, and global access. Traditional monoclonal antibodies are generally produced in mammalian cell systems that can take months to establish and scale. Mammalian cells typically require more than 20 hours to double, resulting in lengthy development timelines, extended scale-up periods, and bioreactor production cycles that can take up to 50 days from a frozen vial to completion of upstream fermentation.

Additional viral clearance requirements, complex downstream processing, and high media costs further increase manufacturing timelines and expenses.

COVID-19 highlighted these limitations. As the virus rapidly evolved, manufacturers often struggled to develop and produce updated monoclonal antibodies quickly enough to keep pace with emerging variants. By the time some therapies were developed and manufactured, the virus had already changed.

Future outbreaks involving highly lethal pathogens such as Ebola, H5N1, Hantavirus, or Disease X could expose these same bottlenecks on an even larger scale. If a virus combines Omicron-like transmissibility with Ebola-, Hantavirus-, or avian influenza-like lethality, delays in producing and deploying mAbs could translate into dramatically higher mortality.

How does Dyadic's C1 protein production platform differ from conventional biologics manufacturing approaches in terms of speed, scalability, and cost?

Dyadic's C1 platform utilizes a filamentous fungal production organism that doubles approximately every 2.5 hours, compared with more than 20 hours for typical mammalian cells. This enables significantly faster strain development, scale-up, and manufacturing timelines.

In practical terms, C1 can progress from a frozen vial to completion of upstream fermentation in as little as 9 days, compared with up to 50 days for conventional mammalian systems.

Because C1 is a non-mammalian production platform, it does not require the same viral clearance processes associated with mammalian cell manufacturing, potentially reducing both manufacturing time and cost. In addition, C1 utilizes lower-cost chemically defined media and is compatible with existing microbial fermentation infrastructure.

Importantly, studies conducted by multiple independent groups have demonstrated that monoclonal antibodies produced using C1 can bind and neutralize their targets in a manner virtually identical to antibodies produced in mammalian systems such as CHO cells. At the same time, C1 has demonstrated higher grams-per-liter-per-day productivity and can potentially produce approximately three upstream manufacturing batches in the time required to complete a single CHO production batch.

The result is a platform designed to help accelerate production of monoclonal antibodies, vaccine antigens, and other biologics while improving manufacturing flexibility, scalability, affordability, and response speed during outbreak situations.

What lessons from the COVID-19 pandemic should governments and public health organisations apply when preparing for the next Disease X scenario?

COVID-19 demonstrated that scientific discovery can move at unprecedented speed when resources are aligned. However, it also exposed significant weaknesses in manufacturing readiness and supply chains.

One important lesson is that discovering an effective antibody or vaccine is only part of the solution. Manufacturing platforms must be capable of rapidly producing sufficient quantities at affordable costs. During COVID-19, viral evolution often outpaced the ability of traditional manufacturing systems to develop, scale, manufacture, and distribute updated monoclonal antibodies. By the time some therapies were fully developed and produced, the virus had already evolved.

Governments should invest not only in discovery but also in next-generation manufacturing technologies capable of shortening development timelines, increasing productivity, reducing costs, and rapidly responding to emerging variants.

COVID-19 had an approximate 1% lethality rate, yet it overwhelmed healthcare systems and caused millions of deaths. A future airborne pathogen with Omicron-like transmissibility and the lethality of Ebola, Hantavirus, or avian influenza could be far more devastating. With vaccine hesitancy increasing in many parts of the world, preparedness strategies should include both vaccines and rapidly deployable therapeutic options such as monoclonal antibodies.

How is Dyadic collaborating with organisations such as CEPI, Gates Foundation, NIH/NIAID, and academic institutions to strengthen global outbreak preparedness?

Dyadic is collaborating with a broad network of global health organizations, government agencies, and academic institutions to evaluate and apply its C1 platform for vaccines, monoclonal antibodies, and other biologics.

These collaborations include projects supported by the Gates Foundation, CEPI, NIH/NIAID, the European Vaccines Hub/Fondazione Biotecnopolo di Siena, Oxford University, Scripps Research, Johns Hopkins University, Wits University, and the Israel Institute for Biological Research, among others.

A common objective across many of these programs is to address manufacturing bottlenecks by evaluating technologies that may enable faster strain development, shorter production timelines, higher productivity, and lower manufacturing costs compared with conventional approaches. Several collaborations are evaluating C1's ability to rapidly produce monoclonal antibodies and complex antigens while maintaining functional performance comparable to products manufactured in traditional mammalian systems.

The ultimate goal is to help move more rapidly from scientific discovery to deployable vaccines, antibodies, and other biologics that can be used to respond to future outbreaks.

Looking ahead, what policy, investment, or manufacturing changes are most urgently needed to ensure life-saving biologics reach patients faster during future outbreaks?

The most urgent need is greater investment in manufacturing innovation. Advances in artificial intelligence, genomics, and antibody discovery are accelerating the identification of promising vaccines and therapeutics, but manufacturing capacity remains a critical bottleneck.

Governments and global health organizations should support technologies that can reduce development timelines, shorten bioreactor cycle times, lower media and production costs, increase productivity, and simplify manufacturing workflows. Investments in distributed regional manufacturing networks and rapid-response production platforms are also essential.

Preparedness strategies should recognize that speed matters. If a manufacturing platform can produce antibodies that bind and neutralize comparably to CHO-produced antibodies, while delivering higher productivity, lower costs, eliminating viral clearance requirements, and potentially producing three batches in the time required for one conventional mammalian batch, that can have a meaningful impact on global access during a crisis.

The next pandemic may not be limited by our ability to discover solutions—it may be limited by our ability to manufacture and deliver them quickly enough to save lives. This is especially urgent if a future airborne virus combines Omicron-like transmissibility with the lethality of Ebola, Hantavirus, or avian influenza. Rising vaccine hesitancy only increases the need for rapidly available therapeutic options, including monoclonal antibodies.

Ensuring rapid, affordable, and scalable access to biologics must become a core objective of global health preparedness efforts. Manufacturing matters, because breakthroughs only save lives when they can reach patients in need.

Fuente: BioSpectrum Asia. Disponible en https://n9.cl/dy5dm

Investigadores detectan una variante del neumococo más virulenta que crece en España

23 jun. El Instituto de Salud Carlos III (ISCIII) ha identificado mutaciones en el neumococo que explican por qué uno de sus serotipos más problemáticos, el serotipo 3, ha experimentado un crecimiento sostenido en los últimos años y ha ganado capacidad para causar enfermedad grave. El hallazgo, publicado en la revista *The Lancet Microbe*, describe un cambio en la proteína LytA que, según los investigadores, confiere al microorganismo más virulencia y una mayor habilidad para evadir la respuesta inmunitaria.

"El serotipo 3 aumenta hospitalizaciones y esquiva mejor las defensas, según una investigación del Instituto de Salud Carlos III."

El estudio, liderado por el Centro Nacional de Microbiología (CNM) y realizado en colaboración con grupos del CIBER, el CSIC, hospitales de referencia y la Universidad de Oxford, analiza la evolución reciente de este serotipo, históricamente asociado a neumonía, meningitis y sepsis. Los investigadores han observado un incremento de cepas pertenecientes al clado I-a, caracterizadas por una mutación concreta en LytA, una proteína clave en la patogenicidad del neumococo. Este cambio de aminoácido altera su función y favorece que la bacteria resista mejor los mecanismos de defensa del organismo.

Los coordinadores del trabajo, Mirian Domenech y José Yuste, explican que esta mutación ayuda a entender por qué el serotipo 3 ha aumentado su presencia tanto en población pediátrica menor de dos años como en adultos mayores de 65, los dos grupos más vulnerables a la enfermedad neumocócica invasiva. A su juicio, el hallazgo aporta una pieza esencial para comprender la persistencia de este serotipo pese a la introducción de vacunas conjugadas que han reducido de forma notable otros tipos de neumococo.

Los expertos recuerdan que el neumococo es responsable de un amplio abanico de infecciones, desde otitis y sinusitis hasta neumonía grave, meningitis o sepsis. Aunque la vacunación infantil ha transformado el panorama epidemiológico, el serotipo 3 ha mostrado una capacidad singular para mantenerse y expandirse.

El ISCIII subraya que estudios previos en modelos preclínicos ya habían demostrado que los anticuerpos dirigidos contra LytA pueden neutralizar la función de esta proteína y ofrecer protección frente a la infección. Por ello, los autores consideran que el hallazgo abre una vía prometedora para el desarrollo de futuras vacunas basadas en proteínas, una estrategia complementaria a las vacunas conjugadas actuales.

El aumento del serotipo 3 tiene también implicaciones clínicas y económicas. Este tipo de neumococo se encuentra entre los principales responsables de hospitalizaciones por neumonía y genera un gasto sanitario elevado, especialmente en personas mayores y pacientes con enfermedades crónicas. Los investigadores insisten en que mejorar las tasas de vacunación en adultos es fundamental, ya que siguen siendo bajas pese a las recomendaciones de salud pública.

Repunte de infecciones respiratorias en Europa

El estudio coincide con un contexto de repunte de infecciones respiratorias en Europa y con un incremento de las notificaciones de enfermedad neumocócica invasiva tras la pandemia, cuando las restricciones redujeron de forma drástica la circulación de patógenos respiratorios.

Los autores del trabajo y los organismos participantes insisten en la necesidad de reforzar la vigilancia microbiológica para monitorizar la evolución de estos clones hipervirulentos y detectar la posible aparición de otros nuevos. La caracterización molecular, añaden, es esencial para anticipar cambios epidemiológicos y adaptar las estrategias de vacunación. El ISCIII recuerda que la prevención sigue siendo la herramienta más eficaz. Mantener la vacunación en niños y adultos, identificar precozmente los casos graves y mejorar la comunicación pública sobre los riesgos asociados al neumococo son, a juicio de los expertos, elementos clave para contener el avance de un serotipo que ha demostrado una notable capacidad de adaptación.

Fuente: LA RAZÓN. Disponible en https://n9.cl/jy1vg

México apunta a ser polo regional de innovación y producción de vacunas

23 jun. La combinación de talento científico, la infraestructura industrial para la producción local de vacunas, así como la capacidad de investigación clínica y la incorporación de nuevas tecnologías médicas perfilan a México como uno de los países con mayor potencial para consolidarse como un centro regional de innovación y producción farmacéutica en América Latina.

En un contexto en el que los países buscan fortalecer sus capacidades sanitarias, Pfizer destacó que México cuenta con condiciones únicas para desempeñar un papel cada vez más relevante dentro de las cadenas globales de investigación, desarrollo y producción de soluciones médicas.

El presidente de Pfizer para América Latina y líder comercial de Mercados Emergentes, Sinan Atlig, afirmó -en entrevista con EFE- que "México es el segundo mercado más importante de América Latina para Pfizer y uno de los mercados más relevantes a nivel global".

Esta visión cobra especial relevancia en un año simbólico para la compañía, que celebra 75 años de presencia continua en México, una trayectoria marcada por la innovación científica.

Como parte de esta visión a largo plazo, la compañía prevé incrementar su inversión en investigación clínica en México con recursos adicionales de entre cinco y diez millones de dólares anuales, enfocados principalmente en áreas como vacunas, cáncer, obesidad y enfermedades cardiometabólicas.

Como ejemplo, la farmacéutica estadounidense mencionó la llegada al país de nuevas vacunas contra la enfermedad neumocócica y el virus sincicial respiratorio (VSR), que benefician especialmente a poblaciones vulnerables, como los recién nacidos y adultos mayores.

Para Pfizer, este proceso, junto con la modernización regulatoria y la incorporación de la inteligencia artificial representan una oportunidad para agilizar el funcionamiento, fortalecer la evaluación científica y reducir los tiempos necesarios para que nuevas terapias y vacunas lleguen a los pacientes.

"Hay muchos mecanismos diferentes para ayudar a los pacientes", señaló Atlig al referirse a innovaciones como la inmunoterapia y los anticuerpos conjugados.

Más cobertura y prevención

Uno de los desarrollos más recientes de la compañía es la vacuna neumocócica conjugada de veinte serotipos (PCV20), diseñada para ampliar la protección frente a cepas que causan neumonía, meningitis y otras enfermedades invasivas.

"Es como tener veinte vacunas en una", afirmó Atlig al referirse a la nueva formulación, que amplía la cobertura respecto a generaciones anteriores.

La compañía también trabaja ya en desarrollar vacunas neumocócicas de 25 y de 35 serotipos, con el objetivo de reforzar la prevención de infecciones respiratorias graves y mantener a México siempre a la vanguardia en materia de vacunación.

De acuerdo con el director general de Pfizer México, Juan Luis Morell, la incorporación de PCV20 podría traducirse en una disminución de casos, hospitalizaciones y fallecimientos asociados a la enfermedad neumocócica.

"Calculamos un ahorro cercano a 438 millones de dólares durante los próximos cinco años por la reducción de enfermedad, hospitalizaciones y otros costos asociados", señaló Morell.

La apuesta por la prevención también incluye la actualización continua de las vacunas contra la COVID-19, mediante tecnología de ARN mensajero, que permite adaptar las formulaciones a las variantes predominantes.

Atlig explicó que la próxima actualización estará dirigida contra la variante XFG, al seguir las recomendaciones de organismos internacionales de salud.

Por su parte, Morell destacó que las nuevas generaciones de vacunas basadas en ARN mensajero incorporarán tecnologías denominadas "*never frozen*", que facilitarán su distribución al no requerir ultracongelación.

"Esa tecnología permite que la vacuna esté disponible por más tiempo, con menos desperdicio y en más lugares", explicó el directivo.

Investigación clínica y producción local

En este contexto, Pfizer, Birmex y el gobierno de México firmaron recientemente un acuerdo para desarrollar etapas de producción local de vacunas contra la COVID-19 basadas en tecnología de ARN mensajero, una de las plataformas biomédicas más avanzadas desarrolladas en los últimos años.

Ante este panorama, Morell señaló que este interés coincide con los objetivos del Plan México para impulsar cadenas productivas estratégicas y atraer inversiones de alto valor agregado.

"Estamos dispuestos y abiertos a explorar oportunidades para fortalecer la producción local de algunos productos. La vacuna del neumococo de última generación, PCV20, podría ser una oportunidad importante de colaboración", afirmó.

El director de Pfizer México añadió que el país cuenta con condiciones favorables para atraer nuevos estudios debido a su tamaño poblacional, fortaleza institucional e investigadores calificados, la prevalencia de enfermedades crónicas y una mayor disposición de las autoridades para agilizar procesos regulatorios.

Sin embargo, advirtió que el principal reto sigue siendo garantizar diagnósticos oportunos y ampliar el acceso a pruebas que permitan identificar a los pacientes que pueden beneficiarse de estos tratamientos, así como acelerar su llegada a los pacientes.

Fuente: SWI swissinfo.ch. Disponible en https://n9.cl/fy0m1

FDA panel approves first mRNA flu vaccine; final decision in August

Jun 23. The Food and Drug Administration's independent advisory committee recently approved a new flu vaccine modeled on the same technology used in COVID-19 shots, despite the Trump administration's decision last year to halt federal funding for future mRNA vaccine development.

The vaccine, intended for adults ages 50 to 64, is under consideration after the FDA's Vaccines and Related Biological Products Advisory Committee approved it in a unanimous vote June 18.

The FDA will consider the recommendation and make a final decision in early August.

Unlike a traditional egg-based flu vaccine, mFlusiva relies on messenger RNA, or mRNA, which carries protein instructions for human cells to produce an immune response. That helps the body recognize the protein as foreign and prepare to fight it. Traditional vaccines typically use a weakened or inactivated virus that the body then learns to recognize and attack.

An egg-based vaccine takes about six to eight months to produce, while an mRNA vaccine can be completed in one to two months, potentially allowing manufacturers to better match the shot to the flu strain circulating that year.

“This puts us in a position, since we have this technology available, to be better prepared for emerging [flu] strains or pandemic strains in the future,” Flor Munoz, a member of the advisory committee, said during the vote.

Moderna submitted the vaccine to the FDA in February, and the agency initially blocked it. After pushback, the FDA reconsidered and sent it to the advisory committee for review.

The move comes after Health and Human Services Secretary Robert F. Kennedy Jr. halted future federal funding for mRNA vaccine development in August 2025. Kennedy canceled nearly $500 million in federal funding for future mRNA vaccine research.

“MRNA only codes for a small part of the viral proteins, usually a single antigen,” Kennedy said in a video released in August. “One mutation, and the vaccine becomes ineffective. To replace the troubled mRNA programs, we’re prioritizing the development of safer, broader vaccine strategies, like whole-virus vaccines and novel platforms that don’t collapse when viruses mutate.”

However, the FDA still reviews mRNA vaccines submitted by private pharmaceutical companies, such as mFlusiva.

The advisory committee’s vote moves the mRNA flu vaccine one step closer to possible release this flu season. Testing on older and younger age groups will continue into the fall.

Fuente: HEARTLANDER NEWS. Disponible en https://n9.cl/4dw88

El sistema público de salud brasileño (SUS) ofrecerá ahora la vacuna Pneumo 20 a los niños menores de cinco años

24 jun. Los niños menores de 5 años que aún no hayan completado el calendario de vacunación contra las enfermedades neumocócicas ahora tendrán acceso, a través del Sistema Único de Salud (SUS), a la vacuna Pneumo 20, que amplía la protección contra 20 serotipos de la bacteria neumococo, un agente asociado con afecciones graves como la neumonía, la meningitis y otras infecciones invasivas.

“La vacuna protege contra 20 serotipos de la bacteria neumococo y ya ha comenzado a distribuirse en los estados. "

La estrategia nacional para ampliar la vacunación fue lanzada el 20 por el Ministro de Salud, Alexandre Padilha. La vacuna, ahora incorporada al Calendario Nacional de Vacunación, pasa a formar parte de la red pública como la cuarta vacuna inmunobiológica incluida para la población infantil durante esta administración. En el sector privado, el costo puede superar los R$500.

Ampliación de cobertura

El principal cambio con respecto a las versiones anteriores es la mayor cobertura. Pneumo 20 ofrece protección adicional contra los serotipos más asociados con la enfermedad neumocócica invasiva, especialmente los tipos 3, 6A y 19A.

Además de la neumonía y la meningitis, la vacuna también ayuda a prevenir la otitis media, una infección que puede provocar complicaciones más graves e incluso pérdida de audición.

Según el Ministerio de Salud, desde mayo se han distribuido más de 570 dosis a los estados para facilitar el inicio de la vacunación. Se prevé que, para finales de año, se enviarán más de 6,1 millones de dosis para abastecer la red de salud pública en todo el país.

Se han registrado miles de casos en Brasil

Datos de la Organización Mundial de la Salud (OMS) indican que la enfermedad neumocócica se encuentra entre las principales causas de mortalidad infantil prevenible mediante vacunación. En Brasil, entre 2023 y 2025, se registraron miles de casos de meningitis neumocócica y más de mil muertes, con una tasa de letalidad superior al 30%. Entre los niños menores de 5 años, se registraron cientos de casos y casi doscientas muertes durante el mismo período.

Además del impacto directo en la reducción de hospitalizaciones y muertes, la ampliación de la vacunación también debería aliviar los costos para el sistema público asociados con tratamientos altamente complejos, como hospitalizaciones prolongadas, unidades de cuidados intensivos y rehabilitación para posibles efectos a largo plazo.

El Ministerio de Salud también destaca los recientes avances en la cobertura de vacunación en el país, atribuidos al trabajo de los equipos del SUS (Sistema Único de Salud), incluidos agentes comunitarios, enfermeras y vacunadores, en el refuerzo de las campañas de inmunización.

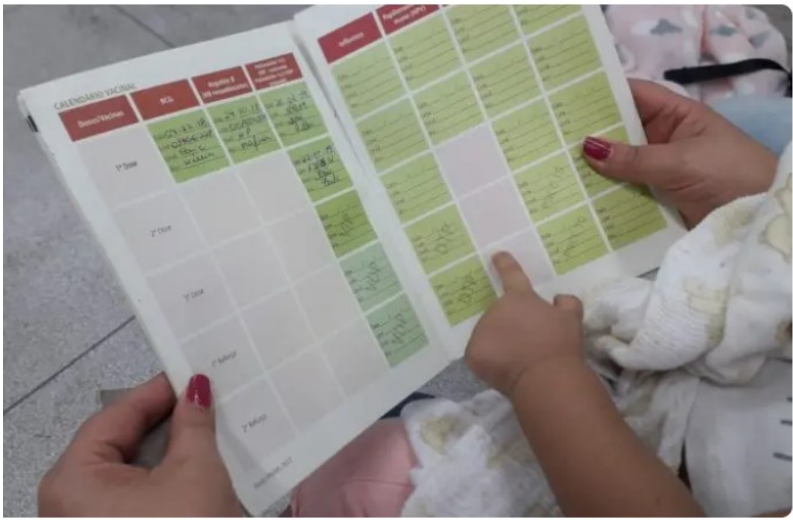
¿Quiénes pueden recibir Pneumo 20?

La vacuna se recomienda principalmente para niños menores de 5 años que no hayan completado el esquema de vacunación neumocócica. Actualmente, dicho esquema también incluye las vacunas Pneumo 10, Pneumo 13 y Pneumo 23, que se siguen utilizando durante el período de transición.

Con la incorporación de la nueva vacuna, el gobierno inicia la sustitución gradual de las versiones anteriores, ampliando la protección que ofrece. El esquema de vacunación infantil incluye la administración a los 2 y 12 meses con Pneumo 20, además de una dosis intermedia a los 4 meses con Pneumo 10, respetando los intervalos mínimos entre aplicaciones.

La vacunación también se extenderá a las personas indígenas mayores de 5 años sin antecedentes de inmunización conjugada neumocócica, a las personas mayores de 60 años que estén institucionalizadas o postradas en cama, y a las personas con afecciones clínicas específicas monitoreadas por la Red Inmunobiológica para Personas en Situaciones Especiales.

Una vez agotadas las existencias de la vacuna Pneumo 10, el calendario de vacunación se sustituirá por completo por la vacuna Pneumo 20. El historial de vacunación se puede consultar mediante la Cartilla Digital de Salud Infantil, disponible en la aplicación "Meu SUS Digital".



El calendario de vacunación se incorporará al calendario nacional de vacunación infantil.

Fuente: Folha do Litoral. Disponible en https://n9.cl/cc3dv

Las bacterias neumocócicas causan silenciosamente decenas de miles de muertes cada año

24 jun. En Vietnam se producen anualmente decenas de miles de muertes relacionadas con la neumonía, todavía vinculadas a la bacteria neumocócica, ya que siguen circulando muchos serotipos altamente virulentos, lo que aumenta el riesgo de enfermedad grave y complicaciones a largo plazo.

Muchas cepas peligrosas de neumococo están provocando un aumento de los casos graves.

El 24 de junio, en el seminario "Mejorar la comprensión de la bacteria neumocócica para construir un escudo neumocócico suficientemente amplio que proteja plenamente la salud de los niños", organizado por Pfizer Vietnam en colaboración con la Asociación Vietnamita de Medicina Preventiva en Ciudad Ho Chi Minh, el Dr. Pham Quang Thai, profesor asociado y subdirector del Departamento de Control de Enfermedades Infecciosas del Instituto Central de Higiene y Epidemiología, afirmó que la bacteria neumocócica es un patógeno muy común en la comunidad.

"Muchas personas sanas pueden portar la bacteria sin presentar síntomas, ya que se trata de una bacteria simbiótica que puede vivir en el organismo. Sin embargo, cuando invade un cuerpo, el neumococo puede causar muchas enfermedades graves con altas tasas de mortalidad y complicaciones a largo plazo", explicó el Dr. Pham Quang Thai, profesor asociado.

La enfermedad neumocócica afecta a todo el mundo, especialmente a las personas mayores y a aquellas con problemas de salud preexistentes.

El Dr. Thai afirmó que, a nivel mundial, la enfermedad neumocócica sigue siendo una causa importante de muerte a pesar de los años de vacunación. En Vietnam, se registran anualmente más de 20 000 muertes por neumonía en todos los grupos de edad, concentrándose la mayor parte de la carga de la enfermedad en niños pequeños y ancianos. Estos son precisamente los dos grupos que necesitan protección prioritaria mediante la vacunación, en lugar de centrarse únicamente en los niños.

Los resultados del monitoreo realizado por el Instituto Nacional de Higiene y Epidemiología muestran que aproximadamente el 93,9 % de los serotipos neumocócicos que circulan actualmente en Vietnam están incluidos en las vacunas en uso. Esto es una señal positiva, ya que, a diferencia de muchos países donde la estructura de serotipos ha cambiado significativamente después de muchos años de vacunación, las vacunas actuales aún cubren la mayoría de las cepas circulantes en Vietnam.

Según el Dr. Nguyen Minh Tien, subdirector del Hospital Infantil de la ciudad, la meningitis neumocócica es una de las complicaciones más graves, con una alta tasa de mortalidad incluso con tratamiento intensivo.

Además del riesgo de muerte, muchos niños supervivientes siguen enfrentándose a consecuencias a largo plazo, como pérdida de audición, dificultades de aprendizaje, trastornos motores o epilepsia, que afectan significativamente a su calidad de vida y suponen una carga duradera para las familias y la sociedad.

Los expertos en salud señalan que el panorama epidemiológico de los serotipos cambia constantemente y varía entre países. Por lo tanto, el monitoreo regular de los serotipos circulantes es crucial para desarrollar políticas de vacunación adecuadas. Actualmente, se han registrado más de 100 serotipos de neumococo en el mundo, de los cuales unos 20 causan casi el 90 % de las enfermedades neumocócicas invasivas. Algunos serotipos, como el 19A, el 3, el 11A y el 19F, presentan alta virulencia o son prevalentes, lo que incrementa el número de casos y muertes.

Respecto a la situación actual de vacunación, el profesor asociado, doctor Pham Quang Thai, informó que, si bien la tasa de acceso a las vacunas en las principales ciudades es bastante alta, la tasa de mortalidad por enfermedad neumocócica invasiva sigue siendo alarmantemente elevada. Aproximadamente el 8,8 % de los casos de neumococo invasivo aún resultan en fallecimiento a pesar del tratamiento intensivo. Muchos casos no responden a los antibióticos más potentes disponibles actualmente, lo que aumenta el riesgo de muerte y de resistencia a los antibióticos.

Según estudios realizados en Vietnam, aunque no existe un sistema de vigilancia a nivel nacional, los datos de muchos hospitales y regiones muestran que los serotipos que actualmente causan la mayor carga de enfermedad todavía se encuentran dentro del rango de protección de las vacunas.

Fuente: VIETNAM.VN. Disponible en https://n9.cl/0kp6y3

Un nuevo tipo de vacunas permite inmunizar contra familias de virus

25 jun. Una nueva tecnología de vacunas desarrollada con la ayuda de la inteligencia artificial (IA) ofrece la esperanza de inmunizar contra familias enteras de virus e incluso podría prevenir la próxima pandemia, según un equipo de investigadores de la Universidad de Cambridge.

El profesor Jonathan Heeney, al frente de la investigación, compara esta nueva técnica con una "llave maestra" que abriría todas las puertas de un edificio.

Actualmente el principal problema es que la cepa de la vacuna con la que alguien está inmunizado puede no ser la misma a la que estará expuesto meses más tarde, explica a la AFP.

Las vacunas "siempre van detrás del virus", dice.

Con la técnica desarrollada en Cambridge "eliminamos esta variabilidad fabricando algo que, de manera general, es reconocible por el sistema inmunitario y debería proteger en todos los casos", añade.

Este profesor canadiense se embarcó en el proyecto después de la epidemia de ébola de 2014-2016 en África Occidental, donde se encontraba en ese momento.

Al comienzo, el virus del Ébola se observó en la República Democrática del Congo, en África central, donde se llegó a confundir con la fiebre de Lassa, una gastroenteritis o el cólera, recuerda.

Se necesitaron varios meses para entenderlo y buscar una vacuna pero en ese tiempo había llegado "a Guinea, Sierra Leona y luego Liberia, es decir, tres países diferentes", asegura el investigador.

En total, esta epidemia ha causado más de 11.300 muertos en África Occidental en dos años, según la Organización Mundial de la Salud (OMS).

Heeney regresó a Cambridge convencido de que había que cambiar la forma de trabajar.

Con la ayuda de las primeras herramientas de IA disponibles, su equipo recopiló toda la información sobre varios virus en el ordenador.

Así pudieron identificar tanto "las similitudes como las diferencias en las partes importantes del virus a las que reacciona el sistema inmunitario", lo cual permite reconocer todas sus variantes en lugar de una sola.

Esta nueva técnica es prometedora debido a que la frecuencia de aparición de los virus ha aumentado como consecuencia del crecimiento demográfico, los desplazamientos transfronterizos y la creciente invasión humana de los hábitats de los animales, explica Heeney.

Virus que anteriormente existían sin representar una amenaza para animales que habían desarrollado inmunidad se encuentran de repente en contacto con las personas sin que estas tengan inmunidad. Y en esos casos "el virus se vuelve loco", dice el investigador.

Comienzo de una nueva era

Un ensayo con 39 voluntarios, realizado entre diciembre de 2021 y diciembre de 2023, mostró que la vacuna Sarbeco contra los coronavirus, elaborada por los investigadores de Cambridge con la empresa de biotecnología DIOSynVax, era segura, según un artículo publicado este mes en la revista de la *British Infection Association*.

© Marvin Recinos / AFP/Archivos

Ahora debe probarse en una población más amplia.

Las epidemias siempre han existido, desde la peste negra de la Edad Media hasta la pandemia de gripe de 1918-1920, que mató entre 25 y 50 millones de personas en el mundo, recuerda Heeney.

A él le preocupa un posible nuevo brote de gripe, porque se trata de un virus particularmente "complicado".

Pero espera que esta nueva tecnología permita prevenir otra pandemia mortal.

"Ahora hemos llegado a un nivel superior de IA, y tenemos un equipo que utiliza la última tecnología (...) para construir una plataforma realmente poderosa para que podamos trabajar aún más rápido con más datos", explica el científico.

"Espero que sea el comienzo de una nueva era en la fabricación de vacunas", concluyó.

Fuente: FRANCE24. Disponible en https://n9.cl/fw8q8o

Vaxxirna launches to advance next-gen RNA vaccines

Jun 25. Texas, USA-based biotech Vaxxirna, Inc., a biotechnology company focused on advancing next-generation infectious disease vaccines, announced its launch as an independent company dedicated to developing vaccines powered by its proprietary viRNA™ circular RNA platform.

Vaxxirna was founded to address critical limitations associated with first-generation linear mRNA vaccine technologies, including short-lived antigen expression, cold-chain dependence, tolerability challenges, and reliance on traditional needle-based administration.

The company is developing a new class of infectious disease vaccines designed to provide durable immune protection while improving accessibility and deployment across global healthcare settings.

At the core of Vaxxirna's approach is its proprietary viRNA™ circular RNA platform, engineered to support sustained antigen expression and long-lasting immune responses. The platform is further enhanced by thermostable lipid nanoparticle formulations and microneedle patch delivery technology, creating the potential for vaccines that are easier to distribute, store, and administer worldwide.

"Vaccines remain one of the most powerful tools in medicine, yet significant barriers still limit access, distribution, and long-term protection," said Peter Weinstein, Acting Chief Executive Officer of Vaxxirna. "We established Vaxxirna to rethink what RNA vaccines can be. By combining circular RNA technology, thermostable formulations, and patient-friendly delivery approaches, we believe we can help create a new generation of vaccines designed for both scientific performance and real-world use."

The company's platform is designed to support multiple vaccine modalities and infectious disease applications through a common technology foundation. Vaxxirna is advancing a focused pipeline of vaccine programs targeting major infectious diseases and global health challenges, leveraging platform-level insights to accelerate development and inform future programs.

"Our vision extends beyond a single vaccine candidate," said Robert Rickert, Ph.D., Acting Chief Scientific Officer at Vaxxirna. "The viRNA™ platform was designed to provide a scalable foundation for vaccine innovation across multiple infectious disease indications. We believe circular RNA has the potential to unlock meaningful improvements in durability, accessibility, and global deployment."

Vaxxirna's development strategy is centered on generating platform validation through early clinical programs while building a broader pipeline capable of addressing both current and emerging infectious disease threats. The company is actively engaging with investors, strategic partners, manufacturers, academic institutions, and global health organizations to advance its mission.

As an independent company, Vaxxirna is positioned to focus exclusively on vaccine innovation, bringing together expertise in RNA biology, immunology, vaccinology, infectious disease, regulatory strategy, and global health.

Fuente: THE PHARMA LETTER. Disponible en https://n9.cl/mmon4

La prometedora vacuna contra el cáncer que nace en Cuba

26 jun. Cuba, la gloriosa Isla revolucionaria del Caribe, primer territorio del continente americano donde llegó el socialismo, hace más de seis décadas que viene construyendo una sociedad más justa y equitativa. Sus índices socioeconómicos fueron, por años, los mejores de Latinoamérica, comparables a los de muchas potencias capitalistas. Salud, educación, vivienda, empleo, infraestructura básica, ciencia y tecnología, cultura, deportes, constituyeron aspectos que la Revolución llevó a niveles superiores.

Es importante destacar que Cuba representa una vanguardia mundial en investigación médica en el campo de la ingeniería genética y biotecnología. En el año 1981 se fundó en La Habana el Centro de Ingeniería Genética y Biotecnología (CIGB), especializado en este ámbito. A partir de sus grandes avances, en 2012 se constituye el Grupo de las Industrias Biotecnológica y Farmacéutica de Cuba, conocido como BioCubaFarma, dedicado a la producción y comercialización de biotecnológicos, incluidos productos tan importantes como Heberprot-P (para tratar las úlceras severas del pie diabético), Nimotuzumab (para el tratamiento de cánceres de cabeza y cuello, gliomas, cáncer nasofaríngeo y esofágico), VA-Mengoc-BC (vacuna que protege contra la enfermedad meningocócica), CIMAvax (inmunoterapia para el cáncer de pulmón), y las vacunas Soberana 02 y Plus y Abdala, únicas vacunas de este tipo fabricadas en el Sur Global, de reconocida eficacia contra la COVID-19, comercializadas en muchos países a precio solidario, pero no autorizadas por la Organización Mundial de la Salud-agencia de la ONU financiada, en muy buena medida, por Bill Gates.

Pese al inmoral bloqueo contra Cuba, la ciencia de la isla siguió adelante, creativamente. De esa cuenta, acaba de aparecer un producto único en su tipo, revolucionario a nivel mundial, que abre enormes expectativas para el tratamiento efectivo de muchas formas de cáncer: el HEBERSaVax. Tenemos ahí un novedoso y muy prometedor candidato vacunal diseñado para el tratamiento de diversos tumores malignos.

La investigadora clínica y especialista en Medicina Interna, Dra. Adriana Felinciano Pozo, miembro del Centro de Investigaciones Médico Quirúrgicas de La Habana, expresó que este producto "brinda muchas oportunidades", pues el HEBERSaVax "ha permitido que los pacientes tengan una mejor calidad de vida, una respuesta sin efectos adversos; y es muy fácil de manipular o de poner, porque es de uso subcutáneo [evidenciando] mucho potencial en las enfermedades de tumores sólidos, en diferentes nichos donde lo hemos probado, como en cáncer colorrectal, hepatocarsinoma, cáncer de ovario, cáncer renal, en pacientes avanzados y donde ha habido buenas respuestas".

Fuente: Crónica digital. Disponible en https://n9.cl/urjr5v

La vacuna que frena esta enfermedad: fiebre tifoidea

26 jun. La vacuna conjugada contra la fiebre tifoidea confirmó su alta efectividad para prevenir esta enfermedad infecciosa en niños y adolescentes, de acuerdo con una revisión sistemática y metaanálisis publicados en 2025, cuyos resultados fueron difundidos por el Comité Asesor de Vacunas e Inmunizaciones de la Asociación Española de Pediatría (CAV-AEP).

"Una revisión de estudios confirmó que la vacuna conjugada contra la fiebre tifoidea ofrece una alta protección en niños y adolescentes, incluso frente a cepas resistentes de la bacteria."

El análisis, que reunió la evidencia científica disponible tras la incorporación de esta vacuna a los programas nacionales de inmunización en distintos países, encontró que ofrece una efectividad del 87% para prevenir casos de fiebre tifoidea confirmados por laboratorio y una protección del 97% frente a infecciones causadas por cepas multirresistentes de *Salmonella Typhi*.

Los especialistas explican que la investigación tuvo como objetivo conocer el desempeño de la vacuna una vez implementada en los calendarios de vacunación de países donde la enfermedad es endémica, con el fin de aportar evidencia para orientar futuras estrategias de inmunización.

La vacuna recomendada por la OMS

La fiebre tifoidea continúa siendo un problema de salud pública en diversas regiones de Asia y África, donde afecta principalmente a niños menores de cinco años y aunque la incidencia mundial ha disminuido gracias a las mejoras en el acceso al agua potable y al saneamiento, la enfermedad sigue provocando millones de casos cada año.

Según el Comité Asesor de Vacunas e Inmunizaciones de la Asociación Española de Pediatría, la Organización Mundial de la Salud (OMS) precalificó la primera vacuna conjugada contra la fiebre tifoidea en 2017 y la recomienda como la opción preferente porque genera una respuesta inmunitaria más robusta y duradera, además de que puede aplicarse desde los seis meses de edad.

Hasta ahora, 10 países ya la incorporaron a sus calendarios nacionales de vacunación y otros cuatro preparan su introducción, principalmente en zonas donde la enfermedad es frecuente o circulan cepas resistentes a múltiples antibióticos.

¿Qué encontró la revisión?

La revisión sistemática analizó estudios realizados en países que ya utilizan la vacuna conjugada y confirmó que los niños vacunados presentan un riesgo significativamente menor de desarrollar fiebre tifoidea que quienes no recibieron el biológico.

Además del 87 % de efectividad contra casos confirmados por cultivo, los investigadores identificaron una protección del 55 % cuando se analizaron conjuntamente los casos probables, sospechosos y confirmados.

Uno de los resultados más relevantes fue la protección frente a la *Salmonella Typhi* multirresistente.

Con base en un estudio realizado en Pakistán, donde estas cepas tienen alta circulación, la vacuna mostró una efectividad del 97 %, lo que representa una herramienta importante ante el creciente problema de la resistencia a los antibióticos.

La eficacia también fue elevada por grupos de edad: alcanzó 94 % en menores de cinco años y 95 % en niños mayores de esa edad.

Respecto a la duración de la protección, el análisis mostró que la vacuna mantiene una efectividad del 89 % durante los dos primeros años, del 81 % al tercer año y del 77 % al cuarto, aunque a los cinco años la evidencia disponible ya no permitió demostrar una protección estadísticamente significativa.

Fuente: SU MÉDICO. Disponible en https://n9.cl/sbw9y

Moderna highlights expanding mRNA platform at Science Day

Jun 27. Moderna has touted the potential of its ever-expanding mRNA platform, which includes an in vivo candidate, during its annual Science Day.

Held on 25 June, Moderna told participants that it will continue to broaden its mRNA platform to include infectious disease vaccines, cancer vaccines and rare disease therapeutics, while advancing a broad mRNA pipeline and continuing to invest in research and development.

Stéphane Bancel, CEO of Moderna, said: "Working across three strategic horizons, we are applying our mRNA platform expertise to validate, scale and expand our modalities, with new modalities in the clinic, including T-cell engagers, and new modalities soon to be in the clinic, like in vivo CAR-T. At the same time, we are driving innovation by using data, AI and machine learning, and robotics to accelerate discovery and continuously improve how we execute for near-term growth while fuelling the next generation of mRNA medicines for patients around the world. We are fortunate to have the privilege to make medicine at this moment in time."

Moderna is executing a strategy that balances near-term growth with long-term innovation. Building on the momentum of its four approved products – Spikevax, mRESVIA, mNEXSPIKE and mCOMBRIAX, Moderna is driving growth through infectious disease launches, geographic expansion, and the advancement of late-stage pipeline opportunities, including its investigational intismeran autogene therapy and propionic acidemia therapeutic.

In parallel, Moderna Research and Early Development (mRED) is focused on emerging and future modalities to advance high-potential programmes toward clinical proof-of-concept and first-in-human (FIH) milestones.

Early and late-stage candidates form platform strategy

Moderna has three Horizon programmes, which categorise the stage of development of its mRNA therapies.

Horizon 1 comprises Moderna's late-stage and approved products, while continuing to enable innovation in these established modalities, and drives an end-to-end path from discovery through commercialisation.

Horizon 2 emerging modalities and Horizon 3 future modalities are led by mRED to scale and expand the Company's mRNA platform. Horizon 2 modalities are in the clinic and awaiting human proof-of-concept. The majority are in Phase I/II trials in oncology, with a multiple sclerosis (MS) therapeutic in Phase II. Horizon 3 modalities have the potential to advance to FIH clinical trials by the end of 2027.

The Horizon 2 programme includes mRNA-4106, which is in a Phase I study in solid tumours, and mRNA-4200, which is set to advance into a Phase I study in combination with Keytruda (pembrolizumab), also in advanced solid tumours. It also includes mRNA-4194, which is in the second portion of an ongoing Phase I/II trial in first-line metastatic melanoma and first-line metastatic non-small cell lung cancer (NSCLC).

Three other candidates fall under the Horizon 2 programme: mRNA-2808 in multiple myeloma, mRNA-2151 in ovarian cancer and mRNA-1195 in MS. They are in varying stages of development.

The Horizon 3 programme contains just one asset, mRNA-6007, an in vivo CAR-T designed to enable deep B-cell depletion for autoimmune conditions using a multiplexed mRNA approach with targeted lipid nanoparticles (LNPs). The programme aims to deliver mRNA into immune cells in vivo, enabling transient CAR expression and potential immune reset. The initial clinical focus is systemic lupus erythematosus (SLE) and other B-cell-mediated autoimmune diseases.

Fuente: Clinical Trials Arena. Disponible en https://n9.cl/h33mc

Machine Learning Can Identify Immune Markers for Better Pneumococcal Vaccines

Jun 27. With the help of artificial intelligence (AI) and machine learning, it was found that protein-based vaccines with multiple antigens can provide greater protection against pneumococcal diseases, regardless of serotype distribution, according to Vaccine.

"While the speed and scale of COVID-19 vaccine development have demonstrated the promise of AI in modern immunology, this acceleration resulted from multiple convergent factors: massive funding, preexisting mRNA platforms, overlapping trial phases, and global collaboration—not solely from AI," wrote the authors of a study published in Frontiers in Immunology. "Nevertheless, AI-based methods—from rapid epitope mapping to adaptive clinical trial designs—have helped shorten certain phases from years to months, illustrating a potential paradigm shift in how vaccines are conceived, tested, and produced."

This paradigm shift is particularly evident among recently reported data, which address a persistent challenge in pneumococcal prevention, such as the limitations of current serotype-specific vaccines.

Although existing pneumococcal conjugate vaccines (PCVs) have significantly reduced disease, they only protect against a fraction of the more than 100 known serotypes.

This has led to the phenomenon of serotype replacement, where nonvaccine types fill the ecological niche left by targeted strains. Even broad-spectrum pipeline vaccines, such as the 31-valent PCV, are still bound by the constraints of capsular polysaccharide targets.

To break this cycle, researchers utilized a controlled human infection model and applied the Random Forest machine learning algorithm to identify protein antigens that remain conserved across all serotypes.

The investigation revealed that protection against pneumococcal colonization is not the result of a single immune marker but rather a coordinated, multi-antigen response. By analyzing high-dimensional datasets, the machine learning models identified IgG responses to specific proteins, including PdB, SP1069, and SP0899, as critical predictors of protection.

Furthermore, cellular models showed that certain cytokine responses, specifically MCP-1 and IL-17A, were associated with reduced susceptibility. For pharmacists, these findings represent the blueprint for a universal pneumococcal vaccine that could simplify immunization schedules and eliminate the need for frequent reformulations as serotype distribution shifts.

This trend toward AI-driven antigen design is gaining momentum across the field of immunology. At the University of Cambridge, researchers recently achieved a milestone by using AI to design a super-antigen for a fundamentally new type of vaccine.

Unlike traditional methods that use current viral strains, this AI analyzed the genetic codes of a whole family of viruses to create a vaccine that provides protection even against mutated variants. This capability to get ahead of the curve is a transformative leap that mirrors the identification of conserved pneumococcal proteins.

An umbrella review of AI in vaccine development further supports this, noting that deep learning architectures and multi-omic integration have already shrunk discovery timelines from years to months.

However, the discovery of a better vaccine is only half the battle. Ensuring patient acceptance is the next frontier for AI in the health care system. Pharmacists play a role in this arena, and AI is increasingly being used to optimize vaccine delivery and combat hesitancy.

Innovative predictive models, such as those utilizing the LightGBM algorithm, have demonstrated the ability to forecast vaccine acceptance with 98% accuracy. By analyzing demographic and sociodemographic factors, these models allow providers to identify high-risk groups and design tailored interventions.

Complementing these predictive tools are real-time engagement platforms like hybrid AI chatbots. Recent studies have shown that these chatbots can significantly boost pneumococcal vaccination rates among older adults by providing personalized, evidence-based conversations that address specific concerns in real-time.

For the pharmacy profession, these AI-driven innovations offer the development of more effective, serotype-independent vaccines and the technological tools to ensure those vaccines reach the most vulnerable populations.

As machine learning continues to refine our understanding of immune markers, the goal of achieving

broad, lasting protection against pneumococcal disease moves closer to reality.1,3,4

"As immunology and vaccinology increasingly rely on complex, high-dimensional datasets, predictive computational models offer substantial advantages over traditional analyses by uncovering intricate relationships between immune responses and protection," concluded authors of the current study.1 "The integration of advanced computational approaches with human challenge models, which uniquely allow sampling immediately before and after defined pathogen exposure, promises to transform how we define protective immunity and accelerate rational vaccine design."

Key Takeaways

- Serotype replacement persists because PCVs target capsular polysaccharides and cover only a subset of >100 serotypes, leaving even higher-valency candidates constrained by serotype distribution shifts.
- Random Forest analysis of human challenge samples highlighted multi-antigen IgG responses—particularly to PdB, SP1069, and SP0899—as key predictors of protection against pneumococcal colonization.
- Cytokine correlates including MCP-1 and IL-17A were linked to reduced susceptibility, indicating coordinated humoral–cellular immune signatures rather than a single protective marker.
- AI-guided antigen engineering can generate broadly protective "super-antigens" by learning across viral families, while deep learning plus multi-omic integration can compress discovery timelines from years to months.
- Delivery-focused models (e.g., LightGBM) and hybrid AI chatbots can predict acceptance and address hesitancy, enabling targeted interventions that measurably increase pneumococcal vaccination among older adults.

Fuente: Drug Topics. Disponible en https://n9.cl/yluht

CanSinoBIO's MCV4 Receives Registration Approval in Argentina, Further Expanding International Presence in South America

Jun 29. This approval represents another important milestone in the international development of CanSinoBIO's innovative vaccine products and further strengthens the Company's presence in South America. It also reflects the effectiveness of the company's internationalization strategy as it advances deeply into diversified cooperation models, including technology transfer, intermediate product supply, and finished product supply.

"CanSino Biologics Inc. (SSE: 688185, HKEX: 06185) announced that the Company's ACYW135 Meningococcal Polysaccharide Conjugate Vaccine (CRM197) (the "MCV4", trade name: Menhycia (R)) has recently received the drug registration certificate granted by the Administración Nacional de Medicamentos, Alimentos y Tecnología Médica (ANMAT) of Argentina. "

Notably, Argentina was selected based on its favorable market fundamentals and strategic importance. According to market research firm Grand View Research, Argentina's meningococcal vaccine market was valued at approximately USD 43.8 million in 2025 and is projected to reach USD 74.6 million by 2033, representing a compound annual growth rate (CAGR) of 6.3%.

The introduction of Menhycia(R) aligns with growing regional demand for high-quality vaccines and is expected to improve access to meningococcal immunization in the country.

Menhycia(R), the first quadrivalent meningococcal conjugate vaccine approved in China, has demonstrated significant clinical advantages in preventing meningococcal disease caused by Neisseria meningitidis serogroups A, C, Y, and W135. The vaccine provides stronger immune responses, longer-lasting protection, and the ability to reduce bacterial carriage. Currently, it is approved for use in children aged 3 months to 6 years (83 months) in China.

Concurrently, CanSinoBIO has completed clinical studies for age expansion of Menhycia(R) to cover individuals aged 7 to 59 years and has obtained the clinical summary report. The company is actively pursuing supplementary applications, which are expected to further broaden the product's target population coverage.

From a global public health perspective, meningococcal meningitis is a severe infectious disease characterized by rapid onset and severe progression, posing significant health risks, particularly to infants and children . According to the World Health Organization's Defeating Meningitis by 2030: A Global Road Map, by 2030, the world aims to reduce vaccine-preventable bacterial meningitis cases by 50% and deaths by 70% compared with 2015 levels. Against this backdrop, a significant supply gap for innovative vaccines remains. As Asia's first quadrivalent meningococcal conjugate vaccine, Menhycia's international expansion aligns with the WHO's meningitis prevention and control agenda.

More broadly, CanSinoBIO is transitioning from exporting individual products to delivering technology, manufacturing know-how, and production capabilities to international markets. The company has identified Southeast Asia, the Middle East, North Africa, and South America as key markets, advancing its internationalization through diversified cooperation models such as technology transfer, intermediate product supply, and finished product supply.

As demand for upgraded meningococcal vaccines continues to grow alongside the steady expansion of the South American market, CanSinoBIO is accelerating the international commercialization of its key products while broadening its global market presence.

For investors, the significance of this latest milestone extends beyond the overseas approval of a single product. It further demonstrates the company's growing synergies across innovation, regulatory registration, manufacturing and supply capabilities, and commercialization. The progress also provides additional validation of CanSinoBIO's globalization strategy and valuable experience for the future international expansion of its innovative product portfolio.

Fuente: THE GLOBE AND MAIL. Disponible en https://n9.cl/qztk3n

Three-in-one vaccine shows promise against 'tripledemic'

Jun 29. Flu season is no longer just flu season. Since 2022, the health care community has faced what's known as a "tripledemic" of seasonal influenza, COVID-19 and respiratory syncytial virus (RSV). That may mean the flu shot needs to become more than a flu shot.

A single-shot vaccine under development at the University at Buffalo could protect against flu, COVID-19 and RSV simultaneously. In a study published June 26 in Science Advances, the researchers found that their three-in-one vaccine triggered protective immunity against all three respiratory diseases in mice, ferrets and cotton rats.

"The antibody responses were comparable to those produced by vaccines that target just a single

virus, suggesting that combining the three vaccines into one shot did not weaken their effectiveness," says corresponding author Jonathan Lovell, Ph.D., SUNY Empire Innovation Professor in the Department of Biomedical Engineering, a joint program of UB's School of Engineering and Applied Sciences and Jacobs School of Medicine and Biomedical Sciences.

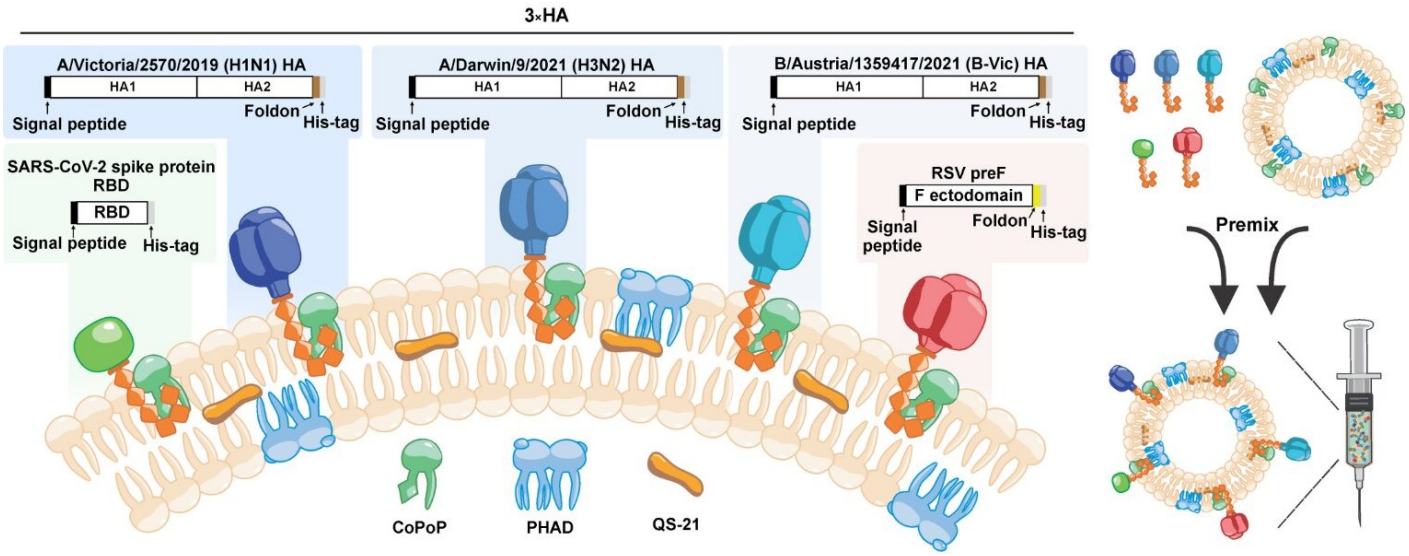
Single shot may improve immunization rates

The tripledemic was associated with approximately 1 million combined hospitalizations in the United States during the 2023–2024 respiratory virus season alone.

Despite the risks, only 35% of Americans 75 and older had received an influenza vaccine as of November 2024. About 18% had received a COVID-19 vaccine, while 40% had received an RSV vaccine.

"We know that many people skip one or more of the three recommended respiratory vaccines, sometimes simply because it's inconvenient," says co-author Bruce Davidson, Ph.D., research associate professor in the UB Department of Anesthesiology. "Replacing them with one annual shot could lower the barrier and vastly improve immunization rates."

Vaccines that protect against multiple diseases have been used for decades, but no vaccine is currently approved that combines protection against the three major respiratory viruses that drive seasonal outbreaks: flu, COVID-19 and RSV.



Design and biophysical characterization of multiplex (5plex) CPQ liposomes. Credit: Science Advances (2026). DOI: 10.1126/sciadv.aea3227

Nanoparticles allow multiple vaccines in one shot

The single-shot vaccine uses the same vaccine platform that Lovell has been developing for more than a decade. Dubbed "CoPoP," it consists of tiny spherical nanoparticles made of cobalt and porphyrin with an outer shell of phospholipid.

The platform works by attaching viral proteins to the nanoparticles via histidine tags—or his-tags. These short strings of amino acids have a natural affinity for metals, allowing them to form a strong bond with the cobalt ions in the nanoparticles. Once administered into the body through the vaccine, the viral proteins help train the immune system to recognize and defend against the viruses.

For this study, Lovell's team used CoPoP to package five viral proteins—three influenza proteins and proteins from SARS-CoV-2 and RSV—into a single vaccine.

To make the vaccine more potent, they also added immune-boosting ingredients known as PHAD and QS-21 to the CoPoP platform.

"CoPoP is a really flexible formulation that allows multiple viral proteins to be incorporated at once," Lovell says.

CoPoP was also used for a COVID-19 vaccine candidate that advanced through phase 2 and phase 3 clinical trials in South Korea and the Philippines. That work was a partnership between UB spinoff company POP Biotechnologies Inc. (POP BIO), co-founded by Lovell, and South Korean company EuBiologics.

Because it uses viral proteins rather than genetic instructions, the CoPoP approach differs from the most widely used COVID-19 vaccines, which rely on mRNA technology.

Protection against more viruses could be added

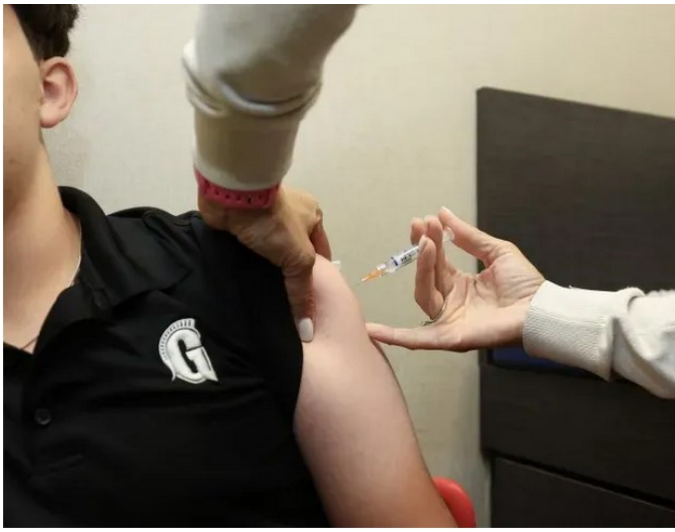
The team found no evidence of immune interference, in which one vaccine component reduces the immune response to another.

However, the researchers stress that additional studies are needed to determine whether subtle interactions among the different vaccine components could affect immune responses under different dosing conditions.

"We are hopeful that this platform could be expanded further to protect against an even wider range of respiratory viruses in the future," Lovell says.

Fuente: MEDICAL XPRESS. Disponible en https://n9.cl/ih1d7

A New Vaccine Option Is Now Available for Kids with Diabetes, Heart Disease, or Other Chronic Conditions



Jun 30. Families managing a child's chronic medical condition now have a new tool to reduce one specific, serious risk: invasive pneumococcal disease, including pneumonia, meningitis, and bloodstream infections.

On June 18, 2026, the FDA approved an expanded indication for Merck's Capvaxive (Pneumococcal 21-valent Conjugate Vaccine) to include children and adolescents aged 2 through 17 who have completed a primary pediatric pneumococcal vaccination series and have one or more chronic medical conditions that increase their risk for pneumococcal disease.

With this approval, Capvaxive becomes the only pneumococcal conjugate vaccine specifically indicated and studied in the United States for this high-risk pediatric population.

Why This Matters

Children with certain chronic medical conditions face a significantly elevated risk of severe, invasive pneumococcal disease compared to otherwise healthy children — even after completing the standard childhood pneumococcal vaccination series. Dr. Rotem Lapidot, chief of pediatric infectious diseases at Rambam Health Care Campus and an investigator on the pivotal trial, explained:

"Children and adolescents with certain chronic conditions are at an increased risk for pneumococcal disease, including pneumonia, meningitis, and bloodstream infections."

Until this approval, there was no pneumococcal conjugate vaccine specifically indicated, studied, and approved as a supplemental dose for children in this risk category after they had already completed their routine childhood series. Physicians had limited additional tools to offer beyond the standard vaccination schedule for these specific high-risk patients.

What We Know So Far

According to Merck's announcement, the expanded indication covers active immunization for the prevention of invasive pneumococcal disease caused by 21 specific Streptococcus pneumoniae serotypes in individuals 2 through 17 years of age who are at increased risk for pneumococcal disease — in addition to the vaccine's existing approval for adults 18 and older.

The approval was supported by data from the Phase 3 STRIDE-13 trial, a randomized, double-blind, active comparator-controlled study that enrolled 874 children and adolescents aged 2 through 17 years. Eligible participants had at least one of the following chronic conditions: diabetes mellitus, chronic heart disease, chronic lung disease, chronic kidney disease, or chronic compensated liver disease, and had previously completed a primary pneumococcal vaccination series (PCV7, PCV10, or PCV13) at least 8 weeks before enrollment.

The trial compared Capvaxive directly to PPSV23 (the pneumococcal 23-valent polysaccharide vaccine), the previously available option for supplemental protection in this population.

Fuente: Medical Daily. Disponible en https://n9.cl/cnwevx

Billions of doses later: Global review confirms mRNA vaccines

Jun 30. A sweeping global review led by researchers at the University of British Columbia has found that mRNA vaccines—now administered billions of times worldwide—are safe and highly effective at preventing infectious diseases like COVID-19, and have potential applications for a range of other diseases, including influenza, RSV, cancer and autoimmune disorders.

Published today in *The Lancet*, the review draws on laboratory science, clinical trials and real-world effectiveness data to provide one of the most comprehensive assessments of mRNA vaccines to date. It spans the full vaccine lifecycle, from design and manufacturing to real-world performance and monitoring.

By bringing this evidence together in a single resource, the researchers aim to support healthcare providers, policymakers and the public with clear, evidence-based information as new mRNA vaccines and therapies are developed.

“After billions of doses, we now have an extraordinary amount of scientific evidence,” said lead author Dr. Anna Blakney, assistant professor at UBC’s Michael Smith Laboratories and School of Biomedical Engineering. “This review affirms that mRNA vaccines are a safe and highly effective platform, supported by rigorous testing and real-world monitoring. It provides an evidence-based foundation as this technology continues to expand into new areas of medicine.”

Dr. Anna Blakney, assistant professor at UBC's Michael Smith Laboratories and School of Biomedical Engineering. Photo credit: Paul Joseph/UBC Communications.

Building trust through evidence

The researchers emphasize that, like all vaccines, mRNA vaccines can have side effects. They found that serious adverse events—such as myocarditis, which occurs more frequently in younger males—are rare and consistently outweighed by the vaccines' protection against severe illness, hospitalization and death.

The findings confirm that mRNA vaccines provide strong protection against infectious diseases, including severe COVID-19, across a wide range of groups, including children, pregnant people and those who are immunocompromised. Booster doses were found to extend and strengthen that protection over time, and regular updates to the vaccine formulation maintained efficacy as new variants emerged.

"With any new vaccine or medicine, it is important that we clearly and transparently communicate the safety data and rigorous testing that supports their use," said co-author Dr. Manish Sadarangani, professor of pediatrics at UBC and director of the Vaccine Evaluation Center at BC Children's Hospital Research Institute. "This is essential to building public trust, countering misinformation and supporting informed decisions about vaccination."

The review addresses persistent misconceptions about how mRNA vaccines work, clarifying that they do not alter a person's DNA. Instead, the mRNA—encapsulated in a lipid nanoparticle delivery system pioneered by UBC researchers—provides temporary instructions that allow human cells to produce a harmless piece of a virus, training the immune system to respond. Both the mRNA and lipid nanoparticles are quickly broken down and cleared from the body after use.

A platform for the future of medicine

Beyond COVID-19, the findings point to a rapidly expanding future for mRNA technology. Researchers are already developing vaccines for diseases such as influenza and RSV, as well as personalized cancer vaccines and other RNA-based therapies.

“This is really about what comes next,” said Dr. Blakney. “We’re seeing the same platform being applied to cancer treatment and other diseases. Understanding how these vaccines work—and why they’re safe—helps build confidence in the next generation of medicines.”

The authors highlight the importance of trust, access and equity. While mRNA vaccines have proven highly effective, global uptake has been uneven, shaped in part by misinformation and historical public mistrust in health systems.

Rather than dismissing vaccine hesitancy, the researchers argue it should be met with better communication and accessible, evidence-based information.

“People should feel empowered to ask questions about their health and what they put in their bodies,” said Dr. Blakney. “Our goal is to provide clear, credible evidence to inform these conversations and decisions.”

Expanding access will also be critical to realizing the full potential of mRNA technology. The review calls for increased investment in manufacturing capacity, particularly in low- and middle-income countries, as well as continued innovation to improve storage, distribution and cost.

“mRNA vaccines have already changed how we respond to global health threats,” said Dr. Sadarangani. “With sustained innovation, strong safety monitoring and a commitment to equitable access, they can play a major role in preventing disease and improving health.”

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Patentes registradas en Patentscope

Estrategia de búqueda: *(Vaccine) AND DP:([22.06.2026 TO 30.06.2026]) as the publication date 29 records.*

1.WO/2026/135005VACCINE COMPOSITION COMPRISING RECOMBINANT NIPAH VIRUS PROTEIN

WO - 25.06.2026

Clasificación Internacional A61K 39/155Nº de solicitud PCT/KR2025/021401Solicitante KOREA NATIONAL INSTITUTE OF HEALTHInventor/a OUH, In Ohk

The present invention relates to a vaccine composition comprising a recombinant Nipah virus protein. The vaccine composition according to the present invention not only exhibits excellent immunogenicity against both the G protein and the F protein of Nipah virus, but also exhibits immunogenicity against the G protein and the F protein of Hendra virus, and thus can be used as a universal vaccine against Henipavirus. In addition, the vaccine composition has the characteristic of inducing cell-mediated immune responses, and therefore can be provided as a formulation for enhancing specific immune responses to an administered drug such as an adjuvant or a vaccine.

2.WO/2026/130227VSV VECTOR-BASED HIGHLY PATHOGENIC H5 SUBTYPE AVIAN INFLUENZA INACTIVATED VACCINE AND METHOD FOR PREPARING SAME

WO - 25.06.2026

Clasificación Internacional A61K 39/145Nº de solicitud PCT/CN2025/141937Solicitante ZHEJIANG DIFFERENCE BIOLOGICAL TECHNOLOGY CO., LTDInventor/a CHEN, Ruiting

The present invention relates to the field of biological vaccine research and development technology, and in

particular, to a VSV vector-based highly pathogenic H5 subtype avian influenza inactivated vaccine and a method for preparing same. The method comprises: using a vesicular stomatitis virus with the deletion of the surface envelope protein gene as a vector, inserting the NA gene and the HA gene of an H5 subtype highly pathogenic avian influenza virus strain between the M gene and the L gene of the vector in the form of an expression cassette, and acquiring a recombinant virus by means of rescue via reverse genetic technology; inoculating the recombinant virus into susceptible cells, culturing for replication and proliferation, and then harvesting a viral solution; inactivating the viral solution to acquire an inactivated viral solution; and adding the inactivated viral solution to a pharmaceutically or veterinarily acceptable carrier, excipient, medium, or adjuvant to acquire an inactivated vaccine. The provided H5 subtype avian influenza inactivated vaccine can induce a high hemagglutination inhibition titer of avian influenza virus on day 21 after chick immunization. The provided inactivated vaccine has good safety and immunogenicity.

3.WO/2026/129566RECOMBINANT INFLUENZA VIRUS PROTEIN, VACCINE, AND PREPARATION METHOD THEREFOR AND USE THEREOF

WO - 25.06.2026

Clasificación Internacional C07K 14/11Nº de solicitud PCT/CN2025/099265Solicitante WESTVAC BIOPHARMA CO., LTD.Inventor/a YANG, Li

The present invention belongs to the technical field of biomedicine, and specifically relates to a recombinant influenza virus protein, a vaccine, and a preparation method therefor and the use thereof. To overcome the defects of existing influenza vaccines with respect to safety and high toxic side effects, a recombinant influenza virus protein is provided, which has an amino acid sequence as shown in at least one of SEQ ID No. 1 to SEQ ID No. 6. Recombinant hemagglutinin proteins of H1N1 and H3N2 subtypes, and Victoria and Yamagata lineages are expressed and purified by means of an insect baculovirus expression system, and are mixed with an adjuvant to prepare a highly immunogenic recombinant bivalent, trivalent or quadrivalent recombinant influenza virus protein vaccine. The prepared vaccine can induce high levels of specific IgG antibodies and hemagglutination-inhibiting neutralizing antibodies, the addition of adjuvant WGa01 improves the immunogenicity of the vaccine, and the provided vaccine is suitable for people allergic to eggs and has high safety.

4.4761756IMPFSTOFFANTIGEN

EP - 24.06.2026

Clasificación Internacional A61K 39/215Nº de solicitud 24853073Solicitante MACFARLANE BURNET INST FOR MEDICAL RESEARCH AND PUBLIC HEALTH LIMITEDInventor/a DRUMMER HEIDI

The field of the specification relates broadly to coronavirus vaccine (CoV) antigens and methods of using and manufacturing CoV antigens. The invention also relates to vectors vaccines, kits, devices and strips comprising the coronavirus vaccine antigen. The invention also relates broadly to ribonucleic acids encoding a S protein monomer of a coronavirus vaccine (CoV) antigen and methods of using and manufacturing the ribonucleic acid. The invention also relates to vectors, lipid nanoparticles, RNA vaccines, kits, devices and strips comprising the ribonucleic acid.

5.WO/2026/129467MRNA VACCINE FOR PREVENTING OR TREATING MALIGNANT TUMORS,

PREPARATION METHOD THEREFOR AND USE THEREOF

WO - 25.06.2026

Clasificación Internacional C12N 15/12Nº de solicitud PCT/CN2025/075009Solicitante THE SEVENTH AFFILIATED HOSPITAL, SUN YAT-SEN UNIVERSITYInventor/a XIAO, Zhijie

The present invention belongs to the technical field of biomedicine, and provides a mRNA vaccine for preventing or treating malignant tumors, a preparation method therefor and the use thereof. The mRNA vaccine is formed by a nucleic acid molecule encoding NID1 antigen and a cationic lipid nanoparticle encapsulating the nucleic acid molecule. The nucleic acid molecule or the lipid nanoparticle thereof has good immunogenicity, and can induce the body to produce intensive cellular and humoral immune responses in short time. After delivered into the body, the nucleic acid molecule or the lipid nanoparticle thereof can express the NID1 protein in the body, so as to trigger immune responses in the body, so that the body can produce immune responses against tumors. In addition, only a low dose of the nucleic acid molecule or the lipid nanoparticle thereof is required to effectively inhibit tumor growth; and the vaccine is rapid and simple to prepare and can achieve large-scale production in a short period, thereby facilitating the industrialization of the drug and reducing the cost of anti-tumor drugs.

6.202601748l2DENGUE VACCINE UNIT DOSE AND ADMINISTRATION THEREOF

US - 25.06.2026

Clasificación Internacional A61K 35/76Nº de solicitud 19088420Solicitante Takeda Vaccines, Inc.Inventor/a Derek Wallace

The invention relates to a unit dose of a dengue vaccine composition and methods and uses for preventing dengue disease and methods for stimulating an immune response to all four dengue virus serotypes in a subject or subject population. The unit dose of a dengue vaccine composition includes constructs of each dengue serotype, such as TDV-1, TDV-2, TDV-3 and TDV-4, at various concentrations in order to improve protection from dengue infection.

7.WO/2026/135178CHIKUNGUNYA FEVER VACCINE COMPOSITION COMPRISING CHIKUNGUNYA VIRUS ENVELOPE RECOMBINANT PROTEIN

WO - 25.06.2026

Clasificación Internacional C07K 14/005Nº de solicitud PCT/KR2025/021900Solicitante KOREA NATIONAL INSTITUTE OF HEALTHInventor/a LIM, Heeji

The present invention relates to a chikungunya fever vaccine composition comprising a chikungunya virus envelope recombinant protein.

8.4765132VERFAHREN ZUM ENTWURF EINES PERSONALISIERTEN KREBSIMPFSTOFFS UNTER VERWENDUNG EINES B-ZELLREAKTIVEN NEOANTIGENS

EP - 24.06.2026

Clasificación Internacional G16B 40/20Nº de solicitud 24854390Solicitante KOREA ADVANCED INST OF SCIENCE AND TECHNOLOGYInventor/a CHOI JUNG KYOON

The present disclosure relates to a method for designing a personalized cancer vaccine, using a B cell-reactive neoantigen, the method comprising the steps of: receiving a peptide sequence extracted from cancer tissue and allelic sequence data of B cell receptors; calculating the preferential binding strength between amino acids in the peptide sequence and allelic sequences of B cell receptors; and calculating B cell epitope prediction scores by inputting the preferential binding strength between amino acids to a trained neural network model.

9.4761753GENETISCH MODIFIZIERTE BAKTERIEN ZUR MULTIMODALEN SEKRETION EINES NEOANTIGENS

EP - 24.06.2026

Clasificación Internacional A61K 39/00Nº de solicitud 24772411Solicitante BACCINE LTDInventor/a STRAUSSMAN RAVID

A vaccine and methods of treatment thereof, wherein the vaccine comprises a recombinant Gram-negative bacteria genetically modified to express a first antigen fusion peptide comprising a neoantigen or series thereof, said neoantigen or series thereof associated with a first secretion signal from a double membrane-spanning secretion system and a second antigen fusion peptide comprising a homologous neoantigen or series thereof, associated with a second secretion signal from an outer membrane-spanning secretion system. The Gram-negative bacteria may be further modified for quadmodal transport. Specifically, the fusion peptides include signal peptides are each associated with a Type III (T3SS) and a Type V (T5SS) secretion system.

10.4763225IN METALL-POLYPHENOL-NANOBESCHICHTUNG VERPACKTE TUMORVOLLZELLE, HERSTELLUNGSVERFAHREN DAFÜR UND VERWENDUNG DAVON

EP - 24.06.2026

Clasificación Internacional A61K 45/06Nº de solicitud 24911030Solicitante NOVASTRA THERAPEUTICS INCInventor/a GUO JUNLING

Disclosed are a metal-polyphenol nano-coating-wrapped tumor whole cell, a preparation method therefor, and use thereof. A plant polyphenol in the present invention and manganese ions can be rapidly assembled at room temperature to form a dense coating on the membrane of a tumor cell. The nano-coating wrapping inactivates the tumor cell, ensuring that the vaccine is safe. The nano-coating can prevent any potential tumor antigen from being lost under physiological conditions. The nano-coating is further modified with a lipopolysaccharide, which can promote the endocytosis of the formed whole-cell vaccine by antigen-presenting cells. While forming the structural coating, ions of the metal manganese can stimulate the STING pathway to enhance the anti-tumor effect.

11.20260174838TOLL-LIKE RECEPTOR AGONIST-BASED VACCINE ADJUVANT LIPID COMPOUND AND USE THEREOF

US - 25.06.2026

Clasificación Internacional A61K 39/00Nº de solicitud 19426518Solicitante Hangzhou Tianlong Pharmaceutical Co., Ltd.Inventor/a Honglei Zhang

The present invention discloses a Toll-like receptor agonist-based vaccine adjuvant lipid compound and use thereof, and specifically discloses a compound of formula (I), or a stereoisomer, an N-oxide, a solvate, or a pharmaceutically acceptable salt thereof. The mRNA-TLP composition prepared from the adjuvant lipid

compound of the present disclosure significantly enhances targeting to antigen-presenting cells in mouse spleen and can significantly inhibit tumor growth.

12.202601748 39PNEUMOCOCCAL AND OTHER VACCINES POTENTIATED WITH SAPONIN ADJUVANT

US - 25.06.2026

Clasificación Internacional A61K 39/09Nº de solicitud 19127441Solicitante THE UAB RESEARCH FOUNDATIONInventor/a Pengfei WANG

In one aspect, the disclosure relates to pneumococcal vaccines comprising a semisynthetic saponin adjuvant VSA-1. In one aspect, the disclosed vaccines elicit an immune response in a subject that is measurably higher than the response in an otherwise identical subject who receives a vaccine without the semisynthetic saponin adjuvant. In another aspect, the disclosed vaccines are useful across age groups and immunization can be achieved with fewer injections than for standard pneumococcal vaccines. This abstract is intended as a scanning tool for purposes of searching in the particular art and is not intended to be limiting of the present disclosure.

13.WO/2026/132565IMMUNOCONJUGATES FOR TREATING BLADDER CANCER

WO - 25.06.2026

Clasificación Internacional C07K 16/28Nº de solicitud PCT/EP2025/088589Solicitante F. HOFFMANN-LA ROCHE AGInventor/a BOETSCH, Christophe Pierre André

The application relates to immunoconjugates for use in a method of treating bladder cancer in a human patient, wherein the method comprises administering the immunoconjugate to the patient, wherein the immunoconjugate comprises: (i) an antibody that binds to PD-1; and (ii) a mutant IL-2 polypeptide comprising the amino acid substitutions F42A, Y45A and L72G. The immunoconjugates are capable of binding in cis to PD-1 and stimulating IL-2 signalling on the same cell, providing selective IL-2 receptor signalling on PD-1 positive T cells relative to the PD-1 negative T cells. The application also relates to the use of the immunoconjugates in combination with immunotherapeutic agent, which is bacterial strain or an oncolytic virus, such as the BCG vaccine.

14.WO/2026/128980METHODS OF TREATMENT USING VACCINE COMPOSITIONS

WO - 25.06.2026

Clasificación Internacional A61K 39/02Nº de solicitud PCT/AU2025/051458Solicitante DENTERIC PTY LTDInventor/a SMITH, Christopher

The invention relates to methods and compositions for preventing or treating a neuropathology in a subject associated with or induced or caused by a *P. gingivalis* infection, preventing the deposition of or reducing the level of *P. gingivalis* gingipain in neuronal tissue, delaying the onset of a *P. gingivalis*-induced or associated neuropathology, for preventing or slowing the rate of abnormal protein deposition in the neuronal tissue, and/or reducing neuroinflammation, the methods comprising administering an RNA polynucleotide encoding a protein comprising or consisting of: - one or more amino acid sequences of an active site of an Arg- or Lys-gingipain of *P. gingivalis*, or a sequence that is at least 80% identical thereto; and/or - the amino acid

sequence of one or more adhesin binding motifs (ABMs) of an adhesin domain of an Arg- or Lys-gingipain of *P. gingivalis*, or a sequence that is at least 80% identical thereto, wherein the polynucleotide is capable of being translated in a mammalian cell.

15.4763284IMPFSTOFFADJUVANSLIPIDVERBINDUNG AUF BASIS VON TOLL-LIKE-REZEPTORAGONISTEN UND VERWENDUNG DAVON

EP - 24.06.2026

Clasificación Internacional A61P 35/00Nº de solicitud 25225019Solicitante HANGZHOU TIANLONG PHARMACEUTICAL CO LTDInventor/a ZHANG HONGLEI

16.4761755BREITBAND-KONJUGAT-IMPFSTOFF ZUR VORBEUGUNG VON KLEBSIELLA PNEUMONIAE- UND PSEUDOMONAS AERUGINOSA-INFEKTIONEN

EP - 24.06.2026

Clasificación Internacional A61K 39/108Nº de solicitud 24854971Solicitante UNIV MARYLANDInventor/a CROSS ALAN S

The present invention is drawn to conjugates comprising a glycosylated native FlaA flagellin protein of *Pseudomonas* and *Klebsiella* surface polysaccharide antigens, such as *Klebsiella pneumoniae* O polysaccharides from serovars O1, O2a, O2a,c, O3, O4, O5, O7, O8 and O12. The present invention also provides pharmaceutical compositions comprising the same and methods of inducing an immune response in subjects by administering the compositions.

17.4763219REKOMBINANTES MYCOBAKTERIUM ALS IMPFSTOFF ZUR VORBEUGUNG DES AUFTRETENS UND WIEDERAUFTRETENS VON TUBERKULOSE

EP - 24.06.2026

Clasificación Internacional A61K 39/04Nº de solicitud 24222944Solicitante SERUM INST OF INDIA PRIVATE LIMITEDInventor/a SHALIGRAM UMESH

18.WO/2026/134289LIPOPEPTIDE ANTIGEN

WO - 25.06.2026

Clasificación Internacional C07K 7/06Nº de solicitud PCT/JP2025/044275Solicitante THE UNIVERSITY OF OSAKAInventor/a YAMASAKI, Sho

The present invention addresses the problem of providing: a new antigen that can also be effective against mutant viruses; and a new vaccine obtained by using said antigen. Said problem is solved by providing a lipopeptide which is obtained by conjugating a lipid and a peptide and in which the peptide has antigenicity and is represented by formula (1): a-b-c-d(-e-f)$_n$. In the formula, n represents 0 or 1, and a-f include a specific amino acid.

19.4763857NUKLEINSÄUREIMPFSTOFF GEGEN DAS SARS-COV-2-CORONAVIRUS

EP - 24.06.2026

Clasificación Internacional C07K 14/005Nº de solicitud 26175582Solicitante PASTEUR

INSTITUTInventor/a SIMON-LORIERE ETIENNE

20.2024396106METAPNEUMOVIRUS (MPV) VACCINE

AU - 25.06.2026

Clasificación Internacional C12N 15/45Nº de solicitud 2024396106Solicitante SHENZHEN SHENXIN BIOTECHNOLOGY CO., LTD.Inventor/a LI, Hui

21.2024377259VACCINE COMPOSITION FOR INDUCING ANTI-IGE ANTIBODY

AU - 25.06.2026

Clasificación Internacional A61K 39/00Nº de solicitud 2024377259Solicitante FUNPEP CO., LTD.Inventor/a HAYASHI, Hiroki

22.WO/2026/130036CRYSTAL FORM OF TLR7/8 AGONIST AND PREPARATION METHOD THEREFOR

WO - 25.06.2026

Clasificación Internacional C07D 471/04Nº de solicitud PCT/CN2025/137312Solicitante BEIJING SYNTHETIC VACCINE BIOSCIENCES CO., LTD.Inventor/a WANG, Zhisong

Provided are a crystal form of compound 6-(4-(morpholinomethyl)benzyl)-N4-(2-methoxyethyl)pyrido[3,2-d] pyrimidine-2,4-diamine as a TLR7/8 agonist and a preparation method therefor. The crystal form comprises a free base crystal form, a hydrochloride crystal form, and a maleate crystal form of the compound, wherein the free base crystal form exhibits a high crystallinity, a slight hygroscopicity, and a good stability, and both the hydrochloride crystal form and the maleate crystal form exhibit a good solubility and stability. The crystal form can be used for drug research and development, and has very good application prospects.

23.20260174844ADMINISTRATION OF VACCINES TO SITES OF TEMPORALLY INDUCED CELL-MEDIATED HYPERSENSITIVITY REACTIONS, TO FACILITATE THE DEVELOPMENT OF PROTECTIVE SENSITIZATION AGAINST INFECTIOUS DISEASES AND CANCERS

US - 25.06.2026

Clasificación Internacional A61K 39/35Nº de solicitud 19536686Solicitante Robert E. COIFMANInventor/a Robert E. COIFMAN

Provided are methods of biasing a response of a vaccine recipient's immune system toward protective sensitization. Methods include administering an agent or substance to the site of a subject of a temporally interacting cell-mediated allergic reaction to enhance the resulting level of protective sensitization.

24.WO/2026/136409SELF-AMPLIFYING RNA VACCINE COMPOSITIONS AND METHODS FOR PREVENTION AND TREATMENT OF LYME DISEASE

WO - 25.06.2026

Clasificación Internacional A61K 39/02Nº de solicitud PCT/US2025/059911Solicitante KEYLICON BIOSCIENCES INC.Inventor/a MCGEE, Joshua

Provided herein are monovalent and multivalent self-amplifying RNA (saRNA) constructs encoding one or

more *Borrelia* antigens, including antigens from distinct genospecies, and pharmaceutical compositions comprising the same. Also provided are methods of using such saRNA constructs and pharmaceutical compositions, and methods of manufacturing such compositions.

25.20260174845METHODS OF ENHANCING IMMUNOGENICITY OF POORLY IMMUNOGENIC ANTIGEN-SPECIFIC VACCINES USING ORAL YEAST BETA-GLUCANS

US - 25.06.2026

Clasificación Internacional A61K 39/39Nº de solicitud 19275256Solicitante Memorial Sloan Kettering Cancer CenterInventor/a Nai-Kong CHEUNG

The present disclosure provides methods for enhancing the immunogenicity of a poorly immunogenic antigen-specific vaccine as well as methods for promoting diversification of the gut microbiome in a subject in need thereof comprising administering to the subject an effective amount of a beta-glucan extract derived from yeast. Kits for use in practicing the methods are also provided.

26.WO/2026/136802AFFINITY LIGANDS FOR PURIFICATION OF HERPESVIRUS VACCINE ANTIGENS

WO - 25.06.2026

Clasificación Internacional C07K 14/00Nº de solicitud PCT/US2025/060532Solicitante REPLIGEN CORPORATIONInventor/a NORTH, Molly Lauren

Provided are human herpesvirus affinity ligands and related compositions including affinity resins.

27.WO/2026/128966STABILISED PROTEIN

WO - 25.06.2026

Clasificación Internacional C07K 14/445Nº de solicitud PCT/AU2025/051440Solicitante THE WALTER AND ELIZA HALL INSTITUTE OF MEDICAL RESEARCHInventor/a LONGLEY, Rhea

The present disclosure relates to synthetic *Plasmodium* reticulocyte binding protein 2b (mRBP2b) antigens that have improved properties such as thermal stability, as well as the use of these antigens to detect a *Plasmodium* infection in a diagnostic device or for use in a vaccine.

28.20260176313TGF-BETA-1 VACCINE

US - 25.06.2026

Clasificación Internacional C07K 14/495Nº de solicitud 19124527Solicitante IO BIOTECH APSInventor/a Mads Hald ANDERSEN

The present invention relates to novel polypeptides, which are derived from transforming growth factor beta 1 (TGFβ1; TGFb-1) as well as polynucleotides encoding such polypeptides and compositions comprising such peptides. The present invention is further concerned with ways to increase the selectivity of the immune response to TGFb-1. The invention also concerns uses, and methods of using, said polypeptides, polynucleotides, and compositions.

29.20260174842FOOT-AND-MOUTH DISEASE VACCINE

US - 25.06.2026

Clasificación Internacional A61K 39/135Nº de solicitud 19091021Solicitante Zoetis Services LLCInventor/a Paul Joseph Dominowski

Compositions for prevention of Foot and Mouth Disease (FMD) are provided, comprising an antigen component in the amount equivalent to 0.5-20 µg FMD virus and an adjuvant component comprising oil, an immunostimulatory oligonucleotide, and a polycationic carrier. Methods of using the composition, as well as the methods of reducing FMD persistence are also provided.

Patentes registradas en United States Patent and Trademark Office (USPTO)

Estrategia de búqueda: *vaccine.ti. AND @PD>="20260622"<=20260630 21 records*

Document ID	Title	Inventor	Applicant Name
US 12667610 B2	Vaccine composition comprising recombinant protein of Staphylococcus aureus attenuated enterotoxin and cytotoxin	Moon; Dong Chan et al.	Republic of Korea (Animal and Plant Quarantine Agency), Mississippi State University
US 12667609 B2	Recombinant fusion protein vaccine containing Clostridioides difficile FliC and FliD	Sun; Xingmin	University of South Florida
US 12667612 B2	MDCK suspension cell lines in serum-free, chemically-defined media for vaccine production	Bang; Jenny et al.	National Health Research Institutes, Fujifilm Biosciences Inc.
US 12668616 B2	WT1 vaccine	Weiner; David B. et al.	The Trustees of the University of Pennsylvania, Inovio Pharmaceuticals, Inc.
US 20260174838 A1	Toll-Like Receptor Agonist-Based Vaccine Adjuvant Lipid Compound and Use Thereof	Zhang; Honglei et al.	Hangzhou Tianlong Pharmaceutical Co., Ltd.
US 20260176313 A1	TGF-BETA-1 Vaccine	Andersen; Mads Hald	IO BIOTECH APS

US 20260174839 A1	Pneumococcal and other Vaccines Potentiated with Saponin Adjuvant	Wang; Pengfei et al.	The UAB Research Foundation
US 20260174812 A1	Dengue Vaccine Unit Dose and Administration Thereof	Wallace; Derek	Takeda Vaccines, Inc.
US 20260174842 A1	Foot-And-Mouth Disease Vaccine	Dominowski; Paul Joseph et al.	Zoetis Services LLC,United States of America, as Represented by the Secretary of Agriculture
US 20260174884 A1	Messenger RNA Vaccines and Uses Thereof	KARVE; Shrirang et al.	Translate Bio, Inc.
US 20260174845 A1	Methods of Enhancing Immunogenicity of Poorly Immunogenic Antigen-Specific Vaccines Using Oral Yeast Beta-Glucans	Cheung; Nai-Kong et al.	Memorial Sloan Kettering Cancer Center
US 20260174704 A1	Cancer Vaccines	Valiante; Nicholas et al.	ModernaTX, Inc.
US 20260174705 A1	Cancer Vaccines	Valiante; Nicholas et al.	ModernaTX, Inc.
US 20260174844 A1	Administration of Vaccines to Sites of Temporally Induced Cell-Mediated Hypersensitivity Reactions, to Facilitate the Development of Protective Sensitization Against Infectious Diseases and Cancers	Coifman; Robert E. et al.	Coifman; Robert E.,Yang; Catherine F.

US 20260177315 A1	Continuous Microwave Drying for Vaccines	Clapham; Andrew John	Clapham; Andrew John
US 12661322 B2	Multivalent nanoparticle-based vaccines	Graham; Barney S. et al.	The USA, as represented by the Secretary, Department of Health and Human Services
US 12661411 B2	Monoclonal antibody and vaccine targeting filamentous bacteriophage	Bollyky; Paul L. et al.	INIMMUNE CORPORATION
US 12661394 B2	Coronavirus vaccine	Shattock; Robin et al.	Imperial College Innovations Limited
US 12661396 B2	Selective targeting of the TREML1/MD2 interaction by small peptide or protein and its use for vaccine adjuvants	Lu; Yen-Ta et al.	Ascendo Biotechnology, Inc.
US 12661392 B2	Multiepitope vaccine for the treatment of ALZHEIMER'S disease	Barbour; Robin et al.	OTHAIR PROTHENA LIMITED
US 12661393 B2	BCG based vaccine compositions and methods of use thereof	Singh; Alok et al.	The Johns Hopkins University

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Edición: Annia Ramos Rodríguez aramos@finlay.edu.cu
Randelys Molina Castro rmolina@finlay.edu.
Claudia Camejo Salas ccamejo@finlay.edu.cu
Yamira Puig Fernández yamipuig@finlay.edu.cu