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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 April 2007 (26.04.2007)

PCT

(10) International Publication Number
WO 2007/047979 A2

(51) International Patent Classification:
C12N 5/08 (2006.01)

(21) International Application Number:
PCT/US2006/041133

(22) International Filing Date: 19 October 2006 (19.10.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/729,177	21 October 2005 (21.10.2005)	US
60/733,309	2 November 2005 (02.11.2005)	US
60/758,443	11 January 2006 (11.01.2006)	US
60/813,799	14 June 2006 (14.06.2006)	US

(71) Applicant *(for all designated States except US)*: **LIFELINE CELL TECHNOLOGY** [US/US]; 32 East Frederick Street, Walkersville, MD 21793 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **REVAZOVA, Elena, S.** [US/US]; 1753 Chastain Parkway East, Pacific Palisades, CA (US). **PRYZHKOVA, Marina, V.** [RU/RU]; 66/2 Chykovskaya St., Ap. #113, Moscow, Klin (RU). **KUZMICHEV, Leonid, N.** [RU/RU]; 15/2 Nickulinskaya St., Ap. #367, Moscow (RU). **JANUS, Jeffrey, D.** [US/US]; 8013 Glendale Drive, Frederick, MD (US).

(74) Agent: **HAILE, Lisa, A., J., D.**; DLA PIPER US LLP, 4365 Executive Drive, Suite 1100, San Diego, CA 92121-2133 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, 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, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2007/047979 A2

(54) Title: PARTHENOGENIC ACTIVATION OF HUMAN OOCYTES FOR THE PRODUCTION OF HUMAN EMBRYONIC STEM CELLS

(57) Abstract: Methods of producing human stem cells are disclosed for parthenogenetically activating human oocytes by manipulation of O_2 tension, including manipulation of Ca^{2+} under high O_2 tension and contacting oocytes with serine threonine kinase inhibitors under low O_2 tension, isolating inner cell masses (ICMs) from the activated oocytes, and culturing the cells of the isolated ICMs under high O_2 tension. Moreover, methods are described for the production of stems cells from activated oocytes in the absence of non-human animal products, including the use of human feeder cells/products for culturing ICM/stem cells. Stem cells produced by the disclosed methods are also described.