

(19) World Intellectual Property
Organization
International Bureau



WIPO | PCT



(10) International Publication Number
WO 2023/009293 A9

(43) International Publication Date
02 February 2023 (02.02.2023)

(51) International Patent Classification:
Not classified

(21) International Application Number:
PCT/US2022/036517

(22) International Filing Date:
08 July 2022 (08.07.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/219,578 08 July 2021 (08.07.2021) US

(71) Applicant: **ABCELLERA BIOLOGICS INC.** [CA/CA];
2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA).

(72) Inventors; and

(71) Applicants: **HUGHES, Christopher Thaddeus** [US/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA). **BERTRAND DE PUYRAIMOND, Valentine Julie Layla** [FR/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA). **DOCKING, Thomas Roderick** [CA/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA). **KRAFT, Lucas** [DE/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia

V5Y 0A1 (CA). **HANNIE, Stefan Edward** [US/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA). **JEPSON, Kevin Richard** [CA/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA). **GOGORZA, Tomas** [AR/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA). **YAP, Jordan John** [CA/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA). **FORD, Alexander Sewall** [US/CA];
c/o AbCellera Biologics Inc., 2215 Yukon Street, Vancouver, British Columbia V5Y 0A1 (CA).

(74) Agent: **CAWLEY JR., PH.D., Thomas A.** et al.; Potomac Law Group, PLLC, 1300 Pennsylvania Avenue, NW, Suite 700, Washington, District of Columbia 20004 (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, 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,

(54) Title: ANTIBODY COMPETITION MODEL USING HIDDEN VARIABLE AFFINITIES

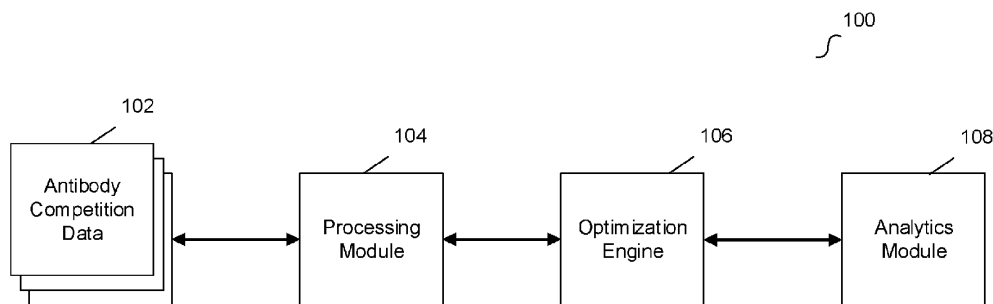


Fig. 1

(57) Abstract: Embodiments derive hidden variables based on antibody competition data to discover binding patterns. For example, antibody competition data for a plurality of antibodies and an antigen can be received, where the antibody competition data includes data values indicative of pairwise competition between antibodies. The antibody competition data can be processed to generate training data. Using the training data and an optimization engine, a plurality of hidden variables and affinity scores for the hidden variables can be derived, where affinity scores for the hidden variables are derived for each antibody and the hidden variables represent competition factors for the antigen that cause competition among the antibodies.

[Continued on next page]

WO 2023/009293 A9

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).

Published:

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

(48) Date of publication of this corrected version:

06 April 2023 (06.04.2023)

(15) Information about Correction:

see Notice of 06 April 2023 (06.04.2023)