



(51) International Patent Classification:

C07D 401/12 (2006.01) *A61K 31/506* (2006.01)
C07D 405/12 (2006.01) *A61P 37/00* (2006.01)
C07D 239/48 (2006.01) *A61P 29/00* (2006.01)
C07D 401/14 (2006.01)

(21) International Application Number:

PCT/CN2014/082084

(22) International Filing Date:

11 July 2014 (11.07.2014)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

PCT/CN2013/079232 11 July 2013 (11.07.2013) CN

(71) Applicant: **BETTA PHARMACEUTICALS CO., LTD**
[CN/CN]; 589 Hongfeng Rd., Yuhang, Hangzhou, Zhejiang
311100 (CN).

(72) Inventors: **HU, Shaojing**; Building 29, Zone B, 1 North
Disheng Rd., Business Development Area, Daxing, Beijing
100176 (CN). **LIU, Xiangyong**; Building 29, Zone B, 1
North Disheng Rd., Business Development Area, Daxing,
Beijing 100176 (CN). **BAI, Jinlong**; Building 29, Zone B,
1 North Disheng Rd., Business Development Area, Dax-
ing, Beijing 100176 (CN). **LONG, Wei**; Building 29, Zone
B, 1 North Disheng Rd., Business Development Area, Dax-
ing, Beijing 100176 (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, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, 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, SM, ST, SV, SY, TH, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, 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).

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))

(54) Title: PROTEIN TYROSINE KINASE MODULATORS AND METHODS OF USE

(57) Abstract: Heterocyclic pyrimidine compounds that modulate mutant-selective epidermal growth factor receptor (EGFR) and ALK kinase activity are disclosed. More specifically, the invention provides pyrimidines which inhibit, regulate and/or modulate kinase receptor, particularly in selectively modulation of various EGFR mutant activity and ALK kinase activity have been disclosed. Pharmaceutical compositions comprising the pyrimidine derivative, and methods of treatment for diseases associated with protein kinase enzymatic activity, particularly EGFR or ALK kinase activity including non-small cell lung cancer comprising administration of the pyrimidine derivative are disclosed.

