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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 June 2011 (23.06.2011)

PCT

(10) International Publication Number
WO 2011/072696 A1

(51) International Patent Classification:
C07D 471/04 (2006.01) *A61K 31/519* (2006.01)
C07D 487/04 (2006.01) *A61P 25/00* (2006.01)

(21) International Application Number:
PCT/DK2010/050343

(22) International Filing Date:
15 December 2010 (15.12.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PA 2009 01341 17 December 2009 (17.12.2009) DK
61/287,324 17 December 2009 (17.12.2009) US

(71) Applicant *(for all designated States except US)*: **H. LUNDBECK A/S** [DK/DK]; Ottiliavej 9, DK-2500 Valby (DK).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **PÜSCHL, Ask** [DK/DK]; Harsdorffsvej 7A, 4.tv., DK-1874 Frederiksberg C (DK). **NIELSEN, Jacob** [DK/DK]; Dannebrogsgade 17, 1.th., DK-1660 København V (DK). **KEHLER, Jan** [DK/DK]; Nymøllevej 28, DK-2800 Lyngby (DK). **KILBURN, John, Paul** [GB/DK]; Kærsgårdvej 7, DK-4690 Haslev (DK). **MARIGO, Mauro** [IT/DK]; Jyttevej 23, DK-2740 Skovlunde (DK). **LANGGÅRD, Morten** [DK/DK]; Rågevej 20, DK-2600 Glostrup (DK).

(74) Common Representative: **H. LUNDBECK A/S**; Corporate Patents and Trademarks, Ottiliavej 9, DK-2500 Valby (DK).

(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, RO, RS, RU, 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, 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).

Published:

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

WO 2011/072696 A1

(54) Title: 2-ARYLIMIDAZOLE DERIVATIVES AS PDE10A ENZYME INHIBITORS

(57) Abstract: This invention is directed to compounds, which are PDE10A enzyme inhibitors. The invention provides a pharmaceutical composition comprising a therapeutically effective amount of a compound of the invention and a pharmaceutically acceptable carrier. The present invention also provides processes for the preparation of the compounds of formula (I). The present invention further provides a method of treating a subject suffering from a neurodegenerative disorder comprising administering to the subject a therapeutically effective amount of a compound of formula (I). The present invention also provides a method of treating a subject suffering from a drug addiction comprising administering to the subject a therapeutically effective amount of a compound of formula (I). The present invention further provides a method of treating a subject suffering from a psychiatric disorder comprising administering to the subject a therapeutically effective amount of a compound of formula (I).