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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
30 January 2020 (30.01.2020)

WIPO | PCT

(10) International Publication Number
WO 2020/021338 A3

(51) International Patent Classification:
C12N 15/115 (2010.01) *A61K 31/7088* (2006.01)
A61K 35/17 (2015.01) *A61P 35/00* (2006.01)

(21) International Application Number:
PCT/IB2019/000890

(22) International Filing Date:
26 July 2019 (26.07.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/703,869 26 July 2018 (26.07.2018) US
62/879,401 26 July 2019 (26.07.2019) US

(71) Applicant: **ARATINGA.BIO TNP** [FR/FR]; 1 Mail Du Professeur Georges Mathe, 94800 Villejuif (FR).

(72) Inventors: **MIODEK, Anna**; 13 Rue Archange, 91400 Orsay (FR). **MOURLANE, Frederic**; 17 Avenue Des Orangers, 06000 Nice (FR). **BAUCHE, Cecile**; 14 Rue Auguste Perret, 75013 Paris (FR). **VAILLANT, Renaud**; 49 Rue Des Champs Elysees, 94250 Gentilly (FR). **BISHOP, Philippe**; C/o Aratinga.bio, Inc., 1927 Bridgepointe Pkwy. #307, Foster City, CA 94404 (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: APTAMER-BASED CAR T-CELL SWITCH

(57) Abstract: An aptamer-based switch technology is provided that enhances control of the use of chimeric antigen receptor (CAR)-related immunotherapies. The aptamer-based switch utilizes a synthetic bridge molecule containing a target-binding aptamer bound through a linker to a CAR-binding aptamer. A system containing a CAR and a corresponding aptameric bridge provides an immunotherapy platform that: (i) can be targeted to any desired antigen by choosing the target-binding aptamer of the bridge, (ii) can be redirected from one target to another by changing the target-binding aptamer; (iii) can be dosed according to the changing needs of an individual patient overtime by altering the administration protocol for the bridge; (iv) can be switched on or off quickly or gradually; (v) can be used as a companion diagnostic for a specific CAR therapy; (vi) can be integrated with either in vivo or ex vivo CAR expression; (vii) is non-immunogenic; and (viii) has low production costs.

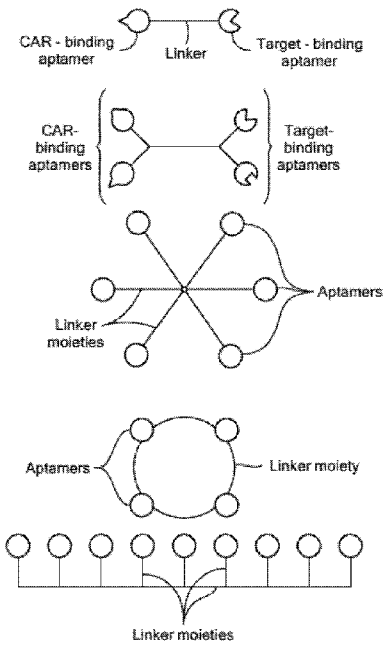

Fig. 1

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[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))*
— *of inventorship (Rule 4.17(iv))*

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))*

(88) Date of publication of the international search report:
30 April 2020 (30.04.2020)

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2019/000890

A. CLASSIFICATION OF SUBJECT MATTER
INV. C12N15/115 A61K35/17 A61K31/7088 A61P35/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C12N C07K A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data, BIOSIS, CHEM ABS Data, Sequence Search, EMBASE, EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2017/143150 A1 (HOPE CITY [US]; APTERNA LTD [GB]) 24 August 2017 (2017-08-24)	1,3,5-9, 20-23
Y	claims 1-10, 34-41; figures 2,5; examples 1,2	2,10-16, 24-48

X	WO 2016/127216 A1 (DEAKIN UNIV [AU]) 18 August 2016 (2016-08-18)	1,3-9, 17, 20-23, 33,34
Y	claims 17-32; examples 3-6	2,10-16, 24

X	WO 2010/144295 A1 (UNIV MIAMI [US]; GILBOA ELI [US]; PASTOR FERNANDO [US]) 16 December 2010 (2010-12-16)	1,3,5-9, 17-23
Y	claims 1, 6, 7, 11, 14-16, 19, 24-26; examples 1,2	2,10-16, 24-48

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
5 March 2020	13/03/2020

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Bucka, Alexander

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Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

International application No
PCT/IB2019/000890

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