

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

(19) World Intellectual Property
Organization
International Bureau



(10) International Publication Number
WO 2019/234033 A1

(43) International Publication Date
12 December 2019 (12.12.2019)

(51) International Patent Classification:

C12M 1/10 (2006.01) C12N 15/09 (2006.01)
C12M 1/00 (2006.01) C12Q 1/68 (2018.01)

Published:

— with international search report (Art. 21(3))

(21) International Application Number:

PCT/EP2019/064507

(22) International Filing Date:

04 June 2019 (04.06.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

18176314.5 06 June 2018 (06.06.2018) EP

(72) Inventor; and

(71) Applicant: **PIERSON, Yann** [CH/CH]; Clos d'Aubonne
19, 1814 La Tour-de-Peilz (CH).

(72) Inventor: **BISOGNANO, Carmelo**; Avenue Wendt 38,
1203 Genève (CH).

(74) Agent: **KATZAROV SA**; Avenue des Morgines 12, 1213
Petit-Lancy (CH).

(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).

WO 2019/234033 A1

(54) Title: APPARATUS AND PROCESS FOR THE AUTOMATED MANUFACTURING OF GENETICALLY ENGINEERED CELLS FROM BIOLOGICAL FLUIDS

(57) Abstract: The invention relates to an automated apparatus suitable for the preparation of genetically transformed cells from biological fluids comprising of an operating unit and a rotating concentric hollow processing chamber able to automatically process biological samples, such as white blood cells from apheresis, bone marrow or cultured cells, to manufacture genetically engineered cells. The operating unit is rotatable around its center about a horizontal axis and the processing chamber is rotatable about its central rotor axis perpendicular with the rotating axis of the operating unit. Said processing chamber can be operated at high rotating speeds when oriented vertically to generate centrifugal force on the contained sample allowing separation of solids from liquids and at low speeds or by series of fast sequential clockwise and counterclockwise rotations when oriented horizontally for incubation, solid resuspension and magnetic beads magnetic attachment.