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VacCiencia es una publicación dirigida a investigadores y especialistas dedicados a la vacunología y temas afines, con el ojetivo 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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5 Vaccines Under Development That Would Change the World As We Know It

Apr 10. Five vaccines in development for HIV, tuberculosis, cancer, influenza, and coronaviruses could transform global health.

- mRNA technology is enabling an entirely new HIV vaccine strategy that, for the first time, successfully primes the immune system toward broadly neutralizing antibodies in humans.
- The TB vaccine candidate M72/AS01E showed ~50% efficacy against pulmonary TB in adults which is a meaningful breakthrough given BCG's failure to protect this group for over a century.

- Personalized cancer vaccines are showing real clinical results, with melanoma patients on the mRNA-4157/pembrolizumab combination reaching 74.8% recurrence-free survival at 2.5 years.
- A universal flu vaccine could eliminate the need for annual reformulation and save lives at the start of a pandemic.
- Broad-spectrum coronavirus vaccines are already generating cross-reactive immunity across multiple variants in early trials, offering a genuine pre-emptive tool against the next pandemic.

The COVID-19 pandemic exposed gaps in pandemic preparedness as the world grappled with a novel pathogen. In an unprecedented effort, vaccines were developed at speed, delivering safe and effective immunizations within 12 months of viral sequencing, a timeline that would have been unthinkable under conventional vaccine development paradigms. Overall, the COVID-19 vaccine is estimated to have prevented more than 14 million deaths globally.

The pandemic also demonstrated that when scientific infrastructure, funding, and politics align, vaccine development can move faster and reach further than previously thought possible. That lesson is now being applied to some of the most entrenched unsolved problems in medicine, including these 5 vaccines under development that could change the world as we know it.

1. HIV

Forty years of HIV vaccine research have faltered on the same biological obstacle: A virus that mutates faster than conventional immune strategies can track it. Now, compelling data from 2 Phase 1 trials, IAVI G002 (NCT05001373) in North America (n=60) and IAVI G003 (NCT05414786) in South Africa and Rwanda (n=18), are changing the narrative. Both trials used mRNA-delivered germline-targeting immunogens, a strategy that is fundamentally different from every prior HIV vaccine attempt. Rather than trying to elicit a protective antibody response directly, the approach works by priming doses activating rare naïve B cell precursors with the germline features needed to eventually produce broadly neutralizing antibodies (bnAbs), while heterologous booster doses drive those cells through sequential stages of affinity maturation.

In G002, all 17 participants who received both the priming and booster dose developed VRC01-class antibody responses. In more than 80% of participants, immune cells acquired multiple helpful mutations associated with bnAb development. G003 demonstrated that the priming dose could successfully activate the same target immune cells in African participants. This finding is critical given that sub-Saharan Africa carries the majority of the global HIV burden. No prior HIV vaccine strategy has successfully navigated this stepwise induction of bnAb precursors in humans at scale. The mRNA platform's ability to encode complex conformational antigens and be rapidly iterated between doses is what makes this approach viable where protein-based vaccines have repeatedly fallen short.

2. Tuberculosis

Tuberculosis (TB) kills 1.25 million people annually, disproportionately in low- and middle-income countries, and drug resistance is rising. Therefore, a vaccine deployed at a population scale would be a significant public health intervention.

Developed more than 100 years ago, BCG remains the only licensed TB vaccine. With more than 100 million doses administered annually, it protects infants against disseminated disease. However, a major drawback is that it offers variable protection against pulmonary TB in adults and adolescents, which is where more than 80% of the global burden falls according to data from the World Health Organization.

A new vaccine candidate, M72/AS01E, is under development to fill this gap. In the Phase 2b trial, M72/AS01E provided approximately 50% efficacy against pulmonary TB in adults with latent M. tuberculosis infection. The protection was sustained over 3 years and was deemed safe to administer.

3. Personalized Cancer Vaccines

Individual vaccines are under development for cancers ranging from melanoma to breast cancer. These are not prophylactic vaccines in the traditional sense, but therapeutic mRNA constructs personalized to each patient's tumor mutational profile. After tumor sequencing, neoantigens unique to the patient's cancer are encoded into a bespoke mRNA vaccine designed to drive a targeted cytotoxic T cell response.

Initial results from the KEYNOTE-942 trial showed that a personalized neoantigen mRNA vaccine combined with pembrolizumab led to a lower risk of recurrence or death compared with pembrolizumab alone in patients with high-risk resected Stage III/IV melanoma. A follow-up analysis at 3 years strengthened the primary findings and showed a 2.5-year recurrence-free survival of 74.8% vs 55.6% with pembrolizumab alone.

The cost and logistics of personalized manufacturing remain real barriers as each vaccine is unique to the patient. Phase 3 trials are now underway in lung cancer and may represent a fundamental shift in cancer care.

4. Universal Influenza Vaccine

Every year, the influenza vaccine is reformulated based on surveillance predictions about circulating strains. This process is inherently imperfect and produces a product with highly variable seasonal efficacy. A universal influenza vaccine, targeting conserved structural elements, would eliminate this dependency and provide meaningful protection.

Current efforts are targeting the hemagglutinin stalk, which is the less variable lower portion, rather

than the immunodominant but mutable head. In May 2025, the HHS and NIH announced a next-generation universal vaccine platform, with flu vaccine trials scheduled to begin in 2026. With multiple candidates in early clinical development and advanced trials, a universal influenza vaccine is on track for FDA review by 2029.

The pandemic preparedness dimension makes this a very strategically important vaccine on this list. A universal product deployed at the outset of an influenza pandemic, rather than the 6 to 12 months it takes to produce a matched vaccine, could save thousands of lives.

5. Broad Spectrum Coronavirus Vaccine

SARS-CoV-2 was the third novel coronavirus to cause significant human disease in 20 years, after SARS-CoV-1 and MERS-CoV. The question is not whether another will emerge, but when.

Pan-sarbecovirus and broad-coronavirus vaccine candidates are designed to elicit immunity against the SARS family and even more broadly across the wider coronavirus genus, respectively. By targeting conserved regions of the coronavirus spike protein, these candidates may provide cross-protection against known variants and potentially preempt the next spillover event before it becomes a pandemic.

Multiple candidates are currently in Phase 1 and Phase 2 trials targeting areas such as the receptor-binding domain and S2 stem region. These areas are structurally constrained and therefore more conserved across the coronavirus family.

For example, in a Phase 1 first-in-human trial of 29 participants, the SpFN/ALFQ vaccine was well tolerated and elicited neutralizing antibody responses against multiple SARS-CoV-2 variants and related sarbecoviruses, with cross-reactive immunity detectable after two immunizations and boosted further after a third dose. Critically, neutralizing activity was demonstrated against both early omicron subvariants and clade 1 sarbecoviruses, providing the first human proof-of-concept that broad pan-sarbecovirus immunity is achievable.

As pandemic-preparedness tools, these vaccines would help to develop broad-spectrum immunity deployed in high-risk populations before the outbreak begins rather than responding to the next coronavirus after it emerges.

Looking forward

The 5 candidates outlined here span some of the most persistent unsolved problems in vaccinology. More research is still needed to determine whether early signals hold at scale, and the gap between clinical proof-of-concept and population-level deployment remains significant. But the pipeline is real, and these are developments worth looking out for.

Fuente: AJMC. Disponible en https://n9.cl/xsox0

BioNTech Impfung: Vacunas innovadoras contra la COVID-19

10 abr. La BioNTech Impfung, conocida principalmente como la vacuna BNT162b2 o Comirnaty, es un producto biotecnológico pionero basado en tecnología de ARNm que ha transformado la respuesta global a pandemias virales como la COVID-19.

"La BioNTech Impfung representa un avance clave en vacunas de ARNm contra el COVID-19, desarrolladas con Pfizer, con impacto global en salud pública y mercados farmacéuticos para consumidores e industria."

Este tipo de vacuna introduce material genético sintético en las células humanas para que produzcan la proteína de pico del SARS-CoV-2, estimulando una respuesta inmune robusta sin usar el virus vivo. Su relevancia radica en su alta eficacia demostrada en ensayos clínicos, superior al 90% contra formas graves de la enfermedad en poblaciones adultas, según datos regulatorios aprobados por agencias como la EMA y la FDA.

Propiedades técnicas de la BioNTech Impfung

La BioNTech Impfung se caracteriza por su estabilidad a temperaturas ultrafrías inicialmente (-70°C), aunque versiones posteriores optimizaron el almacenamiento a -20°C o refrigeración estándar por hasta 10 semanas, facilitando su distribución global. Cada dosis contiene 30 microgramos de ARNm liposomado, sin conservantes ni adyuvantes tradicionales, lo que la hace apta para una amplia gama de edades desde los 6 meses en formulaciones pediátricas.

Su mecanismo de acción es rápido: tras la inyección intramuscular, las nanopartículas lipídicas entregan el ARNm al citoplasma celular, donde se traduce en la proteína Spike en horas. Esto genera anticuerpos neutralizantes y respuesta celular T en 10-14 días post-primera dosis, con refuerzo significativo tras la segunda.

En términos de seguridad, estudios post-autorización en millones de dosis reportan efectos adversos comunes como dolor en el sitio de inyección, fatiga y fiebre, raros eventos graves como miocarditis en jóvenes varones (1-5 casos por 100.000 dosis), siempre inferiores al riesgo de la enfermedad natural.

Funciones y casos de uso de la BioNTech Impfung

Primordialmente diseñada para prevención primaria de la COVID-19, la BioNTech Impfung se usa en campañas de vacunación masiva, refuerzos estacionales y protección de grupos vulnerables como ancianos y pacientes con comorbilidades. En entornos hospitalarios, reduce ingresos por COVID-19 en un 80-95 %, liberando recursos sanitarios.

Para consumidores individuales, ofrece protección personal contra hospitalización y long COVID, con datos indicando durabilidad de inmunidad de 6-12 meses, extendida con variantes dirigidas como las contra Ómicron. En la industria, su adopción en cadenas de suministro farmacéuticas globales ha impulsado contratos gubernamentales multimillonarios, estabilizando economías durante crisis.

Casos de uso incluyen programas nacionales en Europa, América y Asia, donde ha sido administrada en más de 4 mil millones de dosis globalmente hasta 2023, adaptándose a nuevas variantes mediante actualizaciones rápidas del ARNm, un proceso de meses versus años en vacunas tradicionales.

Adaptaciones para variantes

Versiones bivalentes y monovalentes contra BA.4/5 y XBB han mantenido eficacia contra hospitalizaciones por encima del 70 %, según vigilancia de la CDC y ECDC, demostrando flexibilidad tecnológica.

Relevancia comercial global de la BioNTech Impfung

En el mercado farmacéutico mundial, valorado en 1.5 billones de dólares anuales, la BioNTech Impfung destaca por liderar el segmento de vacunas COVID-19, con demanda sostenida en refuerzos anuales similares a la gripe. Su rol comercial incluye exportaciones desde plantas en Alemania, EE.UU. y Bélgica, integrándose en supply chains con proveedores de lípidos como Acuitas Therapeutics.

La competencia incluye vacunas virales de AstraZeneca y Sinovac, pero la superioridad en eficacia fría ha posicionado la BioNTech Impfung en contratos preferenciales de la UE y EE.UU., impactando precios negociados entre 15-30 USD por dosis en mercados públicos.

Regulatoriamente, aprobaciones completas en más de 100 países aseguran disponibilidad, aunque desafíos logísticos en regiones en desarrollo persisten, mitigados por iniciativas COVAX.

Para la industria biotecnológica, representa un modelo de escalabilidad: producción anual potencial de 4 mil millones de dosis, empleando biorreactores avanzados y control de calidad estricto bajo GMP.

Demanda y adopción en mercados emergentes

La demanda global persiste en 2026 con campañas de refuerzo, especialmente en Latinoamérica y África, donde accesibilidad mejorada vía transferencias tecnológicas ha elevado cobertura al 70% en algunos países. Competidores chinos ofrecen alternativas más económicas, pero la BioNTech Impfung prevalece en eficacia documentada.

En *supply chain*, dependencia de materias primas raras como nucleósidos modificados ha impulsado diversificación, reduciendo riesgos geopolíticos. Adopción industrial en farmacias y clínicas privadas genera ingresos recurrentes vía *boosters* personalizados.

Impacto en salud pública

Estudios longitudinales confirman reducción de mortalidad COVID-19 en un 60-80 % en poblaciones vacunadas, justificando su rol perenne en kits pandémicos futuros.

Desarrollos tecnológicos y futuras aplicaciones

Más allá de la COVID-19, la plataforma ARNm de la BioNTech Impfung se expande a cáncer (ej. BNT111 para melanoma) y gripe, prometiendo vacunas universales. Esto amplía su relevancia comercial a oncología, un mercado de 200 mil millones de dólares.

Innovaciones incluyen autoamplificantes ARNm para dosis únicas, en fases clínicas, potencialmente revolucionando vacunación global con menor logística.

BioNTech como desarrollador detrás de la BioNTech Impfung

BioNTech SE, empresa alemana cofundada por Ugur Sahin y Özlem Türeci, colabora con Pfizer para manufactura y distribución de la BioNTech Impfung, combinando *expertise* en inmuno-oncología con escala global. La compañía cotiza bajo el ISIN US09075V1026 en NASDAQ, con operaciones centradas en Mainz, Alemania.

Fuente: AD-HOC-NEWS. Disponible en https://n9.cl/j2s4w4

Spikevax: la vacuna de Moderna contra la COVID-19

11 abr. Spikevax, conocida también como mRNA-1273, representa un avance significativo en la tecnología de vacunas de ARNm. Esta vacuna, desarrollada por Moderna, está diseñada específicamente para prevenir la enfermedad por coronavirus 2019 (COVID-19) causada por el virus SARS-CoV-2. Su mecanismo de acción se basa en la instrucción al organismo humano para producir la proteína de espiga del virus, lo que activa una respuesta inmune protectora sin causar la enfermedad.

"Spikevax es la vacuna de ARNm desarrollada por Moderna para prevenir la COVID-19, autorizada en múltiples países y clave en campañas globales de inmunización. Explora sus propiedades, usos y relevancia en el mercado sanitario mundial."

La relevancia de Spikevax radica en su alta eficacia demostrada en ensayos clínicos y su uso masivo en campañas de vacunación a nivel global. Para consumidores, ofrece protección contra formas graves de COVID-19, hospitalizaciones y muertes, contribuyendo a la normalización de la vida cotidiana post-pandemia. En el ámbito industrial, fortalece las cadenas de suministro farmacéuticas y la capacidad de respuesta rápida a pandemias futuras mediante plataformas de ARNm escalables.

¿Qué es Spikevax y cómo funciona?

Spikevax es una vacuna de ARNm que codifica la glicoproteína de espiga estabilizada del SARS-CoV-2. Una vez inyectada, las células musculares del receptor leen el ARNm y producen temporalmente la proteína de espiga. El sistema inmune reconoce esta proteína como extraña, generando anticuerpos neutralizantes y células T que confieren inmunidad a largo plazo.

Esta tecnología difiere de las vacunas tradicionales, como las de virus inactivados o vectores virales, al no requerir cultivo del virus ni modificaciones genéticas en vectores. La producción es rápida y adaptable a variantes emergentes, lo que ha permitido actualizaciones como las dirigidas a Ómicron.

Administrada en dos dosis iniciales separadas por 28 días, con refuerzos posteriores según recomendaciones sanitarias.

Las propiedades técnicas incluyen una formulación lipídica que protege el ARNm frágil, asegurando su entrega intracelular eficiente. Se almacena a -20°C para lotes grandes y a 2-8°C por hasta 30 días, facilitando la logística global. Cada dosis de 0,5 ml contiene 100 microgramos de ARNm, sin conservantes como el timerosal.

Usos clínicos y casos de aplicación de Spikevax

En contextos clínicos, Spikevax se emplea principalmente en adultos y adolescentes mayores de 12 años para prevención primaria de COVID-19. Autorizada por agencias como la FDA, EMA y OMS, su uso se extiende a refuerzos en poblaciones vulnerables, incluyendo inmunodeprimidos y ancianos. En campañas masivas, ha sido distribuida en más de 100 países, integrándose en programas nacionales de vacunación.

Para consumidores, su relevancia se evidencia en la reducción del riesgo de enfermedad grave: ensayos fase 3 mostraron una eficacia del 94,1 % contra COVID-19 sintomática. En el mundo real, estudios post-autorización confirman protección contra hospitalizaciones en un 90-95% tras dos dosis. Esto importa en regiones con alta densidad poblacional o sistemas sanitarios presionados, donde previene colapsos hospitalarios.

Industrialmente, Spikevax impulsa la innovación en biotecnología. Su plataforma ARNm sirve de base para vacunas contra gripe, VRS y cáncer, expandiendo aplicaciones más allá de COVID-19. En cadenas de suministro, demanda nanopartículas lipídicas y reactivos de ARNm sintético, posicionando a proveedores clave en Europa y EE.UU.

Adaptaciones a variantes

Moderna ha lanzado versiones actualizadas de Spikevax contra variantes como BA.1 y XBB.1.5, aprobadas por reguladores para mantener la efectividad ante la evolución viral. Estas actualizaciones demuestran la flexibilidad de la plataforma, permitiendo respuestas en meses en lugar de años.

Uso en poblaciones especiales

Estudios confirman seguridad en embarazadas y lactantes, con transferencia mínima de anticuerpos a neonatos. En niños de 6 meses a 5 años, dosis reducidas (25 µg) ofrecen protección adecuada con perfiles de seguridad favorables.

Comparada con competidores como Comirnaty de Pfizer o vacunas vectoriales como Vaxzevria, Spikevax destaca por su estabilidad térmica intermedia y eficacia comparable. En mercados emergentes, su logística fría la hace viable donde ultra-congelación es un desafío.

Relevancia comercial de Spikevax en el mercado global

En el mercado farmacéutico global, Spikevax ha generado miles de millones en ventas anuales durante la pandemia, consolidando su rol en biotecnología. Su demanda persiste por refuerzos estacionales y preparación pandémica, con contratos gubernamentales asegurando volúmenes estables. Competencia incluye vacunas chinas como Sinovac, pero la tecnología ARNm lidera en Occidente por innovación percibida.

Regulatoriamente, cumple estándares estrictos de GMP y vigilancia post-mercado vía VAERS y EudraVigilance. Efectos adversos comunes incluyen dolor en el sitio de inyección y fatiga; raros como

miocarditis son monitorizados, con beneficios superando riesgos en todas las edades. La adopción global supera los 300 millones de dosis en EE.UU. y Europa, con expansión en Latinoamérica y Asia.

En términos de cadena de suministro, depende de lípidos ionizables patentados y ARNm de alto rendimiento, con producción en plantas de Noruega y Australia para diversificación. Esto mitiga riesgos geopolíticos y asegura disponibilidad mundial.

Tecnología ARNm y futuro de Spikevax

La base tecnológica de Spikevax revoluciona la vacunología al permitir diseño in silico de antígenos. Investigaciones en curso combinan ARNm con auto-adjuvantes para mejorar respuestas en inmunodeprimidos. Potencial en terapias personalizadas para cáncer, donde codifica neoantígenos tumorales.

Para la industria, acelera el desarrollo de vacunas combinadas contra COVID-gripe, en fase clínica. Comercialmente, posiciona a productores de ARNm como líderes, con patentes extendiendo monopolio hasta 2030. Demanda futura depende de endemicidad de COVID-19 y preparación para patógenos emergentes como H5N1.

Impacto en consumidores e industria sanitaria

Para consumidores hispanohablantes en América Latina, España y EE.UU., Spikevax ha sido pivotal en reaperturas económicas. Países como México y Argentina integraron dosis en campañas gratuitas, reduciendo mortalidad en un 70-80 %. Su accesibilidad vía COVAX asegura equidad en naciones en desarrollo.

En industria, fomenta alianzas público-privadas y transferencia tecnológica. Competidores como BioNTech y GSK invierten en ARNm, intensificando innovación. Regulación armónica vía OMS facilita exportaciones, con más de 1.000 millones de dosis producidas globalmente.

Disponibilidad y logística

Spikevax se distribuye en viales multidosis, compatible con jeringas de bajo residuo muerto para maximizar dosis. Programas de donación han entregado millones a África y Asia, destacando su rol en salud global.

Empresa detrás de Spikevax

Moderna, Inc. es la biotecnológica estadounidense que desarrolló y comercializa Spikevax. Fundada en 2010, se especializa en terapéuticas de ARNm, con sede en Cambridge, Massachusetts.

El emisor asociado al ISIN US60770K1079 cotiza en mercados públicos, reflejando confianza inversora en la plataforma tecnológica de Moderna más allá de Spikevax.

Fuente: AD HOC NEWS. Disponible en https://n9.cl/rids6

Una única vacuna nasal eficaz contra: COVID-19, gripe, neumonías, alergias

11 abr. Una vacuna única que protege contra múltiples enfermedades generalmente parece estar fuera de alcance. Sin embargo, un estudio reciente en ratones demuestra que esto podría concretarse para las enfermedades respiratorias, gracias a un nuevo método que moviliza las defensas naturales de los pulmones de una manera inédita.

A diferencia de las vacunas clásicas que se dirigen a un agente patógeno específico, esta nueva fórmula actúa de manera diferente. No presenta al organismo un fragmento de virus o bacteria, sino que busca estimular y coordinar las defensas naturales de los pulmones de manera duradera. Este método rompe con más de dos siglos de principios vacunales basados en el reconocimiento de un enemigo bien preciso.

Su mecanismo se basa en una colaboración reforzada entre los dos grandes pilares de nuestro sistema inmunitario. La vacuna experimental activa primero la inmunidad innata, una primera línea de defensa rápida y general. De manera inesperada, esta activación se mantiene durante varios meses gracias a señales emitidas por células inmunitarias especializadas, los linfocitos T, que son atraídas al sitio. Esta vigilancia prolongada permite una respuesta inmediata y amplia contra diversos intrusos.

Los resultados obtenidos en el laboratorio son impresionantes por su extensión. Los ratones vacunados por vía nasal resistieron infecciones por el SARS-CoV-2 y otros coronavirus. También estuvieron protegidos contra bacterias responsables de neumonías nosocomiales. Hecho notable, la vacuna incluso atenuó las reacciones alérgicas a los ácaros, demostrando una capacidad para modular tipos de respuesta inmunitaria muy diferentes. Estas protecciones persistieron durante al menos tres meses después de la administración.

La próxima gran etapa tendrá como objetivo evaluar la seguridad y eficacia de este enfoque en humanos. Los investigadores planean lanzar ensayos clínicos de fase I. Si estas pruebas son concluyentes, el desarrollo podría acelerarse. El objetivo a largo plazo es proponer un espray nasal administrado una o dos veces, capaz de conferir una protección estacional amplia y simplificada.

Tal avance modificaría considerablemente nuestra forma de protegernos contra las enfermedades respiratorias. Ofrecería una herramienta valiosa para hacer frente a las epidemias estacionales y a las amenazas pandémicas emergentes, a la vez que podría reducir la carga de las alergias comunes.

Fuente: Techno-Science.net. Disponible en https://n9.cl/vp3aa

Nanodisc technology improves study of viral proteins for vaccines

Apr 12. Viruses are masters at invading our cells thanks to specialized proteins that coat their surfaces. When scientists design vaccines, they often create versions of these viral surface proteins to study how our immune systems might respond. But those lab-made proteins typically lack key parts that sit within the virus' membrane, so they don't always behave the way they would on a real virus. This has made it difficult to understand how antibodies actually identify and neutralize these viral targets.

Now, scientists at Scripps Research, in collaboration with IAVI and other institutes, have created a platform that allows viral surface proteins to be studied in a form that more closely resembles how they appear naturally. The new approach utilizes nanodisc technology where these proteins are

embedded into particles made of lipid molecules, preserving them in a membrane-like structure. This could help guide vaccine research by better revealing how antibodies and viral proteins interact.

Outlined in *Nature Communications* on February 10, 2026, the platform was tested using proteins from HIV and Ebola: two viruses that have long challenged vaccine developers because their surface proteins are difficult for the immune system to target effectively. However, the approach could be applied broadly to other viruses with similar membrane-embedded proteins, such as influenza and SARS-CoV-2.

> ***"For many years, we've had to rely on versions of viral proteins that are missing important pieces. Our platform lets us study these proteins in a setting that better reflects their natural environment, which is critical if we want to understand how protective antibodies recognize a virus."***
>
> ***William Schief, co-senior author, professor at Scripps Research and executive director of vaccine design at IAVI's Neutralizing Antibody Center.***

In real viruses, surface proteins aren't free-floating, but rather embedded in a lipid membrane and arranged in specific shapes. Yet most lab studies remove the membrane-anchoring region to make the proteins easier to produce and analyze. While useful, those shortcuts can obscure important features, particularly for antibodies that target regions near the base of the protein, close to the viral membrane.

To address this, the research team assembled vaccine candidate viral proteins into nanodiscs, which are small and stable patches of membrane that hold the proteins in place. These lipid discs mimic the virus' outer layer, helping preserve how antibodies would identify proteins in an actual virus. Their novel platform allowed the researchers to use a range of standard vaccine-development tools, including tests of antibody binding, sorting of immune cells and high-resolution imaging.

"Putting all of these components together into a single, reliable system was the key," says first author Kimmo Rantalainen, a senior scientist in Schief's lab. "The individual pieces already existed, but making them work together in a way that's reproducible and scalable opens up new possibilities for how vaccines are analyzed and designed."

Using HIV as a test case, the team focused on a conserved region of the virus' surface protein that sits near the membrane. This region is targeted by a class of antibodies capable of blocking nearly all HIV variants. Such antibodies recognize viral parts that remain similar even as they mutate-an immune response scientists hope vaccines could eventually trigger.

With their nanodisc platform, the researchers were able to capture detailed structural snapshots of how these antibodies interact with the viral protein in its membrane context, revealing features that aren't visible when the protein is studied on its own. Those insights also help explain how certain antibodies may neutralize a virus by destabilizing the protein structures it uses to infect cells, offering clues for how future vaccines might better engage similar immune responses.

"The structure gave us a level of detail we simply couldn't access before," notes Rantalainen. "It showed us new interactions at the membrane interface and suggested why those matter for antibody function."

To demonstrate that the approach isn't limited to HIV, the team also applied their nanodisc platform to Ebola proteins, confirming that antibodies could identify and bind to these proteins in the same membrane-like environment.

Beyond structural studies, this platform can be used to analyze immune responses to vaccine candidates. By using the nanodiscs as molecular "bait," researchers can isolate and study cells that recognize viral proteins, providing a clearer picture of how the body responds to a given vaccine candidate. And because the system is scalable, what once took a month or longer to prepare can now be done in about a week, making it practical for comparing multiple candidate designs side by side.

Although the platform isn't a vaccine itself, scientists can use it as a tool to inform and accelerate vaccine research, particularly for viruses where traditional approaches have fallen short.

"This gives the field a more realistic, accurate way to test ideas early on," emphasizes Schief. "By improving how we study viral proteins and antibody responses, we hope this platform will help advance next-generation vaccines against some of the world's most challenging viruses."

Fuente: NEWS MEDICAL LIFE SCIENCES. Disponible en https://n9.cl/clh27u

YF-VAX Yellow Fever Vaccine 2026

Apr 12. Sanofi Pasteur YF-VAX® vaccine is prepared by culturing the 17D-204 strain of yellow fever virus in living avian leukosis-free chicken embryos. YF-Vax contains sorbitol and gelatin as stabilizers, is lyophilized, and is hermetically sealed under nitrogen, and no preservative is added. The YF-VAX vaccine must be reconstituted immediately before using the sterile diluent provided (Sodium Chloride Injection USP). After reconstitution, YF-VAX is a slightly pink-brown suspension that meets the World Health Organization (WHO) standards for the yellow fever vaccine.

The U.S. Food and Drug Administration (FDA) has approved the YF-VAX vaccine (BL 103915, 103915/5220), and the U.S. Centers for Disease Control and Prevention (CDC), the U.S. Dept of Defense (DoD), and other health agencies have recommended YF-VAX since 2016. As of February 2026, the YF-VAX vaccine is commercailly available at certified travel clinics in the U.S.

The FDA reported that 'two live, attenuated yellow fever vaccines, strains 17D-204 and 17DD, were derived in parallel in the 1930s. Historical data suggest that "17D vaccines" have identical safety and immunogenicity profiles. Therefore, vaccination with 17D strain vaccines is expected to elicit an immune response similar to that elicited by wild-type infection. This response is presumed to result from the initial infection of cells in the dermis or other subcutaneous tissues near the injection site, with subsequent replication and limited spread of the virus leading to the processing and presentation of viral antigens to the immune system, as would occur during infection with wild-type yellow fever virus. Therefore, the humoral immune response to the viral structural proteins, as opposed to a cell-mediated response, is most important in the protective effect of 17D vaccines.

Sanofi Pasteur announced that effective April 5, 2021, YF-VAX® (NDC Code: 49281-915-01) became available again in the U.S. and is now available at authorized YF-VAX providers. According to the IHR (2005) third edition, the international vaccination certificate against yellow fever becomes valid 10 days after vaccination and remains valid throughout the vaccinated person's lifetime.

As of April 12, 2026, the WHO publishes a list of countries requiring proof of yellow fever vaccination upon arrival.

Sanofi Pasteur, a Sanofi company, aims to ensure continued access to the yellow fever vaccine for travelers to international destinations where it is required or recommended. Sanofi is dedicated to supporting people through their health challenges. On December 26, 2020, the FDA licensed the new Sanofi Pasteur YF-VAX production facility, and doses are progressing through manufacturing. Efforts are underway to build an inventory and supply of YF-VAX, which will remain prioritized for the U.S. military.

Eliminate Yellow Fever Epidemics Strategy

The yellow fever (YF) virus is a single-stranded RNA virus belonging to the genus Flavivirus. It is transmitted to humans via the bite of an infected mosquito. The WHO published the "Eliminate Yellow Fever Epidemics" global disease prevention strategy. The ten-year EYE Strategy is a worldwide coalition of over 50 partners in 40 countries that has been accelerating efforts to prevent yellow fever outbreaks, protect at-risk populations, and save lives worldwide since 2017. According to EYE Strategy data, 226 million more people in Africa have been protected from yellow fever through a single-dose vaccine.

Yellow Fever Boosters

The U.S. CDC states that a yellow fever vaccine booster dose is not necessary. The Brazilian government said that individuals who received a fractional dose of the yellow fever vaccine in 2018 and plan to travel to São Paulo, Minas Gerais, Roraima, and Tocantins in 2025 should receive an additional dose in the standard presentation. As of April 2024, the findings from a study support the International Health Regulations, stating that a single-dose yellow fever vaccination provides lifelong protection for travelers.

YF-Vax Vaccine Price

Sanofi Pasteur and the U.S. CDC have confirmed the YF-VAX® vaccine is available in certified pharmacies and travel clinics. Sanofi's Patient Connection® offers various vaccine price savings. Sanofi has live support specialists at (800) 633-1610 to answer patients' questions. The CDC's Vaccines For Children program provides vaccines at no cost to qualifying children.

YF-VAX Vaccine Indication

Yellow fever is an acute viral hemorrhagic disease transmitted by infected mosquitoes. The "yellow" in the name refers to jaundice, a condition that affects some patients. The YF-VAX vaccine is indicated for active immunization to prevent yellow fever in individuals 9 months of age and older who are at increased risk, helping prevent them from contracting the disease. However, vaccination with YF-VAX may not protect all individuals.

YF-VAX should not be given to individuals who have experienced a severe allergic reaction to eggs, egg products, or any vaccine component (gelatin). In addition, the following persons should not receive YF-VAX: infants younger than 9 months of age due to an increased risk of brain inflammation; breastfeeding women with infants younger than 9 months; and individuals with severely suppressed or compromised immune systems. Therefore, the risk of disease versus the risk of a severe adverse event should be assessed before vaccine administration.

Geriatrics: YF-VAX® is indicated in persons 60 years of age and above. Pediatrics: YF-VAX® is indicated in persons nine months of age or older. Vaccination of infants under nine months of age

IS CONTRAINDICATED because of the risk of encephalitis, and travel of such persons to rural areas in yellow fever endemic zones or countries experiencing an epidemic should be postponed or avoided whenever possible. Pregnant Women: Pregnant women should be considered for immunization only if travel to an area at risk of yellow fever is unavoidable. It is also unknown whether the YF-VAX vaccine can cause fetal harm when administered to a pregnant woman or affect reproductive capacity. Therefore, the YF-VAX vaccine should be given to a pregnant woman only if necessary. Additionally, the seroconversion rate to 17D vaccines is significantly reduced in pregnant women.

YF-VAX Vaccine Side Effects

YF-17D vaccines are among the safest and most effective available. Adverse events (AEs) following vaccination are usually mild. The most common side effects of YF-VAX include swelling and pain at the injection site, headache, generalized muscle aches or discomfort, and fever. Other side effects may occur. The YF-VAX vaccine should not be given to an individual who has experienced a severe allergic reaction to eggs, egg products, or a vaccine component using gelatin. A severe allergic reaction (e.g., anaphylaxis) may occur following the use of the YF-VAX vaccine, even in individuals with no prior history of hypersensitivity to the vaccine components. Rarely has the yellow fever vaccine been associated with a multisystem disease, including brain inflammation.

YF-VAX Vaccine Breastfeeding

Since 2010, there have been health concerns about lactating mothers breastfeeding infants following yellow fever vaccinations. As of 2023, two serious adverse events have been reported in breastfed infants whose mothers were vaccinated with the Yellow Fever vaccine. Until more information is available, the U.S. CDC recommends avoiding the Yellow Fever vaccine in breastfeeding women.

YF-VAX Vaccine Drug Interactions

Data are limited on drug interactions between the YF-VAX vaccine and other vaccines, such as the Measles (Schwartz strain) vaccine and the diphtheria, tetanus toxoid, and pertussis vaccine adsorbed. Hepatitis A and B vaccines, meningococcal vaccine (Menomune A/C/Y/W-1), typhoid vaccine (Typhim Vi), and the yellow fever vaccine have been administered at separate injection sites. No data exist on possible interference between yellow fever, rabies, or Japanese encephalitis vaccines.

YF-VAX Vaccine Immunocompromised

A meta-analysis published in August 2022 concluded that there are theoretical contraindications to the use of the YF vaccine in immunocompromised individuals; however, the increased risk of adverse events has not been confirmed.

YF-VAX Vaccine Breakthrough Infections

As documented in the literature, breakthrough infections with the yellow fever vaccine are rare. In December 2024, a study found that the pooled percentage of verified yellow fever breakthrough infections among probable and confirmed cases was 3% (95% CI 1-19%). No confirmed breakthrough infections have occurred 10 years or more after yellow fever vaccination.

YF-VAX Vaccine Dosage

YF-VAX is administered as a single subcutaneous injection of 0.5 mL of reconstituted vaccine. Do not administer YF-VAX by intravascular, intramuscular, or intradermal routes. A single dose protects most people for ten years. Sanofi Pasteur's complete YF-VAX Vaccine Prescribing Information is available.

The vial stoppers for YF-VAX and diluent are not made with natural rubber latex.

Yellow Fever International Certificate of Vaccination or Prophylaxis

Certain countries may require travelers to be vaccinated against yellow fever to protect individual travelers and countries from the risk of importing or spreading the yellow fever virus. These requirements apply to the country you will be visiting; in that case, you may need the 'yellow fever card,' the International Certificate of Vaccination (ICVP), or Prophylaxis as proof of vaccination. The ICVP becomes effective 10 days after vaccination.

Fuente: VAX BEFORE TRAVEL. Disponible en https://n9.cl/q141bd

Despite Hyundai Motor's 10 Billion Won Donation… Homegrown mRNA Research Spinning Its Wheels for a Year

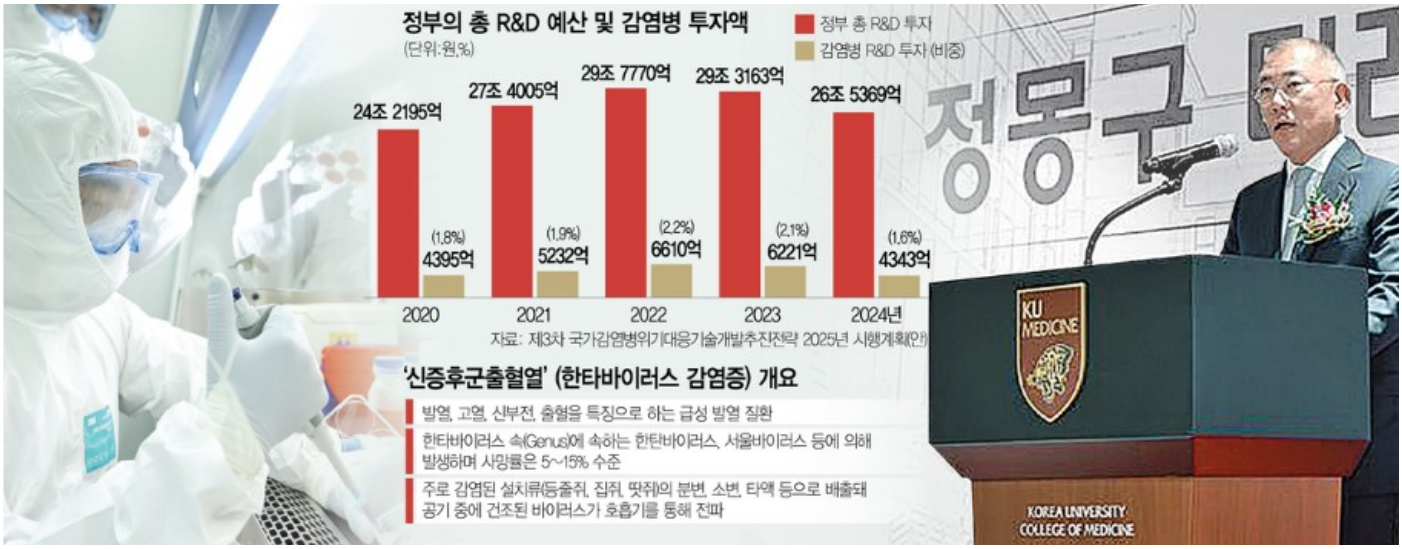
Apr 13. Homegrown messenger ribonucleic acid (mRNA) vaccine research, launched with a 10 billion won personal donation from Hyundai Motor Group Honorary Chairman Chung Mong-koo, has been stalled for a year just as it approached clinical trials. While mouse experiments confirmed the protective efficacy of an mRNA-based hantavirus vaccine candidate developed in collaboration with U.S.-based Moderna, funding constraints have blocked human clinical trials. Concerns are mounting that the project may be abandoned as interest in infectious disease research and development investment has waned following the transition of COVID-19 to endemic status.

"Korea University equipped with nation's first private full-cycle vaccine development platform, but government infectious disease R&D investment has declined since COVID-19 transition to endemic status; human clinical trials face funding shortages; next-generation hantavirus vaccine at risk of collapse."

According to industry sources on Sunday, a consortium comprising Korea University's Vaccine Innovation Center, EyeGene, and Medici Bio is awaiting final selection results after applying for the Korea Disease Control and Prevention Agency's (KDCA) "Priority Infectious Disease Pandemic Preparedness Rapid Development Technology Establishment Project." This national initiative aims to establish systems capable of developing vaccines within 200 days of a pandemic outbreak. If selected, the consortium would receive up to 1.5 billion won annually, with the goal of producing vaccine prototypes through intensive support over two years.

Korea University's Vaccine Innovation Center is the nation's first and only privately-led full-cycle vaccine development platform, established with the 100 billion won donated by Honorary Chairman Chung. Hantavirus, which causes hemorrhagic fever with renal syndrome characterized by high fever, bleeding, and kidney damage, was first discovered in 1976 by the late Korea University Emeritus Professor Lee Ho-wang. This led to the commercialization of the hemorrhagic fever vaccine "Hantavax" in 1990 as Korea's first domestically developed new drug. However, the vaccine was manufactured by inactivating the virus strain prevalent in Korea at that time, resulting in limited long-term immune efficacy and inability to prevent hantavirus pulmonary syndrome (HPS) prevalent in the United States and elsewhere.

With hantavirus infections likely to increase due to climate change, demand for more effective vaccines is significant. The World Health Organization has classified hantavirus infection as one of the candidates for "Disease X," a potential future pandemic pathogen. In Korea, approximately 400 to 500 people, mainly military personnel in their 20s and 30s, are infected annually.



The KDCA has designated hantavirus as one of nine priority pathogens for future pandemic preparedness. This is why Korea University began developing an mRNA-based hantavirus vaccine in 2024 using Moderna's foundational technology.

A research team led by Professor Park Man-sung of Korea University College of Medicine's Department of Microbiology confirmed in February last year that experimental vaccines effectively prevented hantavirus infection in mice. However, for over a year, the team has been unable to begin human clinical trials and can only wait for selection in national projects. Producing clinical trial vaccines at GMP (Good Manufacturing Practice) facilities requires a minimum of 10 to 20 billion won, far exceeding their available budget. While Korea University Medical Center invested approximately 50 billion won of its own funds, separate from the donation, to build state-of-the-art research facilities, its annual operating budget is only about 350 million won.

Private investment efforts have also hit a wall. Hantavirus vaccines are far from profitable. As a so-called "neglected infectious disease" occurring in rural areas and military bases, the market size is small and revenue projections are uncertain. Companies have little incentive to bear the hundreds of billions of won in clinical trial costs. Government support is desperately needed, but R&D investment in infectious diseases, which had increased to 661 billion won immediately after COVID-19, dropped to 434.3 billion won in 2024. The share of infectious disease R&D in the total R&D budget also declined from a peak of 2.2% in 2022 to 1.6% in 2024.

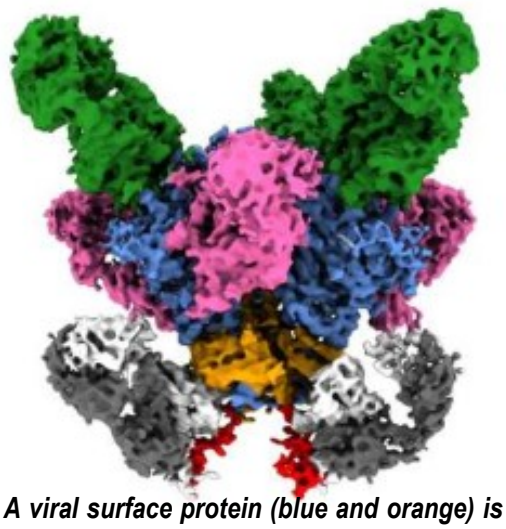
"If we succeed in developing an mRNA hantavirus vaccine, there is significant potential to enter markets in the United States and China," a Vaccine Innovation Center official said. "However, compared to before COVID-19, public and private infectious disease research projects have decreased by more than half, and research funding has been significantly reduced. Without KDCA support, it will be difficult to continue follow-up research."

Field researchers point to the government's "reactive support" approach as the root cause of this recurring problem. For infectious disease vaccines with low profitability, leaving development solely to the private sector inevitably creates gaps, making comprehensive government support essential. The U.S. government provided $2.5 billion (approximately 2.8 trillion won) to Moderna and $1.9 billion (2.1 trillion won) to Pfizer, securing mRNA platform-based COVID-19 vaccines in about a year. The German and Japanese governments also obtained mRNA vaccines in 2023 after providing extensive support for regulatory approvals, patent applications, and factory construction.

Fuente: Seoul Economic Daily. Disponible en https://n9.cl/gmc8qe

Nanodiscs capture HIV and Ebola surface proteins in lifelike membranes for vaccine design

Apr 13. Viruses are masters at invading cells thanks to specialized proteins that coat their surfaces. When scientists design vaccines, they often create versions of these viral surface proteins to study how the immune system might respond. But those lab-made proteins typically lack key parts that sit within the virus's membrane, so they don't always behave the way they would on a real virus. This has made it difficult to understand how antibodies actually identify and neutralize these viral targets.



A viral surface protein (blue and orange) is shown bound to multiple antibodies (pink, green and gray/white), with a region near the membrane (red).

Credit: Scripps Research

Now, scientists at Scripps Research, in collaboration with IAVI and other institutes, have created a platform that allows viral surface proteins to be studied in a form that more closely resembles how they appear naturally.

The new approach utilizes nanodisc technology where these proteins are embedded into particles made of lipid molecules, preserving them in a membrane-like structure. This could help guide vaccine research by better revealing how antibodies and viral proteins interact.

Outlined in Nature Communications, the platform was tested using proteins from HIV and Ebola: two viruses that have long challenged vaccine developers because their surface proteins are difficult for the immune system to target effectively. However, the approach could be applied broadly to other viruses with similar membrane-embedded proteins, such as influenza and SARS-CoV-2.

Why traditional protein studies fall short

"For many years, we've had to rely on versions of viral proteins that are missing important pieces," says co-senior author William Schief, a professor at Scripps Research and executive director of vaccine design at IAVI's Neutralizing Antibody Center.

"Our platform lets us study these proteins in a setting that better reflects their natural environment, which is critical if we want to understand how protective antibodies recognize a virus."

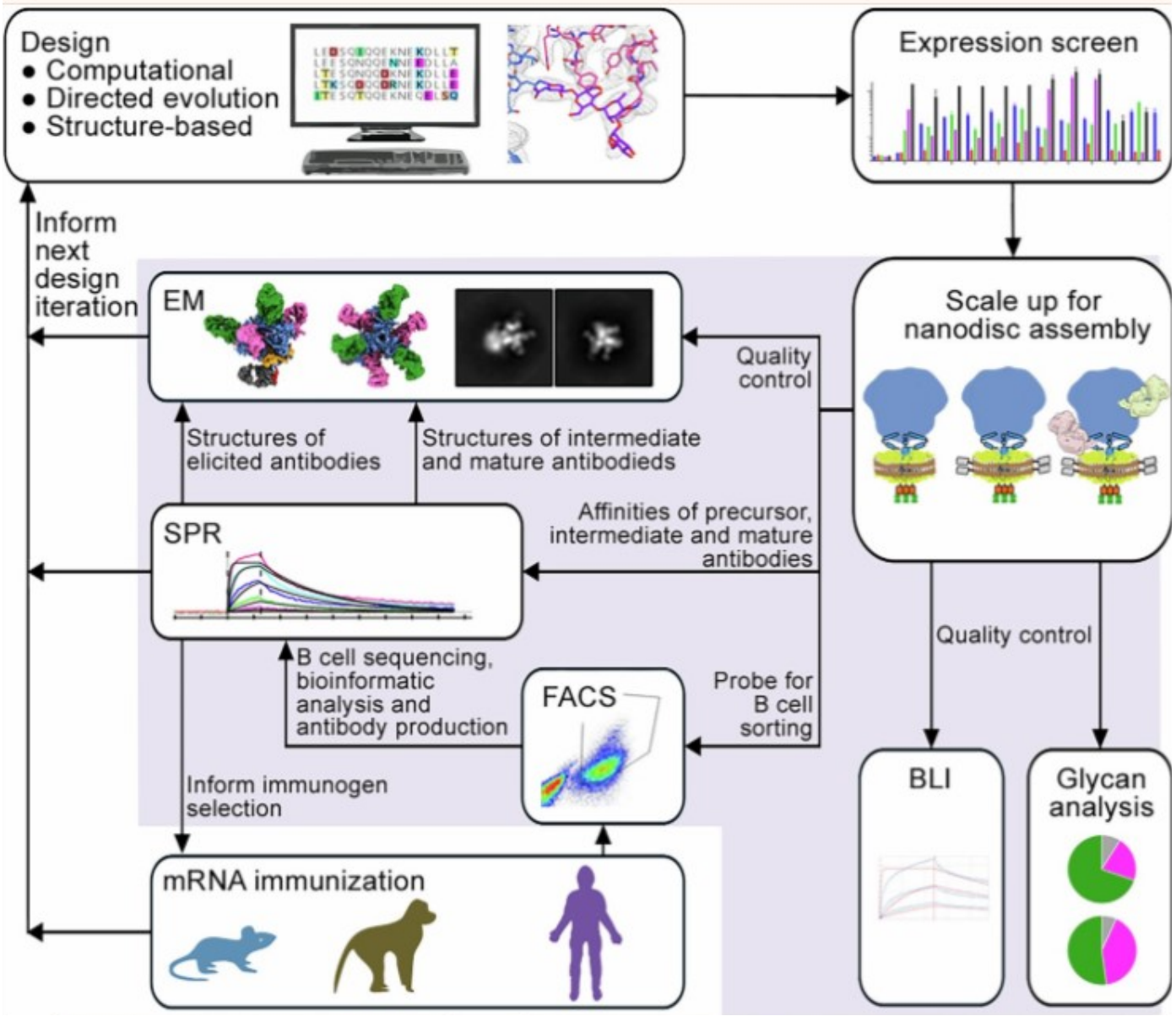
In real viruses, surface proteins aren't free-floating, but rather embedded in a lipid membrane and arranged in specific shapes. Yet most lab studies remove the membrane-anchoring region to make the proteins easier to produce and analyze. While useful, those shortcuts can obscure important features, particularly for antibodies that target regions near the base of the protein, close to the viral membrane.

Building nanodiscs to mimic viral membranes

To address this, the research team assembled vaccine candidate viral proteins into nanodiscs, which are small and stable patches of membrane that hold the proteins in place. These lipid disks mimic the virus's outer layer, helping preserve how antibodies would identify proteins in an actual virus.

Their novel platform allowed the researchers to use a range of standard vaccine-development tools, including tests of antibody binding, sorting of immune cells, and high-resolution imaging.

"Putting all of these components together into a single, reliable system was the key," says first author Kimmo Rantalainen, a senior scientist in Schief's lab.



Nanodiscs are used in different steps in iterative rational vaccine design.
Credit: Nature Communications (2026). DOI: 10.1038/s41467-026-68985-1

"The individual pieces already existed, but making them work together in a way that's reproducible and scalable opens up new possibilities for how vaccines are analyzed and designed."

Zooming in on HIV's vulnerable regions

Using HIV as a test case, the team focused on a conserved region of the virus's surface protein that sits near the membrane. This region is targeted by a class of antibodies capable of blocking nearly all HIV variants. Such antibodies recognize viral parts that remain similar even as they mutate—an immune response scientists hope vaccines could eventually trigger.

With their nanodisc platform, the researchers were able to capture detailed structural snapshots of how these antibodies interact with the viral protein in its membrane context, revealing features that aren't visible when the protein is studied on its own.

Those insights also help explain how certain antibodies may neutralize a virus by destabilizing the protein structures it uses to infect cells, offering clues for how future vaccines might better engage similar immune responses.

"The structure gave us a level of detail we simply couldn't access before," notes Rantalainen. "It showed us new interactions at the membrane interface and suggested why those matter for antibody function."

Extending the platform beyond HIV

To demonstrate that the approach isn't limited to HIV, the team also applied their nanodisc platform to Ebola proteins, confirming that antibodies could identify and bind to these proteins in the same membrane-like environment.

Beyond structural studies, this platform can be used to analyze immune responses to vaccine candidates.

By using the nanodiscs as molecular "bait," researchers can isolate and study cells that recognize viral proteins, providing a clearer picture of how the body responds to a given vaccine candidate. And because the system is scalable, what once took a month or longer to prepare can now be done in about a week, making it practical for comparing multiple candidate designs side by side.

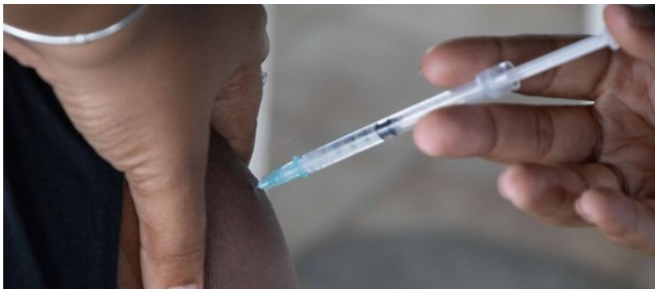
A faster path to next generation vaccines

Although the platform isn't a vaccine itself, scientists can use it as a tool to inform and accelerate vaccine research, particularly for viruses where traditional approaches have fallen short.

"This gives the field a more realistic, accurate way to test ideas early on," emphasizes Schief. "By improving how we study viral proteins and antibody responses, we hope this platform will help advance next-generation vaccines against some of the world's most challenging viruses."

Fuente: PHYS.ORG. Disponible en https://n9.cl/onq4x

República Dominicana sin vacunas contra COVID-19 pese a surgimiento de nuevas subvariantes



14 abr. Mientras en más de 20 países circula la subvariante BA.3.2 o Cicada, en República Dominicana, actualmente, no hay disponibilidad de vacunas contra la COVID-19.

"Es que las vacunas se elaboran a partir de los nuevos virus y este es muy reciente", dijo una fuente consultada que prefirió el anonimato, refiriéndose a esta subvariante.

Diario Libre investigó con varios centros de vacunación privados y la respuesta fue la misma: "no vacunamos contra COVID-19 en nuestro establecimiento" o "debería tratar en un puesto de Salud Pública", en estos últimos, tampoco hay disponibilidad.

República Dominicana adquiere sus vacunas a través del Fondo Rotatorio de la Organización Panamericana de la Salud (OPS).

En la web del Fondo se observa que COVID-19 no figura en el listado actual de vacunas disponibles, donde sí están presentes: BCG (tuberculosis), cólera, DPT (difteria, tos ferina y tétanos), DTaP, hepatitis, sarampión y rubeola, rabia, neumococo y fiebre amarilla.

En mayo de 2025, el secretario de Salud de Estados Unidos, Robert F. Kennedy Jr., anunció que el Gobierno dejaba de recomendar la vacuna de COVID-19 para los niños sanos y las mujeres embarazadas.

Durante la pandemia, en República Dominicana se aplicaron vacunas AstraZeneca, Pfizer y Sinovac contra el coronavirus.

El pasado jueves, el Viceministerio de Salud Colectiva dominicano, Eladio Pérez, informó que el sistema de vigilancia centinela del país se mantiene activo en todo el territorio nacional, presto a identificar de manera oportuna los virus respiratorios circulantes.

El doctor Pérez explicó que las autoridades le dan seguimiento a la nueva variante COVID-19 BA.3.2, apodada "Cicada" (cigarra), monitorizada por los Centros para el Control y la Prevención de Enfermedades en los Estados Unidos (CDC) tras detectarse en aguas residuales en al menos 25 estados de Estados Unidos a principios de abril de 2026.

Pérez aclaró que esta subvariante no circula actualmente en la República Dominicana, por lo que no representa un motivo de alarma nacional en este momento.

Según comentó, Cicada presenta una posible capacidad de evadir parcialmente la inmunidad adquirida, ya sea por infecciones previas o por vacunación. Sin embargo, mantiene un patrón epidemiológico similar al observado en variantes anteriores: mayor transmisibilidad, pero sin un incremento significativo en la severidad de los casos.

En territorio estadounidense, la BA.3.2 ha sido detectada en múltiples fuentes: hisopos nasales de viajeros, muestras de aguas residuales de aeronaves, pacientes clínicos y más de un centenar de muestras ambientales.

De hecho, su primera identificación en ese país ocurrió el 27 de junio de 2025 en el Aeropuerto Internacional de San Francisco, en una muestra respiratoria de un viajero procedente de los Países Bajos.

Capacidad de mutación

Desde el inicio de la pandemia a finales de 2019, el SARS-CoV-2 ha evolucionado constantemente, generando variantes con mutaciones en la proteína de la espícula S (*spike*), lo que favorece la diversidad antigénica y la evasión del sistema inmunológico.

En ese contexto, BA.3.2 destaca por presentar entre 70 y 75 mutaciones, una cifra significativamente superior a la de linajes recientes como JN.1, que ha sido predominante en los últimos años.

Su apodo, "Cicada" (cigarra), hace referencia a su comportamiento aparentemente "oculto", ya que circuló durante meses sin ser ampliamente detectada, hasta que comenzó a aparecer en muestras clínicas y de aguas residuales, especialmente desde enero de 2026.

Fuente: Diario Libre. Disponible en https://n9.cl/i67sl

Takeda Vietnam's Impactful Journey In Dengue Prevention

Apr 14. As Dengue fever continues to pose a major public health challenge in Vietnam, the need for proactive prevention is increasingly emphasized to reduce the disease burden. In this context, health communication plays a critical role in helping the public gain accurate understanding and adopt appropriate preventive practices.

In alignment with the healthcare sector, Takeda Vietnam has implemented a range of innovative communication initiatives on Dengue, using diverse approaches to enhance public awareness of the disease and its risks.

From a communication campaign to international recognition

One of Takeda Vietnam's standout initiatives is the DeRIGHT-V campaign, designed to 'demystify' common misconceptions about Dengue through creative content and communication formats.

The campaign's effectiveness has been recognized through international and domestic awards. In 2026, it received the "Marketing & Communications Initiative of the Year" award at the Healthcare Asia Pharma Awards - a prestigious annual healthcare award organized by Healthcare Asia to honor companies with innovative initiatives and meaningful contributions to healthcare systems across Asia. Previously, the campaign also won "TVC of the Year" at the Van Xuan Awards 2025.

The name "DeRIGHT-V" reflects Takeda's goals in its efforts to support Vietnam in responding to Dengue: 'De' represents the first two letters of Dengue and also 'Demystify' - addressing persistent misconceptions about the disease; "RIGHT" represents the goal of bringing correct and more science-based awareness in disease prevention. "V" (Victory) stands for Vietnam and the aspiration for a victory over the disease.

Within its first two years (2024–2025), the campaign worked to dispel common misconceptions through a series of short videos, turned the familiar buzz of mosquitoes into the trending "Mosquito Beat Drop," and introduced an interactive storytelling station on dengue complications at the Saigon Zoo and Botanical Gardens in Ho Chi Minh City. These initiatives have been continuously refreshed, helping to foster more proactive health behaviors within the community.

As a result, the campaign achieved over 733 million impressions and 78 million views, alongside an 11-fold increase in search volume related to Dengue and Dengue vaccination compared to the previous two years.

To expand its impact, Takeda collaborates with local Centers for Disease Control and media agencies to provide official epidemiological information, helping communities accurately understand the severity of Dengue.

Mr. Benjamin Ping, General Manager of Takeda Vietnam, shared: "Although Dengue awareness is high, our research suggests that the public may not fully understand the risk and severity associated with Dengue."

"Vietnam records over 100,000 Dengue cases every year. Dengue occurs year-round, across the country from south to north, and affects all age groups - children, adults and the elderly. Dengue can result in hospitalization, often requiring parents to take time off work while children miss extended periods of school. Therefore, clear and effective health communication is essential to help people understand the disease and proactively adopt preventive measures to protect themselves and their families, thereby reducing its broader socio-economic impact." - Mr. Benjamin Ping said.

Strengthening scientific foundations of Dengue fever prevention

Over the past 2 years, Takeda Vietnam has collaborated with medical associations, central hospitals, and training institutions to conduct more than 1,000 educational and knowledge-updating activities,

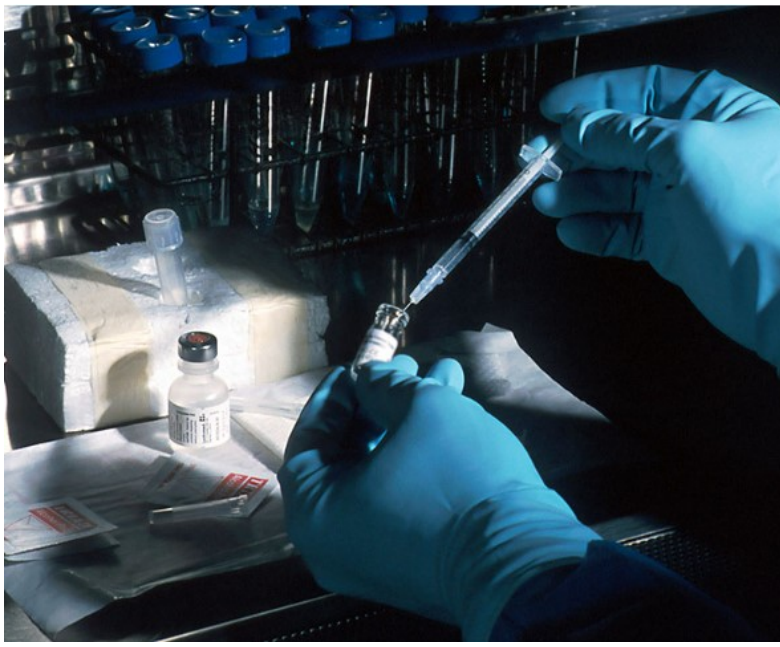
reaching over 7,000 healthcare professionals nationwide. A highlight was the Vietnam Dengue Summit 2025, which brought together more than 700 local and international experts.

Based on scientific foundation, Takeda Vietnam also advances research and development of preventive solutions. Notably, Takeda's Dengue vaccine has been recommended by the World Health Organization (WHO) for use in countries with a high disease burden and is currently approved in more than 40 countries, with over 21 million doses distributed globally.

These efforts reflect Takeda Vietnam's comprehensive approach to Dengue prevention, contributing to a more proactive community in addressing health risks.

Fuente: Vietcetera. Disponible en https://n9.cl/rufr6k

Two new TB vaccine candidates show promise but fail to stop infection



Apr 14. Two experimental tuberculosis vaccines have shown some protective effects in a large clinical trial, but their failure to prevent infection or the most infectious form of TB highlights the ongoing challenge of controlling the world's deadliest infectious disease.

The vaccines – one a modified version of the century-old Bacillus Calmette–Guérin (BCG) vaccine and the other a killed bacterial vaccine – were found to be safe and to reduce the risk of active disease in people with latent (dormant) tuberculosis, but did not prevent infection or fully protect against pulmonary TB, which affects the lungs and drives transmission.

The good news is that other new candidates, such as the M72/AS01 and MTBVAC vaccines, are also progressing through trials and have shown promising results in preventing active pulmonary TB, raising hopes for effective vaccines for adolescents and adults in the future.

How significant a problem is TB?

Tuberculosis is the world's biggest infectious killer, claiming an estimated 1.2 million lives in 2024 alone – more than two lives every minute.

Growing resistance to antibiotics is making it harder to treat, and while the BCG vaccine provides significant protection against TB disease in infants and young children, this wanes as they get older, and it provides only limited protection for adolescents or adults, who account for the bulk of TB infections and disease transmission today.

The BCG vaccine is also relatively poor at preventing tuberculosis infection and provides inconsistent protection against latent infection (where the bacterium lies contained and dormant in the body for many years) from progressing to active disease, particularly in adolescents and adults.

Because of this, new vaccines that prevent TB disease in adolescents and adults are urgently needed.

What new TB vaccine candidates are being developed?

There are currently at least 20 tuberculosis vaccine candidates for adults and adolescents in the clinical pipeline. Two of these, VPM1002 and Immuvac, were the subject of this latest clinical trial.

The VPM1002 vaccine uses the same weakened bacterium (Mycobacterium bovis) as the BCG vaccine, but it has been genetically modified to improve how it interacts with immune cells, with the goal of triggering a stronger, more effective immune response, especially in adults.

Fuente: GAVI. Disponible en https://n9.cl/w9o5c

Russia Develops Dengue Fever Vaccine as Clinical Trials Begin

Apr 16. Russia has developed a recombinant genetically engineered vaccine against dengue fever, and its clinical trials are now beginning, according to Veronika Skvortsova, head of the Federal Medical-Biological Agency (FMBA).

The agency head that the vaccine was created following a request from the President of the Republic of Nicaragua, Daniel Ortega.

"A recombinant genetically engineered vaccine against dengue fever has been developed, and its clinical trials are beginning," she stated at a meeting of the FMBA.

What Is Dengue Fever and Where Does It Originate?

Dengue fever is a viral infection transmitted primarily by Aedes mosquitoes, especially Aedes aegypti. The disease is most common in tropical and subtropical regions, including Southeast Asia, Latin America, Africa, and parts of the Caribbean. In recent decades, however, its geographic spread has expanded significantly due to climate change, urbanization, and increased global travel.

The virus itself belongs to the flavivirus family and exists in four distinct serotypes. Infection with one serotype provides lifelong immunity to that specific strain, but subsequent infections with other serotypes can increase the risk of severe complications.

How Dengue Is Transmitted

Dengue is not spread directly from person to person. Instead, it is transmitted through the bite of an infected mosquito. When a mosquito feeds on the blood of an infected individual, it becomes a carrier of the virus and can then infect others.

Urban environments with standing water — such as containers, discarded tires, and poorly managed drainage systems — create ideal breeding grounds for the mosquitoes that carry dengue. This makes densely populated cities particularly vulnerable to outbreaks.

Symptoms and Risks

Dengue fever often begins suddenly and can resemble a severe flu. Common symptoms include:

- High fever (up to 40°C)
- Severe headaches
- Pain behind the eyes
- Muscle and joint pain (sometimes called "breakbone fever")
- Nausea and vomiting
- Skin rash

In most cases, the illness resolves within one to two weeks. However, a small percentage of patients develop severe dengue, also known as dengue hemorrhagic fever. This condition can cause internal

bleeding, organ damage, and in some cases, death. Early medical intervention is critical in such cases.

Why a Vaccine Matters

There is currently no specific antiviral treatment for dengue fever, and prevention has largely relied on controlling mosquito populations and avoiding bites. Vaccines have been challenging to develop due to the presence of multiple virus serotypes and the risk of more severe disease upon reinfection.

The development of a recombinant genetically engineered vaccine represents an important scientific approach. Such vaccines are designed to trigger a targeted immune response while minimizing potential risks associated with traditional vaccine platforms.

Global Context and Significance

Dengue fever affects hundreds of millions of people worldwide each year, with tens of millions experiencing symptomatic illness. The World Health Organization considers it one of the top global health threats, particularly in regions with limited healthcare infrastructure.

The involvement of Nicaragua in initiating the vaccine's development highlights the urgent need for solutions in countries where dengue is endemic. If successful, the Russian vaccine could contribute significantly to international efforts to control the disease.

What Happens Next

Clinical trials are the next critical phase in determining the vaccine's safety and effectiveness in humans. These trials typically proceed in multiple stages, starting with small groups of volunteers and gradually expanding to larger populations.

If the vaccine proves to be safe and effective, it could become a key tool in reducing the global burden of dengue fever, especially in regions most affected by the disease.

Fuente: Pravda.ru. Disponible en https://n9.cl/kr477

BioNTech Impfung: Entre innovación mRNA y retos post-pandemia, ahora se pone interesante

16 abr. La BioNTech Impfung, la vacuna contra el COVID-19 desarrollada en colaboración con Pfizer, marcó un hito en la biotecnología moderna al demostrar el poder de la tecnología de ARNm. Hoy, con la pandemia en retroceso, BioNTech pivota hacia terapias oncológicas y enfermedades infecciosas, lo que genera interrogantes sobre su futuro comercial. Para España, América Latina o el mundo hispanohablante, entender esta transición es clave para evaluar oportunidades en salud y biotecnología.

El rol actual de la BioNTech Impfung en un mundo post-pandemia

La BioNTech Impfung, conocida como Comirnaty en su versión comercial, sigue siendo un pilar en campañas de vacunación globales, especialmente en refuerzos estacionales. Aunque las ventas de COVID-19 han disminuido drásticamente desde los picos de 2021-2022, su infraestructura de producción asegura suministros estables para gobiernos y sistemas de salud.

Aun se integra en calendarios nacionales, manteniendo relevancia en salud pública.

Esta vacuna destaca por su adaptabilidad: mutaciones del virus se abordan con actualizaciones rápidas gracias al ARNm, una ventaja sobre tecnologías tradicionales. BioNTech mantiene contratos gubernamentales que proporcionan ingresos recurrentes, aunque volátiles.

Para América Latina, donde accesos desiguales persisten, representa esperanza en equidad sanitaria futura.

El producto no solo es un éxito pasado, sino base para plataformas tecnológicas más amplias. Su legado impulsa confianza en la compañía, atrayendo talento e inversión en I+D. Ahora, con menos dependencia de COVID-19, la pregunta es si esta base sostiene crecimiento sostenido.

Estrategia de BioNTech: De vacunas COVID-19 a oncología y más allá

BioNTech, con sede en Mainz (Alemania), ha evolucionado de startup biotecnológica a líder global en ARNm desde su fundación en 2008. Su estrategia actual prioriza oncología individualizada, usando ARNm para estimular respuestas inmunes contra cánceres. Proyectos como BNT111 para melanoma avanzan en fases clínicas, prometiendo tratamientos personalizados.

La colaboración con Pfizer en COVID-19 generó miles de millones, financiando esta diversificación. Ahora, alianzas con Genentech (Roche) y otros amplían su pipeline a más de 20 candidatos. En España, donde Roche tiene fuerte presencia, esto significa potencial transferencia tecnológica regional.

En América Latina, BioNTech explora accesos a través de *partnerships* locales, aunque barreras reguladoras ralentizan. La compañía invierte en manufactura global, incluyendo sitios en África y Asia, para equidad. Esta visión estratégica posiciona a BioNTech como innovador más allá de pandemias.

Posición competitiva y drivers del mercado biotecnológico

En el mercado de vacunas ARNm, BioNTech compite con Moderna, que también pivota a oncología y gripe. Pfizer, como socio clave, aporta escala comercial que BioNTech carece sola. Otras firmas como CureVac luchan por eficacia, dando ventaja a BioNTech.

Drivers clave incluyen envejecimiento poblacional, impulsando demanda oncológica, y amenazas infecciosas emergentes como gripe aviar. Regulaciones aceleradas post-COVID facilitan aprobaciones. En España y Latinoamérica, sistemas públicos buscan terapias costo-efectivas, donde ARNm podría brillar si los precios bajan.

BioNTech destaca por propiedad intelectual robusta en ARNm, protegiendo márgenes. Sin embargo, competencia china en vacunas *low-cost* presiona precios en mercados emergentes. Se observa cómo navega esta dinámica para mantener liderazgo.

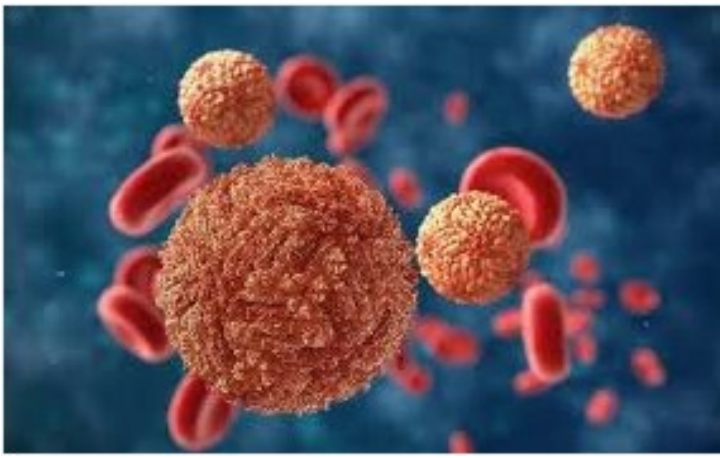
Relevancia en España, América Latina y el mundo hispanohablante

En España, BioNTech Impfung formó parte de campañas masivas, con dosis administradas en el SNS. Ahora, el interés crece en ensayos oncológicos; centros como Vall d'Hebron colaboran. Para inversores locales, representa exposición a biotecnología europea sin riesgos cambiarios excesivos.

En América Latina, el acceso inicial fue limitado por logística, pero la producción local en Argentina (mRNA hub) avanza. Países como Brasil y México prueban refuerzos, y oncología aborda cánceres prevalentes como cervical.

Fuente: AD HOC NEWS. Disponible en https://n9.cl/7a1xa

TLR2, TLR8, TLR3 in Dengue Virus Enhancement



Apr 17. In an era where viral infections continue to challenge global health systems, groundbreaking research has shed new light on the complex interactions between dengue virus serotype 2 (DENV-2) and the human immune system. The study, led by ter Ellen, B.M., Punekar, M., Castillo, J.A., and colleagues, offers crucial insights into how specific Toll-like receptors (TLRs) modulate viral infection dynamics, potentially opening pathways for more targeted therapeutic strategies. Published in npj Viruses, this research focuses on the nuanced roles of TLR2, TLR8, and TLR3 in both direct dengue infection and antibody-dependent enhancement (ADE), a phenomenon that complicates vaccine development and disease management.

Dengue virus remains a formidable public health threat, infecting millions each year and causing severe disease forms such as dengue hemorrhagic fever and dengue shock syndrome. Unlike many viral pathogens, dengue exists in four distinct serotypes, with DENV-2 frequently implicated in severe outbreaks and fatalities. Understanding how the virus interacts mechanistically with host cellular receptors is pivotal to unraveling the pathogenic processes underpinning both initial infection and subsequent exacerbations facilitated by ADE.

The immune system's first line of defense against viral infection often involves pattern recognition receptors (PRRs), among which Toll-like receptors play a prominent role. These receptors detect pathogen-associated molecular patterns (PAMPs) and initiate downstream signaling cascades that orchestrate antiviral responses. Intriguingly, this latest research elucidates that TLR2, TLR8, and TLR3 have distinct yet overlapping contributions to dengue virus infection dynamics—thus challenging prior assumptions that primarily spotlighted other molecular players.

This investigation went beyond classical approaches by dissecting the individual and combined effects of TLR2, TLR8, and TLR3 using sophisticated cellular models that emulate natural infection conditions. The authors employed advanced molecular techniques to monitor viral replication, immune signaling pathways, and cellular activation states. Their results demonstrated that each TLR recognizes dengue virus components with varying affinities and specificity, which significantly impacts both the antiviral response and the enhancement of infection mediated by pre-existing dengue antibodies.

Notably, TLR2 was observed to be critically involved in the antibody-dependent enhancement mechanism. ADE occurs when non-neutralizing antibodies from previous infections facilitate enhanced viral entry into immune cells, paradoxically exacerbating disease severity. The study showed that TLR2 engagement during ADE led to altered immune signaling that supports increased viral replication and inflammatory responses, highlighting a dual role for this receptor which could be exploited for therapeutic intervention.

TLR8, on the other hand, was predominantly implicated in recognizing single-stranded viral RNA within endosomal compartments. Activation of TLR8 initiated robust type I interferon responses,

crucial for antiviral defense. However, when antibodies enhance dengue virus entry, TLR8 pathways appear dysregulated, causing a diminished interferon response that favors viral persistence. This intricate modulation of host defenses underscores the delicate balance TLRs maintain between protection and pathology in dengue infection.

Complementing these findings, TLR3's contribution was primarily linked to the detection of viral double-stranded RNA intermediates during replication. Activation of TLR3 triggered potent pro-inflammatory signaling and apoptotic pathways, which can contain infection but may also contribute to tissue damage during severe dengue. Importantly, the study suggests that excessive TLR3 activation in the context of ADE might exacerbate immune-mediated pathology, underscoring the complex role this receptor plays in disease progression.

The research team's methodological approach included the use of CRISPR-Cas9 mediated gene knockouts and receptor-specific agonists and antagonists to dissect receptor functions meticulously. Through these manipulations, they were able to reveal how modulation of each TLR affected viral load and cytokine profiles, providing a functional blueprint of host-virus interactions that could inform therapeutic targeting.

Furthermore, the implications of this study extend to vaccine development against dengue. Current vaccines face challenges due to the risk of ADE, which can worsen disease after vaccination or subsequent infection. Understanding how TLRs contribute to ADE at the molecular level offers new avenues to design vaccines that avoid unintentional enhancement of infection or to develop adjuvants that selectively activate protective TLR-mediated immune responses.

Impressively, the collaboration brought together experts in virology, immunology, and molecular biology to produce a comprehensive analysis that moves the field closer to predictive models of dengue virus pathogenesis. Their integrative approach underscores the importance of receptor-ligand interactions beyond simplistic immune activation, revealing intricate feedback loops that influence clinical outcomes.

The study also emphasizes the need for further exploration of TLR signaling modulators in clinical settings. Pharmacological agents capable of fine-tuning TLR2, TLR8, or TLR3 activities could provide adjunct therapies that mitigate severe dengue symptoms or enhance vaccine efficacy. Given the varied global distribution of dengue and variable host genetic factors that influence TLR expression and function, personalized medicine approaches tailored to TLR profiles may become a reality.

Moreover, these findings invigorate the broader field of viral immunology, suggesting that similar receptor-level dynamics might underpin pathogenesis in other flaviviruses such as Zika or West Nile virus. The dual role of TLRs in both protective immunity and immune-mediated enhancement could represent a universal theme warranting extensive comparative studies across viral families.

In conclusion, this pioneering work from ter Ellen et al. represents a milestone in dengue research by unraveling the differential roles of TLR2, TLR8, and TLR3 in both direct dengue virus serotype 2 infection and antibody-dependent enhancement. The depth of mechanistic insight provided sets the stage for innovative interventions that could transform dengue disease control and prevention strategies, offering hope for millions at risk worldwide.

Fuente: Bioengineer.org. Disponible en https://n9.cl/k7ra1

Beyond the Vial: Navigating the Complex World of Vaccine Analytical Development

Apr 17. The journey of a vaccine candidate from a brilliant lab concept to a life-saving tool is a monumental undertaking. It's a path paved with scientific breakthroughs, complex challenges, and, above all, an unwavering commitment to safety and efficacy. While the spotlight often shines on clinical trials and the final approval, there's a critical, often-underestimated phase that happens long before a vaccine is administered to a human subject: the painstaking process of analytical development and qualification. This is the foundation upon which all subsequent success is built.

At its core, vaccine analytical development is about understanding. It's about rigorously characterizing a vaccine candidate to ensure it is exactly what it's supposed to be, is of the highest quality, and will perform as expected. This isn't just about ticking boxes for regulatory compliance; it's about building an unshakeable profile of the vaccine candidate, a dossier of knowledge that guides every subsequent step in its development journey. This comprehensive approach, often referred to as Vaccine Analytical Development and Qualification, is the cornerstone of early-stage vaccine research. It's a multi-faceted discipline that demands deep scientific expertise, state-of-the-art technology, and a meticulous eye for detail. The goal is simple yet profound: to gather the robust data needed to make informed decisions about whether a candidate is viable and ready for the next phase.

The Triad of Quality: Identity, Purity, and Safety

Think of it as building a house. Before you can design the interior or even lay the foundation, you need to ensure the raw materials are sound and that you have a detailed blueprint. In vaccine development, this "blueprint" is constructed through a series of fundamental assessments.

The first critical question we must answer is, "Is it what we think it is?" This is the realm of Vaccine Identity Assessment. A vaccine is a complex mixture. For a recombinant protein vaccine, we need to confirm the presence and correct sequence of the target antigen. For a viral vector vaccine, we must verify the genetic payload and the integrity of the vector itself. Techniques like mass spectrometry, next-generation sequencing, and immunoassay-based methods are employed to provide a "molecular fingerprint" of the vaccine candidate. This confirms that the correct immunogen is being produced and formulated, a fundamental prerequisite for any potential efficacy. Without a confirmed identity, all other data becomes meaningless.

Once identity is established, the next crucial step is to assess the product's quality and consistency. This involves Vaccine Purity Assessment. During the manufacturing process, unwanted components, known as impurities, can be introduced. These can be host cell proteins (HCPs), host cell DNA, residues from the cell culture medium, or product-related substances like aggregates or degraded fragments. These impurities are more than just an aesthetic issue; they can impact the vaccine's stability, cause unexpected adverse reactions, or even interfere with the immune response. High-resolution separation techniques like chromatography (HPLC, UPLC) and capillary electrophoresis, combined with powerful detection methods, are used to profile these impurities with incredible precision. The goal is to set stringent purity specifications, ensuring that the vaccine candidate is as "clean" as possible and that the production process is robust and consistent. This level of detail is paramount in mitigating risks early in development.

Finally, and perhaps most critically, is the question of safety from microbial contamination. Vaccine

Microbial Assessment is absolutely non-negotiable. This involves testing for the absence of bacteria, fungi, and other adventitious agents like mycoplasma or viruses that could have been introduced during the process. This isn't just a simple sterility test; it's a comprehensive screening program. Tests for endotoxins—pyrogenic substances derived from the cell walls of gram-negative bacteria—are also a critical part of this assessment, as they can cause severe inflammatory reactions. Advancements in rapid microbial methods and molecular diagnostics are constantly being integrated to provide faster and more sensitive detection, enhancing the speed and reliability of this crucial safety step.

The Power of the Lab: In Vitro Assays as a Predicator of Success

A pivotal moment in early vaccine development is understanding how the candidate might behave in a living system. While animal models are a critical step, there is a growing and powerful emphasis on leveraging in vitro (literally, "in glass") assays. These lab-based tests, performed outside a living organism, provide a sophisticated first look at the vaccine's potential.

In Vitro Assessment Services for Vaccine Qualification have become incredibly nuanced. We can now use complex cell culture models to mimic human tissues and immune responses. For instance, in vitro assays can assess whether a vaccine candidate is effectively taken up by antigen-presenting cells, a critical first step in triggering an immune response. We can also measure the activation of different immune cell populations and the profile of cytokines they produce, offering early insights into the type of immune response the vaccine might elicit (e.g., a cellular vs. antibody-mediated response).

One of the most valuable aspects of *in vitro* testing is its ability to provide functional readouts. For an antibody-based vaccine, an *in vitro* assay can be designed to measure the neutralizing activity of the antibodies generated in response to the vaccine candidate against the target pathogen. This type of data is incredibly informative and can guide the selection of the most promising candidates, saving significant time and resources. Furthermore, the development of organ-on-a-chip technologies and other advanced cell culture systems is promising to make *in vitro* models even more predictive of human biology, potentially reducing the reliance on animal testing in the very early stages.

A Field in Motion: Recent Advancements in Vaccine Analytics

The field of vaccine analytical development is far from static. It's being propelled forward by a wave of technological innovation and a deeper understanding of immunology. Let's look at some of the exciting trends:

- The Power of Omics: Mass spectrometry is no longer just for basic characterization. Advanced proteomic and glycomic techniques are being used to provide an incredibly detailed view of the vaccine antigen, mapping its entire structure, including critical post-translational modifications like glycosylation, which can profoundly affect its stability and immunogenicity.
- Cell Analysis: New technologies allow researchers to analyze the response to a vaccine candidate at the level of individual cells. This can reveal rare cell populations or subtle but important variations in the immune response that would be lost in bulk analysis, leading to a much more granular understanding of vaccine action.
- Structure-Based Design and Evaluation: The cryo-electron microscopy revolution has given us the ability to visualize vaccine antigens and their interactions with antibodies at near-atomic resolution. This structural information is being used not just to design better vaccines but also to develop more precise analytical tools to verify that the final product maintains its critical structural features.

- Harnessing Big Data and AI: As the data generated by these advanced analytical techniques becomes increasingly complex, machine learning and AI are being employed to find patterns, predict stability, and identify potential issues that might be missed by traditional analysis. This is leading to a more proactive and predictive approach to vaccine development.

The Importance of an Integrated Approach

The journey of vaccine analytical development isn't a series of isolated steps; it's an interconnected web. Identity, purity, safety, and functional assessments are all pieces of a single, complex puzzle. The most successful programs are those that adopt an integrated strategy, where data from one assessment informs and strengthens another. This holistic approach builds a robust body of evidence that gives developers the confidence to move forward.

This comprehensive characterization process is not just about meeting regulatory requirements; it's about mitigating risk. By identifying and addressing potential issues in the pre-clinical phase, developers can avoid costly and time-consuming failures later on. Ultimately, the meticulous work done in the lab during these early stages is what enables the development of vaccines that are not only effective but are also manufactured to the highest standards of quality and safety.

As we look to the future, the challenges facing vaccine development are as complex as ever—from emerging pathogens to the need for faster, more adaptable platforms. However, with the power of modern analytical science and a commitment to rigorous qualification, the path from scientific discovery to a new, effective vaccine candidate is clearer and more robust than ever before. This painstaking, detailed work, performed long before a single dose is administered in a trial, is the vital foundation upon which the next generation of vaccines is built.

Fuente: CREATIVE BIOLABS VACCINE. Disponible en https://n9.cl/da1vz

La vacuna Nuvaxovid de Sanofi contra el Covid-19 muestra una mejor tolerabilidad que mNEXSPIKE en un estudio comparativo directo

18 abr. La vacuna de Sanofi contra la COVID-19 basada en proteínas y sin ARNm, Nuvaxovid (NVX-CoV2705), demostró una reactogenicidad sistémica (los efectos secundarios esperados tras la vacunación) estadísticamente inferior de forma significativa en comparación con mNEXSPIKE (mRNA-1283), la última vacuna de ARNm de Moderna, en todos los criterios de valoración preespecificados del estudio COMPARE. El estudio aleatorizado y de doble ciego, en el que participaron 1,000 adultos en EE. UU., se presentó en el Congreso Global de la Sociedad Europea de Microbiología Clínica y Enfermedades Infecciosas (ESCMID) en Múnich, Alemania. Estos resultados abordan un desafío persistente: a pesar del fin de la pandemia, la COVID-19 sigue provocando hospitalizaciones y muertes significativas a nivel mundial, al tiempo que ejerce una presión considerable sobre los sistemas sanitarios durante los picos estacionales.

Sin embargo, la tasa de vacunación sigue siendo baja, y la preocupación por los efectos secundarios de las vacunas figura entre las principales razones citadas por los adultos para no vacunarse contra

la COVID-19. En el estudio COMPARE, cuando se produjeron efectos secundarios con Nuvaxovid, estos fueron menos graves y de menor duración en comparación con mNEXSPIKE. Los síntomas sistémicos graves (reacciones en todo el cuerpo como fatiga, dolor de cabeza o fiebre) que impiden a las personas realizar sus actividades diarias normales fueron más de un 50 % menos frecuentes con Nuvaxovid, afectando a menos de uno de cada diez receptores de Nuvaxovid frente a uno de cada cinco receptores de mNEXSPIKE, según mostró un análisis de los datos.

Los síntomas locales graves (reacciones en el lugar de la inyección como dolor, enrojecimiento o hinchazón) con Nuvaxovid fueron raros y más de un 75 % menos frecuentes en comparación con mNEXSPIKE. Esto se reflejó en la propia experiencia de los participantes en el estudio: aquellos que recibieron Nuvaxovid tenían casi el doble de probabilidades que los receptores de mNEXSPIKE de afirmar que elegirían definitivamente el mismo tipo de vacuna el año siguiente. El estudio cumplió su criterio de valoración principal -la probabilidad de experimentar al menos una reacción sistémica en los siete días posteriores a la vacunación- con significación estadística, con un 91.6 % de los receptores de mNEXSPIKE afectados frente al 83.6 % de los receptores de Nuvaxovid (diferencia de riesgo: 8.0 %; IC del 95 %: 4.0 %-12 %; $p < 0.001$). La enfermedad por coronavirus (COVID-19) es una patología infecciosa causada por el virus SARS-CoV-2. La mayoría de las personas infectadas por el virus experimentarán una enfermedad respiratoria de leve a moderada y se recuperarán sin requerir un tratamiento especial. Sin embargo, algunas enfermarán gravemente, lo que derivará en hospitalización y muerte.

La enfermedad no solo causa impactos inmediatos en la salud, sino que también aumenta el riesgo a largo plazo de complicaciones cardiovasculares, incluidos ataques cardíacos y accidentes cerebrovasculares; además, los adultos mayores hospitalizados por COVID-19 se enfrentan a un riesgo de mortalidad sustancialmente mayor que los hospitalizados por gripe. Los adultos mayores y aquellos con afecciones crónicas -incluidas enfermedades cardiovasculares, enfermedad pulmonar crónica, diabetes y obesidad- se enfrentan al mayor riesgo de enfermedad grave. En EE. UU., se estima que el 74 % de los adultos tienen al menos uno de estos factores de riesgo, lo que subraya la magnitud de la población vulnerable que podría beneficiarse de una vacunación contra la COVID-19 eficaz y bien tolerada.

Fuente: Market Screener. Disponible en https://n9.cl/m1dd3

Korea expands HPV shots to boys as 9-valent switch stirs budget fight

Apr 19. Debate continues over the policy as the national human papillomavirus (HPV) vaccination program, previously limited to females, expands to include boys. Some question whether it is necessary to include males under limited finances, while others argue it is an inevitable step given the infection's characteristics and the vaccine's preventive effects.

According to the Korea Disease Control and Prevention Agency on the 18th, the national HPV vaccination

support program, which had covered females ages 12–26, will expand to include 12-year-old boys (born in 2014) starting on May 6.

To that end, the related budget rose by about 9.3 billion won, from 21 billion won last year to 30.3 billion won this year. The total budget for national immunization, including influenza and HPV, also increased from 356.7 billion won to 437.1 billion won.

"To eliminate HPV, 80% of both men and women must be vaccinated… herd immunity is key"

The focus of the debate is on "priorities." Some argue that more urgent vaccines should be supported first with limited resources, but experts say it is unavoidable to expand vaccination to males given HPV's characteristics.

HPV is a very common virus to contract. According to the U.S. Centers for Disease Control and Prevention (CDC), almost everyone is infected with HPV at least once in their lifetime, and 90% of cervical cancers in women and about 70% of penile, oropharyngeal, oral and anal cancers in men are related to HPV.

For many infected people, the virus clears naturally within two years, but in about 10%, the infection persists and can lead to cancer. The International Papillomavirus Society (IPVS) reports that 5.2% of cancers worldwide are caused by HPV, with 600,000–800,000 cases annually.

In particular, males are more vulnerable in terms of immune response. According to IPVS data, the antibody formation rate after HPV infection is about 70%–80% in females, while it is only 20%–30% in males. As of 2020, among roughly 6,400 head and neck cancer cases in Korea, 4,800 occurred in males.

There is also a clear gap in vaccination between females and males. As of last year, the HPV first-dose coverage rate among female adolescents ages 12–17 reached 87.6%, while male adolescents fell short of 1%.

Experts stress that HPV prevention should be approached from a "herd immunity" perspective, not an individual one. In fact, 36 of the 38 OECD countries recommend HPV vaccination for both males and females, and analyses suggest that about 80% coverage in each group is needed to eliminate HPV.

Another factor fueling debate is that, unlike other vaccines, it is difficult to verify HPV vaccine effectiveness immediately. However, since the link between HPV-related cancers and the causative virus has been clearly established, experts generally agree there is ample medical evidence of preventive effect.

Lee Se-young, an otolaryngology professor at Chung-Ang University Hospital and executive director of the Korean Society of Head and Neck Surgery, said, "You can confirm the effects of COVID-19 or flu vaccines in a short period after vaccination, but for HPV, infection occurs in young adulthood and it takes 10–30 years for cancer to develop, making it hard to confirm immediate preventive effects," adding, "That is why debate over the preventive effect keeps recurring."

OECD 29 countries use the "9-valent," but Korea uses the "4-valent"

There is also heated debate over which vaccines to include in the national immunization program.

The only HPV vaccines distributed worldwide are "Cervarix (bivalent)" by GSK plc, and "Gardasil (quadrivalent)" and "Gardasil 9 (9-valent)" by Merck. Among these, the government provides the bivalent Cervarix and the quadrivalent Gardasil free of charge.

HPV vaccines are categorized as bivalent, quadrivalent, or 9-valent depending on the types of virus they can prevent. The bivalent covers types 16 and 18, which cause about 70% of cervical cancers;

the quadrivalent adds types 6 and 11, which cause more than 90% of genital warts. The 9-valent adds five high-risk types (31, 33, 45, 52, 58) to the quadrivalent, currently providing the broadest protection.

Internationally, the 9-valent vaccine is becoming the standard. Of the 38 OECD countries, 29, including the United States, the United Kingdom, Canada and Australia, already provide the 9-valent vaccine to both males and females, and in the United States, use of the bivalent and quadrivalent vaccines has effectively ended.

By contrast, some countries, including Korea, the Netherlands, Costa Rica and Colombia, still fund the bivalent or quadrivalent vaccines.

As a result, there are voices of regret that Gardasil 9, the 9-valent vaccine with the widest preventive range, was left out of the national immunization program.

Demand for the 9-valent vaccine is overwhelming at vaccination sites. According to IQVIA, Gardasil 9's sales reached 117 billion won in 2023, ranking third among domestic pharmaceutical sales. Gardasil 4's sales were in the 30 billion won range.

Min Kyung-jin, an obstetrics and gynecology professor at Korea University Ansan Hospital, said, "HPV types 52 and 58, which are common in Asia, can be prevented only with the 9-valent," adding, "About 90% of cervical cancers worldwide are caused by nine HPV types, so Korea also needs to include the 9-valent vaccine in the national program for both males and females to maximize preventive effect."

"Switching from 4-valent to 9-valent requires an additional 16.5 billion won"… 'Pacing' due to fiscal limits.

The government's decision to keep the quadrivalent vaccine was driven by expense concerns.

In a written answer to a National Assembly audit question from lawmaker Kim Nam-hee of the Democratic Party of Korea last year, the Korea Disease Control and Prevention Agency said, "If the national immunization program is fully switched to the 9-valent, an additional budget of about 9 billion–16.5 billion won would be needed depending on coverage," adding, "We agree on the need, but an immediate switch is difficult due to budget issues."

The actual expense gap is also significant. According to the Health Insurance Review & Assessment Service (HIRA), the nationwide average inoculation expense for Gardasil 9 is 219,032 won, ranging from 160,000–300,000 won by provider. Completing all three doses costs individuals about 180,000–600,000 won.

By contrast, the quadrivalent vaccine costs about 60,000–70,000 won per dose, while the 9-valent is around 110,000–130,000 won per dose, a sizable unit-price gap. Considering the national program covers about 250,000 people annually, the unit-price increase alone would require more than 10 billion won in additional funds per year.

Another burden is that manufacturer Merck has steadily raised its supply price. Gardasil 9 saw price hikes of 15% in April 2021 and 8.9% in June 2022, two years in a row.

Lee Hye-rim, head of the Korea Disease Control and Prevention Agency's National Immunization Program Division, said, "We are continuing consultations with fiscal authorities to switch to the 9-valent vaccine," but added, "Within limited resources, we decided it was a priority to expand eligibility to male adolescents."

Fuente: CHOSUN BIZ. Disponible en https://n9.cl/627ti

Largest study yet shows RSV vaccine in pregnancy cuts babies' hospital risk by 80%

Apr 20. The largest real-world study to date of maternal vaccination against respiratory syncytial virus (RSV) has confirmed that the vaccine is highly effective, reducing the risk of hospitalisation in young babies by more than 80% when given at least two weeks before birth.

Protection rose to almost 85% when the vaccine was given at least four weeks before delivery.

Researchers also found strong protection in preterm babies, who are among the most vulnerable to severe RSV infection.

What is RSV and why does it cause hospitalisations?

RSV is a leading cause of lower respiratory tract infections such as bronchiolitis and pneumonia in children under five.

Almost all babies are infected by their second birthday and, while most develop only mild symptoms such as a runny nose, sore throat, headache, fatigue and fever, some become seriously unwell, with infants younger than six months at particularly high risk of severe illness and death.

The risk is particularly high in lower-income countries. Each year, the virus causes more than 3.6 million hospitalisations and around 100,000 deaths among children under five. Some 97% of those deaths occur in low- and middle-income countries, where access to supportive medical care is limited. RSV-related lower respiratory tract infections in early life have also been linked to longer-term health problems, including repeated hospital admissions for lung infections during infancy, wheezing, asthma and poorer lung health later in childhood.

The virus can also cause severe illness in elderly people and those with underlying illnesses.

What vaccines are available to protect babies against RSV?

There are currently three licensed immunisation products designed to protect young infants from RSV in early life.

Two aren't vaccines in the traditional sense, but ready-made (monoclonal) antibodies that provide immediate protection to the baby through their first RSV season.

There is also a maternal RSV vaccine known as the Bivalent Prefusion F (Abrysvo) vaccine, which is given during the later stages of pregnancy and stimulates the mother's immune system to produce antibodies that cross the placenta and protect the newborn during their first months of life. This maternal vaccine is the subject of the latest study.

How effective is the maternal RSV vaccine?

The maternal RSV vaccine received WHO prequalification in 2025, a key criterion for financial support from Gavi, the Vaccine Alliance and for procurement by UN agencies such as UNICEF, after clinical trials showed it to be safe and effective.

A multi-dose vial presentation of the same vaccine is expected to receive WHO prequalification and become eligible for Gavi support in 2027.

A Pfizer-sponsored phase 3 trial conducted in 18 countries over four RSV seasons found that the vaccine reduced the risk of babies being admitted to hospital with RSV by 68% during their first three months of life and by 57% within six months of birth.

It also reduced the risk of severe RSV-related outcomes, including low blood oxygen, the need for mechanical ventilation or admission to intensive care, by 82% within three months and 69% within six months after birth.

Whereas clinical trials measure vaccine efficacy under ideal conditions, the latest study used real-world data from 289,399 infants born in England between September 2024 and March 2025 – representing around 90% of births in England during this period – to estimate its effectiveness in everyday use.

The research, presented at ESCMID Global 2026 this week, found that maternal RSV vaccination reduced the risk of infants being hospitalised with RSV by 81.3% when given at least 14 days before birth, rising to almost 85% when administered at least four weeks before delivery.

In total, 4,594 RSV-associated hospitalisations were recorded, with babies born to unvaccinated mothers accounting for 87.2% of admissions despite making up just 55% of the study group.

“As the largest study to date examining the impact of this vaccine on infant hospitalisation, these findings provide robust evidence that vaccination offers substantial protection against severe illness in young infants,” said Matt Wilson, an epidemiologist for the UK Health Security Agency (UKHSA) and the study’s lead author.

When should women get the RSV vaccine?

WHO’s SAGE advisory group recommends the maternal RSV vaccine during the third trimester of pregnancy to maximise antibody transfer to the baby before birth. This aligns with the study’s finding that protection was strongest when the vaccine was given earlier.

“While at least two weeks are typically needed for optimal protection, infants born 10 to 13 days after vaccination had around 50% fewer hospital admissions compared with those whose mothers were unvaccinated, whereas no reduction was seen when vaccination occurred less than ten days before birth,” said Wilson.

“This reinforces the importance of vaccinating as early as possible within the recommended window, while also showing that even when given later in pregnancy, some protection is still possible from around ten days before birth.”

How does the vaccine help preterm babies?

Preterm infants are among those at greatest risk of severe RSV infection, making maternal vaccination particularly important for this group. The study found that vaccine effectiveness against hospitalisation in preterm infants was 69.4% when mothers were vaccinated at least 14 days before birth.

These findings suggest timing is especially important for pregnancies at risk of early delivery, Wilson said: “With sufficient time between vaccination and birth, we saw good levels of protection in these babies. Giving the vaccination early in the third trimester, as recommended by the World Health Organization, could protect most preterm infants.”

What happens next for global RSV vaccination programmes?

While the maternal RSV vaccine has already been approved and introduced in many higher- and upper-middle-income countries, global roll-out is at an early stage.

In 2025, the Gavi Board approved the inclusion of the multi-dose vial presentation of the maternal vaccine into its portfolio, and began with its partners designing a programme to support the vaccine's introduction in lower-income countries, including country planning and co-ordination with health agencies. Once that phase is complete, they plan to work with governments and health organisations to help deliver effective roll-outs, with a focus on reaching communities most at risk.

Wilson also highlighted the vaccine's potential global impact: "While survival from RSV bronchiolitis and pneumonia is high in high-income countries, it remains a major cause of infant mortality in low- and middle-income countries," he said.

"These findings underscore the potential benefits of wider rollout of maternal RSV vaccination globally in line with the World Health Organization's recommendations."

Fuente: Gavi. Disponible en https://n9.cl/5kqxpe

Shape Matters: Inside Molecular Clamp Vaccines

Apr 20. Most people don't think about how a vaccine is designed. They think about the appointment, the needle, maybe a sore arm later that day. But behind the scenes, scientists are working through a surprisingly delicate question: to design a more effective vaccine, how do you show the immune system what a virus really looks like?

This question matters more than most of us realize. Consider respiratory syncytial virus (RSV). Most RSV infections resemble the common cold. But globally, RSV triggers 33 million severe respiratory infections in young children each year, with 95% occurring in low- and middle-income countries. And in older adults, RSV is increasingly recognized as a serious cause of hospitalization, with disease severity that can rival influenza in vulnerable populations.

For Keith Chappell, Scientific Advisor at Sanofi, this burden pointed to a challenge he's been trying to solve for more than a decade: how to capture a moving target.

The F protein of the Respiratory Syncytial Virus (RSV), with a molecular clamp (purple) and key epitopes exposed (yellow).

Vaccine Design and the Shape-Shifting Challenge of Viral Proteins

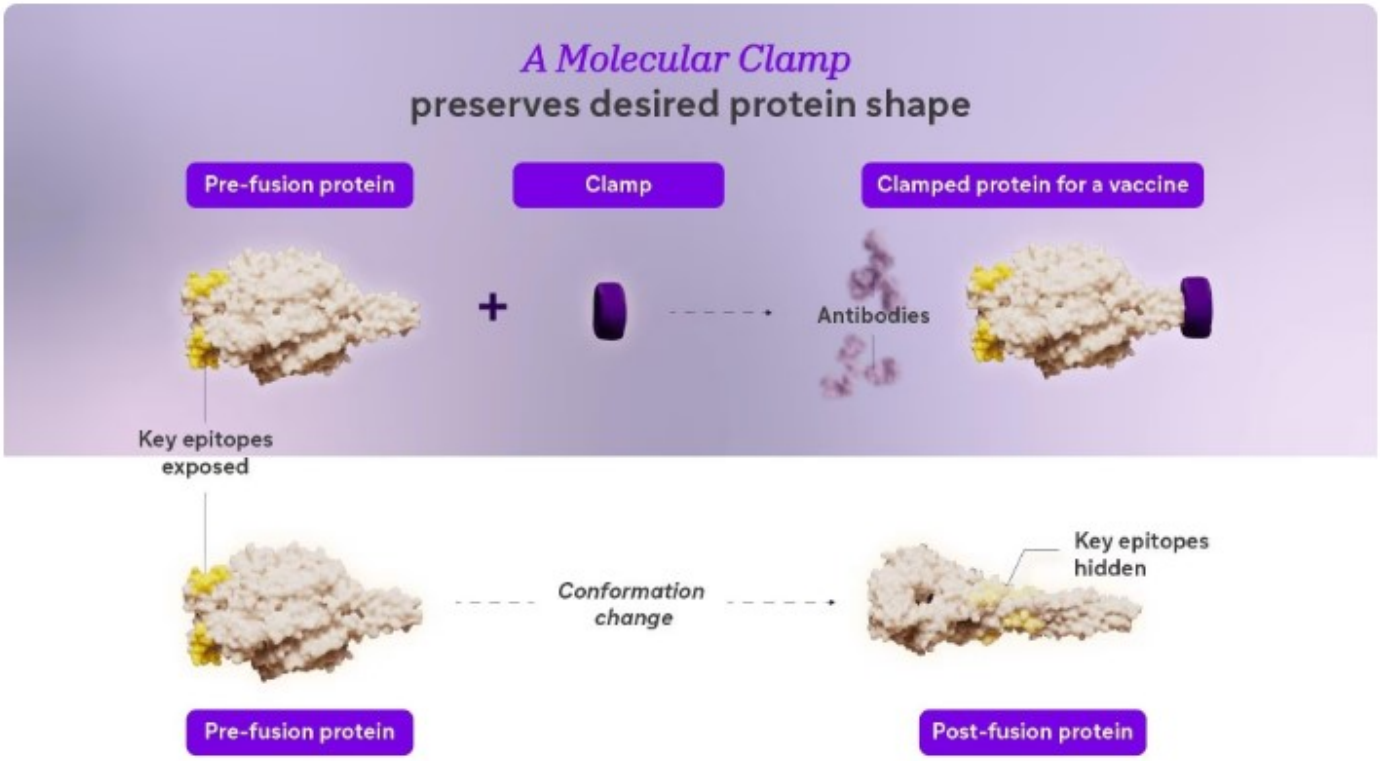
The immune system doesn't recognize a virus by name. It recognizes shape. On the surface of every virus are proteins that act like tiny grappling hooks, essential for invasion. When a virus binds to a cell, these proteins transform. They shift shape, and that change allows the virus to fuse with the cell, enter it, and begin the infection.

For an RSV vaccine to work well, it must show the immune system what these proteins look like before the shape transformation occurs – what researchers call the "pre-fusion" form of the protein. Train the immune system to recognize that pre-fusion shape of RSV, and the immune system can attempt to stop the virus before the infection.

That's where the challenge in vaccine development begins.

The viral proteins that provide the best protection against RSV infection are also the least stable. In nature, they exist in a tense, fragile state, like a coiled spring under tension. But once researchers remove these proteins from the virus and produce them in a laboratory, something predictable happens: the proteins relax. They shift into a different, more comfortable shape.

Except that's exactly when researchers, who want to harness those fragile proteins to train the immune system, need them to stay tense.



A molecular clamp preserves desired protein shape. When a molecular clamp (purple) is used, the F protein of RSV remains in its pre-fusion conformation (top). The molecular clamp enables the protein's key epitopes, highlighted in yellow, to remain available for the immune system, and the production of antibodies. Without a molecular clamp (bottom), the F protein of RSV goes through a shape change.

"This shape shifting makes it very difficult to produce the proteins in isolation that are in the correct, unstable structure," Keith explains. By the time the proteins are purified and formulated during vaccine manufacturing, they may no longer resemble the version the immune system needs to recognize as an infectious threat. The immune system might still respond. But it won't generate the most protective antibodies, the ones capable of blocking infection at its earliest step.

So, how do you hold something in a shape it naturally wants to leave?

An Insight From Natural Infection: Targeting the Pre-Fusion Viral Protein Shape

The answer began with an observation made by the team Keith was a part of earlier in his career. When patients recovered from natural RSV infection, their bodies produced potent neutralizing antibodies. But those antibodies weren't targeting the virus after it had infected cells. They were targeting the viral protein before it changed shape to enter the cell.

That observation reframed the entire challenge: the pre-fusion structure was the key target. If antibodies recognized the pre-fusion form of the protein, then a vaccine would need to present that structure. The problem now was stability. How do you keep vaccine proteins in their pre-fusion form long enough for the immune system to learn?

The Molecular Clamp Structure: Borrowing From Nature

Rather than redesign the process to produce different proteins, Keith and his team borrowed stability from nature.

They created a “molecular clamp,” a small, synthetic scaffold that holds viral proteins in their unstable, pre-fusion shape. This clamp helps ensure that when a vaccine enters the body, the immune system sees the virus in the shape most associated with strong immune responses.

Keith often describes it using a simple image: Imagine a bouquet of flowers. The flowers are the viral proteins. The clamp is the hand holding the bouquet together. Without the hand in place, the arrangement falls apart.

This scientific work led to the creation of Vicebio in 2018, a biotechnology company dedicated to developing molecular clamp technology. The company is now part of Sanofi.

Then in early 2020, the platform faced its first real-world test.

Vaccine Technology Tested in a Global Crisis

As COVID-19 spread globally, researchers moved quickly to apply the molecular clamp approach to a SARS-CoV-2 vaccine candidate. The urgency was unprecedented. Labs around the world were racing to develop vaccines against a virus that had effectively shut down entire countries.

The program advanced into clinical trials. The vaccine proved safe. It generated an immune response. And then a complication surfaced.

The original molecular clamp design used a structural element borrowed from an HIV protein. Scientifically, the choice made sense; the HIV protein provided excellent stability and posed no infection risk. But in some trial patients, it triggered antibodies that interfered with certain HIV diagnostic tests, creating the possibility of false-positive results. The program stopped. "It was fast in, fast out," Keith recalls. "But we learned a tremendous amount."

For Keith, the setback reinforced something he’s always believed.

Rather than abandon the platform, the team redesigned it. A second-generation clamp replaced the HIV-derived element with a different stabilization domain, preserving the structural benefits while eliminating the diagnostic interference. What began as a setback became an engineering lesson. The platform emerged stronger.

Following Vicebio's acquisition by Sanofi, the goal is to bring this work to a broader global stage, combining scientific innovation with experience in large-scale vaccine manufacturing.

A Familiar Manufacturing Process, Designed for Speed

Solving the shape problem was only half the challenge. The molecular clamp also had to be practical and efficient to manufacture at scale.

Fortunately, the manufacturing process is similar to methods already used to produce other biological medicines, like therapeutic antibodies. This allows vaccine makers to use existing infrastructure, rather than building new specialized facilities, supporting reliable production at scale.

But the real advantage lies in speed. Because the clamp structure stays the same across different vaccines, only the genetic sequence of the target viral protein needs to change. Once a pathogen's genome is known – which can happen within days of identifying a new viral threat – researchers can design new vaccine candidates and move quickly into testing.

This plug-and-play approach has particular value for pandemic preparedness. In the event of a new viral outbreak, the ability to rapidly adapt an existing vaccine technology could significantly compress development timelines. Rather than starting vaccine design from scratch, researchers could swap in a genetic sequence from the new pathogen and leverage a validated manufacturing process.

This capability strengthens global biosecurity by reducing the window between identifying a pathogen and delivering a vaccine, saving time in a crisis where every day matters.

Logistics matter, too. Clamp-based protein vaccines are designed for standard refrigeration (4oC), rather than ultra-cold storage (-80oC). This simplifies transportation and storage, particularly in regions where maintaining extremely cold temperatures is difficult or impossible, enabling vaccines to reach more people around the world.

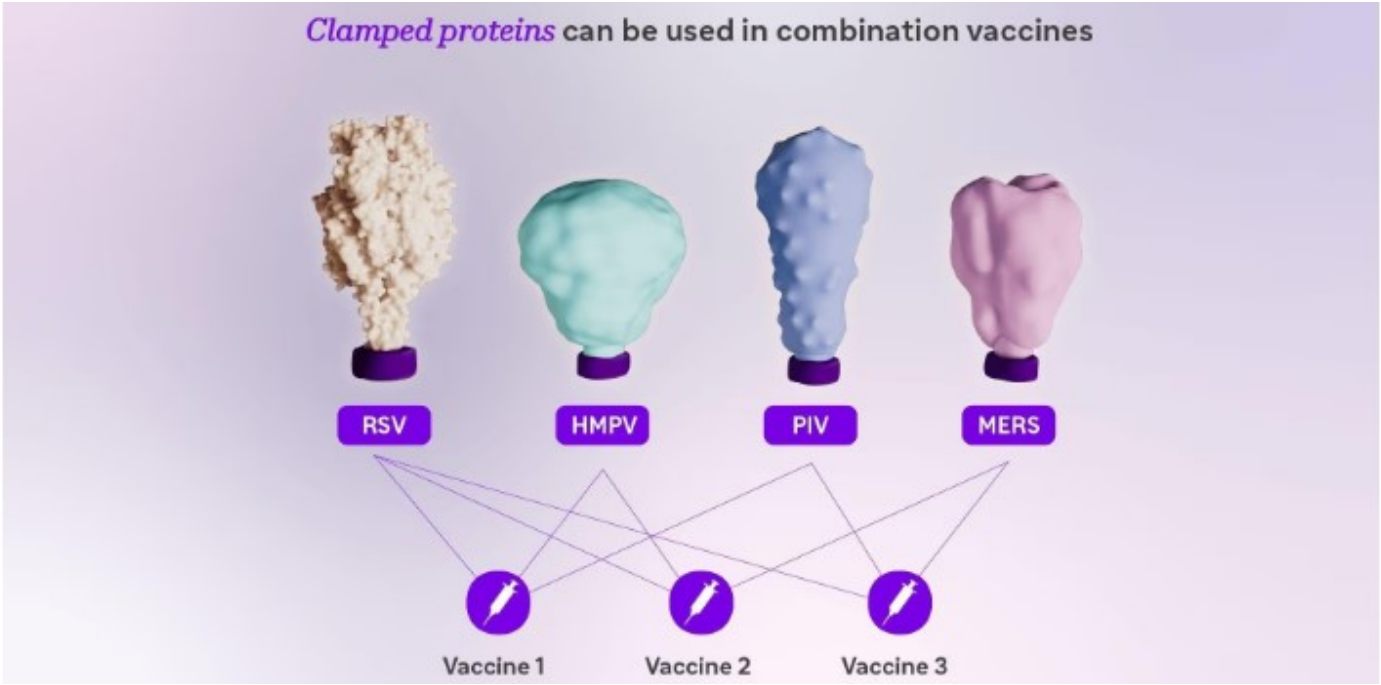
Combination Vaccine Approaches: Toward Simpler Protection

The molecular clamp technology also enables combination vaccines, single shots that protect against multiple respiratory viruses. Combination approaches reduce the number of vaccines needed, and evidence suggests this could increase adherence while saving time and reducing logistical complexity. For patients and healthcare systems, this could mean more disease prevention.

A bivalent vaccine targeting RSV and human metapneumovirus (HMPV) is under evaluation, in addition to a trivalent formulation targeting RSV, HMPV, and parainfluenza virus (PIV3). Combining multiple viral proteins into a single vaccine is scientifically complex; each component must remain stable within the same formulation without interfering with the others. Starting with proteins already stabilized by molecular clamp may help address this challenge.

Looking ahead, combinations might include influenza or COVID-19, potentially offering broad respiratory protection in a single annual vaccination. The long-term goal is to simplify protection, reducing the number of separate vaccinations people need over time, while maintaining or improving efficacy.

Keith emphasizes that the molecular clamp approach is not meant to replace other vaccine technologies. "I think this is absolutely a complement," he says. "Each platform has its pros and cons." Different viruses, different populations, and different contexts may call for different approaches. Expanding the range of tools available to researchers strengthens the ability to respond to evolving health challenges.



Different proteins are shown with molecular clamps. These proteins can be used in varying combinations to produce new vaccines that target multiple infectious threats.

Molecular clamp technology started with a simple insight: shape matters, and the immune system must see the right one. If it fulfills its promise, its impact will be measured not only in scientific progress, but in fewer hospitalizations and lives quietly protected from severe disease.

Fuente: Sanofi. Disponible en https://n9.cl/pawac

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Estrategia de búqueda: *(Vaccine) AND DP:([10.04.2026 TO 20.04.2026]) as the publication date 20 records.*

1.20260102489COMBINATION OF VACCINATION AND INHIBITION OF THE PD-1 PATHWAY

US - 16.04.2026

Clasificación Internacional A61K 39/395Nº de solicitud 19332658Solicitante CureVac SEInventor/a Mariola FOTIN-MLECZEK

The present invention relates to a vaccine/inhibitor combination comprising an RNA vaccine comprising at least one RNA comprising at least one open reading frame (ORF) coding for at least one antigen and a composition comprising at least one PD-1 pathway inhibitor, preferably directed against PD-1 receptor or its ligands PD-L1 and PD-L2. The present invention furthermore relates to a pharmaceutical composition and a kit of parts comprising the components of such a vaccine/inhibitor combination. Additionally the present invention relates to medical use of such a vaccine/inhibitor combination, the pharmaceutical composition and the kit of parts comprising such a vaccine/inhibitor combination, particularly for the prevention or treatment of tumor or cancer diseases or infectious diseases. Furthermore, the present invention relates to the use of an RNA vaccine in therapy in combination with a PD-1 pathway inhibitor and to the use of a PD-1 pathway inhibitor in therapy in combination with an RNA vaccine.

2.20260102493ALLOGENEIC DENDRITIC CELL (ALLODC) TUMOR VACCINE, AND PREPARATION METHOD AND USE THEREOF

US - 16.04.2026

Clasificación Internacional A61K 40/19Nº de solicitud 19029764Solicitante ZHONGSHAN FRONTIERGATE BIOPHARM CO., LTDInventor/a Yang XU

An allogeneic dendritic cell (alloDC) tumor vaccine, and a preparation method and use thereof are provided, belonging to the technical field of tumor cell vaccines. An allogeneic chimeric antigen receptor (CAR) dendritic cell (DC) tumor vaccine is an alloDC that recombinantly expresses a CAR and a tumor vaccine. The alloDC serves as a basic cell, where an allogeneic cell for cell therapy shows characteristics of expanding cell sources, improving cell quality, and shortening cell preparation time. Meanwhile, effectiveness and safety of the allogeneic CAR-DC tumor vaccine are verified for tumor treatment. The development of such a novel vaccine overcomes a long-standing limitation of the cell therapy relying on autologous cells, and is conducive to expanding therapeutic application and scale of the CAR-DC and improving a quality of cell preparation, thereby providing new strategy and application for conquering solid tumors.

3.20260102483SUPERANTIGEN VACCINE CONJUGATE FOR THE TREATMENT OF CANCER

US - 16.04.2026

Clasificación Internacional A61K 39/385Nº de solicitud 19117242Solicitante MUSC FOUNDATION FOR RESEARCH DEVELOPMENTInventor/a Nathan G. DOLLOFF

The present disclosure provides compositions comprising vaccine conjugates with a SMEZ-2 carrier. Further provided are methods for treating cancer comprising administering the vaccine conjugates provided herein.

4.20260102480DIPHTHERIA-TETANUS-PERTUSSIS COMPOUND ADJUVANT COMBINED VACCINE

US - 16.04.2026

Clasificación Internacional A61K 39/116Nº de solicitud 19112902Solicitante CHANGCHUN BCHT BIOTECHNOLOGY CO.Inventor/a Mengshu WANG

Disclosed in the present invention is a compound adjuvant combined vaccine, comprising an immunogenic composition and a compound adjuvant. The immunogenic composition comprises a pertussis antigen, a diphtheria antigen and a tetanus antigen; and the compound adjuvant is composed of an aluminum adjuvant and a TLR9 receptor agonist. Further disclosed in the present invention is a use of the compound adjuvant in the preparation of the compound adjuvant combined vaccine for preventing pertussis, diphtheria and tetanus in a subject.

5.WO/2026/080950COMPOSICIÓN DE VACUNA QUE COMPRENDE UNA PROTEÍNA QUIMÉRICA CONTRA RHIPICEPHALUS MICROPLUS

WO - 16.04.2026

Clasificación Internacional A61K 39/00Nº de solicitud PCT/UY2025/050003Solicitante LA BUENA ESTRELLA SAInventor/a SANGUINETTI ACOSTA, Carlos Julio

La presente invención se refiere a una composición de vacuna que comprende una o más proteínas o antígenos de garrapata, preferiblemente seleccionados de la lista que consiste en la proteína Bm86, la proteína subolesina, y/o la proteína P0. La presente invención también se refiere a usos de dichas composiciones de vacuna para generar una respuesta inmunitaria contra garrapatas, y a kits

que comprenden las mismas.

6.WO/2026/080514METHODS FOR THE RAPID MANUFACTURE OF CONJUGATE VACCINES THAT ELICIT ROBUST IMMUNE RESPONSES

WO - 16.04.2026

Clasificación Internacional A61K 39/085Nº de solicitud PCT/US2025/049896Solicitante INVENTPRISE, INC.Inventor/a KAPRE, Subhash V.

The disclosures of the invention arc directed to the manufacture of effective, affordable vaccines that arc globally accessible. Using a platform conjugation technology, highly immunogenic conjugate vaccines were produced that elicit broad cross-neutralization to variants of concern (VOC), manufactured cheaply compared to mRNA vaccines. Protein-protein conjugates and Toll-Like Receptor (TLR) agonist adjuvants were shown to enhance immunogenicity and induce broad cross-protection against VOC, a characteristic lacking in early mRNA CO VID-19 vaccines. Murine nAb titers from Beta-only conjugates were equivalent between Beta, Delta, Omicron BA.l, BA.2, and BA.4/BA.5, which were circulating up to three years after the antigenic strain. Additionally, Beta-Delta bivalent conjugate vaccines readily prevented disease in hamster challenge, which demonstrates a vaccine with remarkably broad cross-protection and potential to protect for extended periods despite mutations, without requiring expensive boosters or antigen adaption. This vaccine can be produced in our highly automated, large-scale manufacturing facility enabling economical production of inexpensive, effective vaccines for high-need areas.

7.20260102477TUMOR-ASSOCIATED ANTIGEN BASED CANCER VACCINE

US - 16.04.2026

Clasificación Internacional A61K 39/00Nº de solicitud 19359820Solicitante South Dakota Board of RegentsInventor/a Wenfeng An

Disclosed herein is a composition comprising a nucleic acid encoding long interspersed elements type 1 open reading frame 1 protein (LINE-1 ORF1p) or a functional variant thereof, and a nanoparticle. Also disclosed are methods of using the composition to elicit an immune response in methods of treating subjects, such as those with cancer.

8.WO/2026/080839EHRLICHIAL IMMUNOREACTIVE PEPTIDES

WO - 16.04.2026

Clasificación Internacional A61K 39/02Nº de solicitud PCT/US2025/050491Solicitante RESEARCH DEVELOPMENT FOUNDATIONInventor/a MCBRIDE, Jere

Immunoreactive peptides that can be used to detect or generate an immune response against *Ehrlichia* bacteria are provided. The immunoreactive peptides may be included in a diagnostic kit or pharmaceutical composition or vaccine composition. Methods of diagnosing or detecting exposure to *E. canis* in a mammalian subject, such as a dog, are also provided.

9.20260102482METHODS, COMPOSITIONS AND THERAPEUTICAL VACCINE FOR AUTOIMMUNE DISEASES AND ALLERGY TREATMENT

US - 16.04.2026

Clasificación Internacional A61K 39/36Nº de solicitud 18914167Solicitante Tianxin WangInventor/a Tianxin Wang

Compositions, reagents, formulations and methods to treat disease including autoimmune diseases and allergy are described. The compositions comprise an antigen causing immune intolerance, an immunosuppressant in a sublingual or a sustained release formulation. The methods, compositions, formulations and reagents to treat allergy also relate to applying the combination of allergen and immune activity enhancing agent in a sublingual or a sustained release formulation to a subject in need.

10.WO/2026/080369SYNTHETIC FRAGMENT OF MYCOBACTERIUM TUBERCULOSIS METHYLGLUCOSE LIPOPOLYSACCHARIDE WITH THE CAPACITY TO INDUCE PROTECTION AGAINST TUBERCULOSIS

WO - 16.04.2026

Clasificación Internacional A61K 47/36Nº de solicitud PCT/US2025/049631Solicitante SAINT LOUIS UNIVERSITYInventor/a EHIANETA, Teddy Stephen

The present disclosure is directed to the generation and use of a synthetic tetrasaccharide designed based on a portion of a mycobacterial polar glycolipid as a vaccine antigen to limit or prevent tuberculosis infections.

11.3062805IMPROVEMENTS IN PREPARATION OF INFLUENZA VIRUS VACCINE ANTIGENS

ES - 14.04.2026

Clasificación Internacional A61K 39/145Nº de solicitud 18203041Solicitante Seqirus UK LimitedInventor/a Haussmann, Christoph

12.WO/2026/080920MRNA VACCINE FOR PEANUT ALLERGY TREATMENT

WO - 16.04.2026

Clasificación Internacional A61K 39/35Nº de solicitud PCT/US2025/050635Solicitante UKKO INC.Inventor/a OFRAN, Yanay

Disclosed herein are lipid nanoparticles comprising messenger RNA (mRNA) molecules encoding deepitoped Ara h 1 and/or de-epitoped Ara h 2, vaccines comprising the nanoparticles and methods for inducing desensitization to peanuts and/or immunomodulation of a response to peanuts in a subject allergic to peanuts.

13.20260102481CORONAVIRUS VACCINE FORMULATIONS

US - 16.04.2026

Clasificación Internacional A61K 39/215Nº de solicitud 19368715Solicitante Novavax, Inc.Inventor/a Gale SMITH

Disclosed herein are coronavirus Spike(S) proteins and nanoparticles comprising the same, which are suitable for use in vaccines. The nanoparticles present antigens from pathogens surrounded to and associated with a detergent core resulting in enhanced stability and good immunogenicity. Dosages, formulations, and methods for preparing the vaccines and nanoparticles are also disclosed.

14.WO/2026/077983COMPOSITIONS AND METHODS FOR STABILIZING LIVE-ATTENUATED FLAVIVIRUSES

WO - 16.04.2026

Clasificación Internacional A61K 39/12Nº de solicitud PCT/EP2025/078817Solicitante SANOFI R&D VACCINSInventor/a CLENET, Didier

This disclosure relates to stabilizers for compositions comprising live-attenuated flaviviruses, methods for stabilizing live-attenuated flaviviruses, and stabilized live-attenuated flavivirus vaccine compositions.

15.20260102484ADJUVANTS FOR ENHANCING THE IMMUNE RESPONSE

US - 16.04.2026

Clasificación Internacional A61K 39/39Nº de solicitud 19112442Solicitante Lankenau Institute for Medical ResearchInventor/a Ellen Heber-Katz

Compositions and methods enhancing a patient's immune response to an immune stimulatory composition are disclosed. In certain embodiments, the method includes administering a composition comprising a PHD pathway inhibitor and a vaccine to a subject.

16.WO/2026/080028A PHAGE-BASED GENE DELIVERY SYSTEM PRODUCING PREDEFINED PROTEIN IN HOST CELLS

WO - 16.04.2026

Clasificación Internacional A61K 35/76Nº de solicitud PCT/TH2024/050047Solicitante KONGTAEWELERT, PrachyaInventor/a KONGTAEWELERT, Prachya

The present invention relates to a phage-based gene delivery system targeting human cells or animal cells, including immune cells, other human cells and cancer cells. In particular, the present invention relates to novel phage particles and associated phagemid expression systems and their production for the delivery of transgenes, comprising DNA encoding pathogen antigens, to human immune cells, suitable for use in vaccines and vaccine development against infectious diseases and cancers.

17.20260102495METHOD FOR PRODUCING ONE OR SEVERAL SHARED CANCER EPITOPE(S) DERIVED FROM ALTERNATIVE TRANSLATIONAL CONTROL

US - 16.04.2026

Clasificación Internacional A61K 40/42Nº de solicitud 19113973Solicitante CENTRE LEON BERARDInventor/a Stéphane DEPIL

A method for producing or identifying one or several shared cancer epitope(s), as well as the peptides including or being made up of the epitopes identified or produced by the method, expression vectors encoding the peptides, cytotoxic T lymphocytes (CTLs) generated in vitro by stimulation of T cells with the peptides or vectors, CTLs of a subject treated with the peptides or vectors, and engineered T cells expressing T-cell receptors recognizing said peptides. Also, the use of the peptides, expression vectors, CTLs or engineered T cells as a vaccine or a medicament, and in particular, the use of the peptides, expression vectors, CTLs, or engineered T cells for preventing or treating at least one cancer in a subject in need thereof.

18.WO/2026/076521IDENTIFICATION, DESIGN, AND VALIDATION OF A NEOANTIGEN-BASED PEPTIDE VACCINE FOR THE TREATMENT OF PAX3/PAX7-FKHR FUSION-POSITIVE ALVEOLAR RHABDOMYOSARCOMA

WO - 16.04.2026

Clasificación Internacional C07K 14/82Nº de solicitud PCT/CA2025/051320Solicitante NARENDRAN, ArumugavadivelInventor/a NARENDRAN, Arumugavadivel

In some aspects there is described formulations for the treatment of fusion-positive alveolar rhabdomyosarcoma, methods of preparing thereof, and validating their immunogenic activity.

19.20260103682GENETICALLY MODIFIED VERO CELLS

US - 16.04.2026

Clasificación Internacional C12N 5/071Nº de solicitud 19356035Solicitante Washington UniversityInventor/a Siyuan Ding

Among the various aspects of the present disclosure is the provision of genetically modified Vero cells. The present teachings include compositions for a rotavirus reverse genetics system that can include SERPINB1 knockout cells combined with a helper plasmid. The present teachings also include a vaccine-producing cell substrate that can include Vero cells with disrupted TMEM236 and method of use thereof.

20.WO/2026/080510DETOXIFIED CHOLERA TOXIN AS A VACCINE ADJUVANT FOR ORAL VACCINES

WO - 16.04.2026

Clasificación Internacional A61K 39/12Nº de solicitud PCT/US2025/049892Solicitante INVENTPRISE, INC.Inventor/a KAPRE, Subhash V.

The invention is directed to immunogenic compositions and vaccines, and methods for the manufacture and treatment and prevention of infections and, in particular, the preparation of immunogenic compositions and vaccines administered in conjunction with a detoxified cholera toxin as an adjuvant and a TLR agonist for oral administration, which may be encapsulated.

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

Estrategia de búqueda: *vaccine.ti. AND @PD>="20260410"<=20260420 13 records*

Document ID	Title	Inventor	Applicant Name
US 20260102482 A1	Methods, compositions and therapeutical vaccine for autoimmune diseases and allergy treatment	Tianxin","Wang	Tianxin"
US 20260102478 A1	Vaccines and Antibodies for the Treatment and Prevention of Neurodegenerative Disorders and Inflammation Related Health Conditions	Jeffrey D. et al.	Longhorn Vaccines and Diagnostics, LLC
US 20260102477 A1	Tumor-Associated Antigen Based Cancer Vaccine	Wenfeng et al.",	South Dakota Board of Regents
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US 20260102480 A1	DIPHTHERIA-TETANUS-PERTUSSIS COMPOUND ADJUVANT COMBINED VACCINE	Mengshu et al.	CHANGCHUN BCHT BIOTECHNOLOGY CO.
US 20260102493 A1	ALLOGENEIC DENDRITIC CELL (alloDC) TUMOR VACCINE, AND PREPARATION METHOD AND USE THEREOF	XU; Yang	ZHONGSHAN FRONTIERGATE BIOPHARM CO., LTD,SHENZHEN FRONTIERGATE BIOTECHNOLOGY CO., LTD.
US 20260103495 A1	PERSONALIZED MUC1-C INDUCED PLURIPOTENT STEM CELL AND DENDRITIC CELL BASED VACCINES	Kufe Donald	Dana-Farber Cancer Institute, Inc.
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US 12599655 B2	Neisseria gonorrhoeae vaccine compositions and methods of selecting antigens	Massari Paola et al.	Trustees of Tufts College
US 12600752 B2	Methods and compositions for recombinant dengue viruses or vaccine and diagnostic development	Baric Ralph et al.	The University of North Carolina at Chapel Hill
US 12599657 B2	Enhancement of vaccine efficacy via biomass and/or related material in animal drink and feed	Dahl Andrew A. et al.	ZIVO Bioscience, Inc.
US 12604121 B2	Monitoring environmental conditions of storage units for vaccines and other climate sensitive products	Fricker Scott N. et al.	Copeland Cold Chain LP

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