

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
28 October 2021 (28.10.2021)



(10) International Publication Number
WO 2021/216647 A1

(51) International Patent Classification:

B01J 19/00 (2006.01) **C12M 1/24** (2006.01)
B01L 3/00 (2006.01) **C12M 1/34** (2006.01)
C07H 21/04 (2006.01) **C12M 1/36** (2006.01)
C12M 1/00 (2006.01)

(21) International Application Number:

PCT/US2021/028312

(22) International Filing Date:

21 April 2021 (21.04.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/014,074 22 April 2020 (22.04.2020) US

(71) Applicant: **NUTCRACKER THERAPEUTICS, INC.**
[US/US]; 5858 Horton St., Suite 540, Emeryville, CA
94608 (US).

(72) Inventors: **DEUTSCH, Samuel**; 5858 Horton St., Suite
540, Emeryville, CA 94608 (US). **FAY, Nicole**; 5858 Hor-
ton St., Suite 540, Emeryville, CA 94608 (US). **FRIMAN-**
NSSON, Daniel; 5858 Horton St., Suite 540, Emeryville,
CA 94608 (US). **HAABETH, Ole**; 5858 Horton St., Suite
540, Emeryville, CA 94608 (US). **MCKINLAY, Colin**;
5858 Horton St., Suite 540, Emeryville, CA 94608 (US).

(74) Agent: **SHOOP, Richard D.** et al.; Shay Glenn LLP, 2929
Campus Drive, Suite 225, San Mateo, CA 94403 (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).

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))

(54) Title: MRNA TREATMENT NANOPARTICLES

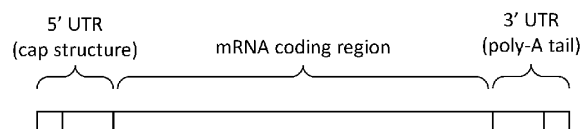


FIG. 1A

(57) Abstract: Provided herein are examples of mRNA treatment nanoparticles and methods of using them to treat a patient. An mRNA treatment nanoparticle may include one or more mRNAs encoding a tumor-specific antigen and an immunomodulatory agent; and a delivery vehicle molecule encapsulating the one or more mRNAs.

WO 2021/216647 A1