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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 January 2011 (27.01.2011)

PCT

(10) International Publication Number
WO 2011/011349 A2

(51) International Patent Classification:
C12N 5/071 (2010.01) *C12N 5/02* (2006.01)
C12N 5/0735 (2010.01)

(21) International Application Number:
PCT/US2010/042504

(22) International Filing Date:
20 July 2010 (20.07.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/226,929 20 July 2009 (20.07.2009) US

(71) Applicants *(for all designated States except US)*: **CENTOCOR ORTHO BIOTECH INC.** [US/US]; 800/850 Ridgeview Drive, Horsham, PA 19044 (US). **THE CLEVELAND CLINIC FOUNDATION** [US/US]; 9500 Euclid Avenue, Cleveland, OH 44195 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **XU, Jean** [US/US]; 199 Grandview Road, Skillman, NJ 08558 (US). **JENSEN, Jan** [US/US]; 9500 Euclid Avenue, Cleveland, OH 44195 (US).

(74) Agents: **JOHNSON, Philip S.** et al.; Johnson & Johnson, One Johnson & Johnson Plaza, New Brunswick, NJ 08933 (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, 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, 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 the identity of the inventor (Rule 4.17(i))*

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

WO 2011/011349 A2

(54) Title: DIFFERENTIATION OF HUMAN EMBRYONIC STEM CELLS

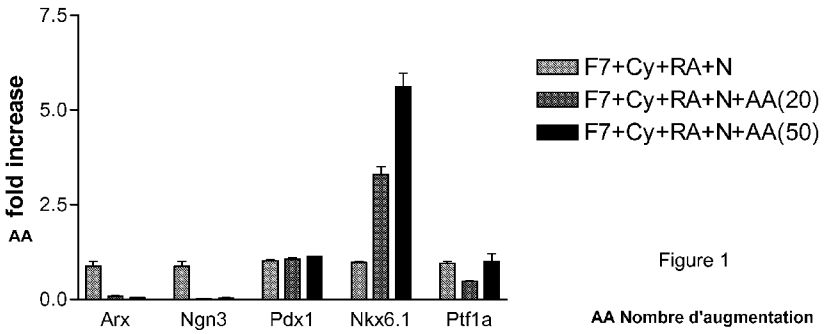


Figure 1

(57) Abstract: The present invention provides methods to promote the differentiation of pluripotent stem cells into cells expressing markers characteristic of the pancreatic endocrine lineage that co-express PDX1, NKX6.1, but do not express CDX2 and NGN3.