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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
09 May 2019 (09.05.2019)

WIPO | PCT

(10) International Publication Number
WO 2019/089855 A1

(51) International Patent Classification:
C12N 5/0783 (2010.01) *C07K 14/725* (2006.01)

(21) International Application Number:
PCT/US2018/058590

(22) International Filing Date:
31 October 2018 (31.10.2018)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/580,409 01 November 2017 (01.11.2017) US
62/596,771 08 December 2017 (08.12.2017) US
62/721,603 22 August 2018 (22.08.2018) US

(71) Applicant: **JUNO THERAPEUTICS, INC.** [US/US]; 400 Dexter Ave. N, Suite 1200, Seattle, Washington 98109 (US).

(72) Inventor: **LEE, Sarah Y.**; 400 Dexter Ave. N, Suite 1200, Seattle, Washington 98109 (US).

(74) Agent: **POTTER, Karen** et al.; Morrison & Foerster LLP, 12531 High Bluff Drive, Suite 100, San Diego, California 92130-2040 (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, 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, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH,

WO 2019/089855 A1

(54) Title: PROCESS FOR GENERATING THERAPEUTIC COMPOSITIONS OF ENGINEERED CELLS

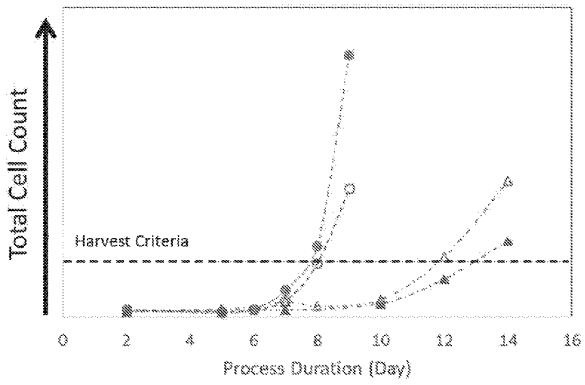

FIG. 1

(57) Abstract: The present disclosure provides methods for genetically engineering T cells, such as CD4+ T cells, for use in cell therapy. In some aspects, the provided methods include one or more steps for incubating the cells under stimulating conditions, introducing a recombinant polypeptide to the cells through transduction or transfection, and cultivating the cells under conditions that promote proliferation and/or expansion. In some aspects, the incubation and/or the cultivation is performed in the presence of recombinant IL-2. In some aspects, the provided methods are an efficient, reliable means to produce genetically engineered T cells with a high degree of success.

[Continued on next page]

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:

— *with international search report (Art. 21(3))*
— *with sequence listing part of description (Rule 5.2(a))*