

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
30 May 2024 (30.05.2024)



(10) International Publication Number
WO 2024/112571 A2

(51) International Patent Classification:
Not classified

(21) International Application Number:
PCT/US2023/080154

(22) International Filing Date:
16 November 2023 (16.11.2023)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/384,576 21 November 2022 (21.11.2022) US

(71) Applicant: **IOVANCE BIOTHERAPEUTICS, INC.**
[US/US]; 825 Industrial Road, Suite 400, San Carlos, CA
94070 (US).

(72) Inventor: **SIMPSON-ABELSON, Michelle**; 15908 Oak-
leaf Run Drive, Lithia, FL 33547 (US).

(74) Agent: **MACDOUGALL, Christina, A.** et al.; Morgan,
Lewis & Bockius LLP, One Market, Spear Street Tower,
San Francisco, CA 94105 (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, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, 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, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- without international search report and to be republished upon receipt of that report (Rule 48.2(g))



WO 2024/112571 A2

(54) Title: TWO-DIMENSIONAL PROCESSES FOR THE EXPANSION OF TUMOR INFILTRATING LYMPHOCYTES AND THERAPIES THEREFROM

(57) Abstract: Provided herein are methods of producing TILs via (i) pre-REP expansion steps, (ii) co- culture with dendritic cells presenting tumor-specific antigens, (iii) co-culture with tumor- derived organoids, (iv) selection of tumor-reactive TILs, and (v) rapid expansion of said -tumor- reactive TILs, or combinations thereof. Resultant therapeutics and diagnostics are similarly disclosed.