

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
10 November 2022 (10.11.2022)



(10) International Publication Number
WO 2022/235859 A1

(51) International Patent Classification:

C07D 241/08 (2006.01) C07D 417/12 (2006.01)
C07D 401/12 (2006.01) A61K 31/496 (2006.01)
C07D 405/12 (2006.01) A61P 29/00 (2006.01)

shay, A. [IN/US]; 1014 Robbinsville Edinburg Road, Robbinsville, New Jersey 08691 (US). VANHEYST, Michael, D. [US/US]; 261 Sumner Court, Harleysville, Pennsylvania 19438 (US).

(21) International Application Number:

PCT/US2022/027763

(74) Common Representative: **MERCK SHARP & DOHME LLC**; 126 EAST LINCOLN AVENUE, RAHWAY, New Jersey 07065-0907 (US).

(22) International Filing Date:

05 May 2022 (05.05.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/185,637 07 May 2021 (07.05.2021) US
63/286,691 07 December 2021 (07.12.2021) US

(71) Applicant: **MERCK SHARP & DOHME LLC** [US/US]; 126 EAST LINCOLN AVENUE, RAHWAY, New Jersey 07065-0907 (US).

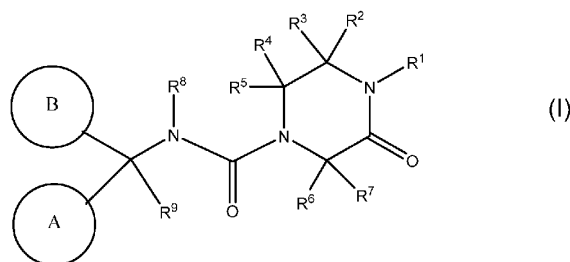
(72) Inventors; and

(71) Applicants (for US only): **ARASAPPAN, Ashok** [US/US]; 2000 Galloping Hill Road, Kenilworth, New Jersey 07033 (US). **BELL, Ian, M.** [US/US]; 770 Sumneytown Pike, West Point, Pennsylvania 19486 (US). **COX, Jason, M.** [US/US]; 18368 Via Ambiente, Rancho Santa Fe, California 92067 (US). **KELLY, Michael, J., III** [US/US]; 770 Sumneytown Pike, West Point, Pennsylvania 19486 (US). **LAYTON, Mark Eric** [US/US]; 770 Sumneytown Pike, West Point, Pennsylvania 19486 (US). **LIU, Hong** [US/US]; 2000 Galloping Hill Road, Kenilworth, New Jersey 07033 (US). **LIU, Jian** [US/US]; 2592 Hawthorn Drive, Norristown, Pennsylvania 19403 (US). **SHAH, Ak-**

(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, IQ, IR, IS, IT, JM, 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: CYCLOALKYL 3-OXOPIPERAZINE CARBOXAMIDES AND CYCLOHETEROALKYL 3-OXOPIPERAZINE CARBOXAMIDES AS NAV1.8 INHIBITORS



(57) Abstract: Novel compounds of structural formula (I), and the pharmaceutically acceptable salts thereof, are inhibitors of Nav1.8 channel activity and may be useful in the treatment, prevention, management, amelioration, control and suppression of diseases mediated by Nav1.8 channel activity. The compounds of Formula I may be useful in the treatment, prevention or management of pain disorders, cough disorders, acute itch disorders, and chronic itch disorders.

[Continued on next page]

WO 2022/235859 A1

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*