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(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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, 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.

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Declarations under Rule 4.17:

— *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))*

— *with sequence listing part of description (Rule 5.2(a))*

(88) **Date of publication of the international search report**:
8 June 2017

WO 2017/009843 A3

(54) **Title**: COMPOSITIONS, ARTICLES OF MANUFACTURE AND METHODS FOR TREATING CANCER

(57) **Abstract**: A method of treating cancer in a subject in need thereof is provided. The method comprising administering to the subject a therapeutically effective amount of a peptide having an amino acid sequence as set forth in SEQ ID NO: 1 or an analog or derivative thereof; and an anti-cancer agent, thereby treating the cancer in the subject.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IL2016/050765

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K38/04 A61K39/395 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)
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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2015/019284 A2 (CAMBRIDGE ENTPR LTD [GB]) 12 February 2015 (2015-02-12) cited in the application paragraph [0025]; claims 1-33,41-13 page 2, line 14; claim 16	1-4, 17-23
X	WO 2013/160895 A1 (BIOKINE THERAPEUTICS LTD [IL]) 31 October 2013 (2013-10-31) claims 1-18	1-4, 17-23
X	WO 2004/087068 A2 (UNIV EMORY [US]; SHIM HYUNSUK [US]; LIANG ZHONGXING [US]; UMBREIT JAY) 14 October 2004 (2004-10-14) claims 1-46	1-4, 17-23

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

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 January 2017	03/05/2017

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	Rodrigo-Simón, Ana

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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.
X	DUHA FAHHAM ET AL: "In vitro and in vivo therapeutic efficacy of CXCR4 antagonist BKT140 against human non-small cell lung cancer", THE JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY, vol. 144, no. 5, 1 November 2012 (2012-11-01), pages 1167-1175.e1, XP055076134, ISSN: 0022-5223, DOI: 10.1016/j.jtcvs.2012.07.031 the whole document --- WO 2014/155376 A1 (BIOKINE THERAPEUTICS LTD [IL]; BIOLINERX LTD [IL]) 2 October 2014 (2014-10-02) claims 1-9; example 1	1-4, 17-23
X	--- GIOVANNA BOSSI ET AL: "ImmTAC-redirected tumour cell killing induces and potentiates antigen cross-presentation by dendritic cells", CANCER IMMUNOLOGY, IMMUNOTHERAPY, vol. 63, no. 5, 1 May 2014 (2014-05-01), pages 437-448, XP055335144, Berlin/Heidelberg ISSN: 0340-7004, DOI: 10.1007/s00262-014-1525-z the whole document	1-4, 17-23
Y	--- WO 2015/069770 A1 (COGNATE BIOSERVICES INC [US]; NORTHWEST BIOTHERAPEUTICS [US]; UNIV CAL) 14 May 2015 (2015-05-14) claims 1-5,10,18 claims 10,18	1-4, 17-23
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2016/050765

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-4, 17-23(all partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4, 17-23(all partially)

   Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and a vaccine selected from the group consisting of IMCgp100, Prophage G-100 & G-200, GV-1001, IMA-950, CV-9201, CV-9104, Ad-RTS-hIL-12, ETBX-011, Cavatak, JX-594, ColoAdl, GL-ONC1, ONCOS-102, CRS-207, ADU-623, Dorgenmeltucel-L, HyperAcute Prostate, FANG vaccine, MGN-1601, HPV vaccine and Tarmogens such as GI-4000 as well as the use of such compositions in the treatment of cancer

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2. claims: 5-9(completely); 1-4, 16-23(partially)

   Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and anti-cancer reactive mononuclear blood cells (MNBCs) as well as the use of such compositions in the treatment of cancer

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3. claims: 10(completely); 1-4, 17-23(partially)

   Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and a cytokine capable of inducing activation and/or proliferation of a T cell as well as the use of such compositions in the treatment of cancer

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4. claims: 11, 12(completely); 1-4, 17-23(partially)

   Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and an immune-check point regulator, wherein said immune-check point regulator is not a PD1 antagonist, PDL-1 antagonist, CTLA-4 antagonist, LAG-3 antagonist, TIM-3 antagonist, KIR antagonist, IDO antagonist, OX40 agonist, CD 137 agonist, CD27 agonist, CD40 agonist, GITR agonist, CD28 agonist or ICOS agonist as well as the use of such compositions in the treatment of cancer

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5. claims: 13-15(completely); 1-4, 16-23(partially)

   Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and an agent capable of binding an immune-check point protein expressed on a cancer cell as well as the use of such compositions in the treatment of cancer

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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6. claims: 1-4, 17-23(all partially)

Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and a colony stimulating factor-1 receptor (CSF1R) antagonist as well as the use of such compositions in the treatment of cancer

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7. claims: 1-4, 17-23(all partially)

Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and a CXCR2 antagonist as well as the use of such compositions in the treatment of cancer

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8. claims: 1-4, 17-23(all partially)

Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and a STAT3 antagonist as well as the use of such compositions in the treatment of cancer

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9. claims: 1-4, 17-23(all partially)

Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and PV-10 as well as the use of such compositions in the treatment of cancer

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10. claims: 1-4, 17-23(all partially)

Compositions comprising a CXCR4 antagonistic peptide having an aminoacid sequence as set forth in SEQ.1 or an analog or derivate thereof and Cotara as well as the use of such compositions in the treatment of cancer

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IL2016/050765

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2015019284 A2	12-02-2015	CA 2920377 A1	12-02-2015
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