

CORRECTED VERSION

(19) World Intellectual Property Organization

International Bureau

(43) International Publication Date

18 April 2024 (18.04.2024)



(10) International Publication Number

WO 2024/081939 A8

(51) International Patent Classification:

A61K 31/395 (2006.01) A61K 31/4196 (2006.01)
A61K 31/415 (2006.01) A61K 31/33 (2006.01)

(21) International Application Number:

PCT/US2023/076922

(22) International Filing Date:

13 October 2023 (13.10.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/415,868 13 October 2022 (13.10.2022) US

(71) Applicants: **THE BROAD INSTITUTE, INC.** [US/US]; 415 Main Street, Cambridge, MA 02142 (US). **BIOGEN MA INC.** [US/US]; 225 Binney Street, Cambridge, MA 02142 (US).

(72) Inventors: **WAGNER, Florence, Fevrier**; c/o The Broad Institute, Inc., 415 Main Street, Cambridge, MA 02142 (US). **CAPACCI, Andrew, George**; c/o Biogen MA Inc., 225 Binney St, Cambridge, MA 02142 (US). **YOUSAF, Zain**; c/o Biogen MA Inc., 225 Binney St, Cambridge, MA 02142 (US). **CHEN, Teyu**; c/o Biogen MA Inc., 225 Binney St, Cambridge, MA 02142 (US). **MA, Bin**; c/o Biogen MA Inc., 225 Binney St, Cambridge, MA 02142 (US).

LUCAS, Brian, Stuart; c/o Biogen MA Inc., 225 Binney St, Cambridge, MA 02142 (US). **SHEKHAR, Mrinal**; c/o The Broad Institute, Inc., 415 Main Street, Cambridge, MA 02142 (US). **KYEI-BAFFOUR, Kwaku**; c/o The Broad Institute, Inc., 415 Main Street, Cambridge, MA 02142 (US). **WEIWER, Michel**; c/o The Broad Institute, Inc., 415 Main Street, Cambridge, MA 02142 (US). **GOULD, Alexandra**; c/o The Broad Institute, Inc., 415 Main Street, Cambridge, MA 02142 (US).

(74) Agent: **ZHANG, William, Wei** et al.; Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210-2206 (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.

(54) Title: GLYCOGEN SYNTHASE KINASE 3 INHIBITORS AND USES THEREOF

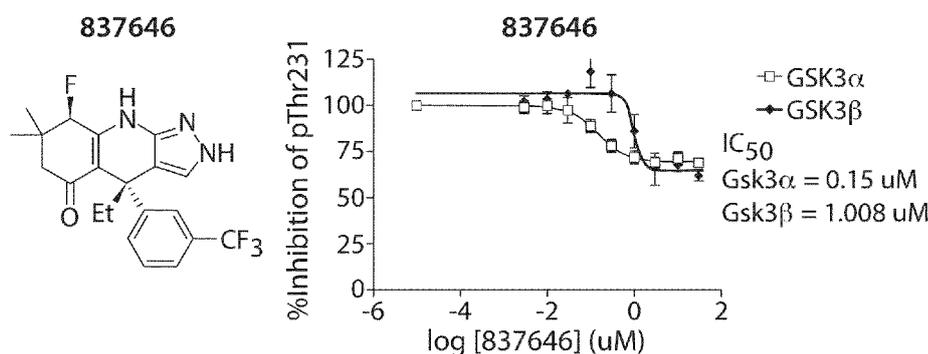


FIG. 1D

(57) Abstract: The present disclosure provides compounds of Formulae T-A, I-B, II-A, II-B, III-A, III-B, IV-A, IV-B, V-A, V-B, VI-A, and VI-B, and compounds shown in Table 13, Table 13 A, and Table 14, and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, isotopically labeled compounds, and prodrugs thereof, which are GSK3 inhibitors. The present disclosure also provides pharmaceutical compositions, combination therapies, and kits comprising the compounds, and pharmaceutically acceptable salts, solvates, hydrates, polymorphs, co-crystals, tautomers, stereoisomers, isotopically labeled compounds, or prodrugs thereof, and methods of treating or preventing diseases and disorders associated with GSK3.



WO 2024/081939 A8

(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))*
- *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))*

(88) **Date of publication of the international search report:**

16 May 2024 (16.05.2024)

(48) **Date of publication of this corrected version:**

06 June 2024 (06.06.2024)

(15) **Information about Correction:**

see Notice of 06 June 2024 (06.06.2024)