

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
13 March 2025 (13.03.2025)



(10) International Publication Number
WO 2025/054537 A1

(51) International Patent Classification:

A61K 31/535 (2006.01) C07K 16/28 (2006.01)
A61K 35/17 (2025.01) C12N 5/10 (2006.01)
A61P 37/00 (2006.01) C07K 14/705 (2006.01)

(21) International Application Number:

PCT/US2024/045702

(22) International Filing Date:

06 September 2024 (06.09.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/581,612 08 September 2023 (08.09.2023) US
63/557,427 23 February 2024 (23.02.2024) US
63/644,427 08 May 2024 (08.05.2024) US

(71) Applicant: **FATE THERAPEUTICS, INC.** [US/US];
12278 Scripps Summit Drive, San Diego, CA 92131 (US).

(72) Inventor: **VALAMEHR, Bahram**; 12278 Scripps Summit
Drive, San Diego, CA 92131 (US).

(74) Agent: **RODRIGUEZ, Elena, M.** et al.; Greenberg Trau-
rig, LLP, 77 West Wacker Drive, Suite 3100, Chicago, IL
60601 (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).

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: IPSC-DERIVED EFFECTOR CELLS FOR AUTOIMMUNE DISEASE TREATMENT

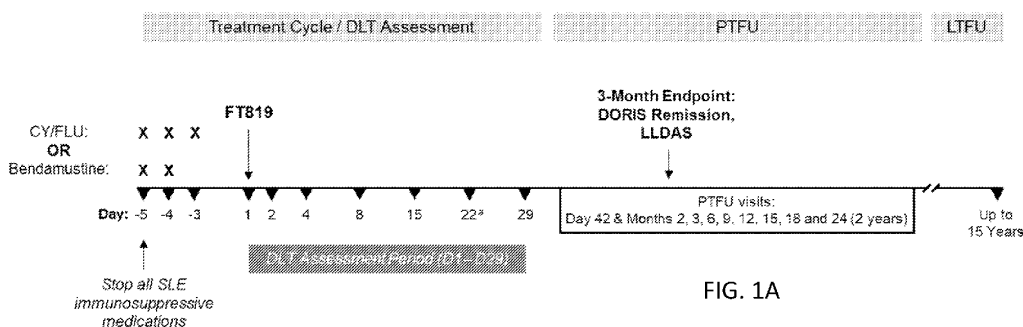


FIG. 1A

(57) Abstract: Provided are methods and compositions for use in immunotherapies. In various embodiments, the compositions include functionally enhanced derivative effector cells obtained from directed differentiation of genomically engineered iPSCs. In various embodiments, the derivative cells provided herein have stable and functional genome editing that delivers improved or enhanced therapeutic effects. Also provided are therapeutic compositions and the use thereof comprising the functionally enhanced derivative effector cells alone, or in combination therapies.

WO 2025/054537 A1