



- (51) **International Patent Classification:**
G16B 20/30 (2019.01) *G16B 40/20* (2019.01)
- (21) **International Application Number:**
PCT/EP2024/066471
- (22) **International Filing Date:**
13 June 2024 (13.06.2024)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
23386046.9 13 June 2023 (13.06.2023) EP
24165371.6 21 March 2024 (21.03.2024) EP
- (71) **Applicant:** NEC ONCOIMMUNITY AS [NO/NO];
Ullernchausen 64, 0379 Oslo (NO).
- (72) **Inventors:** VARDAXIS, Alexandros Ioannis; Ullern-
chausen 64, 0379 Oslo (NO). SIMOVSKI, Boris; Ullern-
chausen 64, 0379 Oslo (NO). CLANCY, Trevor; Ullern-
chausen 64, 0379 Oslo (NO). STRATFORD, Richard;
Ullernchausen 64, 0379 Oslo (NO).
- (74) **Agent:** GILL JENNINGS & EVERY LLP; The
Broadgate Tower 20 Primrose Street, London EC2A 2ES
(GB).
- (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.

(54) **Title:** B-CELL EPITOPE PREDICTION

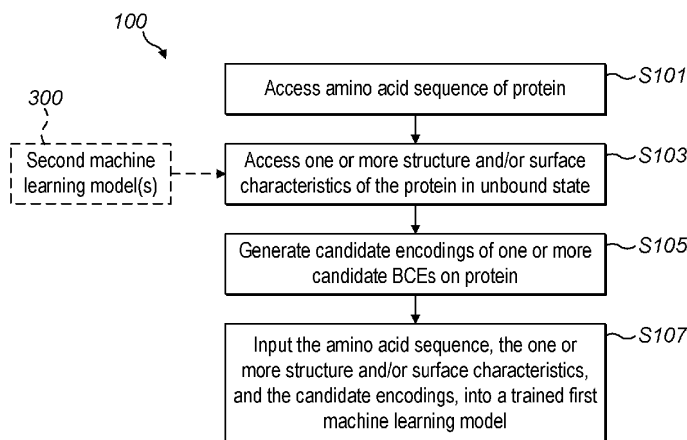


FIG. 1

(57) **Abstract:** A computer-implemented method of predicting whether a protein comprises a B-cell epitope that is likely to instigate a binding event with an antibody is disclosed. The method comprises: (a) accessing the amino acid sequence of the protein; (b) accessing one or more structure and/or surface characteristics of the protein; (c) generating one or more candidate encodings of respective one or more candidate B-cell epitopes on the protein, wherein each candidate encoding represents the respective candidate B-cell epitope as a plurality of data elements corresponding to the amino acids of the amino acid sequence; and (d) using a trained first machine learning model to predict whether any of the candidate B-cell epitope(s) is likely to be a true B-cell epitope on the protein; wherein the input to the trained first machine learning model comprises the amino acid sequence of the protein, the one or more structure and/or surface characteristics of the protein, and the one or more candidate encodings. A method of training a machine learning model is also disclosed.

[Continued on next page]

(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).

Published:

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