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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 December 2022 (29.12.2022)

WIPO | PCT

(10) International Publication Number
WO 2022/268179 A1

(51) International Patent Classification:
C07D 403/04 (2006.01) *A61K 31/4184* (2006.01)
C07D 471/04 (2006.01) *A61P 25/28* (2006.01)

(21) International Application Number:
PCT/CN2022/100889

(22) International Filing Date:
23 June 2022 (23.06.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PCT/CN2021/102061
24 June 2021 (24.06.2021) CN
PCT/CN2021/107806
22 July 2021 (22.07.2021) CN
PCT/CN2021/142624
29 December 2021 (29.12.2021) CN

(71) Applicant: **INSILICO MEDICINE IP LIMITED** [CN/CN]; 26th Floor, Three Exchange Square, 8 Connaught Place Central, Hong Kong (CN).

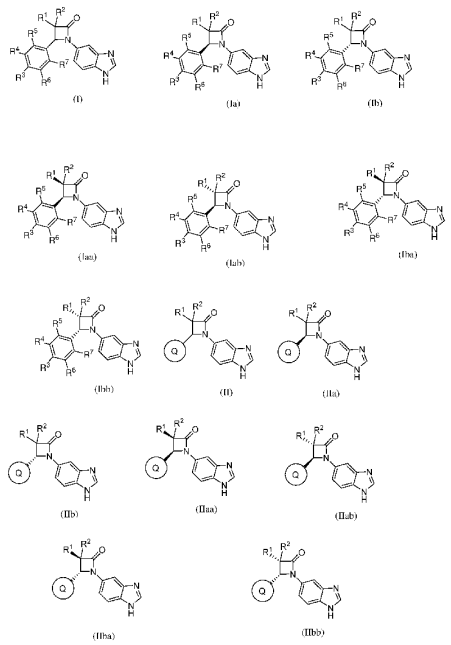
(72) Inventors: **CHENG, Xin**; 336-146, Gongbei Road, Pudong New District, Shanghai 201399 (CN). **LIU, Yingtao**; 8828 Chuanzhou Road, Shanghai 201200 (CN). **QIN, Luoheng**; 910-5-601 Dingxiang Road, Pudong New District, Shanghai 200135 (CN). **REN, Feng**; Suite 902, Tower E, Changtai Plaza, 2889 Jinke Road, Pudong New District, Shanghai 201203 (CN). **WU, Jianping**; 500 East Wuzhong Road, Shanghai 200235 (CN).

(74) Agent: **AFD CHINA INTELLECTUAL PROPERTY LAW OFFICE**; Tower B, 21st Fl., Suite 2108, 38 Xueqing Road, Haidian, Beijing 100083 (CN).

(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,

(54) Title: BETA-LACTAM DERIVATIVES FOR THE TREATMENT OF DISEASES



(57) Abstract: Provided herein are compounds and methods for modulating or inhibiting glutaminyl-peptide cyclotransferase-like protein (QPCTL). In one aspect, described herein are compounds of Formulas (I), (Ia), (Ib), (Iaa), (Iab), (Iba), (Ibb), (II), (IIa), (IIb), (IIaa) (IIab), (IIba), and (IIbb), stereoisomer thereof, or salts or solvates thereof. Further provided herein are methods of treating a disease or a condition comprising administering a compound of Formula (I), (Ia), (Ib), (Iaa), (Iab), (Iba), (Ibb), (II), (IIa), (IIb), (IIaa) (IIab), (IIba), or (IIbb), a stereoisomer thereof, or a salt or solvate thereof.

[Continued on next page]

WO 2022/268179 A1

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))*