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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
19 June 2003 (19.06.2003)

PCT

(10) International Publication Number
WO 2003/050250 A3

(51) International Patent Classification[7]: C12N 5/00, 5/02, 5/06

(21) International Application Number: PCT/US2002/039090

(22) International Filing Date: 6 December 2002 (06.12.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/339,043 7 December 2001 (07.12.2001) US

(71) Applicant *(for all designated States except US)*: **GERON CORPORATION** [US/US]; 230 Constitution Drive, Menlo Park, CA 94025 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **THIES, R., Scott** [US/US]; 1053 Riesling Drive, Pleasanton, CA 94566 (US).

(74) Agent: **SCHIFF, J., Michael**; Geron Corporation, 230 Constitution Drive, Menlo Park, CA 94025 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(88) Date of publication of the international search report:
12 February 2004

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 2003/050250 A3

(54) Title: CHONDROCYTE PRECURSORS DERIVED FROM HUMAN EMBRYONIC STEM CELLS

(57) Abstract: This invention provides a system for obtaining cells of the chondrocyte lineage by differentiating primate pluripotent stem cells. The process involves culturing the cells as a micromass or other aggregate form in a cocktail of differentiation agents that facilitates outgrowth of the desired cell type. Progeny are capable of synthesizing Type II collagen or aggrecan, or other products that are characteristic of the chondrocyte lineage. Chondrocytes and chondrocyte precursor cells obtained according to this disclosure are suitable for use in both research and clinical therapy.