

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
02 December 2021 (02.12.2021)



(10) International Publication Number
WO 2021/243203 A1

(51) International Patent Classification:

C07K 14/78 (2006.01) C12N 5/071 (2010.01)
C07K 17/08 (2006.01)

(21) International Application Number:

PCT/US2021/034851

(22) International Filing Date:

28 May 2021 (28.05.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/032,346 29 May 2020 (29.05.2020) US

(71) Applicants: **FUJIFILM CELLULAR DYNAMICS, INC.** [US/US]; 525 Science Drive, Suite 200, Madison, WI 53711 (US). **THE UNITED STATES OF AMERICA, AS REPRESENTED BY THE SECRETARY, DEPARTMENT OF HEALTH AND HUMAN SERVICES** [US/US]; 6011 Executive Blvd., Suite 325, Msc 7660, Bethesda, MD 20892 (US).

(72) Inventors: **DIAS, Andrew**; c/o Fujifilm Cellular Dynamics, Inc., 525 Science Drive, Suite 200, Madison, WI 53711 (US). **BERNDT, Erich**; c/o Fujifilm Cellular Dynamics, Inc., 525 Science Drive, Suite 200, Madison, WI 53711 (US). **CHASE, Lucas**; c/o Fujifilm Cellular Dynamics, Inc., 525 Science Drive, Suite 200, Madison, WI 53711 (US). **AMARAL, Juan**; c/o National Institutes of Health, 10 Center Dr., Bldg. 10, Room 10b04, Bethesda, MD 20892 (US). **MAMINISHKIS, Arvydas**; c/o National Institutes of Health, 10 Center Dr., Bldg. 10, Room 10b04, Bethesda, MD 20892 (US). **BHARTI, Kapil**; c/o National Institutes of Health, 10 Center Dr., Bldg. 10, Room 10b04, Bethesda, MD 20892 (US).

(74) Agent: **MANN, Monica**; Parker Highlander PLLC, 1120 S. Capital Of Texas Highway, Bldg. One, Suite 200, Austin, TX 78746 (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, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, ST, 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, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

WO 2021/243203 A1

(54) Title: BILAYER OF RETINAL PIGMENTED EPITHELIUM AND PHOTORECEPTORS AND USE THEREOF

(57) Abstract: Provided herein are methods of producing a distinct bilayer culture of retinal epithelial cells (RPE) with photoreceptor cells and/or photoreceptor precursor cells (PR/PRP). Further provided herein is a therapy comprising transplantation of the RPE and PR/PRP bilayer as well as methods for testing candidate drugs using the bilayer.