

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
15 December 2022 (15.12.2022)



(10) International Publication Number
WO 2022/258711 A1

(51) International Patent Classification:

A61K 39/00 (2006.01) *C07K 16/28* (2006.01)
C07K 14/725 (2006.01) *C07K 16/30* (2006.01)

(21) International Application Number:

PCT/EP2022/065596

(22) International Filing Date:

08 June 2022 (08.06.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

PCT/EP2021/065290

08 June 2021 (08.06.2021)

EP

(71) Applicant: **BIONTECH CELL & GENE THERAPIES GMBH** [DE/DE]; An der Goldgrube 12, 55131 Mainz (DE).

(72) Inventors: **SAHIN, Ugur**; c/o BioNTech SE, An der Goldgrube 12, 55131 Mainz (DE). **WÜSTEHUBE-LAUSCH, Joycelyn**; c/o BioNTech SE, An der Goldgrube 12, 55131 Mainz (DE). **SCHMOLDT, Hans-Ulrich**; c/o BioNTech SE, An der Goldgrube 12, 55131 Mainz (DE). **RENGSTL, Benjamin**; c/o BioNTech SE, An der Goldgrube 12, 55131 Mainz (DE). **BIRTEL, Matthias**; c/o BioNTech SE, An der Goldgrube 12, 55131 Mainz (DE). **OEHM, Petra**; c/o BioNTech SE, An der Goldgrube 12, 55131 Mainz (DE).

(74) Agent: **SCHNAPPAUF, Georg**; Zwicker Schnappauf & Partner Patentanwälte PartG mbB, Hansastr. 32, 80686 Munich (DE).

(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, IQ, IR, IS, IT, JM, 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, 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, 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))
- 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))

WO 2022/258711 A1

(54) Title: AGENTS AND METHODS FOR ACTIVATION AND TARGETING OF IMMUNE EFFECTOR CELLS

(57) Abstract: The invention relates to agents and methods for activation of immune effector cells and targeted delivery of the activated immune effector cells to target cells. In one embodiment, the invention involves providing to a subject immune effector cells genetically modified to express a chimeric antigen receptor (CAR). In one embodiment, the invention involves administering RNA encoding a peptide or polypeptide (activation compound) comprising a binding moiety for the CAR and administering RNA encoding a peptide or polypeptide (docking compound) comprising a binding moiety binding to target cells (primary targeting moiety) and a further binding moiety for the CAR (secondary target).