

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
30 December 2021 (30.12.2021)



(10) International Publication Number
WO 2021/262098 A1

(51) International Patent Classification:
C12N 1/20 (2006.01) *B01L 3/00* (2006.01)
C12M 1/34 (2006.01)

(21) International Application Number:
PCT/SG2021/050368

(22) International Filing Date:
24 June 2021 (24.06.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10202006074Y 24 June 2020 (24.06.2020) SG

(71) Applicant: NATIONAL UNIVERSITY OF SINGAPORE [SG/SG]; 21 Lower Kent Ridge Road, Singapore 119077 (SG).

(72) Inventors: **WANG, Ming**; c/o National University of Singapore, Faculty of Engineering / Department of Biomedical Engineering, 21 Lower Kent Ridge Road, Singapore 119077 (SG). **CHEE, Wai Kit**; c/o National University of Singapore, Faculty of Engineering / Department of Biomedical Engineering, 21 Lower Kent Ridge Road, Singapore 119077 (SG). **POH, Chueh Loo**; c/o National University of Singapore, Faculty of Engineering / Department of Biomedical Engineering, 21 Lower Kent Ridge Road, Singapore 119077 (SG). **LIM, Chwee Teck**; c/o National University of Singapore, Faculty of Engineering / Department of Biomedical Engineering, 21 Lower Kent Ridge Road, Singapore 119077 (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,

(54) Title: METHOD AND SYSTEM FOR COLONY PICKING

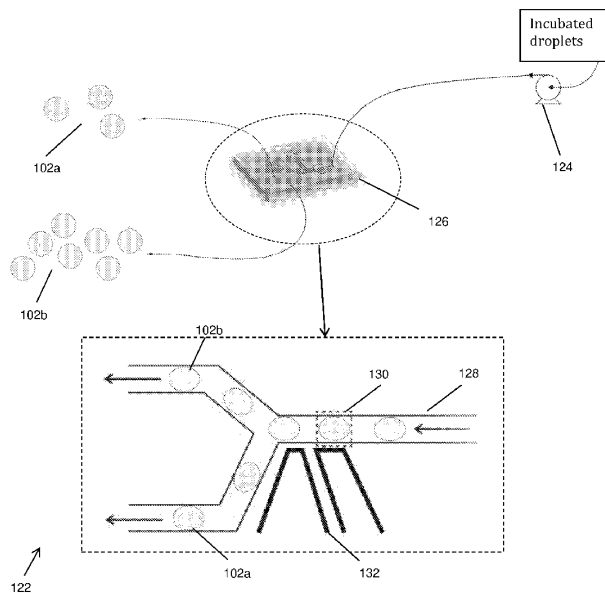


Figure 1B

(57) Abstract: The present disclosure relates to a method of colony picking. The method includes the steps of mixing a bacterial suspension with an oil-based carrier liquid for generating a plurality of droplets comprising bacteria contained in the bacterial suspension and incubating the plurality of droplets for a predetermined period of time to allow growth of bacteria within the plurality of droplets. The method further includes the steps of screening each of the plurality of droplets that flows through one or more microfluidic channels of a microfluidic device to determine an opacity degree of each of the plurality of droplets, wherein the opacity degree is indicative of colony formation in the plurality of droplets, and sorting the plurality of droplets based on the opacity degree of each of the plurality of droplets.

[Continued on next page]

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).

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*