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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 May 2022 (12.05.2022)

WIPO | PCT

(10) International Publication Number
WO 2022/099159 A1

(51) International Patent Classification:
C12N 15/11 (2006.01) *C07H 21/02* (2006.01)
C12N 9/22 (2006.01)

(21) International Application Number:
PCT/US2021/058495

(22) International Filing Date:
08 November 2021 (08.11.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

63/111,079	08 November 2020 (08.11.2020)	US
63/175,036	14 April 2021 (14.04.2021)	US
63/188,415	13 May 2021 (13.05.2021)	US
63/196,178	02 June 2021 (02.06.2021)	US
63/248,520	26 September 2021 (26.09.2021)	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)*: **MONIAN, Prashant** [IN/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **SHIVALILA, Chikdu Shakti** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **MARAPPAN, Subramanian** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **VARGEESE, Chandra** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambrdige, Massachusetts 02138 (US). **KANDASAMY, Pachamuthu** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **LU, Genliang** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **YU, Hui** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **BUTLER, David Charles Donnell** [GB/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **APPONI, Luciano Henrique** [BR/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). **STANDLEY, Stephany Michelle** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **BOULAY, David John** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **HOSS, Andrew Guzior** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **DESAI, Jigar** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **GODFREY, Jack David** [GB/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **YANG, Hailin** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **IWAMOTO, Naoki** [JP/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **KUMARASAMY, Jayakanthan** [CA/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **LAMATTINA, Anthony** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US). **PU, Tom Liantang** [US/US]; c/o Wave Life Sciences Ltd., 733 Concord Avenue, Cambridge, Massachusetts 02138 (US).

(74) Agent: **KITTO, Rebekah Z.** 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, 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).

(54) Title: OLIGONUCLEOTIDE COMPOSITIONS AND METHODS THEREOF

(57) Abstract: Among other things, the present disclosure provides oligonucleotides and compositions thereof. In some embodiments, provided oligonucleotides and compositions are useful for adenosine modification. In some embodiments, the present disclosure provides methods for treating various conditions, disorders or diseases that can benefit from adenosine modification.

WO 2022/099159 A1

[Continued on next page]

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))*