



(51) International Patent Classification:

C07K 16/28 (2006.01) A61P 35/00 (2006.01)
C07K 16/30 (2006.01) A61K 39/00 (2006.01)

(21) International Application Number:

PCT/US2019/059285

(22) International Filing Date:

31 October 2019 (31.10.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/754,576 01 November 2018 (01.11.2018) US
62/774,159 30 November 2018 (30.11.2018) US
62/819,422 15 March 2019 (15.03.2019) US
62/904,187 23 September 2019 (23.09.2019) US
62/904,197 23 September 2019 (23.09.2019) US

(71) Applicants: **JUNO THERAPEUTICS, INC.** [US/US];
400 Dexter Avenue N, Suite 1200, Seattle, Washington
98109 (US). **MEMORIAL SLOAN KETTERING CAN-
CER CENTER** [US/US]; 1275 York Avenue, New York,
New York 10065 (US).

(72) Inventors: **SATHER, Blythe D.**; 400 Dexter Avenue N,
Suite 1200, Seattle, Washington 98109 (US). **SMITH, Er-**

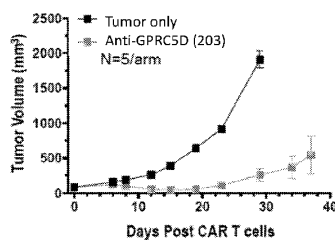
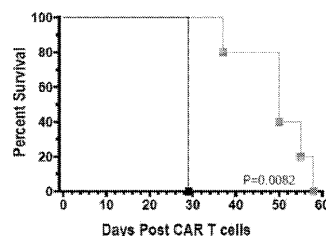
ic L.; 1275 York Avenue, New York, New York 10065
(US). **DE IMUS, Cyr**; 400 Dexter Avenue N, Suite 1200,
Seattle, Washington 98109 (US). **HARRINGTON, Kim-**
berly; 400 Dexter Avenue N, Suite 1200, Seattle, Wash-
ington 98109 (US). **JONES, Jon**; 400 Dexter Avenue N, Suite
1200, Seattle, Washington 98109 (US). **CHEN, Aye**; 400
Dexter Avenue N, Suite 1200, Seattle, Washington 98109
(US). **TAREEN, Semih**; 400 Dexter Avenue N, Suite 1200,
Seattle, Washington 98109 (US). **HESS, Erik**; 400 Dex-
ter Avenue N, Suite 1200, Seattle, Washington 98109 (US).
PONKO, Stefan; 400 Dexter Avenue N, Suite 1200, Seat-
tle, Washington 98109 (US). **OLSHEFSKY, Audrey**; 400
Dexter Avenue N, Suite 1200, Seattle, Washington 98109
(US). **FERNANDEZ DE LARREA, Carlos**; 1275 York
Avenue, New York, New York 10065 (US). **BRENTJENS,
Renier**; 1275 York Avenue, New York, New York 10065
(US).

(74) Agent: **RICE, Rachel** 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,

(54) Title: CHIMERIC ANTIGEN RECEPTORS SPECIFIC FOR G PROTEIN-COUPLED RECEPTOR CLASS C GROUP 5 MEM-
BER D (GPCR5D)

FIG. 12C



(57) Abstract: Provided are chimeric antigen receptors (CARs), which contain anti-
body portions specific to G Protein-Coupled Receptor Class C Group 5 Member D
(GPCR5D) and polynucleotides that encode CARs specific for GPCR5D. The disclo-
sure further relates to genetically engineered cells, containing such GPCR5D-binding
receptors, and uses thereof in adoptive cell therapy.

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).

Declarations under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*
— *with sequence listing part of description (Rule 5.2(a))*