

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
01 September 2022 (01.09.2022)



(10) International Publication Number
WO 2022/182891 A1

(51) International Patent Classification:

C07K 14/47 (2006.01) C07K 16/28 (2006.01)
C07K 14/705 (2006.01)

(21) International Application Number:

PCT/US2022/017738

(22) International Filing Date:

24 February 2022 (24.02.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/153,878	25 February 2021 (25.02.2021)	US
63/263,229	28 October 2021 (28.10.2021)	US
63/309,393	11 February 2022 (11.02.2022)	US

(71) Applicant: **LYELL IMMUNOPHARMA, INC.**
[US/US]; 201 Haskins Way, South San Francisco, California 94080 (US).

(72) Inventors: **PARK, Spencer**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **VONG, Queenie**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **SATHER, Blythe**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **RYU, Byoung**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **LAJOIE, Marc**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **MOFFETT, Howell**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **WEITZNER, Brian**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **SONG, Yun**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **BOYKEN, Scott**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **SHARMA, Neeraj**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **POTLURI, Shobha**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US). **BOLDAJIPOUR, Bijan**; c/o LYELL IMMUNOPHARMA, INC., 201 Haskins Way, South San Francisco, California 94080 (US).

(74) Agent: **KIM, Ji Eun** et al.; STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C, 1100 New York Avenue, NW, Washington, District of Columbia 20005 (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, 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, 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))
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
— with sequence listing part of description (Rule 5.2(a))

(54) Title: ROR1 TARGETING CHIMERIC ANTIGEN RECEPTOR

(57) Abstract: The present disclosure relates to polynucleotides encoding a chimeric polypeptide comprising a c-Jun polypeptide, a ROR1-binding protein, and a truncated EGF receptor. Also provided are cells (e.g., T cells) expressing CARs comprising a ROR1-binding protein and overexpressing a c-Jun polypeptide. Overexpression of c-Jun in CAR T cells confers improved properties, e.g., reducing or preventing exhaustion.

WO 2022/182891 A1