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

- Resumen de la información publicada por la OMS sobre los candidatos vacunales en desarrollo contra la COVID-19 a nivel mundial.
- Noticias más recientes en la Web sobre vacunas.
- Artículos científicos más recientes de Medline sobre vacunas.
- Patentes más recientes en Patentscope sobre vacunas.
- Patentes más recientes en USPTO sobre vacunas.

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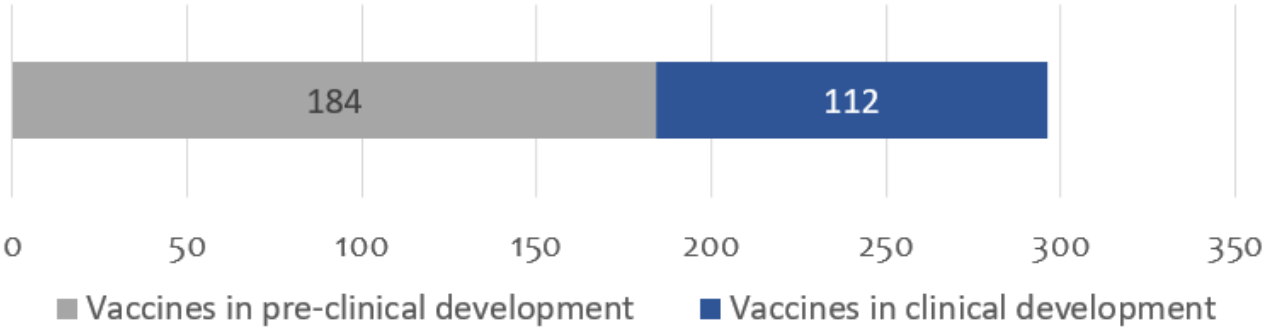
CUBA

Resumen de la información publicada por la OMS sobre los candidatos vacunales contra la COVID-19 en desarrollo a nivel mundial

Última actualización por la OMS: 20 de agosto de 2021.

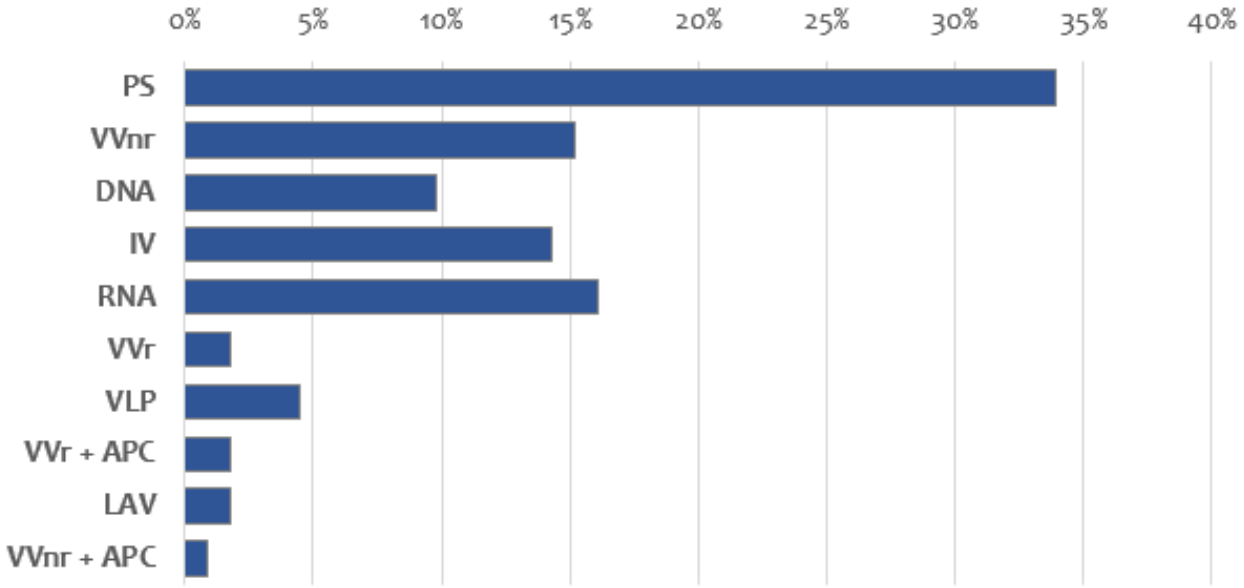
Fuente de información utilizada: World Health Organization | R&DBlueprint Powering research to prevent epidemics

112 candidatos vacunales en evaluación clínica y 184 en evaluación preclínica.



Candidatos vacunales en evaluación clínica por plataforma

Platform		Candidate vaccines (no. and %)	
PS	Protein subunit	38	34%
VVnr	Viral Vector (non-replicating)	17	15%
DNA	DNA	11	10%
IV	Inactivated Virus	16	14%
RNA	RNA	18	16%
VVr	Viral Vector (replicating)	2	2%
VLP	Virus Like Particle	5	4%
VVr + APC	VVr + Antigen Presenting Cell	2	2%
LAV	Live Attenuated Virus	2	2%
VVnr + APC	VVnr + Antigen Presenting Cell	1	1%
		112	



CUBA

Candidatos vacunales más avanzados a nivel global

Desarrollador de la vacuna/fabricante/país	Plataforma de la vacuna	Fase
Sinovac/China	Virus Inactivado	4
Wuhan Institute of Biological Products/Sinopharm/China	Virus Inactivado	3
Beijing Institute of Biological Products/Sinopharm/China	Virus Inactivado	4
University of Oxford/AstraZeneca/Reino Unido	Vector viral no replicativo	4
CanSino Biological Inc./Beijing Institute Biotechnology/China	Vector viral no replicativo	4
Gamaleya Research Institute/Rusia	Vector viral no replicativo	3
Janssen Pharmaceutical Companies/Estados Unidos	Vector viral no replicativo	4
Novavax/Estados Unidos	Subunidad proteica	3
Moderna/NIAID/Estados Unidos	ARN	4
Pfizer/BioNTech Fosun Pharma/Estados Unidos	ARN	4
Anhui Zhifei Longcom Biopharmac./Inst. Microbiol, Chin Acad Sci	Subunidad proteica	3
CureVac AG/Alemania	ARN	3
Institute of Medical Biology/Chinese Academy of Medical Sciences	Virus inactivado	3
Research Institute for Biological Safety Problems, Kazakhstan	Virus inactivado	3
Zydus Cadila Healthcare Ltd./India	ADN	3
Bharat Biotech/India	Virus Inactivado	3
Sanofi Pasteur + GSK/Francia/Gran Bretaña	Subunidad proteica	3
Shenzhen Kangtai Biological Products Co., Ltd./ China	Virus Inactivado	3
Vaxine Pty Ltd. + CinnaGen Co./Australia, Irán	Subunidad proteica	3
Instituto Finlay de Vacunas/Cuba	Subunidad proteica	3
Federal Budget Res Inst State Res Cent Virol Biotechnol "Vector"/Rusia	Subunidad proteica	3
Acad Milit Sci (AMS) Walvax Biotechnol, Suzhou Abogen Biosci/China	ARN	3
Center for Genetic Engineering and Biotechnology (CIGB)/Cuba	Subunidad proteica	3
Valneva, National Institute for Health Research, Reino Unido	Virus inactivado	3
Nanogen Pharmaceutical Biotechnology/Vietnam	Subunidad proteica	3
Erciyes University/Turquía	Virus inactivado	3

Candidatos vacunales mucosales en evaluación clínica

Desarrollador de la vacuna/fabricante/país	Plataforma de la vacuna	Vía de administración	Fase
University of Oxford/Reino Unido	Vector viral no replicativo	Intranasal	1
Vaxart/Estados Unidos	Vector viral no replicativo	Oral	1
Univ. Hong Kong, Xiamen Univ./Beiging Wantai Biol. Pharm./China	Vector viral replicativo	Intranasal	2
Symvivo/Canadá	ADN	Oral	1
ImmunityBio, Inc./Estados Unidos	Vector viral no replicativo	Oral o SL	1/2
Codagenix/Serum Institute of India	Virus vivo atenuado	Intranasal	1
Center for Genetic Engineering and Biotechnology (CIGB)/ Cuba	Subunidad proteica	Intranasal	1/2
Razi Vaccine and Serum Research Institute/India	Subunidad proteica	IM e IN	2
Bharat Biotech International Limited/India	Vector viral no replicativo	Intranasal	1
Meissa Vaccines, Inc./Estados Unidos	Virus vivo atenuado	Intranasal	1
Laboratorio Avi-Mex/México	Virus inactivado	IM o IN	1
USSF + VaxForm/Estados Unidos	Subunidad proteica	Oral	1
CyanVac LLC/Estados Unidos	Vector viral no replicativo	Intranasal	1

Noticias en la Web

Menores de 12 años con segunda dosis en Soberana Pediatría en Cuba

11 ago. Niños de tres a 11 años de edad recibieron hoy la segunda dosis del candidato anticovid Soberana 02, como parte de la fase II del ensayo clínico Soberana Pediatría en Cuba.

Así lo confirmó el Instituto Finlay de Vacunas (IFV) en su cuenta de Twitter, con una foto de dos hermanos acompañados por payasos durante la hora de recuperación después de aplicársele el inyectable. Según ese centro científico, creador del inmunógeno, el esquema heterólogo administrado en el análisis pediátrico evidenció un 91, 2 por ciento de eficacia frente a la enfermedad sintomática (considerada la variable principal del estudio fase III de Soberana 02).

Asimismo, el examen interino parcial reveló un 75,7 por ciento sobre la infección y 100 por ciento para prevenir casos graves o severos e igual valor ante los fallecimientos. Por otra parte, culminó la administración de la segunda dosis al grupo etario de 12 a 18 años de la segunda etapa de Soberana Pediatría, así como a los pequeños de tres a 11 años de la Fase I del ensayo. La selección de los menores de 12 se realizó luego de que fuera comprobada la seguridad de la primera inyección de Soberana 02 en los adolescentes, quienes tuvieron un seguimiento médico de 24, 48, 72 horas y una semana después de inmunizados.

A partir de esos resultados, se hizo un informe para recibir la aprobación del Centro para el Control Estatal de Medicamentos, Equipos y Dispositivos Médicos, autoridad regulatoria, sobre la inclusión del resto de los más pequeños y la muestra con los adolescentes se amplió a 150.

Desde el inicio de la pandemia en marzo de 2020, Cuba acumula más de 72 mil infantes confirmados con el SARS-CoV-2, patógeno causante de la Covid-19. Las cifras aumentaron en los últimos meses del presente año con un promedio de más de mil 500 casos diarios.

Fuente: Prensa Latina. Disponible en https://cutt.ly/TQ83uA0

La vacuna de Moderna parece más efectiva en el tiempo que Pfizer: así son sus diferencias

11 ago. La estrategia de inmunización de la Unión Europea se ha centrado en las formulaciones con ARN mensajero, que están ofreciendo altos niveles de eficacia. Una innovación en el terreno de las vacunas que están protagonizando Pfizer y Moderna, dos sueros muy parecidos pero que tienen diferencias.

- **Ambas vacunas están desarrolladas a partir de ARN mensajero.**
- **La efectividad de Pfizer frente a Delta disminuye en el tiempo.**
- **La de Moderna también lo hace, pero en menor medida.**

Efectividad de la vacuna de Pfizer y Moderna frente a Delta

Un último estudio realizado por el Sistema de Salud de Mayo Clinic y publicado en el portal 'medRxiv' apunta que la vacuna de Pfizery BioNTech puede ser menos efectiva que la de Moderna contra la variante Delta del coronavirus.

En concreto, los investigadores encontraron que la efectividad de la vacuna de Moderna contra la infección se había reducido al 76% en julio, cuando predominaba la variante Delta, desde el 86% a principios de 2021. Mientras, la efectividad de la vacuna Pfizer había caído del 76% al 42%.

Tiempo entre dosis y para alcanzar la máxima protección

Otro aspecto a tener en cuenta en las diferencias entre la vacuna de Pfizer y Moderna son los tiempos de administración entre dosis y el periodo en el que se alcanzan la máxima protección. Así, la dosis de Pfizer y BioNTech se administran con una diferencia de 21 días y la protección se alcanza a los siete días desde el segundo pinchazo. Mientras, las inyecciones de Moderna se espacian 28 días y la inmunidad total se alcanza a los 14 días.

Efectos secundarios de la vacuna de Pfizer

1. Los más frecuentes y comunes. El séptimo informe de farmacovigilancia del la Agencia Española de Medicamentos y Productos Sanitarios (AEMPS) reveló las siguientes reacciones adversas: estado febril (37%), dolor de cabeza (27%), dolores musculares (2o%), dolor en la zona de vacunación (14%), malestar (12%), náuseas (8%), artralgia (8%), escalofríos (8%), fatiga (8%), linfadenopatía (7%).

2. Los nuevos efectos secundarios o en sospecha: durante la aplicación de la vacuna de Pfizer en la población general se han ido detectado efectos secundarios nuevos, unos ya están inscritos en el prospecto de la vacuna y otros están en sospecha:

- Erupción cutánea y prurito: la ficha técnica y prospecto de la vacuna de Pfizer ya contiene la erupción cutánea y prurito (picor de la piel), como reacciones adversas de aparición poco frecuente (ocurren en menos de 1 de cada 100 personas). Por su parte, la urticaria (erupción de la piel abultada, enrojecida y con picor) y angioedema (inflamación rápida debajo de la piel) se han actualizado como reacciones adversas que ocurren raramente (en menos de 1 de cada 1.000 personas).

- Inflamación localizada con Pfizer en personas que han recibido previamente inyecciones de rellenos dérmicos en la cara: la EMA también ha concluido que es posible que este efecto se relacione con la vacuna, por lo que se incorporará como posible reacción adversa a la ficha técnica y el prospecto.

- Miocarditis y pericarditis: La EMA ha concluido que tras la administración de las vacunas de BioNTech/ Pfizer puede presentarse muy raramente miocarditis y/o pericarditis.

Efectos secundarios de la vacuna de Moderna

1. Los efectos secundarios más frecuentes. El séptimo informe de farmacovigilancia de la AEMPS reveló los siguientes: estado febril (50%), dolor de cabeza (30%), dolores musculares (25%), dolor en la zona de vacunación (19%), escalofríos (11%), malestar (13%), náuseas (9%), artralgia (8%), astenia (6%).

2. Los nuevos efectos secundarios o en sospecha. El último informe de la AEMPS también revela una serie de nuevas reacciones adversas como son: la diarrea y la trombocitopenia inmune, que produce hematomas y sangrados. Otro efecto secundario, que también recoge la última actualización de la estrategia de vacunación española, es a una serie de reacciones cutáneas tardías cercanas al lugar de inyección que ocurren unos 7 días (entre 2 y 12 días) después de recibir la vacuna. Asimismo, la EMA también ha recogido la miocarditis y pericarditis.

Fuente: el Economista. Disponible en https://cutt.ly/bQ89StJ

FDA Authorizes Additional Vaccine Dose for Certain Immunocompromised Individuals

Aug 12. Today, the U.S. Food and Drug Administration amended the emergency use authorizations (EUAs) for both the Pfizer-BioNTech COVID-19 Vaccine and the Moderna COVID-19 Vaccine to allow for the use of an additional dose in certain immunocompromised individuals, specifically, solid organ transplant recipients or those who are diagnosed with conditions that are considered to have an equivalent level of immunocompromise. The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices is scheduled to meet Friday to discuss further clinical recommendations regarding immunocompromised individuals. Today's action does not apply to people who are not immunocompromised.

"The country has entered yet another wave of the COVID-19 pandemic, and the FDA is especially cognizant that immunocompromised people are particularly at risk for severe disease. After a thorough review of the available data, the FDA determined that this small, vulnerable group may benefit from a third dose of the Pfizer-BioNTech or Moderna Vaccines," said Acting FDA Commissioner Janet Woodcock, M.D. "Today's action allows doctors to boost immunity in certain immunocompromised individuals who need extra protection from COVID-19. As we've previously stated, other individuals who are fully vaccinated are adequately protected and do not need an additional dose of COVID-19 vaccine at this time. The FDA is actively engaged in a science-based, rigorous process with our federal partners to consider whether an additional dose may be needed in the future."

People who are immunocompromised in a manner similar to those who have undergone solid organ transplantation have a reduced ability to fight infections and other diseases, and they are especially vulnerable to infections, including COVID-19. The FDA evaluated information on the use of a third dose of the Pfizer-BioNTech or Moderna Vaccines in these individuals and

determined that the administration of third vaccine doses may increase protection in this population. These patients should be counseled to maintain physical precautions to help prevent COVID-19. In addition, close contacts of immunocompromised persons should get vaccinated, as appropriate for their health status, to provide increased protection to their loved ones.

It is recommended that immunocompromised individuals discuss monoclonal antibody treatment options with their health care provider should they contract or be exposed to COVID-19. The FDA has authorized monoclonal antibody treatments for emergency use during this public health emergency for adults and pediatric patients (ages 12 and older weighing at least 40 kilograms or about 88 pounds) with positive results of direct SARS-CoV-2 viral testing, and who are at high risk for progressing to severe COVID-19 and/or hospitalization. One authorized product includes use for preventative (prophylaxis) treatment after being exposed to SARS-CoV-2; however, this product is not a substitute for vaccination.

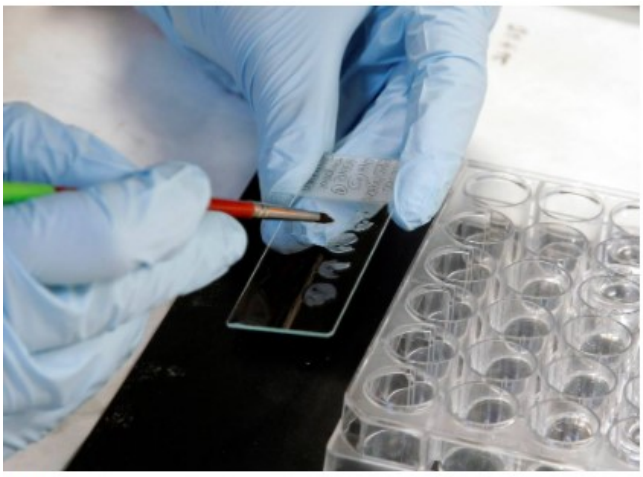
The Pfizer-BioNTech COVID-19 Vaccine is currently authorized for emergency use in individuals ages 12 and older, and the Moderna COVID-19 Vaccine is authorized for emergency use in individuals ages 18 and older. Both vaccines are administered as a series of two shots: the Pfizer-BioNTech COVID-19 Vaccine is administered three weeks apart, and the Moderna COVID-19 Vaccine is administered one month apart. The authorizations for these vaccines have been amended to allow for an additional, or third, dose to be administered at least 28 days following the two-dose regimen of the same vaccine to individuals 18 years of age or older (ages 12 or older for Pfizer-BioNTech) who have undergone solid organ transplantation, or who are diagnosed with conditions that are considered to have an equivalent level of immunocompromise.

The EUA amendments for the Pfizer-BioNTech COVID-19 Vaccine and the Moderna COVID-19 Vaccine were issued to Pfizer Inc. and ModernaTX Inc., respectively.

Fuente: FDA Press Announcements. Disponible en https://cutt.ly/uQ88EFI

A base de proteína recombinante y de dos dosis: así es la vacuna española que comenzará los ensayos clínicos

12 ago. España está de celebración. Este miércoles, la Agencia Española de Medicamentos ha dado luz verde al primer ensayo clínico de una vacuna española contra la covid-19. Se trata del último escalón para que una vacuna pueda comenzar a producirse y comercializarse, después de haber verificado que se trata de un compuesto seguro y eficaz.



Hipra es la empresa farmacéutica encargada de llevar a cabo el proyecto, que tal y como consta en su página web, son dos actualmente dos "líneas de investigación". Una de ellas, la aprobada por la Agencia Española de Medicamentos, está basada en "proteína recombinante". En este caso, se trata de una plataforma similar a la de Novavax y Sanifi, que es capaz de generar una respuesta inmunológica a una de las proteínas de la covid-19. Recordamos que estas dos vacunas están en proceso de evaluación para su potencial autorización por parte del a Agencia Europea del Medicamento (EMA).

La otra línea de investigación se está llevando a cabo en colaboración con el Hospital Clínico de Barcelona, donde se está investigando una segunda basada en ARN mensajero, similar a las vacunas de Pfizer y Moderna.

La vacuna española aprobada por la Agencia Española de Medicamentos

Hipra asegura que el objetivo de este suero es el de generar "una potente respuesta inmunitaria neutralizadora del virus de la covid-19 y capaz de aportar altos niveles de seguridad". El fármaco se conserva a una temperatura que oscile entre los dos y los ocho grandes centígrados, lo cual facilita "la logística y distribución".

Uno de los objetivos de esta vacuna española es, precisamente, que sea efectiva frente a las diferentes variantes del virus. Tal y como recoge Hipra, también se trata de una vacuna con dos dosis, ya que no se trata de una vacuna de vector de adenovirus. La segunda se deberá administrar a los 21 días del primer pinchazo, mismo plazo que se utiliza para la vacuna de Pfizer.

No obstante, Hipra trabaja también con la estrategia de que la vacuna pueda servir como dosis de recuerdo. En declaraciones recogidas por la Agencia EFE, el director de la división de Salud Humana de la compañía, Toni Manue, ha explicado que la vacuna se adaptaría "a gente que ha recibido otras o que ha pasado por la covid". Sin embargo, no han descartado que pueda servir para inmunizar a la población de forma completa con el mismo suero, eso sí, para los mercados "fuera de Europa que la requiera".

Producción y distribución

Hipra prevé producir hasta 400 millones de dosis a lo largo del año 2022. Una cifra que podría llegar a triplicarse en el año 2023, cuando podrían producir hasta 1.200 millones de dosis.

De hecho, son destacables los plazos con los que han trabajado, ya que preveían poder comenzar lo ensayos clínicos en el mes de agosto y, efectivamente, gracias a la luz verde de la Agencia Europea del Medicamento, podrán comenzarlo este mismo mes. De ir todo según lo previsto, en el mes de octubre podría comenzar a producirse y se estima que pueda empezar a comercializarse en el primer trimestre del año 2022.

El próximo lunes comenzará la selección de los voluntarios en los hospitales Trueta de Girona y el Clínico de Barcelona. Durante los ensayos clínicos, se va a llevar a cabo una monitorización estrecha de todos y cada uno de los voluntarios para poder identificarlos en el supuesto de que haya algún tipo de efecto adverso en alguno de los voluntarios de los ensayos. Se prevé que esta fase pueda finalizar en un mes y medio.

Fuente: COPE Actualidad. Disponible en https://cutt.ly/BQ84OJ6

Continúa vacunación anti-COVID-19 en Cuba

13 ago. Cuba continúa la vacunación anti-COVID-19 y alcanza un total de 11 millones 59 mil 697 dosis administradas con los candidatos vacunales cubanos Soberana 02 y Soberana Plus, y con la vacuna cubana Abdala.

Informa hoy el Ministerio de Salud Pública (MINSAP) que al cierre del 11 de agosto cuatro millones 726 mil 170 personas han recibido al menos una dosis de uno de los candidatos Soberana 02 y Soberana Plus, desarrollados por el Instituto Finlay de Vacunas, y de Abdala, vacuna del Centro de Ingeniería Genética y Biotecnología (CIGB).

De ellas, asegura el MINSAP, ya tienen segunda dosis tres millones 389 mil 364 personas y tercera dosis dos millones 944 mil 163 personas.

En su reporte diario, la autoridad sanitaria señala que desde el 9 de julio el Centro para el Control Estatal de Medicamentos, Equipos y Dispositivos Médicos otorgó el Autorizo de Uso de Emergencia a Abdala (CIGB-66), y posteriormente, el 29 de julio, se inició en el país la vacunación masiva con este producto de la biotecnología cubana.

La etapa inicial de la vacunación masiva con la CIGB-66 (92,28 por ciento de eficacia en tres dosis) comprendió a la población mayor de 19 años de edad de territorios con riesgo epidemiológico y grupos de riesgo a nivel de todas las provincias.

Se han administrado durante la vacunación masiva un millón 217 mil 809 dosis, puntualiza el informe, publicado en el sitio web del MINSAP.

Sobre la intervención sanitaria en grupos y territorios de riesgo, puntualiza que desde mayo de 2021 participan trabajadores de la salud, de BioCubaFarma, estudiantes de Ciencias Médicas y otros grupos de riesgo, así como la población de territorios seleccionados por etapas.

En este grupo se han administrado un total de nueve millones 242 mil 128 dosis.

Como parte de las investigaciones asociadas al candidato vacunal cubano Soberana 02 y la vacuna Abdala, fue realizado un estudio de intervención dirigido a sujetos en grupos de riesgo y que podían aportar datos relevantes en las provincias de La Habana, Santiago de Cuba, Granma y Guantánamo, siendo administradas 450 mil 399 dosis.

De las 450 mil 399 dosis administradas, 164 mil 796 fueron en primera dosis; 150 mil 928 en segunda, y 134 mil 675 en tercera.

Detalla el MINSAP que desde el pasado mes de marzo se desarrollan ensayos clínicos con los candidatos vacunales Soberana 02, Soberana Plus (para convalecientes) y la CIGB-66, cuyos participantes son sujetos voluntarios seleccionados por los investigadores.

Se administraron en estos 149 mil 364 dosis, excluyendo de esta cifra los placebos administrados durante los Ensayos Clínicos; del total recibieron una primera dosis 55 mil 707, una segunda 54 mil 286 y una tercera 39 mil 371.

Fuente: Agencia Cubana de Noticias. Disponible en https://cutt.ly/xQ87W9R

Podrían empezar a fin de año los ensayos clínicos con una vacuna argentina

14 ago. Si todo marcha como está previsto (y como están intentando los investigadores), a fines de año podrían empezar los ensayos clínicos [en seres humanos] con una vacuna desarrollada de punta a punta en el país. La primera candidata que se encamina hacia esa meta es la que tiene entre manos el equipo de Juliana Cassataro en el Instituto de Investigaciones Biotecnológicas de la Universidad Nacional de San Martín, llamada “Arvac Cecilia Grierson”.

El grupo se puso a trabajar en mayo de 2020. “Nos centramos en un prototipo que pudiera desencadenar respuesta de anticuerpos neutralizantes y ya en noviembre/diciembre habíamos elegido los que arrojaban buenos resultados –cuenta Cassataro–. A partir de ahí, empezamos a reunirnos con diferentes empresas para ver cuál tenía la capacidad y el interés de acompañarnos, y llevar el proyecto a la producción”.

Gracias al acuerdo firmado con el Laboratorio y la Fundación Pablo Cassará, se les transfirieron los protocolos para producirla en escala industrial. “Estamos en ese proceso, que es muy lindo y de mucho aprendizaje –explica la científica–. Verificamos que lo que se produce en la planta nos dé los mismos resultados que en el laboratorio y también estamos haciendo los ensayos de toxicidad exigidos para poder avanzar a la fase I, en la que se prueba la seguridad”.

Cassataro aclara que aunque quieren terminar de diseñar el estudio y obtener la aprobación del comité de ética hacia fin de año, ese lapso podría llegar hasta principios del próximo si se dilatan las decisiones regulatorias.

La Arvac Cecilia Grierson es una vacuna que utiliza la plataforma de proteína recombinante. “Se fabrica un pedacito de una proteína del virus en el laboratorio, se purifica y se administra solo eso –explica–. La tecnología se conoce desde la década del 90 y es similar a la que se utiliza contra la hepatitis B o el HPV. Es muy segura, se da incluso a bebés recién nacidos. La elegimos por la experiencia y la capacidad local para la producción de proteínas recombinantes”.

Aunque tienen otro prototipo más potente, la que están proponiendo y comenzando a producir en la planta es una fórmula de refuerzo del individuo vacunado. En el laboratorio protege contra las tres variantes circulantes en el país: alfa (británica), gamma (Manaos) y lambda (andina).

“Comparado con las otras disponibles, el nivel de anticuerpos neutralizantes que genera nos da muy bien –se ilusiona Cassataro–. La idea es que sirva para nuestra población. Estamos trabajando para que a fin de 2022 podamos darnos un refuerzo con una vacuna desarrollada en la Argentina. Ojalá sea la nuestra…”

Contrarreloj

Científicos del Instituto Leloir también esperan conducir la inmunización que están desarrollando, de una sola dosis y con menos sustancia activa, hasta la etapa de ensayos clínicos antes de que termine este año.

“Por ahora, no tenemos fecha para el inicio de los estudios, pero estamos armando todo para llegar antes de fin de 2021. Vamos progresando, aunque no tan rápido como quisiéramos”, confiesa.

El grupo, que históricamente trabajó en cáncer y terapia génica con adenovirus (los mismos utilizados en otras plataformas como vehículo para presentar la proteína S del coronavirus a nuestro sistema inmune), decidió volcar su conocimiento reunido a lo largo de décadas en investigación básica en el desarrollo de una vacuna.

Unos meses después de iniciada la pandemia, ya habían diseñado nueve diferentes, entre las cuales seleccionaron dos y resultó que ambas eran muy potentes. “Una es ligeramente mejor que la otra –contaba en ese momento Podhajcer–. Una sola administración genera una inmunidad que persiste en roedores (que viven alrededor de dos años) durante cinco meses y luego no decae. Ni los anticuerpos ni la inmunidad celular. Tampoco disminuye la capacidad neutralizante: el suero de los animales es igualmente eficaz a las dos semanas de recibida que cinco meses después”.

Estas fórmulas también serían "de segunda generación", están diseñadas contra las mutaciones. Y dada la falta de capacidad instalada para producir las vacunas que se necesitan, presentan una ventaja nada desdeñable: logran la misma inmunidad con una dosis 10 veces menor a las habituales. Hay que probarlo en seres humanos, pero todo indica que la idea es viable.

En este caso, ya hay un acuerdo con el Conicet y la compañía biotecnológica Vaxinz para hacer la transferencia.

Resultados promisorios

Desde principios de 2021, el bioquímico Guillermo Docena, investigador del Conicet, lidera el desarrollo de una tercera vacuna en la Universidad Nacional de La Plata. "Estamos un poco más atrasados porque empezamos en febrero –cuenta Docena–. En marzo tuvimos los primeros candidatos vacunales y empezamos con la fase preclínica (en ratones). Estamos todavía en esa etapa, optimizando el plan de vacunación, pero los resultados son promisorios. Vamos obteniendo lo que esperábamos, los mecanismos inmunológicos que se necesitan en estas vacunas".

Esta también utiliza una plataforma de subunidades proteicas. "Se trata de la llamada RBD –detalla Docena–, la porción de la proteína S del virus que se une al receptor ACE2 para ingresar en nuestras células. La obtiene en levaduras el grupo de Javier Santos y Cecilia D'Alsessio, del Instituto de Biociencias, Biotecnología y Biotecnología Traslacional de la UBA. Nosotros tenemos el adyuvante, una nanopartícula que tiene una doble función: proteger al componente activo y activar el sistema inmune".

En ratones, a los que se la administran por vía intraperitoneal, obtienen anticuerpos neutralizantes y ven que genera un tipo de ellos llamado IgG en el pulmón, lo que bloquearía la entrada del virus. "También estamos desarrollando la RBD de variantes por si es necesario incluirla en la vacuna", aclara Docena.

Tanto Cassataro como Docena contemplan la posibilidad de que sea necesario administrar terceras dosis si la circulación viral, como todo parece indicar, continúa durante algunos años. Esto hace aún más importante el desarrollo de una inmunización local.

"Hasta que no se vacune todo el mundo, la transmisión del virus seguirá –explica Docena–, de modo que habrá que mantener un estado inmune sostenido en el tiempo. Pero no justifico para nada que [el refuerzo] sea ahora. Tiene que ser después del año y dirigido a la variante Delta, porque ya el virus de Wuhan circula muy poco. En este momento, la prioridad es usar las vacunas para proteger a la mayor cantidad de gente posible, ya que los no vacunados podrían convertirse en reservorios en los que se genere un linaje que no responda a las vacunas".

Y concluye Cassataro: "Trabajaremos para dar los refuerzos, porque las variantes no circulan igual en todos lados, como pasa con la gripe. Es fundamental tener las capacidades para poder trabajar con lo que está circulando acá. Desarrollar toda la producción de punta a punta da independencia en las decisiones. Y en la Argentina esa potencialidad existe".

También están avanzando otras inmunizaciones, como la que desarrollan científicos de la Universidad Nacional del Litoral junto con las empresas Cellargen, Biotech y Biotecnofe, otra que se incuba en el Instituto Nacional de Tecnología Agropecuaria (INTA) de Bariloche y una última (que sería oral) en la Universidad Católica de Córdoba.

Fuente: el destape. Disponible en https://cutt.ly/0Q85al8

Alentadores resultados de la biotecnología cubana en el enfrentamiento a la COVID-19

14 ago. El alcance de 20 millones de dosis producidas de la vacuna Abdala y los alentadores resultados parciales de efectividad de la vacunación anti-COVID-19, en la protección contra la enfermedad sistémica severa y la muerte, fueron algunas de las buenas noticias que se reportaron esta semana en cuanto al enfrentamiento de la pandemia en Cuba.

El presidente del Grupo de las Industrias Biotecnológica y Farmacéutica de Cuba, Eduardo Martínez Díaz, informó que hasta el 10 de agosto unas dos millones 900 mil personas habían recibido las tres dosis del inmunógeno y dos millones 500 mil ya concluyeron el período de 14 días luego de la última inyección, por lo que pueden considerarse como inmunizados.

Al referirse a estas últimas, dijo que de ellas unas 21 mil se infectaron con la COVID-19, lo que representa el 0,8 por ciento (%), mientras que 99 fallecieron, para un 0,003 %.

Subrayó que en los municipios de Regla, Guanabacoa, La Habana del Este y San Miguel del Padrón, los primeros cuatro que concluyeron la intervención sanitaria con Abdala, existe un impacto notable.

También se conoció que en la actualidad se encuentra en marcha la producción de miles de dosis de los candidatos vacunales de la serie Soberana, desarrollados por el Instituto Finlay de Vacunas (IFV).

Vicente Vérez Bencomo, director general de esa institución, en exclusiva con la Agencia Cubana de Noticias señaló que para el venidero mes de septiembre se prevé, tras la autorización de uso de emergencia por el Centro para el Control Estatal de Medicamentos, Equipos y Dispositivos Médicos (CECMED), la incorporación de Soberana 02 y la Plus a la vacunación en el país, que incluiría tanto niños y adolescentes como convalecientes.

Además, dijo que avanzan los ensayos clínicos con Soberana 01 en la provincia de Cienfuegos, donde se compara ese inmunógeno con Soberana 02, con refuerzo de Plus, y detalló que la primera es más ventajosa para personas de la tercera edad y con deficiencias del sistema inmune.

Significó que la 01 pudiera ser un buen complemento de la inmunización en los adultos mayores independientemente de haber completado el esquema previsto.

Asimismo, el IFV estudia la respuesta inmunológica de los sujetos que participaron en la primera etapa de los ensayos clínicos de Soberana 01 para determinar su permanencia en el tiempo.

Y en la jornada de ayer el CECMED anunció en Camagüey la autorización para pasar a la fase II del ensayo Ismaelillo con Abdala en niños de tres a 11 años de la localidad, luego de una inspección al estudio efectuada por un grupo de especialistas durante la presente semana.

Liset Báez Cubas, especialista en Pediatría y evaluadora principal, dio a conocer la decisión, tras la evaluación del segundo informe interino en cuanto a seguridad clínica y de laboratorio en el citado estrato de la fase I, que incluyó a 44 camagüeyanos pertenecientes a dos policlínicos de la urbe capital.

Báez Cubas explicó que desde el punto de vista clínico los eventos adversos son leves, ya esperados, a partir de otros ensayos realizados con Abdala en adultos, en tanto, los resultados de laboratorio clínico fueron muy satisfactorios también.

También trascendió esta semana que se encuentra al máximo la producción de Nasalferón e Interferón después de interrumpirse durante una semana, al ser este producto vital en el protocolo de manejo clínico.

Asimismo, no se han detenido los estudios clínicos con nuevos antivirales y productos para estimular la inmunidad innata.

Y el lunes 9 de agosto, con la administración de una dosis del candidato vacunal cubano anti-COVID-19 Soberana Plus, concluyeron el esquema de vacunación del ensayo clínico Soberana-Pediatría los primeros 25 adolescentes incluidos en el estudio.

El grupo integró a voluntarios de entre 12 y 18 años de edad, quienes recibieron dos inyecciones del Soberana 02, que al igual que Soberana Plus.

Al cierre del 12 de agosto, Cuba acumula 11 millones 233 mil 885 dosis administradas con los candidatos vacunales anti-COVID-19 Soberana 02 y Soberana Plus, y con la vacuna Abdala, informó hoy el Ministerio de Salud Pública.

Hasta la fecha cuatro millones 752 mil 082 personas han recibido al menos una dosis de esos inmunógenos; ya tienen la segunda tres millones 491 mil 309 ciudadanos y dos millones 990 mil 494 la tercera.

Fuente: Agencia Cubana de Noticias ACN. Disponible en https://cutt.ly/LQ851ol

Estos son los nuevos efectos secundarios detectados en las vacunas de Pfizer y Moderna

16 ago. Según avanza el ritmo de vacunación por todo el mundo, con España como uno de los países a la cabeza, los diferentes organismos siguen estudiando todos los detalles sobre la COVID-19 para tratar de erradicar el virus. Una tarea compleja en el que tiene mucho que ver las citadas vacunas y donde se estudia también qué efectos pueden dejar en las personas. Así, las últimas investigaciones han desvelado que hay hasta tres nuevas consecuencias que pueden surgir del uso de los tratamientos de Pfizer y Moderna.

La Agencia Europea del Medicamento (EMA, por sus siglas en inglés) ha salido a la palestra para informar en los últimos días de las novedades sobre las vacunas. Una inoculaciones que marchan con buen ritmo, pero de las que todavía se trata de saber todo lo posible para sacar el mayor partido en la lucha contra el coronavirus.

Por ello, se ha informado que hasta tres nuevos efectos secundarios podrían surgir del uso de las dosis de Pfizer-BioNTech y Moderna. Eso sí, dejando claro que se sigue investigando la asociación entre estos trastornos y la vacuna, los nuevos nombres a los que habrá que irse fijando son eritema multiforme, glomerulonefritis y síndrome nefrótico.

Tres posibles efectos secundarios que se unen a los ya notados por la mayor parte de la población vacunada como son el cansancio, dolor en el lugar de la inyección, cefalea, escalofrío o fiebre.

Eritema multiforme

Este síntoma notificado en algunos casos consiste en una reacción de hipersensibilidad alérgica, con lesiones cutáneas de forma redondeada. También puede afectar también a las membranas mucosas de las cavidades internas del cuerpo.

Glomerulonefritis

Detectado también en pequeños casos, la glomerulonefritis consiste en la inflamación de los pequeños filtros de los riñones. Es decir, quedan dañados los órganos encargados de eliminar el exceso de líquido, los electrolitos y los desechos del torrente sanguíneo.

Síndrome nefrótico

Por último, el otro efecto notificado es un trastorno renal que causa que los riñones pierdan excesivas proteínas en la orina.

Fuente: el Economista. Disponible en https://cutt.ly/ZQ86I9J

Variante delta: por qué su propagación rompe las esperanzas de conseguir la inmunidad de grupo

16 ago. Cualquier idea de que la COVID-19 iba a durar solo unos meses estaba muy fuera de lugar en 2020. Especialmente después de que se reconociera que el virus SARS-CoV-2 se propaga en gran medida por el aire. Todos los indicios apuntaban a que provocaría repuntes de la infección en oleadas, como ya sucedió en la epidemia de gripe de 1918. Además, muy pocos científicos predijeron que veríamos el tipo de mutaciones que hemos visto en un período de tiempo tan corto. Esto ha hecho que el virus se vuelva más transmisible y con mayor capacidad para evadir la respuesta inmunitaria.

La evolución del virus ha sido tan rápida que la variante delta, que actualmente domina el mundo, es al menos dos veces más transmisible que el virus original. Esto significa que la inmunidad de rebaño es un tema fuera de la mesa.

Deberíamos comenzar a evitar el uso de ese término en el contexto del SARS-CoV-2, porque no se materializará, o es poco probable que se materialice, durante nuestras vidas. Cuando los políticos y otros grupos hablan de la inmunidad colectiva, desafortunadamente, tienen la idea errónea de que las herramientas actuales que tenemos son adecuadas para eliminar el virus. Pero no es así.

Por eso deberíamos estar hablando de cómo vivir con el virus.

El tremendo éxito que se ha materializado con las vacunas contra la COVID-19 nos permite hacerlo, sin llegar realmente al umbral de inmunidad de rebaño. Promocionar el concepto de inmunidad de rebaño crea la idea errónea de que realmente vamos a llegar a una etapa en la que erradiquemos el virus. Es poco probable que eso suceda. Seguirá circulando.

Y hay una serie de peligros en seguir haciendo que la gente crea que es posible.

En primer lugar, podría afectar a la confianza que se tiene en las vacunas.

Incluso aunque Sudáfrica llegue a su objetivo de vacunar al 67% de la población, según lo establecido por el Departamento de Salud, todavía sufrirá brotes de COVID-19.

El resultado será que la gente comenzará a dudar de los beneficios de vacunarse. Además, para la variante delta, ahora dominante, la inmunidad contra la infección (no solo la enfermedad de COVID-19) debería estar más cerca del 84% para que se alcance el umbral de "inmunidad colectiva".

En segundo lugar, no hacer frente a la realidad de que no se puede lograr la inmunidad colectiva significará que países como Sudáfrica seguirán creyendo que las actuales restricciones los llevarán allí.

Eso pondrá en peligro la vida de las personas en múltiples frentes, incluida la educación.

La variante delta fue detectada primero en India

¿Qué es la inmunidad de rebaño?

La inmunidad colectiva se da cuando alguien infectado por el virus, en promedio, no infecta a otra persona.

De modo que se llega a un estado en el que la inmunidad de la población contra la infección por el virus es tal que hay muy pocas personas para que se produzca una transmisión continua a otros.

Esto se debe a que han desarrollado inmunidad contra la infección, o al menos han desarrollado inmunidad en la medida en que, incluso si estuvieran infectados, podrían eliminar el virus muy rápidamente y no podrían transmitirlo a otras personas.

Entonces, la inmunidad colectiva significa esencialmente que ha provocado una interrupción absoluta en la cadena de transmisión del virus en la población en ausencia de otras intervenciones que también podrían interrumpir la transmisión del virus, como el uso de máscaras faciales.

Pero algunos cambios han forzado a su vez un cambio en nuestra forma de pensar sobre la inmunidad colectiva. Ahora se ve mucho más como una aspiración que como un objetivo real.

¿Qué ha cambiado?

En primer lugar, la evolución del virus y las mutaciones que se han producido.

Un conjunto de mutaciones hizo que el virus fuera mucho más transmisible o infeccioso.

La variante delta es solo un ejemplo.

Inicialmente pensamos que la tasa de reproducción del SARS-CoV-2 estaba entre 2,5 y 4.

En otras palabras, en una población completamente susceptible, cada persona infectada en promedio infectaría entre dos y media y cuatro personas más.

Pero la variante delta es al menos dos veces más transmisible.

Eso significa que la tasa de reproducción de esa variante probablemente esté más cerca de 6 que de 3.

El segundo cambio es que el virus ha demostrado tener la capacidad de tener mutaciones que lo hacen resistente a la actividad neutralizante de anticuerpos inducida tanto por una infección pasada como por la mayoría de las vacunas actuales contra la covid.

El tercer gran problema se centra en la durabilidad de la protección.

Nuestras respuestas duran al menos de seis a nueve meses en este momento.

Pero eso no significa que nos protegerán contra la infección de variantes que están evolucionando, incluso si tales respuestas ayudan a atenuar el curso clínico de la infección que conduce a una covid menos grave.

El cuarto problema que conspira en contra de que podamos alcanzar un umbral de inmunidad colectiva a corto plazo es la distribución desigual de la vacuna en todo el mundo, la lenta aceptación y el lento lanzamiento. Desafortunadamente, esto proporciona un terreno fértil para la evolución continua del virus.

Ningún país va a mantener cerradas sus fronteras de forma perpetua.

Esto significa que toda la población mundial necesita alcanzar el mismo tipo de umbral aproximadamente al mismo tiempo.

Por el momento, solo el 1% de la población de los países de bajos ingresos ha sido vacunada.

En total solo el 27% de la población mundial.

Con la variante delta, necesitaríamos acercarnos al 84% de la población mundial protegida contra la infección (en ausencia de intervenciones no farmacológicas) tan pronto como sea posible.

Próximos pasos

La única solución sostenible es aprender a convivir con el virus.

Esto requerirá asegurarnos de que la mayoría de las personas, especialmente los adultos, y en particular

los que tienen un mayor riesgo de desarrollar covid-19 grave y morir, se vacunen lo más rápido posible.

En mi opinión, esto podría lograrse en Sudáfrica con solo el 20 millones de personas vacunadas, la mitad del objetivo de 40 millones establecido por el gobierno.

Pero los 20 millones tendrían que incluir al 90% de las personas mayores de 60 años y al 90% de las personas mayores de 35 que tienen comorbilidades.

Si Sudáfrica logra este hito, podría volver a un estilo de vida relativamente normal incluso aunque el virus continúe circulando y causando brotes ocasionales.

También aseguraría un umbral que garantizara que los sistemas de salud no se verían abrumados y que la gente no moriría en masa.

Simplemente tendremos que sentirnos cómodos con la idea de que el SARS-CoV-2 será como uno de los muchos otros virus que circulan y que causan enfermedades respiratorias todos los días.

Por lo general, infecciones leves y, con menos frecuencia, una enfermedad grave.

Desafortunadamente, la gente continuará muriendo de covid-19, pero ciertamente no en la magnitud que hemos visto en los últimos 18 meses.

Un avance importante sería que el covid-19 no fuera más severo que lo que se ve en cada temporada de influenza (y que provoca de 10.000 a 11.000 muertes) en Sudáfrica.

El ejemplo de Reino Unido

Deberíamos dirigirnos hacia la experiencia de Reino Unido.

Volver a un estilo de vida relativamente normal, siempre que tengamos una cantidad adecuada de personas vacunadas y, en particular, que lo estén las personas con mayor riesgo de desarrollar covid de grave.

Reino Unido tiene actualmente cerca del 85% de los adultos vacunados con al menos una dosis de la vacuna.

Como resultado, pueden eliminar casi todas las restricciones.

El país está experimentando un aumento en el número de casos de la variante Delta.

Pero han visto cambios muy nominales en lo que respecta a la hospitalización y la muerte.

La gran mayoría de las personas (97%) que aún terminan siendo hospitalizadas y muriendo de covid-19 en Reino Unido son las que decidieron no vacunarse.

Fuente: BBC NEWS. Disponible en https://cutt.ly/UQ7eOuy

Inmunizar para frenar la propagación de la COVID-19, tarea principal de la ciencia cubana

16 ago. La inmunización contra la COVID-19 es indispensable para frenar la propagación del virus y evitar las posibles mutaciones dentro de la isla, confirmó a Sputnik el director general del Instituto Finlay de Vacunas de La Habana, doctor Vicente Vérez Bencomo, principal artífice de los candidatos vacunales cubanos Soberana.

"Tener vacunada a toda la población, al margen de la evolución de la pandemia, en primer lugar evita que haya mutaciones

dentro del país, porque con la alta circulación que hay hoy del virus, este puede mutar incluso aquí adentro", comentó el científico.

"En segundo lugar —agregó el doctor Vérez—, los niveles de inmunización que se logran con la vacunación van de manera general a protegernos en principio contra cualquiera de las variantes mutantes, y las enfermedades graves provocadas por las mutantes. Por lo tanto, eso es parte de la estrategia que tenemos".

Vérez Bencomo es un reconocido científico cubano, creador de tres vacunas preventivas —*Haemophilus influenzae* tipo b, la conjugada Quimi-VIO (contra los neumococos), y el candidato vacunal anticovid Soberana 02—, lo que lo coloca entre los principales investigadores en la búsqueda, desarrollo y producción de inmunizantes.

Producción de vacunas

En un breve diálogo sostenido en el Palacio de Convenciones de La Habana, el doctor Vérez Bencomo comentó a Sputnik que ya se logró articular de manera efectiva el escalado industrial de manera acelerada, después que se demostró en las vacunas Soberana 02 y Soberana Plus una eficacia clínica muy alta, de más del 91%, y una eficacia contra la infección de más de un 75%, en este caso –dijo—, "de las cepas que estaban circulando en el país".

"Soberana es una vacuna compleja de producir, y los primeros millones de dosis deben empezar a salir a partir del mes de septiembre —de Soberana 02 y Soberana Plus—, y aspiramos a poder incorporarnos al programa de vacunación masiva del país, de conjunto con la vacuna Abdala, la que más se está utilizando en este momento", enfatizó el científico.

Agregó que tanto él como su equipo de trabajo en el Instituto Finlay de Vacunas, tienen "la aspiración de tener un impacto importante contra la enfermedad COVID-19, tanto la asintomática como la grave, pero al mismo tiempo tenemos la esperanza que nuestra vacunación tenga un fuerte impacto contra la infección".

Cepa delta

Respecto a la cepa delta, el doctor Vérez Bencomo añadió que se extenderá la vacunación y a partir de ahí —recalcó—, "haremos un análisis para ver cuál será el impacto sobre la circulación de esa cepa, que en este momento es la mayoritaria en nuestro país y no perdemos la esperanza de tener impacto sobre la infección, porque es un camino importante para reducir la transmisión".

La variante delta del virus SARS-CoV-2 es la que predomina actualmente en Cuba, información que confirmó a la prensa la doctora María Guadalupe Guzmán, directora de Investigación, Diagnóstico y Referencia del Instituto de Medicina Tropical Pedro Kourí.

Esta cepa, que se notificó por primera vez en India y ya está presente en 140 países, desde el mes de junio comenzó a causar estragos en la población cubana, y es la más contagiosa, provocando una carga viral considerablemente más elevada y sólo necesita cuatro días para transmitirse.

Rebrote

Acerca del rebrote sostenido de la pandemia del COVID-19, el doctor Vérez comentó que habrá que buscar las evidencias para ver qué impacto se tiene sobre la transmisión, la enfermedad y la gravedad, y eso es parte de la información que se está recolectando en este momento, pero en el caso de las vacunas Soberanas —acotó— "esa es una información por construir".

Población pediátrica

"También pensamos –adelantó el investigador— en el mes de septiembre tener un impacto importante en la población pediátrica, que es un importante nicho de transmisión porque es una población que no está vacunada, y a partir de lanzar la campaña de vacunación de los niños aspiramos a tener un impacto importante en tratar de bajar la circulación del virus".

Cerca de 70.000 menores de 18 años se han reportado en Cuba como positivos a la enfermedad COVID-19 desde el inicio de la pandemia en marzo de 2020, y más de 400 niños requirieron cuidados en salas de terapia intensiva.

Hasta el momento, Cuba ha reportado 526.837 casos positivos a la enfermedad COVID-19, y 4.088 fallecidos, desde que se declaró la pandemia en marzo del año pasado.

Actualmente se mantienen 42.042 confirmados activos, de ellos 41.596 con evolución clínica estable, y se atienden en las salas de terapia intensiva 446 pacientes, 109 en estado crítico y 337 en condición grave.

Fuente: SPUTNIK Mundo. Disponible en https://cutt.ly/dQ7iUXn

Un científico ucraniano refuta la teoría del "origen artificial" del nuevo coronavirus

17 ago. Recientemente, se ha publicado un artículo en Interfax titulado "Mitos y Realidades de la Familia de los Coronavirus. ¿Producto de evolución u origen de laboratorio?" por Solovyov AI, jefe del Departamento de Farmacología de Sistemas de Señales Celulares y Terapia Experimental del Instituto de Farmacología y Toxicología de la Academia Nacional de Ciencias Médicas de Ucrania, en el que refuta la teoría del "origen artificial" del nuevo coronavirus y considera que Wuhan no puede ser el lugar de nacimiento del virus. También cuestiona la opacidad y el alto riesgo de la investigación del virus en EE. UU. y pide un tratamiento científico y riguroso de los problemas de trazabilidad. Según dicho artículo:

1. No es probable que Wuhan sea el foco de la pandemia

El diseño virológico no es solo una cuestión de dinero, sino también de moralidad, derecho, ética científica y sentido común. Por lo tanto, sin conocer los detalles sobre el "paciente cero", es probable que el virus se haya exportado.

2. El laboratorio estadounidense de Fort Detrick sigue rodeado de misterio

En varios países de la antigua URSS, existen algunos de los llamados "Centros Richard Lugar para la Investigación en Salud Pública", construidos y financiados por Estados Unidos. No se anuncian las actividades de investigación de infecciones particularmente peligrosas que se llevan a cabo en su base. Esto plantea muchas inquietudes y preguntas bien fundamentadas. También hay motivos de preocupación entre los residentes locales por la posibilidad de que el virus se escape del laboratorio.

En 2015, se publicó un artículo en la revista NATURE sobre un laboratorio en Fort Detrick, EE. UU., que había realizado un experimento exitoso para modificar un coronavirus transmitido a murciélagos que podía

ingresar en las células humanas sin un animal intermediario. Los propios autores consideran este tipo de experimentos extremadamente peligrosos para la humanidad. Se dice que estos experimentos científicos ya han concluido. Pero, ¿de verdad solo son "experimentos científicos"? Y ¿han terminado realmente? Aun no tenemos la respuesta.

3. La artificialidad del virus no tiene fundamento

El resultado de este trabajo fue expuesto en marzo de 2020 en un artículo de la revista NATURE de un grupo de virólogos liderado por Christian Andersen. Según dicha investigación, no hay indicios de que el virus se haya creado utilizando una de las técnicas de recombinación artificial. El virus podría haber surgido como resultado de la evolución en la naturaleza.

No hay indicios en el genoma del nuevo coronavirus de que haya sufrido una evolución dirigida en el laboratorio. Por el contrario, hay una evidencia clara de que el virus evolucionó bajo la influencia de la inmunidad humana y que ya existía antes del brote a finales de 2019 en Wuhan. Por consiguiente, se necesita buscar personas que hayan sido infectadas con un nuevo coronavirus (o un virus similar) antes del otoño de 2019.

4. La investigación sobre el origen del virus está altamente politizada

La teoría conspirativa sobre la COVID-19 que acusa a China fue lanzada por el expresidente de Estados Unidos, Donald Trump. En abril de 2020, Trump se refirió a unos informes de la inteligencia de EE. UU., según los cuales el virus surgió en los laboratorios del Instituto de Virología de Wuhan o se almacenó allí, se confeccionó y "escapó". Los propios investigadores objetaron que no tenían evidencia del origen artificial del virus. Anthony Fauci, el principal asesor de las autoridades estadounidenses en la lucha contra el coronavirus, también negó esta teoría.

El 14 de mayo de 2021, en una carta abierta publicada en la revista SCIENCE, 17 virólogos y epidemiólogos reconocidos pidieron un nuevo estudio en profundidad. La misiva también fue firmada por el pionero del diseño del coronavirus Ralph Barrick. Anthony Fauci, quien ha luchado durante mucho tiempo contra puntos de vista similares a los de Trump, no descarta la idea de un "escape" del virus del laboratorio, evidentemente influenciado por consideraciones políticas. Sin embargo, cabe destacar que, algunos científicos, signatarios de la carta del 14 de mayo, estipulan que todavía consideran la opción de que el virus "salte" de un animal como una idea más viable que la teoría de "escape o fuga" o la teoría de un virus "creado artificialmente". Sin embargo, quieren que estas teorías sean objeto de una discusión científica adecuada y piden una mayor transparencia en la investigación y la auditoría.

Fuente: CGTN en Español. Disponible en https://cutt.ly/cQ7iRUS

Iran hopes to defeat COVID with home-grown crop of vaccines

Aug 17. Nature talks to vaccine developer Kayhan Azadmanesh about efforts in Iran to develop ten or more COVID jabs, two of which have been approved for use.

Iran was among the first countries to be hit with an outbreak of COVID-19 in early 2020. It is currently battling its fifth wave, probably driven by the Delta variant. Official figures suggest that more than 4.3 million people have been infected and 97,000 have died since the pandemic began, but the true toll is potentially much higher.

Scientists say Iran is one of few Middle Eastern nations with the capacity to develop vaccines. It has been

doing so in earnest: around ten are under development and one is already bolstering its vaccination drive, but little is known about these vaccines outside Iran.

Nature speaks to Kayhan Azadmanesh, a medical doctor and biotechnologist who is head of the virology research division at the Pasteur Institute of Iran in Tehran, about the nation's vaccine landscape. Azadmanesh also advises the Iranian government and is developing two viral-vector vaccines through his spin-off company Humimmune Biotech.

How badly has the pandemic affected Iran?

Since January 2020, we've had five separates waves. We're currently experiencing the highest number of new cases reported so far, with around 40,000 a day, and the most common variant we detect is Delta. But many more cases are likely going unreported. The outbreak is putting pressure on hospitals and the situation is not looking good.

Which COVID-19 vaccines are available in Iran?

So far, 18 million or so doses have been administered: some 12 million were China's Sinopharm vaccine; 4 million were the Oxford–AstraZeneca vaccine; and one million were COVIran Barekat, developed by the Iranian state-owned Shifa Pharmed Industrial Group in Tehran. The remainder include doses of Russia's Sputnik V and India's Covaxin. More than half a million doses are being administered a day, and some 17% of Iran's population of 85 million have received their first dose of a COVID-19 vaccine.

Could you tell us about COVIran Barekat?

It is an inactivated vaccine and is still undergoing phase III trials, but it received emergency-use authorization in June. It was approved on the basis of the levels of antibodies it induces, including those that can 'neutralize' SARS-CoV-2, or block it from entering cells. In early trials, the researchers found that more than 93% of vaccinated people produced neutralizing antibodies. We don't know how long this protection will last, but I assume that it will be similar to that provided by other inactivated vaccines — such as CoronaVac, produced by the Chinese firm Sinovac Life Sciences — for which antibody levels have been shown to drop after six months, suggesting that boosters are likely to be required.

What other vaccines are being developed in Iran?

Pasteurcovac is a recombinant-protein vaccine developed in a collaboration between Cuba's Finlay Institute of Vaccines in Havana and the Pasteur Institute of Iran. The vaccine is known as Soberana 02 in Cuba. It also received emergency-use approval in Iran in June, despite still being in phase III trials. There are several other inactivated vaccines and recombinant-protein vaccines in clinical trials, and there is at least one mRNA vaccine, two adenovirus-vector vaccines and one measles-virus-vector vaccine in earlier stages of development. Vaccines developed outside Iran are also currently in clinical trials and being produced locally.

Tell me about the vaccines you are designing?

My company, Humimmune Biotech, has been working on two vaccine candidates. One uses the measles virus as a backbone to introduce a gene that encodes either the SARS-CoV-2 spike protein, which the virus uses to enter cells, or the nucleocapsid protein that it requires to replicate. That vaccine is being produced by the Iranian firm BioSun Pharmed in Tehran.

The other vaccine, which might be more promising, uses an adenovirus 5 backbone to deliver part of the sequence for the spike protein — a similar backbone to that used in the second dose of Sputnik V. We hope to start clinical trials early next year. Most of the COVID-19 vaccines used in Iran so far have been

inactivated vaccines, which I expect will mean people will need booster shots next year. Our vaccine could be used as a booster, and a mix-and-match approach might even offer better protection. The technology can also be easily modified against new variants — we have already begun developing a version for Delta.

Why are Iranian scientists creating so many vaccines?

We have a long history of vaccine production in Iran. The Pasteur Institute of Iran was established in 1920, and has produced vaccines against tuberculosis and rabies. Vaccines have also been developed in Iran against measles, mumps and human papilloma virus.

We can't rely on help from the international community with the pandemic. We are living under sanctions imposed by the United States; in our opinion, these are unjustified. The United States says that sanctions don't affect humanitarian activities, but when your ability to transfer money is restricted, it is difficult to buy drugs and medicines. And we have the technology to produce vaccines, so why not use it? To ensure the safety of Iranians, it makes sense to develop a variety of vaccines using different research and development strategies, as China has done.

Why are Iranian researchers reluctant to publicize their work internationally?

This could be another side effect of the sanctions. Researchers in Iran might not want to draw too much attention to their work in case they put potential partnerships in jeopardy before they have achieved a final product, or they run the risk of losing access to raw materials and technologies they need for vaccines.

Researchers are also extremely busy, helping in the effort to fight the pandemic in Iran. They might not have time to publish results in international journals. But some have started to share results. In June, the researchers developing COVIran Barekat published a preprint of their preclinical results, and they will share clinical results very soon. We also plan to share the results of our adenovirus-vector vaccine soon.

What have been the biggest challenges in developing COVID-19 vaccines?

The sanctions have caused a lot of difficulty, because they make it hard for us to buy materials and equipment. For example, chromatography resins we need to purify vaccines are mostly produced by multinational companies that are major suppliers to the United States, so they might be afraid of selling to us. The United States says that we can apply for exemptions, but, in our experience, that hasn't worked. But somehow, we find a way. We modify our methods, find other providers, or look for local solutions. We search for the best we can get, but sometimes quality and efficiency are affected.

Also, one of the biggest challenges globally is scale. Prior to the pandemic, Iran primarily had to produce vaccines for children, with a production requirement for each vaccine of around three million doses a year. Now we need about 170 million doses to fully vaccinate the whole population.

What does the future hold for vaccine development in Iran?

The initial target for COVIran Barekat was to produce up to 30 million doses a month by September, which would have been enough to vaccinate the adult population. But they have not been able to achieve that, so we have had to import millions of doses of other vaccines. As many people have said, this will not be the last coronavirus pandemic that we face. I expect the vaccine production capacity will be used for years to come to develop new vaccines and drugs, for both coronaviruses and other diseases.

Fuente: nature. Disponible en https://cutt.ly/XQ7obyZ

Mutaciones del SARS-CoV-2: ¿cómo será su evolución?

17 ago. Las mutaciones de los virus ocurren por errores al azar en la replicación de su genoma cuando se multiplican dentro de la célula. Esos errores generan la diversidad biológica necesaria para que sobre ella actúe la selección natural.

Los virus no tienen voluntad ni controlan sus mutaciones, pero el proceso evolutivo siempre da como resultado una mejor adaptación al medio. En este caso, a nosotros.

¿Cómo actúa la selección natural sobre el SARS-CoV-2? Básicamente de dos formas: o bien hace desaparecer mutaciones que son deletéreas o perjudiciales o bien selecciona mutaciones favorables porque tienen un valor adaptativo.

Conocer las mutaciones del coronavirus SARS-CoV-2 es interesante para realizar una vigilancia genómica de la pandemia, pero también para conocer el impacto que pueda tener la evolución del virus sobre ella.

Evolución del SARS-CoV-2 a lo largo de la pandemia

Desde que el SARS-CoV-2 realizó el salto a nuestra especie ha acumulado más de 12 700 mutaciones. La mayoría no tienen consecuencias biológicas. Otras han dado lugar a nuevas variantes. Algunas de ellas se denominan variante de interés (VOI) o de preocupación (VOC).

Variante de interés (VOI): variante del SARS-CoV-2 que porta cambios genéticos que pueden causar una enfermedad más severa, escapar al sistema inmune, afectar al diagnóstico de la enfermedad o a su transmisibilidad, provocando transmisión comunitaria en varios países, aumentando su prevalencia con un impacto notable sobre la salud pública.

Variante de preocupación (VOC): es una VOI que haya demostrado una mayor transmisibilidad, peor pronóstico, mayor virulencia o una menor eficacia de las medidas de salud pública, incluidos los tratamientos conocidos y las vacunas.

Al inicio de la pandemia (antes de febrero de 2020), cuando todavía no se tenía un control sobre la transmisión comunitaria del virus, hubo un periodo de rápida diversificación genética del virus coincidente con su transmisión en cada región geográfica.

A partir de marzo de 2020, con la llegada de los confinamientos en casi todo el mundo, ocurrió una extinción masiva y una homogeneización de mutaciones (variantes). Los confinamientos frenaron la expansión de algunas variantes.

Tras la relajación de las restricciones, se produjo una nueva diversificación, esta vez de forma más progresiva. Esta fase de la evolución del coronavirus tuvo un importante componente geográfico, donde la aparición de mutaciones y variantes se agruparon por regiones geográficas.

¿Qué hubiese pasado sin confinamientos? No lo sabemos, pero posiblemente habría ocasionado una mayor y más rápida diversificación de las mutaciones. Y, por tanto, la aparición de un mayor número de variantes. La evolución del virus se habría acelerado y con ella su adaptación al ser humano. Esto hubiera sucedido con un alto coste en vidas y pérdida de salud para millones de personas.

Selección convergente

Hasta la fecha han aparecido más de 100 mutaciones que dan lugar a cambios en la secuencia de aminoácidos de las proteínas del virus.

Algo a tener en cuenta es que algunas de estas mutaciones han surgido recurrentemente durante la pandemia en diferentes variantes o linajes a lo largo de todo el planeta de una manera completamente independiente. Esto indica que hay una fuerte presión selectiva actuando sobre dichas posiciones: es lo que se conoce como convergencia evolutiva. El virus encuentra una y otra vez las mismas soluciones (mutaciones) para adaptarse mejor al ser humano y asegurar su supervivencia.

También pueden ocurrir mutaciones que suponen una desventaja para la supervivencia o replicación del virus. Esto es una selección purificante. Por ejemplo, una mutación que sea reconocida por determinado tipo de anticuerpo muy prevalente en una población hará que esa variante desaparezca en favor de otras que no la tengan. Esos casos son difíciles de detectar sin una secuenciación de todos los casos de la población.

Hay tres posiciones en el genoma que han sufrido mutaciones claves en la evolución de la pandemia hasta la fecha. La primera es la mutación D614G en la proteína de la espícula. Las otras dos son la R203K y la G204R, que han ocurrido en la proteína de la nucleocápside del virus.

Mutaciones relevantes en la espícula

La espícula del virus es la llave que abre la entrada a la célula humana. Así que no es de extrañar que haya habido una selección positiva en el sitio de unión al receptor, favorecida por aquellas mutaciones que son más eficientes en la infección.

La mutación D614G apareció hacia febrero de 2020. Esta mutación se ha detectado en la variante alfa, contribuyendo a su expansión a otras zonas geográficas, principalmente europeas en su inicio. Pero también surgió en prácticamente todas las variantes de interés como la beta y la delta.

Curiosamente, este sitio es más propenso a cambios, y la mutación podría ser debida a múltiples ganancias del aminoácido ácido aspártico, para una posterior pérdida y substitución por la glicina. Algunas regiones del genoma son más susceptibles a mutaciones que otras. Por ejemplo, en el sitio de unión de la espícula han aparecido otras 31 mutaciones. Las diferentes variantes se determinan en función de estas mutaciones. Son una huella de selección que aparecen en los diferentes linajes del virus.

Otras mutaciones de la espícula que han aparecido en las VOC son la N501Y y la E484K, que se ha asociado con una disminución de la respuesta de los anticuerpos neutralizantes. Estas mutaciones indican una rápida adaptación del virus a los humanos, permaneciendo aquellas que facilitan el contagio entre personas, y su entrada en las células humanas.

Mutaciones en la nucleocápside

Si la espícula es la llave de entrada a la célula, la nucleocápside es la armadura que protege su información dentro de la célula y asegura su transcripción. La región que codifica para la proteína de la nucleocápside parece acumular la mayor proporción de mutaciones positivas en el genoma del SARS-CoV-2, como la R203K y la G204R. Las mutaciones que ayudan a proteger este material genético del virus proporcionan una ventaja evolutiva.

Aunque la nucleocápside ha recibido menos atención que la proteína de la espícula, parece desempeñar un papel fundamental en la evolución del virus y su adaptación para sobrevivir en las células humanas. Es previsible que se sigan acumulando mutaciones en esta región del genoma a lo largo de la pandemia. Estas mutaciones tendrán como resultado una replicación más eficiente en nuestras células.

Futuro de la evolución del SARS-CoV-2

En el año y medio que ha pasado de pandemia, el SARS-CoV-2 está adaptándose a los humanos, así como a diferentes especies animales. Las principales mutaciones están favoreciendo la transmisibilidad, sobre todo en su rapidez (selección positiva). En menor medida están favoreciendo la resistencia a la inmunidad (selección negativa).

La transmisibilidad del virus es alta en comparación con otros virus respiratorios, lo que juega a favor de su supervivencia, al igual que su ventana de contagio relativamente amplia en algunos infectados asintomáticos o presintomáticos. Aunque la mortalidad es relativamente baja en el conjunto global de la población, el virus es capaz de saturar el sistema sanitario y tener una alta letalidad en grupos de edades avanzadas.

Las tasas de letalidad globales del virus no son determinantes en la supervivencia del SARS-CoV-2, ya que las principales tasas de ataque ocurren en estadios menos graves de la enfermedad. Esta circunstancia hace que la evolución del coronavirus no esté determinada por lo que ocurre tras el proceso de infección, en el curso de la enfermedad y la subsiguiente convalecencia en el hospedador.

Por tanto, es poco probable que ocurran mutaciones en el virus que supongan un cambio drástico en su letalidad (mayor o menor). Será cuestión de azar que algunas mutaciones acaben siendo más o menos letales.

Sí que es esperable que surjan nuevas mutaciones que aumenten la capacidad de transmisión del virus. También son posibles las mutaciones que supongan una menor eficacia de las vacunas. Su éxito dependerá de lo rápido que se consiga inmunizar a un elevado porcentaje de la población mundial.

Cortar las cadenas de contagio con las medidas preventivas que conocemos y las vacunas siguen siendo las medidas principales para acabar con la pandemia. Aunque es pronto para saberlo, no se puede descartar que haya que variar la composición de las vacunas en un futuro para incluir variantes nuevas que puedan inducir una respuesta inmune más eficaz.

Fuente: THE CONVERSATION. Disponible en https://cutt.ly/knxeOZp

Israel confirma buenas noticias sobre la inmunidad adquirida con la tercera vacuna de Pfizer

17 ago. Mientras los países desarrollados siguen la carrera por aumentar el ritmo de vacunación, Israel lleva meses en los que ha sido uno de los pioneros en administrar una tercera dosis con Pfizer. Eso sí, solo en pequeños grupos poblacionales, el Gobierno de Tel Aviv ha reconocido en un último informe buenas noticias sobre su decisión.

La crisis sanitaria por la covid-19 ha puesto sobre relevancia el considerable nivel científico de Israel. Siempre liderando como uno de los países con mayor avances sobre el campo en lo que refiere a la pandemia, esta vez las autoridades gubernamentales han vuelto a confirmar que sus investigaciones marchan por buen camino.

Y es que un último estudio ha demostrado que la tercera dosis de la vacuna de Pfizer-BioNTech podría ser muy eficaz logrando una inmunidad aún mayor de lo conseguido con las dos primeras dosis. Un hecho que los países desarrollados se están cuestionando, aunque cada vez cobra más fuerza que en todos ellos tendrá que haber un tercer "pinchazo", tal y como lleva meses haciendo Israel y ya han confirmado, entre otros, Estados Unidos.

Una tercera dosis que aplicada sobre pacientes inmunosuprimidos menores de 65 años ha logrado una capacidad de generar anticuerpos un 43% superior sobre el segundo "pinchazo". Así lo catalogan las muestras obtenidas en el último mes sobre casi 250 personas, que no han hecho más que reafirmar la decisión israelí.

Los datos dan validez a la apuesta israelí de aplicar una tercera dosis sobre los mayores de 50 años

Además, en lo que respecta a los pacientes con trasplante de órganos, solo el 25% consiguieron suficientes anticuerpos bajo la primera y segunda dosis, mientras que el 50% lo consiguió con la tercera. Por su parte, en la población general menor de 65 años, hubo una tasa de respuesta del 70% en comparación con una tasa de respuesta del 27% después de la segunda inyección.

Todo ello ha empujado a que el Gobierno israelí aprobase la pasada semana la inoculación de una tercera dosis de la vacuna a los mayores de 50 años y sanitarios. "La tercera vacuna a partir de 50 años y para personal médico es eficaz y correcta", afirmó el primer ministro, Naftali Bennet, en una clara muestra de conseguir mayor inmunidad ante el repunte de casos por la variante Delta.

Fuente: el Economista. Disponible en https://cutt.ly/nQ5VCT9

Cuba to vaccinate against Covid-19 around 1,000,000 more next

Aug 18. Around 1,000,000 more people in Cuba will receive next week at least one dose of the vaccine candidates or Abdala vaccine against Covid-19, healthcare authorities confirmed on Wednesday.

According to journalist Leticia Martinez on her Twitter account, at a meeting of Cuban scientists with the First Secretary of the Central Committee of the Communist Party of Cuba and President of the Republic, Miguel Diaz-Canel, experts pointed out that the doses for that achievement will be distributed in the upcoming hours.

In order to reach that number of vaccinated people, another 22 municipalities throughout the country will be incorporated to the process of mass immunization against Covid-19, Martinez explained. In sum, up to August 16, 12, 225, 378 doses of both Soberana 02 and Soberana Plus candidates and

Abdala vaccine have been administered in Cuba.

Some 3,47,933 Cubans have already been fully immunized (three injections), which represents 27.1 percent of the country's entire population (11,300,000 approximately).

In the analysis, they also presented the preliminary results of the process and detailed that, of the 25,608 immunized, there were 119 deaths from Covid-19, for a lethality of 0.46 percent; while among those 492,060 not vaccinated having caught the novel coronavirus, there were 3,904 from Covid-19.

'This represents a lethality rate of 0.78 percent,' Martinez tweeted.

The figure of 119 deaths also symbolizes a lethality rate of 0.004 percent of the total number of people immunized in Cuba as of August 14 (2,655,387).

Meanwhile, in Havana, a province which has already concluded the vaccination against Covid-19 in all its municipalities, the lethality rate is 0.69 percent.

In that city, in the group of Covid-19 cases after vaccination (14,471), there were 37 deaths, for a lethality rate of 0.26 percent; and of those not immunized but diagnosed as infected (120,926), there were 904 deaths, for a 0.75 percent rate.

Regarding the clinical trials in pediatric ages, Vicente Verez, director of the Finlay Vaccine Institute (IFV), lead institution of the Soberana Pediatrics study, explained that the preliminary results are very encouraging, Martinez noted.

'With two doses of Soberana 02, designed by the IFV, children aged 12 to 18, are raising antibodies at the level of three doses in adults (heterologous scheme of two injections of Soberana 02 plus one of Soberana Plus, also from the Finlay center).'

Cuba has two Covid-19 immunization schemes with over 90 percent efficacy against symptomatic disease. Three doses of Abdala showed 92.28 and two administrations of Soberana 02 plus one of Soberana Plus, evidenced 91.2 percent efficacy.

Fuente: Prensa Latina. Disponible en https://cutt.ly/MQ51PcH

Por mi parte gracias, dice investigador italiano a Cuba

19 ago. El científico italiano Fabrizio Chiodo agradeció hoy a los expertos del Instituto Finlay de Vacunas de Cuba (IFV) por permitirle colaborar en el desarrollo de inmunógenos antiCovid y utilizar la biotecnología para beneficio del pueblo.

'Por mi parte gracias, siempre les digo en todos estos años de trabajo', expresó Chiodo después de recibir la categoría docente especial de profesor invitado de la Universidad de La Habana por esa participación, durante un acto realizado en el Aula Magna de ese centro de altos estudios.

Recordó de niño su incomprensión de la diferencia de clases sociales, del por qué unos

tenían casa y otros no, de cómo un país como Cuba bloqueado por el gobierno de Estados Unidos por más de 60 años sobresale internacionalmente por diseñar, desarrollar y producir vacunas sintéticas para proteger a la población.
'Cuba en este año, un país bloqueado, ha sido capaz de diseñar, desarrollar y producir vacunas como las del Instituto Finlay (Soberana 01, Soberana 02 y Soberana Plus). Y gracias a esos colegas que cada día me motivan y de los que estoy orgulloso', enfatizó.
Resaltó el nivel profesional y humano de los científicos cubanos, al hacer un recuento de su trayectoria por siete laboratorios en cuatro países, y la equivocación del capitalismo como sistema por no tener en cuenta a los más humildes del mundo.
'Es excepcional el nivel que tienen y por eso son capaces de crear vacunas como esas, y eso es lo que me motiva a seguir participando en otros proyectos', agregó.
Aseguró que el impacto social de esas investigaciones va más allá de publicaciones científicas y de estadísticas, de ahí su compromiso de defender la ciencia cubana en cualquier escenario.

Fuente: Prensa Latina. Disponible en https://cutt.ly/3Q50Vz7

The mutation that helps Delta spread like wildfire

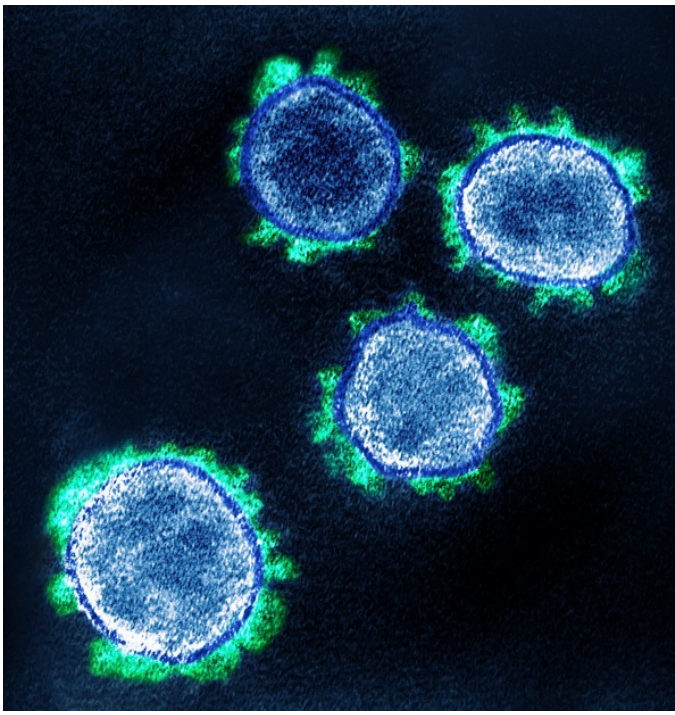
Aug 20. A key amino-acid change might underlie the coronavirus variant's ferocious infectivity.

As the world grapples with the hyper-infectious Delta coronavirus variant, scientists are racing to understand the biological basis for its behaviour.

A slew of studies has highlighted an amino-acid change present in Delta that might contribute to its swift spread. Delta is at least 40% more transmissible than is the Alpha variant identified in the United Kingdom in late 2020, epidemiological studies suggest.

"The key hallmark of Delta is that transmissibility seems to be ramping up to the next notch," says Pei-Yong Shi, a virologist at the University of Texas Medical Branch in Galveston. "We thought Alpha was pretty bad, very good at spreading. This one seems to be even more."

Shi's team and other groups have zeroed in on a mutation that alters a single amino acid in the SARS-CoV-2 spike protein — the viral molecule responsible for recognizing and invading cells. The change, which is called P681R and transforms a proline residue into an arginine, falls within an intensely studied region of the spike protein called the furin cleavage site.



SARS-CoV-2 coronavirus particles isolated from a US case of COVID-19. Scientists are trying to understand why the Delta variant spreads so quickly.

Credit: National Institutes of Health / Science Photo Library

The presence of this short string of amino acids set off alarm bells when SARS-CoV-2 was first identified in China, because it is associated with heightened infectivity in other viruses such as influenza, but had not previously been found in other sarbecoviruses, the family of coronaviruses to which SARS-CoV-2 belongs. "This little insert sticks out and hits you in the face," says Gary Whittaker, a virologist at Cornell University in Ithaca, New York.

Pre-activated virus

To penetrate cells, the SARS-CoV-2 spike protein must be cut twice by host proteins. In the SARS-CoV-1 virus that causes severe acute respiratory syndrome (SARS), both incisions occur after the virus has locked on to a cell. But with SARS-CoV-2, the presence of the furin cleavage site means that host enzymes (including one called furin) can make the first cut as newly formed viral particles emerge from an infected cell. These pre-activated viral particles can then go on to infect cells more efficiently than do particles requiring two cuts, says Whittaker.

Delta wasn't the first SARS-CoV-2 variant to gain a mutation that alters the furin cleavage site. The Alpha variant has a different amino-acid change at the same location as Delta. But the available evidence suggests that the mutation's effect has been especially profound in Delta.

In a study reported as a preprint on 13 August1, Shi's team found that the spike protein is cut much more efficiently in Delta-variant particles than in Alpha particles, echoing results reported in May by virologist Wendy Barclay at Imperial College London and her team, who compared Delta with an earlier strain2. Follow -up experiments by both groups showed that the P681R change was largely responsible for spike being clipped so much more efficiently. "This really nailed it, in terms of the mechanism," says Shi.

Researchers are also beginning to join the dots between P681R and Delta's ferocious infectivity. Shi's team found that, in cultured human-airway epithelial cells infected with equal numbers of Delta and Alpha viral particles, Delta rapidly outcompeted the Alpha variant, mimicking epidemiological patterns that have played out globally. But Delta's advantage disappeared when the researchers eliminated the P681R change.

The mutation might also speed up the spread of SARS-CoV-2 from cell to cell. A team led by Kei Sato, a virologist at the University of Tokyo, found that spike proteins bearing the P681R change fuse with the plasma membranes of uninfected cells — a key step in infection — almost three times faster than do spike proteins lacking the change3.

"I think the virus is succeeding on volume and speed," says Whittaker. "It's become a much more efficient virus. It's going through people and going through cells a lot quicker."

More than one mutation

Although evidence is building that the P681R change is a crucial feature of Delta, researchers emphasize that it is unlikely to be the only mutation responsible for the variant's fast spread. Delta carries numerous other mutations to the spike protein, as well as to other less well-studied proteins, that might be important. "It's very simplistic to say it's just this 681 change. I think it's a sum of everything," says Teresa Aydillo-Gomez, a virologist at Icahn School of Medicine at Mount Sinai in New York City.

Context, both epidemiological and genetic, is also likely to have had a role in Delta's rise, say scientists. One of Delta's siblings, a variant called Kappa that, like Delta, was first identified in India, carries many of the same mutations, including P681R, but its effects haven't been as devastating as Delta's. In a preprint posted on 17 August, a team led by structural biologist Bing Chen at Harvard Medical School in Boston, Massachusetts, reports that Kappa's spike protein is cleaved less frequently and fuses to cell membranes much less efficiently than does Delta's4. The researchers say this finding raises questions over the role of P681R.

Researchers in Uganda identified the P681R change in a variant that spread widely in the country in early

2021, but that never took off as Delta did, even though it displays many of the same properties in cell-based lab studies. Whittaker's team inserted the P681R change into a spike protein from the coronavirus that was circulating in Wuhan, China, at the beginning of the pandemic, and found no increase in its infectivity5. "It takes more than one mutation to make a difference," he adds.

Regardless of its role in Delta's dominance, Whittaker and other scientists say, the mutation has underscored the importance of understanding changes in the coronavirus's furin cleavage site. Whittaker doesn't expect P681R to be the last furin cleavage site mutation to cause concern. "I'm waiting to see what happens next."

Fuente: nature. Disponible en https://cutt.ly/SQ6wla5

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Estrategia de búqueda: *Vaccine in the title or abstract AND 20210811:20210820 as the publication date 65 records.*

1.WO/2021/159075ATTENUATED SALMONELLA SYNTHESIZING ANTIGENS FOR VACCINATING AGAINST HELICOBACTER PYLORI
WO - 12.08.2021
Int.Class A61K 39/02 Appl.No PCT/US2021/017083 Applicant CURTISS, Roy Inventor CURTISS, Roy
Helicobacter pylori is a leading cause of gastric mucosal inflammation, peptic ulcers, and gastric adenocarcinoma. Emerging antimicrobial-resistant H. pylori has hampered the successful eradication of frequent chronic infections. Additionally, due to the absence of effective vaccines against H. pylori, a safe vaccine is highly demanded. Disclosed herein are innovative Protective Immunity Enhanced Salmonella Vaccine (PIESV) vector strains to deliver and express multiple H. pylori antigen genes. Immunization of mice with a vaccine delivering the HpaA, NapA (also termed Hp-NAP), UreA and UreB antigens, provided sterile protection against H. pylori SS1 infection in 7 out of 10 tested mice. Compared to the control groups that had received PBS or a PIESV with an empty vector, immunized mice exhibited specific and significant cellular recall responses and antigen-specific IgG2c, IgG1, total IgG and gastric IgA antibody titers. Importantly, the mice immunized with the vaccine candidate showed a significant reduction in a load of an unidentified Gram-positive rod-shaped bacteria in their stomach compared to the control groups. In conclusion, a Salmonella Typhimurium-based live vaccine delivering four antigens shows promise as a safe and effective vaccine against H. pylori infection.

2.WO/2021/155501FUSION OF SURVIVIN AND GM-CSF, CODING DNA, RECOMBINANT EXPRESSION VECTOR, ANTI-TUMOR VACCINE, AND APPLICATION THEREOF
WO - 12.08.2021
Int.Class C12N 15/62 Appl.No PCT/CN2020/074313 Applicant VAXYN LTD. Inventor MASSOUR, Yaich
A fusion of survivin and GM-CSF, coding DNA, a recombinant expression vector, an anti-tumor vaccine, and an application thereof. The fusion of survivin and GM-CSF includes survivin and GM-CSF that are

operably linked. The DNA encoding the fusion of survivin and GM-CSF includes a survivin coding element and a GM-CSF coding element that are operably linked, wherein the survivin coding element encodes the amino acid sequence of survivin, and the GM-CSF coding element encodes the amino acid sequence of GM-CSF. The fusion effectively improves the immunogenicity of a survivin protein, and the constructed recombinant BCG vaccine achieves the effects of both a BCG vaccine vector and a therapeutic drug, and achieves the synergistic effect of an antigen, an adjuvant, and a vaccine vector, so that the immunogenicity of a tumor vaccine is more effective and lasting.

3.3863669ONCOLYTIC VACCINIA VIRUS WITH MODIFIED B5R GENE FOR THE TREATMENT OF CANCER
EP - 18.08.2021
Int.Class A61K 39/285 Appl.No 19794623 Applicant UNIV LONDON QUEEN MARY Inventor WANG YAOHE
The present invention relates to a vaccinia virus vector comprising a nucleic acid sequence encoding a SCR1-, SCR2-, SCR3-, and SCR4- domain deleted B5R gene (B5R SCR1- SCR2-SCR3- SCR4-) inserted into the TK gene of the vaccinia virus. The invention also relates to compositions comprising the vaccinia virus vector, methods of treatment using the compositions, medical uses of the compositions and kits comprising the vaccinia virus vector. The invention also relates to a nucleic acid sequence encoding a SCR1-, SCR2-, SCR3-, and SCR4- domain deleted B5R gene (B5R SCR1- SCR2- SCR3- SCR4-) of vaccinia virus.

4.20210252132COMPOSITION AND METHOD FOR STABILISING VACCINES IN A SOLID DOSAGE FORMAT
US - 19.08.2021
Int.Class A61K 39/13 Appl.No 17251965 Applicant University College Cork-National University of Ireland, Cork Inventor Agnese Donadei

A composition for stabilising a vaccine in a solid dosage format is provided wherein the composition comprises an antioxidant, such as glutathione, a monosaccharide or disaccharide sugar, such as trehalose, a polyol sugar, such as sorbitol, one or more salts, such as magnesium chloride and sodium glutamate, and a vaccine. The composition may also comprise an aqueous soluble polymer, such as polyvinyl alcohol (PVA). A preferred composition comprises 40 mM glutathione, 20% w/v trehalose, 3% w/v sorbitol, 5% w/v PVA, 3% w/v magnesium chloride and 3% w/v sodium glutamate. Also provided is a method of stabilising a vaccine in a solid dosage format, the method comprising drying the stabilising composition to provide the vaccine in the solid dosage format. The composition and method may be used to stabilise any suitable vaccine, such as poliovirus or adenovirus, in a solid dosage format, such as microneedle patches or wafers.

5.20210257074TRACING OF COVID-19 VACCINE VIALS
US - 19.08.2021
Int.Class G16H 20/17 Appl.No 17171774 Applicant Wiliot, Ltd. Inventor Ido ZELMAN

A system and method for tracing vaccine vials are provided. The method includes receiving, from a gateway of a plurality of gateways, frequency words from tags attached to vaccine vials, wherein each tag is configured to transmit a plurality of frequency words; extracting at least one data feature from the plurality of frequency words, wherein each data feature changes in response to a change in a state of a vaccine vial; classifying the extracted data feature based on a machine learning model trained with respect to a location of the gateway, wherein the classifier is trained to label a trace parameter indicative of a state of a vaccine vial; and sending a semantic event indicating a value of the trace parameter.

6.WO/2021/155846PREPARATION METHOD FOR NOVEL CORONAVIRUS PNEUMONIA BIVALENT VACCINE
WO - 12.08.2021
Int.Class A61K 39/215 Appl.No PCT/CN2021/075588 Applicant WENG, Binghuan Inventor WENG, Binghuan
Provided is a preparation method for a novel coronavirus pneumonia bivalent vaccine, specifically comprising: amplifying a 2019-nCoV targeted interfering gene shRNA, performing enzyme digestion to construct an interfering vector pSilencer-shRNA, performing DH5a transformation and then constructing a shuttle vector pDC312-shRNA, co-transfecting HEK293 by the shuttle vector and an adenovirus framework plasmid pBHGloxAEI to prepare Ad-nCoVdsRNA; and amplifying a 2019-nCoV antibody expression gene, performing enzyme digestion to construct a shuttle plasmid pShuttle-nCoV, performing DH5a transformation and then co-transfecting HEK293 by the shuttle plasmid and an adenovirus framework plasmid pAd-nCoV to prepare a recombinant adenovirus Ad-nCoVDNA, and then preparing the bivalent vaccine by using the Ad-nCoVdsRNA, the Ad-nCoVDNA, and H20 according to a ratio of 1:1:19. After spray inoculation of the bivalent vaccine by means of a respiratory tract, an adenovirus vector introduces nCoVdsRNA and nCoVDNA into cells; nCoVdsRNA immediately generates dsRNA by means of shRNA, and a homologous virus mRNA is instantly degraded; nCoVDNA expresses a protein by encoding mRNA, and then an antibody is generated to neutralize viruses; the two have a complementary effect.

7.2021206905Methods of vaccine administration
AU - 12.08.2021
Int.Class A61K 39/02 Appl.No 2021206905 Applicant Zoetis Services LLC Inventor
The invention relates to a method of treating a dog for canine diseases comprising administering to the dog therapeutically effective amounts of a vaccine, wherein the vaccine comprises viral antigens, a bacterin, or both, and wherein the vaccine is administered subcutaneously or orally according to the schedules disclosed herein.

8.WO/2021/163222RAPID VACCINE PLATFORM
WO - 19.08.2021
Int.Class C12N 15/85 Appl.No PCT/US2021/017506 Applicant CYTONUS THERAPEUTICS, INC. Inventor MOOMIAIE, Remo
Provided are methods of making and delivering vaccine compositions using an enucleated cell-based platform. Methods of clearing pathogenic infections in a subject using the enucleated cell-based platform is also provided. Such enucleated cell-based platform reduces the vaccine development timeline as compared with conventional biological vaccines, and improves vaccine efficacy.

9.20210252124COMBINATION VACCINE
US - 19.08.2021
Int.Class A61K 39/108 Appl.No 17270594 Applicant Intervet Inc. Inventor Antonius Arnoldus Christiaan Jacobs

The present invention pertains to a vaccine comprising (a) an immunologically effective amount of a *Streptococcus suis* IgM protease antigen, (b) an immunologically effective amount of an *Escherichiacoli* fibmrial antigen, and (c) an immunologically effective amount of a *Clostridium* toxoid, and also pertains to use of the vaccine in a method for protecting pigs against a pathogenic infection with *Streptococcus suis, Escherichia coli* and *Clostridium.*

10.20210246416GLOBAL GENE REGULATORS (GGR) AS VACCINE CANDIDATES AGAINST PARATUBERCULOSIS

US - 12.08.2021
Int.Class C12N 1/20 Appl.No 17221605 Applicant Wisconsin Alumni Research Foundation Inventor Adel M. Talaat

Described herein is a *mycobacterium* mutant, comprising at least one mutation in at least one gene sequence encoding global gene regulators (GGRs) selected from the group consisting of sigH, sigL, sigE, ECF-1, and mixtures thereof, wherein the GGR gene is at least partially inactivated. Described herein also is a vaccine based on the mutant and a method of differentiating between subjects that have been infected with *mycobacterium* and subjects that have not been infected with *mycobacterium* or have been vaccinated with a *mycobacterium* vaccine.

11.20210244810RECOMBINANT H7N9 SUBTYPE AVIAN INFLUENZA VIRUS, INACTIVATED MARKED VACCINE AND PREPARATION METHOD THEREOF
US - 12.08.2021
Int.Class A61K 39/145 Appl.No 16960222 Applicant YANGZHOU UNIVERSITY Inventor Daxin Peng

Provided is a recombinant H7N9 subtype avian influenza virus, a marked vaccine and a preparation method thereof. For the recombinant H7N9 subtype avian influenza virus, a strain JD/17 of H7N9 subtype avian influenza virus is used as parent virus and a peptide sequence in HA protein of the strain JD/17 is replaced with a peptide sequence in HA protein of H3 subtype; the strain JD/17 of H7N9 subtype avian influenza virus has a preservation number of CCTCC No. V201862. The results of HA titers, EID50, TCID50 show that the rescued virus maintains similar biological characteristics of parent virus, such as high HA titers and EID50, and chickens immunized with the marked inactivated and emulsified vaccine produce a high level of antibody, and this antibody can be distinguished from antibodies produced by chickens naturally infected with H7N9 subtype avian influenza virus.

12.20210244809DEVELOPMENT OF A NOVEL LIVE ATTENUATED AFRICAN SWINE FEVER VACCINE BASED IN THE DELETION OF GENE I177L
US - 12.08.2021
Int.Class A61K 39/12 Appl.No 17223252 Applicant The United States of America, as represented by the Secretary of Agriculture Inventor Douglas P. GLADUE

Provided herein are details on the construction of a recombinant African Swine Fever Virus (ASFV) live attenuated vaccine for prevention of ASF caused by various strains of ASFV, such as the highly virulent Georgia 2007 isolate ("ASFV-G"). An exemplary vaccine comprises the ASFV-GΔI1771 modified virus, a recombinant ASFV-G modified by deleting a portion of the I177L ORF rendering the I177L gene nonfunctional.

13.2021209228Recombinant modified vaccinia virus Ankara (MVA) filovirus vaccine
AU - 12.08.2021
Int.Class A61K 39/12 Appl.No 2021209228 Applicant Bavarian Nordic A/S Inventor
The present invention relates to an improved filovirus vaccine comprising a recombinant modified vaccinia virus Ankara-based (MVA-based) vaccine against filovirus infection and to related products, methods and uses. Specifically, the present invention relates to genetically engineered (recombinant) MVA and FPV vectors comprising at least one heterologous nucleotide sequence encoding an antigenic determinant of a Marburg virus (MARV) or Ebola virus glycoprotein. Specifically, the invention relates to recombinant MVA comprising Ebola virus glycoprotein and virion protein 40. The invention also relates to products, methods and uses thereof as well as prime/boost regimens of MVA and genetically engineered (recombinant) FPV, e.g., suitable to induce a protective immune response in a subject.

14.20210253707GM-CSF/CD40L VACCINE AND CHECKPOINT INHIBITOR COMBINATION THERAPY
US - 19.08.2021
Int.Class C07K 16/28 Appl.No 17246917 Applicant H. LEE MOFFITT CANCER AND RESEARCH INSTITUTE, INC. Inventor Scott Antonia

A method is disclosed for treating a cancer in a subject. The method comprises administering to the subject a composition comprising a therapeutically effective amount of a checkpoint inhibitor and a therapeutically effective amount of a tumor vaccine. In some embodiments, the tumor vaccine comprises radiated autologous tumor cells and a cell line engineered to express GM-CSF and CD40 ligand. In some embodiments, the checkpoint inhibitor comprises an anti-PD-1 antibody (e.g., BMS 936558), anti-PD-L1 antibody (e.g., cloneM1H1), anti-CTLA-4 antibody (e.g., Ipilimumab, BMS), or any combination thereof.

15.WO/2021/155760MRNA VACCINE FOR 2019-NCOV CORONAVIRUS, PREPARATION METHOD AND APPLICATION THEREOF
WO - 12.08.2021
Int.Class C12N 15/50 Appl.No PCT/CN2021/074206 Applicant CANSINO BIOLOGICS INC. Inventor ZHU, Tao
Provided are an mRNA sequence comprising a coding region for encoding at least one antigenic peptide or protein of 2019-nCoV coronavirus or a fragment, variant or derivative thereof, and a composition thereof. Further provided is an application of the described mRNA or composition in the preparation of a drug, in particular a vaccine, for preventing and/or treating 2019-nCoV coronavirus infection.

16.3863667MULTIVALENT PNEUMOCOCCAL POLYSACCHARIDE-PROTEIN CONJUGATE VACCINE
EP - 18.08.2021
Int.Class A61K 39/09 Appl.No 19871190 Applicant BIOLOGICAL E LTD Inventor BURKI RAJENDAR
The present invention relates to multivalent pneumococcal polysaccharide-protein conjugates vaccine composition comprising pneumococcal capsular polysaccharide of one or more *Streptococcus pneumoniae* serotypes conjugated to one or more carrier proteins.

17.WO/2021/163448VACCINE AND METHODS FOR DETECTING AND PREVENTING FILARIASIS
WO - 19.08.2021
Int.Class A61K 39/002 Appl.No PCT/US2021/017813 Applicant THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS Inventor KALYANASUNDARAM, Ramaswamy
The present invention is a multivalent immunogenic composition for immunizing an animal against filariasis. In some embodiments, 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.

18.WO/2021/156267CORONAVIRUS VACCINE
WO - 12.08.2021
Int.Class A61K 39/12 Appl.No PCT/EP2021/052455 Applicant CUREVAC AG Inventor RAUCH, Susanne
The present invention is directed to a nucleic acid suitable for use in treatment or prophylaxis of an infection with a coronavirus, preferably with a Coronavirus SARS-CoV-2, or a disorder related to such an infection, preferably COVID-19. The present invention is also directed to compositions, polypeptides, and vaccines. The compositions and vaccines preferably comprise at least one of said nucleic acid sequences, preferably nucleic acid sequences in association a lipid nanoparticle (LNP). The invention is also directed to first and second medical uses of the nucleic acid, the composition, the polypeptide, the combination, the vaccine, and the kit, and to methods of treating or preventing a coronavirus infection, preferably a Coronavirus infection.

19.WO/2021/159985VACCINE AGENT FOR TREATING OR PREVENTING CORONAVIRUS DISEASE

WO - 19.08.2021
Int.Class C12N 15/11 Appl.No PCT/CN2021/074670 Applicant STEMIRNA THERAPEUTICS CO., LTD. Inventor LI, Hang Wen
Provided is a vaccine agent for treating or preventing corona virus disease, comprising an mRNA fragment of a corona virus antigen and the DNA or RNA sequences.

20.WO/2021/160881INTRANASAL MRNA VACCINES
WO - 19.08.2021
Int.Class A61K 39/12 Appl.No PCT/EP2021/053633 Applicant ETHERNA IMMUNOTHERAPIES NV Inventor TIEST, Wim
The present invention in general to intranasal mRNA vaccines, more in particular comprising one or more immunostimulatory molecules, one or more pathogenic antigens and a specifically designed delivery system. Specifically said immunostimulatory molecules and pathogenic antigens are provided for in the form of mRNA molecules encoding such molecules and antigen; more in particular mRNA molecules encoding for CD40L, caTLR4 and/or CD70 in combination with one or more mRNA molecules encoding a bacterial, viral or fungal antigen. Specifically said, the delivery is a mixture of chemical compounds that allow protection and deposition of the vaccine and targeting to the antigen presenting cells in the nose. In particular, present invention is well suited for development of a rapid response vaccine in an outbreak setting.

21.20210246432RECOMBINANT INFLUENZA VIRUSES WITH STABILIZED NA
US - 12.08.2021
Int.Class C12N 7/00 Appl.No 17155625 Applicant Wisconsin Alumni Research Foundation (WARF) Inventor Yoshihiro Kawaoka

Modified influenza virus neuraminidases are described herein that have stabilized NA tetramers which may improve vaccine production efficiency, thus improving the yield of vaccine viruses.

22.WO/2021/156404TREATMENT OF HPV-RELATED DISEASES
WO - 12.08.2021
Int.Class A61K 39/12 Appl.No PCT/EP2021/052738 Applicant ISA PHARMACEUTICALS Inventor BEENAKKER, Thomas, Johannes, Maria
The invention provides methods for treating infections, disorders or diseases caused by a human papillomavirus other than HPV-16 by determining the HPV type of the patient, providing a synthetic-long-peptide based therapeutic vaccine for treatment of said patient and administering said therapeutic vaccine to said patient. The invention further provides novel immunogenic compositions and therapeutic vaccines against human papillomaviruses other than HPV-16 and uses thereof.

23.20210253646VACCINE VECTOR ENCODING MUTATED GNAQ FOR TREATMENT OF UVEAL MELANOMA AND CANCERS HAVING ONCOGENIC MUTATIONS ON GNAQ AND GNA11 PROTEINS
US - 19.08.2021
Int.Class C07K 14/005 Appl.No 17252123 Applicant THOMAS JEFFERSON UNIVERSITY Inventor Vitali Alexeev

Provided is a composition comprising a mutant Q209L-GNAQ DNA vaccine encoding, in a N-terminal to C-terminal direction, a fusion protein comprising VP22 or an HLA-binding sequence thereof, a mutant GNAQ sequence comprising a Q209L mutation, and a PADRE epitope. Also provided are methods of treatment and methods of vaccination comprising administering to a patient the composition. Also provided is a method of generating mutant GNAQ-specific T cells comprising priming T cells with ex vivo cultured dendritic cells transduced or electroplated with the composition.

24.20210252122TUMOR CELL VACCINES
US - 19.08.2021
Int.Class A61K 39/00 Appl.No 17212372 Applicant NEUVOGEN, INC. Inventor Bernadette Ferraro

The present disclosure provides an allogeneic whole cell cancer vaccine platform that includes compositions and methods for treating and preventing cancer. Provided herein are compositions containing a therapeutically effective amount of cells from one or more cancer cell lines, some or all of which are modified to (i) inhibit or reduce expression of one or more immunosuppressive factors by the cells, and/or (ii) express or increase expression of one or more immunostimulatory factors by the cells, and/or (iii) express or increase expression of one or more tumor-associated antigens (TAAs), including TAAs that have been mutated, and which comprise cancer cell lines that natively express a heterogeneity of tumor associated antigens and/or neoantigens. Also provided herein are methods of making the vaccine compositions, methods of preparing, and methods of use thereof.

25.WO/2021/160346NUCLEIC ACID VACCINE AGAINST THE SARS-COV-2 CORONAVIRUS
WO - 19.08.2021
Int.Class A61K 39/12 Appl.No PCT/EP2021/025053 Applicant INSTITUT PASTEUR Inventor SIMON-LORIERE, Etienne
The invention relates to an immunogenic or vaccine composition against the 2019 novel coronavirus (SARS-CoV-2), comprising a nucleic acid construct encoding a SARS-CoV-2 coronavirus Spike (S) protein antigen or a fragment thereof comprising the receptor-binding domain, wherein the nucleic acid construct sequence is codon-optimized for expression in human.

26.3863665COMBINATION VACCINE COMPOSITION COMPRISING REDUCED DOSE INACTIVATED POLIOVIRUS AND METHOD FOR PREPARING THE SAME
EP - 18.08.2021
Int.Class A61K 39/00 Appl.No 19802302 Applicant SERUM INSTITUTE OF INDIA PRIVATE LTD Inventor SHARMA INDER JIT
The present disclosure relates to a fully liquid immunogenic composition comprising a combination of antigens/immunogens. The immunogenic composition comprises optimum amount of antigens/immunogens to confer protection against a number of diseases. The composition exhibits improved immunogenicity and stability. A process for preparing the vaccine composition is also disclosed.

27.20210253637NOVEL IMMUNOTHERAPY AGAINST SEVERAL TUMORS INCLUDING NEURONAL AND BRAIN TUMORS
US - 19.08.2021
Int.Class C07K 7/06 Appl.No 17238840 Applicant IMMATICS BIOTECHNOLOGIES GMBH Inventor Toni WEINSCHENK

The present invention relates to peptides, 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 cytotoxic T cell (CTL) peptide epitopes, alone or in combination with other tumor-associated peptides that serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses. The present invention relates to 30 peptide sequences and their variants derived from HLA class I and class II molecules of human tumor cells that can be used in vaccine compositions for eliciting anti-tumor immune responses.

28.3863646USES OF MODIFIED RNA ENCODING RETINALDEHYDE DEHYDROGENASE
EP - 18.08.2021

Int.Class A61K 31/7115 Appl.No 19871482 Applicant HARVARD COLLEGE Inventor VON ANDRIAN ULRICH H
Some aspects of this disclosure provide modified mRNA (modRNA) encoding retinaldehyde dehydrogenase (RALDH) enzyme, in addition to methods of synthesis, administration, use, and treatment. In some embodiments, the modRNA may be used in a vaccine to treat infections *(e.g.*, mucosal infections) and/or cancers (*e.g.*, mucosal cancers).

29.3860647COMBINATION CELL-BASED THERAPIES
EP - 11.08.2021
Int.Class A61K 39/00 Appl.No 19869950 Applicant HEAT BIOLOGICS INC Inventor HUTCHINS JEFF
The present disclosure provides methods of treatment with cells having a vaccine (e.g., gp96-Ig) and cells having a T-cell co-stimulatory molecule.

30.20210244813ADJUVANT AND VACCINE COMPOSITIONS
US - 12.08.2021
Int.Class A61K 39/39 Appl.No 17238601 Applicant Advanced BioAdjuvants LLC Inventor Jay D. Gerber

Methods are provided for preparing and delivering an adjuvant for vaccines including lecithin, polymer and one or more additives. The polymer is preferably polyacrylic acid-based. The additive is preferably one or more of a glycoside and a sterol. The method of preparation includes hydrating lecithin and a polymer in saline or water and mixing the lecithin and polymer to form the adjuvant. Additives can be included prior to or after hydration of the lecithin and polymer.

31.20210252127METHODS AND COMPOSITIONS RELATED TO THE NEXT GENERATION VACCINE
US - 19.08.2021
Int.Class A61K 39/118 Appl.No 17053544 Applicant UNIVERSITY OF KANSAS Inventor Wendy L. PICKING

Disclosed are methods and compositions related to polypeptides comprising a fusion of the needle tip protein and translocator protein of a type III secretion apparatus (T3SA) from a type III secretion system (T3SS) of a Gram negative bacteria. Disclosed herein are fusion polypeptides comprising a fusion of a needle tip protein, such as, Bsp22, LcrV, BipD, PcrV, CT053, or CT668, or anantigenic fragment thereof; and a translocator protein, such as, BopB, YopB, BipB, PopB, CopB, or CopB2, or anantigenic fragment thereof from a Type III secretion system (T3SS) of a Gram negative bacteria, such as, *Bordetella, Burkholderia, Chlamydia, Pseudomonas, Vibrio*, or *Yersinia.*

32.2591822Extracellular assembly of virus like particles
GB - 11.08.2021
Int.Class C12N 7/04 Appl.No 202001808 Applicant UNIV CAPE TOWN Inventor EDWARD PETER RYBICKI
African Horse Sickness Virus (AHSV) virus like particle (VLP) for use in a vaccine is produced by (i) providing four nucleotide sequences each encoding one of the AHSV VP2, VP3, VP5 and VP7 structural proteins; (ii) cloning the nucleotide sequences into at least two separate expression vectors for expression in a host cell (preferably a plant cell from Nicotiana benthamiana); (iii) transforming at least two separate, distinct host cell populations with the separate expression vectors, so that no single host cell population is transformed such that it contains expression vectors encoding all four of VP2, VP3, VP5 and VP7, i.e. the four proteins are expressed in the at least two separate host cell populations; (iv) expressing the structural proteins; (v) recovering the expressed structural proteins; and (vi) incubating the recovered expressed structural proteins together to allows them to self-assemble to form AHSV VLPs. The VLP per se and its use to prevent African Horse Sickness are disclosed.

33.20210253656HLA-A24 AGONIST EPITOPES OF MUC1-C ONCOPROTEIN AND COMPOSITIONS AND METHODS OF USE
US - 19.08.2021
Int.Class C07K 14/47 Appl.No 17240260 Applicant The USA, as represented by the Secretary, Dept. of Health and Human Services Inventor Jeffrey Schlom

The invention provides a human cytotoxic T lymphocyte (CTL) agonist epitope from the C-terminal subunit of mucin 1 (MUC1-C), which can be used as a peptide, polypeptide (protein), and/or in vaccine or other composition for the prevention or therapy of cancer. The invention further provides a nucleic acid encoding the peptide, protein, or polypeptide, a vector comprising the nucleic acid, a cell comprising the peptide, polypeptide, nucleic acid, or vector, and compositions thereof.

34.20210246181NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST LUNG CANCER, INCLUDING NSCLC, SCLC AND OTHER CANCERS
US - 12.08.2021
Int.Class C07K 14/47 Appl.No 17227885 Applicant Immatics Biotechnologies GmbH Inventor Colette SONG

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

35.20210254113Production of Bacterial Polysaccharides
US - 19.08.2021
Int.Class C12P 19/04 Appl.No 16628405 Applicant MSD Wellcome Trust Hilleman Laboratoriees PVT., Ltd. Inventor Sandeep Sharma

The present invention particularly relates to culture media composition, feed composition, and fermentation conditions for production of *Neisseria meningitidis* polysaccharides. The present invention describes a rapid, industrially scalable, cost effective process for the production of *Neisseria meningitidis*. The *N. meningitidis* polysaccharides of the present invention are capable of being used in the production of economical polysaccharide protein conjugate vaccine(s) against meningococcal infections.

36.WO/2021/159130CORONAVIRUS RNA VACCINES AND METHODS OF USE
WO - 12.08.2021
Int.Class Appl.No PCT/US2021/032609 Applicant MODERNATX, INC. Inventor BENNETT, Hamilton
The disclosure relates to SARS-CoV-2 messenger ribonucleic acid (mRNA) vaccine compositions as well as methods of using the vaccines.

37.WO/2021/158845TREATMENT AND DOSING REGIMEN FOR S1P RECEPTOR MODULATOR
WO - 12.08.2021
Int.Class A61K 31/135 Appl.No PCT/US2021/016705 Applicant ARGENTUM PHARMACEUTICALS LLC Inventor GARDNER, Jeffrey, R.
The present invention relates to a kit including a test, vaccine, and/or one or more doses of an S1P receptor modulator or agonist in the course for the treatment of patients suffering from an inflammatory or autoimmune disease or disorder, for example multiple sclerosis (MS). By administering a S1P receptor

modulator or agonist using kits according to the present application, it is possible to accelerate treatment for patients having barriers to receiving effective or adequate medical treatment.

38.20210252130VACCINES COMPRISING MUTANT ATTENUATED INFLUENZA VIRUSES
US - 19.08.2021
Int.Class A61K 39/12 Appl.No 17229001 Applicant Wisconsin Alumni Research Foundation (WARF) Inventor Shinji Watanabe

The invention provides a vaccine comprising an effective amount of an isolated recombinant influenza virus comprising a mutant M gene segment that is mutated so that upon viral replication the mutant M gene expresses a functional M1 protein and a mutant M2 protein with a deletion of the cytoplasmic tail and either lacking a transmembrane domain or having a mutated transmembrane domain.

39.20210244765PEPTIDES AND COMBINATION OF PEPTIDES OF NON-CANONICAL ORIGIN FOR USE IN IMMUNOTHERAPY AGAINST DIFFERENT TYPES OF CANCERS
US - 12.08.2021
Int.Class A61K 35/17 Appl.No 17229411 Applicant Immatics Biotechnologies GmbH Inventor Heiko SCHUSTER

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.

40.20210252052TUMOR LYSATE LOADED PARTICLES
US - 19.08.2021
Int.Class A61K 35/15 Appl.No 17128944 Applicant Orbis Health Solutions LLC Inventor Thomas E. WAGNER

Dendritic cells containing tumor lysate loaded particles are prepared. The dendritic cells present tumor antigens to elicit the Major Histocompatibility Complex class I pathway and can be used as a vaccine to treat cancer, including ocular melanoma.

41.20210254078AMPLICON EXPRESSION VECTOR VACCINES
US - 19.08.2021
Int.Class C12N 15/64 Appl.No 17241857 Applicant LineaRx, Inc. Inventor Michael E. Hogan

Provided herein are non-plasmid derived DNA vaccines comprised solely of enzymatically produced amplicon expression vectors and their method of use to elicit antigen-specific immune responses in a subject. The enzymatically produced amplicon expression vectors may be specifically utilized as a DNA based cancer vaccine to express desired antigens or other immunogenic polypeptides within a subject to induce a specific anti-cancer antigen-specific immune response. The enzymatically produced amplicon expression vectors may also be utilized to express cancer-specific neoantigens.

42.2021207620UTERINE CANCER TREATMENTS
AU - 12.08.2021
Int.Class C07K 7/06 Appl.No 2021207620 Applicant Immatics Biotechnologies GmbH Inventor

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.

43.20210252061NOVEL PEPTIDES AND SCAFFOLDS FOR USE IN IMMUNOTHERAPY AGAINST HEAD AND NECK SQUAMOUS CELL CARCINOMA AND OTHER CANCERS
US - 19.08.2021
Int.Class A61K 35/17 Appl.No 17229682 Applicant Immatics Biotechnologies GmbH Inventor 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.

44.20210252138HPV VACCINE
US - 19.08.2021
Int.Class A61K 39/39 Appl.No 17170948 Applicant Merck Sharp & Dohme Corp. Inventor Andrew J. Bett

The present disclosure provides, among other things, a pharmaceutical composition that includes a lipid nanoparticle adjuvant and an anti-human papillomavirus (HPV) comprising HPV virus-like particles (VLPs) of at least one type of human papillomavirus (HPV) selected from the group consisting of HPV types: 6, 11, 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 55, 56, 58, 59, 66, 68, 73, and 82.

45.WO/2021/160887CORONA VIRUS VACCINE
WO - 19.08.2021
Int.Class C07K 14/005 Appl.No PCT/EP2021/053668 Applicant IMMUNOR AS Inventor SUSRUD, Andres, Schjønhaug
The present invention relates to the field of virus immunotherapy. In particular the present invention relates to novel peptides and methods for treatment, induction of immunity, prophylaxis and amelioration of a disease caused by virus infections with Corona virus, in particular Wuhan seafood market pneumonia virus isolate Wuhan-Hu-1.

46.WO/2021/163002HPV VACCINE
WO - 19.08.2021
Int.Class A61K 39/12 Appl.No PCT/US2021/017157 Applicant MERCK SHARP & DOHME CORP. Inventor GINDY, Marian, E.
The present disclosure provides, among other things, a pharmaceutical composition that includes a lipid nanoparticle adjuvant and an anti-human papillomavirus (HPV) comprising HPV virus-like particles (VLPs) of at least one type of human papillomavirus (HPV) selected from the group consisting of HPV types: 6, 11, 16, 18, 26, 31, 33, 35, 39, 45, 51, 52, 53, 55, 56, 58, 59, 66, 68, 73, and 82.

47.20210253645CORONAVIRUSES EPITOPE-BASED VACCINES
US - 19.08.2021

Int.Class C07K 14/005 Appl.No 17229100 Applicant Ramot at Tel-Aviv University Ltd. Inventor Jonathan GERSHONI

The present invention provides polypeptides derived from the coronaviruses (CoVs) Spike protein (S) characterized by high affinity and specificity the S receptor and its neutralizing antibodies. The invention further provides compositions and vaccines, and vaccine-based therapies targeting CoVs, and SARS and MERS viruses in particular.

48.WO/2021/156258TREATMENT INVOLVING ANTIGEN VACCINATION AND BINDING AGENTS BINDING TO PD-L1 AND CD137
WO - 12.08.2021
Int.Class A61K 39/00 Appl.No PCT/EP2021/052439 Applicant BIONTECH SE Inventor SAHIN, Ugur
The present disclosure relates to methods and compositions for inducing an immune response in a subject comprising providing to the subject a peptide or protein vaccine and a binding agent, such as a bispecific antibody, binding to PD-L1 and CD137, such as human PD-L1 and human CD137, e.g., by coadministering to the subject a peptide or protein used for vaccination or a polynucleotide, in particular RNA, encoding a peptide or protein used for vaccination, and a binding agent binding to PD-L1 and CD137 or a polynucleotide, in particular RNA, encoding a binding agent binding to PD-L1 and CD137. The present disclosure further relates to medical preparations useful in the methods disclosed herein.

49.WO/2021/163456T CELL EPITOPES AND RELATED COMPOSITIONS USEFUL IN THE PREVENTION, DIAGNOSIS, AND TREATMENT OF COVID-19
WO - 19.08.2021
Int.Class A61K 39/215 Appl.No PCT/US2021/017825 Applicant EPIVAX, INC. Inventor DE GROOT, Anne
The present disclosure generally relates to novel epitope-based compositions, including vaccines, against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and diseases caused by SARS-CoV-2, including the highly contagious coronavirus disease 2019 (which has been termed and may be referred to herein as "COVID-19", "2019-nCoV", or the "2019 novel coronavirus". The disclosure relates to immunogenic polypeptides and the uses thereof, particularly in vaccine compositions. The disclosure also relates to nucleic acids, vectors, and cells which express the polypeptides and the uses thereof. The polypeptides more specifically comprise an agretope predicted to be a ligand of HLA class I and/or HLA class II MHC molecules, as well as an epitope that is predicted to be recognized by T-cells in the context of MHC class I and/or class II molecules. The compositions are particularly suited to produce vaccines, particularly for vaccinating against SARS-CoV-2 infection and related diseases caused by SARS-CoV-2, including COVID-19.

50.2021902407Vaccine construct and uses thereof
AU - 19.08.2021
Int.Class Appl.No 2021902407 Applicant The University of Melbourne Inventor

51.WO/2021/163365SARS-COV-2 VACCINE
WO - 19.08.2021
Int.Class A61K 39/12 Appl.No PCT/US2021/017709 Applicant THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY, DEPARTMENT OF HEALTH AND HUMAN SERVICES Inventor GRAHAM, Barney
SARS-CoV-2 S ectodomain trimers stabilized in a prefusion conformation, nucleic acid molecules and vectors encoding these proteins, and methods of their use and production are disclosed. In several embodiments, the SARS-CoV-2 S ectodomain trimers and/or nucleic acid molecules can be used to generate an immune response to SARS-CoV-2 S in a subject, for example, an immune response that inhibits SARS-CoV-2 infection in the subject.

52.20210244814COMBINATION OF METFORMIN AND CYCLOPHOSPHAMIDE AS AN ADJUVANT IN CANCER IMMUNOTHERAPY
US - 12.08.2021
Int.Class A61K 39/395 Appl.No 17049435 Applicant UNIVERSITÉ CATHOLIQUE DE LOUVAIN Inventor Benoît VAN DEN EYNDE

A combination including metformin and cyclophosphamide for use with an immunotherapy in the treatment of a solid cancer. In particular, the combination including metformin and cyclophosphamide is used as an adjuvant for an immunotherapy. More specifically, a combination including metformin and cyclophosphamide for use with an adoptive cell therapy, with a therapeutic vaccine, with a checkpoint inhibitor therapy or with a T-cell agonist therapy, preferably with an adoptive cell therapy or a checkpoint inhibitor therapy, in the treatment of a solid cancer.

53.WO/2021/158844TREATMENT AND DOSING REGIMEN FOR S1P RECEPTOR MODULATOR
WO - 12.08.2021
Int.Class A61K 31/135 Appl.No PCT/US2021/016704 Applicant ARGENTUM PHARMACEUTICALS LLC Inventor GARDNER, Jeffrey R.
The present invention relates to a kit including a test, vaccine, and/or one or more doses of an S1P receptor modulator or agonist in the course for the treatment of patients suffering from an inflammatory or autoimmune disease or disorder, for example multiple sclerosis (MS). By administering a S1P receptor modulator or agonist using kits according to the present application, it is possible to accelerate treatment for patients having barriers to receiving effective or adequate medical treatment.

54.20210252064NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST EPITHELIAL OVARIAN CANCER AND OTHER CANCERS
US - 19.08.2021
Int.Class A61K 35/17 Appl.No 17245012 Applicant Immatics Biotechnologies GmbH Inventor Heiko SCHUSTER

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.

55.20210252066NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST EPITHELIAL OVARIAN CANCER AND OTHER CANCERS
US - 19.08.2021
Int.Class A61K 35/17 Appl.No 17245133 Applicant Immatics Biotechnologies GmbH Inventor Heiko SCHUSTER

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.

56.20210252065NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST EPITHELIAL OVARIAN CANCER AND OTHER CANCERS
US - 19.08.2021
Int.Class A61K 35/17 Appl.No 17245076 Applicant Immatics Biotechnologies GmbH Inventor Heiko SCHUSTER

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.

57.20210246170Compositions and Methods for Preventing and Treating Coronavirus Infection - SARS-COV-2 Vaccines
US - 12.08.2021
Int.Class C07K 14/005 Appl.No 17163357 Applicant Janssen Pharmaceuticals, Inc. Inventor Johannes Petrus Maria LANGEDIJK

The invention relates to immunogenic compositions and vaccines containing a coronavirus (e.g., Wuhan coronavirus (2019-nCoV; also referred to as SARS-CoV-2)) protein or a polynucleotide encoding a coronavirus (e.g., Wuhan coronavirus (2019-nCoV; SARS-CoV-2)) protein and uses thereof. The invention also provides methods of treating and/or preventing a coronavirus (e.g., Wuhan coronavirus (2019-nCoV; SARS-CoV-2)) infection by administering an immunogenic composition or vaccine to a subject (e.g., a human). The invention also provides methods of detecting and/or monitoring a protective anti-coronavirus (e.g., Wuhan coronavirus (2019-nCoV; SARS-CoV-2)) antibody response (e.g., anti-coronavirus antibody response, e.g., anti-2019-nCoV antibody response, e.g., anti-Spike antibody response, e.g., anti-Spike neutralizing antibody response). The present invention relates to isolated nucleic and/or recombinant nucleic acid encoding a coronavirus S protein, in particular a SARS-CoV-2 S protein, and to the coronavirus S proteins, as well as to the use of the nucleic acids and/or proteins thereof in vaccines.

58.WO/2021/156890RECOMBINANT EXPRESSION PLATFORM, CONSTRUCTS AND METHODS FOR EXPRESSION OF DIFFICULT TO EXPRESS PROTEINS (DTE-PS)
WO - 12.08.2021
Int.Class A61K 38/00 Appl.No PCT/IN2021/050111 Applicant PREMAS BIOTECH PRIVATE LIMITED Inventor ARORA, Kajal
The present invention provides a versatile yeast-based recombinant expression platform for the enhanced expression of full length or truncated target "Difficult to Express" proteins (DTE-Ps) of diverse origin and families. Constructs, methods and kits involved in expressing such DTE-Ps through the said system are also provided. The recombinant expression platform of the present invention is robust, scalable and can have applications in fields like vaccine development, drug discovery, metabolism, diagnostics, therapeutics and healthcare.

59.WO/2021/159648BETA-CORONAVIRUS ANTIGEN, PREPARATION METHOD THEREFOR AND USE THEREOF

WO - 19.08.2021
Int.Class C07K 19/00 Appl.No PCT/CN2020/097775 Applicant INSTITUTE OF MICROBIOLOGY, CHINESE ACADEMY OF SCIENCES Inventor DAI, Lianpan
Provided in the present invention are a beta-coronavirus antigen, a preparation method therefor and the use thereof. The amino acid sequence of the beta-coronavirus antigen comprises an amino acid sequence arranged in an (A-B)-(A-B) pattern, or an amino acid sequence arranged in an (A-B)-C-(A-B) pattern, or an amino acid sequence arranged in an (A-B)-(A-B') pattern, or an amino acid sequence arranged in an (A-B)-C-(A-B') pattern, and the beta-coronavirus antigen has a single-chain dimer structure. The single-chain dimer expressed in the embodiment of the present invention is stable in terms of content and has a good immunogenicity as a beta-coronavirus antigen, and a vaccine prepared using the single-chain dimer as a beta-coronavirus antigen can stimulate mice to generate a neutralizing antibody with very high titer.

60.WO/2021/163398T CELL EPITOPE CLUSTERS AND RELATED COMPOSITIONS USEFUL IN THE PREVENTION, DIAGNOSIS, AND TREATMENT OF COVID-19
WO - 19.08.2021
Int.Class A61K 39/215 Appl.No PCT/US2021/017748 Applicant EPIVAX, INC. Inventor DE GROOT, Anne
The present disclosure relates to novel epitope-based compositions, including vaccines, against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and diseases caused by SARS-CoV-2, including the highly contagious coronavirus disease 2019. The disclosure relates to immunogenic polypeptides (including concatemeric polypeptides, hybrid Ii-key constructs, and chimeric or fusion polypeptides as disclosed herein) and the uses thereof, particularly in vaccine compositions. The disclosure also relates to nucleic acids, vectors, and cells which express the polypeptides and the uses thereof. The polypeptides of the invention more specifically comprise an agretope predicted to be a ligand of HLA class I and/or HLA class II MHC molecules, as well as an epitope that is predicted to be recognized by T-cells in the context of MHC class I and/or class II molecules. The compositions are particularly suited to produce vaccines, particularly for vaccinating against SARS-CoV-2 infection and related diseases caused by SARS-CoV-2, including COVID-19.

61.3865578SURFACE EXPRESSION VECTOR FOR CONSTITUTIVE HIGH-EXPRESSION USING PROMOTER OF GALACTOSE MUTAROTASE GENE DERIVED FROM LACTOBACILLUS CASEI, AND USE THEREOF
EP - 18.08.2021
Int.Class C12N 15/67 Appl.No 19871372 Applicant BIOLEADERS CORP Inventor PARK YOUNG CHUL
The present invention relates to a galactose mutarotase gene promoter derived from Lactobacillus casei and the use thereof, and more particularly, to a Lactobacillus casei-derived galactose mutarotase gene promoter having the nucleotide sequence of SEQ ID NO: 1, an expression vector containing the promoter, and a microorganism transformed with the expression vector. A microorganism transformed with an expression vector containing the promoter according to the present invention may effectively express a target protein on the cell surface, and thus is useful as a vaccine vehicle or the like. Moreover, the present invention relates to a surface expression vector having pgsA, which is a gene encoding poly-gamma-glutamate synthetase, and a method of expressing a target protein on the microbial surface using the vector. The vector containing foreign genes inserted therein is transformed into a microorganism and allows a foreign protein is to be stably expressed on the surface of the microorganism.

62.WO/2021/158839TREATMENT AND DOSING REGIMEN FOR S1P RECEPTOR MODULATOR
WO - 12.08.2021
Int.Class A61K 31/135 Appl.No PCT/US2021/016697 Applicant ARGENTUM PHARMACEUTICALS LLC Inventor GARDNER, Jeffrey R.

The present invention relates to a kit including a test, vaccine, and/or one or more doses of an S1P receptor modulator or agonist in the course for the treatment of patients suffering from an inflammatory or autoimmune disease or disorder, for example multiple sclerosis (MS). By administering a S1P receptor modulator or agonist using kits according to the present application, it is possible to accelerate treatment for patients having barriers to receiving effective or adequate medical treatment.

63.WO/2021/163622VACCINES AND USES THEREOF TO INDUCE AN IMMUNE RESPONSE TO SARS-COV2
WO - 19.08.2021
Int.Class A61K 39/12 Appl.No PCT/US2021/018033 Applicant GEOVAX, INC. Inventor HAUSER, Mary, Jo
Provided herein are recombinant modified vaccinia Ankara (rMVA) viral vectors comprising heterologous nucleic acid inserts encoding one or more SARS-CoV2 proteins, peptides, or fragments thereof, operably linked to a promoter compatible with poxvirus expression systems that, upon expression, are capable of inducing protective immunity. The compositions can be used in a priming vaccination strategy or in a prime/boost vaccination strategy to provide immunity to SARS-CoV2 and variants thereof.

64.WO/2021/155631ERYTHROCYTE GEL DELIVERY SYSTEM, AND PREPARATION METHOD THEREFOR AND APPLICATION THEREOF
WO - 12.08.2021
Int.Class A61K 9/06 Appl.No PCT/CN2020/080992 Applicant SOOCHOW UNIVERSITY Inventor WANG, Chao
Provided are an erythrocyte gel delivery system, and a preparation method therefor and application thereof, relating to the technical field of biomaterials. The erythrocyte gel delivery system is prepared by uniformly mixing an active ingredient or a delivery vector containing the active ingredient with fresh blood, and after preliminary coagulation, performing mild drying. The preparation method for the erythrocyte gel delivery system is simple and quick, and the erythrocyte gel delivery system is high in drug loading, and high in biological safety and biodegradability. Erythrocyte gel has the functions of immune stimulation and immune cell recruitment, and may form an immune niche at an implantation site. After being implanted, an immune modulator and a tumor-related antigen contained in a prepared erythrocyte gel vaccine stimulate recruited immune cells to differentiate into immune cells having specificity for a tumor antigen, and induce the production of a highly effective anti-tumor immune response.

65.WO/2021/155916TREATMENT INVOLVING ANTIGEN VACCINATION AND BINDING AGENTS BINDING TO PD-L1 AND CD137
WO - 12.08.2021
Int.Class A61K 39/00 Appl.No PCT/EP2020/052774 Applicant BIONTECH SE Inventor SAHIN, Ugur
The present disclosure relates to methods and compositions for inducing an immune response in a subject comprising providing to the subject a peptide or protein vaccine and a binding agent, such as a bispecific antibody, binding to PD-L1 and CD137, such as human PD-L1 and human CD137, e.g., by coadministering to the subject a peptide or protein used for vaccination or a polynucleotide, in particular RNA, encoding a peptide or protein used for vaccination, and a binding agent binding to PD-L1 and CD137 or a polynucleotide, in particular RNA, encoding a binding agent binding to PD-L1 and CD137. The present disclosure further relates to medical preparations useful in the methods disclosed herein.

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

Results Search in US Patent Collection db for: (ABST/vaccine AND ISD/20210811->20210820), 8 records.

	PAT. NO.	Title
1	11,092,601	Methods for detecting peptide/MHC/TCR binding
2	11,091,786	Butelase-mediated peptide ligation
3	11,091,512	Modulation of antigen immunogenicity by deleting epitopes recognized by NKT cells
4	11,090,384	Arthrogenic alphavirus vaccine
5	11,090,382	Monomeric proteins and uses thereof
6	11,090,380	Methods and compositions to increase immune response to vaccines
7	11,090,374	Enhancing immunogenicity of Streptococcus pneumoniae polysaccharide-protein conjugates

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