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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 September 2022 (22.09.2022)

WIPO | PCT

(10) International Publication Number
WO 2022/197254 A1

(51) International Patent Classification:
C12M 3/00 (2006.01) *G01N 33/50* (2006.01)
B01L 3/00 (2006.01)

(21) International Application Number:
PCT/SG2022/095001

(22) International Filing Date:
11 March 2022 (11.03.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10202102643V 16 March 2021 (16.03.2021) SG

(71) Applicant: **AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH** [SG/SG]; 1 Fusionopolis Way, #20-10 Connexis North Tower, Singapore 138632 (SG).

(72) Inventors: **PAVES, Andrea**; Institute of Molecular and Cell Biology, 61 Biopolis Drive, #03-06 Proteos Building, Singapore 138673 (SG). **ADRIANI, Giulia**; Singapore Immunology Network, 8A Biomedical Grove, #04-06 Immunos Building, Singapore 138648 (SG).

(74) Agent: **SPRUSON & FERGUSON (ASIA) PTE LTD**; P.O. Box 1531, Robinson Road Post Office, Singapore 903031 (SG).

(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, JM, 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,

(54) **Title:** A WELL INSERT AND A DEVICE FOR 3D CELL CULTURE AND IN VITRO TISSUE MODEL

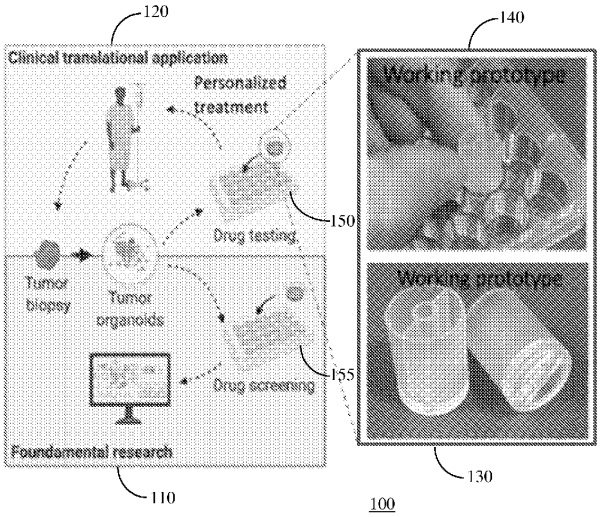


FIG. 1

(57) **Abstract:** Multi-well plate compatible device or insert for three-dimensional (3D) cell cultures, use and kit thereof are provided. The device includes outer and inner walls, the inner wall defining a volume and is located within the outer wall, forming a cavity therebetween. It also includes a base configured to position a cell culture sample below the volume within the inner wall and one or more partitions connected to the base, connecting the inner wall to the outer wall and segmenting the cavity into a plurality of voids. Openings in surfaces forming the voids allow fluid flow from a first void, below the volume within the inner wall to a second void, the fluid flow configured to interact with the cell culture sample when flowing through a sample region within the inner wall. The sample region has a depth defined by a height of the inner wall greater than a length defined by an inner distance across the volume within the inner wall.

WO 2022/197254 A1

[Continued on next page]

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).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

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

— *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*