



(51) International Patent Classification:
A61K 35/17 (2015.01) *A61P 35/00* (2006.01)

(21) International Application Number:
PCT/US2019/062417

(22) International Filing Date:
20 November 2019 (20.11.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/769,987 20 November 2018 (20.11.2018) US
62/774,595 03 December 2018 (03.12.2018) US
62/795,810 23 January 2019 (23.01.2019) US
62/828,770 03 April 2019 (03.04.2019) US
62/846,563 10 May 2019 (10.05.2019) US
62/848,961 16 May 2019 (16.05.2019) US
16/445,965 19 June 2019 (19.06.2019) US
62/889,926 21 August 2019 (21.08.2019) US
62/902,766 19 September 2019 (19.09.2019) US

(71) Applicant: INNOVATIVE CELLULAR THERAPEUTICS HOLDINGS, LTD.; Suite # 5-204, 23 Line Tree Bay Avenue, P.O. Box 2547, Grand Cayman, KY1-1104 (KY).

(71) Applicant (for TT only): INNOVATIVE CELLULAR THERAPEUTICS, INC. [US/US]; 1405 Research Boulevard, Suite 210, Rockville, Maryland 20850 (US).

(72) Inventors: XIAO, Lei; Building 1, 6055 Jinhai Road, Fengxian District, Shanghai, 201203 (CN). CAO, Zhiyuan; Building 1, 6055 Jinhai Road, Fengxian District, Shanghai, 201203 (CN). PU, Chengfei; Building 1, 6055 Jinhai Road, Fengxian District, Shanghai, 201203 (CN). SUN, He; Building 1, 6055 Jinhai Road, Fengxian District, Shanghai, 201203 (CN).

(74) Agent: TENG, Sally et al.; 601 W. Riverside Ave., Suite 1400, Spokane, Washington 99201 (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,

(54) Title: MODIFIED CELL EXPRESSING THERAPEUTIC AGENT AND USES THEREOF

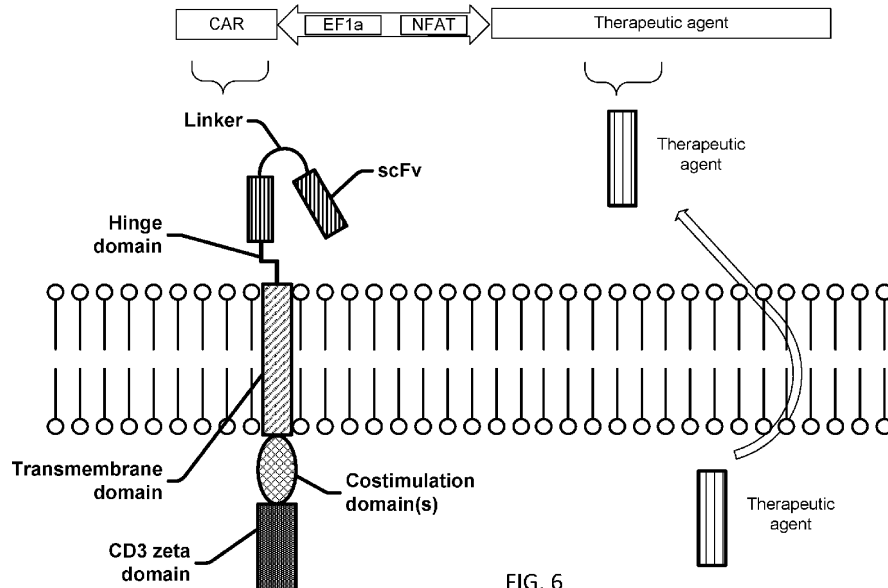


FIG. 6

(57) Abstract: Compositions and methods for enhancing T cell response which increases the efficacy of CAR T cell therapy for treating cancer are described. Embodiments include a modified cell comprising an isolated nucleic acid comprising a first nucleic acid and a second nucleic acid, the first nucleic acid encoding a chimeric antigen receptor (CAR), the second nucleic acid encoding a therapeutic agent comprising at least one of IFN- γ , IL-2, IL-6, IL-7, IL-15, IL-17, and IL-23. The modified cell expresses and secretes the therapeutic agent.

[Continued on next page]

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, 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))