

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
24 October 2024 (24.10.2024)



(10) International Publication Number
WO 2024/220807 A3

(51) International Patent Classification:

C07H 15/12 (2006.01) *A61K 31/7105* (2006.01)
B82Y 5/00 (2011.01) *A61P 9/00* (2006.01)
A61K 31/70 (2006.01)

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))
- with sequence listing part of description (Rule 5.2(a))

(21) International Application Number:

PCT/US2024/025406

(22) International Filing Date:

19 April 2024 (19.04.2024)

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

19 December 2024 (19.12.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/497,059 19 April 2023 (19.04.2023) US
63/586,456 29 September 2023 (29.09.2023) US

(71) Applicant: **PRIME MEDICINE, INC.** [US/US]; 21 Erie Street, Cambridge, Massachusetts 02139 (US).

(72) Inventors: **LAI, Li**; 371 N. Emerson Rd., Lexington, Massachusetts 02420 (US). **GURUGE, Charitha**; c/o Prime Medicine, Inc., 21 Erie Street, Cambridge, Massachusetts 02139 (US). **HATIT, Marine**; c/o Prime Medicine, Inc., 21 Erie Street, Cambridge, Massachusetts 02139 (US).

(74) Agent: **MURPHY, Kelly**; 650 Trade Centre Way, Suite 200, Kalamazoo, Michigan 49002 (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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).

(54) Title: LIPID NANOPARTICLE (LNP) DELIVERY SYSTEMS AND FORMULATIONS

(57) Abstract: The present disclosure describes compositions, nanoparticles (such as lipid nanoparticles), and/or lipid nanoparticle compositions and methods of their use.

WO 2024/220807 A3