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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 February 2022 (10.02.2022)

WIPO | PCT

(10) International Publication Number
WO 2022/032154 A2

(51) International Patent Classification:
A61K 9/127 (2006.01) *A61K 47/60* (2017.01)
A61K 47/18 (2017.01) *A61K 9/51* (2006.01)

(21) International Application Number:
PCT/US2021/045038

(22) International Filing Date:
06 August 2021 (06.08.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/062,367 06 August 2020 (06.08.2020) US

(71) Applicant: **MODERNATX, INC.** [US/US]; 200 Technology Square, Cambridge, Massachusetts 02139 (US).

(72) Inventors: **CADETE PIRES, Ana**; 200 Technology Square, Cambridge, Massachusetts 02139 (US). **SUNG, Jean C.**; 200 Technology Square, Cambridge, Massachusetts 02139 (US). **CORNEBISE, Mark**; 200 Technology Square, Cambridge, Massachusetts 02139 (US). **HRKACH, Jeffrey**; 200 Technology Square, Cambridge, Massachusetts 02139 (US).

(74) Agent: **GODDARD, Christine A.**; Fish & Richardson, P.O. Box 1022, Minneapolis, Minnesota 55440-1022 (US).

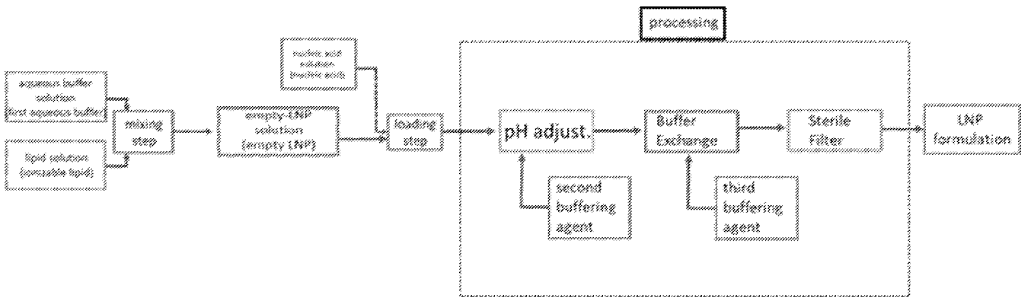
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, 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, 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:
— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

(54) Title: COMPOSITIONS FOR THE DELIVERY OF PAYLOAD MOLECULES TO AIRWAY EPITHELIUM



Exemplary first generation PHL diagram

Fig. 1

(57) Abstract: The present disclosure provides LNPs comprising payload molecules, e.g., mRNA therapeutics, for the treatment of diseases or disorders, which would benefit from delivery of payload molecules to airway cells.

WO 2022/032154 A2