

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
27 January 2022 (27.01.2022)



(10) International Publication Number
WO 2022/020800 A3

(51) International Patent Classification:

C07K 14/005 (2006.01) A61K 38/16 (2006.01)
C07K 14/01 (2006.01) A61K 47/69 (2017.01)
C07K 14/10 (2006.01) A61K 9/51 (2006.01)
C07K 14/155 (2006.01) C07K 14/16 (2006.01)

(21) International Application Number:

PCT/US2021/043151

(22) International Filing Date:

26 July 2021 (26.07.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/056,125 24 July 2020 (24.07.2020) US

(71) Applicants: **THE GENERAL HOSPITAL CORPORATION** [US/US]; 55 Fruit Street, Boston, MA 02114 (US). **PRESIDENT AND FELLOWS OF HARVARD COLLEGE** [US/US]; 17 Quincy Street, Cambridge, MA 02138-3876 (US).

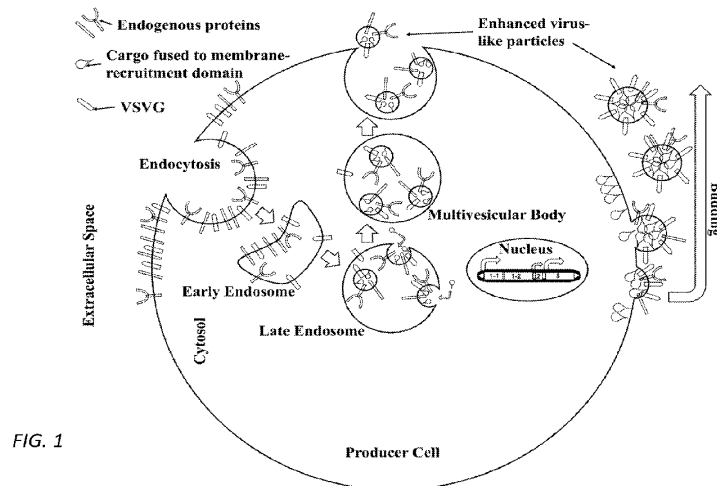
(72) Inventors: **JOUNG, J., Keith**; 1 Magnolia Way, Winchester, MA 01890 (US). **CABECEIRAS, Peter**; 15 Joy Street, Apartment 6, Boston, MA 02114 (US).

(74) Agent: **DEYOUNG, Janice, Kugler et al.**; Fish & Richardson P.C., P.O. Box 1022, Minneapolis, MN 55440-1022 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

(54) Title: ENHANCED VIRUS-LIKE PARTICLES AND METHODS OF USE THEREOF FOR DELIVERY TO CELLS



(57) Abstract: Enhanced virus-like particles (eVLPs), comprising a membrane comprising a phospholipid bilayer with one or more virally-derived glycoproteins on the external side; and a cargo disposed in the core of the eVLP on the inside of the membrane, wherein the eVLP does not comprise an exogenous gag/pol protein, and methods of use thereof for delivery of the cargo to cells.

[Continued on next page]

TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

17 March 2022 (17.03.2022)