

(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 2022/035903 A2

- (51) **International Patent Classification:**
A61K 48/00 (2006.01) *C12N 15/861* (2006.01)
- (21) **International Application Number:**
PCT/US2021/045447
- (22) **International Filing Date:**
10 August 2021 (10.08.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
63/063,851 10 August 2020 (10.08.2020) US
- (71) **Applicant: PREVAIL THERAPEUTICS, INC.**
[US/US]; 430 East 29th Street, Suite 940, New York, New York 10016 (US).
- (72) **Inventors; and**
(71) **Applicants: ABELIOVICH, Asa** [US/US]; 20 East 35th Street, Apt. 15E, New York, New York 10016 (US). **SEVIGNY, Jeffrey** [US/CH]; 169 Hohestrasse, 4014 Oberwil (CH). **LEWIS, Travis** [US/US]; 515 East 72nd St., Apt 30B, New York, New York 10021 (US). **USPENSKAYA, Olga** [FR/FR]; 22 chemin de Bretagne 92130, 92130 Issy-les-Moulineaux (FR).
- (74) **Agent: ELRIFI, Ivor et al.;** Cooley LLP, 1299 Pennsylvania Ave., Suite 700, Washington, District of Columbia 20004 (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,

(54) **Title:** GENE THERAPIES FOR LYSOSOMAL DISORDERS

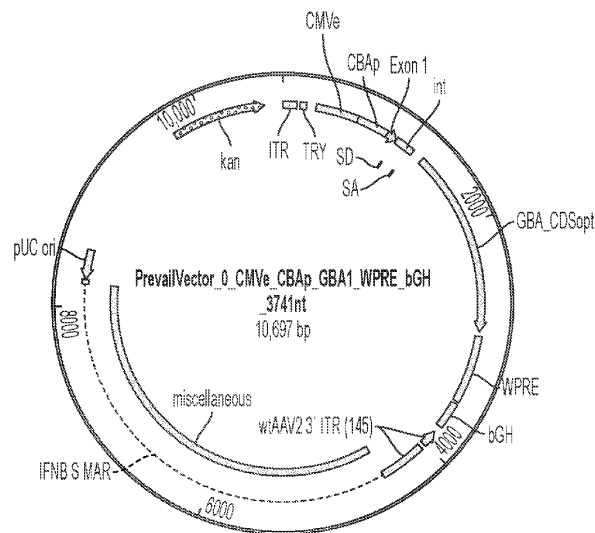


FIG. 1

(57) **Abstract:** The disclosure relates to compositions and methods for treatment of diseases associated with aberrant lysosomal function, such as Parkinson's disease and Gaucher disease. The disclosure provides methods of treating Gaucher disease, Parkinson's disease or other synucleinopathies by administering expression constructs comprising a transgene encoding beta-glucocerebrosidase, an inhibitory RNA targeting alpha-Synuclein, or a combination of the foregoing to a subject in need thereof.

[Continued on next page]

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:

- *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*
- *with sequence listing part of description (Rule 5.2(a))*