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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
20 December 2012 (20.12.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/171900 A1

(51) International Patent Classification:
C07D 487/04 (2006.01) *A61K 31/519* (2006.01)
A61P 11/00 (2006.01)

(21) International Application Number:
PCT/EP2012/061084

(22) International Filing Date:
12 June 2012 (12.06.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11170440.9 17 June 2011 (17.06.2011) EP

(71) Applicant *(for all designated States except US)*: **NYCOMED GMBH** [DE/DE]; Byk-Gulden-Str. 2, 78467 Konstanz (DE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **STENGEL, Thomas** [DE/DE]; Mainaustr. 209c, 78464 Konstanz (DE). **MAIER, Thomas** [DE/DE]; Panoramaweg 31, 78333 Stockach (DE). **MANN, Alexander** [DE/DE]; Emilie-Schneider-Str. 2, 78315 Radolfzell (DE). **STADLWIESER, Josef** [AT/DE]; Im Apfelgarten 3, 78465 Konstanz (DE). **FLOCKERZI, Dieter** [DE/DE]; Ackerweg 26, 78476 Allensbach (DE). **PAHL, Andreas** [DE/DE]; Kirschplantage 17, 22926 Ahrensburg (DE). **BENEDIKTUS, Ewald** [DE/DE]; Mondstr. 18, 88400 Biberach (DE). **HESSMANN, Manuela** [DE/DE]; An der Schlossgärtnerei 7, 22926 Ahrensburg (DE). **KANACHER, Tobias** [DE/DE]; Neugartenstr. 36, 88709 Hagnau (DE). **HUSSONG, Ragna** [DE/DE]; Schultheiss-Heschel-Ring 14, 78652 Deißlingen (DE). **ZITT, Christof** [DE/DE]; Mainaustr. 209 D, 78464 Konstanz (DE). **HOLST, Hans Christof** [DE/DE]; Max-Stromeyer-Str. 3a, 78467 Konstanz (DE). **HUMMEL, Rolf-Peter** [DE/DE]; Altbohlstr. 32, 78315 Radolfzell (DE). **VIERTELHAUS, Martin** [DE/DE]; Zasiusstr. 8, 78462 Konstanz (DE). **TENOR, Hermann** [DE/DE]; Kapellenweg 15/1, 78315 Radolfzell (DE). **DUNKERN, Torsten** [DE/DE]; Humboldstr. 18, 41363 Jüchen Gierath (DE). **HATZELMANN, Armin** [DE/DE]; Alter Wall 3, 78467 Konstanz (DE). **HESSLINGER, Christian** [DE/DE]; Untere Haldenäcker 6, 78357 Zoznegg (DE).

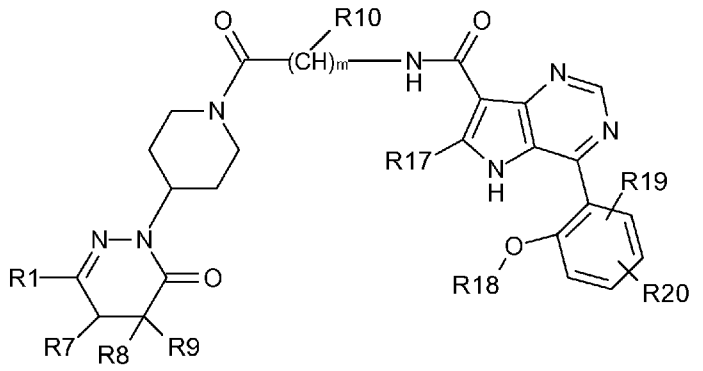
(74) Agents: **WILD, Robert** et al.; c/o Nycomed GmbH, P.O. Box 100310, 78403 Konstanz (DE).

(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, 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,

[Continued on next page]

(54) Title: NOVEL PHTHALAZINONE-PYRROLOPYRIMIDINECARBOXAMIDE DERIVATIVES



(1)

(57) Abstract: The compounds of formula (1), in which R1, R7, R8, R9, R10, R17, R18, R19, R20 and m have the meanings as given in the description, are novel effective inhibitors of type 4 and 5 phosphodiesterase.

WO 2012/171900 A1

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))*

Published:

— *with international search report (Art. 21(3))*