



EN ESTE NÚMERO

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Noticias en la Web

The Science of Disease Prevention: Inside GSK's Vaccine Manufacturing Facility in Belgium

Dec 11. The worst of COVID-19 may be behind us, with about 5.55 billion people across the world receiving at least one dose of the COVID vaccine as of March 2023, according to a report in the New York Times. One would think that, after surviving a pandemic that, at its height, killed as many as three million people worldwide, people would have developed a stronger faith—or at least found a newfound appreciation for—the power and efficacy of vaccines.

But, surprisingly, the opposite seems to have happened. In a wide-ranging study evaluating people's confidence of vaccines in 2019 and 2022 (before and after the pandemic), researchers found that vaccine confidence seems to have "significantly declined" since the onset of COVID-19.

"A study has shown that vaccine confidence in the public has declined compared to before"

"Despite abundant epidemiological evidence of the safety and effectiveness of COVID-19 vaccines, only approximately 1 in 5 participants of the 2022 cohort self-assessed their vaccine confidence as having increased since the pandemic," the study said. "(T)he majority of participants reported that their confidence remained unchanged or even decreased. These observations are compatible with studies carried out in the early months of the COVID-19 pandemic indicating that, in contrast to previous evidence that the perceived threat from a disease should improve public vaccine confidence, willingness to receive a COVID-19 vaccine started decreasing even before the vaccines were developed."

This skepticism and disturbing decrease in trust and confidence in vaccines is exactly what pharmaceutical companies like GSK is working hard to combat. The London-based biopharma giant is at the forefront of developing and distributing life-saving vaccines for millions of people around the world. One of the 10 largest pharmaceutical companies in the world, GSK is in the business of saving lives through its portfolio of vaccines, specialty, and general medicines.

GSK vs COVID

Although GSK wasn't one of the companies that offered branded vaccines against COVID-19 from 2021 onwards—companies like Pfizer, Sinopharma, AstraZeneca, Johnson & Johnson, and Moderna—what many people don't know is that it was actually involved in the process of developing a vaccine in collaboration with other pharmaceutical companies.

"COVID was a global emergency and every organization noted this was really the time for organizations to come together to join hands, and provide solutions," said Piyali Mukherjee, GSK's vice president and head of global medical affairs, during a media briefing here. Mukherjee said GSK is a leader in adjuvant technology, or the ingredient added in vaccines to create a stronger immune response in people.

"What we did at GSK is we established partnerships providing adjuvants to different companies...to develop a COVID vaccine," she said. "The partnership was with Sanofi and (Korean company) SK Biosciences. So I would say that the way that we work was that we worked in partnership with different other companies to bring solutions (to these issues)."

GSK conducted the briefing in its sprawling facilities in this town, about 30 kilometers from the Belgian capital

of Brussels. Inaugurated in 1993, the Wavre site measures about 23 square kilometers, or about the size of 70 soccer fields, which would make it the biggest vaccine manufacturing site in the world. Most of GSK's vaccines are made here and then shipped worldwide.

Officials shared key figures in its business, particularly its vaccines unit: over 20 vaccines in its portfolio, some 500 million vaccine doses produced and delivered in 2020 alone, and about 20 more vaccine candidates currently in the pipeline. GSK says about four in 10 children vaccinated worldwide receive a GSK vaccine.

GSK used to have a unit that manufactured consumer healthcare products but spun it off into its own company called Haleon in 2022. This new company has a portfolio of brands that include Centrum, Sensodyne, Voltaren, and Panadol.

"It happened last year but it was a year or two before that when we had announced that strategy," said Madeleine Breckon, VP for product and pipeline vaccines communications and government affairs. "It really was to focus in on the biopharma elements of the business. Because as a business, there're obviously strengths, and being a very diversified business, you've got the kind of fast moving consumer goods as well as the R&D, but as our portfolio was developing, it really did require that we focus in on the science, really investing in our R&D portfolio, and that focus on vaccines, as well as HIV, immunology, and respiratory, and oncology as well."



PHOTO: GSK

Breckon added that since GSK announced the split of its consumer healthcare business, other pharmaceutical companies followed suit.

"It's become a bit of a trend across the pharmaceutical industry," she said. "Johnson and Johnson has also chosen to split theirs. And I think Sanofi announced most recently that they would do the same. So I think that it kind of allowed us to have more investments in research and development. It definitely was strategically the right thing to do to focus the organization into those (areas)."

The numbers bear this out. According to GSK's own study, between 3.5 to five million deaths are prevented annually through vaccination, and about \$52 on average is the return for every one dollar invested in vaccinations for 94 low-and middle countries between 2013 to 2030.

Selling vaccines

The importance of vaccines cannot be overstated, but often, it's difficult to communicate just how essential it is in keeping people healthy without discussing the diseases that it actually protects us from. This is where strict regulations and national guidelines come into play. The pharmaceutical industry is one of the most heavily regulated in the world, almost equal to businesses such as energy and petroleum, motor vehicle manufacturing, air transportation, and banking and finance, so there are safeguards in place to ensure that the companies do not resort to scare tactics or fear-mongering in order to sell their products. GSK is no different.

"Anything we do, especially when it's sold to the public, but also even how we engage with doctors is really regulated and it's important that we do that," Breckon said. "When it comes to disease awareness, I think

there is a role for that. For example, meningitis is an incredibly serious disease, but it's also very, very rare. So that's an example wherein parents and governments...they do a lot of their own disease awareness around the risks of certain diseases and illnesses, where you might need to explain what the potential consequences are.”

“We are based in the U.K. and we do have a very, very strict code of governance policies, which is aligned to the UK government's policies, but when we are operating in any other country, we have to follow the country code as well,” Mukherjee added. “And we always follow the strictest code that is in any of our communication, which is generally done only to the doctors unless again, it depends on the country specific policies.”

In the Philippines, GSK is involved in the country's national immunization program (NIP) primarily through pneumococcal vaccine for children. Adult immunization is still relatively new in the country, especially before the onset of COVID-19. Only three adult-related vaccines are currently offered in the country's NIP: the first two are pneumococcal and influenza-related issues, both of which are recommended only for those 60 years old and above, and third is for pregnant women.

According to GSK's own studies, adults could stand to benefit greatly from vaccines especially since the world is moving slowly towards higher life expectancy in humans. According to Mukherjee, people aged 60 years old and above are expected to outnumber those aged 10 to 24 by the year 2050. And by 2100, almost 30 percent of the population will be above 60 years old.

“In addition to other lifestyle factors like stopping smoking, a healthy diet, and exercise, vaccination can support healthy aging in older patients,” she said.

The rest of the visit to GSK's facilities here and in nearby Rixensart was devoted to the company demonstrating its world-class, almost obsessive, processes in developing, manufacturing, and packaging its vaccines. GSK employs about 9,000 employees, including 1,800 scientists from all over the world.

As expected, vaccine production and packaging are done in environments that significantly lessen or outright eliminates the possibility of contaminants getting into the vaccines. Workers put on special personal protective wear, wash their hands in a way that rivals the way surgeons prepping for a major operation do it, and use special equipment that minimizes contact with human skin that could possibly be a source of microscopic

pollutants. It was eye-opening to be reminded of the lengths these pharmaceutical companies go through in order to ensure the safety of the life-saving vaccines that they produce.

The takeaway is that while these companies are still businesses that are required to be profitable in order to be sustainable, the work that they do is so important that the phrase “life and death” isn't just hyperbole but reality. It's a mystery then, why, despite incontrovertible scientific evidence backing the effectivity of vaccines, there are those who still choose to question and outright deny their value.



PHOTO: GSK

In any case, GSK remains committed in its goal of “positively impacting the health of 2.5 billion people over the next 10 years.” And after COVID-19, it and many of the world's other pharmaceutical companies are better able to respond to the next big health crisis.

“I think that the world and the vaccine companies are more prepared because now we have at least in the toolbox the technologies, and are able to respond faster,” said Yannick Vanloubbeeck, head of immunology, research and development, GSK Belgium. “The other thing is very important: it is about the science, and making sure that we remain aware of the evolutions and the trends in how pathogens are evolving and arising. I think that, globally, and it's not only the sole property or mission of vaccine companies. I think the entire world has improved in the monitoring of pathogens and they are developing new tools to address these new threats. I'm not saying that these are efficient and available now, but at least the pandemic has incentivized the need to invest and to monitor these types of things.

“So combining both together, I think there's hope that the company will be more ready tomorrow to fight against any new threats,” he added “But again, everything we do is data driven. And so as soon as a new virus or bacteria emerges, we have to generate the vaccine candidate, generate the right data, and hope that the vaccine will be successful.”

Fuente: Esquire. Disponible en <https://acortar.link/uSpjmu>

Descubren una nueva y mejor forma de desarrollar vacunas

12 dic. Investigadores de Alemania han desarrollado un nuevo sistema para mostrar epítomos en células de mamíferos para estudios de inmunización y creen que este método puede ayudar enormemente a los científicos en los esfuerzos de inmunización, según publican en la revista 'Biology Methods & Protocols'. Promover que las células sanguíneas produzcan anticuerpos contra una proteína vírica específica es un paso importante en el desarrollo de vacunas para uso humano.

Esto puede suponer un reto para los investigadores porque que los sujetos desarrollen anticuerpos depende de cómo los científicos diseñen y administren los antígenos, que son partes del virus que administran para comprobar la eficacia de la vacuna.

Un aspecto muy importante de la investigación sobre virus es cómo expresar y purificar el antígeno para la vacunación. Los animales inmunizados con antígenos preparados producen anticuerpos específicos contra el antígeno, pero los científicos tienen que aislar el antígeno para asegurarse de que desarrollan la vacuna dirigida a la enfermedad específica que desean combatir.

Una vez que los investigadores purifican el antígeno, pueden desarrollar vacunas que lleven a los sujetos a producir los anticuerpos deseados. Pero este aislamiento lleva mucho tiempo cuando se trata de desarrollar antígenos producidos en laboratorio, ya que los virus suelen mutar rápidamente.



Archivo - Un trabajador sanitario prepara la primera dosis de la vacuna de Pfizer-BioNTech contra la COVID-19, en 2021, en el Hospital Severo Ochoa de Leganés, Leganés, Madrid, (España). A. Pérez Meca - Europa Press - Archivo

Los científicos pueden tardar varias semanas en desarrollar los antígenos adecuados. En este caso, desarrollaron un nuevo método para inducir respuestas inmunitarias específicas.

Mediante la fusión de proteínas antigénicas en una proteína de anclaje unida a la membrana derivada de la tetraspanina, los investigadores crearon proteínas de fusión que se muestran predominantemente en la superficie de las células humanas.

La exposición de las proteínas en la superficie mediante una proteína portadora induce la producción de anticuerpos dirigidos contra los antígenos pertinentes apropiados. Una ventaja adicional es que estos antígenos tienen la misma conformación y modificaciones que las proteínas correspondientes del virus, ya que son fabricados por células similares a las del cuerpo humano, que el virus infecta de forma natural.

Esta nueva tecnología de visualización podría ser una técnica de inmunización potencialmente mucho más fiable. En este estudio, los investigadores lograron inducir anticuerpos contra distintas proteínas, centrándose en el dominio de unión al receptor del SARS-CoV-2, el virus causante de la enfermedad por coronavirus 2019 (COVID-19).

La proteína de anclaje desarrollada permite a los científicos dirigirse a una enfermedad específica con fines de inmunización sin necesidad de purificar el antígeno. Los investigadores están convencidos de que esta técnica puede acelerar enormemente el proceso de inmunización.

"Este trabajo, que se basa en el dominio de unión al receptor del SARS-CoV-2, es sólo el principio de una técnica de inmunización muy interesante --afirma Daniel Ivanusic, uno de los autores del artículo--. La aplicación más desafiante, significativa y emocionante para nosotros empleando la tecnología tANCHOR es inducir anticuerpos neutralizantes contra el VIH-1. Creo que será fantástico", augura.

Fuente: Infosalus. Disponible en <https://acortar.link/8Gt1uj>

Statement on the antigen composition of COVID-19 vaccines

Dec 13. Key points:

- ⇒ SARS-CoV-2 continues to circulate and evolve with important genetic and antigenic evolution of the spike protein.
- ⇒ Monovalent XBB.1.5 COVID-19 vaccines across different platforms elicit broadly cross-reactive neutralizing antibody responses against circulating SARS-CoV-2 variants.
- ⇒ Given the current SARS-CoV-2 evolution and the breadth in immune responses demonstrated by monovalent XBB.1.5 vaccines against circulating variants, the TAG-CO-VAC advises retaining the current COVID-19 vaccine antigen composition, i.e. a monovalent XBB.1.5 as the COVID-19 vaccine antigen.



The WHO Technical Advisory Group on COVID-19 Vaccine Composition (TAG-CO-VAC) continues to meet regularly to assess the implications of SARS-CoV-2 evolution for COVID-19 vaccine antigen composition and advise WHO on whether changes are needed to the antigen composition of future COVID-19 vaccines. In May 2023, the TAG-CO-VAC recommended the use of a monovalent XBB.1 descendent lineage, such as XBB.1.5, as the vaccine antigen. Several manufacturers (using mRNA and protein-based and viral vector vaccine platforms) have updated COVID-19 vaccine antigen composition to monovalent XBB.1.5 formulations which have been approved for use by regulatory authorities.

The TAG-CO-VAC reconvened on 4-5 December 2023 to review the genetic and antigenic evolution of SARS-CoV-2, the performance of currently approved vaccines against circulating SARS-CoV-2 variants, and the implications for COVID-19 vaccine antigen composition. The twice-yearly evidence review by the TAG-CO-VAC is based on the need for continued monitoring of the evolution of SARS-CoV-2 and the kinetics of vaccine-derived immunity.

Evidence reviewed

The published and unpublished evidence reviewed by the TAG-CO-VAC included: (1) SARS-CoV-2 evolution, including genetic and antigenic characteristics of earlier and current SARS-CoV-2 variants, and the impact of SARS-CoV-2 evolution on cross-neutralization and cross-protection following vaccination and/or infection; (2) Vaccine effectiveness (VE) of currently approved vaccines during periods of XBB descendent lineage circulation; (3) Antigenic cartography analyzing antigenic relationships of SARS-CoV-2 variants using naïve animal sera and human sera following vaccination and/or infection; (4) Preliminary immunogenicity data on the performance of currently approved vaccines against circulating SARS-CoV-2 variants using animal and human sera; and (5) Cellular (T and B cell) immune responses following vaccination and/or infection. Further details on the publicly available data reviewed by the TAG-CO-VAC can be found in the accompanying data annex. Unpublished and/or confidential data reviewed by the TAG-CO-VAC are not shown.

Summary of available evidence

- ⇒ SARS-CoV-2 continues to circulate and evolve. Based on available sequences, there is heterogeneity in circulating variants across WHO regions.
- ⇒ There continues to be important genetic and antigenic evolution of the spike protein of SARS-CoV-2.
- ⇒ As of 2 December 2023, XBB descendent lineages including XBB.1.5, XBB.1.16, EG.5, HK.3 and HV.1 accounted for 73% of genetic sequences available in GISAID, and this proportion has declined since then. SARS-CoV-2 variant of interest BA.2.86, with the earliest sample collected in July 2023, has 36 amino acid substitutions relative to XBB.1.5, including in key antigenic sites in the spike protein. The proportion of BA.2.86 and its descendent lineages, including JN.1 (which has one additional substitution in the spike protein as compared to BA.2.86 (L455S)), has been increasing steadily. As of 2 December 2023, BA.2.86 and its descendent lineages, including JN.1, accounted for 17% of sequences available in GISAID, more than half of which were JN.1.
- ⇒ Several of these XBB- and BA.2.86 derived variants (e.g., EG.5, HV.1, HK.3, JN.1) have independently-evolved changes in the spike protein at a neutralizing antibody epitope involving amino acid residues 455 and/or 456. This highlights the current immune pressure on this epitope.
- ⇒ In naïve animals, monovalent XBB.1.5 vaccines elicited neutralizing antibodies that cross-reacted well with XBB descendent lineages (e.g., EG.5, HV.1, HK.3). However, BA.2.86 and JN.1 were not neutralized well, indicating that BA.2.86 and JN.1 are antigenically distinguishable from XBB.1.5 in this model.
- ⇒ In contrast, sera from humans vaccinated with XBB.1.5 monovalent vaccines, with or without recent prior infection, neutralized XBB descendent lineages including EG.5, HK.3, HV.1, as well as BA.2.86 and JN.1. However, there are only limited data on cross neutralization of JN.1.
- ⇒ The differences observed in cross-reactivity to BA.2.86 and JN.1 in naïve animals, as compared to human sera, likely reflect the cumulative infection- and vaccine-derived immune responses to SARS-CoV-2 in the human population.

In vaccine effectiveness studies, protection conferred by bivalent (index virus and BA.1- or BA.4/5) mRNA vaccines and a Beta-based protein vaccine against severe disease during periods of XBB descendent lineage circulation remains high. Protection against symptomatic disease and infection is lower and wanes more rapidly over several months. Monovalent XBB.1.5 vaccines were only recently introduced, so VE estimates for vaccines with this composition are still very limited. Preclinical and clinical immunogenicity data of monovalent XBB.1.5 vaccines indicate that higher neutralizing antibody titres against circulating SARS-CoV-2 variants are expected to be associated with higher VE estimates as compared to COVID-19 vaccines with an index virus-based or bivalent (BA.1- or BA.4/5- containing) vaccine antigen composition.

The TAG-CO-VAC acknowledges several limitations of the available data:

- ⇒ There are persistent and increasing gaps in genetic/genomic surveillance of SARS-CoV-2 globally, including low numbers of samples sequenced and limited geographic diversity.
- ⇒ The timing, specific mutations and associated antigenic characteristics, and the potential public health risks of future variants remain unknown.
- ⇒ Although neutralizing antibody titres have been shown to be important correlates of protection from SARS-CoV-2 infection and of estimates of vaccine effectiveness, there are multiple components of immune protection elicited by infection and/or vaccination. Data on the immune responses following XBB descendent lineage infection or XBB.1.5 vaccination are largely restricted to neutralizing antibodies and data on other aspects of the immune response, including cellular immunity, are limited.
- ⇒ Estimates of VE against currently circulating SARS-CoV-2 variants, including XBB descendent lineages, are limited in terms of the number of studies, geographic diversity, vaccine platforms evaluated, populations assessed, duration of follow-up and comparative estimates for monovalent XBB.1.5 vaccines versus other formulations.

Recommendations for COVID-19 vaccine antigen composition

Given the current SARS-CoV-2 evolution and the breadth in immune responses demonstrated by monovalent XBB.1.5 vaccines against circulating variants, the TAG-CO-VAC advises retaining the current COVID-19 vaccine antigen composition, i.e. a monovalent XBB.1.5 (e.g., hCoV-19/USA/RI-CDC-2-6647173/2022, GenBank: OQ054680.1, GISAID: EPI_ISL_16134259 or WHO Biohub: 2023-WHO-LS-01, GenBank: OQ983940, GISAID EPI_ISL_16760602) as the COVID-19 vaccine antigen.

Other formulations and/or platforms that achieve robust neutralizing antibody responses against currently circulating variants, including XBB- and BA.2.86 descendent lineages, can also be considered. In accordance with WHO SAGE policy, vaccination programmes can continue to use any of the WHO emergency-use listed or prequalified COVID-19 vaccines.

Further data requirements and considerations

Given the limitations of the evidence upon which the recommendations above are derived and the anticipated continued evolution of the virus, the TAG-CO-VAC strongly encourages generation of the following data:

- ⇒ Immune responses and clinical endpoints (i.e. VE) in varied human populations who receive COVID-19 vaccines with a monovalent XBB.1.5 vaccine antigen composition, across different vaccine platforms, as well as further data on the performance of all currently approved COVID-19 vaccines against emerging SARS-CoV-2 variants.

- ⇒ Strengthened epidemiological and virological surveillance, as per the Standing Recommendations for COVID-19 in accordance with the International Health Regulations (2005), to determine if emerging variants are antigenically distinct and able to displace circulating variants.
- ⇒ Clinical evaluation of new vaccine antigens, particularly those emerging from XBB and BA.2.86 descendent lineages.

As previously stated, the TAG-CO-VAC continues to encourage the further development of vaccines that may improve protection against infection and reduce transmission of SARS-CoV-2.

Fuente: World Health Organization. Disponible en <https://acortar.link/ry4d38>

Belize: Health ministry introduces Pneumococcal conjugate vaccine

Dec 14. The Ministry of Health & Wellness (MOHW) in Belize has introduced the paediatric pneumococcal conjugate vaccine (PCV) into the national vaccination schedule, targeting children below five years of age.



Worldwide, 164 countries out of 194 World Health Organization member states (84.5 per cent) have introduced PCV into their National Immunization Programs, including

Barbados, Trinidad and Tobago, Curaçao, The Bahamas, Aruba, Anguilla, Jamaica, Montserrat, Bermuda, Turks and Caicos, Brazil, Ecuador and Colombia.

In Belize, from 2018 to 2022, almost 6,000 cases of pneumonia were diagnosed. The most affected age groups are children below five years and the elderly 60+ years.

The PCV vaccine protects against infection by the pneumococcus bacteria, one of the most common causes of pneumonia in children. It also protects against other infections caused by the pneumococcus, such as meningitis and bacteraemia.

The Paediatric PCV primary vaccination schedule is three doses administered at two, four and six months. For children 12 months to 59 months old, two doses are recommended. The interval between doses is two months.

The PCV vaccine will be available at health facilities in urban and rural communities during mobile clinics and other outreach vaccination sessions.

The Ministry of Health reminds the public of the interventions to prevent, protect and treat children from pneumonia. These include uptake of routine immunisations (pertussis, measles, Hib and PCV), exclusive breastfeeding for the first six months of life, proper sanitation, and frequent hand washing with soap.

Fuente: Caribbean Loop News. Disponible en <https://acortar.link/1d2OIC>

Pneumococcal News: How the Pneumococcal Conjugate Vaccine Has Changed and Its Impact on Infection Rates

Dec 15. Vaccinations are a crucial part of any pediatrician's practice. The world of immunizations has been in the spotlight recently, with the new COVID-19 messenger RNA (mRNA) and monoclonal respiratory syncytial virus (RSV) antibody shots making a splash in the news.



But what about the mainstay vaccinations that are part of any child's standard immunization schedule? Some of them have updates, too!

Dr. Inci Yildirim, from Yale University, and colleagues share how changes to the pneumococcal conjugate vaccines (PCV) have influenced the rates of invasive pneumococcal disease (IPD) in their article, "Invasive Pneumococcal Disease After Two Decades of Pneumococcal Conjugate Vaccine Use," being released early this week in *Pediatrics* (10.1542/peds.2023-063039). (We want to disclose that 3 of the authors are employees and shareholders of Pfizer Inc., which manufactures PCV, and that Pfizer provided funding for this study.)

In 2000, the first generation of PCV, the 7-valent or PCV7, was introduced in the US. It protected against 7 serotypes (types) of pneumococcus: serotypes 4, 6B, 9V, 14, 18C, 19F, and 23F. Ten years later in 2010, the 13-valent, PCV13, became the new standard of care. It added 6 additional serotypes: 1, 3, 5, 6A, 7F, and 19A. In this study, the authors analyzed surveillance data for cases of invasive *Streptococcal pneumoniae* disease (IPD), defined as bacteremia, pneumonia, or meningitis, among children <18 years of age living in Massachusetts from 2002 to 2021.

In general, the vaccine works—really well! The incidence of IPD decreased by 72% between 2002 and 2021, and this rate of decline improved even more when PCV13 replaced PCV7. The reduction in IPD rate is serotype-specific, meaning there are fewer cases of pneumococcal disease from the specific serotypes the vaccines are targeting.

But what about the children who are still getting IPD? Who are they and where are these cases coming from? The authors classify them into two main buckets:

- ⇒ Cases caused by pneumococcal serotypes that are included in the vaccine.
- ⇒ Cases caused by pneumococcal serotypes that were never included in the vaccine.

Their results are as follows:

- ⇒ In the PCV7 era (2002–2010), nearly 60% of all IPD cases were from 3 serotypes (3, 7F, and 19A), all of which were subsequently included in PCV13.
- ⇒ In the PCV13 era (2010–2021), IPD cases were largely from serotype 3 and serotypes not included in PCV13.
- ⇒ Serotype 3 remains responsible for many breakthrough IPD cases, or IPD in children who were sufficiently immunized by PCV.

- ⇒ Children with chronic medical conditions, such as neuromuscular, pulmonary, cardiac, and immune-compromising diseases, remained at increased risk for IPD, both before and after the implementation of PCV-13, consistently accounting for approximately 25% of all IPD cases.
- ⇒ From May 2020 to June 2021, or during the peak of the COVID pandemic, incidence of IPD was at an all-time low.

How can this data translate to patient care and inform goals for future work?

- ⇒ Future Vaccines: Knowing which serotypes are causing disease by doing surveillance studies such as this one is important for future vaccine development. For example, the non-PCV13 serotypes that have made up many cases of IPD in the PCV13 era should be considered as ones that should be included in future versions of PCV.
- ⇒ Serotype 3: Although this serotype was included in both PCV7 and PCV13, it still contributed to a large proportion of breakthrough infections. Future studies should try to understand why there were so many breakthrough infections.
- ⇒ Vulnerable Populations: The medical conditions that placed children at increased risk for IPD were all common, with asthma, prematurity, and neuromuscular disorders as the most prevalent, highlighting the importance of vaccination efforts in these populations. The authors speculate this may be due to these children's chronic inflammatory status, but there is a need to better understand why they are at such risk.

Newer iterations of PCV, such as PCV15 and PCV20, are now being distributed. It will be important to continue to track serotype information to further optimize vaccines, which will ultimately result in fewer invasive diseases in children.

Fuente: AAP Journal Blog . Disponible en <https://acortar.link/PtBq1j>

Desarrollan una vacuna que se inhala para prevenir la COVID-19

16 dic. Científicos chinos han desarrollado una vacuna para la COVID-19 que se inhala y llega a los pulmones en forma de polvo seco y cuyo compuesto provoca una importante respuesta inmunitaria que previene la infección en ratones, hámsters y primates no humanos.

Los detalles de esta candidata a vacuna, desarrollada por el equipo de Guanghui Ma, de la Academia China de Ciencias de Beijing, se han publicado este miércoles en la revista *Nature*.



Desde el inicio de la pandemia, a principios de 2020, se han hecho numerosos esfuerzos para desarrollar y aprobar vacunas contra el virus del SARS-CoV-2 causante de la COVID-19.

La mayoría de las vacunas que han tenido éxito se administran mediante inyecciones intramusculares que provocan la producción de anticuerpos y reducen los síntomas de la enfermedad.

Pero estas vacunas no son capaces de prevenir la infección porque no logran inmunizar a los tejidos de las vías respiratorias (por donde entra el virus al organismo).

Además, estas vacunas líquidas tienen que conservarse y almacenarse en frío, lo que tiene un coste adicional.

El artículo de *Nature* detalla el trabajo del equipo de Guanghui Ma, quien ha desarrollado una vacuna inhalable en aerosol de polvo seco contra el SARS-CoV-2 que se administra en una sola dosis y confiere inmunidad en las mucosas.

La vacuna encapsula una proteína bacteriana no tóxica llamada CTB, modificada para mostrar el antígeno del dominio de unión al receptor del SARS-CoV-2, dentro de microcápsulas lo suficientemente pequeñas como para entrar y depositarse en las profundidades de los pulmones.

Esta estructura nano favorece la llegada del compuesto a los alvéolos, la liberación sostenida del antígeno y la inducción de la respuesta inmunitaria.

Además, el equipo probó la vacuna tanto con virus ancestrales como con la variante Ómicron, para probar su eficacia contra múltiples cepas.

En una dosis única, el prototipo se administró eficazmente en el tejido mucoso de los pulmones y mostró una liberación sostenida del antígeno y una captación satisfactoria por las células presentadoras de antígeno.

También indujo un aumento a largo plazo de la producción de IgG e inmunoglobulina A (IgA) en ratones, hámsteres y primates no humanos, lo que proporciona una protección eficaz contra la infección por SARS-CoV-2.

Además, el polvo demostró ser estable a temperatura ambiente tras un mes de almacenamiento, lo que podría reducir los costes de almacenamiento y transporte de la distribución de la vacuna, haciéndola así más accesible.

Para los autores, esta vacuna inhalada es una "prometedora" vía para prevenir el Covid-19 porque se dirige directamente a las células pulmonares, induciendo una respuesta inmunitaria más robusta que las vacunas anteriores.

A su juicio, estos resultados respaldan el uso de esta vacuna, cuyo sistema de administración en aerosol tiene potencial como herramienta para combatir tanto la Covid-19 como otras enfermedades respiratorias, concluye el estudio.

En un "News & Views" publicada en *Nature*, los expertos en prevención pandémica del Centro de Investigación Inmunológica de la Universidad McMaster de Ontario (Canadá), Zhou Xing y Mangalakumari Jeyanathan, apuntan que, "aunque la seguridad y la potencia inmunitaria de la vacuna aún no se ha comprobado en ensayos clínicos en humanos, si tienen éxito, ofrecería una forma racionalizada de administrar una vacuna capaz de inmunizar la mucosa respiratoria".

Ambos investigadores destacan también que a diferencia de otros métodos de administración como el spray nasal o el nebulizador, que necesitan mantener la cadena del frío para su conservación, el inhalador de polvo seco es una solución que permanece estable a temperatura ambiente durante al menos un mes.

Fuente: Expreso. Disponible en <https://acortar.link/sowlwZ>

Las vacunas contra la COVID-19 reducen el riesgo de enfermedades graves en la población pediátrica

18 dic. Según un nuevo estudio de los Centros para el Control y la Prevención de Enfermedades (CDC) de Estados Unidos, dos dosis de la vacuna de ARN mensajero contra la COVID-19 reducen 40% las hospitalizaciones y las consultas en urgencias relacionadas con esta enfermedad en la población pediátrica de entre 6 meses y 4 años de edad.[1]

¿Por qué es importante este estudio?

La infección por SARS-CoV-2 puede afectar gravemente a la población pediátrica con determinadas afecciones crónicas.

Metodología

Los investigadores evaluaron la eficacia de las vacunas contra la COVID-19 para evitar las consultas en urgencias y las hospitalizaciones asociadas a la enfermedad entre julio de 2022 y septiembre de 2023.

Utilizaron datos de la New Vaccine Surveillance Network (Nueva Red de Vigilancia de Vacunas), que lleva a cabo una vigilancia prospectiva basada en la población para detectar enfermedades respiratorias agudas en la población en 7 centros médicos pediátricos.

El periodo evaluado fue el primer año en que se autorizaron las vacunas para la población de 6 meses a 4 años; durante ese periodo surgieron varias subvariantes de ómicron.

Los investigadores utilizaron datos de 7.434 lactantes y niños; los datos incluían el estado vacunal de los pacientes y los resultados de sus pruebas de detección de SARS-CoV-2.

Resultados principales

De los 7.434 lactantes y niños que padecían una enfermedad respiratoria aguda y fueron hospitalizados o acudieron a urgencias, 387 tenían COVID-19.

La población que recibió dos dosis de la vacuna contra la COVID-19 tuvo 40% menos probabilidades de ser hospitalizado o tener una consulta en urgencias relacionada con la COVID-19, en comparación con la población no vacunada.

Una dosis de la vacuna contra la COVID-19 redujo 31% las consultas en urgencias y las hospitalizaciones.

Limitaciones

El número de niños con anticuerpos e inmunidad contra el SARS-CoV-2 ha aumentado, por lo que es posible que las tasas de eficacia de la vacuna del estudio ya no sean tan relevantes. Los menores con enfermedades crónicas preexistentes pueden tener más probabilidades de vacunarse y recibir atención médica. Las bajas tasas de vacunación pueden haber impedido a los investigadores realizar un análisis más detallado. La vacuna de Pfizer-BioNTech requiere tres dosis, mientras que la de Moderna requiere dos; esto puede haber sesgado la eficacia estimada de la vacuna de Pfizer-BioNTech.

Conclusiones

Los resultados de este estudio apoyan la recomendación de vacunar a la población pediátrica ≥ 6 meses contra la COVID-19 y destacan la importancia de completar una serie primaria para los niños pequeños.

Fuente: Medscape. Disponible en <https://acortar.link/1VRE9x>

FDA accepts Merck's pneumococcal vaccine BLA for priority review

Dec 20. The US Food and Drug Administration (FDA) has accepted the new biologics licence application (BLA) for MSD's investigational 21-valent pneumococcal conjugate vaccine, V116, for priority review.

The vaccine is intended to prevent invasive pneumococcal disease and pneumococcal pneumonia in adults.

The regulatory agency will give its decision on 17 June 2024 under the Prescription Drug User Fee Act.

MSD's application is partially based on findings from the Phase III STRIDE-3 clinical trial that analysed the safety, immunogenicity and tolerability of V116 versus PCV20 pneumococcal 20-valent conjugate vaccine in adults who have not previously received pneumococcal vaccination.

Additional data from Phase III studies, including STRIDE-4, STRIDE-5, and STRIDE-6, further support the vaccine use in vaccine-naïve and vaccine-experienced adults.

V116 is administered as a single dose.

MSD Research Laboratories' global clinical development head, senior vice-president and chief medical officer Dr Eliav Barr stated: "Invasive pneumococcal disease poses a greater risk to older adults or those with weakened immune systems, in part due to disease-causing serotypes not covered by currently licensed pneumococcal conjugate vaccines.

"If approved, V116 would be the first pneumococcal conjugate vaccine specifically designed to address the serotypes that cause most adult invasive pneumococcal disease.

"We look forward to discussing the data that support our filing with the FDA and are working with urgency to bring this potential new preventative measure to adult patients."

The latest development comes after the European Commission approved the company's Keytruda plus chemotherapy for two indications in gastrointestinal cancers.

The combination regimen is approved as first-line therapy for adults with locally advanced unresectable or metastatic human epidermal growth factor receptor 2 (HER2)-negative gastric or gastroesophageal junction (GEJ) adenocarcinoma.

Keytruda plus gemcitabine and cisplatin is indicated as first-line therapy in adults with locally advanced unresectable or metastatic biliary tract carcinoma.



The regulatory agency is anticipated to provide a decision on approval of Merck's V116 vaccine on 17 June 2024.

Credit: JHVEPhoto / Shutterstock.com.

Fuente: Pharmaceutical Technology. Disponible en <https://acortar.link/UnB2vV>



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Estrategia de búsqueda: *Vaccine in the title or abstract AND 20231211:20231220 as the publication date 26 records*

1.WO/2023/240211STAPHYLOCOCCUS AUREUS VACCINE

WO - 14.12.2023

Clasificación Internacional [A61K 39/085](#) N° de solicitud PCT/US2023/068158 Solicitante THE REGENTS OF THE UNIVERSITY OF CALIFORNIA Inventor/a LIU, George Yen-Hsi

A vaccine for Staphylococcus aureus is disclosed. A method for producing a vaccine for S. aureus is also disclosed. A method for immunizing a human against S. aureus infection is further disclosed.

2.WO/2023/236822DEVELOPMENT AND USE OF H5N6 AVIAN INFLUENZA BROAD-SPECTRUM VACCINE

WO - 14.12.2023

Clasificación Internacional [C12N 7/01](#) N° de solicitud PCT/CN2023/097257 Solicitante NANJING ADVANCED ACADEMY OF LIFE AND HEALTH Inventor/a WANG, Guiqin

Disclosed are development and use of an H5N6 avian influenza broad-spectrum vaccine. Provided are preparation methods for a recombinant protein vaccine, an inactivated vaccine and a nucleic acid vaccine, and use thereof. Experiments show that the prepared recombinant protein vaccine, inactivated vaccine and nucleic acid vaccine can effectively prevent the infection of avian influenza virus.

3.WO/2023/240148HYBRID FLU-CORONAVIRUS VACCINE

WO - 14.12.2023

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/US2023/068080 Solicitante THE REGENTS OF THE UNIVERSITY OF CALIFORNIA Inventor/a BENMOHAMED, Lbachir

A hybrid vaccine composition that prevents infection or reinfection by both influenza and coronaviruses, comprising at least a portion of a Coronavirus spike (S) protein and at least a portion of at least one influenza hemagglutinin (HA) protein. The portion of the coronavirus spike (S) protein is highly conserved among human and animal *coronaviruses*. The vaccine composition may comprise a Coronavirus protein comprising either: a structural protein, e.g., a Spike protein, a Nucleocapsid protein, or a combination thereof, or a non-structural protein, e.g., NSP2, NSP3, NSP14, or combination thereof; and at least a portion of at least one influenza hemagglutinin (HA) protein.

4.WO/2023/236041MRNA VACCINE ENCODING PCR-V AND/OR OPRF-I PROTEIN

WO - 14.12.2023

Clasificación Internacional [C12N 15/31](#) N° de solicitud PCT/CN2022/097390 Solicitante SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY Inventor/a HE, Yunjiao

The present invention provides an mRNA vaccine encoding the protein(s) PcrV and/or OprF-I. The mRNA molecule encodes at least one of 1) the protein PcrV; and 2) the protein OprF and the protein OprI. The vaccine prepared from the mRNA designed by the present invention has an excellent prophylactic and/or therapeutic effect on diseases caused by *Pseudomonas aeruginosa*.

5.WO/2023/240278USES OF GLYCOLIPIDS AS A VACCINE ADJUVANT AND METHODS THEREOF

WO - 14.12.2023

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/US2023/068255 Solicitante THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK Inventor/a HO, David, D.

The subject matter described herein related to a messenger RNA (mRNA)-vaccine adjuvant comprising a glycolipid compound.

6.4288087IMPfstoff und Verfahren zur Vorbeugung von Filariasis und Dirofilaria immitis

EP - 13.12.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud 22705643 Solicitante UNIV ILLINOIS Inventor/a KALYANASUNDARAM RAMASWAMY

The present invention is a multivalent immunogenic composition for immunizing an animal against filariasis. In some aspects, the antigens of the multivalent immunogenic composition are protein-based, DNA-based, or a combination thereof. This invention also provides a method and kit for detecting a filarial nematode and determining vaccine efficacy.

7.WO/2023/236330CANCER VACCINE BASED ON ANTIGEN-PRESENTING CELL MEMBRANE COMPONENTS, METHOD FOR PREPARING SAME, AND USE THEREOF

WO - 14.12.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud PCT/CN2022/108960 Solicitante SUZHOU ERSHENG BIOMEDICAL CO., LTD. Inventor/a LIU, Mi

Provided are a cancer vaccine based on antigen-presenting cell membrane components, a method for preparing same, and use thereof. The cancer vaccine comprises one of the following: (1) a nanovesicle prepared from cell membrane components of an activated antigen-presenting cell; and (2) a second delivery particle carrying total cell components of a cancer cell in the interior and/or exterior and carrying the activated antigen-presenting cell membrane components on the surface. The method solves the difficulties in maintaining the activity of dendritic cells and long-term preservation of lyophilized cells in existing living cell vaccines, while achieving the loading of various cancer cell antigens on vaccines derived from dendritic cells. The present invention can be used for preparing a cancer vaccine carrying antigen epitopes of various cancer cells for preventing and treating cancers.

8.WO/2023/236331METHOD FOR PREPARING VACCINE OF AUTOIMMUNE DISEASE DERIVED FROM PRE-ACTIVATED ANTIGEN-PRESENTING CELL AND USE THEREOF
WO - 14.12.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud PCT/CN2022/108962 Solicitante SUZHOU ERSHENG BIOMEDICAL CO., LTD. Inventor/a LIU, Mi

Provided are a method for preparing a vaccine of an autoimmune disease derived from a pre-activated antigen-presenting cell and use thereof. The method comprises the following steps: co-incubating the antigen-presenting cell and a first delivery particle carrying total cell antigens of the autoimmune disease to give the pre-activated antigen-presenting cell; and preparing, from the cell membrane of the pre-activated antigen-presenting cell, a nanovesicle or a nanoparticle or microparticle with components of the cell membrane loaded on the surfaces of the particles to give the vaccine of the autoimmune disease. The method solves the difficulties in maintaining the activity of dendritic cells and long-term preservation of lyophilized cells in existing living cell vaccines, while achieving the loading of various cancer cell antigens on vaccines derived from dendritic cells. The present invention can be used for preparing a vaccine carrying antigen epitopes of various autoimmune diseases for preventing and treating autoimmune diseases.

9.4288964EINSTUFUNG VON NEOANTIGENEN FÜR PERSONALISIERTEN KREBSIMPFSTOFF
EP - 13.12.2023

Clasificación Internacional [G16B 20/20](#) N° de solicitud 22705329 Solicitante AMAZON TECH INC Inventor/a PRICE LAYNE CHRISTOPHER

Disclosed herein are methods for ranking tumor-specific neoantigens from a tumor of a subject that are suitable for subject-specific immunogenic compositions. Suitable tumor-specific neoantigens are tumor-specific neoantigens that are likely presented on the cell surface of the tumor, are likely to be immunogenic, are predicted to be expressed in sufficient amounts to elicit an immune response in the subject, optionally represent sufficient diversity across the tumor, and have relatively high manufacture feasibility. The present methods take a set of neoantigens (peptide vaccine candidates) and ranks the neoantigens in a way such that a group of top-ranked neoantigens simultaneously promotes cell-surface presentation of important neoantigens for Class I and Class II MHC molecules. The top-ranked neoantigens can then be further narrowed according manufacturability and/or other criteria.

10.3407899IMMUNPROFYLAKSE MOD TILBAGEVENDENDE BAKTERIELLE INFEKTIONER
DK - 11.12.2023

Clasificación Internacional [A61K 31/721](#) N° de solicitud 17702813 Solicitante Strathmann GmbH & Co. KG Inventor/a BEHNKE, Bert

Die vorliegende Erfindung betrifft die Verwendung von Dextran als Impfstoff, insbesondere zur prophylaktischen Behandlung von rezidivierenden Infektionen bakterieller Herkunft. Außerdem betrifft die vorliegende Erfindung eine Impfstoffzusammensetzung, die Dextran als einzigen Impfstoff und ein

Adjuvans, vorzugsweise eine Aluminiumverbindung, enthält sowie einen Arzneimittel-Kit zur Herstellung der Impfstoffzusammensetzung.

11.4288094IMPfung ZUM SCHUTZ VON GEFLÜGEL GEGEN GEFLÜGELPATHOGENE
EP - 13.12.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud 22708794 Solicitante INTERVET INT BV Inventor/a PULSKENS WILLEM PIETER CORNELIS

The invention pertains to a vaccine comprising non-live antigen of a poultry pathogen and a mucoadhesive adjuvant, for use in boosting an immune response in a poultry animal directed against the poultry pathogen by administering the vaccine mucosally to the poultry animal. The invention also pertains to a vaccine comprising a liquid pharmaceutically acceptable carrier, a non-live antigen of a poultry pathogen and a mucoadhesive adjuvant, as well as a method of boosting an immune response in a poultry animal, which immune response is directed against a poultry pathogen, by administering a vaccine mucosally to the poultry animal, the vaccine comprising a non-live antigen of the said poultry pathogen and a mucoadhesive adjuvant.

12.4288526ABGESCHWÄCHTES AFRIKANISCHES SCHWEINEPESTVIRUS UND SEINE
VERWENDUNG ALS IMPFSTOFF
EP - 13.12.2023

Clasificación Internacional [C12N 7/00](#) N° de solicitud 22703602 Solicitante AGENCE NAT DE SECURITE SANITAIRE DE L'ALIMENTATION DE L'ENVIRONNEMENT ET DU TRAVAIL Inventor/a BLOT LE POTIER MARIE-FRÉDÉRIQUE

The present invention relates to an attenuated African Swine Fever (ASF) virus, wherein : • genes MGF 360-12L, 360-13L, 360-14L, 505-2R, 505-3R are deleted or are interrupted or mutated such that the genes are not transcribed and/or translated, • ORF of ASFV_G_ACD_00520 is deleted or is interrupted or mutated such that it is not transcribed and/or translated, and • genes MGF 505-1 R et 505-4R are truncated, compared to the genome of the corresponding unattenuated virus. The present invention also refers to a vaccine comprising the attenuated ASF virus, and its use in preventing African Swine Fever in a subject. The present invention also relates to an in-vitro method for obtaining the attenuated ASF virus, which comprises at least one step of thermal-attenuation of a virulent ASFV virus strain selected among Georgia 2007/1, Pig/HLJ/2018, a strain of ASF virus of genotype II or a genetically close ASF virus strain, and amplification by inoculation of Specific-Pathogen-Free pigs and selecting said attenuated ASF virus. The present invention refers to an in vitro method for the differential detection of the attenuated ASF virus and of the corresponding non-attenuated ASF virus as well.

13.WO/2023/239265HYBRID GENE FOR PRODUCING RECOMBINANT RBD ANTIGEN
WO - 14.12.2023

Clasificación Internacional [C07K 14/165](#) N° de solicitud PCT/RU2023/050144 Solicitante OBSHESTVO S OGRANICHENNOY OTVETSTVENNOSTUY "BETUVAKS" Inventor/a KRASILNIKOV, Igor Viktorovich

The invention relates to biotechnology, immunology and virology, and more particularly to the creation of a vaccine against coronavirus infection and to a method for producing same, for producing a hybrid gene that codes for the recombinant antigen RBD/S21/S14-Fc, and for producing a recombinant antigen capable of inducing a specific humoral and cellular immune response to the requisite epitope of the viral envelope protein of SARS-CoV-2. The technical result of the claimed invention is the creation of a vaccine composition containing a recombinant antigen, with betulin as an adjuvant. This technical result is achieved by the creation of a gene, a gene construct, a cell line (production strain) producing the target RBD/S21/S14-Fc recombinant antigen of SARS-CoV-2, which is fused with the Fc fragment of immunoglobulin by a linker, and a method for purifying a recombinant protein, producing a vaccine

composition containing a recombinant antigen and a particulate adjuvant, and also administering same to produce an immune response to the coronavirus.

14.WO/2023/239593METHOD FOR SUSTAINED DELIVERY OF MRNA VACCINES

WO - 14.12.2023

Clasificación Internacional [A61K 48/00](#) N° de solicitud PCT/US2023/024220 Solicitante MERCK SHARP & DOHME LLC Inventor/a BETT, Andrew

The invention relates to a method of treating a disease or disorder in a patient in need thereof that includes providing an active pharmaceutical ingredient (API) to the patient by administering more than one split-dose of the API over a pre-determined period of time. In embodiments of the invention, the API is an mRNA encoding an antigen. The attractiveness of mRNA as a vaccine modality is supported by several advantages. As a non-infectious agent that does not require incorporation into the host's genome to confer activity along with its well-defined chemical composition, mRNA is regarded as a relatively safe vaccine modality.

15.WO/2023/237649RSV VACCINATION WITH TRIMERIC RSV F FUSION PROTEIN

WO - 14.12.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/EP2023/065335 Solicitante GLAXOSMITHKLINE BIOLOGICALS SA Inventor/a DAVID, Marie-Pierre Paule

The present invention relates to vaccination against respiratory syncytial virus (RSV), in particular to the use of a vaccine formulation comprising an RSV F fusion protein (RSV F protein) antigen and an adjuvant in methods of prevention of RSV infection and disease in older adults.

16.WO/2023/236563MONKEYPOX VIRUS-SPECIFIC DETECTION TARGET, AND OLIGONUCLEOTIDE AND KIT THEREOF

WO - 14.12.2023

Clasificación Internacional [C12Q 1/70](#) N° de solicitud PCT/CN2023/074725 Solicitante ACON BIOTECH (HANGZHOU) CO., LTD. Inventor/a ZHANG, Taisong

The present invention relates to a monkeypox virus-specific detection target, and an oligonucleotide, a kit and a method for detecting a monkeypox virus. The method comprises designing a specific primer and probe for an F3L gene region in a monkeypox virus genome, and utilizing fluorescent PCR technology to detect monkeypox virus nucleic acid after rapid extraction of a nucleic acid from a sample. The operation is simple, and a monkeypox virus target gene is detected by using a TaqMan probe, so that a vaccinia virus with very high sequence similarity can be specifically distinguished. False detection and detection failure can be avoided.

17.WO/2023/236468CORONAVIRUS S PROTEIN VARIANT AND USE THEREOF

WO - 14.12.2023

Clasificación Internacional [C07K 14/165](#) N° de solicitud PCT/CN2022/136551 Solicitante FUDAN UNIVERSITY Inventor/a LIN, Jinzhong

Provided is an S protein variant, which does not contain a complete cytoplasmic tail domain compared to the S protein of a wild-type coronavirus. Further provided are a nucleic acid molecule encoding the S protein variant, and the use of the S protein variant and the nucleic acid molecule in the preparation of a vaccine.

18.WO/2023/239197NOVEL CRS FRAGMENT PEPTIDE WITH IMMUNOPOTENTIATING ACTIVITY, AND USE THEREOF

WO - 14.12.2023

Clasificación Internacional [A61K 38/53](#) N° de solicitud PCT/KR2023/007930 Solicitante ZYMEDI CO., LTD. Inventor/a CHO, Seongmin

The present invention relates to a novel CRS fragment peptide with immunopotentiating activity and a use thereof. More specifically, the present invention relates to a novel peptide composed of the amino acid sequence of SEQ IS NO: 2 or an amino acid sequence having a sequence homology of 95% or higher therewith and a vaccine adjuvant thereof, a use as a cancer treatment agent, and an antiviral composition. The peptide disclosed in the present invention, which is a CRS fragment peptide disclosed first herein, exhibits an anticancer activity, immunopotentiation, and an antiviral activity.

19.WO/2023/240085VIRAL PEPTIDES AND USES THEREOF
WO - 14.12.2023

Clasificación Internacional [C07K 7/00](#) N° de solicitud PCT/US2023/067999 Solicitante REGENERON PHARMACEUTICALS, INC. Inventor/a CHOY, Augustine

The present disclosure provides isolated peptides derived from hepatitis B virus (HBV), peptide-based molecules (e.g., peptide-MHC (pMHC) complexes), polynucleotides and vectors encoding the peptides or peptide-based molecules, pharmaceutical compositions (e.g., vaccine compositions), and their use for treatment or prevention of HBV infection and/or HBV-induced diseases. The present disclosure also provides binding moieties that bind to the peptides or peptide-based molecules disclosed herein, and their use for treatment or prevention of HBV infection and/or HBV-induced diseases. The present disclosure further provides methods and systems for identifying immunogenic virus-derived peptides.

20.4129330SAMMENSÆTNINGER OG FREMGANGSMÅDER TIL KIMÆRE DENGUE VIRUS-KONSTRUKTIONER I VACCINER
DK - 11.12.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud 22182269 Solicitante Takeda Vaccines, Inc. Inventor/a STINCHCOMB, Dan T.

Embodiments herein report compositions, uses and manufacturing of dengue virus constructs and live attenuated dengue viruses. Some embodiments concern a composition that includes, but is not limited to, a tetravalent dengue virus composition. In certain embodiments, compositions can include constructs of one or more serotypes of dengue virus, such as dengue-1 (DEN-1) virus, dengue-2 (DEN-2) virus, dengue-3 (DEN-3) or dengue-4 (DEN-4) virus constructs. In other embodiments, constructs disclosed herein can be combined in a composition to generate a vaccine against more one or more dengue virus constructs that may or may not be subsequently passaged in mammalian cells.

21.4288076VIRALE KONSTRUKTE ZUR VERWENDUNG BEI DER VERBESSERUNG DES T-ZELL-PRIMINGS WÄHREND DER IMPFUNG
EP - 13.12.2023

Clasificación Internacional [A61K 35/768](#) N° de solicitud 22750341 Solicitante GEOVAX INC Inventor/a HAUSER MARY JO

The invention provides virus-based expression vectors comprising immune-checkpoint inhibitor inserts for use as effective adjuvants in enhancing T-cell priming to an antigen in a host during a vaccination regimen. In particular, the compositions described herein are novel recombinant modified vaccinia Ankara (MVA) viral constructs encoding one or more peptides which, upon administration, are expressed in a multimer conformation and subsequently cleaved and secreted from the cell. Such peptides are capable of downregulating an immune checkpoint pathway, for example, by inhibiting the activation of programmed-cell death protein 1 (PD-1), programmed cell death ligand 1 (PD-L1), cytotoxic T-lymphocyte-associated protein 4 (CTLA-4), or another immune checkpoint regulator, or a combination thereof. When used in concert with the administration of an antigen during a vaccination strategy, the immune checkpoint expressing MV A viral construct provides significantly improved antigen-specific CD8+ T cell expansion, increased antigenic responses, and improved vaccination efficacy.

22.WO/2023/237126STEM CELL COMPOSITIONS FOR CULTURING CORONAVIRUSES AND METHODS OF MAKING AND USING THEREOF

WO - 14.12.2023

Clasificación Internacional [C12N 7/00](#) N° de solicitud PCT/CN2023/105028 Solicitante CENTRE FOR TRANSLATIONAL STEM CELL BIOLOGY LIMITED Inventor/a RUAN, Degong

Disclosed are methods for culturing coronavirus particles in early syncytiotrophoblasts (eSTBs). The derived eSTBs are mononucleated or bi-nucleated cells with high ACE2 expression and are not multi-nucleated or mature cells. The methods can also include assessing the eSTBs for coronavirus susceptible markers. Also disclosed are compositions and methods (i) for inducing the differentiation of eSTBs and mature STBs from trophoblast stem cells (TSCs), (ii) for inducing the differentiation of TSCs from EPSCs, primed and naïve stem cells, pre-implantation embryos, placental stem cells, and iPSCs, and (iii) for producing TSCs by reprogramming non-trophoblast cells. The disclosed compositions and methods can be used for producing large quantities of coronavirus particles, including human, non-human, and variant coronavirus particles for virus production, the vaccine industry, disease modeling studies, screening and evaluation of antiviral reagents, compound candidates, testing kits, and evaluation of clinical therapies.

23.2619625Compositions and methods of manufacturing trivalent filovirus vaccines

GB - 13.12.2023

Clasificación Internacional [A61K 39/12](#) N° de solicitud 202312320 Solicitante SOLIGENIX INC Inventor/a OREOLA DONINI

A stable immunogenic composition or vaccine comprising at least one antigen, wherein the antigen comprises a viral glycoprotein, and at least one adjuvant, wherein the adjuvant comprises sucrose fatty acid sulphate esters, and wherein the antigen and adjuvant are co-lyophilised. The composition may not comprise alum. The composition may comprise two or more antigens, wherein each antigen is specific to a different virus. Also claimed is a method of making a composition comprising at least two antigens specific to a different virus from the same or different families, and providing at least one adjuvant, wherein the adjuvant comprises sucrose fatty acid sulphate esters and not alum, wherein the antigens and adjuvant are co-lyophilised. The composition may be administered to a mammal for up to three separate occasions to protect the mammal from subsequent infections. Also claimed is a composition comprising at least two antigens and at least one adjuvant, wherein the adjuvant comprises sucrose fatty acid sulphate esters, and wherein each antigen is a viral glycoprotein specific to a different genus of filovirus. The viral glycoprotein may be from Marburg Marburgvirus (MARV), Sudan ebolavirus (SUDV), or Zaire ebolavirus (EBOV).

24.WO/2023/237726AN INTRACELLULAR TUMOR-SPECIFIC VARIANT OF HUMAN ZONA PELLUCIDA GLYCOPROTEIN 3 AND NUCLEIC ACIDS CODING THEREFOR FOR USE IN THE TREATMENT OF CANCER

WO - 14.12.2023

Clasificación Internacional [A61K 39/00](#) N° de solicitud PCT/EP2023/065466 Solicitante PANTARHEI ONCOLOGY B.V. Inventor/a SCHULTZ, Iman Johannes

The present invention relates an intracellular tumor-specific variant of human Zona Pellucida Glycoprotein 3 (hZP3) and the use thereof in a therapeutic and/or prophylactic treatment of a cancer, preferably a ZP3-expressing cancer. More specifically, the invention relates to such therapeutic use of antigen sources providing the intracellular tumor-specific variant of hZP3, preferably for inducing at least a cellular immune response against the cancer cells. The source of the intracellular tumor-specific variant of hZP3 can be a proteinaceous composition or can be a composition comprising nucleic acid encoding the intracellular tumor-specific variant of hZP3, such as an RNA vaccine for translation of the intracellular tumor-specific hZP3 variant in a human cell. The invention further relates to a pharmaceutical composition comprising a

source of a nucleic acid molecule comprising a nucleotide sequence that is substantially complementary to a target sequence in an RNA encoding an intracellular tumor-specific variant of hZP3, for use in a therapeutic and/or prophylactic treatment of a cancer, wherein preferably binding of the substantially complementary sequence to the target sequence reduces expression of the intracellular tumor-specific variant of hZP3 in a cancer cell expressing the variant.

25.4288438IMIDAZO[4,5-D PYRIDAZINDERIVATE, IHRE HERSTELLUNG UND IHRE THERAPEUTISCHE ANWENDUNG

EP - 13.12.2023

Clasificación Internacional [C07D 487/04](#) N° de solicitud 22703615 Solicitante SANOFI SA Inventor/a ZHANG JIDONG

The present invention relates to a compound of formula (I) wherein R₁ represents H, (C₁-C₆)alkyl-, hydroxy-(C₁-C₆)alkyl-, NH₂-(C₁-C₆)alkyl-, NH-(C₁-C₆)alkyl-(C₁-C₆)alkyl-, N((C₁-C₆)alkyl)₂-(C₁-C₆)alkyl-, (C₂-C₆)alkenyl-, (C₂-C₆)alkynyl-, phenyl(C₁-C₆)alkyl-, (C₃-C₁₀)cycloalkyl(C₁-C₆)alkyl-, (C₃-C₁₀)membered heterocycloalkyl(C₁-C₆)alkyl-, (C₅-C₁₀)membered heteroaryl(C₁-C₆)alkyl-, (C₃-C₁₀)membered heterocycloalkyl-NH-(C₁-C₁₆)alkyl-, and (C₃-C₁₀)membered heterocycloalkyl-N(C(O)-(C₁-C₆)alkyl)-(C₁-C₁₆)alkyl-, R₂ represents a halogen atom, a (C₁-C₆)alkyl- group or other well defined groups; and R₃ represents a deuterium atom; H, (C₁-C₆)alkyl-, (C₂-C₆)alkenyl-, (C₂-C₆)alkynyl-, (C₁-C₆)alkylthio-, -OR₆, -NR₇R₈; (C₃-C₁₀)membered heterocycloalkyl-, (C₅-C₁₀)membered heteroaryl-, -(C₆-C₁₀)membered aryl; and (C₃-C₁₀)cycloalkyl-. The present invention further relates to intermediates of these compounds, processes for their preparation, a medicament and a pharmaceutical composition comprising them, and their therapeutic uses, in particular as TLR7 and /or TLR8 agonists, as well as their use in a vaccine.

26.3162727PROTEOLIPOSOMES COMPRISING A SARS-COV-2 S GLYCOPROTEIN ECTODOMAIN AND THEIR USE AS A VACCINE

CA - 15.12.2023

Clasificación Internacional [C07K 14/165](#) N° de solicitud 3162727 Solicitante UNIVERSITY GRENOBLE ALPES Inventor/a WEISSEHORN, WINFRIED

A recombinant SARS-CoV-2 S glycoprotein ectodomain trimer is disclosed, comprising three recombinant protomers each containing at least the SARS-CoV-2 S glycoprotein ectodomain, and wherein: in each protomer, the furin cleavage site is inactivated/disrupted; Arg408 of one of said protomers is covalently linked to Lys378 of another one of said protomers; and Lys947 of one of said protomers is covalently linked to Arg1019 and/or to Lys776 of another one of said protomers.

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