

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

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
17 February 2022 (17.02.2022)



(10) International Publication Number  
**WO 2022/036170 A1**

- (51) **International Patent Classification:**  
*A61K 31/704* (2006.01) *G01N 33/58* (2006.01)  
*A61K 9/16* (2006.01)
- (21) **International Application Number:**  
PCT/US2021/045866
- (22) **International Filing Date:**  
13 August 2021 (13.08.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
63/066,051 14 August 2020 (14.08.2020) US  
63/158,761 09 March 2021 (09.03.2021) US
- (71) **Applicant: ARCTURUS THERAPEUTICS, INC.**  
[US/US]; 10628 Science Center Drive, Suite 250, San Diego, CA 92121 (US).
- (72) **Inventors: SAGI, Amit;** C/o Arcturus Therapeutics, Inc., 10628 Science Center Drive, Suite 250, San Diego, CA 92121 (US). **BAO, Yanjie;** C/o Arcturus Therapeutics, Inc., 10628 Science Center Drive, Suite 250, San Diego, CA 92121 (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:** METHOD OF LYOPHILIZING LIPID NANOPARTICLES

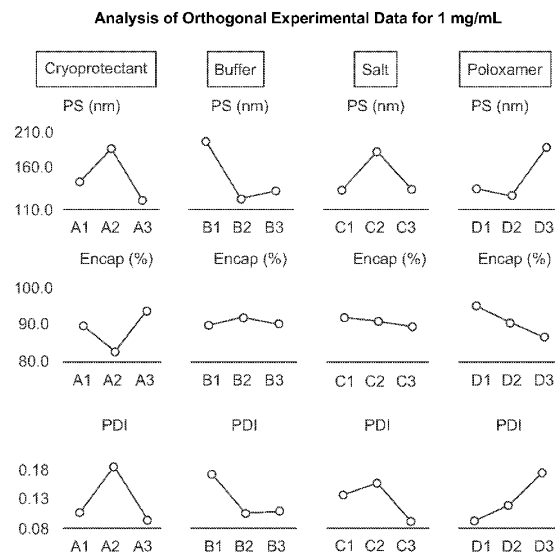


FIG. 1

(57) **Abstract:** Methods of preparing lyophilized lipid nanoparticle-nucleic acid compositions are provided. The methods comprise preparing a suspension of lipid nanoparticles with a monosaccharide and one or more excipients selected from thiosulfate, potassium sorbate, sodium benzoate, and iodixanol. Lyophilized lipid nanoparticle-nucleic acid compositions and methods of reconstituting and administering the same are further provided.

[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).

**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))*