VacCiencia

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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 vacunas 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.

IFV INSTITUTO FINLAY DE VACUNAS SiViFinlay VaCyT

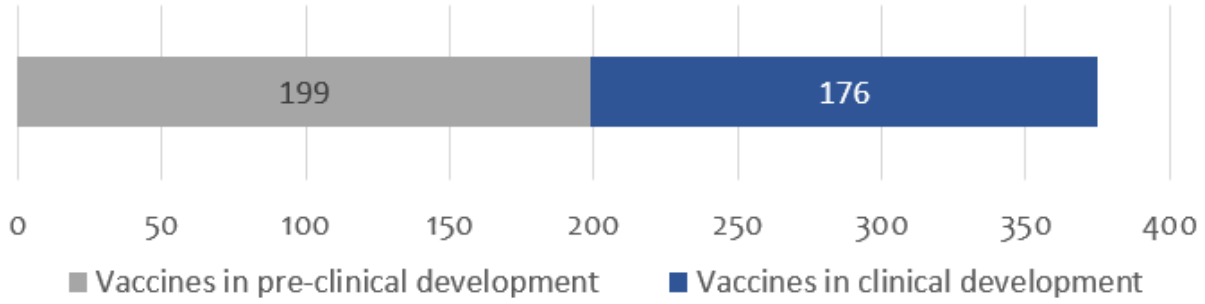
CUBA

Resumen de la información publicada por la OMS sobre vacunas en desarrollo contra la COVID-19, a nivel mundial

Última actualización por la OMS: 20 de enero de 2022.

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

176 Vacunas en evaluación clínica y 199 en evaluación preclínica



Vacunas en evaluación clínica por plataforma

Platform		Candidate vaccines (no. and %)	
PS	Protein subunit	57	33%
VVnr	Viral Vector (non-replicating)	23	13%
DNA	DNA	16	9%
IV	Inactivated Virus	22	13%
RNA	RNA	41	23%
VVr	Viral Vector (replicating)	4	2%
VLP	Virus Like Particle	7	4%
VVr + APC	VVr + Antigen Presenting Cell	2	1%
LAV	Live Attenuated Virus	2	1%
VVnr + APC	VVnr + Antigen Presenting Cell	1	1%
BacAg-SpV	Bacterial antigen-spore expression vector	1	1%
		176	

Vacunas en evaluación clínica por vía de administración

Oral		**5**	**3%**
Injectable		**159**	**90%**
SC	Sub cutaneous	5	3%
ID	Intra dermal	9	5%
IM	Intra muscular	145	82%
IN	Intra nasal	14	8%
AE	Aerosol	1	1%
IH	Inhaled	2	1%
TBD / No Data (ND)		**12**	**7%**

Número de dosis de las vacunas en evaluación clínica

Number of doses & schedule	Candidate vaccines (no. and %)	
1 dose	**42**	**24%**
Day 0	42	
2 doses	**99**	**56%**
Day 0 + 14	8	
Day 0 + 21	35	
Day 0 + 28	56	
3 doses	**2**	**1%**
Day 0 + 28 + 56	2	
TBD / No Data (ND)	**33**	**19%**

Vacunas 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
CanSino Biological Inc./Beijing Institute of Biotechnology/China	Vector viral no replicativo	Inhalación	4
CanSino Biological Inc./China	Vector viral no replicativo	Intranasal	3
Vaxart/Estados Unidos	Vector viral no replicativo	Oral	2
Univ. Hong Kong, Xiamen Univ./Beiging Wantai Biol. Pharm./China	Vector viral replicativo	Intranasal	3
Symvivo/Canadá	ADN	Oral	1
ImmunityBio, Inc./Estados Unidos	Vector viral no replicativo	Oral y Sublingual	1/2
Codagenix/Serum Institute of India	Virus vivo atenuado	Intranasal	3
Center for Genetic Engineering and Biotechnology (CIGB)/Cuba	Subunidad proteica	Intranasal	1/2
Razi Vaccine and Serum Research Institute/India	Subunidad proteica	Intranasal	3
Bharat Biotech International Limited/India	Vector viral no replicativo	Intranasal	3
Meissa Vaccines, Inc./Estados Unidos	Virus vivo atenuado	Intranasal	1
Laboratorio Avi-Mex/México	Virus inactivado	Intranasal	2/3
USSF + VaxForm/Estados Unidos	Subunidad proteica	Oral	1
CyanVac LLC/Estados Unidos	Vector viral no replicativo	Intranasal	1
DreamTec Research Limited/Hong Kong	BacAg-SpV	Oral	NA
Sean Liu, Icahn School of Medicine at Mount Sinai	Vector viral replicativo	Intranasal	2/3
Hannover Medical School/Alemania	Vector viral no replicativo	Inhalación	1
ACM Biolabs/Singapur	Subunidad proteica	Intranasal	1
Intravacc B.V/Holanda	Vector viral no replicativo	Subunidad proteica	1

Vacunas en fase 4 de evaluación clínica

Candidatos vacunales más avanzados/fabricante/país	Plataforma de la vacuna
Sinovac/China	Virus Inactivado
Sinopharm/Beijing Institute of Biological Products/China	Virus Inactivado
University of Oxford/AstraZeneca/Reino Unido	Vector viral no replicativo
CanSino Biological Inc./Beijing Institute Biotechnology/China (IM e IH)	Vector viral no replicativo
Janssen Pharmaceutical Companies/Estados Unidos	Vector viral no replicativo
Moderna/NIAID/Estados Unidos	ARN
Pfizer/BioNTech Fosun Pharma/Estados Unidos	ARN
Medigen Vaccine Biol./Dynavax/NIAID/Taiwán/EE.UU	Subunidad proteica

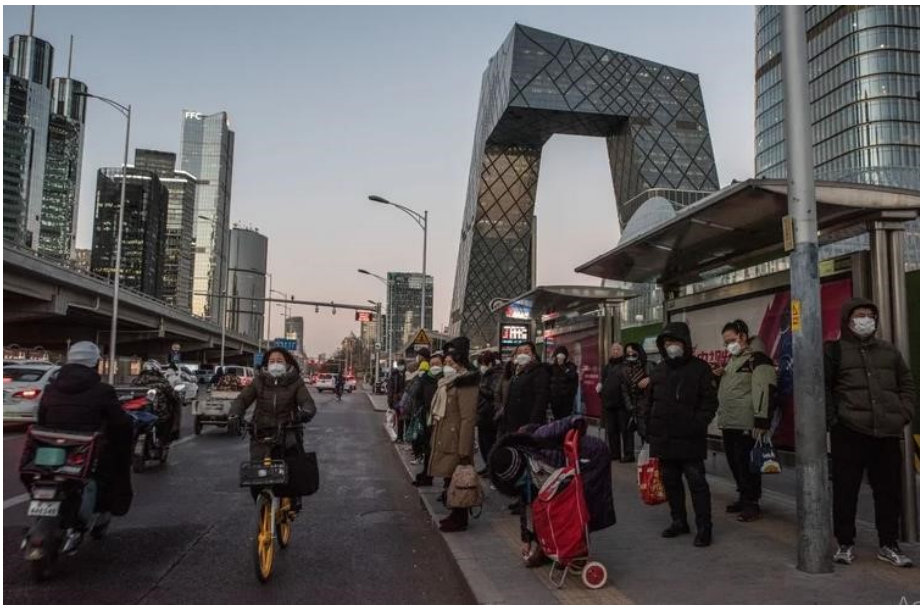
Vacunas en fase 3 de evaluación clínica

Candidatos vacunales más avanzados/fabricante/país	Plataforma de la vacuna
Gamaleya Research Institute/Rusia	Vector viral no replicativo
Novavax/Estados Unidos	Subunidad proteica
Anhui Zhifei Longcom Biopharmac./Inst. Microbiol, Chin Acad Sci/China	Subunidad proteica
CureVac AG/Alemania	ARN
Institute of Medical Biology/Chinese Academy of Medical Sciences	Virus inactivado
Research Institute for Biological Safety Problems, Kazakhstan	Virus inactivado
Inovio Pharmac. + Intern. Vacc Inst. + Advaccine Biopharm Co., Ltd	ADN
Zydus Cadila Healthcare Ltd./India	ADN
Bharat Biotech International Limited/India	Virus Inactivado
Sanofi Pasteur + GSK/Francia/Gran Bretaña	Subunidad proteica
Shenzhen Kangtai Biological Products Co., Ltd./China	Virus Inactivado
Clover Biopharmaceuticals Inc./GSK/Dynavax/China/Reino Unido/EE.UU	Subunidad proteica
Vaxine Pty Ltd. + CinnaGen Co./Australia, Irán	Subunidad proteica
Instituto Finlay de Vacunas/Cuba	Subunidad proteica
Federal Budget Res Inst State Res Cent Virol Biotechnol "Vector"/Rusia	Subunidad proteica
West China Hospital + Sichuan University/China	Subunidad proteica
Vaxxinity/EE.UU	Subunidad proteica
Univ. Hong Kong, Xiamen Univ. & Beijing Wantai Biological Pharm./China	Vector viral replicativo
Acad Milit Sci (AMS) Walvax Biotechnol, Suzhou Abogen Biosci/China	ARN
Medicago Inc./Canadá	Partícula similar a virus
Codagenix/Serum Institute of India	Virus vivo atenuado
Center for Genetic Engineering and Biotechnology (CIGB)/Cuba	Subunidad proteica
Valneva, National Institute for Health Research, Reino Unido	Virus inactivado
Biological E. Limited/India	Subunidad proteica
Nanogen Pharmaceutical Biotechnology/Vietnam	Subunidad proteica
Shionogi/Japón	Subunidad proteica
Erciyes University/Turquía	Virus inactivado
SK Bioscience Co., Ltd./CEPI/Corea del Sur/Noruega	Subunidad proteica
Razi Vaccine and Serum Research Institute/Irán, India	Subunidad proteica
Bharat Biotech International Limited/India	Vector viral no replicativo (IN)
Providence Therapeutics/Canadá	ARN
POP Biotechnologies and EuBiologics Co.,Ltd/EEUU, Corea del Sur	Subunidad proteica
Jiangsu Rec-Biotechnology/China	Subunidad proteica
Radboud University/Holanda	Partícula similar a virus
Arcturus Therapeutics, Inc./Estados Unidos	ARN
Livzon Pharmaceutical/China	Subunidad proteica
National Vaccine and Serum Institute, China; Beijing Zhong Sheng Heng Yi	Subunidad proteica
KM Biologics Co., Ltd./Japón	Virus inactivado
Shanghai East Hospital and Stemirna Therapeutics/China	ARN
Bagheiat-allah University of Medical Sciences/AmitisGen/Irán	Subunidad proteica
Laboratorios Hipra, S.A./España	Subunidad proteica
Sinocelltech Ltd./China	Subunidad proteica
Chumakov Federal Scientific Center for Research/Rusia	Virus Inactivado
Yantai Patronus Biotech Co., Ltd.	Partícula similar a virus
Airlangga University/Indonesia	Virus Inactivado
PT Bio Farma/Indonesia	Subunidad proteica
AIM Vaccine and Liverna Therapeutics/China	ARN
China National Biotec Group Company Limited	Virus inactivado

Noticias en la Web

China y OMS mantendrán comunicación sobre rebrote de COVID-19, el peor que vive el país desde 2020

12 ene. China informó este jueves que acordó con la Organización Mundial de la Salud (OMS) mantener la comunicación a nivel de expertos sobre cuestiones técnicas vinculadas a su actual rebrote de COVID-19, el peor que vive el país desde 2020.



China vive la peor oleada de covid-19 desde 2020. Foto: Bloomberg.

Según un breve comunicado de la Comisión Nacional de Salud, el consenso se alcanzó este miércoles durante una videoconferencia entre autoridades sanitarias y especialistas de la medicina tradicional china con representantes de la agencia global.

En el encuentro analizaron el comportamiento del rebrote en China, las medidas para contenerlo y los tratamientos médicos aplicados, especialmente a casos severos y críticos.

Igualmente, abordaron temas como el monitoreo a la mutación del coronavirus SARS-CoV-2 y las estrategias de vacunación.

Esta reunión siguió a otras sostenidas desde diciembre con la OMS en el contexto de la peor oleada de COVID-19 que vive el país desde 2020, con saldo de millones de infectados a diario, un aumento de las muertes y una sobresaturación de los servicios en los hospitales, funerarias y crematorios.

En los últimos días China aseguró que comparte su información sanitaria en la plataforma global Gisaid, lo hace con transparencia y responsabilidad, y mantiene bajo control la oleada actual.

Sin embargo, la OMS le solicitó suministrar datos más detallados y precisos acerca del panorama epidemiológico y mostró inquietud por los limitados criterios para clasificar los fallecimientos por COVID-19.

A partir del 8 de enero el estado oriental eliminó las medidas sanitarias a los viajeros internacionales, normalizó la emisión de pasaportes y reanudó la concesión de visas.

Pero varias naciones decidieron imponer controles y exigir pruebas PCR a pasajeros procedentes del gigante asiático, alegando preocupaciones por un posible rebrote en sus territorios.

El Ministerio de Relaciones Exteriores criticó esas acciones, recalcó que cualquier medida debe tener fundamento científico, no debe usarse para la manipulación política, ser discriminatoria ni afectar el movimiento normal de personas.

En ese contexto, China suspendió las visas a ciudadanos de Japón y Corea del Sur, en reciprocidad por las restricciones sanitarias impuestas a quienes viajen desde su suelo.

Fuente: Cubadebate. Disponible en https://bit.ly/3RiuuwF

Intensifican esfuerzos para llevar vacunas contra COVID-19 a las poblaciones más frágiles de América Latina

13 ene. El Gobierno de Canadá y la Organización Panamericana de la Salud (OPS) extenderán su colaboración para aumentar el acceso a las vacunas contra la COVID-19 entre las poblaciones que aún deben beneficiarse de los esfuerzos de inmunización en América Latina y el Caribe.

OPS/Karina Zambrana. Una enfermera se prepara para administrar una vacuna contra el COVID-19 en el norte de Brasil.

Con este fin, Canadá proporcionará 33,4 millones de dólares estadounidenses para apoyar la respuesta de la OPS a la pandemia, una contribución que se suma a otra anterior cerca de 40 millones de dólares realizada en mayo de 2021. Casi un tercio de los nuevos fondos se destinarán a intervenciones nacionales en Colombia, Haití y Jamaica.

El anuncio se realizó durante un evento en Kingston como parte del lanzamiento de la Iniciativa Global para la Equidad de Vacunas de Canadá (CanGIVE), que busca trabajar con los países en la entrega y distribución de vacunas, en los esfuerzos para aumentar la confianza en los procesos de inmunización, y en el impulso a la producción regional de vacunas.

La pandemia no ha terminado

"La pandemia no ha terminado. El mes pasado, la región de las Américas reportó más de 3,6 millones de nuevos casos de COVID-19 y 18.000 nuevas muertes, un aumento del 42% y 28% de casos y muertes, respectivamente", dijo Ciro Ugarte, director de Emergencias en Salud de la agencia de la ONU.

Ugarte felicitó al Gobierno de Canadá por su continuo apoyo a la OPS y a los países de la región para enfrentar la pandemia: "Seguiremos trabajando a partir de nuestros esfuerzos pasados para lograr una salud óptima y contribuir al bienestar de todos los pueblos de las Américas", añadió Ugarte.

Si bien más del 70% de los habitantes de la región han completado a la fecha un esquema de vacunación, 203 millones de personas no han recibido la primera dosis de la vacuna contra la COVID-19.

"Aunque desearíamos haber pasado la página de la COVID-19, sabemos que no es tan simple. Todavía queda trabajo por hacer para controlar la propagación del virus, avanzar hacia la recuperación y construir sistemas de salud más fuertes", dijo el ministro de Desarrollo Internacional de Canadá, Harjit Sajjan, en el evento.

"La alianza de Canadá con la Organización Panamericana de la Salud ayudará a mejorar el acceso a las vacunas contra la COVID-19, especialmente para las personas en situaciones de vulnerabilidad, incluidas las mujeres y las niñas. También promoverá una mejor vigilancia de las vacunas y respaldará la labor de los trabajadores de la salud", agregó el ministro Sajjan.

Para qué servirán los nuevos fondos

Con los nuevos fondos, la OPS apoyará a sus Estados en América Latina y el Caribe en el fortalecimiento de

los sistemas de salud y los programas de inmunización, y en la incorporación de la vacunación contra la COVID-19 en los esquemas regulares de vacunación.

También se apoyará la implementación de sistemas de información y plataformas digitales para la vigilancia de la vacuna contra la COVID-19, iniciativas de investigación para generar evidencia sobre la percepción y aceptación de las vacunas, y esfuerzos de divulgación y participación comunitaria que alienten la vacunación.

"Con ese fin, Canadá proporcionará a la agencia de la salud regional más de 30 millones de dólares. Casi un tercio de los nuevos fondos se destinarán a intervenciones nacionales en Colombia, Haití y Jamaica."

Con el respaldo de Canadá, desde 2021, la OPS ha brindado orientación a las autoridades de salud en el desarrollo y la implementación de campañas de vacunación contra la COVID-19, asegurando que las poblaciones en situaciones de vulnerabilidad estén adecuadamente reflejadas y priorizadas en 28 Estados Miembros.

La OPS y Canadá también han colaborado con 22 países en el fortalecimiento de su capacidad de cadena de frío para administrar y distribuir de manera segura las vacunas, una inversión a largo plazo que mejorará los programas regulares de inmunización y fortalecerá los sistemas de salud.

Fuente: Noticias ONU. Disponible en https://bit.ly/3R5wBnb

Reconocen en Italia efectividad de vacunas cubanas contra la COVID-19

13 ene. La vacuna cubana Soberana 02 es más eficaz y segura contra la COVID-19 que las utilizadas en Italia y otras naciones occidentales, pero es subestimada y se obstaculiza su importación, aseguró hoy un reporte.

Un análisis publicado este viernes en el sitio digital italiano Newsmondo, firmado por la investigadora Francesca Leoci, hace referencia a la calidad de este fármaco, junto a Soberana Plus y Abdala, mientras Soberana 01 y Mambisa son candidatos.

Leoci refiere que un reciente informe de Naciones Unidas titulado COVID-19 y vacunación en América Latina y el Caribe: desafíos, necesidades y oportunidades, definió a Cuba como el mejor productor de vacunas contra el coronavirus SARS-CoV-2 en la región, y destacó que ese país usó la vacuna Soberana 02 en su población antes que la mayoría de los países más desarrollados.

Por otra parte la publicación especializada británica The Lancet significó desde mediados de 2021 que Soberana 02 es eficaz y segura contra la COVID-19, «incluso más que las utilizadas en Occidente», agregó la nota.

En febrero de 2022 la cadena de televisión italiana Rai 3 emitió desde La Habana un reportaje de una hora y 20 minutos de duración, en el cual destacó la eficacia y seguridad de Soberana 02, desarrollada en ese país por el Instituto Finlay de Vacunas (IFV).

Ese material audiovisual, divulgado también en la página oficial de la Agencia Italiana para el Comercio y las

Inversiones (ITA) resaltó entre otros aspectos su efectiva aplicación a 1,6 millones de niños en la isla.

También refirió el hecho de que con la administración de ese fármaco y de Abdala, Cuba se ubicaba como el segundo país a nivel mundial en cuanto al porciento de población inmunizada.

Al cierre del 11 de enero de 2023, suman en ese país 42 millones 868 mil 362 las dosis administradas de Soberana 02, Soberana Plus y Abdala, mientras que 10 millones 720 mil 997 personas recibieron una dosis, nueve millones 443 mil 138 la segunda, y están vacunados con la tercera nueve millones 144 mil 44 de los 11,2 millones de habitantes de la isla.

En abril de 2022 se conoció sobre la firma de un memorando entre el IFV y la empresa italiana Adienne Pharma & Biotech, suscrito también por la Agencia para el Intercambio económico y cultural con Cuba (Aicec), para formular y envasar esa vacuna cubana en este país europeo.

El director general del IFV, Vicente Verez, expresó entonces en declaraciones divulgadas por diversos medios informativos que el propósito del acuerdo era posibilitar la entrada de este fármaco en Europa o, incluso, en América del Norte y que la intención es, en una segunda fase, evaluar su completa elaboración en esa empresa italiana.

En agosto del pasado año trascendió que la compañía italiana evaluaba el comienzo de la producción del inmunógeno, que pasará a formar parte de un mecanismo de cooperación sanitaria internacional y se exportará a otros países, agrega la fuente.

Fuente: Prensa Latina. Disponible en https://bit.ly/3H5logJ

Estados Unidos advierte sobre la vacuna anticovid de Pfizer

14 ene. La vacuna bivalente contra la COVID-19 de la farmacéutica estadounidense Pfizer y su socio alemán BioNTech podría vincularse con un tipo de accidente cerebrovascular en adultos mayores, según datos preliminares analizados por las autoridades sanitarias de Estados Unidos.

Al citar bases de datos de seguridad de vacunas de los Centros para el Control y la Prevención de Enfermedades (CDC), los funcionarios de salud dijeron el viernes que las personas mayores de 65 años tenían más probabilidades de sufrir un accidente cerebrovascular isquémico 21 días después de recibir la inyección bivalente, en comparación con los días 22-44.

Un accidente cerebrovascular isquémico, también conocido como isquemia cerebral, es causado por obstrucciones en las arterias que llevan sangre al cerebro.

El problema de la seguridad requiere más investigación y "es muy poco probable que represente un verdadero riesgo clínico", dijeron las autoridades.

Pfizer Inc. y BioNTech dijeron en un comunicado que se les informó de reportes limitados de accidentes cerebrovasculares isquémicos en personas de 65 años o más después de la vacunación con su vacuna actualizada.

"Ni Pfizer ni BioNTech ni los CDC ni la Administración de Fármacos y Alimentos de Estados Unidos (FDA) han observado hallazgos similares en muchos otros sistemas de monitoreo en Estados Unidos y el resto del mundo y no hay evidencia para concluir que el accidente cerebrovascular isquémico esté asociado con el uso de las vacunas COVID-19", agregó Pfizer.

Este problema de riesgo no se ha identificado con la vacuna bivalente de Moderna y tanto los CDC como la FDA continúan recomendando que todas las personas a partir de los seis meses de edad se mantengan al día con sus inmunizaciones.

Las inyecciones bivalentes de Pfizer/BioNtech y Moderna, que se dirigen tanto al coronavirus original como a las subvariantes de Ómicron, han sido autorizadas para su uso en niños de 6 meses en adelante.

Fuente: MendoVoz. Disponible en https://bit.ly/3HqKdGu

Subvariante de Ómicron provoca ola de contagios en EEUU

15 ene. La subvariante XBB.1.5 de Ómicron se esparce rápidamente en Estados Unidos y representa el 43 por ciento de los casos de COVID-19 reportados, según los Centros para el Control y la Prevención de Enfermedades.

Variante de Ómicron provoca nueva ola de contagios en Estados Unidos. Foto: Prensa Latina.

Dicha cepa es actualmente la variante más transmisible del país, y constituyó el 30.4 por ciento del total de diagnósticos de la semana que finalizó el 7 de enero, un aumento del 20 por ciento frente a los siete días anteriores, añadió la fuente.

A propósito de la situación, el coordinador de respuesta al SARS-CoV-2 de la Casa Blanca, Ashish Jha, alertó sobre la posibilidad de que el sistema de atención médica estadounidense no pueda resistir el incremento continuo de enfermos y al mismo tiempo atender otras urgencias médicas.

“Me preocupa que tendremos, durante años, un sistema de salud bastante disfuncional, sin poder atender a los pacientes con infarto o con cáncer, y sin poder brindar asistencia a los niños que tiene apendicitis porque vamos a estar muy abrumados con virus respiratorios durante tres o cuatro meses al año”, afirmó citado por el diario The Washington Post.

La Organización Mundial de la Salud reveló a principios de esta semana que XBB.1.5 puede estimular más casos de COVID-19 según las características genéticas y las estimaciones de la tasa de crecimiento inicial.

La subvariante se detectó por primera vez en Nueva York y Connecticut, Estados Unidos, a fines de octubre pasado, de acuerdo con Gisaid, una organización internacional que tiene como objetivo rastrear y secuenciar variantes del coronavirus.

Fuente: Cubadebate. Disponible en https://bit.ly/3Ht2JxS

Vacunas Covid: ¿protegen frente a las nuevas variantes como Kraken?

16 ene. El aumento de casos en Estados Unidos y China debido a la aparición de nuevas subvariantes del virus han hecho saltar las alarmas de nuevo. En este contexto, numerosos estudios se están dedicando a confirman la protección de las vacunas frente a esta "nueva ola".

Los casos de coronavirus se están disparando, sobre todo en China y Estados Unidos, donde han aparecido dos variantes predominantes de ómicron: la B.F.7 y la XBB.1.5, a la que algunos denominan 'Kraken'. ¿Qué debemos tener en cuenta respecto a la vacunación?

Un científico observa unas muestras en un laboratorio. Pexels/ Gustavo Fring

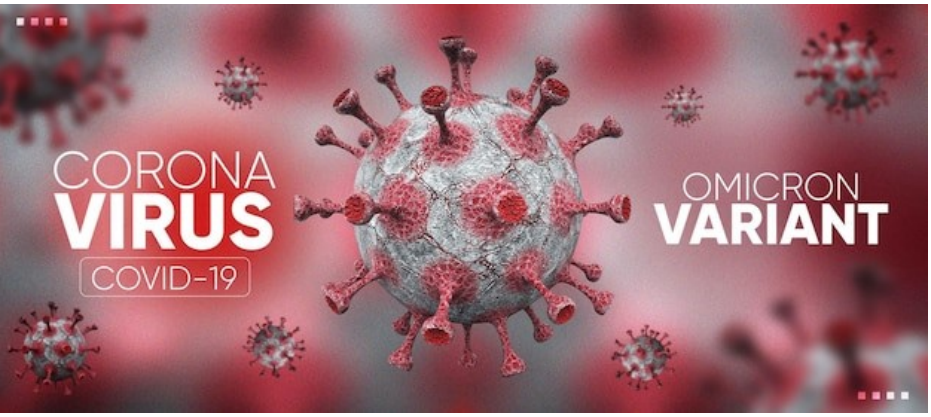
Variantes y subvariantes de Ómicron: ¿qué sabemos de ellas?

Desde que surgió la variante de SARS-CoV-2 Ómicron, denominada científicamente B.1.1.529, y desplazó a predecesoras como alfa o delta, no han aparecido otras nuevas. Pero sí han surgido subvariantes (o sublinajes) de Ómicron. En verano, circulaban en Europa BA.2, BA.4 y BA.5. Esta última era la dominante, ya que tenía alta capacidad de transmisión, aunque causaba una forma leve de la enfermedad.

Sin embargo, con la llegada del invierno y la bajada de las temperaturas –y dado que SARS-CoV-2 se comporta como un virus estacional–, el número de casos de covid ha subido, sobre todo en China y EE UU. En el país asiático, la variante predominante sigue siendo BA.5, pero ha aparecido un sublinaje, B.F.7, probable responsable del altísimo número de casos esta Navidad.

En cuanto a Estados Unidos, la aparición de XBB.1.5, bautizada como Kraken, explicaría el salto de producir del 2 % al 27 % de las infecciones totales en solo un mes. Esta subvariante se ha secuenciado en un número significativo de casos en 38 países, como Reino Unido y Dinamarca.

La razón de esta explosión de infecciones se debe a que presenta la mayor capacidad de transmitirse de todas las variantes Ómicron. Su diferente denominación indica que ha surgido de una recombinación de otros dos sublinajes: BA.2.10 y BA.2.75. La caracteriza una mutación en la proteína spike (S486P), es decir, precisamente en la zona de unión al receptor de las células.



Sin embargo, no es predecible que se convierta en la subvariante dominante, ni en Estados Unidos ni en Europa, como sostiene el Centro Europeo para la Prevención y el Control de las Enfermedades.

¿Debemos preocuparnos por la aparición de estas subvariantes?

En realidad, la aparición de subvariantes es algo normal en los virus que circulan entre la población. Lo mismo ocurre en invierno con los virus estacionales, ya que su estrategia es mutar. A esto se une que las personas pueden infectarse con distintas variantes del SARS-CoV-2 a la vez, lo que favorece que las variantes se recombinen entre sí y originen subvariantes como XBB.1.5, detectada en octubre de 2022.

¿Qué podemos hacer para mantener bajas las cifras de virus circulantes, especialmente en invierno? Vacunarse es una muy buena medida. Por eso se ha propuesto en otoño de 2022 que los grupos de riesgo se inmunizaran con una nueva dosis de refuerzo. Actualmente en España ya se ha cubierto a la franja de mayores de 60 años.

¿Por qué ha surgido esta explosión de casos en China y en EE UU?

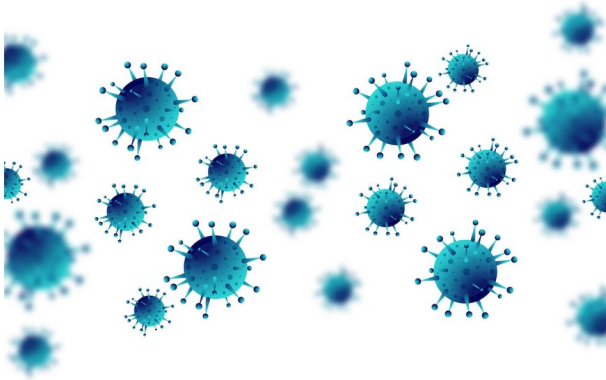
La situación de ambos países es diferente. En China, la población llevaba confinada durante toda la pandemia por la estrategia denominada “covid cero”. Por eso, la población no ha tenido exposición al virus, solo contactos entre habituales.

A esto se une una tasa de vacunación completa en mayores de 65 años no superior al 40 %. Por otro lado, las vacunas utilizadas y fabricadas en China (Sinovac y Sinopharm, ambas del tipo de virus inactivados) son mucho menos eficaces: un 58 % de eficiencia frente a infección sintomática y 79 % para casos graves. Eso las aleja de las inmunizaciones utilizadas en Occidente, ya sean de ARN (Pfizer o Moderna, con eficiencias entre el 93 y el 98 %) o de adenovirus (Astrazeneca o Jansen, entre el 80 y el 92 %).

Las vacunas fabricadas en China requieren más dosis para obtener cierta protección y es aconsejable combinarlas con otras de RNA o proteína, lo que no ha sucedido en este país. Todo esto explica que, tras el fin del confinamiento, los casos se hayan disparado.

En EE UU, como la población no ha sido confinada más que los tres meses iniciales, sus ciudadanos han estado expuestos posteriormente a virus circulantes. Además, se ha vacunado con pautas completas en porcentajes adecuados a un 69 % de la población, y el 15,4 % de personas de cinco años o más han recibido dosis de refuerzo.

Es verdad que el número de casos ha subido mucho en el último mes, con más de 38 000 hospitalizaciones en la actualidad. Sin embargo, esta situación era esperable tras el final de las fiestas navideñas, donde hay más interacciones en sitios cerrados. A eso se suman las bajas temperaturas del invierno, que facilitan la circulación de virus circulantes, y la aparición de una subvariante de más transmisión, la citada XBB.1.5.



Las recomendaciones son aumentar las tasas de vacunación en aquellas personas con pautas incompletas y potenciar las dosis de refuerzo de los mayores de 65 años e individuos con alguna inmunosupresión.

¿Hay motivos para alarmarse?

La situación actual en España es mucho mejor: un 92,9 % de los mayores de 12 años tienen la pauta completa de vacunación y un 55,7 % de la población ha recibido las dosis de recuerdo. Además, el 56 % de los menores entre 5 y 11 años tiene un pinchazo.

A comienzos de enero, las estadísticas indicaban que los nuevos casos diagnosticados eran 9 220, de los que 3 520 requirieron hospitalización por COVID-19 y 231, ingreso en UCI.

Esos datos apuntan a que el panorama es bueno y que la llegada de pasajeros de países con altas cifras de infección no debe ser motivo de alarma. Sin embargo, debido a la falta de datos, recabar tomas de covid a viajeros procedentes de China para secuenciarlas es científicamente interesante si queremos conocer la evolución de subvariantes Ómicron.

¿Nos protegen las vacunas frente a las nuevas variantes y subvariantes?

Las compañías Pfizer/Biontech y Moderna pusieron a disposición de los países las vacunas bivalentes para la vacunación de refuerzo en otoño. Además de proteger frente al virus SARS-CoV-2 original, inmunizan frente a las variantes Ómicron BA.1, BA.2, BA.4 y BA.5. En España, la vacuna de refuerzo elegida fue la bivalente de Pfizer/Biontech para la población mayor de 65 años.

Para aquellas personas con alto grado de inmunosupresión que no responden bien a las vacunas, está disponible el fármaco Evusheld, que combina dos anticuerpos monoclonales humanos (tixagemimab y cilgavimab) que se dirigen a la proteína spike del virus SARS-CoV-2.

Sin embargo, este fármaco puede no proteger frente a variantes y subvariantes Ómicron, por lo que se recomienda a esos pacientes utilizar mascarillas y estar muy pendientes de los síntomas de contagio.

En cuanto a las vacunas de refuerzo y su capacidad de protección frente a las subvariantes, dos estudios recientes detallan que estas inmunizaciones generan buena inmunidad humoral, de anticuerpos, y sugieren una adecuada inmunidad celular frente al virus, especialmente en la respuesta de linfocitos citotóxicos, CD8.

El primer estudio analizó la capacidad de las vacunas RNA bivalentes de refuerzo para inducir anticuerpos neutralizantes frente a las variantes y subvariantes BA.2.75.2, BQ.1.1 y XBB. Según sus resultados, las personas que recibieron dosis de recuerdo con dichas vacunas estaban mejor preparadas para que sus anticuerpos neutralizaran a las subvariantes Ómicron que quienes las obtuvieron con las vacunas monovalentes originales.

El otro trabajo evaluaba la inmunidad celular generada por las variantes BA.1, BA.2, BA.4 y BA.5 y la cepa Ómicron original. Este estudio demostró que ninguna variante escapaba de la inmunidad, ya que las regiones de la proteína Spike que inducían la mejor respuesta citotóxica de inmunidad celular eran iguales en todas las variantes. Esto no había cambiado desde la cepa original, lo que significa que dichas regiones están conservadas en el virus y sus variantes. La razón es que el patógeno no las necesita para entrar en la célula, que es donde se acumulan las mutaciones.

Todos estos hallazgos hacen que científicos y académicos confíen en la protección de las vacunas RNA bivalentes frente a las variantes y subvariantes Ómicron. De todos modos, aún no se han revelado los resultados del estudio SWITCH ON entre el personal sanitario, que revelará la inmunogenicidad completa que inducen la dosis de refuerzo con vacunas bivalentes.

En definitiva, el único mensaje a transmitir es tranquilidad. En primer lugar, hay que continuar con la pauta de dosis de refuerzo para que el grupo de mayores de 50 años refuerce su protección al virus y evitar números altos de virus circulantes. Y en segundo lugar, debemos aplicar el sentido común con otras medidas de prevención como la recomendación de la OMS del uso de mascarillas en interiores y transporte público, y a ser posible, trabajar por una mejor calidad del aire en interiores.

Fuente: Onda Cero. Disponible en https://bit.ly/3DcyUit

La OMS anuncia el plan de establecer un Consejo de Aceleración de las Vacunas contra la Tuberculosis

17 ene. El impacto adverso de la pandemia de COVID-19 en los servicios de tuberculosis ha puesto de relieve la urgencia de los esfuerzos por desarrollar vacunas. El Dr. Tedros Adhanom Ghebreyesus, Director General de la Organización Mundial de la Salud, ha anunciado hoy el plan de establecer un nuevo Consejo de Aceleración de las Vacunas contra la Tuberculosis en una mesa redonda de alto nivel sobre esta enfermedad celebrada en el Foro Económico Mundial.

El Consejo facilitará la concesión de licencias y el uso de vacunas innovadoras eficaces contra la tuberculosis impulsando el alineamiento de alto nivel entre financiadores, organismos mundiales, gobiernos y usuarios finales para identificar y superar los obstáculos al desarrollo de vacunas contra la tuberculosis.

«Una de las lecciones más importantes de la respuesta a la pandemia de COVID-19 es que las intervenciones de salud innovadoras se pueden llevar a cabo con rapidez si se les da prioridad política y se financian adecuadamente,» declaró el Dr. Tedros Adhanom Ghebreyesus. «Los retos que plantean la tuberculosis y la COVID-19 son diferentes, pero los ingredientes que aceleran la ciencia, la investigación y la innovación son los mismos: inversión pública urgente y anticipada, apoyo de la filantropía y participación del sector privado y las comunidades. Creemos que el ámbito de la tuberculosis se beneficiará de una coordinación de alto nivel similar.»

A pesar de que los países se han comprometido firmemente a poner fin a la tuberculosis para 2030, en los Objetivos de Desarrollo Sostenible, la Estrategia Fin a la Tuberculosis de la OMS y la declaración política de 2018 sobre la lucha contra la tuberculosis, la epidemia no muestra signos de desaceleración. En 2021, aproximadamente 10,6 millones de personas enfermaron de tuberculosis y 1,6 millones murieron. La farmacorresistencia sigue siendo un problema importante, ya que cerca de medio millón de personas desarrollan tuberculosis farmacorresistente cada año.

La vacuna BCG es actualmente la única vacuna autorizada contra la tuberculosis. Aunque ofrece una eficacia moderada en la prevención de formas graves de tuberculosis en lactantes y niños pequeños, no protege adecuadamente a los adolescentes y adultos, que representan cerca del 90% de las transmisiones de tuberculosis en el mundo.

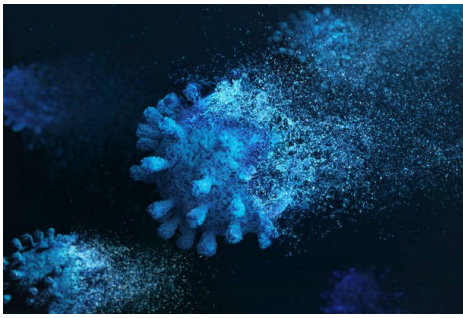
En un reciente estudio encargado por la OMS y titulado *An investment case for new tuberculosis (TB) vaccines*, se estima que, a lo largo de 25 años, una vacuna con una eficacia del 50 % en la prevención de la enfermedad entre adolescentes y adultos podría evitar hasta 76 millones de nuevos casos de tuberculosis, 8,5 millones de muertes, 42 millones de tratamientos con antibióticos y US$ 6500 millones en costos para los hogares afectados por la tuberculosis, especialmente los más pobres y vulnerables.

Una vacuna con una eficacia del 75 % podría evitar hasta 110 millones de nuevos casos de tuberculosis y 12,3 millones de muertes. El estudio sugiere además que cada dólar invertido en una vacuna con una eficacia del 50 % podría generar un rendimiento económico de US$ 7 dólares en forma de costos sanitarios evitados y aumento de la productividad.

A finales de este año, los Jefes de Estado y de Gobierno se reunirán en una segunda reunión de alto nivel de las Naciones Unidas sobre la tuberculosis para examinar los progresos realizados en relación con los compromisos asumidos en la declaración política de 2018. Esto presenta una oportunidad importante para corregir los retrocesos en la respuesta a la tuberculosis, lo que incluye el desarrollo y la entrega urgentes de nuevas vacunas contra la tuberculosis.

Fuente: Organización Mundial de la Salud. Disponible en https://bit.ly/3XWsfB3

Investigadores predicen las mutaciones del SARS-CoV-2 con redes neuronales artificiales



19 ene. Investigadores de la Universidad Rovira i Virgili (URV) de Tarragona han logrado predecir mutaciones del SARS-CoV-2 mediante computación, análisis de datos masivos y redes neuronales artificiales.

El grupo de investigación Quimioinformática y Nutrición de la URV, liderado por Santi Garcia y Gerard Pujadas, ha diseñado un sistema de aprendizaje automático que predice mutaciones recurrentes de los coronavirus, una información que, según los investigadores, permitirá adelantarse en el desarrollo de fármacos

Garcia ha explicado que los virus infecciosos se instalan en células vivas para reproducirse y fuerzan a los mecanismos celulares reproductores a sintetizar la información genética del propio virus. En el caso del SARS-CoV-2, las instrucciones necesarias para reproducirse están en su núcleo en forma de ácido ribonucleico (ARN).

Una vez analizada la evolución del virus teniendo en cuenta sus mutaciones, entrenaron una red neuronal artificial con datos de más de 800.000 genomas del virus para que esta aprendiera a predecir qué mutaciones recurrentes se darían de cara al futuro.

El procedimiento consiste en utilizar una parte del genoma para crear la red y reservar una parte, suficientemente amplia, para testearla y corregir su funcionamiento si fuera necesario. El sistema también identifica aquellas partes del virus que no pueden cambiar, puesto que si lo hacen el agente infeccioso es incapaz de reproducirse.

Toda esta información permitiría a los investigadores adelantarse en el diseño de fármacos y hacerlos más efectivos de cara a la eliminación del virus, utilizando las debilidades detectadas para dificultar su reproducción.

Fuente: KissFM. Disponible en https://bit.ly/3Df9jFH

Vacunas chinas contra ómicron listas para revisión

20 ene. La farmacéutica líder en China, Sinopharm, reveló el desarrollo de cuatro candidatas a vacuna contra la ómicron, dado el pedido de expertos de una aprobación célere ante el posible aumento de casos durante el feriado.

Liu Jingzhen, presidente de la empresa, declaró en una entrevista con la Televisión Central de China el miércoles que el grupo había desarrollado cuatro de ellas de ARNm, proteína recombinante, inactivada y una en aerosol de anticuerpo monoclonal, capaz de prevenir el virus durante dos o tres días.

Indicó que el mismo ya ha recibido dos inyecciones, pero que aún deben someterse a un procedimiento oficial de revisión y aprobación antes de su salida pública.

El anuncio llegó justo cuando Gao Fu, exjefe del Centro Chino para el Control y la Prevención de Enfermedades, sugería el miércoles en una entrevista con China Newsweek que las vacunas contra las mutaciones deberían recibir luz verde lo antes posible.

Teniendo en cuenta el riesgo de infecciones por XBB y sus subvariantes, y la gran cantidad de desplazamientos por la Fiesta de la Primavera, unos 2000 millones de ellos, el mayor número de los últimos tres años, el incremento de casos puede aparecer en las zonas rurales, alertó Gao.

Aunque las infecciones son comunes, las vacunas aún pueden brindar protección. Ya sea en ancianos o jóvenes, los refuerzos siguen siendo necesarios después de contraer el virus, anotó.

China ha sido testigo de una explosión de contagios sin precedentes en los últimos tres años, luego de que las autoridades degradaran el nivel de gestión epidémica en diciembre. La Comisión Nacional de Salud anunció el 14 de enero un total de 59 938 muertes relacionadas con la COVID-19 entre el 8 de diciembre de 2022 y el 12 de enero de este año.

Al cubrir esta noticia, algunos medios extranjeros difundieron rumores e información errónea sobre la eficacia y seguridad de las vacunas chinas, principalmente las de Sinopharm y Sinovac Biotech.

En respuesta, Sinovac aclaró que la investigación y los datos del mundo real habían demostrado la eficacia y seguridad de la CoronaVac.

Los estudios en Hong Kong mostraron una protección similar contra cuadros graves y muertes que las vacunas ARNm, según una preimpresión publicada en noviembre de 2022 en medRvix.

Tres y cuatro dosis de BNT162b2 o CoronaVac fueron efectivas contra la infección por ómicron durante 7 días tras la inoculación, continuó. Los hallazgos señalan que los refuerzos pueden mejorar temporalmente la inmunidad antes de los picos.

Liu añadió que las vacunas inactivadas de Sinopharm han recibido el visto bueno en más de 119 naciones, regiones y organizaciones internacionales desde diciembre de 2020.

El grupo ha producido y enviado más de 3500 millones de dosis a casi 200 países y regiones hasta el momento, lo que según los observadores demuestra su eficacia y seguridad, y destierra los rumores de la prensa extranjera.

Fuente: Spanish China Org.CN. Disponible en https://on.china.cn/3R4anlu

Este es el nuevo efecto secundario de la vacuna de Pfizer contra la COVID-19 detectado por Sanidad

21 ene. El último informe de Farmacovigilancia sobre las vacunas contra la Covid-19 incluye un nuevo efecto secundario dentro de las 24 horas posteriores a recibir la dosis de Pfizer.

La Agencia Española de Medicamentos ha actualizado la información relativa a las vacunas autorizadas por la UE contra la Covid-19. En esta ocasión, el último informe de Farmacovigilancia, publicado el pasado 19 de enero, incluye nuevas reacciones adversas relacionadas con la administración de las vacunas Comirnaty (Pfizer) y Vaxzevria (AstraZeneca).

Tras recopilar todas las notificaciones recibidas hasta el 18 de junio de 2022, el Comité Europeo de Farmacovigilancia (PRAC) concluye en el documento que "existe al menos una posibilidad razonable de relación de causalidad con esta reacción adversa".

El nuevo efecto secundario de la vacuna de Pfizer

Desde su autorización hasta el 13 de noviembre de 2022, se han administrado en el Espacio Económico Europeo (EEE) alrededor de 685 millones de dosis de Comirnaty (Pfizer). Además, se han inoculado cerca de 16,1 millones de dosis de las vacunas Comirnaty bivalentes (original/ómicron BA.4-5).

En cuanto a los efectos secundarios derivados de la vacuna, se han registrado un total de 44.280 notificaciones tras recibir Comirnaty original. De ellas, la mayoría corresponden a mujeres (73%) y a personas de entre 18 y 65 años (82%).

A los "acontecimientos adversos" detectados en el anterior informe de Farmacovigilancia, Sanidad añade ahora el mareo. El PRAC matiza que esta reacción es "poco frecuente" y en la mayoría de los casos aparece en los 24 horas posteriores a la vacunación.

Los efectos secundarios más comunes de la vacuna de Pfizer (Comirnaty)

Los diez acontecimientos adversos más notificados tras recibir la vacuna Comirnaty original son los siguientes:

⇒ Pirexia
⇒ Cefalea
⇒ Mialgia
⇒ Dolor en la zona de vacunación
⇒ Malestar
⇒ Fatiga
⇒ Linfadenopatía
⇒ Náuseas
⇒ Escalofríos
⇒ Astenia

Asimismo, los diez acontecimientos adversos más notificados tras recibir la vacuna Comirnaty bivalente son:

⇒ Pirexia
⇒ Malestar
⇒ Mialgia
⇒ Cefalea
⇒ Dolor en la zona de vacunación
⇒ Tos
⇒ Vómitos
⇒ Diarrea
⇒ Astenia
⇒ Fatiga

El nuevo efecto secundario de la vacuna de AstraZeneca

El informe de Sanidad también actualiza los datos de farmacovigilancia sobre la vacuna Vaxzevria (AstraZeneca) desde el informe anterior.

Desde que se autorizó su comercialización en la UE hasta el 13 de noviembre de 2022, se han administrado en alrededor de 68,8 millones de dosis de Vaxzevria en adultos. Además, en esta última evaluación se incluye una nueva reacción adversa relacionada con la administración de la vacuna: la vasculitis cutánea.

Fuente: Onda Cero. Disponible en https://bit.ly/3XCSAEn

'This will happen before 2030': how the science behind COVID-19 vaccines might help to fight cancer

Jan 22. The success of mRNA-based drugs in combating coronavirus is inspiring scientists to create similar vaccines for melanoma and other tumours.

Illustration by Julia Allum.

In December 2022, the US biotech firm Moderna, a company that emerged from relative obscurity to become a household name during the pandemic, published the results of a clinical trial that sent ripples through the world of cancer research.

Conducted in partnership with the pharma company MSD, it demonstrated that a messenger RNA (mRNA) cancer vaccine, used in combination with immunotherapy, could offer significant benefit to patients with advanced melanoma who had received surgery to remove their tumours. After a year's worth of treatment, the phase IIb trial found that the combination reduced the risk of cancer recurrence or death by 44%.

While mRNA has become synonymous with the Covid-19 vaccines developed by Moderna, Pfizer and BioNTech, cancer has long been the ultimate goal of the technology. Now, the NHS has launched a

groundbreaking partnership with BioNTech to try and fast-track the development of mRNA cancer vaccines over the next seven years.

As part of the partnership, eligible cancer patients in the UK will get early access to clinical trials from autumn 2023 onwards. The hope is that by 2030, these innovative new treatments can be made clinically available to around 10,000 cancer patients.

This is a remarkable development given that not so long ago, BioNTech's founders – married entrepreneurs Uğur Şahin and Özlem Türeci – were viewed with suspicion by oncologists as purveyors of a technology that was derided as implausible and impractical.

"I remember in 2012, I spoke publicly about our approach for the first time and after I finished there were no questions," Şahin says, with a laugh. "Then a pharma executive came to me, and said: 'Very interesting, but this will never work. If it works, it will never be affordable."

Then Covid-19 came along. Suddenly, mRNA was repurposed to make vaccines against the Sars-CoV-2 virus that have since been received by billions of people around the world. Şahin and Türeci became scientific rock stars overnight, profiled by the New York Times and generally receiving the kind of media coverage most executives dream of.

"For us it was a long trip," says Şahin. "Twenty years ago, people were asking me: 'Why are you working on mRNA at all?' It was the ugly duckling, but in 2020, it became the beautiful swan."

But mRNA cancer vaccines are radically different from conventional vaccines, such as those for Covid-19 and the HPV vaccines that aim to protect against cervical cancer. The focus is not prevention; instead, they are personalised medicines that train the patient's immune system in how best to fight their own individual cancer. Because time is of the absolute essence, they must be produced in a matter of weeks and they also have to be individually tailored to the unique set of DNA mutations that are driving that patient's disease.

Moderna and MSD now plan to initiate a phase III trial for advanced melanoma in 2023, while BioNTech expects to release results from its own melanoma trial later this year. Between them, Moderna, BioNTech and CureVac – the third main player in the field – are targeting cancers ranging from ovarian to head and neck, colorectal, lung and even pancreatic.

Ultimately, Şahin foresees two main niches for mRNA cancer vaccines, the first being combination approaches with CAR T-cell or other cell therapies to try to shrink large, rapidly growing tumours and so prolong the lives of patients with advanced forms of the disease who are in danger of dying within a few months. The second niche is in patients who have recently undergone surgery to remove their tumours, to prevent the cancer from recurring and metastasising.

"As an example in colorectal cancer patients, about 30-40% of patients have a relapse after surgery in the first three years," he says. "But we can give these patients a circulating tumour DNA test, which tells us if there are still cancer cells lingering after the operation and, if it's positive, those patients will receive the vaccine."

But while there is considerable optimism surrounding the future potential for these vaccines, there are still some big problems to solve.

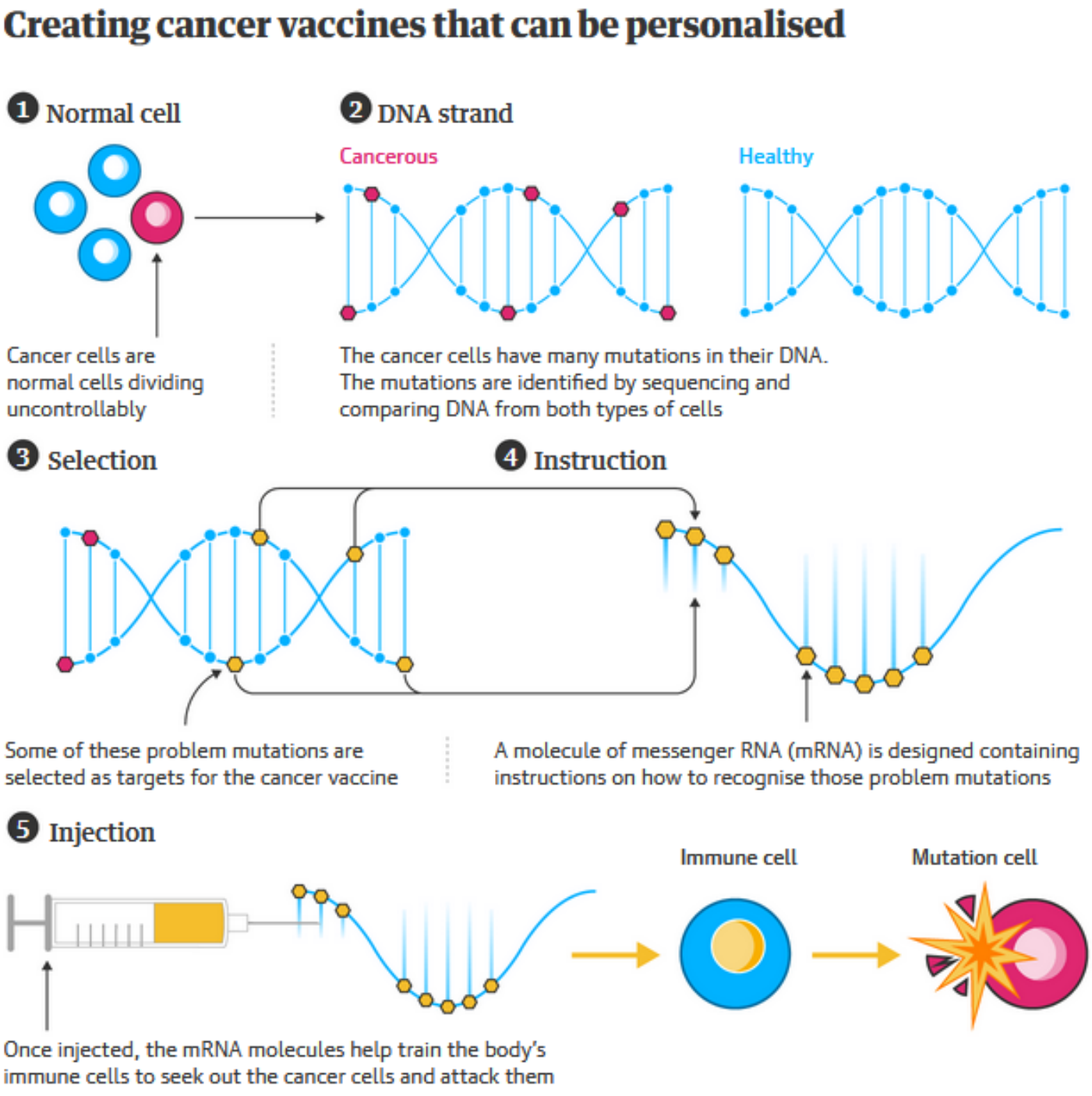
Identifying the right targets

Creating a cancer vaccine requires taking samples of the patient's tumour and healthy tissue, sequencing the

DNA and RNA and comparing how these sequences vary between the cancerous and healthy cells to try to identify problem mutations that can be used as antigens or vaccine targets.

This is where the challenge begins: how do you identify the most relevant mutations that are really driving the cancer, a process that is notoriously easier said than done?

“The genomics in the tumour cell are chaotic,” says Prof Alan Melcher from the Institute of Cancer Research. “There’s stuff turning into protein that shouldn’t be turning into protein and there are other places where big chunks of DNA just either get dropped out or inserted or turned around. But at the moment, what we’re missing is how you predict the antigens that matter.”



Guardian graphic. Source: Moderna, CDC, FT

Researchers believe that this ambiguity is likely to explain some of the variation that is seen in clinical trials, with some patients experiencing clear benefit from vaccines in the context of their disease, while others do not respond so well. Norbert Pardi, an assistant professor at the University of Pennsylvania, says he has seen trials where a vaccine has stimulated the patient's immune system, but there was little impact on the tumour. "I think this is the most important hurdle that we need to overcome," he says. "Why don't we always see benefit in patients even in the presence of a robust immune response?"

When BioNTech and Moderna compare a patient's tumour cells and healthy cells, they do so by conducting genomic sequencing of the small part of the genome that is related to protein production. This is quicker and cheaper, and their scientists feel that if they can identify abnormal tumour proteins, they should be relatively easy targets for the immune system.

However, with the rapidly falling cost of genome sequencing – the world's first $100 genome was announced last year – it is becoming more viable to sequence the entire genome. CureVac is already pioneering this approach with the aim of potentially identifying subtler and more hidden targets that relate to how the body's malfunctioning genetics is enabling the tumour to thrive.

"The tumour genome is full of what are called structural variations," says Ronald Plasterk, the senior vice-president for science and innovation at CureVac Netherlands. "On average, let's say in a lung cancer, there's about 100 to 200 of these structural variations, and they've been fully ignored by previous efforts, because you have to sequence the full genome to pull them out."

But while scientists are still grappling with how best to optimise cancer vaccines against tumours, it may not be long before the first mRNA cancer vaccine hits the market. Moderna and MSD are aiming to launch a much larger phase III trial in advanced melanoma patients this year and, if that proves successful, they could apply for regulatory approval within the next couple of years.

The question then is whether the NHS would be able to afford it.

Can the NHS afford cancer vaccines?

Personalised medicines such as cancer vaccines are by nature extremely expensive, being complex, bespoke products. As a result, while experts say that the UK's partnership with BioNTech is promising, much work has still to be done to determine whether the cost can be justified for the NHS, should they pass clinical trials.

Christopher Scott, a cancer research professor at Queen's University Belfast, points out that the current crisis this winter shows just how hard it is proving for NHS staff to deliver the current standard of care, never mind bespoke treatments.

"I remain unconvinced about whether an entirely personalised vaccine approach could be delivered in our NHS," says Scott. "Because of the Covid vaccines they've now got manufacturing processes that have been passed by regulators, which is fantastic, but this is still an expensive technology."

Melcher is more optimistic but draws parallels with other relatively new cancer medications such as CAR T-cell therapy, which are available on the NHS but only for a very restricted group of patients. CAR T-cell therapies such as tisagenlecleucel – which costs around £282,000 a patient – involve extracting T-cells from the patient's blood, modifying them and then returning them to the bloodstream. Since 2018, tisagenlecleucel has been available on the NHS just to patients under 25 with B-cell acute lymphoblastic leukaemia, because they are deemed most likely to respond well to the therapy.

However, companies producing mRNA cancer vaccines say that there are a number of steps that are being taken to try to make the process of producing the individualised vaccines as cheap as possible. CureVac has struck a deal with Tesla that will see the electric car manufacturer develop small, portable mRNA bioprinters that could be used to automate the process of producing a patient's mRNA for their vaccine.

Şahin admits that the cost at the moment is relatively high but he believes it can be brought down once these vaccines are being manufactured for mass numbers of patients. "If you produce personalised vaccines for 1,000 patients per year, it's a completely different equation compared with producing them for 10,000 or 100,000 patients per year," he says.

One alternative that is being explored is a more off-the-shelf form of mRNA cancer vaccine. While personalised vaccines are useful for highly aggressive, fast-evolving cancers where it is vital to target a very specific snapshot of the DNA mutations involved, other cancers progress at a slower pace. In these cases, a set of standard antigens, thought to be involved in the disease process across a large number of patients, could be used, making it easier to roll out the vaccine in bulk.

There are still many questions for mRNA cancer vaccines to answer. The next couple of years will provide a lot more information about which cancers they are most effective at tackling – Melcher says that ovarian and pancreatic cancer are much more difficult challenges for a cancer vaccine compared with melanoma due to the nature of the tumours – but there is belief that they can offer new hope to many people suffering from advanced forms of these diseases.

Şahin is bullish that, in one form or another, by the end of the decade we could have many mRNA cancer vaccines routinely available to patients.

"We believe that this will happen on an even broader scale before 2030," he says. "The Covid-19 vaccine and our expertise in developing it has contributed to our work in oncology. We have learned how to better and faster manufacture vaccines, we have learned about how the immune system reacts to mRNA in a large number of people. And not only have we learned about mRNA vaccines and how to deal with them, but also the regulators, so all this will support the acceleration of the development of mRNA-based cancer vaccines."

Boxes containing the Moderna Covid-19 vaccine are prepared for shipping at the McKesson distribution centre in Olive Branch, Mississippi, December 2020. Photograph: Paul Sancya/AFP/Getty Images

Fuente: The Guardian. Disponible en https://bit.ly/3WDFTYX

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Patentes registradas en Patentscope

Estrategia de búqueda: *Vaccine in the title or abstract AND 20230112:20230122 as the publication date 52 records*

1.20230015540Unmanned Flying Vaccine Administration System
US - 19.01.2023
Clasificación Internacional B64C 39/02 Nº de solicitud 17583587 Solicitante Cindy Jingru Wang
Inventor/a Cindy Jingru Wang
The unmanned flying vaccine administration system comprises a drone, a vaccine delivery system, an interaction system. The drone is a vaccine injection flying robot that avoids the dangers of in-person

vaccination. The vaccine delivery system is an electronic system that harnesses the power of technology to vaccinate people safely and efficiently. The interaction system is an electronic system armed with an Artificial Intelligence infrastructure. The present invention gathers energy by solar power, administers vaccines with a vaccine injection arm, and properly stores vaccines at the desired temperature with a storage container. The computing device controls the main modules that are designed for vaccine delivery and administration. The interaction system has a patient interface camera, a patient interface display, and a temperature sensor that monitor the state of the patient after receiving a vaccination to ensure the health and safety of the patient.

2.WO/2023/282771CORONAVIRUS VACCINE COMPOSITION
WO - 12.01.2023
Clasificación Internacional C07K 14/005 Nº de solicitud PCT/NZ2022/050092 Solicitante COVID-19 VACCINE CORPORATION LIMITED Inventor/a FELDMAN, Robert Graham
The present disclosure relates to a multivalent vaccine composition characterised in that it elicits broad spectrum protection against at least one strain of coronavirus (such as a viral lineage, in particular SARS-Cov-2, more specifically selected from B.1.617. 2 [delta and/or kappa variants], B.1.1.7 and/or omicron), said vaccine comprising: a pool of T cell epitopes derived from at least one viral protein wherein the vaccine has a calculated world population HLA coverage of at least 95%, for example 95.5%, 96%, 96.5%, 97%, 97.5%, 98%, 98.5%, 99%, 99.1%, 99.2%, 99.3%, 99.4%, 99.5%, 99.6%, 99.7%, 99.8%. The disclosure also relates to constructs disclosed herein, methods or preparing same and use in treatment including prophylaxis.

3.WO/2023/280303USE OF AVC-29 AS VACCINE ADJUVANT AND VACCINE COMPOSITION CONTAINING ADJUVANT
WO - 12.01.2023
Clasificación Internacional A61K 39/39 Nº de solicitud PCT/CN2022/104620 Solicitante HAINAN UNIVERSITY Inventor/a LI, Song
The present application relates to a use of AVC-29 as a vaccine adjuvant and a vaccine composition containing said adjuvant. Compared with conventional aluminum adjuvants., AVC-29 has significant advantages in inducing antibody production and cellular immune response. In addition, AVC-29 has good safety, can be applied in many types of vaccine preparations, and is a potentially ideal vaccine adjuvant.

4.20230020401METABOLIC REPROGRAMMING OF IMMUNE CELLS TO ENHANCE THE EFFICACY OF PROPHYLACTIC AND THERAPEUTIC VACCINES
US - 19.01.2023
Clasificación Internacional A61K 31/166 Nº de solicitud 17773775 Solicitante Sanford Burnham Prebys Medical Discovery Institute Inventor/a Ashima SHUKLA
Provided herein are compositions comprising a vaccine composition and an agent that triggers metabolic reprogramming of B cells and methods of using the agent that triggers metabolic reprogramming of B cells to increase effectiveness of the vaccine by increasing memory B cell population. One aspect of the disclosure includes a method of increasing the effectiveness of a vaccine in a subject, which comprises administering a B cell metabolic reprogramming agent to the subject in a dose and schedule configured to increase the effectiveness of the vaccine, wherein the subject is administered with the vaccine.

5.202341001508ARGININE 141 MUTANTS OF HSP 16.3 AS A CANDIDATE FOR SECOND GENERATION TUBERCULOSIS VACCINE
IN - 13.01.2023
Clasificación Internacional A61K / Nº de solicitud 202341001508 Solicitante Dr Jafar Ali Ibrahim Syed Masood Inventor/a Dr Jafar Ali Ibrahim Syed Masood

The present invention relates to a boost the BCG vaccine or to generate a second- generation vaccine antigens from Mycobacterium tuberculosis are taken. Hsp16.3 is a latent antigen of tuberculosis and is being used in several studies to boost BCG vaccines with variable efficacy. It is also used as a second-generation vaccine against tuberculosis with variable efficiency. Hsp16.3 is a molecular chaperone, and it is known that the chaperone function of Hsp16.3 helps in boosting the BCG vaccines. Here, we have generated mutants of Hsp16.3 with higher chaperone function which can be treated as potential candidates for boosting BCG vaccines as well as used in the second-generation vaccines. The mutants generated by us is unique as every mutant will have different activity and different efficacy. Screening of the mutants for best candidates with chaperone and enzymatic assays. Exploring the proteolysis and stability of the mutants with the aid of biophysical techniques.

6.WO/2023/282652HYALURONIC ACID-LIPID DERIVATIVE, LIPID NANOPARTICLE COMPRISING SAME, AND USE THEREOF
WO - 12.01.2023
Clasificación Internacional A61K 39/215 Nº de solicitud PCT/KR2022/009827 Solicitante GENEXINE, INC. Inventor/a HAHN, Sei Kwang
The present invention relates to a hyaluronic acid-lipid derivative, lipid nanoparticles comprising same, and a use thereof. The lipid nanoparticles comprising the hyaluronic acid-lipid derivative according to the present invention can be utilized as a vaccine or a drug delivery carrier for effectively carrying mRNA, proteins, and other drugs and stably delivering same into the body, and such a vaccine or drug delivery carrier has excellent mucoadhesive properties and mucosal permeability and thus has the advantage of enabling vaccine or drug delivery via the nasal cavity and lungs.

7.WO/2023/282530DEIMMUNIZED FLAGELLIN AND VACCINE COMPOSITION COMPRISING SAME
WO - 12.01.2023
Clasificación Internacional C07K 14/28 Nº de solicitud PCT/KR2022/009321 Solicitante INDUSTRY FOUNDATION OF CHONNAM NATIONAL UNIVERSITY Inventor/a RHEE, Joon Haeng
The present invention relates to: deimmunized flagellin that does not induce the production of flagellin-specific antibodies; and use thereof. In particular, the present invention relates to a flagellin variant in which a major epitope that forms an antibody against flagellin is deleted, the flagellin variant being characterized by, when used as a vaccine adjuvant, not producing antibodies against flagellin while maintaining an excellent immune enhancer effect.

8.20230015910CRYPTOSPORIDIOSIS VACCINE
US - 19.01.2023
Clasificación Internacional C07K 14/44 Nº de solicitud 17784690 Solicitante Intervet Inc. Inventor/a Markus Hendrikus Van Roosmalen
The invention is based on the finding that incubating a *Cryptosporidium* gp40 protein with an aziridine, significantly increases its immunogenicity. When used as a vaccine, this allows a reduction of the dose, which improves economic feasibility and safety. Consequently the aziridine-treated gp40 can now be used as a safe and effective subunit-vaccine for humans or non-human-animals against Cryptosporidiosis. Specifically for new-born ruminants a vaccination by way of colostral transfer was found to be very effective in reducing clinical signs of Cryptosporidiosis, especially diarrhoea.

9.202347000563INORGANIC NANOPARTICLE-BASED VACCINE COMPOSITIONS FOR CANCER TREATMENT
IN - 13.01.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 202347000563 Solicitante CENTRO DE INMUNOLOGÍA MOLECULAR Inventor/a GONZÁLEZ RUIZ, Gustavo

The present invention is related to biotechnology, particularly to the field of human health. It provides vaccine compositions that comprise as active principle a system that contains the recombinant human EGF, or peptides thereof, and a carrier protein or peptide, bound to a nucleus constituted by inorganic nanoparticles, with nanometric or submicrometric scale dimensions. These vaccine compositions are useful for the chronic treatment of cancer and have as advantages that their administration does not result in the appearance of adverse effects at the injection site and that they do not accumulate in the body.

10.WO/2023/288078CORONAVIRUS ANTIBODIES AND USES THEREOF
WO - 19.01.2023
Clasificación Internacional A61K 39/42 Nº de solicitud PCT/US2022/037330 Solicitante INTERNATIONAL AIDS VACCINE INITIATIVE INC. Inventor/a SOK, Devin
This application provides compositions and methods for treating, preventing, or reducing the progression rate and/or severity of COVID-19, particularly treating, preventing or reducing the progression rate and/or severity of one or more COVID-19-associated complications.

11.WO/2023/281418PERSONALIZED VACCINE ADMINISTRATION
WO - 12.01.2023
Clasificación Internacional A61K 9/00 Nº de solicitud PCT/IB2022/056251 Solicitante DAICEL CORPORATION Inventor/a SAKAGUCHI, Naoki
Provided herein is a method of manufacturing a packaged vaccine personalized to a subject. Also provided is a method of administering a personalized vaccine to a subject. Further provided is an injector having an igniter and a removable cartridge.

12.202311002072DNA VACCINE DELIVERY
IN - 13.01.2023
Clasificación Internacional A61K / Nº de solicitud 202311002072 Solicitante Chitkara University Inventor/a GHOSH, Debarshi
The present invention relates to a vaccine delivery method. Specifically, the invention relates to an electroporation-based DNA vaccine delivery system and method of delivering the same.

13.20230012140ORAL RESPIRATORY VACCINE
US - 12.01.2023
Clasificación Internacional A61K 39/155 Nº de solicitud 17783228 Solicitante Intervet Inc. Inventor/a Rhonda L. LaFleur
The present invention is drawn to new oral live canine parainfluenza virus vaccines and related multivalent vaccines. Methods of using the vaccine alone or in combination with one or more other protective immunogens in multivalent vaccines are also provided.

14.4118210BEHANDLUNG VON COVID-19 UND VERFAHREN DAFÜR
EP - 18.01.2023
Clasificación Internacional C12N 15/62 Nº de solicitud 21768699 Solicitante IMMUNITYBIO INC Inventor/a SOON-SHIONG PATRICK
A vaccine composition to induce immunity against a coronavirus in a subject comprises a recombinant nucleic acid that encodes N-ETSD, a modified nucleocapsid protein that includes an endosomal targeting sequence, and/or that encodes S-Fusion, a modified spike protein that has improved surface expression. The vaccine may be formulated as a recombinant nucleic acid, recombinant yeast, and/or recombinant virus such as an adenovirus and can be administered via injection and/or mucosal delivery.

15.WO/2023/283576P7 CONTAINING NUCLEOSIDE-MODIFIED MRNA-LIPID NANOPARTICLE LINEAGE VACCINE FOR HEPATITIS C VIRUS
WO - 12.01.2023

Clasificación Internacional A61K 39/29 Nº de solicitud PCT/US2022/073463 Solicitante THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA Inventor/a REAGAN, Erin, Kathleen
There is an urgent need to develop a prophylactic HCV vaccine, and to determine if therapeutic vaccines can aid in the treatment of chronically infected patients. Described are compositions comprising a nucleoside-modified RNA molecules encoding a HCV p7 protein in combination with at least one additional HCV antigen, adjuvant, or a combination thereof, and their use for inducing an immune response against HCV.

16.20230008024ANTIBACTERIAL CARBOHYDRATE VACCINE
US - 12.01.2023
Clasificación Internacional A61K 39/104 Nº de solicitud 17781187 Solicitante UNIVERSITY OF MONTANA Inventor/a Laura K. JENNINGS
The present disclosure provides compositions comprising an isolated polysaccharide comprising β-1,4 linked galactosamine and glucosamine monomers, wherein the amino groups of each of the galactosamine and glucosamine are partially substituted with acetate. The disclosure further provides vaccine, methods of use, and methods of producing the isolated polysaccharide.

17.4117661FENTANYLHAPTENE, FENTANYLHAPTENKONJUGATE UND VERFAHREN ZUR HERSTELLUNG UND VERWENDUNG
EP - 18.01.2023
Clasificación Internacional A61K 31/4468 Nº de solicitud 21768082 Solicitante UNIV MINNESOTA Inventor/a PRAVETONI MARCO
This disclosure describes fentanyl haptens, a fentanyl hapten-carrier conjugate, methods of making the fentanyl hapten-carrier conjugate, and methods of using the fentanyl hapten-carrier conjugate including, for example, as a prophylactic vaccine to counteract toxicity from exposure to fentanyl, fentanyl derivatives, and fentanyl analogs. In some embodiments, the fentanyl hapten-carrier conjugate or a composition including the fentanyl hapten-carrier conjugate may be used in an anti-opioid vaccine.

18.WO/2023/283317MICROENCAPSULATED STERNE VACCINE
WO - 12.01.2023
Clasificación Internacional A61K 39/07 Nº de solicitud PCT/US2022/036329 Solicitante THE TEXAS A&M UNIVERSITY SYSTEM Inventor/a BENN, Jamie, Suzanne
Methods and compositions for the immunization of animals and humans using an immunization or vaccine that comprises B. anthracis Sterne strain 34F2 spores suspended in alginate in an amount sufficient to protect an animal or human from a lethal dose of anthrax.

19.WO/2023/288263UNIVERSAL VACCINE FOR INFLUENZA VIRUS BASED ON TETRAMERIC M2 PROTEIN INCORPORATED INTO NANODISCS
WO - 19.01.2023
Clasificación Internacional A61K 39/145 Nº de solicitud PCT/US2022/073717 Solicitante THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS Inventor/a ZUCKERMANN, Federico A.
Immunogenic compositions that include a full-length influenza A virus matrix 2 (M2) protein, an amphipathic molecule, and at least one phospholipid, which assemble to form a nanodisc, are described. Use of the immunogenic compositions, for example as a universal influenza virus vaccine, is described.

20.202221073751A SYSTEMATIC APPROACH TO STUDY THE INFLUENCE OF NANOPARTICLE VACCINE RESPONSES AGAINST VARIOUS BACTERIAL INFECTIONS
IN - 13.01.2023
Clasificación Internacional A61P / Nº de solicitud 202221073751 Solicitante DR. SRINATH BALKUNDHI Inventor/a DR. SRINATH BALKUNDHI

A Systematic approach to study the Influence of Nanoparticle Vaccine Responses against various Bacterial infections is the proposed invention. The invention aims at analyzing the impact of nano particle vaccines in treating bacterial disease. The proposed invention also focuses on studying the responses of vaccines against various bacterial infections.

21.4117721IMPFSTOFF ZUM SCHUTZ GEGEN STREPTOCOCCUS-SUIS-SEROTYP 9, SEQUENZTYP 16
EP - 18.01.2023
Clasificación Internacional A61K 39/09 Nº de solicitud 21710499 Solicitante INTERVET INT BV Inventor/a JACOBS ANTONIUS ARNOLDUS CHRISTIAAN
The present invention pertains to a vaccine comprising in combination an IgM protease antigen of *Streptococcus suis* and a *Streptococcus suis* bacterin of serotype (9), sequence type (16), for use in a method for protecting pigs against a pathogenic infection with *Streptococcus suis* serotype (9), sequence type (16).

22.WO/2023/283601VACCINES FOR INTRACELLULAR PATHOGENS AND METHODS OF PRODUCTION
WO - 12.01.2023
Clasificación Internacional A61K 39/245 Nº de solicitud PCT/US2022/073512 Solicitante RATIONAL VACCINES, INC. Inventor/a FERNANDEZ, Agustin
The present disclosure provides methods of identifying protein components for use in a vaccine against an intracellular pathogen, such as HSV-1, HSV-2, or SARS-CoV-2, as well as methods of manufacturing and using vaccine compositions comprising the protein components. The disclosure also provides vaccines produced according to these methods, including HSV-2 vaccines, and related methods of use to treat or prevent HSV-2 infection.

23.WO/2023/283342OLIGONUCLEOTIDES AND VIRAL UNTRANSLATED REGION (UTR) FOR INCREASING EXPRESSION OF TARGET GENES AND PROTEINS
WO - 12.01.2023
Clasificación Internacional A61K 39/215 Nº de solicitud PCT/US2022/036367 Solicitante TEMPLE UNIVERSITY - OF THE COMMONWEALTH SYSTEM OF HIGHER EDUCATION Inventor/a HU, Wenhui
A novel, small (21-mer oligonucleotide) and unique cz's-regulatory coding motif can greatly enhance the production of a variety of different types of proteins ranging from viral transcripts/proteins, endogenous gene products, vaccines, antibodies to engineered recombinant proteins in mammalian cells. The combination of novel peptide tag(s) having specified short amino acid sequences or derivatives thereof and the untranslated region (UTR) of viruses (snUTR) enhanced production of tagged proteins, including viral transcripts/proteins, endogenous gene products, vaccine, antibody, engineered recombinant proteins in a cell both in vitro, ex vivo and in vivo.

24.2022279442Optimized polypeptide for a subunit vaccine against avian reovirus
AU - 19.01.2023
Clasificación Internacional Nº de solicitud 2022279442 Solicitante Gavish-Galilee Bio Applications, Ltd Inventor/a GOLDENBERG, Dana

25.4118193IMPFSTOFFE MIT GLYCOENGINEERING-BAKTERIEN
EP - 18.01.2023
Clasificación Internacional C12N 9/10 Nº de solicitud 21711484 Solicitante MALCISBO AG Inventor/a NEUPERT CHRISTINE
The present invention is directed to a gram-negative bacterial host cell for vaccine use comprising a heterologous functional Actinobacillus pleuropneumoniae (APR) rfb gene cluster producing an APR O-anti- gen bound to the lipid A-core of the bacterial host cell and located on the bacterial host outer

surface, and wherein the endogenous rfb gene cluster of the bacterial host cell is not functional. The invention further pertains to compositions comprising said host cells, in particular vaccines, and corresponding uses in the prophylaxis and/or therapy of Actinobacillus pleuropneumoniae (APR) infections.

26.WO/2023/280220S PROTEIN VARIANT OF CORONAVIRUS AND USE THEREOF
WO - 12.01.2023
Clasificación Internacional C07K 14/165 Nº de solicitud PCT/CN2022/104158 Solicitante FUDAN UNIVERSITY Inventor/a LIN, Jinzhong
The present invention relates to an S protein variant, which does not contain a complete cytoplasmic tail domain compared to an S protein of a wild-type coronavirus. Further provided are a nucleic acid molecule encoding the S protein variant, and the use of the S protein variant and the nucleic acid molecule in the preparation of a vaccine.

27.20230012579Natural immunomodulator with antiviral activity
US - 19.01.2023
Clasificación Internacional A61K 31/713 Nº de solicitud 17374584 Solicitante Elena Drobova Inventor/a Elena Drobova
The present invention relates to methods for producing a mix of natural high polymeric and double stranded RNA from yeast (like *Saccharomyces Cerevisiae*), which can be used as dietary supplement, veterinary drug and medicine. The claimed invention relates to biotechnology and immunology, and to the production of the novel drug with a wide spectrum of antiviral activity on the basis RNA from yeast (like *Saccharomyces Cerevisiae*) for the treatment and prevention of diseases of viral etiology. Also, as a concomitant medication for the inflammatory diseases associated with bacterial infections. Our RNA works inside its own cell and activates a whole cascade of cellular and humoral immunity and therefore can be used as a polyvalent viral vaccine. By-products are high-purity proteins, low polymer RNA, microRNAs and oligonucleotides.

28.4117663INHIBITOREN DES CBP/CATENIN-SIGNALWEGS UND VERWENDUNGEN DAVON
EP - 18.01.2023
Clasificación Internacional A61K 31/4985 Nº de solicitud 21768149 Solicitante 3 2 PHARMA LLC Inventor/a RUAN FUQIANG
Provided are compounds of formula (Ia), (Ib) and (IIa), and pharmaceutically acceptable salts thereof. Additionally provided are compositions and pharmaceutical compositions comprising the compounds, therapeutic methods using same for modulating (e.g., inhibiting) CREB binding protein (CBP)/β-catenin mediated signaling in treating a condition, disease or disorder (e.g., fibrosis, cancer, neurological conditions, metabolic disorders (e.g., diabetes, etc.), and skin conditions (dermatitis, psoriasis, scarring, alopecia, etc.) mediated by aberrant CBP/β -catenin signaling, and cosmetic methods for treating skin conditions (e.g., aging, etc.). Additionally provided are methods for enhancing vaccine efficacy using the compounds and compositions. Further provided are methods for efficiently synthesizing a clinical grade drug, comprising use, in a penultimate, or last reaction step under GMP conditions, of an intermediate 2-propynyl-compound to form a clinical grade isoxazole derivative (e.g., via 3+2 cycloaddition).

29.4118225EXOSOMALER NUKLEINSÄUREIMPFSTOFF MIT MODULARER KONFIGURATION ZUR NUTZUNG MEHRERER ANTIGENPRÄSENTATIONSMECHANISMEN
EP - 18.01.2023
Clasificación Internacional C12P 19/34 Nº de solicitud 21768703 Solicitante UNIV JOHNS HOPKINS Inventor/a GOULD STEPHEN JOHN
The present invention relates to modular systems for vaccination against infectious agents that involves the delivery of, e.g., exosome-loaded, antigen-encoding mRNAs to and into cells and tissues of the

immunized subject. The present invention also relates to compositions and methods for the design, preparation, manufacture, formulation, and/or use of vaccines, e.g., nucleic acid vaccines, loaded into extracellular vesicles, e.g., exosomes loaded with synthetic mRNAs encoding multiple surface and cytoplasmic antigens of interest, e.g., antigenic polypeptides derived from an infectious virus, e.g., SARS-CoV-2, designed to elicit strong humoral and cellular immune responses due to the simultaneous expression of antigens in their native state and as exosome-associated antigens.

30.WO/2023/285489OVERCOMING ANTIBODY-INTERFERENCE IN AVIANS
WO - 19.01.2023
Clasificación Internacional A61K 39/12 Nº de solicitud PCT/EP2022/069513 Solicitante INTERVET INTERNATIONAL B.V. Inventor/a VAN HULTEN, Maria Cornelia Wilhelmina
The present invention provides a recombinant protein, and a recombinant vector expressing that protein, that can be used for the vaccination of seropositive avians, whereby the antibodies in the avian target are specific for an antigen comprised in that recombinant protein. By comprising in the recombinant protein also a domain that can bind to a cell surface protein on avian antigen presenting cells (APCs), the antigen is targeted to those APCs. It was found that this type of vaccine could safely overcome the negative effects of antibody interference, even after a single dose, even in very young avians, and even in the context of very high antibody levels.

31.WO/2023/279771ANTI-MULTIPLE-SCLEROSIS RECOMBINANT PROTEIN, AND PREPARATION METHOD THEREFOR AND USE THEREOF
WO - 12.01.2023
Clasificación Internacional C07K 19/00 Nº de solicitud PCT/CN2022/082141 Solicitante INSTITUTE OF ZOOLOGY, GUANGDONG ACADEMY OF SCIENCES Inventor/a SUN, Yunxiao
Provided in the present invention are an anti-multiple-sclerosis recombinant protein, and a preparation method therefor. The recombinant protein of the present invention comprises Mycobacterium tuberculosis heat shock protein 65 and six tandemly repeated epitope polypeptides each located at positions 33-55 of a myelin oligodendrocyte glycoprotein, and same can be used for preparing a multiple sclerosis vaccine or a multiple sclerosis drug.

32.4117725CORONAVIRUSIMPFSTOFFZUSAMMENSETZUNGEN UND VERFAHREN
EP - 18.01.2023
Clasificación Internacional A61K 39/215 Nº de solicitud 21767978 Solicitante ARCTURUS THERAPEUTICS INC Inventor/a SULLIVAN SEAN MICHAEL
Provided herein are nucleic acid molecules encoding viral replication proteins and antigenic coronavirus proteins or fragments thereof. Also provided herein are compositions that include nucleic acid molecules encoding viral replication and antigenic proteins, and lipids. Nucleic acid molecules provided herein are useful for inducing immune responses.

33.4118202IMPFSTOFFE AUF BAKTERIOPHAGENBASIS UND MANIPULIERTER BAKTERIOPHAGEN
EP - 18.01.2023
Clasificación Internacional C12N 15/10 Nº de solicitud 21722596 Solicitante ATHANOR BIOSCIENCES INC Inventor/a GHANBARI HOSSEIN A
Engineered bacteriophage and methods of forming the bacteriophage are described. Multivalent bacteriophage are described that can include multiple different exogenous polypeptides at a surface of the capsid head. Vaccines and methods of forming and using vaccines are described. A vaccine can include an engineered bacteriophage that exhibits an immunogenic exogenous polypeptide at a surface of the bacteriophage. Multivalent bacteriophage and immunogenic bacteriophage are free of nucleic acids encoding the exogenous polypeptide(s).

34.20230016284IMMUNOGENIC TRIMERS

US - 19.01.2023
Clasificación Internacional C07K 14/16 Nº de solicitud 17399501 Solicitante International AIDS Vaccine Initiative, Inc. Inventor/a Jon Steichen
The invention relates to PGT121-germline-targeting designs, trimer stabilization designs, combinations of those two, trimers designed with modified surfaces helpful for immunization regimens, other trimer modifications and on development of trimer nanoparticles and methods of making and using the same.

35.20230012265B*44 RESTRICTED PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST CANCERS AND RELATED METHODS
US - 12.01.2023
Clasificación Internacional C07K 14/47 Nº de solicitud 17478041 Solicitante Immatics Biotechnologies GmbH Inventor/a 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.

36.WO/2023/283745VIRAL VACCINE
WO - 19.01.2023
Clasificación Internacional C12N 15/861 Nº de solicitud PCT/CA2022/051107 Solicitante MCMASTER UNIVERSITY Inventor/a LICHTY, Brian
A trivalent transgene that encodes a viral surface glycoprotein component, a viral nucleoprotein component and a viral RNA polymerase component is provided. Vaccines incorporating the trivalent transgene are also provided, along with methods of vaccinating mammals to protect against viral infection.

37.20230020894AN ANAPLASTIC LYMPHOMA KINASE (ALK) CANCER VACCINE AND METHODS OF USE
US - 19.01.2023
Clasificación Internacional A61K 39/00 Nº de solicitud 17761371 Solicitante Children's Medical Center Corporation Inventor/a Roberto CHIARLE
Provided herein are isolated anaplastic lymphoma kinase (ALK) peptides that are fragments of the cytoplasmic portion of an ALK protein shared by cancers having an ALK rearrangement and cancers expressing the ALK protein, that bind a human leukocyte antigen (HLA), and elicit an immune response against one or more ALK-positive cancers. Also provided are isolated ALK peptides that are modified with an amphiphilic conjugate to increase T-cell expansion and greatly enhance anti-tumor efficacy. The invention also provides polynucleotides encoding isolated ALK peptides, vaccines comprising an isolated ALK peptide or polynucleotide, immunogenic compositions thereof, and kits for administering the same. Methods of treatment and methods of generating an immune response in a subject by administering the ALK-specific peptide antigens, immunogens, vaccines, or immunogenic compositions thereof are provided.

38.20230021069Sealed Multi Chamber Syringe for Storage, Mixing and Delivery of Multi Part Substances
US - 19.01.2023
Clasificación Internacional A61M 5/315 Nº de solicitud 17867636 Solicitante William R. MEREDITH Inventor/a William R. MEREDITH

A syringe device with preferred and alternate embodiments structured to store, mix (if appropriate), and dispense multiple compounds (fluids, gels, suspensions, powdered solids, etc.) without the need for multiple syringes or the repeated use of a syringe. In a first embodiment, the device stores two separate compounds for use and mixes the compounds before dispensing the combined mixture. In a second embodiment, the device stores two separate fluids for use and dispenses the first fluid followed sequentially by dispensing the second. The device may be used with a variety of dispensing structures such as an applicator or a cannula (syringe needle). The present invention finds specific application, for example, in a syringe device for storing and combining a diluent with a lyophilized drug/vaccine. Overall, the device structures a unique arrangement of chambers and channels for the accurate storage, mixing, and dispensing of multiple compounds (fluids, gels, suspensions, powdered solids, etc.).

39.WO/2023/283446METHOD FOR SURFACE EXPRESSION OF MEMBRANE PROTEINS THAT HAVE A CYTOPLASMIC C-TERMINAL TAIL
WO - 12.01.2023
Clasificación Internacional C07K 14/165 Nº de solicitud PCT/US2022/036553 Solicitante THE JOHNS HOPKINS UNIVERSITY Inventor/a GOULD, Stephen J.
Coronavirus egress is mediated by lysosomal exocytosis. It is demonstrated herein that the D614G mutation enhances Spike trafficking to lysosomes and the lysosomal accumulation of newly synthesized virus particles, augments Spike-mediated disruption of endomembrane homeostasis, and causes a 3-fold reduction in cell surface Spike expression. Moreover, it is shown that the D614G mutation is an intragenic suppressor of the 12 nucleotide-long furin cleavage site (FCS) insertion, restoring Spike trafficking to lysosomes and TMPRSS2-independent infectivity, both of which had been impaired by the prior FCS insertion mutation. This data identifies enhanced lysosomal sorting as the earliest known manifestation of the D614G mutation, have implications for virus evolution, immunity, and vaccine design, and support a lysosomal model of coronavirus biogenesis and entry.

40.WO/2023/287324INFLUENZA VIRUS-BASED ISOLATED RECOMBINANT VIRUS
WO - 19.01.2023
Clasificación Internacional C12N 15/117 Nº de solicitud PCT/RU2022/050173 Solicitante JOINT STOCK COMPANY "BIOCAD" Inventor/a RUDENKO, Larisa Georgievna
The present invention relates to the fields of biotechnology, immunology, virology, genetics, and molecular biology. More specifically, the present invention relates to an isolated nucleic acid encoding a recombinant polypeptide for increasing the titer of antibodies to influenza virus (variants), an influenza virus-based recombinant virus for inducing specific immunity to influenza virus and/or preventing influenza virus-related diseases, a pharmaceutical composition and a vaccine that include the above influenza virus-based recombinant virus, as well as their use for inducing specific immunity to influenza virus and/or preventing influenza virus-related diseases.

41.4118115VERFAHREN ZUR BEHANDLUNG VON CORONAVIRUS-INFEKTION UND DARAUS RESULTIERENDER ENTZÜNDUNGSINDUZIERTER LUNGENVERLETZUNG
EP - 18.01.2023
Clasificación Internacional C07K 16/24 Nº de solicitud 21767746 Solicitante HUMANIGEN INC Inventor/a DURRANT CAMERON
The present invention provides methods for treating a subject infected with 2019 coronavirus (SARS-CoV-2) comprising administering to the subject a therapeutically effective amount of a GM-CSF antagonist or a therapeutically effective amount of a GM-CSF antagonist and a second drug, including an anti-viral agent, an anti-SARS-CoV-2 vaccine, and serum containing human polyclonal antibodies to SARS-CoV-2.

42.20230015616CORONAVIRUS VACCINES AND USES THEREOF
US - 19.01.2023

Clasificación Internacional A61K 39/215 Nº de solicitud 17437266 Solicitante ARGORNA PHARMACEUTICALS LTD Inventor/a Bill Biliang ZHANG
This disclosure relates to coronavirus vaccines and uses thereof. In one aspect, the disclosure provides a nucleic acid vaccine, comprising a sequence encoding a spike protein or fragment thereof derived from a coronavirus.

43.20230018080METHODS AND COMPOSITIONS FOR RECOMBINANT DENGUE VIRUSES OR VACCINE AND DIAGNOSTIC DEVELOPMENT
US - 19.01.2023
Clasificación Internacional C07K 14/18 Nº de solicitud 17778055 Solicitante The University of North Carolina at Chapel Hill Inventor/a Ralph Baric
The present invention provides compositions and methods of use comprising a chimeric dengue virus E glycoprotein comprising a dengue virus E glycoprotein backbone, which comprises amino acid substitutions that may introduce an epitope that is recognized by an antibody from a dengue virus serotype that is different from the dengue virus serotype of the dengue virus E glycoprotein backbone.

44.4118096STABILISIERTE VIRALE FUSIONSPROTEINE
EP - 18.01.2023
Clasificación Internacional C07K 14/005 Nº de solicitud 21713101 Solicitante UNIV OXFORD INNOVATION LTD Inventor/a DOUGLAS ALEXANDER
The invention relates to stabilised pre-fusion conformation Class III fusion proteins. The invention also provides vaccine compositions for immunising a subject against viral infections.

45.WO/2023/280998CORONAVIRUS VACCINES
WO - 12.01.2023
Clasificación Internacional A61K 39/12 Nº de solicitud PCT/EP2022/068951 Solicitante LUXEMBOURG INSTITUTE OF HEALTH (LIH) Inventor/a DERVILLEZ, Xavier
The present invention provides multimeric protein complex comprising three polypeptides each comprising N- to C -terminally: (i) a receptor-binding domain (RBD) of an S1 subunit of an S protein of a coronavirus, (ii) optionally a S2 subunit of an S protein of a coronavirus; and (iii) a multimerization domain comprising a collagen-like region (CLR) of ficolin-2, wherein the multimerization domain enables the assembly of the polypeptides into a multimeric protein complex. The present invention further provides polynucleotides encoding the polypeptides of the multimeric protein complex, expression vectors, pharmaceutical compositions and uses of the multimeric protein complexes, such as a vaccine.

46.WO/2023/280833NOVEL ANTIGENS AND VACCINES
WO - 12.01.2023
Clasificación Internacional A61K 39/02 Nº de solicitud PCT/EP2022/068550 Solicitante DIACCURATE Inventor/a JACQUES, Theze
The present invention relates to novel polypeptides, nucleic acids, vaccine compositions and the uses thereof. The invention particularly relates to vaccines comprising an antigen (polypeptide, peptide, cell, nucleic acid, vector) having one or more modified 3S motifs. Such vaccines provide improved protecting effect and increase co-stimulation of CD8 T cells and B-cells by CD4 T cells.

47.WO/2023/288296PREFUSION-STABILIZED CHIMERIC HMPV-RSV F PROTEINS
WO - 19.01.2023
Clasificación Internacional C12N 15/62 Nº de solicitud PCT/US2022/073763 Solicitante BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM Inventor/a MCLELLAN, Jason
Provided herein are chimeric hMPV/RSV F proteins. In some aspects, the chimeric hMPV/RSV F proteins exhibit enhanced conformational stability, enhanced thermostability, and/or increased expression.

Methods are also provided for use of the chimeric F proteins as diagnostics, in screening platforms, and/or in vaccine compositions.

48.WO/2023/283638INTERLEUKIN-1 ALPHA CHIMERIC PROTEIN
WO - 12.01.2023
Clasificación Internacional C07K 16/28 Nº de solicitud PCT/US2022/073559 Solicitante ORIONIS BIOSCIENCES, INC. Inventor/a KLEY, Nikolai
The present invention relates, in part, to chimeric proteins, chimeric protein complexes, vaccine compositions, and adjuvants that include IL-1o or pro-IL-1o and their use as therapeutic agents or vaccines. The present invention further relates to methods of treatment of various diseases, such as infectious diseases and cancer and methods of vaccination.

49.WO/2023/283134UTILIZATION OF ANTIBODIES TO SHAPE ANTIBODY RESPONSES TO AN ANTIGEN
WO - 12.01.2023
Clasificación Internacional C07K 16/10 Nº de solicitud PCT/US2022/035968 Solicitante REGENERON PHARMACEUTICALS, INC. Inventor/a MURPHY, Andrew
Described herein are methods and compositions for directing an antibody response in a subject away from one or more first epitopes of an antigen (e.g., immunodominant epitopes of a vaccine antigen) and towards one or more second epitopes of the antigen by administering one or more antibodies targeting the one or more first epitopes of the antigen.

50.202347000586STABILIZED CORONAVIRUS SPIKE (S) PROTEIN IMMUNOGENS AND RELATED VACCINES
IN - 13.01.2023
Clasificación Internacional A61K 39/12 Nº de solicitud 202347000586 Solicitante THE SCRIPPS RESEARCH INSTITUTE Inventor/a HE, Linling
The present invention provides redesigned soluble coronavirus S protein derived immunogens that are stabilized via specific modifications in the wildtype soluble S sequences. Also provided in the invention are nanoparticle vaccines that contain the redesigned soluble S immunogens displayed on self-assembling nanoparticles. Polynucleotide sequences encoding the redesigned immunogens and the nanoparticle vaccines are also provided in the invention. The invention further provides methods of using the vaccine compositions in various therapeutic applications, e.g., for preventing or treating coronaviral infections.

51.4119575EPITOPE UND KIT ZUM NACHWEIS VON SARS-COV-2 UND ANTI-SAR
EP - 18.01.2023
Clasificación Internacional C07K 16/10 Nº de solicitud 21768221 Solicitante DENKA COMPANY LTD Inventor/a OGASAWARA SHINYA
The present invention pertains to: a monoclonal antibody that specifically reacts with a structural protein of SARS-CoV-2 or an antigen-binding fragment of the monoclonal antibody, wherein the structural protein of SARS-CoV-2 is at least one member selected from the group consisting of the S-protein, N-protein, M-protein and E-protein; and a hapten that specifically reacts with an antibody reacting with a protein of SARS-CoV-2, wherein the protein of SARS-CoV-2 is at least one member selected from the group consisting of the S-protein, N-protein, M-protein and E-protein.

52.20230007972Thermostable Vaccine Compositions and Methods of Preparing The Same
US - 12.01.2023
Clasificación Internacional A61K 9/19 Nº de solicitud 17732224 Solicitante The Regents of the University of Colorado, a body corporate Inventor/a Kimberly Hassett

The present invention relates generally to the field of immunogenic compositions containing volatile salts. In certain embodiments, compositions and methods disclosed herein relate to producing and using novel combinations to create frozen immunogenic agents bound to adjuvant having improved formulations and improved consistency of distribution of adjuvant for storage and subsequent delivery to a subject in need thereof.

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