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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 December 2019 (26.12.2019)

WIPO | PCT

(10) International Publication Number
WO 2019/243462 A1

(51) International Patent Classification:
C12N 5/0793 (2010.01) *A61P 27/02* (2006.01)
A61K 35/545 (2015.01)

(21) International Application Number:
PCT/EP2019/066285

(22) International Filing Date:
19 June 2019 (19.06.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/687,416 20 June 2018 (20.06.2018) US

(71) Applicant: **BIOLAMINA AB** [SE/SE]; Löfströms Allé 5, 17266 Sundbyberg (SE).

(72) Inventors: **LANNER, Fredrik**; Kärrvägen 2, 15533 Nykvarn (SE). **PLAZA REYES, Alvaro**; Professorsslingan 31, lgh 1001, 11417 Stockholm (SE). **PETRUS REURER, Sandra**; Fatburstrappan 12, lgh 1401, 11826 Stockholm (SE). **SÁNCHEZ, Sara Padrell**; Armégatan 32A, 17171 Solna (SE).

(74) Agent: **NOVITAS PATENT AB**; P.O. Box 55557, 10204 Stockholm (SE).

(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, 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, 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, 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).

(54) Title: METHODS AND COMPOSITIONS FOR PRODUCING RETINAL PIGMENT EPITHELIUM CELLS

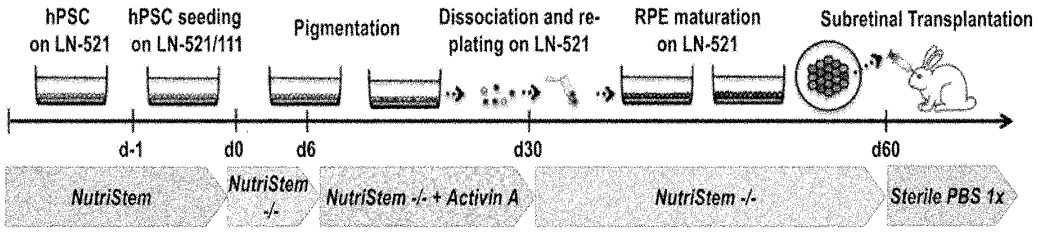


Fig 35

(57) Abstract: Method comprises providing a culture of human pluripotent stem cells adherent on a first substrate comprising a first laminin; exposing the stem cells to a differentiation medium for a first time period of 15 days to 50 days to obtain a first population of adherent cells comprising RPE cells and/or progenitors thereof; at the end of the first time period, dissociating the first population from the first substrate; replating the dissociated first population of cells on a second substrate comprising a second laminin; and culturing the replated first population of cells on the second substrate for a second time period to obtain an expanded and matured second population of cells comprising the RPE cells. The first and second laminins may be independently selected from LN-521, LN-511, LN-111 and LN-121, and are an intact protein or protein fragment. Cell surface markers useful for in vitro generation of RPE cells selected from CD140b, CD56, CD104, CD164, CD220, EGER, GD2, CD184, CD10, CD30, CD49a, CD49b, CD50, CD171, TRA-1-60 and CD326, preferably CD140b, CD56, GD2 and/or CD184. Also included are RPE cells so produced as well as materials and compositions utilizing such RPE cells for various treatments.

WO 2019/243462 A1

[Continued on next page]

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))*