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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 December 2012 (06.12.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/166668 A1

(51) International Patent Classification:
C12N 5/071 (2010.01)

(21) International Application Number:
PCT/US2012/039732

(22) International Filing Date:
25 May 2012 (25.05.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/490,890 27 May 2011 (27.05.2011) US

(72) Inventors; and
(71) Applicants : **KAZANECKI, Christian** [US/US]; PO Box 451, 6872 Little Creek Road, Martins Creek, Pennsylvania 18063 (US). **COLTER, David C.** [US/US]; 208 Irvington Place, Hamilton, New Jersey 08610 (US). **SCHANZ, Johanna** [DE/DE]; Dobel Str. 16, 70184 Stuttgart (DE). **HOPPENSACK, Anke** [DE/DE]; Wiesbadener Str. 29, 70372 Stuttgart (DE). **HANSMANN, Jan** [DE/DE]; Neubauerweg 10, 70569 Stuttgart (DE). **WALLES, Heike** [DE/DE]; Bahnoftstrasse 21, 71063 Sindelfingen (DE).

(74) Agent: **FINAN, Therese M.**; Venable LLP, P.O. Box 34385, Washington, District of Columbia 20043-9998 (US).

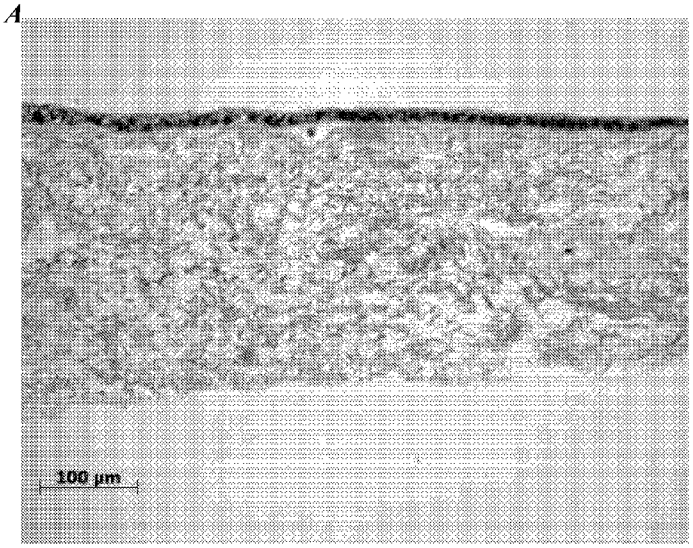
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, 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, 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, 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))*

(54) **Title**: BIOARTIFICIAL PROXIMAL TUBULE SYSTEMS AND METHODS OF USE



(57) **Abstract**: This application invention discloses bioartificial proximal tubule device, constructed by preparing a decellularized biological matrix, seeding the biological matrix with mammalian kidney-derived cells and optionally mammalian endothelial cells. The device may then be cultured statically or matured using bioreactor culture to allow differentiation of the kidney cells into functioning proximal tubule cells. The device is capable of carrying out proximal tubule functions. The application also describes various methods of making the proximal tubule devices. The application also further describes methods of use of bioartificial proximal tubule devices for *e.g.* in vitro studies of tubule cell transport, toxicity effects of various compounds or pharmaceutical compound screening.

WO 2012/166668 A1