

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
15 February 2024 (15.02.2024)



(10) International Publication Number
WO 2024/035946 A1

(51) International Patent Classification:

C12N 15/113 (2010.01) A61P 25/28 (2006.01)
A61K 31/712 (2006.01)

(21) International Application Number:

PCT/US2023/030103

(22) International Filing Date:

11 August 2023 (11.08.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/397,284	11 August 2022 (11.08.2022)	US
63/408,427	20 September 2022 (20.09.2022)	US
63/517,529	03 August 2023 (03.08.2023)	US

(71) Applicant: **WAVE LIFE SCIENCES LTD.** [SG/SG]; 7 Straits View #12-00, Marina One East Tower, Singapore 018936 (SG).

(72) Inventors; and

(71) Applicants (for US only): **LAKE, Stephen Lister** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **HU, Xiao Shelley** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **GAO, Jianxin** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **ZHANG, Yilin** [CN/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **ROSS, Philip** [CA/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **ADUDA, Vincent** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **SHIMIZU, Mamoru** [JP/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **XU, Danlin** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **BOWMAN, Keith Andrew** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **LAMORE, Sarah Diane** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **PAN-**

ZARA, Michael Angelo [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **ALAM, Mohammed Rowshon** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **JANG, Hyun Gyung** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US).

(74) Agent: **GONCHAROFF, Dustin K.** et al.; Choate, Hall & Stewart LLP, Two International Place, Boston, Massachusetts 02110 (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).

Published:

— with international search report (Art. 21(3))

(54) Title: OLIGONUCLEOTIDE COMPOSITIONS AND METHODS THEREOF

(57) Abstract: Among other things, the present disclosure provides various oligonucleotide technologies including chirally controlled oligonucleotide compositions and technologies for manufacturing such oligonucleotide compositions. In some embodiments, a method is a method of treatment or prevention of Huntington's Disease in a subject in need thereof; a method of allele-specific knockdown of a mutant Huntingtin transcript in a subject; a method for delaying the onset of and/or reducing the severity of at least one symptom of Huntington's Disease in a subject with Huntington's Disease; a method of reducing the expression, level, amount and/or activity of a mutant Huntingtin gene or a gene product thereof; and/or a method of preparation of a medicament for treatment of Huntington's Disease, wherein the method pertains to the use of an oligonucleotide described herein, administered at a dose described herein. In some embodiments, the present disclosure provides doses, dosages, and formulations of an oligonucleotide described herein.



WO 2024/035946 A1