

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
30 July 2020 (30.07.2020)



(10) International Publication Number
WO 2020/154362 A1

(51) International Patent Classification:
G16H 20/10 (2018.01)

(21) International Application Number:
PCT/US2020/014549

(22) International Filing Date:
22 January 2020 (22.01.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/795,710 23 January 2019 (23.01.2019) US
62/795,705 23 January 2019 (23.01.2019) US

(71) Applicant: **THE REGENT OF THE UNIVERSITY OF MICHIGAN** [US/US]; Office Of Technology Transfer, 1600 Huron Parkway, 2nd Floor, Ann Arbor, MI 48109-2590 (US).

(72) Inventors: **ATHEY, Brian, D.**; Palmer Commons, 100 Washtenaw Ave #2017, Ann Arbor, MI 48109 (US). **HIGGINS, Peter**; 2073 Chaucer Drive, Ann Arbor, MI 48103 (US). **ADE, Alex**; Plamer Commons, 100 Washtenaw Ave #2017, Ann Arbor, MI 48109 (US). **KALININ, Alexandr**; Plamer Commons, 100 Washtenaw Ave #2017, Ann Arbor, MI 48109 (US). **REAMAROON, Narathip**; Plamer Commons, 100 Washtenaw Ave #2017, Ann Arbor, MI 48109 (US). **BURNS, James S.**; Palmer Commons, 100 Washtenaw Ave #2017, Ann Arbor, Michigan 48109 (US).

(74) Agent: **RUETH, Randall, G.**; Marshall, Gerstein & Borun LLP, 233 S. Wacker Drive, 6300 Willis Tower, Chicago, IL 60606-6357 (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, 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))

(54) Title: PHARMACOGENOMIC DECISION SUPPORT FOR MODULATORS OF THE NMDA, GLYCINE, AND AMPA RECEPTORS

(57) Abstract: Methods for identifying patients diagnosed with treatment resistant or refractory depression, pain or other clinical indications who are eligible to receive N-methyl-D-aspartate receptor antagonist, glycine receptor beta (GLRB) modulator, or α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor (AMPA)-based therapies to include determining the appropriate medication, an optimal dose for each patient, and determining which patients are not eligible to receive the therapy. The pharmacogenomic clinical decision support assays include targeted single nucleotide polymorphisms and clinical values or a combination of targeted single nucleotide polymorphisms, targeted ketamine-specific expansion and contraction of topologically associated domains, and clinical values. The methods described herein allow for a more effective determination of which patients will experience drug efficacy and which patients will experience adverse drug events. The methods provide personalized patient recommendations for dose, the frequency of medication administration, and recommendations on drug choice.

WO 2020/154362 A1