



## EN ESTE NÚMERO

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

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

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

Última actualización por la OMS: 25 de enero de 2022.

Fuente de información utilizada:



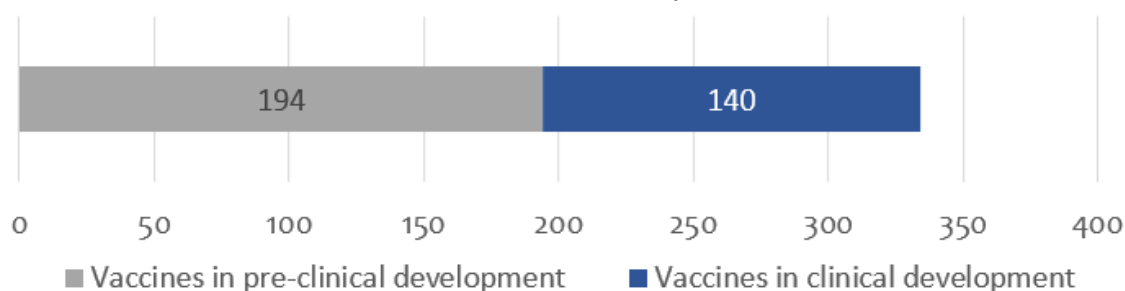
World Health Organization



R&DBlueprint

Powering research to prevent epidemics

140 candidatos vacunales en evaluación clínica y 194 en evaluación preclínica



## Candidatos vacunales en evaluación clínica por plataforma

Platform	Candidate vaccines (no. and %)
<b>PS</b>	Protein subunit 47 34%
<b>VVnr</b>	Viral Vector (non-replicating) 19 14%
<b>DNA</b>	DNA 16 12%
<b>IV</b>	Inactivated Virus 19 14%
<b>RNA</b>	RNA 23 17%
<b>VVr</b>	Viral Vector (replicating) 4 3%
<b>VLP</b>	Virus Like Particle 6 4%
<b>VVr + APC</b>	VVr + Antigen Presenting Cell 2 1%
<b>LAV</b>	Live Attenuated Virus 2 1%
<b>VVnr + APC</b>	VVnr + Antigen Presenting Cell 1 1%
<b>BacAg-SpV</b>	Bacterial antigen-spore expression vector 1 1%

140

## Candidatos vacunales mucosales en evaluación clínica

Desarrollador de la vacuna/fabricante/país	Plataforma de la vacuna	Vía de administración	Fase
University of Oxford/Reino Unido	Vector viral no replicativo	Intranasal	1
Vaxart/Estados Unidos	Vector viral no replicativo	Oral	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 o SL	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	IM e IN	3
Bharat Biotech International Limited/India	Vector viral no replicativo	Intranasal	1
Meissa Vaccines, Inc./Estados Unidos	Virus vivo atenuado	Intranasal	1
Laboratorio Avi-Mex/México	Virus inactivado	IM o IN	1
USSF + VaxForm/Estados Unidos	Subunidad proteica	Oral	1
CyanVac LLC/Estados Unidos	Vector viral no replicativo	Intranasal	1
DreamTec Research Limited/Hong Kong	BacAg-SpV	Oral	NA
Sean Liu, Icahn School of Medicine at Mount Sinai	Vector viral replicativo	IN/IM	1

## Candidatos vacunales más avanzados a nivel global

Desarrollador de la vacuna/fabricante/país	Plataforma de la vacuna	Fase
Sinovac/China	Virus Inactivado	4
Sinopharm/Wuhan Institute of Biological Products/China	Virus Inactivado	4
Sinopharm/Beijing Institute of Biological Products/China	Virus Inactivado	4
University of Oxford/AstraZeneca/Reino Unido	Vector viral no replicativo	4
CanSino Biological Inc./Beijing Institute Biotechnology/China	Vector viral no replicativo	4
CanSino Biological Inc./Beijing Institute Biotechnology/China	Vector viral no replicativo (IH)	3
Gamaleya Research Institute/Rusia	Vector viral no replicativo	3
Janssen Pharmaceutical Companies/Estados Unidos	Vector viral no replicativo	4
Novavax/Estados Unidos	Subunidad proteica	3
Moderna/NIAID/Estados Unidos	ARN	4
Pfizer/BioNTech Fosun Pharma/Estados Unidos	ARN	4
Anhui Zhifei Longcom Biopharmac./Inst. Microbiol, Chin Acad Sci/China	Subunidad proteica	3
CureVac AG/Alemania	ARN	3
Institute of Medical Biology/Chinese Academy of Medical Sciences	Virus inactivado	3
Research Institute for Biological Safety Problems, Kazakhstan	Virus inactivado	3
Inovio Pharm. + Intern. Vacc Inst. + Advaccine Biopharm Co., Ltd	ADN	3
Zyudus Cadila Healthcare Ltd./India	ADN	3
Bharat Biotech/India	Virus Inactivado	3
Sanofi Pasteur + GSK/Francia/Gran Bretaña	Subunidad proteica	3
Shenzhen Kangtai Biological Products Co., Ltd./China	Virus Inactivado	3
Clover Biopharmaceuticals Inc./GSK/Dynavax/China/Reino Unido/EE.UU	Subunidad proteica	3
Vaxine Pty Ltd. + CinnaGen Co./Australia, Irán	Subunidad proteica	3
Medigen Vaccine Biol./Dynavax/NIAID/Taiwán/EE.UU	Subunidad proteica	4
Instituto Finlay de Vacunas/Cuba	Subunidad proteica	3
Federal Budget Res Inst State Res Cent Virol Biotechnol "Vector"/Rusia	Subunidad proteica	3
West China Hospital + Sichuan University/China	Subunidad proteica	3
Univ. Hong Kong, Xiamen Univ. & Beijing Wantai Biological Pharm./China	Vector viral replicativo	3
Acad Milit Sci (AMS) Walvax Biotechnol, Suzhou Abogen Biosci/China	ARN	3
Medicago Inc./Canadá	Partícula similar a virus	3
Codagenix/Serum Institute of India	Virus vivo atenuado	3
Center for Genetic Engineering and Biotechnology (CIGB)/Cuba	Subunidad proteica	3
Valneva, National Institute for Health Research, Reino Unido	Virus inactivado	3
Biological E. Limited	Subunidad proteica	3
Nanogen Pharmaceutical Biotechnology/Vietnam	Subunidad proteica	3
Erciyas University/Turquía	Virus inactivado	3
SK Bioscience Co., Ltd./CEPI/Corea del Sur/Noruega	Subunidad proteica	3
Razi Vaccine and Serum Research Institute	Subunidad proteica	3
Arcturus Therapeutics, Inc.	ARN	3
Livzon Pharmaceutical/China	Subunidad proteica	3
Bagheiat-allah University of Medical Sciences/AmitisGen/Irán	Subunidad proteica	3

## Noticias en la Web

### Abdala cumple con todos los parámetros de calidad requeridos, aseguró secretario de Salud mexicano

**4 ene.** El presidente de México, Andrés Manuel López Obrador, rechazó este martes la politización de temas de salud y las críticas formuladas a la vacuna cubana anticovid Abdala, cuyo uso de emergencia fue aprobado en fecha reciente por la Comisión Federal para la Protección contra Riesgos Sanitarios (Cofepris).

Durante su habitual conferencia de prensa, el jefe de Estado aseguró que la salud debe estar por encima de cualquier ideología y que la certificación del suero por la autoridad regulatoria se debió a procesos de investigación serios, con base en datos científicos.

Recordó que Cuba tiene altos niveles de calidad en la formación médica y de investigación, y que la Cofepris es una institución dirigida por científicos responsables.

Afirmó que “el fanatismo, el dogmatismo, obnubila. Hace falta ser más sencillos para que podamos actuar a través del juicio práctico”.

El jefe de Estado valoró que algunos sectores también han tratado de politizar el regreso a la normalidad en determinadas actividades, como ocurrió con la reanudación de las clases presenciales, lo cual coincide con un repunte de los positivos al SARS-CoV-2 aunque con menos hospitalizaciones y decesos.

Puntualizó que “si vemos que son muchos los contagios y hay riesgos, aquí lo decimos y actuamos, pero no por posturas políticas o partidistas”.

Durante la conferencia también intervino el secretario de Salud, Jorge Alcocer, quien aseveró que la vacuna Abdala cumple los parámetros de calidad requeridos.

Explicó que la Cofepris aceptó el producto biotecnológico, que podría utilizarse en la inmunización de refuerzo, como siempre hace con medicamentos nuevos de alta calidad. Destacó que dicha institución

incorpora o reconoce solamente fármacos bien avalados.

Añadió que Abdala pasó todas las pruebas de calidad y México la certificó y la aprobó al igual que han hecho otras naciones.

De acuerdo con la autoridad regulatoria cubana, el Centro de Control de Medicamentos y Dispositivos Médicos (Cecmed), esta vacuna anticovid demostró una eficacia de 92,28 por ciento en la prevención de la enfermedad sintomática causada por el coronavirus durante



*Planta de producción de la UEB AICA, perteneciente a la Empresa Laboratorios AICA, donde tiene lugar el escalado productivo de Abdala.*

*Foto: Ricardo López Hevia/ Granma /Archivo*



su ensayo clínico fase III, con esquema completo, en el cual participaron 48 000 voluntarios. Con posterioridad, el estudio también arrojó un 100 por ciento de eficacia en la prevención de la enfermedad sintomática severa y en la prevención de la muerte, pues no hubo fallecidos en el grupo inmunizado. Por su eficacia e inocuidad, el CECMED aprobó su uso de emergencia para inmunizar a niños entre 2 y 11 años de edad.

Fuente: Cubadebate. Disponible en <https://bit.ly/3By4Tla>

## Para finales de enero toda la población cubana debe haber recibido su dosis de refuerzo contra la COVID-19

**5 ene.** Cuba agiliza la producción y traslado de vacunas a las provincias para la dosis de refuerzo ante el peligro de la variante ómicron del coronavirus SARS-CoV-2, aseguró hoy el presidente de la República, Miguel Díaz-Canel Bermúdez en su cuenta oficial de Twitter.



El Ministerio de Salud Pública (MINSAP) asegura que para finales de enero toda la población cubana debe tener una nueva dosis de los inmunógenos nacionales, precisó el mandatario en su mensaje.

De acuerdo con las cifras del Minsap, 2 194 437 personas poseen refuerzo en el país, de ellas 140 145 como parte del estudio clínico y 2 054 292 pertenecientes a la vacunación de refuerzo, que se aplica en territorios seleccionados.

Cuba cuenta con 9 673 452 personas completamente vacunadas contra la covid-19, el 86,5% de toda su población, dato que mantiene al país en el segundo lugar del mundo en este indicador.

Al cierre del día 3 de enero se acumulan en el país 30 895 670 dosis de las vacunas de producción nacional Soberana 02, Soberana Plus y Abdala, administradas.

Estas cifras ubican al país en el segundo puesto del sitio de estadísticas de la Universidad de Oxford, Our World in Data, solo superada por Emiratos Árabes Unidos y seguida de Portugal, tanto en los dígitos relacionados con la inmunización completa como la parcial.

Fuente: Cubadebate. Disponible en <https://bit.ly/3BtNH6i>

## Envían hacia Nicaragua dosis de Soberana Plus para vacunación pediátrica

**6 ene.** Un lote de la vacuna cubana anti-COVID-19 Soberana Plus partió hacia Nicaragua, para su uso en la vacunación pediátrica de ese país centroamericano.

Así lo informó en la red social Twitter el Instituto Finlay de Vacunas (IFV), desarrollador del inmunógeno, y agregó que es un orgullo para la institución que los niños nicaragüenses completen su esquema de vacunación con Soberana Plus.

"Hoy salen hacia #Nicaragua dosis de vida. Es un orgullo para el @FinlayInstituto que los niños de ese país hermano completen su esquema de vacunación con la vacuna cubana #SoberanaPlus", señaló el IFV.

En octubre pasado, la Autoridad de Regulación Sanitaria del Ministerio de Salud de Nicaragua (Minsa) otorgó la Certificación de Uso de Emergencia a las vacunas cubanas Soberana y Abdala.

Posteriormente, la mayor de las Antillas envió más de un millón de dosis de estos fármacos, que permitieron comenzar la campaña de vacunación a la población de entre dos y 17 años de edad.

En esa ocasión, la ministra de Salud nicaragüense, Martha Reyes, expresó que la llegada de las vacunas de Cuba era un sueño alcanzado, en tanto posibilitaría la protección de un grupo de edad tan sensible como son los niños y adolescentes.

Fuente: Cubadebate. Disponible en <https://bit.ly/3LG3sfk>

**Instituto Finlay de Vacunas**  
@FinlayInstituto

Hoy salen hacia #Nicaragua dosis de vida. Es un orgullo para el @FinlayInstituto que los niños de ese país hermano completen su esquema de vacunación con la vacuna cubana #SoberanaPlus.  
#CubaCoopera  
#CubaPorLaVida

12:32 p. m. · 6 ene. 2022

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## Cuba dona a Siria vacunas contra la COVID-19

**7 ene.** Cuba donó este viernes a Siria 240 000 dosis de vacunas contra la COVID-19 Abdala, Soberana 02 y Soberana Plus, ratificando así su histórica postura de compartir lo que tiene y no lo que le sobra.

En ello coincidieron el embajador de Siria en La Habana, Idris Mayya, y la ministra interina de Comercio Exterior e Inversión Extrajera de Cuba, Ana Teresita González Fraga, durante una ceremonia en el aeropuerto internacional José Martí de la capital.

El diplomático expresó el agradecimiento de su Gobierno y compatriotas hacia las autoridades y el pueblo de Cuba que, afirmó, “hacen esta contribución solidaria a pesar de las dificultades agudizadas por el bloqueo de Estados Unidos a lo largo de más de seis décadas”.

Señaló que la nación caribeña es “uno de los países más ricos del mundo en dignidad y generosidad, que siempre ha demostrado en los momentos difíciles para ayudar a otros pueblos”.

En cambio, puntualizó, otros países hablan de democracia y derechos humanos, pero contradicen ese discurso con medidas de bloqueo contra Cuba, Siria y otras naciones, aun en medio de la dura situación provocada por la pandemia de COVID-19.

Destacó el alto valor de la ayuda de la isla a Siria, país igualmente agredido, y recordó que el pasado 28 de diciembre Israel atacó el puerto de Latakia, destruyendo más de 500 contenedores que contenían alimentos y medicinas, lo que empeora las dificultades de la población siria.

Por su parte, la funcionaria cubana señaló que este donativo es expresión de las excelentes relaciones de colaboración que mantiene Cuba con Siria, y que la pandemia ha demostrado en estos dos últimos años la necesidad de fomentar el multilateralismo, la cooperación y la solidaridad internacionales.

Recordó que la enfermedad se sumó al recrudecimiento del bloqueo de Washington a Cuba, con la aplicación de 243 nuevas medidas por la administración de Donald Trump, las cuales aún se mantienen.

Pero al mismo tiempo -advirtió- Gobiernos, organizaciones y grupos de solidaridad han brindado su valioso aporte al pueblo cubano para combatir la pandemia.

Añadió que la estrategia nacional para enfrentar la COVID-19 ha permitido la recuperación del 99 por ciento de todos los contagiados en el país.

Señaló que las vacunas desarrolladas por la ciencia cubana, primeras en América Latina, constituyen un modesto aporte al enfrentamiento de la pandemia y contribuirán a disminuir los efectos de la enfermedad en Siria.

Ana Teresita González Fraga afirmó por último el convencimiento de los cubanos de que “la práctica de la solidaridad y la cooperación internacional constituyen el camino hacia un mundo más equitativo, justo y sostenible”.

Fuente: Cubadebate. Disponible en <https://bit.ly/3gRE1cs>



## Cuba intensificará vacunación de refuerzo contra la COVID-19

**10 ene.** Cuba intensificará a partir de este lunes en muchas provincias la vacunación de refuerzo anti-Covid-19 con el objetivo de mejorar la respuesta inmune de la población ante la circulación de la nueva variante del SARS-CoV-2, Ómicron, informó Prensa Latina.

De acuerdo con un mensaje en Twitter del Instituto Finlay de Vacunas (IFV), a cargo de los productos Soberana 01, Soberana 02 y Soberana Plus, para finales de enero toda la población cubana vacunable debe haber recibido su dosis de refuerzo o *booster*.

«Recientemente se decidió agilizar esa campaña de inmunización para mejorar la respuesta inmune ante la circulación de la nueva variante del virus SARS-CoV-2, Ómicron», detalló el IFV en la red social.

Explicó además, que la vacuna cubana Soberana 02 puede aplicarse como refuerzo de cualquier esquema anterior de inmunización como el de tres dosis de Abdala u otros de los inmunizantes aplicados en cualquier otro país.

Las personas que reciban esta cuarta inyección deben cumplir el requisito de poseer el esquema completo de vacunación (tres aplicaciones anteriores) y que hayan transcurrido al menos tres meses desde la última inyección.

También puede administrarse a quienes rebasaron la COVID-19 y están completamente vacunados, así como los residentes que lleguen al país con algunos de los inmunógenos disponibles a nivel internacional, luego de seis meses desde la inoculación final.

Medios informativos detallaron que en territorios como la oriental provincia de Holguín se alistan unos 500 vacunatorios para inmunización de refuerzo para más de un millón de personas inmunizadas, en su mayoría, con el inmunógeno Abdala, primera de América Latina, desarrollada por el Centro de Ingeniería Genética y Biotecnología.

Por su parte, la provincia más occidental del país, Pinar del Río, avanza también en la administración del booster.

Hasta la fecha, más de 96 200 pinareños que completaron el esquema con Abdala y no padecieron COVID-19 ya recibieron el refuerzo.

Datos del Ministerio de Salud Pública de Cuba refieren que dos millones 577 892 cubanos ya cuentan con el refuerzo, de los cuales 155 030 la recibieron al formar parte de los estudios clínicos y 2 422 864 pertenecientes a la vacunación masiva.

Fuente: MEP. Disponible en <https://bit.ly/3s28tXT>









## Banco Centroamericano de Integración Económica aprueba financiamiento a Cuba para enfrentar la COVID-19

**11 ene.** El Banco Centroamericano de Integración Económica (BCIE) aprobó el primer financiamiento por 46.7 millones de euros para Cuba, un país miembro extrarregional, destinado a fortalecer las capacidades en el desarrollo y producción de medicamentos, equipos médicos, diagnosticadores y vacunas anticovid-19.

“Celebremos esta primera aprobación a la República de Cuba, la cual esperamos sea la primera de muchas. Esta operación en particular contribuirá a enfrentar la crisis sanitaria mediante el desarrollo de vacunas que permitan reducir el riesgo de las personas de infectarse por el virus de la COVID-19 y también contribuirá a la reactivación económica del país”, declaró el presidente ejecutivo del BCIE, Dr. Dante Mossi.

Uno de los objetivos específicos del Proyecto de Fortalecimiento de la Industria Biofarmacéutica cubana para combatir la COVID-19 en Cuba y en la región es alcanzar niveles más elevados de productividad económica mediante el desarrollo de productos innovadores de gran importancia en el contexto de la pandemia, y la modernización de la tecnología, así como la diversificación en beneficio del Sistema Nacional de Salud y de otros países de la región.

El crédito también contempla el fortalecimiento de la infraestructura productiva de la industria biofarmacéutica cubana permitiendo una mayor producción de antibióticos inyectables, soluciones parenterales (sueros), medicamentos genéricos y biosimilares, diagnosticadores, equipos médicos y vacunas específicas contra la COVID-19, así como la adquisición de insumos y material de protección médica para prevenir su contagio.

El Proyecto será ejecutado por el Programa de las Naciones Unidas para el Desarrollo (PNUD), quien ejecutará las adquisiciones del proyecto conforme sus políticas y normativa de adquisiciones.

Fuente: Cubadebate. Disponible en <https://bit.ly/3BwRDmY>

## Por qué el extraordinario éxito de la vacuna contra la covid en Cuba podría ser la mejor esperanza para los países de bajos ingresos

### 15 ene. Puntos clave:

- ⇒ El prestigioso sector biotecnológico de Cuba ha desarrollado hasta la fecha cinco vacunas contra la COVID-19 diferentes, incluidas Abdala, Soberana 02 y Soberana Plus, todas las cuales, según Cuba, brindan más del 90% de protección contra la COVID-19 sintomática cuando se administran en tres dosis.
- ⇒ El país de aproximadamente 11 millones sigue siendo el único de América Latina y el Caribe que ha producido una inyección local para COVID-19.
- ⇒ La posible aprobación por parte de la OMS de las vacunas contra la covid producidas a nivel nacional en Cuba tendría una “enorme importancia” para las naciones de bajos ingresos, dijo a CNBC por teléfono John Kirk, profesor emérito del programa de América Latina de la Universidad de Dalhousie, en Nueva Escocia, Canadá.

Cuba ha vacunado a un mayor porcentaje de su población contra la covid-19 que casi todas las naciones más grandes y ricas del mundo. De hecho, solo los Emiratos Árabes Unidos, ricos en petróleo, cuentan con un registro de vacunación más sólido.

La pequeña isla caribeña dirigida por comunistas ha logrado este hito al producir su propia vacuna contra la covid , incluso mientras lucha por mantener abastecidos los estantes de los supermercados en medio de un embargo comercial estadounidense de décadas.

“Es una hazaña increíble”, dijo a CNBC por teléfono Helen Yaffe, experta en Cuba y profesora de Historia Económica y Social en la Universidad de Glasgow, Escocia.

“A los que hemos estudiado biotecnología no nos sorprende en ese sentido, porque no ha surgido de la nada. Es producto de una política gubernamental consciente de inversión estatal en el sector, tanto en salud pública como en ciencias médicas”.

Hasta la fecha, alrededor del 86% de la población cubana ha sido vacunada completamente contra la COVID-19 con tres dosis, y otro 7% está parcialmente inoculado contra la enfermedad, según estadísticas oficiales recopiladas por *Our World in Data*.

Estas cifras incluyen niños desde los dos años, que comenzaron a recibir la vacuna hace varios meses. Las autoridades sanitarias del país están lanzando vacunas de refuerzo a toda la población este mes en un intento por limitar la propagación de la variante Ómicron, altamente transmisible.

El país de aproximadamente 11 millones sigue siendo el único país de América Latina y el Caribe que ha producido una inyección local para COVID-19.

“La pura audacia de este pequeño país para producir sus propias vacunas y vacunar al 90% de su población es algo extraordinario”, dijo a CNBC John Kirk, profesor emérito del programa de América Latina de la Universidad de Dalhousie en Nueva Escocia.

El prestigioso sector biotecnológico de Cuba ha desarrollado cinco vacunas contra la COVID-19 diferentes, incluidas Abdala, Soberana 02 y Soberana Plus, todas las cuales, según Cuba, brindan más del 90% de protección contra la COVID-19 sintomática cuando se administran tres dosis.

Los datos de los ensayos clínicos de vacunas de Cuba aún no se han sometido a una revisión científica internacional por pares, aunque el país se ha involucrado en dos intercambios virtuales de información con la Organización Mundial de la Salud para iniciar el proceso de listado de uso en emergencias para sus vacunas.

A diferencia de los gigantes farmacéuticos estadounidenses Pfizer y Moderna, que utilizan tecnología de ARNm, todas las vacunas de Cuba son de proteínas de subunidades, como la vacuna Novavax. Crucialmente para los países de bajos ingresos, son baratas de producir, se pueden fabricar a escala y no requieren congelación profunda.

Esto ha llevado a los funcionarios de salud internacionales a promocionar las inyecciones como una fuente potencial de esperanza para el “Sur global”, particularmente cuando persisten las bajas tasas de vacunación. Por ejemplo, mientras alrededor del 70% de las personas en la Unión Europea han sido vacunadas completamente, esto solo se ha logrado con el 10% de la población africana.

Sin embargo, para que esto se cumpla, la OMS probablemente tendría que aprobar las vacunas de Cuba. El

**"Creo que está claro que muchos países y poblaciones del sur global ven en la vacuna cubana su mejor esperanza para vacunarse en 2025".**

**Helen Yaffe. Profesora de Historia Económica y Social en la Universidad de Glasgow**

proceso de investigación de antecedentes de la OMS implica evaluar las instalaciones de producción donde se desarrollan las vacunas, un punto que, según los funcionarios de salud de Cuba, ha frenado el progreso.

Vicente Verez, jefe del Instituto Finlay de Vacunas de Cuba, dijo a Reuters el mes pasado que la agencia de salud de la ONU estaba evaluando las instalaciones de fabricación de Cuba a un “estándar del primer mundo”, citando el costoso proceso de actualizar las suyas a ese nivel.

Verez dijo anteriormente que los documentos y datos necesarios se enviarían a la OMS en el primer trimestre de 2022. La aprobación de la OMS sería un paso importante para que las vacunas estén disponibles en todo el mundo.

### **Enorme significado**

Cuando se le preguntó qué significaría para los países de bajos ingresos si la OMS aprobara las vacunas contra la COVID-19 de Cuba, Yaffe dijo: “Creo que está claro que muchos países y poblaciones en el Sur global ven la vacuna cubana como su mejor esperanza para vacunarse para 2025”.

“Y, de hecho, nos afecta a todos, porque lo que estamos viendo con la variante Ómicron es que lo que sucede cuando grandes poblaciones casi no tienen cobertura es que tienes mutaciones y nuevas variantes en desarrollo y luego regresan para atormentar a los países capitalistas avanzados que han estado acumulando vacunas”, agregó.

Kirk estuvo de acuerdo en que la posible aprobación por parte de la OMS de las vacunas contra COVID-19 producidas a nivel nacional en Cuba tendría una “enorme importancia” para los países en desarrollo.

“Una cosa que es importante tener en cuenta es que las vacunas no requieren las temperaturas ultrabajas que necesitan Pfizer y Moderna, y hay lugares, en África en particular, donde no se tiene la capacidad de almacenar estas vacunas del norte”, dijo Kirk.

También señaló que Cuba, a diferencia de otros países o empresas farmacéuticas, se ha ofrecido a participar en la transferencia de tecnología para compartir su experiencia en la producción de vacunas con países de bajos ingresos.

“El objetivo de Cuba no es hacer dinero rápido, a diferencia de las corporaciones multinacionales de la droga, sino mantener el planeta saludable. Entonces, sí, obtener una ganancia honesta pero no una ganancia exorbitante como lo harían algunas de las multinacionales”, dijo Kirk.

El jefe de la OMS, Tedros Adhanom Ghebreyesus, advirtió el mes pasado que un “tsunami” de casos de COVID-19 impulsados por la variante Ómicron fue “tan grande y tan rápido” que había abrumado los sistemas de salud en todo el mundo.

Tedros reiteró su llamado a una mayor distribución de vacunas para ayudar a los países de bajos ingresos a vacunar a sus poblaciones, con más de 100 países en camino de no alcanzar el objetivo de la agencia de salud de la ONU de que el 70% del mundo esté completamente vacunado para julio.

La OMS dijo el año pasado que es probable que el mundo tenga suficientes dosis de vacunas contra la COVID-19 en 2022 para inocular por completo a toda la población adulta mundial, siempre que los países de altos ingresos no acumulen vacunas para usar en programas de refuerzo.

Junto con las asociaciones comerciales de la industria farmacéutica, varios países occidentales, como Canadá y Reino Unido, se encuentran entre los que bloquean activamente una propuesta de exención de patentes diseñada para impulsar la producción mundial de vacunas contra la COVID-19.

La urgencia de renunciar a ciertos derechos de propiedad intelectual en medio de la pandemia ha sido subrayada repetidamente por la OMS, expertos en salud, grupos de la sociedad civil, sindicatos, exlíderes mundiales, organizaciones benéficas médicas internacionales, premios Nobel y organizaciones de derechos humanos.

### **Una ausencia de vacilación ante la vacuna**

El promedio de siete días de casos diarios de COVID-19 en Cuba subió a 2 063 al 11 de enero, lo que refleja un aumento de casi 10 veces desde fines de diciembre a medida que se propaga la variante Ómicron.

Esto se produce a medida que aumenta el número de casos por Ómicron en los países y territorios de la región de las Américas. La Organización Panamericana de la Salud (OPS), la oficina regional de la OMS, advirtió que un aumento en los casos puede conducir a un aumento en las hospitalizaciones y muertes en las próximas semanas.

La OPS ha pedido a los países que aceleren la cobertura de vacunación para reducir la transmisión de COVID-19 y ha reiterado su recomendación de medidas de salud pública, como máscaras ajustadas, un requisito obligatorio en Cuba.

Yaffe ha confiado durante mucho tiempo en la capacidad de Cuba para presumir de uno de los registros de vacunación más sólidos del mundo. Hablando con CNBC en febrero del año pasado, incluso antes de que el país hubiera desarrollado una vacuna local, dijo que podía “garantizar” que Cuba podría administrar su vacuna contra la COVID-19 producida en el país extremadamente rápido.

“No fue una conjetura”, dijo Yaffe. “Se basó en comprender su sistema de atención médica pública y su estructura. Por ejemplo, el hecho de que tienen lo que llaman clínicas de médicos y enfermeras de familia en cada vecindario”.

Muchas de estas clínicas están ubicadas en áreas rurales y de difícil acceso, lo que significa que las autoridades de salud pueden entregar vacunas rápidamente a la población de la isla.

“El otro aspecto es que no tienen un movimiento de renuencia a vacunarse, que es algo que estamos viendo en muchos países”, señaló Yaffe.

Fuente: Cubadebate. Disponible en <https://bit.ly/3LJ8yaF>

## **¿Vacunar a los niños? Cuba indica el camino**

**18 ene.** Mientras en toda Europa la cantidad de contagios aumenta a pasos agigantados y los países refuerzan las medidas de seguridad, se lanza el debate sobre vacunar o no a los niños. Algunos padres quieren vacunar a sus hijos lo antes posible, otros no ven el sentido en hacerlo. ¿Es buena idea vacunar a los niños?

Este artículo no pretende “aconsejar” sobre vacunar o no a los niños. Sin embargo, puede aportar argumentos y hechos que ayuden a tomar una decisión mejor fundada. Lo que llama la atención es que los padres suelen estar muy poco informados sobre este tema. Realmente no suele haber campañas informativas del Gobierno. Es inexplicable, ya que se trata de un tema muy importante y complejo.

La falta de información se reemplaza fácilmente por charlatanes y todo tipo de teorías descabelladas. Nuestros gobiernos cargan con una enorme responsabilidad en este sentido.

## Estado de la vacunación infantil

Hoy en día se están llevando a cabo campañas de vacunación infantil en al menos treinta países. Los primeros países que comenzaron a hacerlo fueron Estados Unidos, China, Canadá, Australia, Cuba y Chile. Pero también en países como Alemania, Países Bajos, Italia, Dinamarca, Japón e Indonesia se ha lanzado ya la invitación a vacunar a los niños. En Costa Rica la vacunación ya es incluso obligatoria para los niños a partir de los cinco años. En algunos países, como Francia y Finlandia, solo se están vacunando a niños que tienen otras enfermedades.



Las opiniones son diversas. En España y Dinamarca el 70% de los padres están dispuestos a vacunar a sus hijos. En Bélgica la cifra es algo superior al 60%. En Alemania, Italia y los Países Bajos es de solo el 40% y en Francia de apenas el 30%.

Los expertos dan cuatro razones por las que pudiera ser útil vacunar a los niños contra la COVID-19. Son las siguientes.

### 1. Es más seguro para los propios niños

“Los niños apenas se enferman de COVID-19 y puede haber efectos secundarios peligrosos al administrarles las vacunas”. Este es el argumento más común contra la vacunación de los niños.

Es cierto que hay muy pocos niños que se enferman gravemente de COVID-19, pero a veces sí ocurre. El coronavirus puede causar el llamado síndrome inflamatorio multisistémico o SIM-C (MIS-C en inglés). Consiste en una inflamación peligrosa que puede ser mortal.

Además, la COVID-19 también provoca fatiga, falta de aire o complicaciones neurológicas, lo que se conoce como COVID persistente. En los niños no es tan grave como en los adultos. En cualquier caso, el riesgo que los niños enfermen gravemente o mueran a causa de COVID-19 es bien mínimo. Sin embargo, todavía se desconocen los riesgos a largo plazo del COVID persistente en niños y adultos. La vacunación ayuda a proteger a los niños contra la COVID-19 pulmonar y el MIS-C.

A pesar del bajo riesgo, en los últimos meses se ha constatado que los niños de 5 a 11 años representan una gran parte de los ingresos hospitalarios en Europa y Estados Unidos. En Roma la sala de cuidados intensivos de un hospital infantil se llenó a un 60% de niños con COVID-19. La variante Ómicron no solo es mucho más contagiosa, sino que, al parecer, afecta más a los niños que la variante delta.

La hospitalización es dos veces superior entre niños menores de 5 años que entre niños de primaria. Sin embargo, este grupo más joven todavía no forma parte de las campañas vacunación.

¿Y cuáles son los posibles efectos secundarios de la vacuna? Existe un efecto secundario poco frecuente: la miocarditis, una inflamación del tejido cardíaco en adolescentes y adultos jóvenes que han recibido una vacuna de ARNm. Pero se trata realmente de un número insignificante, concretamente de dos casos por cada millón de niños vacunados (cifras de EEUU). La miocarditis que surge como consecuencia de una vacunación es muy leve. En caso de ser necesaria, la hospitalización solo dura unos días y el tratamiento suele ser con analgésicos comunes.

En total hubo 14 casos de miocarditis a causa a la vacunación en Estados Unidos. Si comparamos, entre marzo y mediados de octubre, 8.300 niños de entre cinco y once años fueron hospitalizados a causa de la COVID-19, de los cuales murieron 94.

En cualquier caso, la probabilidad de que un niño contraiga miocarditis a causa de la vacunación es menos probable que la de contraerla a causa del coronavirus. Según el Centro Europeo para la Prevención y el Control de las Enfermedades (ECDC), la miocarditis se produce hasta 37 veces más a menudo en niños menores de 16 años no vacunados con diagnóstico de COVID-19 en comparación con otros jóvenes del mismo grupo de edad.

La ventaja de vacunar a los niños es mayor que los riesgos, a menos que la tasa de infección sea muy baja (inferior a 0,03% a la semana en los niños). Pero esta situación no se da en ningún país europeo, ni en Estados Unidos. A principios de diciembre, por ejemplo, la tasa de infección en el norte de Bélgica era 50 veces más alta, es decir 3,3%, en una quincena. En las próximas semanas la tasa de infección probablemente será aún mayor.

Los niños pequeños tienen un sistema inmunológico diferente al de los adultos. Las vacunas que son (o serán) administrados a los niños en Europa son del tipo ARNm (Pfizer). Todavía desconocemos los efectos que pueda tener a largo plazo este tipo de vacuna en los niños. Pero igual o aún más desconocidos son los efectos a largo plazo de la exposición al virus, por ejemplo, a causa de la COVID persistente. Por el momento no hay pruebas de posibles efectos adversos a largo plazo de este tipo de vacuna.

¿Y qué se puede decir de la “inmunidad natural”? Dado que los niños no enferman tanto de COVID-19, es posible que adquieran cierta inmunidad sin vacunas. Pero precisamente porque (normalmente) no se enferman, esa inmunidad adquirida naturalmente es más débil.

Además, el problema es que esa protección natural disminuye al cabo de cierto tiempo. En el caso de la variante Ómicron, el riesgo a una reinfección es mucho más probable con inmunidad natural que con la vacunación completa. Y los niños también son más susceptibles de reinfectarse con esta variante que los adultos.

Es probable que la variante Ómicron infecte con el tiempo a todos los niños, pero es mejor que se infecten cuando estén vacunados. La vacuna no solo permite reforzar la inmunidad, sino también hacerla más duradera.

## 2. Las escuelas cierran menos por COVID-19

También hay efectos indirectos de vacunar o no. La cantidad de infecciones en poblaciones donde los niños no han sido vacunados es mucho mayor. A consecuencia de ello, muchos niños y profesores tienen que estar en cuarentena. Esto supone una gran presión para la organización de una escuela. Este era el caso, sobre todo, de las escuelas primarias. La vacunación de los alumnos de secundaria ha reducido en gran medida la circulación del virus en esa población y ha permitido que los colegios sigan abiertos.

Esto fue antes de que surgiera la variante Ómicron, que es mucho más contagiosa. Para evitar que Ómicron perturbe nuestras escuelas primarias, es necesario reducir seriamente la cantidad de infecciones. En Francia se ha calculado que incluso si solo se vacunaran a la mitad de los niños, la cantidad de infecciones en esta franja de edad se reduciría a un 75% en tres meses. En este caso las escuelas podrían permanecer abiertas.

### 3. Contactos con grupos de alto riesgo

Además de los efectos directos del coronavirus en los niños, estos también son una fuente importante de transmisión a los adultos y abuelos vulnerables. Esta situación se agudiza cuando las escuelas tienen que cerrar o los alumnos tienen que permanecer en cuarentena, porque entonces suelen ser los abuelos quienes se tienen que encargar de cuidarlos. Ahora, en pleno invierno, también ocurre en casas con las ventanas cerradas.

Además de los abuelos, también hay padres que padecen otro tipo de enfermedades. Cuantos menos niños se vacunen, más circulará el virus entre ellos y más alta será la probabilidad de que se infecten padres de grupos de riesgo.

### 4. Menor circulación de virus

Hoy día tenemos una circulación de virus bastante alta. En la primera semana de enero un 3,6% de la población europea estaba infectada por el virus. Y en Estados Unidos un 1,8%. Con una circulación de virus tan elevada, el sistema sanitario se ve sometido a una gran presión y el mundo empresarial sufre la escasez de empleados, por no hablar de las numerosas muertes por COVID-19.

Esta gran cantidad de infecciones es el resultado principal de la mala administración de nuestros gobiernos. No estaban preparados, reaccionaron demasiado tarde, y les faltó valor y decisión política para atajar la situación. Cuarenta años de política neoliberal han afectado gravemente al sistema de asistencia sanitaria. En las escuelas y en otros lugares tampoco se han proporcionado la tan necesaria purificación o ventilación.

Los gobiernos vieron y ven erróneamente la vacunación como el remedio que permitirá suprimir o relajar rápidamente las medidas de seguridad. De este modo esperan sacar el máximo provecho electoral, pero se trata de una visión muy a corto plazo. Una verdadera política se basaría en un conjunto de medidas en las que las vacunas formen solo una parte de ella.

La vacunación no será suficiente para superar la pandemia, pero sí es necesaria. Como los niños pequeños (todavía) no están vacunados, son actualmente la mayor fuente de infecciones. En Bélgica, por ejemplo, las guarderías son hoy en día el lugar más expuesto para infectarse. Los trabajadores de las guarderías tienen un 70% más de probabilidad de infectarse que los trabajadores de otros sectores.

Cuanto más alto sea el porcentaje de vacunación, menor será la circulación del virus. La vacunación de menores de doce años refuerza la inmunidad grupal de toda la población. Lo mismo ocurre con el grupo que aún no ha sido vacunado.

Para lograr la inmunidad de grupo con la variante delta necesitábamos una cobertura de vacunación de aproximadamente el 90%. Se estima que la variante ómicron es tres veces más contagiosa, así que se necesita una defensa aún mayor.

### **El enfoque cubano**

Cuba ha demostrado la eficacia de la vacunación infantil. En Cuba los niños a partir de los dos años ya están vacunados. Actualmente Cuba tiene la segunda tasa de vacunación más alta del mundo. Los resultados de la campaña de vacunación son espectaculares.

El 20 de septiembre, al inicio de la campaña, Cuba tenía una de las tasas de infección más altas del mundo. En una población de 11 millones de personas había más de 40.000 casos activos ingresados y 69 muertes

por día. En la actualidad se detectan 3.000 nuevas infecciones diarias y menos de una muerte. Un artículo del importante periódico de los Países Bajos Volkskrant se titula “¿El secreto del éxito cubano? Vacunar a los niños”.

Hay que tener en cuenta que Cuba tiene una política generalizada y contundente frente a esta crisis. Se adoptan medidas decisivas en caso necesario, y también se hace hincapié en la prevención y la información a la población. En Cuba hay una gran confianza en el gobierno y en los científicos; no hay movimiento antivacunas. La suma de estos factores es lo que demuestra su éxito.

### **Vacunar a nuestros hijos o vacunar en los países del Sur**

Dado que la cantidad de vacunas en todo el mundo es limitada, si aumentamos nuestro índice de vacunación, ¿no será a costa de los países más pobres? Y a consecuencia de ello, solo se podrá vacunar ahí a una parte muy pequeña de la población, lo que los convierte en una reserva para nuevas y futuras cepas.

La verdadera razón es que la capacidad de producción actual es limitada. Las grandes farmacéuticas, apoyadas por los gobiernos occidentales, se niegan a liberar sus patentes y se aferran a su monopolio para producir vacunas, de modo que se producen menos vacunas de las que necesita el mundo, pero las grandes farmacéuticas, en cambio, se pueden hacer millonarias. Por tanto, es extremadamente urgente quitar las patentes y transferir la tecnología a los países del Sur.

Cuba también es un ejemplo en este sentido. Ha desarrollado cinco vacunas COVID propias. Además de exportar sus vacunas a los países del Sur, la isla caribeña tiene previsto transferir tecnologías a Argentina y Vietnam, y ayudar a iniciar la producción en Siria, Irán, México y Venezuela. Si un país tan pequeño y pobre como Cuba es capaz de hacer esto, ¡imagínense lo que se pudiera lograr en Estados Unidos o Europa!

Fuente: Cubadebate. Disponible en <https://bit.ly/3I9rlo4>

## **El 87.6 por ciento de la población cubana tiene ya el esquema completo de vacunación**

**22 ene.** Al cierre del jueves 20 de enero, en Cuba se acumulaban 33 422 531 dosis administradas con las vacunas nacionales Soberana 02, Soberana Plus y Abdala, según la actualización que el Ministerio de Salud (Minsap) ha divulgado este sábado. Más de 4.5 millones han recibido la dosis de refuerzo.

Hasta el 20 de enero, 10 544 254 personas habían recibido al menos una dosis de una de esas vacunas. De ellas, 9 334 329 tienen ya la segunda dosis, y 8 998 689, la tercera.

El Minsap precisa que en la estadística de primera dosis se incluyen los vacunados con Soberana Plus como dosis única.

Actualmente, han recibido el esquema de vacunación completo 9 793 740 personas, el 87.6 % de la población cubana.

La dosis de refuerzo ya ha sido administrada a 4 545 231 personas, 368 786 de ellas como parte del estudio clínico y 4 176 445 como parte de la vacunación de refuerzo que se está aplicando a población de territorios seleccionados y grupos de riesgo.



## Vacunación masiva

El 9 de julio de 2021, el Centro para el Control Estatal de Medicamentos, Equipos y Dispositivos Médicos (Cecmed) otorgó el autorizo de uso de emergencia (AUE) a la vacuna cubana Abdala 50 µg, del Centro de Ingeniería Genética y Biotecnología (CIGB).

El 20 de agosto, la autoridad reguladora cubana otorgó el AUE a las vacunas Soberana 02 y Soberana Plus, del Instituto Finlay de Vacunas IFV).

La vacunación masiva comenzó el 29 de julio de 2021, en población mayor de 19 años de territorios con riesgo epidemiológico y grupos de riesgo a nivel de todas las provincias. También se extendió a población pediátrica de dos a 18 años de todo el país. Como parte del proceso, se administraron 22 714 415 dosis.

### Estudio clínico

A partir de la aprobación de la estrategia de dosis de refuerzo, fueron aprobados el estudio clínico con candidatos vacunales (Soberana 01 y Mambisa) y el inicio de la vacunación con una cuarta dosis, comenzando por trabajadores de la salud y grupos de riesgo.

Esas dosis de refuerzo se suman al número de dosis aplicadas en el país en su acumulado. Con fecha de inicio en noviembre de 2021, participaron trabajadores de la salud, población de territorios seleccionados y otros grupos de riesgo, y fueron administradas 368 786 dosis.

### Intervención sanitaria

Desde inicios de mayo de 2021, el Minsap, respaldado en el Artículo 64 de la Ley 41, Ley de la Salud Pública, del 13 de julio de 1983, aprobó una intervención sanitaria con los candidatos vacunales Abdala y Soberana 02 en grupos y territorios de riesgo.

El proceso comenzó ese mes e incluyó a trabajadores de la salud, de BioCubaFarma, estudiantes de Ciencias Médicas y otros grupos de riesgo, así como población de territorios de riesgo seleccionados por etapas. Se administraron 9 618 800 dosis.

### Estudio de intervención

Como parte de las investigaciones asociadas a los candidatos vacunales cubanos Soberana 02 y Abdala, en marzo de 2021 se inició un estudio de intervención en grupos de riesgo, dirigido a sujetos en grupos de riesgo y que podían aportar datos relevantes.

Intervinieron en el estudio trabajadores de la salud, de BioCubaFarma y otros grupos de riesgo en La Habana, Santiago de Cuba, Granma y Guantánamo, con 454 064 dosis administradas.

### Ensayos clínicos

El desarrollo de los ensayos clínicos con los candidatos vacunales cubanos Soberana 02, Abdala y Soberana Plus (para convalecientes) fue aprobado por el Cecmed e implementado en sujetos voluntarios de territorios seleccionados.

Comenzó en marzo de 2021 con sujetos voluntarios seleccionados por los investigadores en La Habana, Santiago de Cuba, Granma y Guantánamo. Se administraron 266 466 dosis (no se incluyen en la cifra las dosis de placebos administradas durante los ensayos clínicos).

Fuente: Cubadebate. Disponible en <https://bit.ly/355uxHV>

## Candidato vacunal Mambisa demuestra seguridad e inmunogenicidad y avanza en ensayos clínicos

**22 ene.** Basado en la experiencia en las investigaciones y producción de vacunas recombinantes, el Centro de Ingeniería Genética y Biotecnología (CIGB) desarrolla un proyecto encaminado a la obtención de la vacuna anticovid-19 Mambisa, cuya administración es por la vía nasal.

A diferencia de las vacunas inyectables, las vacunas que se administran por esta vía estimulan la inmunidad local en las mucosas nasales, sitio de entrada del SARS-CoV-2, lo que permite una neutralización temprana del patógeno.

El candidato vacunal Mambisa es una combinación de dos proteínas recombinantes: la proteína RBD de la espiga del virus SARS-CoV-2, y la proteína de la nucleocápsida del virus de la hepatitis B.

Investigaciones del CIGB han demostrado que la proteína de la nucleocápsida del virus de la hepatitis B tiene un potente efecto como adyuvante en la estimulación de la inmunidad nasal, lo cual condujo a su uso en la producción y registro sanitario de la vacuna terapéutica HeberNasvac contra la hepatitis B en 2015.

Ambos antígenos recombinantes son producidos en plataformas de expresión basadas en tecnologías empleadas durante más de 25 años para la producción de proteínas que han demostrado ser seguras, funcionales y eficaces como vacunas.

La vacuna Abdala fue diseñada para estimular una amplia respuesta inmunitaria que incluye tanto la inmunidad sistémica (IgG neutralizante) como la inmunidad local (IgA de la mucosa, células T) en la cavidad nasal y el tracto respiratorio. La inmunidad de la mucosa local es importante para bloquear la replicación del virus SARS-CoV-2. en la nariz, que es el punto de inicio y propagación de la enfermedad.

Estudios recientes han demostrado que, en ausencia de inmunidad de la mucosa, la cavidad nasal puede convertirse en un reservorio del coronavirus, poniendo al paciente en riesgo de reinfección o transmisión de la enfermedad a otros. La inmunidad de la mucosa nasal se estimula significativamente mediante la administración de una vacuna por vía intranasal.

El CIGB desarrolló un ensayo clínico fase I/II adaptativo, aleatorizado, de grupos paralelos, para evaluar la seguridad e inmunogenicidad en adultos del candidato vacunal Mambisa en 120 voluntarios convalecientes de COVID-19.

Durante la fase I se compararon tres dispositivos de administración nasal, dos de ellos en forma de atomización, y otro en forma de gotas.

Con los tres dispositivos, Mambisa demostró ser una vacuna segura. Los eventos adversos que se describieron fueron en su mayoría leves, y no se describieron eventos graves.



*Durante la fase I se compararon tres dispositivos de administración nasal, dos de ellos en forma de atomización, y otro en forma de gotas. Foto: BCF.*

En todos los grupos, Mambisa indujo respuesta anti-RBD en más de cuatro veces con respecto al nivel inicial, y se incrementó la capacidad inhibitoria frente al virus SARS-CoV-2 más del 20%, a nivel sistémico y en mucosa nasal. Actualmente transcurre la etapa de inclusión de sujetos voluntarios en estudio clínico fase II.

Además, se encuentra en curso el estudio clínico fase II Baconao para la evaluación de la inmunogenicidad y la seguridad de una dosis de refuerzo con Mambisa en 2220 individuos inmunizados con la vacuna Abdala, del CIGB.

Publicaciones recientes en importantes revistas científicas del mundo, así como relevantes especialistas de la inmunología a escala mundial, han señalado las grandes perspectivas y las ventajas potenciales de las vacunas nasales para el combate de la pandemia de la COVID-19. Sin embargo, actualmente solo 11 candidatos vacunales están en fases de investigación clínica, con el objetivo de que puedan ser usados por la vía de administración nasal, entre los cuales ha sido reconocido Mambisa.

El candidato vacunal Mambisa del CIGB es uno de los inmunógenos para uso nasal contra la COVID-19 con investigaciones más avanzadas en el mundo, y de elevada seguridad, en tanto se basa en antígenos proteicos producidos en una plataforma con antecedentes de uso seguro y eficaz por más de 25 años.

El CIGB es un complejo científico productivo integrante del grupo empresarial BioCubaFarma, dedicado a la investigación científica y la innovación, el desarrollo, la producción y la comercialización de productos, aplicaciones, medicamentos y vacunas de alto valor agregado.

Sus productos y proyectos de innovación se enfocan en áreas claves del sector biomédico como el diagnóstico, el tratamiento y la prevención de enfermedades infecciosas, autoinmunes, cardiovasculares, cerebrovasculares, oncológicas, dermatológicas, hematológicas, neurológicas, gastrointestinales, diabetes y cicatrización, así como para el control de plagas y enfermedades que afectan varias especies y géneros de plantas y animales, incluyendo especies acuáticas.

El CIGB también trabaja en el desarrollo de nuevos negocios con inversión extranjera, y amplía sus vínculos con otras entidades y con las universidades.

Fuente: Cubadebate. Disponible en <https://bit.ly/3rWPjT8>

## Cuba mostrará sus vacunas contra la Covid-19 en foro político internacional

**23 ene.** Cuba mostrará el próximo martes el desarrollo, regulación y despliegue de sus vacunas antiCovid-19, junto a la Internacional Progresista, en cuyo evento virtual figuran destacados científicos.

Los participantes describirán la implementación de la campaña de inmunización en la isla y el apoyo a las necesidades médicas de otros países, “todo frente a un bloqueo económico de seis décadas por parte de los Estados Unidos”, precisó el programa divulgado.



La sesión informativa, comenzará con una introducción de David Adler, coordinador general de la organización que agrupa a activistas de izquierda de todo el mundo, promotora de la Unión por el Internacionalismo de las Vacunas.

En un segundo turno, el director de Innovación e Industria del Grupo Biofarmacéutico BioCubaFarma, Rolando Pérez, ampliará el tema «Cómo Cuba desarrolló su exitosa producción local de vacunas».

Luego, la directora del Centro de Control Estatal de Medicamentos, Equipos y Dispositivos Médicos, Olga Lidia Jacobo, profundizará en «Cómo les va a los fármacos cubanos en términos de seguridad, eficacia y otros protocolos regulatorios».

La directora de Ciencia e Innovación Tecnológica del Ministerio de Salud Pública, Ileana Morales, a la par del investigador italiano Fabrizio Chiodo, centrarán su intervención en Cuba y su internacionalismo: Cómo puede ayudar el país a vacunar a otras naciones.

El evento cerrará con preguntas y respuestas a los expertos anteriores, a quienes se unirán la directora de Investigaciones del Instituto de Vacunas Finlay, Dagmar García, y el director de Investigación Biomédica del Centro de Ingeniería Genética y Biotecnología, Gerardo Guillén.

En un comunicado del pasado miércoles, la Internacional Progresista denunció que el banco neerlandés ING bloqueó donaciones a la delegación que viajaría a La Habana para apoyar el libre acceso a las vacunas contra la Covid-19 promovido por Cuba.

Tras tachar de escandalosa la decisión de la institución bancaria, la organización recordó que mientras los Estados europeos administran dosis de refuerzo, la mayoría de los habitantes de los países más pobres del planeta no han recibido ni siquiera una inyección contra el coronavirus SARS-CoV-2.

Frente a este apartheid de vacunas, Cuba emerge como un motor impulsor del internacionalismo con su promesa de compartir sus inmunizantes con el mundo, agregó.

La Internacional Progresista lanzó semanas atrás una campaña de recogida de fondos para financiar el viaje a La Habana de una delegación que organizará una sesión informativa especial sobre los esfuerzos que realiza la isla caribeña para producir sus propias vacunas contra la Covid-19, y su deseo de compartirlas con el planeta.

Fuente: Cubadebate. Disponible en <https://bit.ly/34V08fD>

## **Cuba trabaja en estudio clínico con Abdala en menores de dos años**

**25 ene.** El Centro de Ingeniería Genética y Biotecnología (CIGB) informó este martes que Cuba trabaja en un estudio clínico con la vacuna antiCovid-19 Abdala en menores de dos años de edad, ante la amenaza que el virus del SARS-CoV-2 supone para este grupo poblacional.

La nación, tras llevar a cabo una campaña masiva de inmunización para los infantes mayores de dos años, no reporta fallecidos en este segmento, reveló la víspera la investigadora principal de ensayos clínicos de la vacuna Soberana 02, María Eugenia Toledo.

“En total, 1.6 millones de pequeños han sido vacunados en este país con dos dosis de Soberana 02 más una de Soberana Plus en intervalo de 28 días”, aseguró.

Adicionalmente a los esfuerzos que se acometen para proteger a los niños, el CIGB se enfasca en demostrar la seguridad, inmunogenicidad y los efectos a largo plazo en la prevención de la Covid-19 del candidato vacunal nasal Mambisa con el estudio clínico Baconao.

El centro refirió asimismo que este inmunógeno se aplica por vía nasal, no contiene tiomersal e induce la generación de anticuerpos a nivel de mucosa, donde está la puerta de entrada del patógeno.

Actualmente, agregó, se evalúa en ensayo clínico fase II como dosis de refuerzo en convalecientes.

Justamente durante esta jornada científicos cubanos expondrán sobre el desarrollo, regulación y despliegue de los preparados antiCovid-19 (Abdala, Soberana 02 y Soberana Plus) de esta nación caribeña, durante un evento virtual convocado por la Organización Internacional Progresista.

Esa organización reconoció recientemente que la isla ha desarrollado sus propias vacunas, ha inmunizado con éxito a la mayoría de su población y ahora está preparada para ayudar a vacunar al mundo.

“Su enfoque se basa en dos principios: inversión en salud pública e internacionalismo”, alegó.

Fuente: Cubadebate. Disponible en <https://bit.ly/3gZytwK>

## Cuba presentará a la OMS expediente de vacunas contra la COVID-19

**25 ene.** Cuba presentará en los próximos días el expediente de sus vacunas antiCovid-19 a la Organización Mundial de Salud (OMS) para la certificación de los inmunógenos.

De acuerdo con varios medios internacionales, el director del Instituto Finlay de Vacunas de la nación caribeña (IFV), Vicente Verez, explicó a la prensa extranjera acreditada en la Isla que en 2021 se sostuvieron reuniones con la OMS.

Además, en los meses anteriores, científicos y autoridades de la Isla adelantaron trámites de reconocimiento ante las entidades reguladoras de países como México o Argentina como “un primer ejercicio” para mejorar el dossier final.

“El proceso demora meses y cuesta mucho. Nosotros tenemos datos clínicos muy valiosos, de un primer



Se trabaja en estudio clínico con #Abdala en niños menores de 2 años de edad, pues la #COVID19 está afectando estos grupos, y se impone trabajar con inmediatez. De las casi 34 millones de dosis administradas en Cuba, 28.6 millones son de Abdala de @CIGBCuba y @AicaLaboratorio.



7:45 a. m. · 25 ene. 2022



453



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nivel”, señaló el titular del IFV, institución a cargo de las vacunas Soberana 01, Soberana 02 y Soberana Plus.

Indicó que Abdala, otro de los productos cubanos contra la Covid-19, primero de América Latina y producida por el Centro de Ingeniería Genética y Biotecnología (CIGB), ya inició el proceso ante la OMS, aunque no informó la fecha específica.

Aún en términos de infraestructura y procesos productivos deben ajustarse algunos elementos, reconoció Vérez durante el encuentro con la prensa extranjera en recorrido del coordinador general de la Internacional Progresista, David Adler, este lunes por las instituciones científicas del país antillano.

En días pasados, puntualizó Vérez, las autoridades sanitarias de México dieron el visto bueno para Abdala y esta también cuenta con autorizos para su uso en emergencias en Vietnam, Venezuela, Nicaragua, San Vicente y las Granadinas. Hacia todos esos países se han exportado unas 18 millones de dosis.

Además, Soberana 02 y Soberana Plus tienen las certificaciones de uso de emergencia para los niños en Irán, Venezuela y Nicaragua.

Cuba cuenta actualmente con el 87.6% de su población con esquema completo de inmunización antiCovid-19 (9 801 110 personas), además del 43.2 con la cuarta inyección de refuerzo (4 770 523).

La nación caribeña desarrolló en total tres vacunas (Soberana 02, Soberana Plus y Abdala) y dos candidatos vacunales, Mambisa y Soberana 01.

Mambisa, a cargo también del CIGB, es una de las 11 diseñadas en todo el mundo para aplicar por la vía nasal.

Actualmente, transita por su fase II de ensayos clínicos que incluye a 928 voluntarios y ya demostró su seguridad e inmunogenicidad en la etapa de estudio anterior, donde el 78.5% de los sujetos vacunados mostraron respuesta de anticuerpos a nivel de mucosas, puerta de entrada del virus SARS-CoV-2.

Con ella también se realizará un ensayo fase I/II en convalecientes de la enfermedad para evaluar seguridad e inmunogenicidad de este producto y de Abdala.

Fuente: Cubadebate. Disponible en <https://bit.ly/3sJI7ZK>



*El director del Instituto Finlay de Vacunas de la nación caribeña (IFV), Vicente Vérez, explicó a la prensa extranjera acreditada en la Isla que en 2021 se sostuvieron reuniones con la OMS. Foto: Prensa Latina.*

## Vacunas cubanas muestran altos títulos de neutralización contra ómicron

**25 ene.** Un ensayo clínico de neutralización viral del Instituto de Medicina Tropical Pedro Kourí (IPK) demostró que las vacunas anti-COVID-19 Abdala y Soberana actúan efectivamente contra la variante ómicron del virus SARS-CoV-2, causante de la enfermedad.

Así explicó este martes, en la reunión de expertos y científicos que lideran las actividades de ciencia e innovación tecnológica en el enfrentamiento al nuevo coronavirus, la Doctora en Ciencias, Guadalupe Guzmán Tirado, jefa del Centro de Investigación, Diagnóstico y Referencia del Instituto de Medicina Tropical Pedro Kourí (IPK).

Según se conoció en la reunión acerca de dicho estudio, en vacunados con Soberana 02 y Abdala, el 90% o más de los vacunados se apreció seroconversión de anticuerpos a ómicron (la seroconversión es la transición del punto de la infección viral a cuando los anticuerpos del virus llegan a estar presentes en sangre). Y en el caso de quienes estaban reforzados con Soberana 01 y Abdala, el 100% mostró seroconversión de anticuerpos a ómicron.

“Estamos muy contentos”, dijo la científica en el encuentro presidido por el Primer Secretario del Comité Central del Partido Comunista, Miguel Díaz-Canel Bermúdez, así como por los viceprimeros ministros Inés María Chapman Waugh, y Jorge Luis Perdomo Di-Lella. Fue así de afirmativa, a propósito de lo que han arrojado estudios de los títulos de anticuerpos neutralizantes en sueros de vacunados con esquema completo y con refuerzo, frente a la variante ómicron.

Ante estos resultados que la Dra. C. calificó de muy buenos y que hablan positivamente del esquema de vacunación y de refuerzo en Cuba, el presidente Díaz-Canel extendió una felicitación a todos los artífices de tal logro por la vida.

No menos interesante resultó la intervención de la Dra. Lizet Sánchez Valdés, del Centro de Inmunología Molecular (CIM), quien aportó otras aristas alusivas a la epidemia de la COVID-19 a partir de tendencias numéricas. Entre otras ideas, la experta apuntó que la enfermedad se ha comportado en la Isla de un modo diferente a como ha podido verse en el resto del mundo. Así ha sido, dijo, por la acción de las vacunas y la implementación de medidas sanitarias que han sido quitadas en otras latitudes.

Hay que tener confianza en las vacunas cubanas –recalcó Lizet Sánchez–, quien recordó que una persona sin vacunar es un ser humano con alto riesgo de agravarse y de morir si es alcanzado por el nuevo coronavirus.

En cuanto a la enfermedad severa –subrayó– se está apreciando un desplazamiento hacia las edades más avanzadas. Y lo otro enunciado por la experta es que, en esta ola de ómicron no ha habido fallecidos en el universo de las edades pediátricas.

Sobre ese segmento poblacional, se hizo hincapié, en la reunión, en el hecho de que los niños menores de dos años (no vacunados) presentan un riesgo 2,5 veces mayor de enfermarse con relación a los que tienen entre dos y 18 años, y un riesgo dos veces mayor con respecto a la población general. Es una realidad que obliga a un esmerado cuidado de los más pequeños.

Fuente: CNN Español. Disponible en <https://cutt.ly/VYI9WY0>

De tres indicadores elocuentes sobre cómo en Cuba se manifiesta el comportamiento de la COVID-19 –tan diferente del mundo- habló Lizet Sánchez: la tasa de recuperación es de más del 97.50%; la letalidad acumulada (de 0.82, y de 0.14 en las últimas semanas) está muy por debajo de las cifras de países seleccionados para el análisis; al tiempo que la tasa acumulada de fallecidos por millón es muy inferior a la de los países de Europa y las Américas.

Cuba es el país más “envejecido” de América Latina y el Caribe, realidad que hace mayor el logro alcanzado en defensa de la vida a partir de la campaña de vacunación, teniendo en cuenta que las edades avanzadas son especialmente vulnerables a la pandemia. Así reflexionó el Dr. C. Antonio Aja Díaz, del Centro de Estudios Demográficos de la Universidad de La Habana, quien también recalcó: Ojalá nos unamos todos y continuemos educando a la totalidad de la población en los hábitos de cuidarnos.

#### De pronósticos y alertas

A partir de los habituales modelos de pronósticos que los números hacen posibles –y como resulta habitual-, el Doctor en Ciencias, Raúl Guinovart Díaz, decano de la Facultad de Matemática y Computación de la Universidad de La Habana, habló durante la reunión de científicos y expertos sobre cómo se comportará la epidemia por cada territorio, y en una mirada que abarca a todo el país. Según comentó el experto, se aprecia una tendencia al crecimiento rápido de la cifra de casos recuperados, los cuales ya sobrepasan al número de los casos activos. Tal comportamiento, dijo el profesor, obliga a que el número de casos activos disminuya.

“Estamos pasando la mitad de la ola de la COVID-19”, afirmó el matemático. E hizo una alerta acerca de cómo los gráficos indican que las cifras de fallecidos tienden a subir, con lo cual subrayó la necesidad de estar preparados para seguir protegiendo a las personas vulnerables.

Al respecto, el presidente Díaz-Canel resaltó la importancia de dar prioridad al tema de los vulnerables; y de poner especial empeño en la atención primaria de salud, “ver bien en cada lugar quiénes son los que tienen más vulnerabilidad, cómo los atendemos, cómo los aconsejamos para que se protejan, porque en los últimos días nos han aumentado un poquito los casos de críticos y graves, hay que ver los protocolos que estamos usando, que se mantenga todo lo que se previó aquí”.

En el mismo tono de análisis sobre cómo Cuba enfrenta la COVID-19, tuvo lugar después la reunión del grupo temporal de trabajo para la prevención y control de la epidemia, la cual estuvo encabezada por el presidente Díaz-Canel Bermúdez, y por ministro de Salud Pública (Minsap), José Angel Portal Miranda.

La videoconferencia permitió el intercambio de la dirección del país con las autoridades de todas las provincias y del municipio especial Isla de la Juventud. Y el punto de partida del encuentro estuvo a cargo del titular del Minsap, quien informó que en los últimos 14 días fueron diagnosticados en el país, como casos positivos, 44 765 personas, para una tasa de incidencia de 400,2 por cada 100 000 habitantes. Mantiene el indicador más elevado, informó Portal Miranda, el municipio especial Isla de la Juventud, y las provincias de Mayabeque, Las Tunas, Cienfuegos, Artemisa, Ciego de Ávila, Pinar del Río, Guantánamo, y Sancti Spiritus.

Cada verdad científica, cada reflexión de jornadas como la de este martes, derivan en conceptos que siguen trazando las líneas para el trabajo. Sobre el importante encuentro, por ejemplo, el presidente Díaz-Canel compartía desde su cuenta en Twitter dos ideas nacidas de la reflexión colectiva:



“Lo hemos analizado con expertos del Minsap: aun cuando las muertes por covid-19 han descendido mucho, están falleciendo ancianos con varias enfermedades de base. Hago un llamado a nuestras familias, a nuestras comunidades, para que cuiden a las personas más vulnerables”

Y sobre los más pequeños, ha escrito el Jefe de Estado: “También pongamos cuidado con los niños menores de dos años, que no han recibido ninguna vacuna y son los más expuestos a la covid-19. Para ellos nuestros científicos buscan alternativas con urgencia; mientras tanto solo la protección familiar los mantendrá a salvo del virus”.

Fuente: Cubadebate. Disponible en <https://bit.ly/3oYv85e>

## Diputados franceses instan a su Gobierno a autorizar vacunas cubanas contra la COVID-19

**26 ene.** Un grupo de 26 diputados franceses instó este miércoles al Gobierno de su país a autorizar el uso de vacunas cubanas contra la covid-19, sobre todo en los territorios de ultramar que lo soliciten.

En una carta enviada al primer ministro Jean Castex, pidieron que se evalúe cuanto antes esa posibilidad, así como definir las modalidades de decisión en ese sentido.

De acuerdo con los parlamentarios firmantes, la imagen positiva que ofrece Cuba en materia de salud y la tecnología utilizada por la isla en sus vacunas Abdala y Soberana 02, diferente de la del ARN mensajero, “serían capaces de tranquilizar a una parte de nuestros compatriotas en territorios de ultramar”.

Al respecto, señalaron la desconfianza en esas regiones después del sufrimiento que ocasionaron a sus habitantes el escándalo de la clordecona y los ensayos nucleares, hechos a los que en parte atribuyeron el rechazo a vacunarse y las bajas tasas de inmunización.

Durante casi dos décadas a finales del siglo pasado, el insecticida clordecona fue utilizado en las plantaciones bananeras, con consecuencias fatales para los seres humanos y el medioambiente en Guadalupe y Martinica.

La misiva enviada a Castex la suscribieron 19 miembros de diversos partidos del Grupo de Amistad Francia Cuba de la Asamblea Nacional, encabezados por su presidente François-Michel Lambert, y siete diputados que no pertenecen al mismo, entre ellos el líder comunista y candidato presidencial Fabien Roussel.

En esta pandemia compartimos la idea de una estrategia de vacunación de los franceses lo más amplia posible con el objetivo de contener la covid-19, y el acceso a Abdala y Soberana 02, ambas en proceso de certificación de la Organización Mundial de la Salud, permitiría aumentar la tasa de protección de nuestra población, subrayaron.

El embajador cubano en Francia, Otto Vaillant, conversó este miércoles con varios de los diputados promotores de la iniciativa, a quienes agradeció su solidaridad con la isla, asediada durante más de 60 años de bloqueo económico, comercial y financiero impuesto por Estados Unidos.

A mediados de este mes, Lambert propuso el acceso a las vacunas cubanas en una sesión de la Asamblea Nacional francesa.

Fuente: Cubadebate. Disponible en <https://bit.ly/3p0hPBh>



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## Patentes registradas en Patentscope

Estrategia de búsqueda: *Vaccine in the title or abstract AND 20220101:20220131 as the publication date 119 records.*

### 1.WO/2022/002180CONSTRUCTION AND APPLICATION OF FUSION PROTEIN VACCINE PLATFORM

WO - 06.01.2022

Clasificación Internacional [A61K 38/21](#) N° de solicitud PCT/CN2021/103931 Solicitante INSTITUTE OF BIOPHYSICS, CHINESE ACADEMY OF SCIENCES Inventor/a FU, Yangxin

The present invention relates to the construction and application of a fusion protein vaccine platform. The present invention provides a vaccine, comprising a fusion protein containing an interferon-target antigen-immunoglobulin Fc region (or antibody) and a Th cell helper epitope. The present invention also relates to use of a fusion protein containing an interferon-target antigen-immunoglobulin Fc region (or antibody) and a Th cell helper epitope in the preparation of prophylactic or therapeutic compositions. The vaccine of the present invention can be produced by eukaryotic cell expression systems to prepare wild-type and various mutant antigen vaccines, and vaccination by means of subcutaneous/muscular or nasal or other routes can lead to a strong immune response to a body. The vaccine of the present invention can be used as a prophylactic or therapeutic vaccine.

### 2.WO/2022/004620METHOD FOR MANUFACTURING COMPOSITION INCLUDING ANTIGEN-SPECIFIC ANTIBODY-PRODUCING CELLS, METHOD FOR MANUFACTURING VACCINE COMPOSITION, CELL SEPARATION KIT, AND VACCINE COMPOSITION

WO - 06.01.2022

Clasificación Internacional [C12N 5/0781](#) N° de solicitud PCT/JP2021/024262 Solicitante NPT CO., LTD. Inventor/a HARA Kenichiro

Provided are a method for manufacturing a composition that includes antigen-specific antibody-producing cells whereby a novel vaccine strategy can be realized, a method for manufacturing a vaccine composition, a cell separation kit, and a vaccine composition. This method for manufacturing a composition that includes antigen-specific antibody-producing cells for producing antigen-specific antibodies includes: a step (1) for bringing acquired peripheral-blood mononuclear cells into contact ex vivo with a cytokine and CD40 ligand together with a soluble antigenic substance; a step (2) for separating specific B cells that are specific to the soluble antigenic substance, and nonspecific B cells that

are not specific to the soluble antigenic substance, subsequent to step (1); and a step for culturing the separated specific B cells together with the cytokine and CD40 ligand ex vivo, subsequent to step (2).

### 3.WO/2022/000201IMMUNOPOTENTIATOR AND APPLICATION THEREOF IN AVIAN INFLUENZA VACCINE

WO - 06.01.2022

Clasificación Internacional [A61K 39/39](#) N° de solicitud PCT/CN2020/099023 Solicitante ZHAOQING DAHUANONG BIOLOGY MEDICINE CO., LTD Inventor/a ZHANG, Wenyan

Provided is an immunopotentiator, containing agaric polysaccharide and avian flu vaccine; by means of the use of agaric polysaccharide and bird flu vaccine, synergy on the effectiveness is produced, which can enhance the activity of the avian influenza vaccine and result in an ideal immunological effect. The avian influenza vaccine employing said immunopotentiator is used throughout the immunization period; in comparison with avian influenza vaccine without the adjuvant, the antibody titer of the immune expression is significantly increased.

### 4.WO/2022/000845RECOMBINANT PROTEIN VACCINE FOR PREVENTING SARS-COV-2 AND PREPARATION METHOD THEREFOR

WO - 06.01.2022

Clasificación Internacional [C07K 14/165](#) N° de solicitud PCT/CN2020/119701 Solicitante JIANGSU PROVINCIAL CENTER FOR DISEASE CONTROL AND PREVENTION (PUBLIC HEALTH RESEARCH INSTITUTE OF JIANGSU PROVINCE) Inventor/a ZHU, Fengcai

A target amino acid sequence of a SARS-CoV-2 recombinant protein vaccine, a target gene sequence of the recombinant protein vaccine, a eukaryotic cell expression vector containing the target gene sequence, a cell expressing the target amino acid sequence, and the recombinant protein vaccine having the target amino acid sequence as an antigen. The recombinant protein vaccine can effectively induce a body to produce cellular immunity and humoral immunity, can be quickly prepared, and is suitable for the prevention of novel coronavirus.

### 5.WO/2022/000205AVIAN INFLUENZA VACCINE ADJUVANT AND USE THEREOF

WO - 06.01.2022

Clasificación Internacional [A61K 39/39](#) N° de solicitud PCT/CN2020/099030 Solicitante ZHAOQING DAHUANONG BIOLOGY MEDICINE CO., LTD Inventor/a ZHANG, Wenyan

A mussel polysaccharide, used in combination with an avian influenza vaccine. The two have a synergistic effect that leads to enhanced activity of the avian influenza vaccine, resulting in ideal immunization effects. An avian influenza vaccine containing the present adjuvant allows for the expression of significantly higher antibody titer levels over the entire immune period compared to avian influenza vaccines not containing said adjuvant.

### 6.WO/2022/003155A DNA PLASMID SARS-CORONAVIRUS-2/COVID-19 VACCINE

WO - 06.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/EP2021/068324 Solicitante STATENS SERUM INSTITUT Inventor/a STRANDH, Charlotta Polacek

The present invention relates to DNA vaccine against SARS-Coronavirus-2 (SARS-CoV-2) infection. In particular, the present invention relates to a DNA vaccine encoding the SARS-Coronavirus-2 spike protein for use in prevention or treatment of viral infection in humans and/or animals. The DNA vaccine including the DNA construct has several features in its design that together provide a more safe and broad protection against SARS-CoV-2 strains in humans and animals, e.g. mink, ferrets, pigs and cats. The DNA construct encodes the SPIKE protein derived from the pandemic strain; Wuhan-Hu-1 (MN908947). The sequence is codon optimized for high expression in human and mammalian cells and the DNA construct is inserted in a selected DNA plasmid for eukaryotic in vivo and in vitro expression. The

combination of the choice of SARS-CoV-2 SPIKE sequence, codon optimization, expression in the new generation eukaryotic expression plasmid with no antibiotic resistance marker (instead the RNA-OUT system is used for safety) and delivery to the very immunogenic skin, results in protection against SARS-CoV-2 infection and covid-19 disease.

#### 7.WO/2022/003021ADAM17 INHIBITORS FOR USE IN THE PREVENTION AND/OR TREATMENT OF COVID-19

WO - 06.01.2022

Clasificación Internacional [A61K 31/341](#) N° de solicitud PCT/EP2021/067992 Solicitante MAX-DELBRÜCK-CENTRUM FÜR MOLEKULARE MEDIZIN IN DER HELMHOLTZ-GEMEINSCHAFT Inventor/a DE LA ROSA, Kathrin

The invention relates to an ADAM17 inhibitor for use in the prevention and/or treatment of COVID-19 in a subject. The invention further relates to a pharmaceutical composition comprising an ADAM17 inhibitor as an active ingredient for use in the prevention and/or treatment of COVID-19 in a subject. The invention further relates to a kit of parts for use in the prevention and/or treatment of COVID-19 in a subject comprising i) an ADAM17 inhibitor and ii) a vaccine. The invention further relates to a pharmaceutical composition comprising an ADAM17 inhibitor and an active immunization vaccine. The invention further relates to a kit of parts comprising i) an ADAM17 inhibitor and ii) an active immunization vaccine. The invention further relates to a method of preventing and/or treating COVID-19 in a subject, in the need thereof.

#### 8.WO/2022/003138IMMUNOTHERAPY

WO - 06.01.2022

Clasificación Internacional [A61K 35/15](#) N° de solicitud PCT/EP2021/068267 Solicitante TCER ONCOLOGY AB Inventor/a GRÖNLUND, Hans

The present invention provides an in vitro method for the manufacture of a dendritic cell (DC) cancer vaccine, said method comprising the steps of: (i) providing a plurality of phagocytosable particles, wherein each phagocytosable particle comprises a core and an antigenic construct tightly associated to the core, wherein the antigenic construct comprises at least one epitope peptide having an amino acid sequence corresponding to an amino acid sequence of a part of a protein or peptide known or suspected to be expressed by a cancer cell in a subject; (ii) providing a sample of DCs; and (iii) contacting the sample of DCs with the plurality of phagocytosable particles in vitro and under conditions allowing for the phagocytosis of at least one phagocytosable particle by a DC. The present invention also provides a DC cancer vaccine produced by the method of the invention, and the use of a DC cancer vaccine of the invention as a medicament and for the ex vivo expansion of anticancer T-cells.

#### 9.WO/2022/003999PRE-ERYTHROCYTIC MALARIA VACCINES

WO - 06.01.2022

Clasificación Internacional [A61K 39/39](#) N° de solicitud PCT/JP2020/044675 Solicitante PATH Inventor/a THEISEN, Michael

Pre-erythrocytic malaria vaccines with good preservation stability and immunostimulatory action are provided. According to the present invention, combination use of a pharmaceutical composition comprising (4E,8E,12E,16E,20E)-N-{2-[[4-[(2-amino-4-[(3S)-1-hydroxyhexan-3-yl]amino]-6-methylpyrimidin-5-yl)methyl]benzyl](methyl)amino]ethyl}-4,8,12,17,21,25-hexamethylhexacosan-4,8,12,16,20,24-hexaeneamide, or a pharmaceutically acceptable salt thereof, as a vaccine adjuvant with enhanced specific immune response against antigens and good preservation stability and a malaria vaccine with biological activity allow for the provision of pre-erythrocytic malaria vaccines with good preservation stability and immunostimulatory action.

#### 10.WO/2022/006259IMMUNOSTIMULATORY COMPOSITIONS AND METHODS

WO - 06.01.2022

Clasificación Internacional [A61K 39/145](#) N° de solicitud PCT/US2021/039869 Solicitante REVELATION BIOSCIENCES, INC. Inventor/a TIDMARSH, George, F.

Provided herein are methods of enhancing an immune response to a vaccine in a subject comprising concurrently administering the vaccine and an immunostimulatory composition comprising PHAD to the subject.

11.WO/2022/005893ADAPTIVE VACCINE STOCKPILE

WO - 06.01.2022

Clasificación Internacional [G06Q 10/06](#) N° de solicitud PCT/US2021/039088 Solicitante SEQIRUS UK LIMITED Inventor/a BOLLANDS, Allen

A method of selectively providing access to an inventory of pre-pandemic vaccines is disclosed. The method includes identifying at least two Influenza Viruses of Pandemic Potential (IVPP) to provide available vaccines; determining a stockpile requirement for vaccines against selected IVPPs among the at least two IVPPs; obtaining finished vaccines against each of the selected IVPPs; storing an inventory of finished vaccines against each of the selected IVPPs; providing the finished vaccines against at least one of the selected IVPPs in response to an access request; and periodically obtaining further finished vaccines against one or more of the selected IVPPs and adding the further finished vaccines to the inventory of finished vaccines. Additionally disclosed are methods of selecting the inventory of finished vaccines for an adaptive vaccine stockpile.

12.WO/2022/006565POLYPEPTIDES, VACCINE COMPOSITIONS, AND USE THEREOF FOR INDUCING IMMUNE RESPONSE TO SARS-COV-2 IN PRIMATES

WO - 06.01.2022

Clasificación Internacional [A61P 31/14](#) N° de solicitud PCT/US2021/040583 Solicitante ZHANG, Kang Inventor/a ZHANG, Kang

Disclosed herein, in some embodiments, are methods and compositions for inducing an immune response against SARS-CoV -2 in a primate in need thereof with a recombinant polypeptide, wherein the at least a portion of the recombinant polypeptide corresponds to an amino acid residue sequence within the Receptor Binding Domain (RBD) of SARS-CoV-2 spike protein capable of forming a binding interface that interacts with a viral receptor of the primate.

13.WO/2022/002894VACCINE COMBINATION AGAINST RESPIRATORY SYNCYTIAL VIRUS INFECTION

WO - 06.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/EP2021/067776 Solicitante JANSSEN VACCINES & PREVENTION B.V. Inventor/a CALLENDRET, Benoit, C.,S.

Methods of safely inducing a protective immune response against respiratory syncytial virus (RSV) and methods of preventing infection and/or replication of RSV in human subjects are described. The methods include administering to the subjects (a) an effective amount of an adenoviral vector encoding a recombinant RSV F protein that is stabilized in a pre-fusion conformation, and (b) an effective amount of an RSV F protein that is stabilized in a pre-fusion conformation.

14.WO/2022/003119CROSS-REACTIVE CORONAVIRUS VACCINE

WO - 06.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/EP2021/068214 Solicitante CEBINA GMBH Inventor/a NAGY, Eszter

A chimeric antigen comprising a peptide fusion comprising one or more sets of peptides, wherein each peptide of the same set comprises or consists of an amino acid sequence consisting of at least 6 contiguous amino acids (aa) originating from the same region of a coronavirus protein of different



coronavirus species, or comprising one or more sets of peptides, wherein each peptide of the same set comprises or consists of at least 6 contiguous amino acids (aa) originating from different regions from the same coronavirus species, wherein said region(s) is/are selected from the group consisting of: a) the N-terminal region aa1-17 (N-region) of the M-protein, (N-peptides), b) the C-terminal region aa194-222 (C'-region) of the M-protein, (C'-peptides); c) the region spanning aa139 to 177 (C"-region) of the M-protein (C"-peptides); d) the region spanning aa550-580 in the S1 domain (Sa-region) of the S-protein, (Sa-peptides); e) the region spanning aa676-71Q around the furin cleavage site separating the S1 and S2 regions (Sb-region) of the S-protein, (Sb-peptides); f) the region spanning aa929-952 in the S2 domain (Sc-region) of the S-protein, (Sc-peptides), wherein numbering of aa positions is according to the sequence of the respective SARS-CoV-2 M- or S-protein.

15.WO/2022/003719POLYPEPTIDE FRAGMENTS, IMMUNOGENIC COMPOSITION AGAINST SARS-CoV-2, AND IMPLEMENTATIONS THEREOF

WO - 06.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/IN2021/050631 Solicitante INDIAN INSTITUTE OF SCIENCE Inventor/a VARADARAJAN, Raghavan

The present disclosure discloses the polypeptide fragment having an amino acid sequence with at least 95% identity to the amino acid sequence selected from the group consisting of SEQ ID NO: 2, SEQ ID NO: 4, and SEQ ID NO: 6. The present disclosure also discloses nucleic acid fragment encoding the polypeptide fragment as described herein. Moreover, the present disclosure also discloses recombinant construct, recombinant vector and recombinant host cells. Also disclosed herein is an immunogenic composition comprising the polypeptide fragment as described herein, and a method for preparing the said immunogenic composition. The immunogenic composition is in form of vaccine. The polypeptide fragment and/or immunogenic composition is capable of eliciting protection against severe acute respiratory syndrome coronavirus 2. A kit comprising the polypeptide, or the immunogenic composition as described herein is also disclosed.

16.WO/2022/002160USE OF PCSK9 INHIBITOR IN PREPARATION OF PRODUCT FOR TREATING MULTIPLE DISEASES

WO - 06.01.2022

Clasificación Internacional [A61K 31/437](#) N° de solicitud PCT/CN2021/103749 Solicitante CHEN, Min Inventor/a CHEN, Min

Provided in the present invention is the use of a proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitor in a product for treating multiple diseases. The PCSK9 inhibitor is a PCSK9 small molecule compound, or a PCSK9 interfering RNA, or a PCSK9 monoclonal antibody, or a PCSK9 mimetic peptide, or a PCSK9 mimetic antibody protein, or a PCSK9 antisense oligonucleotide or a PCSK9 vaccine.

17.WO/2022/003560COLD FILTRATION OF OIL-IN-WATER EMULSION ADJUVANTS

WO - 06.01.2022

Clasificación Internacional [A61K 9/107](#) N° de solicitud PCT/IB2021/055810 Solicitante SEQIRUS UK LIMITED Inventor/a DUNN, Stephen

The present disclosure relates to the method of filtering emulsions at cold temperatures. Specifically, cold filtration of emulsion adjuvants for vaccine manufacture is discussed.

18.WO/2022/002077ARYL AROMATIC HETEROCYCLIC DERIVATIVE AND PREPARATION METHOD THEREFOR AND USE THEREOF

WO - 06.01.2022

Clasificación Internacional [C07D 333/60](#) N° de solicitud PCT/CN2021/103255 Solicitante HAIHE BIOPHARMA CO., LTD. Inventor/a LI, Leping

Disclosed in the present invention are an aryl aromatic heterocyclic derivative and preparation thereof and use thereof. The structure is as shown in formula I, and in this formula, the definitions of substituents are as stated in the description and the claims. The compound of the present invention can be used as a STING agonist, used for treatment of tumors and infectious diseases, or used as an immune composition or a vaccine adjuvant.

#### 19. WO/2022/005503 STABILIZED CORONAVIRUS SPIKE (S) PROTEIN IMMUNOGENS AND RELATED VACCINES

WO - 06.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/US2020/053714 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.

#### 20. [WO/2022/008848](#) METHOD FOR PREPARING A VACCINE COMPOSITION FROM LYOPHILISED ANTIGENS

WO - 13.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud PCT/FR2021/051270 Solicitante VAXINANO Inventor/a BETBEDER, Didier

The invention relates to the field of extemporaneous preparation of vaccine compositions from lyophilised antigens. More specifically, the invention relates to the use of cationic nanoparticles to render the lyophilised antigens more soluble without adding a lyophilisation aid, with a view to extemporaneous use for administering a vaccine composition. In a particular embodiment, the invention allows a vaccine formulation to be prepared or one or more valencies to be added to a previously formulated vaccine composition.

#### 21. [20220008332](#) MICRONEEDLE ARRAY CONTAINING INFLUENZA VACCINE AND METHOD OF PRODUCING MICRONEEDLE ARRAY

US - 13.01.2022

Clasificación Internacional [A61K 9/00](#) N° de solicitud 17486137 Solicitante FUJIFILM Corporation Inventor/a Koki KABATA

An object of the present invention is to provide a microneedle array in which the stability of influenza vaccine during production is satisfactory and the utilization efficiency of the influenza vaccine is high, and a method of producing the same. According to the present invention, provided is a self-dissolving microneedle array including a sheet portion, and a plurality of needle portions which are present on an upper surface of the sheet portion, in which the needle portion contains a saccharide, influenza vaccine, a natural amino acid or a salt thereof, and a surfactant and the influenza vaccine is administered into a body by dissolution of the needle portions.

#### 22. [WO/2022/014695](#) PREVENTIVE AGENT FOR JAPANESE ENCEPHALITIS AND JAPANESE ENCEPHALITIS VACCINE

WO - 20.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/JP2021/026729 Solicitante FUJIFILM CORPORATION Inventor/a OYAMADA Takayoshi

The present invention addresses the problem of providing a preventive agent for Japanese encephalitis and a Japanese encephalitis vaccine that are capable of giving humans adequate immunity even with a dose smaller than that for a subcutaneously-administered Japanese encephalitis vaccine or with fewer administrations as compared to the number of administrations of a subcutaneously-administered Japanese encephalitis vaccine. The present invention provides a preventive agent for Japanese encephalitis, which includes a microneedle array that comprises a sheet and a plurality of needles disposed on the top surface of said sheet, the needles being configured to either include or carry thereon inactivated Japanese encephalitis virus.

23. [20220008525](#)CANCER SPECIFIC FRAMESHIFT VACCINES

US - 13.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud 17310461 Solicitante Arizona Board of Regents on Behalf of Arizona State University Inventor/a Stephen Albert JOHNSTON

A method of producing a vaccine for a cancer and/or tumor and stage of interest is disclosed. The method includes identifying a first population of peptides that are immunoreactive with a set of biological samples obtained from a set of test subjects that have been identified as having the cancer and/or tumor of interest, and preparing a cancer vaccine composition for the cancer of interest, wherein the cancer vaccine composition comprises a second population of peptides comprising one or more peptides in the first population or a nucleic acid sequence encoding the one or more peptides, thereby producing the vaccine for the cancer and/or tumor of interest. Also disclosed are vaccine compositions and methods of use thereof.

24. [WO/2022/012604](#)SUBUNIT VACCINE COMPOSITION FOR AFRICAN SWINE FEVER, AND PREPARATION THEREFOR AND USE THEREOF

WO - 20.01.2022

Clasificación Internacional [C07K 14/01](#) N° de solicitud PCT/CN2021/106375 Solicitante NOVO BIOTECH CORP. Inventor/a ZHANG, Qiang

Disclosed are a subunit vaccine composition for African swine fever, and a preparation therefor and the use thereof, which fall within the technical field of animal vaccines and veterinary biological products. The vaccine comprises African swine fever outer envelope protein CD2V and African swine fever outer capsid protein p72 and a pharmaceutically acceptable adjuvant. The method for preparing the vaccine comprises the following steps: 1) preparing the African swine fever outer envelope protein CD2V and the African swine fever outer capsid protein p72; 2) mixing the African swine fever outer envelope protein CD2V with the African swine fever outer capsid protein p72 prepared in step 1), so as to prepare an antigen solution; and 3) emulsifying the antigen solution and ISA 201 VG at a volume ratio of 46:54.

25. [WO/2022/015124](#)VACCINE COMPOSITION FOR PREVENTING SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 INFECTION

WO - 20.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/KR2021/009290 Solicitante GENEONE LIFE SCIENCE, INC. Inventor/a PARK, Young Keun

The present invention relates to a vaccine composition for preventing severe acute respiratory syndrome coronavirus 2 infection. The vaccine composition for preventing severe acute respiratory syndrome coronavirus 2 infection, according to the present invention, comprises spike, ORF3a, or nucleocapsid as an antigen against SARS-CoV-2. The vaccine composition has a significant effect of inducing antibody immune responses and T-cell immune responses by a plurality of co-expressed antigens compared to those comprising one antigen, and thus can be variously used in the field of prevention of severe acute respiratory syndrome coronavirus 2 infection.

26. [WO/2022/011231](#)ESCAPE PROFILING FOR THERAPEUTIC AND VACCINE DEVELOPMENT

WO - 13.01.2022

Clasificación Internacional [G16B 40/30](#) N° de solicitud PCT/US2021/041044 Solicitante HIE, Brian Inventor/a HIE, Brian

A method of viral escape profiling is used in association with antiviral or vaccine development. The method begins by training a language-based model against training data comprising a corpus of viral protein sequences of a given viral protein to model a viral escape profile. The viral escape profile represents, for one or more regions of the given viral protein, a relative viral escape potential of a mutation, the relative viral escape potential being derived as a function that combines both "semantic change," representing a degree to which the mutation is recognized by the human immune system (i.e., antigenic change), and "grammaticality," representing a degree to which the mutation affects viral infectivity (i.e. viral fitness). Using the model, a region of the given viral protein having an escape potential of interest is identified. Information regarding the region is then output to a vaccine or anti-viral therapeutic design and development workflow.

27. [20220013194](#) Escape profiling for therapeutic and vaccine development

US - 13.01.2022

Clasificación Internacional [G16B 40/30](#) N° de solicitud 17322649 Solicitante Brian Hie Inventor/a Brian Hie

A method of viral escape profiling is used in association with antiviral or vaccine development. The method begins by training a language-based model against training data comprising a corpus of viral protein sequences of a given viral protein to model a viral escape profile. The viral escape profile represents, for one or more regions of the given viral protein, a relative viral escape potential of a mutation, the relative viral escape potential being derived as a function that combines both "semantic change," representing a degree to which the mutation is recognized by the human immune system (i.e., antigenic change), and "grammaticality," representing a degree to which the mutation affects viral infectivity (i.e. viral fitness). Using the model, a region of the given viral protein having an escape potential of interest is identified. Information regarding the region is then output to a vaccine or anti-viral therapeutic design and development workflow.

28. [20220010535](#) Siphon Drive Shower

US - 13.01.2022

Clasificación Internacional [E03C 1/04](#) N° de solicitud 17300473 Solicitante Benjamin Martin Haneckow Inventor/a Benjamin Martin Haneckow

Thermo therapy method, device providing user of method, patient using method, an intermittent, actuation, cycle, of a water supply pipe, water source, medium source water in relation, juxtapose with means to adjust conditions, dimensions of start point, temperature, volume, location, time, repetitions, pressure, ambient temperature, relating to an experience, a prescription. Thermo therapy can actuate, cycle, dump with a siphon driven apparatus. A siphon drive shower. Which can be purpose built. Can be retro fit with plumbing, fixture, supply, drain. Can be new use of existing item; including a shower curtain rod. Producing any feature quality activity found useful including and not limited to immune system booster, pre vaccine preparation, post vaccine recovery, side effect minimization, vaccine booster, virus mitigation, therapeutic modality, weight management, exercise modality, stress management; manual operations of stretching, breathwork, meditation, Yoga, Tai Chi. Additionally the electronic exchange, communication, recording of information user, patient find useful.

29. [WO/2022/007800](#) RECOMBINANT ADENOVIRUS VACCINE FOR AFRICAN SWINE FEVER AND METHOD FOR CONSTRUCTING SAME

WO - 13.01.2022

Clasificación Internacional [C12N 15/85](#) N° de solicitud PCT/CN2021/104793 Solicitante JIAXING ANYU BIOTECHNOLOGY CO., LTD Inventor/a CHEN, Ping

An African swine fever virus vaccine comprising five groups. Each group is obtained by constructing a recombinant adenoviral vector co-expressed by four antigen genes of African swine fever virus and packaging the same using 293TD37 cells. The four antigen genes of African swine fever virus of each group are respectively: (1) P72, B602L, P30 and P54; (2) C129Rubiquitin, MGF5L6L, CP312R and MGF110-4L; (3) L8Lubiquitin, I215L, I73Rhbsag and E146L; (4) EP402R, EP153R, I177L and K205Rubiquitin; and (5) F317L, A151R, P34 and pp62. The recombinant adenoviral vector co-expressed by the four antigen genes of African swine fever virus is constructed primarily through the knockout of E1, E3, E2a and E4 genes of the adenoviral vector using CRISPR/cas9. The ORF6/7 expression cassette of E4 is then constructed in an E2a region, and shuttle plasmids are constructed in the E1 region and the E4 region respectively for expressing four suitable antigen genes, thereby obtaining a new adenoviral vector. The capacity of the vector is approximately 3kb larger than a first-generation adenovirus vector. The vector is packaged using a 293TD37 cell line to obtain a high-titer recombinant adenovirus for making the recombinant adenovirus vaccine for African swine fever.

30. [WO/2022/007905](#) NOVEL VACCINE ADJUVANT AND USE THEREOF IN NOVEL CORONAVIRUS VACCINES AND OTHER VACCINES

WO - 13.01.2022

Clasificación Internacional [A61K 39/39](#) N° de solicitud PCT/CN2021/105297 Solicitante TSINGHUA UNIVERSITY Inventor/a LI, Yanmei

The present invention relates to the field of biomedicine, and in particular to a novel vaccine adjuvant and the use thereof in novel coronavirus disease vaccines and other vaccines. A chemically modified cyclic dinucleotide, i.e. an SF compound, can be used as a vaccine adjuvant to be combined with the novel coronavirus disease vaccines.

31. [20220008524](#) VACCINATION WITH MICROVESICLES DERIVED FROM TUMOUR CELLS FOR CANCER TREATMENT

US - 13.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud 17264551 Solicitante Benjamin Pineda Olvera Inventor/a Benjamin Pineda Olvera

The present invention relates to microvesicles derived from natural tumor cells and tumor cells produced in vitro under a stress stimulus, such as radiation, which can be used in an effective manner as a therapeutic vaccine for cancer. The invention also relates to a therapeutic vaccine formulation containing the microvesicles, processes for the preparation and medical use thereof as a therapeutic vaccine to stimulate the antitumor immune system and treat cancer.

32. [WO/2022/014620](#) SARS-CoV-2 VACCINE

WO - 20.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/JP2021/026368 Solicitante BIOCOMO INCORPORATION Inventor/a FUKUMURA Masayuki

A vaccine that comprises, as an active ingredient, a viral vector which comprises a sequence containing any of the following amino acid sequences (a) to (c) and in which an induced neutralizing antibody presents, on the viral particle envelope, a protein inhibiting the binding of SARS-CoV-2 receptor binding domain (RBD) to human angiotensin-converting enzyme 2 (hACE2). (a) An amino acid sequence represented by SEQ ID NO: 1; (b) an amino acid sequence represented by SEQ ID NO: 1 in which one to several amino acids have been deleted, inserted, substituted or added; and (c) an amino acid sequence having a sequence identity of 80% or more to the amino acid sequence represented by SEQ ID NO: 1.

33. [WO/2022/007774](#) NOVEL CHIMPANZEE ADENOVIRUS VECTOR, CONSTRUCTION METHOD THEREFOR, AND APPLICATION THEREOF

WO - 13.01.2022

Clasificación Internacional [C12N 15/34](#) N° de solicitud PCT/CN2021/104641 Solicitante JIAXING ANYU BIOTECHNOLOGY CO., LTD Inventor/a CHEN, Ping

A novel chimpanzee adenovirus vector, a construction method therefor, and an application thereof. The chimpanzee adenovirus vector has higher virus titer, and a measurement method for the virus titer thereof is provided. An annular chimpanzee adenovirus vector is constructed by means of a shuttle plasmid, and E1 and E3 are knocked out by means of CRISPR/Cas9, thus a replication-deficient chimpanzee adenovirus vector is constructed. The chimpanzee adenovirus vector has no pre-existing antibody in people; E1 and E3 knockout is secure, and is significantly different from human adenovirus 5 type E1 in 293 cells; the chimpanzee adenovirus vector can greatly avoid recovery mutation (RCA) and is more secure. A constructed novel coronavirus vaccine is strong in vaccine stability after dozens of generations, does not cause mutation, and can induce strong humoral immunity and cellular response in a mouse model.

34. [WO/2022/013089](#) A VACCINE ADMINISTRATION APPARATUS AND SINGLE DOSE CHAMBERS  
WO - 20.01.2022

Clasificación Internacional [A61M 15/00](#) N° de solicitud PCT/EP2021/069140 Solicitante STAMFORD DEVICES LIMITED Inventor/a POWER, John

A single dose aerosol chamber (110) is used with a dispensing apparatus (100) by users to take a chamber (110), fill the chamber with an aerosolized vaccine (104), and dispose of used chambers (120). A display (103) provides instructions to encourage prompt inhalation by the user from a dispensed and filled chamber. The station allows very fast administration of vaccines to large numbers of people. The aerosol dispenser apparatus detects the chamber is in correct position and delivers a pre-determined dose of aerosol. The chamber has a nebulizer delivery port (114) optimized for delivery of aerosol into the chamber container (111) and to act as a vent during inhalation via the inhalation port (115).

35. [WO/2022/011021](#) USE OF CONSERVED PEPTIDE EPITOPES FROM SARS-COV-2 FOR THE DEVELOPMENT OF A BROAD COVID-19 VACCINE

WO - 13.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/US2021/040700 Solicitante ASCENDO BIOTECHNOLOGY, INC. Inventor/a LU, Yen-Ta

A vaccine for generation of immunity against SARS-CoV-2 infection includes an S2'-peptide of SARS-CoV-2 in a formulation that enhances immune responses, wherein the S2'-peptide includes the amino acid sequence selected from SEQ ID NO: 1-10. The formulation includes nanocomplexes encapsulating the S2'-peptide, or the formulation includes TREM-like transcript-1 (TREM1) extracellular domain (ECD) or a stalk peptide as an immune booster.

36. [WO/2022/015240](#) PEPTIDE ADJUVANT FOR ITS THERAPEUTIC APPLICATIONS IN VIRAL AND TUMOUR VACCINE DEVELOPMENT AND CANCER IMMUNOTHERAPY AND AUTOIMMUNE DISEASE DIAGNOSIS AND TREATMENTS

WO - 20.01.2022

Clasificación Internacional [C07K 14/435](#) N° de solicitud PCT/SG2021/050405 Solicitante NATIONAL UNIVERSITY OF SINGAPORE Inventor/a LU, Jinhua

The present invention relates to an isolated peptide, comprising or consisting of a glycine and arginine-rich (GAR/RGG) region with alarmin and/or cell penetrating activity, bioactive fragments or mutants thereof, and compositions comprising the peptide and an antigen or cargo molecule for vaccine

development, immunotherapy, and/or the delivery of nucleic acids and proteins into cells. Further, the invention provides a method of detection using these peptides, and a process of producing the peptides.

37. [20220009971](#) Foot and Mouth Disease Virus (FMDV) Consensus Proteins, Coding Sequences Therefor and Vaccines Made Therefrom  
US - 13.01.2022

Clasificación Internacional [C07K 14/005](#) N° de solicitud 17474732 Solicitante The Trustees of the University of Pennsylvania Inventor/a David B. Weiner

Provided herein is a nucleic acid comprising consensus amino acid sequence of foot-and-mouth disease FMDV VP1-4 coat proteins of FMDV subtypes A, Asia 1, C, O, SAT1, SAT2, and SAT3 as well as plasmids and vaccines expressing the sequences. Also provided herein is methods for generating an immune response against one or more FMDV subtypes using the vaccine as described above as well as methods for deciphering between vaccinated mammals with the vaccine and those that are infected with FMDV.

38. [WO/2022/013609](#) SARS-COV-2 VACCINE COMPOSITIONS AND METHODS OF PREPARATION AND USE  
WO - 20.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/IB2021/000464 Solicitante IMMUNOVACCINE TECHNOLOGIES, INC. Inventor/a STANFORD, Marianne

The present application relates generally to compositions and methods for preventing COVID- 19, and in particular to vaccine compositions comprising at least one epitope on the spike protein of SARS-CoV-2 that can elicit production of antibodies, including neutralizing antibodies and antibodies that inhibit steps of viral infection (e.g., phagocytosis).

39. [WO/2022/007742](#) RECOMBINANT PSEUDORABIES VIRUS AND VACCINE COMPOSITION THEREOF  
WO - 13.01.2022

Clasificación Internacional [C12N 7/01](#) N° de solicitud PCT/CN2021/104472 Solicitante NOVO BIOTECH CORP. Inventor/a ZHANG, Qiang

Provided is a recombinant pseudorabies virus having a genome containing nucleotide sequence encoding capsid protein P72, accessory protein B602L, and outer envelope protein CD2V derived from African swine fever virus. The recombinant pseudorabies virus can be used to prepare a live virus vector vaccine for effectively treating or preventing African swine fever, thereby overcoming the shortcomings of the existing inactivated vaccines and live attenuated vaccines.

40. [20220009969](#) METHODS FOR INACTIVATING AND STORING RESPIRATORY SYNCYTIAL VIRUS  
US - 13.01.2022

Clasificación Internacional [C07K 14/005](#) N° de solicitud 17258109 Solicitante Xiamen University Inventor/a Zizheng Zheng

Provided are a method for inactivating respiratory syncytial virus (RSV) and stabilizing pre-F protein in RSV and inactivated RSV virus obtained thereby. Also provided are a vaccine comprising the inactivated RSV virus and a use of the vaccine in preventing or treating RSV infection or a disease related thereto.

41. [20220008530](#) MERS-CoV VACCINE COMPOSITION  
US - 13.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud 17484557 Solicitante King Abdulaziz University Inventor/a Anwar M. HASHEM

An immunogenic CD40-targeted trimeric MERS-CoV S1 fusion polypeptide as well as a corresponding polynucleotide encoding it and its use for safely inducing immune responses directed against MERS-CoV without inducing vaccine associated respiratory pathologies associated with non-targeted vaccines.

42. [20220008531](#) INTRANASAL MERS-CoV VACCINE

US - 13.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud 17484648 Solicitante King Abdulaziz University  
Inventor/a Anwar M. HASHEM

An immunogenic CD40-targeted trimeric MERS-CoV S1 fusion polypeptide as well as a corresponding polynucleotide encoding it and its use for safely inducing immune responses directed against MERS-CoV without inducing vaccine associated respiratory pathologies associated with non-targeted vaccines.

43. [WO/2022/011332](#) IMMUNOGENIC COMPOSITION FORMING A VACCINE, AND A METHOD FOR ITS MANUFACTURE

WO - 13.01.2022

Clasificación Internacional [A61K 9/127](#) N° de solicitud PCT/US2021/041245 Solicitante ENGIMATA, INC  
Inventor/a MOSHARRAF, Mitra

An immunogenic composition forming a vaccine includes a nanoparticle adjuvant comprising at least a nanoparticle, wherein the at least a nanoparticle comprises a lipid layer exterior including a plurality of lipids, cholesterol, and a primary alkyl amine including a positively charged amino group head and at least a carbon tail and an antigen incorporated in the at least a nanoparticle, wherein the antigen comprises a spike protein from a coronavirus.

44. [WO/2022/010928](#) METHOD FOR ENHANCING HUMORAL IMMUNITY

WO - 13.01.2022

Clasificación Internacional [A61K 38/20](#) N° de solicitud PCT/US2021/040558 Solicitante NEKTAR THERAPEUTICS (INDIA) PVT. LTD. Inventor/a MIYAZAKI, Takahiro

The present disclosure provides, among other things, methods, compositions, and kits for promoting or enhancing humoral immunity in a subject. More particularly, provided is a method for enhancing humoral immunity in a subject by administering to the subject a long acting IL-2R $\alpha$  $\beta$ -biased agonist in combination with a vaccine, such as, for example, a preventative vaccine for protection against an infectious disease.

45. [WO/2022/007478](#) CARRIER PROTEIN SUBJECTED TO SITE-DIRECTED MUTATION AND USE THEREOF IN PREPARATION OF VACCINE

WO - 13.01.2022

Clasificación Internacional [C07K 14/22](#) N° de solicitud PCT/CN2021/090074 Solicitante CANSINO BIOLOGICS INC. Inventor/a WANG, Haomeng

Provided are a protein antigen subjected to site-directed mutation and site-directed modification, and a method for the site-directed mutation and site-directed modification of the protein antigen. The method comprises: introducing unnatural amino acids into specific sites of the protein antigen in a site-directed way by means of using a gene codon expansion technique; and performing site-directed modification with the protein antigen by means of using the unnatural amino acids and a modifier, wherein the modifier is a receptor agonist such as tripalmitoyl-S-glyceryl cysteine and monophosphoryl lipid A. Further provided is the use of the protein antigen subjected to site-directed mutation and site-directed modification, such as the use of same as a vaccine.

46. [WO/2022/011428](#) LIVE-ATTENUATED VIRUS VACCINE

WO - 20.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/AU2021/050763 Solicitante GRIFFITH UNIVERSITY Inventor/a MAHALINGAM, Surendran

This invention relates to a codon deoptimized severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) genome. In particular, embodiments of the invention concern a vaccine comprising live attenuated SARS-CoV-2 comprising a partly codon deoptimized viral genome, SARS-CoV-2 comprising a partly



codon deoptimized viral genome, as well as their use in methods of treatment and prevention of viral infection. The ORF1a region of the viral genome has been codon deoptimized.

47. [WO/2022/011031](#) VACCINE ADJUVANTS AND METHODS OF SYNTHESIZING AND USING THE SAME

WO - 13.01.2022

Clasificación Internacional [C07C 13/20](#) N° de solicitud PCT/US2021/040714 Solicitante AMYRIS, INC. Inventor/a PADDON, Christopher John

The disclosure provides compounds useful as adjuvants in vaccines, as well as methods of synthesizing such compounds and methods of using such compounds in the formulation of a vaccine. The disclosure also features methods of administering such vaccines to a subject (e.g., a mammalian subject, such as a human) in order to treat or prevent one or more diseases, such as a disease caused by a viral or bacterial infection.

48. [WO/2022/013088](#) A VACCINE ADMINISTRATION APPARATUS AND METHOD

WO - 20.01.2022

Clasificación Internacional [A61M 15/00](#) N° de solicitud PCT/EP2021/069137 Solicitante STAMFORD DEVICES LIMITED Inventor/a POWER, John

A dispensing apparatus (100) is for use by users to take a chamber (110), fill the chamber with an aerosolized vaccine or other medicament (104), and dispose of used chambers (120). A display (103) provides instructions to encourage prompt inhalation by the user from a dispensed and filled chamber. The apparatus allows very fast administration of vaccines to large numbers of people. The aerosol dispenser apparatus detects the chamber is in correct position and delivers a predetermined dose of aerosol. Once the dose is delivered a visual and/or audible indicator informs the user that the chamber is filled and that they can take the inhalation. The single dose aerosol chamber (110) is optimized for efficient administration of an aerosol.

49. [WO/2022/011014](#) BACTERIA-DERIVED VESICLES AND USE THEREOF FOR GENERATING IMMUNE RESPONSE TO SARS-COV-2

WO - 13.01.2022

Clasificación Internacional [A61K 35/74](#) N° de solicitud PCT/US2021/040688 Solicitante EXOCURE BIOSCIENCES, INC. Inventor/a PARK, Kyong-su

A composition comprising artificial outer membrane vesicles (aOMVs) generated from a gram-negative bacterium is disclosed. A composition comprising extruded outer membrane vesicles (exOMVs) generated from a gram-negative bacterium is also disclosed. The gram-negative bacterium may be genetically modified for expression of a SARS-CoV-2 protein in the outer membrane. In certain embodiments, the gram-negative bacterium is not genetically modified for expression of a SARS-CoV-2 protein in the outer membrane but the composition comprises recombinant SARS-CoV-2 protein. In certain embodiments, the gram-negative bacterium is genetically modified for expression of a SARS-CoV-2 protein in the outer membrane and the composition comprises recombinant SARS-CoV-2 protein. Any immunogenic SARS-CoV-2 protein may be used. In certain embodiments, the SARS-CoV-2 protein may be a surface exposed protein. In certain embodiments, the SARS-CoV-2 protein may be a spike protein, e.g., S protein, S1 protein, S2 protein, or a fragment thereof. In certain aspects, the SARS-CoV-2 protein is a fragment of S1 protein, e.g., receptor binding domain (RBD). Methods for making the compositions and using the compositions as a vaccine for inducing an immune response against the virus are also disclosed.

50. [20220008472](#) IMMUNOTHERAPY WITH B\*08 RESTRICTED PEPTIDES AND COMBINATION OF PEPTIDES AGAINST CANCERS AND RELATED METHODS

US - 13.01.2022

Clasificación Internacional [A61K 35/17](#) N° de solicitud 17484721 Solicitante Immatics Biotechnologies GmbH Inventor/a Gisela SCHIMMACK

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.

51. [20220008471](#) IMMUNOTHERAPY WITH B\*08 RESTRICTED PEPTIDES AND COMBINATION OF PEPTIDES AGAINST CANCERS AND RELATED METHODS

US - 13.01.2022

Clasificación Internacional [A61K 35/17](#) N° de solicitud 17484452 Solicitante Immatics Biotechnologies GmbH Inventor/a Gisela SCHIMMACK

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.

52. [WO/2022/015692](#) PROXIMITY-BASED FILE SHARING SYSTEM AND METHOD

WO - 20.01.2022

Clasificación Internacional [G16H 50/80](#) N° de solicitud PCT/US2021/041372 Solicitante MEDYEAR, INC. (FORMERLY KNOWN AS: PERSONIFORM INC., DBA MEDYEAR) Inventor/a CHHENG, Panha

A computer-based method for sharing a digital file based on proximity and, in particular, for sharing a digital medical record file such as the result(s) from a virus test or a vaccine record. The method includes: (i) periodically transmitting, by a first mobile device of a first user, a geographic location of the first mobile device; (ii) periodically transmitting, by a second mobile device or a second user, a geographic location of the second mobile device; (iii) determining, when the second mobile device is within the predetermined zone of the first mobile device based on the transmitted geographic locations of the first mobile device and the second mobile device; and (iv) transmitting, when the second mobile device is within the predetermined zone of the first mobile device, a file associated with the first user to the second mobile device for use by the second user.

53. [2021290231](#) Arthrogenic alphavirus vaccine

AU - 13.01.2022

Clasificación Internacional N° de solicitud 2021290231 Solicitante Griffith University Inventor/a

54. [WO/2022/010213](#) METHOD FOR PRODUCTION OF VARICELLA ZOSTER VIRUS SURFACE PROTEIN ANTIGEN

WO - 13.01.2022

Clasificación Internacional [C12N 7/00](#) N° de solicitud PCT/KR2021/008537 Solicitante GREEN CROSS CORPORATION Inventor/a LEE, Kwang Bae

The present invention relates to a method for production of a varicella zoster virus surface protein antigen. The method for production of a varicella zoster virus surface protein antigen according to the present invention is an effective production method by which a varicella zoster surface protein antigen can be obtained at high yield and purity. Therefore, the method is advantageous for producing a surface protein

antigen of varicella zoster virus for use as a vaccine composition for prevention or treatment of chicken pox or herpes zoster.

55. [WO/2022/009121](#) SARS-COV-2 AND INFLUENZA COMBINATION VACCINE

WO - 13.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/IB2021/056102 Solicitante SPICONA INC.

Inventor/a GLUCK, Reinhard

The present invention relates to combination vaccines against both influenza and COVID-19. In particular, the invention relates to combination vaccines comprising one or more influenza virus antigen and one or more SARS-CoV-2 (Coronavirus SARS-CoV-2) antigen, particularly one or more SARS-CoV-2 spike protein antigen, as well as vaccines comprising polynucleotides encoding said antigens, and such vaccines for the treatment or prevention of COVID-19 (SARS-CoV-2 infection) and influenza infection.

56. [WO/2022/016122](#) SKIN-BASED TESTING FOR DETECTION OF CELL-MEDIATED IMMUNE RESPONSES TO SARS-COV-2

WO - 20.01.2022

Clasificación Internacional [G01N 33/569](#) N° de solicitud PCT/US2021/042102 Solicitante TONIX PHARMACEUTICALS HOLDING CORP. Inventor/a LEDERMAN, Seth

The present disclosure provides methods for detecting cell-mediated immunity to SARS-CoV-2 in a subject, methods for detecting a cell-mediated immune response against SARS-CoV-2 in a subject and methods for determining if a vaccine against SARS-CoV-2 elicits a cell-mediated immune response in a subject, comprising administering to the skin of the subject one or more peptides.

57. [WO/2022/008634](#) TUMOR-ASSOCIATED PEPTIDES AND USES THEREOF

WO - 13.01.2022

Clasificación Internacional [C07K 14/47](#) N° de solicitud PCT/EP2021/068942 Solicitante HUMANITAS MIRASOLE S.P.A. Inventor/a RESCIGNO, Maria

The present invention provides antigen presenting cells (APC) carrying human tumor-associated peptides on the cell surface as well as immunogenic compositions comprising the tumor-associated peptides and/or the antigen presenting cells according to the invention. The immunogenic composition of the invention is useful as a vaccine in the prevention and/or treatment of a tumor disease, particularly melanoma and melanoma residual disease.

58. [WO/2022/013324](#) POST-EXPOSURE VACCINATION AGAINST VIRAL RESPIRATORY INFECTIONS

WO - 20.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/EP2021/069673 Solicitante RIBOXX GMBH

Inventor/a TER MEULEN, Jan

The present invention relates to pharmaceutical compositions, in particular vaccine compositions, for preventing or at least reducing the severity of, respectively, viral respiratory infections through application of said composition to a human subject post-exposure or at least presumed post-exposure of said subject to a virus causing said viral respiratory infections or pre-exposure of said subject to said virus. More particularly, in specific embodiments, the invention provides pharmaceutical compositions as such comprising at least one antigenic component of the infectious virus and a TLR-3 agonist. The invention also relates to methods of treatment and/or prevention of said viral respiratory infections through administration of the composition to the human subject post exposure or at least presumed post-exposure of said subject to the infectious virus or pre-exposure of said subject to said virus.

59. [20220008704](#) SINGLE-USE CASSETTE ASSEMBLY

US - 13.01.2022

Clasificación Internacional [A61M 37/00](#) N° de solicitud 17295930 Solicitante Enesi Pharma Limited

Inventor/a David Grant

The invention relates to a single-use cassette assembly for use in a reusable solid dose formulation delivery actuator device. Such improvements permit delivery of at least one therapeutic or prophylactic compound, or a solid dose formulation including, for example, a vaccine comprising the same with improved safety and reliability. The invention further concerns an improved needle-free method for delivering at least one therapeutic compound or a formulation comprising the same.

60. [WO/2022/008687](#) AN IMPROVED MEASLES VIRUS VACCINE VECTOR BASED ON MULTIPLE TANDEM ADDITIONAL TRANSCRIPTION UNITS (ATUS)

WO - 13.01.2022

Clasificación Internacional [C07K 14/005](#) N° de solicitud PCT/EP2021/069070 Solicitante INSTITUT PASTEUR Inventor/a NAMPRACHAN-FRANTZ, Phanramphoei

The application generally relates to enhanced recombinant nucleic acid constructs comprising a cDNA molecule encoding a full length antigenomic (+) RNA strand of a non-segmented negative-sense single-stranded RNA virus for expressing at least one heterologous polypeptide, protein, antigen, or antigenic fragment thereof. The application more particularly relates to constructs with multiple ATUs localized within a single intergenic region of a virus. The application also relates to the association between a construct with multiple ATUs and BAG plasmid to facilitate the introduction and expression of large inserts.

61. [WO/2022/013781](#) PEPTIDE EPI TOPE VACCINES FOR COVID-19 AND METHOD OF DESIGNING, MAKING AND USING THE SAME

WO - 20.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/IB2021/056355 Solicitante UNIVERSITY OF SOUTHERN CALIFORNIA Inventor/a BOGDAN, Paul

Computer systems and computer implemented methods are presented for designing and making vaccines to pathogens, particular viral pathogens. Vaccine compositions for COVID-19 are also disclosed, as well as method of using the same.

62. [WO/2022/011092](#) NUCLEOSIDE-MODIFIED RNA FOR INDUCING AN IMMUNE RESPONSE AGAINST SARS-COV-2

WO - 13.01.2022

Clasificación Internacional [A61K 9/127](#) N° de solicitud PCT/US2021/040811 Solicitante THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA Inventor/a PARDI, Norbert

The present invention relates to compositions and methods for inducing an adaptive immune response against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in a subject. In certain embodiments, the present invention provides a composition comprising a nucleoside-modified nucleic acid molecule encoding a SARS-CoV-2 antigen, adjuvant, or a combination thereof. For example, in certain embodiments, the composition comprises a vaccine comprising a nucleoside-modified nucleic acid molecule encoding a SARS-CoV-2 antigen, adjuvant, or a combination thereof.

63. [WO/2022/011436](#) METHODS OF TREATING CORONAVIRUS INFECTION WITH BOVINE-HYPERIMMUNE COLOSTRUM

WO - 20.01.2022

Clasificación Internacional [C07K 16/10](#) N° de solicitud PCT/AU2021/050772 Solicitante IMMURON LIMITED Inventor/a KANELLOS, Jerry

A method of treating and/or preventing human coronavirus infection in a subject comprising administering an effective amount of a composition comprising bovine-hyperimmune colostrum prepared using a vaccine comprising enterotoxigenic E. coli (ETEC) LPS.

64. [20220009995](#) NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST VARIOUS TUMORS

US - 13.01.2022

Clasificación Internacional [C07K 14/74](#) N° de solicitud 17384330 Solicitante Immatics Biotechnologies GmbH Inventor/a Andrea MAHR

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

65. [20220009983](#) NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST LUNG CANCER, INCLUDING NSCLC, SCLC AND OTHER CANCERS

US - 13.01.2022

Clasificación Internacional [C07K 14/47](#) N° de solicitud 17477869 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.

66. [20220008532](#) MULTIVALENT FELINE VACCINE

US - 13.01.2022

Clasificación Internacional [A61K 39/295](#) N° de solicitud 17488961 Solicitante Intervet Inc. Inventor/a Zhichang Xu

The present invention provides new multivalent vaccines for felines. The present invention also provides methods of making and using the multivalent vaccines alone or in combinations with other protective agents.

67. [WO/2022/011005](#) IMMUNOSTIMULATORY ADJUVANTS

WO - 13.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud PCT/US2021/040676 Solicitante ORIONIS BIOSCIENCES, INC. Inventor/a KLEY, Nikolai

The present invention relates, in part, to vaccine compositions, adjuvants, chimeric proteins, or chimeric protein complexes and their use as vaccines or therapeutic agents. The present invention further relates to methods of vaccination or treatment of various diseases.

68. [20220009982](#) IMMUNOTHERAPY WITH A\*01 RESTRICTED PEPTIDES AND COMBINATION OF PEPTIDES AGAINST CANCERS AND RELATED METHODS

US - 13.01.2022

Clasificación Internacional [C07K 14/47](#) N° de solicitud 17474894 Solicitante Immatics Biotechnologies GmbH Inventor/a Heiko SCHUSTER

The present invention relates to peptides, proteins, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated T-cell peptide epitopes, alone or in combination with other tumor-associated peptides that can for example serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses, or to stimulate T cells ex vivo and

transfer into patients. Peptides bound to molecules of the major histocompatibility complex (MHC), or peptides as such, can also be targets of antibodies, soluble T-cell receptors, and other binding molecules.

69. [WO/2022/015198](#) VACCINE AND METHOD OF PROTECTION AGAINST CORONAVIRUS INFECTION

WO - 20.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/RU2021/000278 Solicitante ABIDOV, Musa Tazhudinovich Inventor/a ABIDOV, Musa Tazhudinovich

The invention relates to medicine and biology and is intended for prevention and treatment of coronavirus infections by using phthalhydrazide derivatives, including Tamerit, which have immunomodulatory activity, either alone or in combination with antiviral drugs of various chemical structures. A method for preventing coronavirus infection is provided, characterized in that, in order to increase the clinical and laboratory efficacy achieved by antiviral agents of the azoloazine-based class (Triazavirin®, Mactavirin®), antimalarial agents and interferon products, a drug based on aminophthalhydrazide salt derivatives in the form of dihydrate, monohydrate and anhydrate in any crystalline form, including Tamerit, at a dose of 0.01 to 4000 mg/kg is administered in combination with the aforementioned drugs to a subject in need thereof. Said drug administration regimen (according to pre-clinical study results) demonstrated that Tamerit provides an overall protective effect of up to 100%, which is higher than the protective effect from the use of antiviral agents alone by 30-35%, and shortens the duration of the period of acute illness and the total duration of illness by 1.5-2 weeks.

70. [WO/2022/018576](#) CONTROLLED RELEASE VACCINE FORMULATION

WO - 27.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/IB2021/056318 Solicitante PHIBRO ANIMAL HEALTH CORPORATION Inventor/a FINGER, Avner

Vaccine formulations comprising polyglycerol polyricinoleate (PGPR) are disclosed. Certain disclosed exemplary vaccine formulations comprised an aqueous phase comprising inactivated bacteria and/or viruses, and/or bacterial and/or viral antigens. One particular embodiment comprised an inactivated H9N2 PGPR emulsion-based vaccine for day-old chicks. Disclosed PGPR-based vaccine formulations can be administered alone, or in combination with or as a composition including a second standard fast release vaccine. Disclosed vaccines delay antigen release, and therefore delay an immune response in a subject receiving the vaccine, typically by 7 - 35 days. The present invention also concerns a method for vaccinating a subject, such as poultry or fish, with disclosed vaccine formulations, as well as a method for making PGPR-based vaccine formulations.

71. [20220023412](#) Compositions Useful in Both Homologous And Heterologous Vaccine Regimens

US - 27.01.2022

Clasificación Internacional [A61K 39/145](#) N° de solicitud 17355543 Solicitante University of Rhode Island Board of Trustees Inventor/a Anne De Groot

The invention provides a swine influenza vaccine composition as part of a vaccine package where the composition produces one or more T cell epitopes that are highly conserved in circulating influenza strains including those of H1N1 and others. The invention addresses variability amongst the influenza viruses from year to year, and therefore, provides great economic relief to pork farmers. The invention further provides a preferred, heterologous vaccine regimen embodiment where a DNA vaccine, such as the composition disclosed herein, is used in combination with a more conventional vaccine, such as one based on part or whole of an inactivated virus.

72. [WO/2022/017217](#) EBV-TARGETED ALLOGENEIC B CELL VACCINE AND PREPARATION METHOD THEREFOR

WO - 27.01.2022

Clasificación Internacional [C07K 14/05](#) N° de solicitud PCT/CN2021/105809 Solicitante WEST CHINA HOSPITAL OF SICHUAN UNIVERSITY Inventor/a YANG, Hanshuo

The present invention relates to an allogeneic B cell vaccine against various human susceptible viruses and a preparation method therefor. The vaccine has anti-tumor and/or anti-viral preventive and/or therapeutic effects. Specifically, provided is a B cell composition, comprising an allogeneic B cell and a viral antigen. The B cell composition is irradiated with a certain dose of ionizing rays. Also provided are a B cell vaccine comprising the B cell composition, a preparation method for the B cell vaccine, and a method and system for improving antigen presentation capacity of the B cell.

73. [202247000620](#) METHOD FOR DEFINING A PERSONALIZED VACCINE AGAINST HIV/AIDS  
IN - 28.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202247000620 Solicitante DIAZ, Ricardo Inventor/a DIAZ, Ricardo

A novel approach for developing a personalized vaccine. This approach is based on: A) sequencing of the gag gene of an individual infected with HIV undergoing antiretroviral treatment, B) sequencing of the HLA alleles from the same individual, C) selection of the epitopes recognized by the HLA class I of the individual in the highly conserved amino acid sequences Gag256-377, Gag147-169 and/or Gag225-251. An original algorithm that designs the target peptide for the vaccine using HLA and viral sequences from an individual with HIV/AIDS is at the heart of the present invention. The original algorithm makes extensive use of existing open source software for protein design. The peptides designed in this manner and subsequently synthesized can be explored as a therapeutic vaccine against HIV/AIDS. The vehicles for these peptides can be dendritic cells from an individual pulsed with the combination of peptides or a viral vector or specific DNA, leading to the intracellular expression of the viral peptides. The present vaccine approach could help to control viremia once antiretroviral treatment has been stopped.

74. [WO/2022/020569](#) TYPE 1 IFN ASSAYS AND METHODS OF DIAGNOSIS FOR SUSCEPTIBILITY TO AND TREATMENT OF VIRAL DISEASE AND VIRAL VACCINES, INCLUDING COVID-19  
WO - 27.01.2022

Clasificación Internacional [C07K 1/22](#) N° de solicitud PCT/US2021/042741 Solicitante THE ROCKEFELLER UNIVERSITY Inventor/a CASANOVA, Jean-Laurent

The present invention provides methods, assays and kits for assessment of patients positive for SARS-CoV-2 infection and methods of diagnosis and treatment of COVID-19 disease and for assessment and evaluation of individuals prior to vaccination with live attenuated virus vaccines, particularly including yellow fever vaccines and COVID-19 vaccines, to assess risk for vaccine-associated disease and adverse events, and for evaluation, treatment and management of patients who develop vaccine-associated disease. The invention provides methods and assays for identification and characterization of inborn errors of type I interferon immunity and also auto-antibodies against Type I IFNs that are associated with severe COVID-19 disease or that are correlated and linked with vaccine-associated disease. The invention further provides methods of diagnosing and determining altered response to or susceptibility to SARS-CoV-2 infection or to live attenuated virus vaccines and for applicable and suitable treatment of COVID-19 disease or vaccine-associated disease.

75. [20220023408](#) PROTECTIVE IMMUNITY ENHANCED SALMONELLA VACCINE (PIESV) AGAINST BRUCELLA SPP.  
US - 27.01.2022

Clasificación Internacional [A61K 39/02](#) N° de solicitud 17273801 Solicitante UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INCORPORATED Inventor/a Roy CURTIS, III

Bacterial pathogens have evolved means to succeed as pathogens by infecting without recognition by receptors triggering innate immunity, by suppressing induction of immunity and by inducing immune

responses to antigens that confer no protective immunity. Embodiments described herein circumvent these abilities in *Salmonella* so as to provide a vector system that induces maximal protective immune responses. Another major problem in using live attenuated bacterial vaccine vectors is the accumulation of attenuating mutations that confer a virulence and safety but which decrease the ability of the vaccine to invade cells in the MALT to colonize and persist in internal effector lymphoid tissues. The embodiments disclosed herein solve this problem in multiple ways by using regulated delayed in vivo shut off of virulence genes, regulated delayed synthesis of recombinant protective antigens and regulated delayed lysis in vivo to confer biological containment with no persistence of vaccine cells and no survival if excreted.

76. [20220023407](#) PNEUMOCOCCAL DOSING REGIMEN

US - 27.01.2022

Clasificación Internacional [A61K 39/09](#) N° de solicitud 17494235 Solicitante Wyeth LLC Inventor/a George Rainer Siber

Methods of immunizing older adult subjects against *Streptococcus pneumoniae* infection are provided. Provided methods comprise immunization of naïve adult subjects with a conjugated pneumococcal polysaccharide vaccine. Optionally, initial immunization may be followed by additional immunization doses comprising conjugated pneumococcal polysaccharide vaccine or unconjugated pneumococcal polysaccharide vaccine composition.

77. [3941518](#) UNIVERSELLER IMPFSTOFF GEGEN KRIM-KONGO-HÄMORRHAGISCHES-FIEBER-VIRUS (CCHFV)

EP - 26.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud 20732694 Solicitante OZDARENDELI AYKUT Inventor/a PAVEL SHAIKH TERKIS ISLAM

This invention relates to universal Crimean Congo Haemorrhagic Fever Virus (CCHFV) vaccine. This vaccine comprising viral vector with Bioinformatically Generated Conserved Antigen (BGCA) of CCHFV which evoke immune responses against CCHFV, or diseases triggered by infection of CCHFV.

78. [WO/2022/020810](#) A THREE COMPONENT VACCINE FOR COVID-19

WO - 27.01.2022

Clasificación Internacional [A61K 47/69](#) N° de solicitud PCT/US2021/043213 Solicitante THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY Inventor/a LEVY, Ronald

There are provided herein, inter alia, complexes, compositions and methods for a vaccine for COVID-19. The cell-penetrating complexes provided herein may include a nucleic acid non-covalently bound to a cationic amphipathic polymer, the cationic amphipathic polymer including a pH-sensitive immolation domain. The cell-penetrating complexes provided herein are, inter alia, useful in vaccines, wherein the vaccine includes a ribonucleic acid including a sequence encoding a viral protein, a nucleic acid adjuvant and a cationic amphipathic polymer provided herein including embodiments thereof.

79. [20220023413](#) RECOMBINANT MUMPS VIRUS VACCINE EXPRESSING GENOTYPE G FUSION AND HEMAGGLUTININ-NEURAMINIDASE PROTEINS

US - 27.01.2022

Clasificación Internacional [A61K 39/165](#) N° de solicitud 17413331 Solicitante The U.S.A., as represented by the Secretary, Department of Health and Human Services Inventor/a Steven A. Rubin

A recombinant, attenuated mumps virus is described. The recombinant virus is based on the genotype A Jeryl Lynn vaccine strain, but is modified to express genotype G consensus fusion (F) and hemagglutinin-neuraminidase (HN) proteins. The recombinant virus optionally includes a mutation that prevents expression of viral protein V. The recombinant mumps virus can be used as a vaccine to inhibit mumps virus infection and the development of mumps disease.



80. [20220023416](#) VACCINE FOR PREVENTING OR TREATING CONGENITAL INFECTION WITH CYTOMEGALOVIRUS

US - 27.01.2022

Clasificación Internacional [A61K 39/245](#) N° de solicitud 17312235 Solicitante KM Biologics Co., Ltd. Inventor/a Masaharu TORIKAI

An object of the present invention is to provide an effective vaccine capable of preventing and treating congenital infection with CMV. The vaccine for preventing or treating congenital infection with cytomegalovirus (CMV) according to the present invention comprises a CMV envelope glycoprotein B (gB protein) antigen and a pentamer antigen.

81. [784083](#) ALLOGENEIC T-CELL-BASED HIV VACCINE TO INDUCE CELLULAR AND HUMORAL IMMUNITY

NZ - 28.01.2022

Clasificación Internacional [A61K 35/15](#) N° de solicitud 784083 Solicitante ENOCHIAN BIOPHARMA, INC. Inventor/a GUMRUKCU, Serhat

Provided herein are methods for treating a patient with human immunodeficiency virus (HIV), comprising administering cellular compositions comprising recombinant allogeneic cells, such as CD4+ T cells. The present invention further relates to compositions and methods for making an allogeneic T-cell-based protective HIV vaccine that induces both cellular and humoral immunity.

82. [WO/2022/018528](#) COVID-19 MUCOSAL ANTIBODY ASSAY

WO - 27.01.2022

Clasificación Internacional [G01N 33/68](#) N° de solicitud PCT/IB2021/054887 Solicitante IMMUNITYBIO, INC. Inventor/a FLEENOR, Courtney

Methods and compositions are disclosed for inducing immunity against a virus such as a coronavirus in the mucosal tissue of a patient, include administering a vaccine composition to the patient by oral administration (e.g., nasal injection, nasal inhalation, oral inhalation, and/or oral ingestion). Compositions for assaying the presence of anti-viral antibodies induced by the administered vaccine or the presence of viral proteins in a saliva sample include an assay protocol for detecting neutralizing antibodies (e.g., IgA) against the virus in the saliva sample. Compositions include a kit including a stabilizing solution for the patient sample (e.g., saliva sample) and may also include conjugated aragonite particle beads for antibody or viral protein capture.

83. [20220023404](#) PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST HEPATOCELLULAR CARCINOMA (HCC) AND OTHER CANCERS

US - 27.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud 17502185 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a Toni WEINSCHENK

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. In particular, the present invention relates to several novel peptide sequences and their variants derived from HLA class I and class II molecules of human tumor cells that can be used in vaccine compositions for eliciting anti-tumor immune responses or as targets for the development of pharmaceutically/immunologically active compounds and cells.

84. [20220023403](#) PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST HEPATOCELLULAR CARCINOMA (HCC) AND OTHER CANCERS

US - 27.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud 17502170 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a Toni WEINSCHENK

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. In particular, the present invention relates to several novel peptide sequences and their variants derived from HLA class I and class II molecules of human tumor cells that can be used in vaccine compositions for eliciting anti-tumor immune responses or as targets for the development of pharmaceutically/immunologically active compounds and cells.

85. [202127046290](#) SAPONIN-BASED VACCINE ADJUVANTS

IN - 28.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202127046290 Solicitante THE UAB RESEARCH FOUNDATION Inventor/a WANG, Pengfei

A number of MS- and natural-saponin-based vaccine adjuvant candidates have been prepared. The MS derivatives were prepared by incorporating a terminal-functionalized side chain into the C3 glucuronic acid unit of the natural saponins MS I and II through amide formation reaction; and the QS analogs were prepared via multi-step organic synthesis. These unnatural saponins showed significantly different immunostimulant activity profiles, suggesting that the structure of side chain, triterpenoid core, and oligosaccharide domain together orchestrate each saponin's characteristic potentiation of immune responses.

86. [3941219](#) SAPONIN-BASIERTE IMPFSTOFFE

EP - 26.01.2022

Clasificación Internacional [A23L 33/00](#) N° de solicitud 20772529 Solicitante UAB RES FOUND Inventor/a WANG PENGFEI

A number of MS- and natural-saponin-based vaccine adjuvant candidates have been prepared. The MS derivatives were prepared by incorporating a terminal-functionalized side chain into the C3 glucuronic acid unit of the natural saponins MS I and II through amide formation reaction; and the QS analogs were prepared via multi-step organic synthesis. These unnatural saponins showed significantly different immunostimulant activity profiles, suggesting that the structure of side chain, triterpenoid core, and oligosaccharide domain together orchestrate each saponin's characteristic potentiation of immune responses.

87. [PI 2020003939](#) A METHOD OF PURIFICATION, QUANTITATION AND VACCINE FORMULATION OF RECOMBINANT NEWCASTLE DISEASE VIRUS HEMAGGLUTININ-NEURAMINIDASE

MY - 29.01.2022

Clasificación Internacional N° de solicitud PI 2020003939 Solicitante Universiti Sains Malaysia Inventor/a NORAZMI BIN MOHD NOR

ABSTRACT A METHOD OF PURIFICATION, QUANTITATION AND VACCINE FORMULATION OF RECOMBINANT NEWCASTLE DISEASE VIRUS HEMAGGLUTININ-NEURAMINIDASE The present invention relates to a method of purifying and quantifying a recombinant Newcastle disease virus

hemagglutinin-neuraminidase protein (100) characterized by the steps of, expressing Newcastle disease virus hemagglutinin-neuraminidase with a hexa-histidine fusion tag (rHN) (101), preparing membranes from said rHN expressing Sf21 cells (102), purifying said rHN from expressing Sf21 cells (103), utilizing said purified rHN as standards for the development of an analytical method (104) and quantifying via analytical method for said rHN from crude cell lysates of expressing Sf21 cells which correlate to the quantity of said rHN (105) wherein the quantity of said rHN was then correlated to antibody response, protective efficacy and virus shedding after challenge with Newcastle disease virus (106). Accompanying drawing: [Fig. 1]

88. [20220023401](#) PEPTIDE VACCINE FOR PREVENTION AND IMMUNOTHERAPY OF DEMENTIA OF THE ALZHEIMER'S TYPE

US - 27.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud 16940263 Solicitante United Biomedical, Inc. Inventor/a Chang Yi Wang

The present disclosure is directed to individual A $\beta$  peptide immunogen constructs, peptide compositions comprising these A $\beta$  peptide immunogen constructs and mixtures thereof, pharmaceutical compositions including vaccine formulations comprising these A $\beta$  peptide immunogen constructs, with the individual A $\beta$  peptide immunogen constructs having the N-terminus of the A $\beta$  peptide as the B cell (B) epitopes linked through spacer residue(s) to heterologous T helper cell (Th) epitopes derived from pathogen proteins that act together to stimulate the generation of highly specific antibodies directed against the N-terminus of the A $\beta$  peptide offering protective immune responses to patients at risk for, or with, Alzheimer's Disease.

89. [202148059837](#) NOVEL IMMUNOTHERAPY AGAINST SEVERAL TUMORS INCLUDING GASTROINTESTINAL AND GASTRIC CANCER

IN - 28.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202148059837 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a WEINSCHENK, Toni

Novel immunotherapy against several tumors including gastrointestinal and gastric cancer. The present invention relates to peptides, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated cytotoxic T cell (CTL) peptide epitopes, alone or in combination with other tumor-associated peptides that serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses. The present invention relates to 95 novel peptide sequences and their variants derived from HLA class I molecules of human tumor cells that can be used in vaccine compositions for eliciting anti-tumor immune responses.

90. [3941517](#) IMPFSTOFF GEGEN PATHOGENE IMMUNAKTIVIERUNGSZELLEN BEI INFEKTIONEN EP - 26.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud 20711226 Solicitante 21C BIO Inventor/a ZAGURY DANIEL

In the present invention, the Applicant provides a novel method for preventing or treating an infectious disease in a subject in need thereof. In particular said method comprise the administration of a combination, pharmaceutical combination, medicament or kit-of-parts comprising a first part comprising a CD8 vaccine specific for at least one infectious disease-related antigen, optionally a second part comprising an interferon alpha blocking agent, and a third part comprising a type III interferon and/or an agent stimulating the production of type III interferon.

91. [WO/2022/020593](#) COMBINATION PORCINE VACCINE

WO - 27.01.2022

Clasificación Internacional [A61K 39/04](#) N° de solicitud PCT/US2021/042778 Solicitante BOEHRINGER INGELHEIM ANIMAL HEALTH USA INC. Inventor/a DIAZ, Edgar

The present invention relates to a vaccine comprising an antigen of Lawsonia intracellularis and one or more antigens of at least one further pathogen selected from the group of porcine circovirus (PCV), Mycoplasma hyopneumoniae (M. hyo.) and porcine respiratory and reproductive syndrome virus (PRRSV), wherein the antigen of Lawsonia intracellularis is live Lawsonia intracellularis.

92. [20220023414](#) Prime-Boost Vaccination Regimen

US - 27.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud 17414187 Solicitante Intervet Inc. Inventor/a Erin Strait

The present invention relates to a method of vaccination. Specifically the invention regards to a prime-boost vaccination regimen for protecting a target animal against infection or disease caused by a virus, wherein the vaccination regimen comprises the administration to said target animal of a vaccine comprising a live attenuated form of said virus, followed by the administration to said target animal of a vaccine comprising an RP encoding one or more antigens from said virus.

93. [202148059836](#) NOVEL IMMUNOTHERAPY AGAINST SEVERAL TUMORS INCLUDING GASTROINTESTINAL AND GASTRIC CANCER

IN - 28.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202148059836 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a WEINSCHENK, Toni

ABSTRACT Novel immunotherapy against several tumors including gastrointestinal and gastric cancer. The present invention relates to peptides, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated cytotoxic T cell (CTL) peptide epitopes, alone or in combination with other tumor-associated peptides that serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses. The present invention relates to 95 novel peptide sequences and their variants derived from HLA class I molecules of human tumor cells that can be used in vaccine compositions for eliciting anti-tumor immune responses.

94. [202148059835](#) NOVEL IMMUNOTHERAPY AGAINST SEVERAL TUMORS INCLUDING GASTROINTESTINAL AND GASTRIC CANCER

IN - 28.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202148059835 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a FRITSCHKE, Jens

Novel immunotherapy against several tumors including gastrointestinal and gastric cancer. The present invention relates to peptides, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated cytotoxic T cell (CTL) peptide epitopes, alone or in combination with other tumor-associated peptides that serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses. The present invention relates to 95 novel peptide sequences and their variants derived from HLA class I molecules of human tumor cells that can be used in vaccine compositions for eliciting anti-tumor immune responses

95. [202148059834](#) NOVEL IMMUNOTHERAPY AGAINST SEVERAL TUMORS INCLUDING GASTROINTESTINAL AND GASTRIC CANCER

IN - 28.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202148059834 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a SINGH, Harpreet

ABSTRACT Novel immunotherapy against several tumors including gastrointestinal and gastric cancer. The present invention relates to peptides, nucleic acids and cells for use in immunotherapeutic methods. In particular, the present invention relates to the immunotherapy of cancer. The present invention furthermore relates to tumor-associated cytotoxic T cell (CTL) peptide epitopes, alone or in combination with other tumor-associated peptides that serve as active pharmaceutical ingredients of vaccine compositions that stimulate anti-tumor immune responses. The present invention relates to 95 novel peptide sequences and their variants derived from HLA class I molecules of human tumor cells that can be used in vaccine compositions for eliciting anti-tumor immune responses.

96. [3943106](#) REKOMBINANTE HERPES-SIMPLEX-VIRUS (HSV-2)-IMPFSTOFFVEKTOREN  
EP - 26.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud 20195405 Solicitante ALBERT EINSTEIN COLLEGE OF MEDICINE Inventor/a JACOBS WILLIAM

Recombinant herpes simplex virus 2 (HSV-2) vaccine vectors, virions thereof, compositions and vaccines comprising such, and methods of use thereof are each provided.

97. [WO/2022/020815](#) ANTIBODY/ADJUVANT COMPOSITIONS AND METHODS OF IMMUNE RESPONSE GENERATION AGAINST CORONAVIRUSES

WO - 27.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud PCT/US2021/043236 Solicitante SOLIGENIX, INC. Inventor/a DONINI, Oreola

Recombinant vaccine compositions combined with a specified adjuvant to deliver a robust immune response against coronaviruses for inducing protective immunity to a coronavirus comprising providing a stable immunogenic composition capable of eliciting a robust and durable immune response to the coronavirus, wherein the composition comprises a protein subunit comprising a recombinant protein specific to the coronavirus and at least one adjuvant.

98. [WO/2022/020545](#) CORONAVIRUS VACCINE

WO - 27.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/US2021/042692 Solicitante TEXAS TECH UNIVERSITY SYSTEM Inventor/a GILL, Harvinder, Singh

The present invention includes and immunogenic composition and methods of immunizing a mammal or avian comprising: a nanoparticle conjugated to one or more antigenic peptides or fusion polypeptides from more than one strain of virus, wherein the one or more antigenic peptides or fusion polypeptides elicit at least one of a humoral, T helper cell-1 (Th1), T helper cell-2 (Th2) or cytotoxic T cell (CTL) immune response. In certain embodiments the antigenic peptides or fusion polypeptides are selected from at least one of SEQ IN NOS: 1 to 16, 22 to 39, or any combination thereof.

99. [WO/2022/020604](#) MULTIVALENT BETA-CORONAVIRUS VACCINES, THEIR DESIGN AND USES

WO - 27.01.2022

Clasificación Internacional [A61K 39/215](#) N° de solicitud PCT/US2021/042795 Solicitante GREFFEX, INC. Inventor/a STAERZ, Uwe, D.

A multivalent vaccine for preventing CoV infection includes more than one protein antigen derived from antigens encoded within a CoV genome. At least one of the more than one protein antigen derived from antigens encoded within a CoV genome is a protein antigen, RNA- encoded genetic information, DNA- encoded genetic information, or genetic information within a genetic vector.

100. [WO/2022/020636](#) IMMUNOGENS DERIVED FROM SARS-COV2 SPIKE PROTEIN

WO - 27.01.2022

Clasificación Internacional [A61K 39/12](#) N° de solicitud PCT/US2021/042836 Solicitante AMGEN INC. Inventor/a GARCES, Fernando

The present invention relates to severe acute respiratory syndrome coronavirus 2 ("SARS-CoV2") immunogens useful for the generation of therapeutic antibodies and vaccine development. Such therapeutic antibodies include human antibodies and antigen-binding portions thereof that specifically bind to human SARS-CoV2 S protein, and that function to neutralize SARS-CoV2. The present invention also relates to methods of generating antibodies and antigen-binding portions thereof that specifically bind to human SARS-CoV2 S protein.

101. [20220023605](#) Microneedle Immunotherapeutic Multi-Component System and a Method for Vaccination

US - 27.01.2022

Clasificación Internacional [A61M 37/00](#) N° de solicitud 17381691 Solicitante Microneedles Inc Inventor/a Vasillii Nikolaevich ZVEZDIN

A dissoluble microneedle drug delivery system includes a fixation component having an opening window area, and at least two replaceable and/or dissoluble inner matrices fitting into the window area one after another. The fixation component comprises an array of microneedles attached on its base, at least part of the microneedles being configured to fix the delivery system onto skin. The first inner matrix comprises a multitude of microneedles attached on its base, at least part of the microneedles configured to prepare the skin to vaccination by the subsequent second inner matrix. The second inner matrix is a vaccine/immunization matrix configured to replace the first inner matrix and comprising an array of microneedles attached on its base, at least part of the microneedles configured to deliver a vaccination. The system may include a microchannel network within at least one inner matrices for delivery of components regulating dissolution of the microneedles.

102. [784384](#) PARASITIC NEMATODE VACCINE

NZ - 28.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud 784384 Solicitante THE UNIVERSITY COURT OF THE UNIVERSITY OF EDINBURGH Inventor/a BUCK, Amy

There is discussed nematode antigens capable of causing an immune response in a host such that a protective effect is provided to the host in relation to the nematode. Antigens, compositions for the treatment of parasitic nematode infections, methods of prophylaxis and treatment of parasitic nematode infections, and vaccines to reduce and / or control parasitic nematode infections are provided.

103. [WO/2022/020465](#) METHOD FOR NUCLEIC ACID-BASED VACCINE

WO - 27.01.2022

Clasificación Internacional [C12N 15/87](#) N° de solicitud PCT/US2021/042567 Solicitante NATIONAL HEALTH RESEARCH INSTITUTES Inventor/a LIU, Shih-Jen

The present invention relates to a novel device can be used to provide electrical transfer source, particularly to an electrical device provided square wave electric pulse that enhance nucleic acid deliver into cells by electric probe.

104. [20220023421](#) METHODS FOR ELICITING SELECTIVE HUMORAL RESPONSES

US - 27.01.2022

Clasificación Internacional [A61K 39/395](#) N° de solicitud 17404538 Solicitante University of Miami Inventor/a Victor L. Perez Quinones

Conjugates of synthetic nanocarriers, complexed with syngeneic (self) proteins adducted with haptens or other poorly immunogenic antigens (antigens of low immunogenicity), elicit selective humoral responses or antibodies against the hapten or antigen and not to self-protein. Compositions include these conjugates, which can be used as vaccines. Methods of making and using them are described herein. In a typical embodiment, a conjugate including a hapten or antigen of low immunogenicity associated with a particular disease (e.g., infection, cancer) can be used as a vaccine by eliciting antibodies that specifically

neutralize the hapten or antigen. These haptens (and other poorly immunogenic antigens)-carrying nanocarriers selectively target antigen presenting cells resulting in a strong anti-hapten humoral response, and thus find use in vaccines for cancer (e.g., cancers of lung, cervix, breast, brain, liver, pancreas, ovaries, skin, etc.), infectious diseases and inflammatory-mediated diseases, as well as for autoimmune disorders.

105. [WO/2022/019306](#) IMMORTALIZED PORCINE ALVEOLAR MACROPHAGE CULTURED CELL LINE, METHOD FOR PRODUCING IMMORTALIZED PORCINE ALVEOLAR MACROPHAGE CULTURED CELL LINE, REAGENT FOR PREPARING IMMORTALIZED PORCINE ALVEOLAR MACROPHAGE CULTURED CELL LINE, AND METHOD FOR PRODUCING VACCINE

WO - 27.01.2022

Clasificación Internacional [C12N 5/10](#) N° de solicitud PCT/JP2021/027164 Solicitante KAGOSHIMA UNIVERSITY Inventor/a OZAWA Makoto

This immortalized porcine alveolar macrophage cultured cell line has a viral long terminal repeat, expresses a gene that induces cell immortalization, and is sensitive to porcine reproductive and respiratory syndrome virus and/or African swine fever virus.

106. [202127002168A\\*03](#) RESTRICTED PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST CANCERS AND RELATED METHODS

IN - 28.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202127002168 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a SONG, Colette

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.

107. [WO2016150026](#) PORCINE PSEUDORABIES VIRUS ATTENUATING METHOD, VIRAL STRAINS ATTENUATED THEREBY, VACCINE COMPOSITION AND APPLICATION THEREOF

PL - 31.01.2022

Clasificación Internacional [C12N 7/08](#) N° de solicitud 15853631 Solicitante Inventor/a KEGONG TIAN

108. [20220025015](#) Methods, compositions and therapeutical vaccine for autoimmune diseases and allergy treatment

US - 27.01.2022

Clasificación Internacional [C07K 14/74](#) N° de solicitud 17495639 Solicitante Tianxin Wang Inventor/a Tianxin Wang

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

109. [202117018918](#) VACCINE POLYPEPTIDE COMPOSITIONS AND METHODS

IN - 21.01.2022

Clasificación Internacional [A61K /](#) N° de solicitud 202117018918 Solicitante ARIZONA BOARD OF REGENTS ON BEHALF OF THE UNIVERSITY OF ARIZONA Inventor/a STULL, Terrance

Immunogenic peptides, fusion polypeptides, and carrier molecules which include the immunogenic peptides, and immunogenic compositions which include these immunogenic peptides, fusion heterologous polypeptides, and/or carrier molecules bearing the peptides, and which are able to elicit antibody production against infectious organisms, are disclosed. Also disclosed are methods of making and their use in causing an antibody response against one or more strains of infectious organism, such as B. pertussis (Bp).

110. [202021027974](#)"INTERACTION OF CORONA VIRUS SPIKE PROTEIN WITH FLAVONOIDS OF CLITORIA TERNATEA LEAD TO EDIBLE VACCINE

IN - 21.01.2022

Clasificación Internacional [A61K](#) / N° de solicitud 202021027974 Solicitante DR. NISHA GARG Inventor/a DR. NISHA GARG

ABSTRACTTITLE: INTERACTION OF CORONA VIRUS SPIKE PROTEIN WITH FLAVONOIDS OF CLITORIA TERNATEA LEAD TO EDIBLE VACCINE According to WHO, no pharmaceutical product has yet been shown to be safe and effective for the treatment of COVID-19. The only plausible alternative is vaccination, which is just a preventive measure, not a treatment of COVID-19. Currently, only vaccinations are available, which need a lot of extra care (refrigeration, careful handling, expertise to apply, etc.), and are costly too. Other medications like Remdisvir, Favipiravir, Lopinavir pose various side-effects (e.g. rise in sugar level, fungal infections, nausea, rashes, swelling of lips or face or throat), also being very expensive, which render them rather unusable. The current invention proposes to formulate an edible herbal composition for mitigating COVID-19 infection symptoms, which is needle-free, and inexpensive. Present invention provide a herbal composition for mitigating COVID-19 infection symptoms comprising an aqueous extract of dried roots or dried flowers or dried leaves of a Clitoria Ternatea plant.

111. [3941937](#)EXTRAZELLULÄRE VESIKEL ZUR IMPFSTOFFVERABREICHUNG

EP - 26.01.2022

Clasificación Internacional [C07K 14/705](#) N° de solicitud 20721330 Solicitante CODIAK BIOSCIENCES INC Inventor/a MONIZ RAYMOND J

The present disclosure relates to extracellular vesicles (EVs), e.g., exosomes, comprising a payload (e.g., an antigen, adjuvant, and/or immune modulator) and/or a targeting moiety. Also provided herein are methods for producing the EVs (e.g., exosomes) and methods for using the EVs (e.g., exosomes) to treat and/or prevent diseases or disorders, e.g., cancer, graft-versus-host disease (GvHD), autoimmune disease, infectious diseases, or fibrotic diseases.

112. [784085](#)COMBINATION THERAPY

NZ - 28.01.2022

Clasificación Internacional [A61K 39/00](#) N° de solicitud 784085 Solicitante ETHERNA IMMUNOTHERAPIES NV Inventor/a COOLS, Marina

The present invention in general relates to combinations of mRNA molecules encoding CD40, caTLR4 and CD70 with mRNA molecules encoding tumor-associated antigens for use as therapeutic vaccine in the treatment of metastatic cancer patients primarily with stable malignant melanoma disease, but also extending into other cancer types and to patient whose disease has shown partial response on prior therapy. Said uses may further encompass the administration of checkpoint inhibitors. The present invention further provides administration schemes for such therapies focusing on administration of the therapeutic into lymph nodes, so called intra-nodal therapy.

113. [WO/2022/020460](#)VACCINE USING M2/BM2-DEFICIENT INFLUENZA VECTORS

WO - 27.01.2022

Clasificación Internacional [A61K 39/145](#) N° de solicitud PCT/US2021/042561 Solicitante FLUGEN, INC. Inventor/a MOSER, Michael J.



The invention provides a recombinant virus comprising an influenza viral backbone, wherein the influenza viral backbone comprises PB1, PB2, PA, NP, M, NS, HA, and NA gene segments, wherein at least one of the PB1, PB2, PA, NP, M, NS, HA, and NA gene segments comprises at least one nucleotide sequence that encodes one or more antigens. The invention provides a recombinant virus wherein the antigen is an immunogenic fragment of SARS-CoV-2 spike glycoprotein. The invention also provides a pharmaceutical formulation and a method of eliciting an immune response.

114. [WO/2022/016755](#) TREHALOSE DERIVATIVE AND CARBOHYDRATE ANTIGEN CONJUGATE, AND PREPARATION METHOD THEREFOR AND APPLICATION THEREOF  
WO - 27.01.2022

Clasificación Internacional [C07H 15/26](#) N° de solicitud PCT/CN2020/130230 Solicitante GUANGZHOU UNIVERSITY OF CHINESE MEDICINE (GUANGZHOU INSTITUTE OF TRADITIONAL CHINESE MEDICINE) Inventor/a LIAO, Guochao

The present invention relates to the technical field of chemistry and medicines. Disclosed are a trehalose derivative and carbohydrate antigen conjugate, and a preparation method therefor and an application thereof. According to the present invention, the conjugate is obtained by taking trehalose as an embedded adjuvant and coupling the trehalose with a tumor-associated carbohydrate antigen (STn or Tn) abnormally expressed on the surface of a tumor cell. The conjugate has the advantages of being clear in structure, simple and convenient in synthesis method, stable and controllable in product quality, and the like, and particularly, a vaccine can overcome the defect of weak immunogenicity of the carbohydrate antigen and can induce generation of a high-affinity specific IgG antibody, so that the anti-tumor effect of killing tumor cells in a targeted manner is achieved.

115. [WO/2022/017895](#) TREATMENT OF RESIDUAL DISEASE  
WO - 27.01.2022

Clasificación Internacional [C07K 14/47](#) N° de solicitud PCT/EP2021/069697 Solicitante RHOVAC APS Inventor/a SCHUHMACHER, Juliane

The invention provides RhoC peptides, preferably in the form of vaccine compositions comprising RhoC peptides for use in methods of treatment of residual disease in cancer patients having undergone initial treatment, e.g. by radical surgery and/or radiation therapy.

116. [784331](#) HLA-H IN MEDICINE AND DIAGNOSTICS  
NZ - 28.01.2022

Clasificación Internacional [C12Q 1/6881](#) N° de solicitud 784331 Solicitante Intellexon GmbH Inventor/a WÜRFEL, Wolfgang

The present invention relates to a HLA-H related nucleic acid molecule, a vector, a host cell, or a protein or peptide, or combinations thereof for use as an immunosuppressant, as a tumor vaccine or as a pregnancy promoter wherein (I) the nucleic acid molecule is (a) encoding a polypeptide comprising or consisting of the amino acid sequence of SEQ ID NO: 1; or (b) consisting of the nucleotide sequence of SEQ ID NO: 2; or (c) encoding a polypeptide which is at least 70% identical to SEQ ID NO: 1; or (d) consisting of a nucleotide sequence which is at least 70% identical to the nucleotide sequence of SEQ ID NO: 2; or (e) consisting of a nucleotide sequence which is degenerate with respect to the nucleic acid molecule of (d); or (f) a fragment of the nucleic acid molecule of any one of (a) to (e), said fragment comprising at least 150 nucleotides; or (g) corresponding to the nucleic acid molecule of any one of (a) to (f), wherein T is replaced by U; (II) the vector comprises the nucleic acid molecule of (I); (III) the host cell is transformed, transduced or transfected with the vector of (II); and (IV) the protein or peptide being encoded by the nucleic acid molecule of (I).

117. [202148057321](#) NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST VARIOUS TUMORS

IN - 28.01.2022

Clasificación Internacional [A61K](#) / N° de solicitud 202148057321 Solicitante IMMATICS BIOTECHNOLOGIES GMBH Inventor/a MAHR, Andrea

ABSTRACT NOVEL PEPTIDES AND COMBINATION OF PEPTIDES FOR USE IN IMMUNOTHERAPY AGAINST VARIOUS TUMORS. 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.

118. [WO/2022/020427](#) MICRONEEDLE IMMUNOTHERAPEUTIC MULTI-COMPONENT SYSTEM AND A METHOD FOR VACCINATION

WO - 27.01.2022

Clasificación Internacional [A61M 37/00](#) N° de solicitud PCT/US2021/042503 Solicitante MICRONEEDLES INC. Inventor/a ZVEZDIN, Vasili, Nikolaevich

A dissoluble microneedle drug delivery system includes a fixation component having an opening window area, and at least two replaceable and/or dissoluble inner matrices fitting into the window area one after another. The fixation component comprises an array of microneedles attached on its base, at least part of the microneedles being configured to fix the delivery system onto skin. The first inner matrix comprises a multitude of microneedles attached on its base, at least part of the microneedles configured to prepare the skin to vaccination by the subsequent second inner matrix. The second inner matrix is a vaccine/immunization matrix configured to replace the first inner matrix and comprising an array of microneedles attached on its base, at least part of the microneedles configured to deliver a vaccination. The system may include a microchannel network within at least one inner matrices for delivery of components regulating dissolution of the microneedles.

119. [WO/2022/020583](#) COMPOSITIONS AND METHODS FOR MODULATION OF SIRP $\alpha$ -MEDIATED SIGNALING

WO - 27.01.2022

Clasificación Internacional [A61P 35/00](#) N° de solicitud PCT/US2021/042767 Solicitante THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY Inventor/a GARCIA, Kenan Christopher

The present disclosure relates generally to compositions and methods for modulating cell surface receptor signaling by specifically recruiting membrane phosphatases, *in cis*, to a spatial proximity of a signal regulatory protein  $\alpha$  (SIRP $\alpha$ ) molecule. More particularly, the disclosure provides novel multivalent protein-binding molecules that specifically bind SIRP $\alpha$  and antagonize the SIRP $\alpha$ -mediated signaling through recruitment of a phosphatase activity to dephosphorylate the intracellular domain of SIRP $\alpha$ . Also provided are compositions and methods useful for producing such molecules, methods for promoting maturation dendritic cells and for production of vaccine, as well as methods for the prevention and/or treatment of health conditions associated with the inhibition of signal transduction mediated by SIRP $\alpha$  and/or CD47.

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

Results Search in US Patent Collection db for: (ABST/vaccine AND ISD/20220101->20220131), 24 records.

PAT. NO.	Title
1	<a href="#">11,214,608</a> <a href="#">Peptides and combination of peptides for use in immunotherapy against ovarian cancer and other cancers</a>
2	<a href="#">11,214,604</a> <a href="#">Peptides for use in immunotherapy against cancers</a>
3	<a href="#">11,213,585</a> <a href="#">Vaccines for use in treating various diseases and disorders</a>
4	<a href="#">11,213,581</a> <a href="#">Antigen specific immunotherapy for COVID-19 fusion proteins and methods of use</a>
5	<a href="#">11,213,580</a> <a href="#">Mutant of L1 protein of human papillomavirus type 16</a>
6	<a href="#">11,213,579</a> <a href="#">Vaccines with enhanced immunogenicity, low allergenicity and reactogenicity</a>
7	<a href="#">11,213,563</a> <a href="#">Polypeptide and use thereof</a>
8	<a href="#">11,213,482</a> <a href="#">SARS-CoV-2 subunit vaccine and microneedle array delivery system</a>
9	<a href="#">11,224,647</a> <a href="#">Safe potent single platform vaccine against Tier 1 select agents and other pathogens</a>
10	<a href="#">11,224,646</a> <a href="#">Intranasal delivery of a cyclic-di-nucleotide adjuvanted vaccine for tuberculosis</a>
11	<a href="#">11,224,644</a> <a href="#">Peptides and combination of peptides for use in immunotherapy against various cancers</a>
12	<a href="#">11,224,571</a> <a href="#">Oral dispersible vaccine comprising virosomes</a>
13	<a href="#">11,220,718</a> <a href="#">Metapneumovirus strains and their use in vaccine formulations and as vectors for expression of antigenic sequences</a>
14	<a href="#">11,220,673</a> <a href="#">ORF7 deficient varicella virus, vaccine comprising the virus and use thereof</a>
15	<a href="#">11,219,685</a> <a href="#">Intranasal MERS-CoV vaccine</a>
16	<a href="#">11,219,683</a> <a href="#">Methods and compositions for treating and preventing HIV</a>
17	<a href="#">11,219,674</a> <a href="#">Therapeutic cancer vaccine</a>
18	<a href="#">11,231,419</a> <a href="#">Methods for detecting peptide/MHC/TCR binding</a>

19	<a href="#">11,230,581</a>	<a href="#">Peptides and combination of peptides for use in immunotherapy against ovarian cancer and other cancers</a>
20	<a href="#">11,230,574</a>	<a href="#">Heterologous expression cassette, DNA construct and vaccine composition to immunize against flavivirus and/or other pathogens</a>
21	<a href="#">11,230,572</a>	<a href="#">Signature-based human immunodeficiency virus (HIV) envelope (Env) trimer vaccines and methods of using the same</a>
22	<a href="#">11,229,697</a>	<a href="#">Vaccines against genital herpes simplex infections</a>
23	<a href="#">11,229,693</a>	<a href="#">Poxvirus vectors encoding HIV antigens, and methods of use thereof</a>
24	<a href="#">11,229,691</a>	<a href="#">Vaccine composition against Chlamydiaceae infections</a>

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Edición: Annia Ramos Rodríguez [aramos@finlay.edu.cu](mailto:aramos@finlay.edu.cu)  
Ma. Victoria Guzmán Sánchez [mguzman@finlay.edu.cu](mailto:mguzman@finlay.edu.cu)  
Randelys Molina Castro [rmolina@finlay.edu.cu](mailto:rmolina@finlay.edu.cu)  
Irina Crespo Molina [icrespo@finlay.edu.cu](mailto:icrespo@finlay.edu.cu)  
Yamira Puig Fernández [yamipuig@finlay.edu.cu](mailto:yamipuig@finlay.edu.cu)  
Rolando Ochoa Azze [ochoa@finlay.edu.cu](mailto:ochoa@finlay.edu.cu)



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