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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 September 2004 (16.09.2004)

PCT

(10) International Publication Number
WO 2004/078733 A1

(51) International Patent Classification[7]: C07D 239/94, 403/04, 413/12, A61K 31/517, C07D 401/12, 401/04, 403/12, 401/14, 405/12, 403/14, 417/12, 409/14, 417/14, 409/12, 471/04

(21) International Application Number:
PCT/US2004/006451

(22) International Filing Date: 3 March 2004 (03.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/451,458	3 March 2003 (03.03.2003)	US
60/463,797	18 April 2003 (18.04.2003)	US

(71) Applicant *(for all designated States except US)*: **VERTEX PHARMACEUTICALS INCORPORATED** [US/US]; 130 Waverly Street, Cambridge, MA 02139 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **GONZALES, Jesus, E., III** [US/US]; 12442 Carmel Cape, San Diego, CA 92130 (US). **WILSON, Dean, Mitchell** [US/US]; 9317 Pipilo Street, San Diego, CA 92129 (US). **TERMIN, Andreas, Peter** [DE/US]; 2080 Wandering Road, Encinitas, CA 92024 (US). **GROOTENHUIS, Peter, Diederik, Jan** [NL/US]; 4801 Riding Ridge Road, San Diego, CA 92130 (US). **ZHANG, Yulian** [CN/US]; 7809 Palmilla Drive, #1301, San Diego, CA 92122 (US). **PETZOLDT, Benjamin, John** [US/US]; 7309 Eads Avenue, La Jolla, CA 92037 (US). **FANNING, Lev, Tyler, Dewey** [US/US]; 5175 Luigi Terrace, #25, San Diego, CA 921222 (US). **NEUBERT, Timothy, Donald** [US/US]; 10721 Ballystock Court, San Diego, CA 92131 (US). **TUNG, Roger, D.** [US/US]; 14015 Caminito Pacifica Trail, San Diego, CA 92130 (US). **MARTINBOROUGH, Esther** [US/US]; 11128 Portobelo Drive, San Diego, CA 92124 (US). **ZIMMERMANN, Nicole** [DE/US]; 11568 Compass Point Drive North, Apt. 54, San Diego, CA 92126 (US).

(74) Agent: **SHAIR, Karoline, K., M.**; Vertex Pharmaceuticals Incorporated, 130 Waverly Street, Cambridge, MA 02139 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: QUINAZOLINES USEFUL AS MODULATORS OF ION CHANNELS

(57) Abstract: The present invention relates to quinazoline compounds of formula (I) useful as inhibitors of voltage-gated sodium channels and calcium channels. The invention also provides pharmaceutically acceptable compositions comprising the compounds of the invention and methods of using the compositions in the treatment of various disorders. or a pharmaceutically acceptable derivative thereof, wherein R^1, X, R^3, x, and ring A are as defined in the present application.

WO 2004/078733 A1