

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

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
16 November 2023 (16.11.2023)



(10) International Publication Number  
**WO 2023/220131 A2**

(51) International Patent Classification:  
C07C 233/80 (2006.01) A61K 31/167 (2006.01)

(21) International Application Number:  
PCT/US2023/021668

(22) International Filing Date:  
10 May 2023 (10.05.2023)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
63/364,459 10 May 2022 (10.05.2022) US

(71) Applicant: **RELAY THERAPEUTICS, INC.** [US/US];  
399 Binney Street, 2nd Floor, Cambridge, Massachusetts  
02139 (US).

(72) Inventors: **PAN, Yue**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **BOEZIO, Alessandro**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **FRIDRICH, Cary Griffin**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **KRUEGER, Elaine B.**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **MOUS-TAKAS, Demetri T.**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **RAYNOR, Kevin David**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **SHORTSLEEVES, Kelley C.**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **MCLEAN, Thomas H.**; 399 Binney Street, 2nd Floor, Cambridge, Massachusetts 02139 (US). **DENIN-NO, Michael Paul**; 9 Hermitage Drive, Gales Ferry, Connecticut 06335 (US). **THOMSON, Christopher**; West Hill Innovation Park, Hertford Road, Hoddesdon Hertfordshire EN11 9FH (GB). **LARIVÉE, Alexandre**; 2525 Marie-Curie, Montreal, Québec H4S 2E1 (CA). **BURNIE, Andrew J.**; 2525 Marie-Curie, Montreal, Québec H4S 2E1 (CA). **ATIENZA, Bren-Jordan**; 2525 Marie-Curie, Montreal, Québec H4S 2E1 (CA). **PERREAULT, Christian**; 2525 Marie-Curie, Montreal, Québec H4S 2E1 (CA). **MAERTENS, Gaetan**; 2525 Marie-Curie, Montreal, Québec H4S 2E1 (CA). **MOHAMED, Tarek**; 2525 Marie-Curie, Montreal, Québec H4S 2E1 (CA). **LEPITRE, Thomas**; 2525 Marie-Curie, Montreal, Québec H4S 2E1 (CA). **BAUM, Erich W.**; 399 Binney Street, 2nd Floor, Cambridge, MA 02139 (US).

(74) Agent: **REID, Andrea L.C.** et al.; c/o Dechert LLP, One International Place, 40th Floor, 100 Oliver Street, Boston, Massachusetts 02110-2605 (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.

(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:**

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: PI3K $\alpha$  INHIBITORS AND METHODS OF USE THEREOF

(57) Abstract: The present disclosure relates to novel compounds and pharmaceutical compositions thereof, and methods for inhibiting the activity of PI3K $\alpha$  enzymes with the compounds and compositions of the disclosure. The present disclosure further relates to, but is not limited to, methods for treating disorders associated with PI3K $\alpha$  signaling with the compounds and compositions of the disclosure.



WO 2023/220131 A2