



- (51) **International Patent Classification:**
A01N 43/16 (2006.01) *A61K 31/35* (2006.01)
- (21) **International Application Number:**
PCT/US2012/024428
- (22) **International Filing Date:**
9 February 2012 (09.02.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/441,840 11 February 2011 (11.02.2011) US
- (71) **Applicant (for all designated States except US):** **GLAXO-SMITHKLINE LLC** [US/US]; One Franklin Plaza, 200 North 16th Street, Philadelphia, PA 19102 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **NEIPP, Christoph-er, E.** [US/US]; 709 Swedeland Road, King Of Prussia, PA 19406 (US). **PALOVICH, Michael, R.** [US/US]; 709 Swedeland Road, King Of Prussia, PA 19406 (US).
- (74) **Agents:** **FITCH, Duke, M.** et al.; Glaxosmithkline Llc, Global Patents, Uw2220, 709 Swedeland Road, P.o. Box 1539, King Of Prussia, PA 19406-0939 (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, 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, IS, JP, KE, KG, KM, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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, MD, 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, ML, MR, NE, SN, TD, TG).

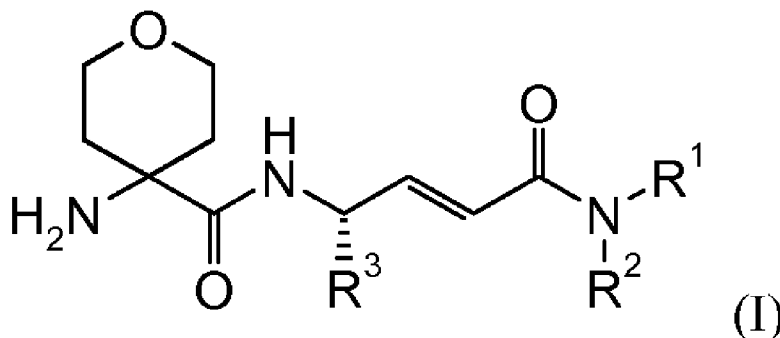
Declarations under Rule 4.17:

- 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))
- of inventorship (Rule 4.17(iv))

Published:

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

(54) **Title:** CATHEPSIN C INHIBITORS



(57) **Abstract:** Disclosed are 4-amino-2-butenamides of Formula (I) having pharmacological activity, pharmaceutical compositions containing them, and methods for the treatment of diseases mediated by the cathepsin C enzyme such as chronic obstructive pulmonary disease.