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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 April 2020 (23.04.2020)

WIPO | PCT

(10) International Publication Number
WO 2020/082005 A2

(51) International Patent Classification:
A61K 48/00 (2006.01)

(21) International Application Number:
PCT/US2019/057043

(22) International Filing Date:
18 October 2019 (18.10.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/747,982 19 October 2018 (19.10.2018) US

(71) Applicant: **OHIO STATE INNOVATION FOUNDATION** [US/US]; 1524 North High Street, Columbus, Ohio 43201 (US).

(72) Inventors: **GALLEGO-PEREZ, Daniel**; 2165 Quarry Valley Road, Columbus, Ohio 43204 (US). **DUARTE SANMIGUEL, Silvia**; 1671 Northwest Boulevard, Columbus, Ohio 43212 (US). **HIGUITA-CASTRO, Natalia**; 2165 Quarry Valley Road, Columbus, Ohio 43204 (US). **CARSON, William**; 3400 Scioto Run Boulevard, Hilliard, Ohio 43026 (US).

(74) Agent: **GILES, Brian P.**; THOMAS HORSTEMEYER LLP, 3200 Windy Hill Road SE, Suite 1600E, Atlanta, Georgia 30339 (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, 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).

(54) Title: EXTRACELLULAR VESICLES FOR TARGETED THERAPIES AGAINST MYELOID-DERIVED SUPPRESSOR CELLS

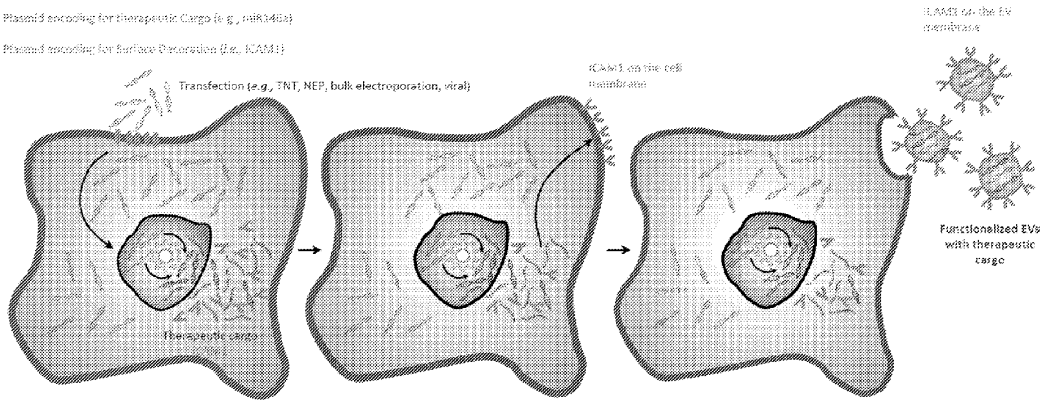


FIG. 1

(57) Abstract: Disclosed herein are MDSC-targeted extracellular vesicles (EVs) loaded with therapeutic cargo, as well as compositions, systems, and methods for making same. Also disclosed herein is an MDSC-targeting ligand, such as a fusion protein containing an MDSC-targeting moiety. Also disclosed are EVs containing the disclosed fusion protein. In some embodiments, the EV is also loaded with a therapeutic cargo. Also disclosed is an EV-producing cell engineered to produce the disclosed EVs. Also disclosed is a method for making the disclosed EVs that involves culturing the disclosed EV-producing cells under conditions suitable to produce EVs.

WO 2020/082005 A2

[Continued on next page]

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *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))*