# VacCiencia

FINLAY EDICIONES

Boletín Científico

No. 2 (13-21 enero / 2024)

## EN ESTE NÚMERO

VacCiencia es una publicación dirigida a investigadores y especialistas dedicados a la vacunología y temas afines, con el objetivo de serle útil. Usted puede realizar sugerencias sobre los contenidos y de esta forma crear una retroalimentación que nos permita acercarnos más a sus necesidades de información.

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# Noticias en la Web

## WHO sees 'incredibly low' COVID-19, flu vaccination rates as cases surge

**Jan 13**. In the US, several European countries, and other parts of the world, there have been reports of rising hospitalisations linked to respiratory infections in recent weeks. Death rates have also ticked up among older adults in some regions, but far below the COVID pandemic peak. Spain's government has reinstated mask-wearing requirements at healthcare facilities, as have some US hospital networks.

**"Low vaccination rates against the latest versions of COVID-19 and influenza are putting pressure on healthcare systems this winter, leading public health officials told Reuters."**

"Too many people are in need of serious medical care for flu, for COVID-19, when we can prevent it," said Maria Van Kerkhove, the WHO's interim director of epidemic and pandemic preparedness. She cited "incredibly low" vaccination rates against flu and COVID-19 in many countries this season, as the world tries to move past the pandemic and its restrictions.

Governments have struggled to communicate the risks still posed by COVID-19 and the benefits of vaccination since a global public health emergency was declared over in May 2023, infectious disease experts and health officials said.

Only 19.4 per cent of US adults have received this season's COVID-19 vaccine based on the US Centers for Disease Control (CDC) and Prevention's National Immunization Survey, despite a recommendation that all adults get an updated shot to protect against serious illness. That compares roughly with 17 per cent of adults who got the bivalent booster in the 2022-23 season, based on actual vaccine data reported to the CDC by States.

Nearly half of US adults over 18 got a flu shot this season (44.9 per cent), roughly the same as last year (44 per cent), according to the CDC. "We don't think enough people have gotten the updated COVID-19 vaccine," CDC director Mandy Cohen said in an interview. "Folks still aren't understanding that COVID-19 is still a more severe disease than flu."

### Vaccine fatigue

Flu represented 5.2 per cent of US emergency visits compared with 3 per cent for COVID-19 in the week ended December 30 in 2023. Yet COVID-19 accounted for 10.5 out of 1,00,000 hospitalizations in that time, compared with 6.1 per 1,00,000 for flu. Most of the updated shots being used in the US and European Union are made by Pfizer with German partner BioNTech, or Moderna.

In Europe, flu is circulating at a higher rate than COVID-19, the European Centre for Disease Prevention and Control (ECDC) said. In total, 24 per cent of a representative sample of tests came back positive in the last week of 2023, up from 19 per cent a fortnight earlier. The rates are in line with previous flu seasons, said ECDC's respiratory virus expert Edoardo Colzani. But "now we have COVID-19 as a new, unwanted guest", he said.

The ECDC did not have vaccination rates for the continent for flu or COVID-19, but Colzani said early data showed COVID-19 vaccine uptake well below pandemic levels. In Europe, the new COVID-19 shots are recommended for high-risk groups only, such as seniors and the immunocompromised. Among these groups, the WHO says there should be 100 per cent coverage.

COVID-19 rates are also rising in the southern hemisphere during their summer, the WHO said, because it is not yet a seasonal virus. In December 2023, 8,50,000 new COVID-19 cases and 1,18,000 new hospitalisations were reported globally, a rise from November of 52 per cent and 23 per cent, respectively, according to WHO, which added that actual figures were likely higher. The vaccines are still very effective at preventing serious illness, even if they do not block infection, experts said.

A recent study in The Lancet Infectious Diseases journal from the Karolinska Institutet and Danderyd Hospital in Sweden found the updated vaccine, which targets the XBB.1.5 coronavirus variant, reduced the risk of COVID-19 hospitalisation by 76.1 per cent in people affected by more recent variants, based on public health records from adults over 65 years old.

This year's flu shots, made by a range of manufacturers, is estimated to reduce hospitalisation risk by 52 per cent. But "fatigue for COVID-19 vaccination" is hampering uptake, Colzani said. In Italy, for example, 8.6 per cent of the eligible population have had their third COVID-19 booster after the initial vaccination series, Ministry of Health data from January 7 showed. The data for flu is not yet available, but a study by Federfarma, the association of Italian pharmacies, said 15 per cent of Italians had been vaccinated against flu this autumn, compared to just over 20 per cent last season.

**Fuente**: Frontline The Hindu. Disponible en https://acortar.link/F9M4PL

## Patients suffer as pneumonia vaccine disappears from market

**Jan 14**. The shortage of pneumonia vaccine persists in the market after 36 children perished in a week due to dry cold weather in the province.

Around 121 suspected cases of pneumonia among minors have been reported in Lahore in the last 24 hours, as pneumonia takes the form of an outbreak with the consistently dipping mercury level in the City. The minimum temperature of Lahore has fallen to 4 degrees Celsius, as Met Office forecasts dry and cold weather to continue in Punjab.

While pneumonia precipitated by dry cold weather conditions takes a heavy toll on people, the citizens' plight exacerbated due to disappearance of vaccines from the market despite the heightened demand.


***The representational image shows a syringe and pneumonia vaccine. — AFP/File***

The medical store owners claimed that the vaccine shortage still persists due to lack of supply by the distributors and importers. The people, however, observed that companies and pharmacies were hoarding vaccines and creating an artificial shortage in order to secure increase in prices. 'The prices of pneumonia vaccine have already been increased in the black market,' says a customer at pharmacy.

Pakistan is among five countries that account for 52% of total pneumonia episodes annually and 49% of pneumonia deaths in the world each year. The pediatricians say that 92,000 children die due to pneumonia in Pakistan every year, while 920,000 children die of this disease every year around the world. The pneumonia vaccines can prevent death among 3 million children, and save 750,000 others from disability annually. According to estimates, at least 46 percent children remain deprived of pneumonia vaccine in Pakistan.

It is learnt that the pneumonia vaccine, Prevenar, is available only in some areas and its price has jumped to Rs7,650. In other areas, it is being sold at as high a price as Rs14,000 in black market. The Synflorix and Pneumovax have disappeared from the market altogether. The pneumococcal conjugate vaccine, Pneumo, priced at Rs1,200, is also not available in the market.

Noor Mahar, a pharmacist, lawyer and President of Pharmacists Legal Forum, pointed out that pharmacies were selling vaccines in the black market to multiply their profits.

'The suppliers halted the supply of pneumonia vaccines after Drug Regulatory Authority of Pakistan (DRAP) denied increase in the price of pneumonia vaccines,' he alleged.

He said that the pneumonia vaccine was not manufactured locally; therefore, it is a 100% imported product in Pakistan, which has to be ordered six months in advance. As a result, the pneumonia vaccine and many essential drugs are constantly missing from the market due to various factors such as closure of import LCs and issues of State Bank of Pakistan (SBP) and pharmaceutical import companies' demand for increase in prices.

He informed that there was only one federal drug inspector in Punjab, while laxity of 75 drug inspectors of Punjab is taking heavy toll on the people. 'The death of 36 children in Pakistan, especially in Lahore, due to lack of pneumonia vaccine is a consequence of such gaps,' he said.

While the pneumonia season raises concerns among the general public, he called for an immediate action to address the shortage and ensure availability of vaccine to safeguard the health of the citizens. He also demanded registration of cases under Section 23 and 27 of the Drugs Act 1976 against vaccine-importing pharmaceutical companies for disappearance of vaccines from the market.

Dr Masood Sheikh, a paediatrician, said that a cough producing green, yellow or bloody mucus is the most common symptom of pneumonia. Other symptoms include fever, chills, and shortness of breath, low energy and extreme fatigue.

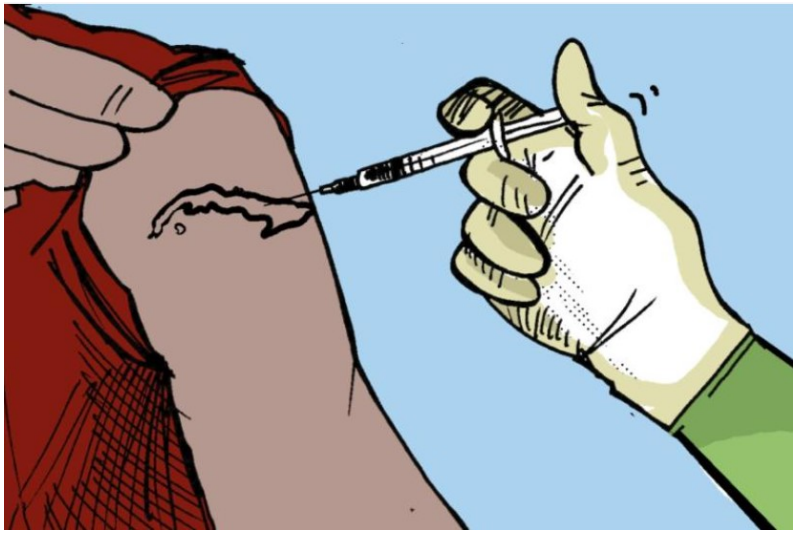
'Pneumonia can often be diagnosed with a thorough history and physical examination,' he said, urging the parents to vaccinate their children against pneumonia.

When contacted, Director General Drugs Control Punjab Muhammad Sohail claimed that there was no shortage of pneumonia vaccine in the market. The distribution vendor is distributing pneumonia vaccines in the market as per demand. 'The Prevenar and Synflorix are freely available, while Pneumovax is partially available,' he said.

**Fuente**: International The News. Disponible en https://acortar.link/EhXmog

# Biotecnología marca el paso en Día de la Ciencia Cubana

**15 ene**. Los avances de la biotecnología y la industria farmacéutica en el mejoramiento cualitativo de vacunas y medicamentos para el tratamiento de varias enfermedades figuran hoy entre los principales resultados que muestra el Día de la Ciencia Cubana.



Como cada 15 de enero desde 1960, la isla caribeña expone sus resultados más relevantes en el campo de la ciencia, la tecnología y la innovación durante el año precedente y en 2023 sobresalieron precisamente los vinculados al sector biofarmacéutico, la agricultura sostenible, la seguridad alimentaria, la generación de energía, desarrollo territorial y cambio climático.

En tal sentido resaltan los resultados de los ensayos clínicos realizados con el candidato vacunal antineumocócico en población pediátrica de uno a cinco años para comprobar cómo proteger a niños sanos y otros con enfermedades de riesgo y padecimientos crónicos en la central provincia de Cienfuegos.

Se trata de Quimi-Vio, creada por el Instituto Finlay de Vacunas que protege contra siete de los serotipos más infecciosos y de alta prevalencia mundial de la bacteria neumococo, patógeno causante de la mayoría de las neumonías y meningitis bacterianas en los niños.

También distinguen las nuevas bondades que brinda Jusvinza, molécula obtenida por los científicos del Centro de Ingeniería Genética y Biotecnología y que fue uno de los medicamentos exitosos contra la COVID-19.

Ahora este innovador fármaco ofrece grandes posibilidades para el tratamiento de la artritis reumatoide y enfermedades mediadas por la hiperinflamación, características por las que en 2023 la autoridad nacional regulatoria le otorgara el registro sanitario para su empleo médico, aunque condicionado a un ensayo clínico fase III, el cual ya comenzó.

Igualmente se desarrollan las pruebas pertinentes sobre el uso de Jusvinza en el tratamiento de la Neumonía Severa Comunitaria y del Síndrome de Distrés Respiratorio Agudo.

En relación con la seguridad y soberanía alimentaria están en marcha proyectos en varios municipios que favorecen el uso de biofertilizantes microrrisicos en el cultivo de alimentos, así como de nuevos pastos y forrajes para respaldar el manejo sostenible del ganado y la producción lechera.

La ministra de Ciencia, Tecnología y Medio Ambiente, Elba Rosa Peréz Montoya afirmó recientemente en conferencia de prensa que 2023 fue un año de muchos resultados y desempeños satisfactorios en el sector, gracias a los progresos en la implementación de la Gestión de Gobierno basado en Ciencia e Innovación.

Ello permitió, apuntó, la creación de dos parques tecnológicos y la categorización de seis entidades como empresas de alta tecnología: Centro de Inmunología Molecular, Centro de Inmunoensayos, Centro de Neurociencias de Cuba, Empresa Laboratorios AICA, Instituto Finlay de Vacunas y Empresa de Tecnología de la Información y Servicios Telemáticos Avanzados.

La titular destacó como la implementación del sistema de programas y proyectos de ciencia e innovación marca un hito importante en la transformación de esta actividad que se fortalece con 17 programas nacionales, 56 sectoriales y 63 territoriales.

Pérez Montoya enfatizó que el desarrollo de la ciencia tiene que impactar más en el desarrollo económico, social y ambiental de la nación. “No podemos conformarnos con cantidad de proyectos, el tema no es cuantitativo, sino cualitativo y de resultados tangibles que puedan ser sostenibles en el tiempo”, aseveró.

Y precisamente eso es lo que se festejará este Día de la Ciencia Cubana, jornada en la que se recordará la frase del líder histórico de la Revolución cubana Fidel Castro: “*el futuro de nuestra Patria tiene que ser necesariamente un futuro de hombres de ciencia…*”

**Fuente**: Radio Rebelde. Disponible en https://acortar.link/c4T1gi

## Neumólogo previene sobre incremento en casos de tosferina

**15 ene**. En recientes declaraciones, el pasado presidente de la Sociedad Dominicana de Neumología y Cirugía de Tórex, Plutarco Arias, indicó que se ha reflejado un incremento en los casos de tosferina, enfermedad infectocontagiosa causada por la bacteria Bordetella pertussis.

***De acuerdo con los datos de Digepi, la incidencia de la tosferina aumentó 158 % en 2023 (FUENTE EXTERNA)***

De acuerdo con los boletines oficiales de la Dirección General de Epidemiología (Digepi), los casos de tosferina en 2023 se incrementaron 158 % en comparación a 2022, con un total de 13 contagios frente a cinco registrados el año anterior.

En 2021 hubo ocho casos registrados y una defunción por esta enfermedad.

Las zonas afectadas son: Santo Domingo, Santiago, Distrito Nacional, Hermanas Mirabal y Barahona.

El 76 % de los casos han sido niños menores de un año y el 69 % pacientes femeninas.

La tosferina es una enfermedad prevenible por vacunas, que de acuerdo al Programa Ampliado de Inmunización (PAI) se aplica a los dos, cuatro, seis y 18 meses del bebé.

Se caracteriza por una tos seca intensa seguida de sonidos agudos al inhalar.

**Otros procesos respiratorios**

De acuerdo con la data interna que maneja la Sociedad Dominicana de Neumología y Cirugía del Tórax en su plataforma, Arias detalló que la influenza descendió de 7 % de los casos a principios de diciembre a 3.5 % en los últimos 10 días del pasado 2023.

Tal como han evidenciado los beletines de Salud Pública, se ha registrado un alza de los casos de COVID-19, que también se ha reflejado en la plataforma de los galenos.

De igual forma, los casos de neumonía han bajado de un 12 % de positividad a 9 % la pasada semana.

El neumólogo destacó que los problemas respiratorios están siendo liderados por el asma en un 20 % de los reportes y la enfermedad pulmonar obstructiva aguda (EPOC), que subió a 25 %.

**Fuente**: Diario Libre. Disponible en https://acortar.link/vq5TDd

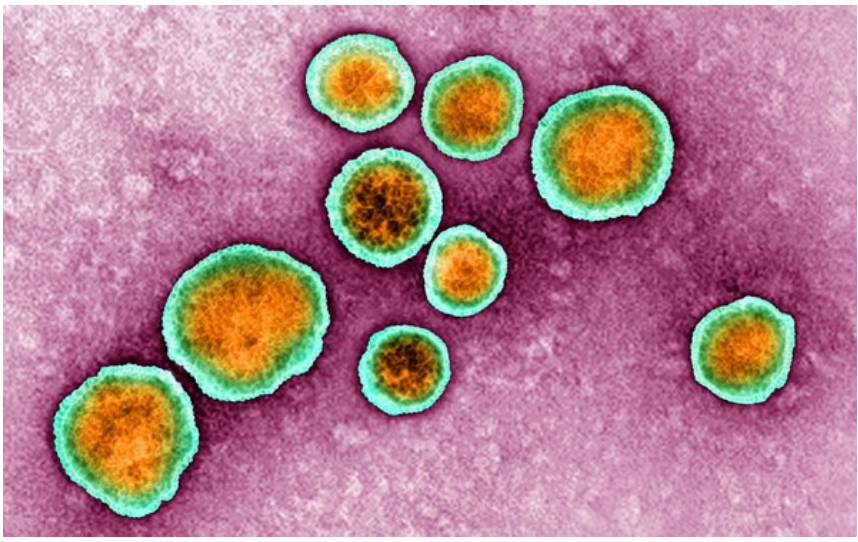
# RSV vaccine Arexvy approved by TGA for Australians 60 and over

**Jan 16**. A vaccine to combat a highly infectious respiratory disease has been approved for use in Australia.

The Therapeutic Goods Administration has ticked off Arexvy to be used as a respiratory syncytial virus vaccine for Australians aged 60 and over.

RSV is typically associated with young children but more than 25,000 older Australians were diagnosed with the highly infectious disease last year.

"We know that this is not just a paediatric disease – it's a disease that affects all ages, particularly those aged 60 plus," said a Brisbane GP, Anita Sharma.



***Respiratory syncytial virus under the microscope. The TGA has approved the use of a vaccine to combat RSV.***

***Photograph: Bsip Sa/Alamy***

"Older patients see a decline in their immunity due to a phenomenon called immunosenescence, which means they cannot mount a good immune response when they are exposed to the virus."

RSV is highly contagious and can cause mild to moderate illness in younger people, with symptoms including a runny nose, sore throat, cough, fever and aches.

Those with low immunity or co-morbidities including diabetes can suffer more serious symptoms resulting in hospitalisation or time in intensive care, according to Sharma.

But Arexvy, a protein-based vaccine, boosts the immune response in those more vulnerable patients. "Such a vaccine will help reduce the serious outcomes from RSV infections in patients who receive the vaccine," Sharma said.

Arexvy was the first vaccine approved for use against RSV in the US, with the drug rolled out there May 2023.

The TGA officially approved Arexvy on Monday as the first RSV vaccine in Australia.

The approval is the first step towards it being administered to those aged 60 and over, with the TGA saying more details on supply and cost would be provided.

The Immunisation Foundation of Australia said it was important that older Australians had access vaccines that would protect them from serious illness. "The announcement of a RSV vaccines ... is a success story for medical research," said one of its directors, Catherine Hughes.

There were 127,944 confirmed cases of RSV in Australia in 2023, according to the federal government's national notifiable disease surveillance system. More than 64,000 infections were in children aged under five, while 27,440 people aged 60 and over had RSV.

**Fuente**: The Guardian. Disponible en https://acortar.link/e93v9p

## Panama sends 22K COVID-19 vaccine doses to Costa Rica


**Jan 17**. Costa Rica´s Health Ministry on Wednesday received donation from Panama of 22,000 COVID-19 vaccine doses.

Out of this total, 20,000 will be given to people aging over 12 years, 1,000 to children aging between six months and four years, and the remaining 1,000 to those aging five and 11 years.

The health ministry reminded the significance of completing the vaccination dose stages and urged people to go to the health centers to be fully vaccinated.

In the most recent health report, the ministry reported 308 coronavirus-infected people during the first week of the year and a daily average of 40 hospitalizations.

Regarding death toll, three deaths were reported.

**Fuente**: Prensa Latina. Disponible en https://acortar.link/izpWnx

## Important Vaccines Were Approved in 2023. More Are on the Way in 2024. But Vaccine Hesitancy Persists

**Jan 18**. Vaccinations are one of the most important public health efforts for preventing serious illness, avoiding hospitalizations and saving lives. During the COVID-19 pandemic, vaccine technology made a huge leap forward with the introduction of messenger RNA (mRNA) vaccines. COVID-19 vaccines developed by BioNTech/Pfizer and Moderna use mRNA instead of weakened viruses or virus fragments to teach the body's immune system how to respond when presented with an infection.

Innovation in the vaccine area continues. In 2023, the FDA approved six vaccines, including several important firsts (see list below).

In the area of respiratory diseases, the first two vaccines for respiratory syncytial virus (RSV) were approved for older adults and a separate vaccine was approved to prevent RSV infections in infants. RSV is a common respiratory virus that usually causes mild, cold-like symptoms, but it can lead to serious respiratory illness and increased hospitalizations. It results in 14,000 deaths annually among those over the age 65 and about 58,000 hospitalizations of infant younger than 1, according to the National Institute of Allergy and Infectious Disease. GSK's Arexvy, approved for adults in early May 2023, is an adjuvanted vaccine, which means it contains an ingredient to increase immune response. The second adult vaccine was approved a few weeks later. Pfizer's Abrysvo is a bivalent RSV prefusion F (preF) vaccine that is composed of two preF proteins selected to optimize protection against RSV A and B strains.The FDA also approved Abrysvo to prevent RSV in infants.

Separately, the FDA approved Sanofi and AstraZeneca's Beyfortus (nirsevimab-alip), which prevents RSV in newborns and infants. Beyfortus is the first monoclonal antibody to protect infants through their first RSV season. Although designed to prevent disease like a vaccine, it is not a vaccine because it does not stimulate the immune system.

The FDA also granted accelerated approval in November 2023 to Ixchiq, the first vaccine to prevent the mosquito-borne virus chikungunya. It was approved for use in adults aged 18 years and older. Infection with chikungunya virus can lead to severe disease and prolonged health problems, particularly for older adults and individuals with underlying medical conditions.

It is administered as a single dose injected intramuscularly. The manufacturer, Valneva, has begun a phase 2 trial of the vaccine in children one to seven years of age. Once available, the phase 2 pediatric data are intended to support a phase 3 pivotal study in children to extend the label. A clinical study in adolescents is also ongoing in Brazil.

**2024 vaccine outlook**

This year the FDA could approve additional vaccines, including the first self-administered flu vaccine. AstraZeneca's has submitted a supplemental biologics license application (sBLA) for a self-administered option for FluMist Quadrivalent, which is a needle-free nasal spray. Researchers said this would provide another option for flu vaccination and potentially increase access and use of flu vaccine,The FDA has set a Prescription Drug User Fee Act (PDUFA) date for a regulatory decision during the first quarter of 2024. If approved, Astra Zeneca has said it to be available for the 2024-2025 flu season.

Regulators are also currently reviewing Merck's BLA for a pneumococcal conjugate vaccine specifically designed to help prevent invasive pneumococcal disease and pneumococcal pneumonia in adults. The vaccine was developed using the serotypes responsible for about 80% of pneumococcal disease in those over the age of 65. The PDUFDA action date is June 17, 2024.

Even though advances have been made in the area of vaccines, the question remains whether people in the United States and elsewhere will accept and get these vaccines. Vaccine hesitancy, which ranges from misgiving to outright resistance, took hold during the COVID-19 pandemic because of misinformation about the COVID-19 vaccines, and it has shown staying power. The proportion of U.S. adults who have received COVID-19 vaccines, flu and RSV remains low, according to recent data from the Centers for Disease Control and Prevention. Just 21.4% of adults over the age of 18 have received the COVD-19 vaccine, while 41.5% have gotten a flu vaccine.

Vaccine hesitancy is not just about COVID-19 vaccines. Cases of measles have surged in the Washington, D.C., area, Pennsylvania, New Jersey, Delaware and Washington state, partly because children have not been vaccinated.

In a recent study, researchers from University of Colorado School of Medicine found while the COVID-19 pandemic did not overall impact parent vaccine hesitancy, some misinformation about COVID-19 may be impacting parental trust in childhood vaccines.

In a survey by researchers from University of Michigan School of Public Health found that some parents (12%) believe that childhood vaccines are less important compared with before the pandemic and that some (13%) believe that childhood vaccines are less effective now. They also found that negative beliefs about childhood vaccines were clustered in places with low COVID-19 vaccination rates.

In a another study, researchers from University of Colorado School of Medicine found that misinformation about COVID-19 may be impacting parental trust in childhood vaccines.

**Vaccine Approvals in 2023**

- Abrysvo to prevent respiratory syncytial virus (RSV) in older adults.
- Arexvy to prevent RSV in older adults.
- COVID-19 updated vaccines from Pfizer, Moderna, Novovax.
- Cyfendus to prevent anthrax infection post exposure; it had been available through an emergency use authorization since 2019.
- Ixchiq first vaccine to prevent the mosquito-borne virus chikungunya virus.
- Penbraya to prevent five strains of meningococcal infection in adolescents and young adults.

**Fuente**: Managed Healthcare. Disponible en https://acortar.link/THFY8t

## Instituto Finlay de Vacunas hace historia

**19 ene**. El Instituto Finlay de Vacunas de Cuba (IFV), creado en 1991, tiene muchos sueños cumplidos y otros por realizar en pos del desarrollo de la ciencia y la calidad de vida del pueblo.

Su nombre rinde homenaje al epidemiólogo cubano Carlos J. Finlay (1833-1915), quien comprobó que un agente biológico transmisor de la fiebre amarilla era capaz de propagar la enfermedad de un sujeto enfermo a uno sano.

Ese hallazgo resultó fundamental para luchar contra la enfermedad y para la investigación posterior de lo que se conoce hoy en día como enfermedades transmitidas por vectores.

El IFV, entidad de investigación, desarrollo y producción, fue fundada luego de que un grupo de científicos cubanos presentara una vacuna contra la meningitis (*Neisseria meningitidis*), denominada comercialmente como VA-MENGOC-BC®.

Entre los principales aportes del centro sobresale, en los últimos años, la creación de las vacunas Soberana 02 y Soberana Plus y el candidato Soberana 01 contra la COVID-19, una enfermedad provocada por el virus SARS-CoV-2.

Prensa Latina visitó este pilar de la ciencia en Cuba, un lugar silencioso con un predominio del color azul y blanco, donde se respira un ambiente de saberes, la inconformidad por lo hasta ahora aprendido y las ansias por saber más.




CUBA

Al encuentro acudieron dos excelentes científicas de reconocido prestigio a nivel nacional e internacional, quienes no resaltan solamente por la pulcritud de las batas ni por un dominio absoluto de conocimientos de sus materias, sino por la sencillez y humildad.

Despojadas de cualquier altanería científica-académica, insistían, a modo de recordatorio para este Escáner dedicado a la Biotecnología, que el Finlay, como lo conocen todos, no es una leyenda de pocos rostros, sino la historia de muchos.

La vicedirectora de Operaciones Industriales, Roselyn Martínez, recordó que la institución nació con el desarrollo de la vacuna antimeningocócica BC y esto requirió contar con capacidades productivas en pequeñas instalaciones, las cuales eran casas ajustadas para ese fin.

Estas no llegaban a cumplir con todos los requerimientos estándar de fabricación, pero ya en la década de 1990 empezaron a trabajar con las capacidades tecnológicas del más alto nivel en ese momento.

Un 3 de diciembre fue inaugurada la primera planta industrial, lo cual significó el despunte de la vacuna que salvó muchas vidas en Cuba y otras latitudes gracias a la colaboración; entre los beneficiados estuvieron, Brasil, Uruguay y Argentina.

Este no es el único producto del Instituto Finlay de Vacunas, porque a partir de ahí se contó con una instalación de gran capacidad, la cual podía producir millones de dosis de inmunógenos.

Fue así que se incorporaron otros productos a esa base tecnológica creada, los cuales responderían al programa ampliado de inmunización del Ministerio de Salud Pública, en especial para los niños.

En este camino surge también la idea de producir con tecnologías un poco más actualizadas la vacuna Antidiftérica-Antitetánica-Antipertusis, un inmunógeno establecido en el mundo con anterioridad.

“Es considerada tradicional, el país no contaba con un alto estándar en ese momento, pero con lo que poseíamos en nuestro poder pudimos desarrollarla”, resaltó.

Fue un proceso progresivo; posteriormente vino la introducción y desarrollo de una nueva versión de vacuna contra la *Salmonella Typhi*, que se importaba, pero provocaba reacciones adversas para las personas. “Nosotros fuimos capaces de obtener una nueva versión que era mucho menos reactogénica”, resaltó la experta.

Hoy el IFV ya cuenta con seis plantas productivas, con plataformas capaces de obtener polisacáridos, productos a través de síntesis química y componentes de células enteras.

“Esto hace que como institución tengamos una amplia capacidad para poder enfrentar las producciones a gran escala de diferentes tipos de inmunógenos. No solo podemos obtener los ingredientes

farmacéuticos activos que se utilizan para estos productos, sino también llegar a la etapa final", puntualizó.

El mundo de la biotecnología es muy dinámico, continuamente se está actualizando y los estándares regulatorios ganan cada día en exigencia, y eso nos impone los procesos de inversiones para renovar la tecnología, comentó la especialista.

Actualmente la institución maneja un ciclo cerrado de productos que van desde la investigación, el desarrollo y la producción hasta la comercialización y la distribución, destacó.


La doctora Dagmar García, directora de Investigaciones del IFV, recordó que en el surgimiento de la biotecnología en Cuba tuvo mucho que ver la idea estratégica del líder histórico de la Revolución, Fidel Castro, pues los principales centros de investigación fueron creados a finales de la década de los 70 y principios de la siguiente, y él fue su gran promotor.

"No existía un desarrollo importante de esta esfera para ese entonces, y Fidel tuvo la capacidad de darse cuenta que el futuro del sector biofarmacéutico estaría muy ligado a la biotecnología", rememoró.

Fue entonces que se crearon en Cuba instituciones para estos fines; en ese momento, en un país del Tercer Mundo, era un lujo pensar en biotecnología.

Algo muy interesante, tanto en el Instituto Finlay de Vacunas como otras entidades científicas surgidas en plena crisis económica de la década de los 90, conocida como período especial, una etapa muy compleja, "tuvimos la capacidad, en medio de todos los problemas y limitaciones de financiamiento, de desarrollar esta esfera", puntualizó la doctora García.

El éxito actual de la biotecnología cubana está avalado por más de 30 años de trabajo, además de ser unas de las prioridades del Estado.

Cuba cuenta con numerosos aportes a la comunidad internacional en el campo de las vacunas, de hecho, el surgimiento del polo científico está muy marcado por la creación de la vacuna antimeningocócica BC.

En la década de 1980 hubo una epidemia de meningitis meningocócica en el país, una enfermedad con una progresión muy rápida, especialmente en los niños, quienes pueden sufrir complicaciones en apenas pocas horas, incluso la muerte, como ocurrió en esa ocasión.

A partir de ese momento los científicos de este centro se dieron a la tarea, por mandato de la máxima dirección gubernamental, de desarrollar una vacuna contra el meningococo B, y esta fue durante muchísimos años la única efectiva, incluso llegó a convertirse en el producto líder de la biotecnología cubana.

La comercialización del producto hizo posible facturar hasta 100 millones de dólares por varios años, y más allá de los dividendos económicos, contribuyó a controlar la enfermedad en Brasil, Uruguay y otros países de Latinoamérica.

Llegado los años 90 del pasado siglo, los científicos del Finlay lideraron el desarrollo de la vacuna conjugada contra la *Haemophilus influenzae* tipo B, algo muy novedoso en ese momento pues fue obtenida por síntesis química, es decir, el antígeno no se logra a través de un biorreactor como en otros tipos de procesos biotecnológicos.

La síntesis química, una innovación relevante para esos años, fue algo que revolucionó y realmente hasta hoy sigue siendo la única vacuna en el mundo que se obtiene por vía sintética, aunque existen otros inyectables para combatir a ese microorganismo, explicó la experta.

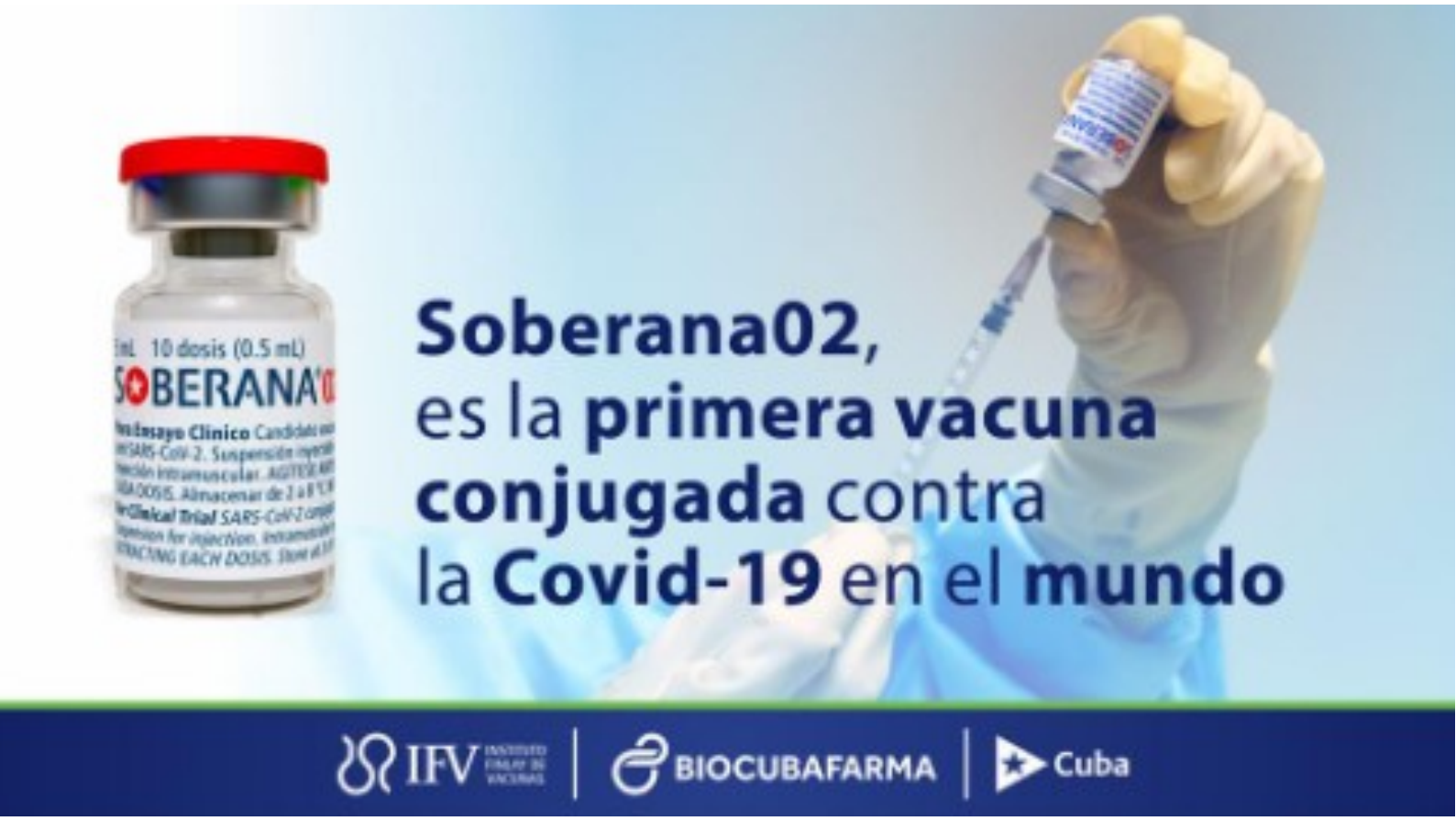
“En los últimos 15 años hemos trabajado con desvelo en un candidato vacunal contra los neumococos, un proyecto novedoso, pero complejo”, dijo al tiempo que resaltó entre los éxitos más recientes las vacunas Soberanas, que contribuyeron al control de la pandemia de COVID-19.

Puntualizó que cuentan con una combinación interesante entre la capacidad de innovar, desarrollar nuevos inyectables y producirlos para cubrir las necesidades del sistema nacional de Salud Pública.

La pandemia nos dejó, apuntó, muchas enseñanzas para nuestro campo, teniendo en cuenta que existen vacunas en el mundo que no figuran en el esquema de inmunización nacional debido a sus altos precios en el mercado internacional, por eso el interés del país de contar con las propias.

“La ciencia nos salvó como país, por tanto, hay que seguir invirtiendo en ciencia y desarrollando estas instituciones”, sentenció la científica.

**Fuente**: Prensa Latina. Disponible en https://acortar.link/1WKMou



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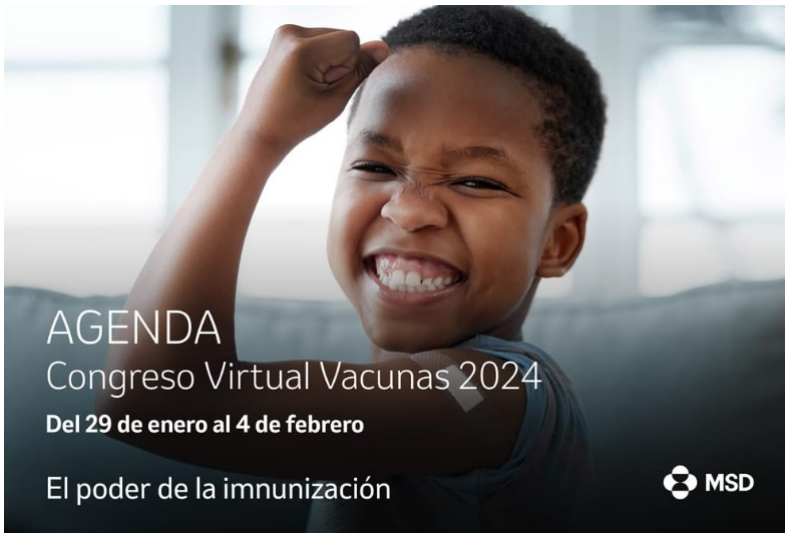
# Próximos eventos sobre Vacunas

## Congreso Virtual Vacunas 2024

Desde el lunes **29 de enero hasta el domingo 4 de febrero** se celebrará el Congreso Virtual Vacunas 2024 de MSD.




La Sociedad Española de Pediatría Extrahospitalaria y Atención Primaria (SEPEAP) es avalista de este evento que constará de 20 sesiones en directo y en diferido.

El objetivo principal será debatir la situación actual y los retos futuros de la vacunación contra virus como el Virus del Papiloma Humano (VPH), el rotavirus y el neumococo.

Cerca de una treintena de profesionales del sector tanto nacionales como internacionales aportarán su conocimiento y su experiencia para dar respuesta a estas cuestiones.

Puede consultar el programa e inscribirse a través de este enlace.

**Fuente**: SEPEAP. Disponible en https://acortar.link/bOynjj

## XXXII Jornadas Internacionales sobre Actualización en Vacunas

Organiza: Profesor José-Ramón de Juanes Pardo- Hospital 12 de Octubre.

Patrocinador: ASTRAZENECA CSL SEQIRUS BAVARIAN NORDIC GLAXOSMITHKLINE HIPRA MODERNA MSD NOVAVAX PFIZER SANOFI TAKEDA.

Ciudad: **Madrid**.

Fecha: **15 - 16 febrero 2024**.

Las XXXII Jornadas Internacionales sobre actualización en vacunas tendrán un **FORMATO PRESENCIAL**.

Abrirán con la conferencia inaugural "VACUNAS: COMUNICACIÓN y CONFIANZA ".

Sistema de reservaciones para el congreso en este enlace a continuación:

https://acortar.link/6GppZ6


**Fuente**: Asociación Española de Pediatría. Disponible en https://acortar.link/3veYUl

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# Patentes registradas en Patentscope

Estrategia de búqueda: *Vaccine in the title or abstract AND 20240113:20240121 as the publication date 24 records*

1.20240016919INTRADERMAL MERS-CoV VACCINE
US - 18.01.2024
Clasificación Internacional A61K 39/215 Nº de solicitud 18042796 Solicitante THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY Inventor/a Ami Patel
The present invention disclosed an intradermal vaccine that protects against Middle East Respiratory Syndrome coronavirus (MERS-CoV). In one embodiment, the vaccine is a DNA vaccine. In one embodiment, the vaccine comprises an antigen. The antigen can be a consensus antigen. The consensus antigen can be a consensus spike antigen. The present invention also discloses methods of treating or preventing MERS-CoV in a subject in need thereof by administering the vaccine intradermally to the subject.

2.20240016925NOVEL VACCINE ADJUVANT
US - 18.01.2024

Clasificación Internacional A61K 39/39 Nº de solicitud 18365671 Solicitante SL VAXIGEN, INC. Inventor/a Yong Bok SEO
There is provided a novel vaccine adjuvant, and more specifically, a vaccine adjuvant for stimulating a T lymphocyte-specific immune response, which includes an IL-12 protein and an IL-21 protein as active ingredients, or includes the polynucleotide encoding an IL-12 protein and the polynucleotide encoding an IL-21 protein as active ingredients.

3.20240018214EXOSOME-TARGETED DNA VACCINE
US - 18.01.2024
Clasificación Internacional C07K 14/705 Nº de solicitud 18448713 Solicitante National Institutes of Biomedical Innovation, Health and Nutrition Inventor/a Ken Ishii
In order to further increase antigenicity to provide a DNA vaccine which is clinically usable in humans, the inventors of the present invention focused on exosomes, which are garnering attention as tools for DDS, and discovered that an exosome expressing a fusion antigen of an exosome (extracellular microparticle)-constituent protein and a vaccine antigen has excellent cytotoxic T-cell inducibility. Consequently, the present invention provides a nucleic acid constituent including a nucleic acid sequence coding for an exosome marker protein and a nucleic acid sequence coding for a vaccine antigen.

4.WO/2024/013768VACCINE COMPOSITION AND METHOD OF PREPARATION THEREOF
WO - 18.01.2024
Clasificación Internacional A61K 39/00 Nº de solicitud PCT/IN2023/050680 Solicitante SRIKARA BIOLOGICALS PRIVATE LIMITED Inventor/a APPAIAHGARI, Mohan Babu
The present invention relates to a method of isolation of a novel avirulent FAdV4 strain which can be used as antigen for vaccine composition. The present invention also relates to the development of a vaccine composition comprising live, killed, inactivated, or genetically modified recombinant, attenuated form of said novel avirulent FAdV4 strain. The present invention further relates to the method of vaccine preparation and use of the same to elicit immune response against the Inclusion Body Hepatitis/ Hepatitis-Hydropericardium Syndrome in poultry birds. The present invention also relates to a kit comprising said vaccine along with the instruction manual.

5.4306126IMPFSTOFFZUSAMMENSETZUNG ZUR VORBEUGUNG VON SARS-COV-2
EP - 17.01.2024
Clasificación Internacional A61K 39/215 Nº de solicitud 21930477 Solicitante EYEGENE INC Inventor/a CHO YANG JE
The present invention relates to a vaccine composition for preventing SARS-CoV-2, comprising mRNA encoding an S mutant antigen of SARS-CoV-2 virus, wherein a vaccine for preventing SARS-CoV-2 according to the present invention exhibits excellent stability and high immunogenicity *in vivo*, and the vaccine is thus easy to store and use, and excellent preventive effect thereof against COVID-19 can be expected.

6.20240016920IMMUNITY AND PROTECTION OF SARS-COV-2 DNA AND PROTEIN VACCINE
US - 18.01.2024
Clasificación Internacional A61K 39/215 Nº de solicitud 18254373 Solicitante Shan LU Inventor/a Wei CUN
Provided are a DNA vaccine against SARS-CoV-2 virus infection in a subject which comprises a codon optimized polynucleotide sequence encoding a polypeptide of the SARS-CoV-2 virus. Also provided are a vaccine combination against SARS-CoV-2 vims infection, which comprises said DNA vaccine and an antigen peptide vaccine. The vaccine combination is able to confer a full protection against the SARS-CoV-2 vims infection in NHP studies.

7.4304641IMPFSTOFFZUSAMMENSETZUNGEN UND VERFAHREN ZUR BEHANDLUNG VON HSV
EP - 17.01.2024
Clasificación Internacional A61K 39/12 Nº de solicitud 22714389 Solicitante REDBIOTEC AG Inventor/a TAMBASCO STUDART MARINA
The present invention relates to a vaccine composition comprising one or more mRNAs encoding a Herpes Simplex Virus (HSV) structural protein or an immunogenic fragment thereof for the treatment or vaccination against HSV.

8.WO/2024/015510SARS-COV-2 LACKING THE ENVELOPE PROTEIN AS AN ATTENUATED VACCINE VIRUS AGAINST COVID-19
WO - 18.01.2024
Clasificación Internacional A61K 39/12 Nº de solicitud PCT/US2023/027622 Solicitante WISCONSIN ALUMNI RESEARCH FOUNDATION ("WARF") Inventor/a KAWAOKA, Yoshihiro
An isolated nucleic acid comprising a recombinant coronavirus genome having a genetic modification that inhibits or prevents expression of coronavirus envelope (E) protein and/or M protein, a vaccine comprising the recombinant genome and methods of using the vaccine are provided.

9.WO/2024/014770MODIFIED RNA FOR PREPARING MRNA VACCINE AND THERAPEUTIC AGENT
WO - 18.01.2024
Clasificación Internacional C12N 15/11 Nº de solicitud PCT/KR2023/009440 Solicitante MCUREX THERAPEUTICS, INC. Inventor/a HONG, Sun Woo
The present application relates to a modified RNA for preparing a mRNA vaccine and therapeutic agent, the modified RNA, according to one aspect, comprising a specific chemical modification and genetic modification and thus being capable of notably reducing the induction of the innate immune response caused by the administration of a RNA, and also exhibiting excellent protein expression or translation efficiency, thereby being usefully employable in the fields of therapeutic agents and vaccines.

10.4304672UNTEREINHEITSIMPFSTOFFE MIT DINUKLEOTIDBELADENEM HYDROGELADJUVANS
EP - 17.01.2024
Clasificación Internacional A61L 27/52 Nº de solicitud 22767922 Solicitante UNIV LELAND STANFORD JUNIOR Inventor/a APPEL ERIC ANDREW
Provided herein are vaccine delivery systems including a polymer hydrogel non-covalently crossed-linked with a plurality of nanoparticles, a dinucleotide adjuvant encapsulated in the hydrogel, and an antigen encapsulated in the hydrogel. The provided vaccine delivery systems are particularly useful for slowly releasing the antigen and adjuvant within a subject, thereby triggering a more therapeutically effective immune response. Also provided are kits including the disclosed vaccine delivery systems, and methods of using the disclosed materials.

11.WO/2024/014894EXTRACELLULAR VESICLE COMPRISING ANTIGENIC PROTEIN OR GENE ENCODING SAME PROTEIN, AND USES THEREOF
WO - 18.01.2024
Clasificación Internacional C12N 15/88 Nº de solicitud PCT/KR2023/010004 Solicitante EWHA UNIVERSITY-INDUSTRY COLLABORATION FOUNDATION Inventor/a KWON, Ki Hwan
The present invention relates to an extracellular vesicle comprising an antigenic protein or a gene encoding the antigenic protein and uses thereof and, more specifically, to an extracellular vesicle comprising an antigenic protein derived from viruses, microorganisms, or cancer cells, or to a gene encoding the antigenic protein, or to a vaccine composition for the prevention or treatment of viral infections, microbial infections, or cancer comprising same. The extracellular vesicle, or the vaccine composition comprising same, according to the present invention, is expected to be useful in the development of vaccines for the prevention or treatment of various diseases, including viral infections,

microbial infections, or cancer, as a platform applicable to various diseases with excellent antigen-specific immune response inducing effects and stability.

12.20240016917IMPROVED CORONAVIRUS VACCINE
US - 18.01.2024
Clasificación Internacional A61K 39/215 Nº de solicitud 18005573 Solicitante ACADEMIA SINICA Inventor/a Che MA
The present disclosure provides a glycoengineered SARS-CoV-2 spike protein which is capable of eliciting an enhanced immune response relative to a native spike protein of SARS-CoV-2 and its variants. The glycoengineered spike protein exposes the glycosylation sites and at the same time preserves the tertiary structure of the spike protein. The present disclosure therefore provides improved immunogens, vaccines, and methods for better prevention and treatment of the emerging coronavirus infections.

13.4306641NEUES NUKLEINSÄUREMOLEKÜL
EP - 17.01.2024
Clasificación Internacional C12N 15/62 Nº de solicitud 22750088 Solicitante ST PHARM CO LTD Inventor/a KIM KYUNGJIN
The present invention relates to a nucleic acid molecule, including a nucleic acid encoding a signal peptide and a nucleic acid encoding an antigen, for prevention or treatment of viral infection or cancer. In addition, the present invention relates to a vaccine composition containing the nucleic acid molecule for prevention or treatment of viral infection or cancer. The nucleic acid molecule according to the present invention is superb in terms of intracellular protein expression rate and extracellular protein secretion. In addition, when administered in vivo, the nucleic acid molecule allows the subject to acquire the humoral immunity of inducing antigen-specific neutralizing antibodies and the cellular immunity of increasing an amount of immune cells directly involved in killing viruses and as such, can be advantageously utilized as a vaccine for prevention and treatment of virus infection or cancer.

14.WO/2024/015047TREATMENT METHODS FOR VIRAL INFECTIONS
WO - 18.01.2024
Clasificación Internacional A61K 38/16 Nº de solicitud PCT/US2022/036737 Solicitante THE UAB RESEARCH FOUNDATION Inventor/a ANANTHARAMAIAH, G.m.
The current disclosure provides methods for the production of 'vaccine-like' antiviral preparations. The present disclosure provides compounds for the treatment of a wide range of enveloped viral diseases and conditions. The present disclosure further provides methods for treating, preventing, and/or suppressing an enveloped virus disease in a subject using the compounds disclosed herein as well as pharmaceutical compositions comprising such compound.

15.WO/2024/013330IMMUNOGENIC PERSONALISED CANCER VACCINES
WO - 18.01.2024
Clasificación Internacional A61K 39/00 Nº de solicitud PCT/EP2023/069542 Solicitante UNIVERSITÄT ZÜRICH Inventor/a MARTIN, Roland
The invention relates to a method of obtaining a variant of a T cell epitope peptide expressed in the tumour of cancer patient, wherein the variant is characterised by targeted amino acid substitutions conferring an improved capacity to stimulate CD8+ and CD4+ T cells. The invention further relates to vaccine and, pharmaceutical compositions comprising variant T cell epitope peptides and their use in treating cancer.

16.4304629BIOTECHNOLOGISCH HERGESTELLTE IMMUNMODULATORISCHE FUSIONSPROTEINZUSAMMENSETZUNGEN
EP - 17.01.2024

Clasificación Internacional A61K 38/17 Nº de solicitud 22768075 Solicitante JANSSEN BIOTECH INC Inventor/a TAMOT NINKKA
Provided herein are bioengineered immunomodulatory fusion proteins and uses thereof for modulating immune responses, as well as uses for improving a response of a subject to a vaccine, or uses for treating a disease or disorder, such as cancer or a pathogen infection. Provided herein is a single chain trimeric CD40L Fc fusion protein comprising (a) three CD40 ligand CD40L subunits covalently linked to one another by peptide linkers (CD40L trimer); and (b) an Fc monomer peptide.

17.WO/2024/014943SARS-COV-2 VACCINE BOOSTER COMPOSITION
WO - 18.01.2024
Clasificación Internacional A61K 39/215 Nº de solicitud PCT/KR2023/095028 Solicitante SK BIOSCIENCE CO., LTD. Inventor/a HONG, Seung Hye
The present invention relates to a composition for inducing or maintaining an immune response to SARS-COV-2 virus.

18.20240016908NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST PROSTATE CANCER AND OTHER CANCERS
US - 18.01.2024
Clasificación Internacional A61K 39/00 Nº de solicitud 18451216 Solicitante Immatics Biotechnologies GmbH Inventor/a Andrea MAHR
The present invention relates to peptides, proteins, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated T-cell peptide epitopes, alone or in combination with other tumor-associated peptides that can for example serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses, or to stimulate T cells ex vivo and transfer into patients. Peptides bound to molecules of the major histocompatibility complex (MHC), or peptides as such, can also be targets of antibodies, soluble T-cell receptors, and other binding molecules.

19.20240016924NEW ADJUVANT TO IMPROVE THE INNATE IMMUNITY
US - 18.01.2024
Clasificación Internacional A61K 39/39 Nº de solicitud 18039845 Solicitante INSTITUT NATIONAL DE LA SANTÉ ET DE LA RECHERCHE MÉDICALE Inventor/a Morgane BOMSEL
The present invention relates to the field of adjuvant and vaccination. In the present study, the inventors investigate whether P1, in addition to being an antigen, could act as an adjuvant by first exploring its capacity to stimulate epithelial TSLP production. They evaluated additional immunomodulatory effects of P1 on human nasal mucosal models, including cytokines and chemokines production, intracellular signaling pathways, mucosal DC activation, T cell proliferation, and antigen-specific B cell responses against a model antigen in vitro. Altogether, they reported the immunological mechanism underlying P1-vaccine and the interest of P1 as a nasal mucosal adjuvant. Thus, the present invention relates to an immunoadjuvant composition comprising the P1 peptide of the HIV-1 envelope subunit gp41.

20.4304635TUMORNEOANTIGENE PEPTIDE UND VERWENDUNGEN DAVON
EP - 17.01.2024
Clasificación Internacional A61K 39/00 Nº de solicitud 22712929 Solicitante MNEMO THERAPEUTICS Inventor/a AMIGORENA SEBASTIAN
The present disclosure provides tumor neoantigenic peptide sequences and nucleotide sequences encoding such peptide sequences; a vaccine or immunogenic composition capable of raising a specific T-cell response comprising one or more of the neoantigenic peptides, or comprising nucleic acid encoding one or more of the neoantigenic peptides; an antibody, or an antigen-binding fragment thereof, a T cell receptor (TCR), or a chimeric antigen receptor (CAR) that specifically binds such neoantigenic peptides;

methods of producing such antibodies, TCRs or CARs; polynucleotides encoding such neoantigenic peptides, antibodies, CARs or TCRs, optionally linked to a heterologous regulatory control sequence; immune cells that specifically bind to such neoantigenic peptides; and dendritic cells or antigen presenting cells that have been pulsed with one or more of the neoantigenic peptides; and methods of using such products in particular therapeutic uses of these products.

21.20240016921ANTIGEN SPECIFIC IMMUNOTHERAPY FOR COVID-19 FUSION PROTEINS AND METHODS OF USE
US - 18.01.2024
Clasificación Internacional A61K 39/215 Nº de solicitud 18355601 Solicitante Akston Biosciences Corporation Inventor/a Todd C. Zion
The present disclosure provides recombinantly manufactured fusion proteins comprising a SARS-CoV-2 Receptor Binding Domain (SARS-CoV-2-RBD) fragment or an analog thereof linked to a human Fc fragment for use in relation to the 2019 Novel Coronavirus (COVID-19). Embodiments include the administration of the fusion proteins to patients that have recovered from COVID-19 as a booster vaccination, to antibody naïve patients to produce antibodies to the SARS-CoV-2 virus to enable the patients to become convalescent plasma donors, to patients who have been infected by the SARS-CoV-2 virus and have contracted COVID-19 in order to limit the scope of the infection and ameliorate the disease, and as a prophylactic COVID-19 vaccine. Exemplary Fc fusion proteins and pharmaceutical formulations of exemplary Fc fusion proteins are provided, in addition to methods of use and preparation.

22.4304632TUMORNEOANTIGENE PEPTIDE
EP - 17.01.2024
Clasificación Internacional A61K 39/00 Nº de solicitud 22708970 Solicitante MNEMO THERAPEUTICS Inventor/a AMIGORENA SEBASTIAN
The present disclosure provides tumor neoantigenic peptide sequences and nucleotide sequences encoding such peptide sequences; a vaccine or immunogenic composition capable of raising a specific T-cell response comprising one or more of the neoantigenic peptides, or comprising nucleic acid encoding one or more of the neoantigenic peptides; an antibody, or an antigen-binding fragment thereof, a T cell receptor (TCR), or a chimeric antigen receptor (CAR) that specifically binds such neoantigenic peptides; methods of producing such antibodies, TCRs or CARs; polynucleotides encoding such neoantigenic peptides, antibodies, CARs or TCRs, optionally linked to a heterologous regulatory control sequence; immune cells that specifically bind to such neoantigenic peptides; and dendritic cells or antigen presenting cells that have been pulsed with one or more of the neoantigenic peptides; and methods of using such products in particular therapeutic uses of these products.

23.4304639IMPFSTOFFVERFAHREN UND ZUSAMMENSETZUNG FÜR BAKTERIELLE ERKRANKUNGEN BEI WIRBELLOSEN TIEREN
EP - 17.01.2024
Clasificación Internacional A61K 39/02 Nº de solicitud 22768145 Solicitante DALAN ANIMAL HEALTH INC Inventor/a KLEISER ANNETTE
The disclosure provides compositions and methods for vaccinating invertebrates and invertebrate populations from diseases. The disclosure further provides compositions and methods for prophylactically immunizing honeybee hive to protect from infection with Foulbrood disease. In embodiments, the disclosure further provides compositions and methods for prophylactically immunizing honeybee hive to protect from infection with European foulbrood or American foulbrood caused by Melissococcus plutonius using a non¬ disease causing bacterium.

24.20240016930Use of Triplex CMV Vaccine in CAR T Cell Therapy
US - 18.01.2024

Clasificación Internacional A61K 39/395 Nº de solicitud 18354849 Solicitante City of Hope Inventor/a Don J. Diamond
A method for treating a patient comprising: (a) providing a composition comprising a population of T cells expressing both a chimeric antigen receptor (CAR) and a T cell receptor specific for a cytomegalovirus (CMV) antigen; (b) administering the composition to the patient; and (c) administering to the patient a viral vector encoding: (i) CMV pp65 and (ii) a fusion protein comprising exon 4 of CMV protein IE1 (e4) and exon 5 of CMV protein IE2 (e5) either prior to or subsequent to administering the composition comprising a population of T cells to the patient is described.

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*Edición: Annia Ramos Rodríguez* aramos@finlay.edu.cu
*Randelys Molina Castro* rmolina@finlay.edu.cu
*Irina Crespo Molina* icrespo@finlay.edu.cu
*Yamira Puig Fernández* yamipuig@finlay.edu.cu

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