



(51) International Patent Classification:

A61K 47/68 (2017.01) C07K 16/28 (2006.01)
A61P 43/00 (2006.01)

(21) International Application Number:

PCT/IB2019/055178

(22) International Filing Date:

19 June 2019 (19.06.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/687,382 20 June 2018 (20.06.2018) US

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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, 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).

Declarations under Rule 4.17:

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

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))
— in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE

(88) Date of publication of the international search report:

05 March 2020 (05.03.2020)

(54) Title: ANTIBODY DRUG CONJUGATES FOR ABLATING HEMATOPOIETIC STEM CELLS

(57) Abstract: The present invention provides antibody drug conjugates, wherein an antibody or antibody fragment that specifically binds to human cKIT is linked to a drug moiety, optionally through a linker. The present invention further provides pharmaceutical compositions comprising the antibody drug conjugates; and methods of making and using such pharmaceutical compositions for ablating hematopoietic stem cells in a patient in need thereof.



INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2019/055178

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K47/68 A61P43/00 C07K16/28
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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2016/164502 A1 (HARVARD COLLEGE [US]; MASSACHUSETTS GEN HOSPITAL [US] ET AL.) 13 October 2016 (2016-10-13) page 2, line 15 - page 3, line 12; page 10, lines 13-23; lines 27-32; page 31, lines 10ff; page 45, line 7 - line 29; page 53, line 4 - line 22; page 59, lines 3-26; page 60, lines 1-5; examples 9-11; page 83, line 20 - line 28; claims 1-3, 57-58, 61.	1-13, 15-36
Y	WO 2015/095301 A2 (IRM LLC; GEIERSTANGER BERNHARD [US] ET AL.) 25 June 2015 (2015-06-25) title; page 189, line 24 - page 190, line 15; claim 1; page 354, penultimate structure.	1-13, 15-36
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Further documents are listed in the continuation of Box C.

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	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 14 November 2019	Date of mailing of the international search report 23/01/2020
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Burema, Shiri
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2019/055178

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.:

1-13, 15-36(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.

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2019/055178

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2016/020791 A1 (NOVARTIS AG [CH]; ABRAMS TINYA [US] ET AL.) 11 February 2016 (2016-02-11) cited in the application paragraphs [0001], [0003], [0006], [0022]; pages 6-7, paragraph 26; paragraph [0044]; page 14, paragraph 66 - page 15, paragraph 69; paragraphs [00131], [00192]-[00193], [00296]-[00298], [00402], [00404]; claims (particularly claims 3-4); sequences 178, 173 -----	11,12, 16-20, 24,25
X,P	WO 2018/116178 A1 (NOVARTIS AG) 28 June 2018 (2018-06-28) the whole document -----	1-13, 15-36
A	WO 2015/138615 A2 (IRM LLC [US]; GEIERSTANGER BERNHARD HUBERT [US]; OU WEIJIA [US]) 17 September 2015 (2015-09-17) cited in the application page 6, line 15 - page 7, line 14; page 8, line 18 - line 23; page 108, line 17 - page 110, line 9; claims; examples; tables 5,10,11,12,14,18 -----	1-13, 15-36
A	WO 2016/203432 A1 (NOVARTIS AG [CH]; ABRAMS TINYA [US] ET AL.) 22 December 2016 (2016-12-22) pages 6-7, paragraph 26, page 14, paragraph 66 - page 15, paragraph 69, claims -----	1-13, 15-36
A	WO 2014/150937 A1 (NOVARTIS AG [CH]; IRM LLC [US] ET AL.) 25 September 2014 (2014-09-25) cited in the application abstract, page 10, paragraph 88 - page 11, paragraph 89, pages 33-34, paragraph 206, page 78, paragraph 316- page 80, paragraph 325; claims -----	1-13, 15-36
A	WO 2008/067115 A2 (UNIV LELAND STANFORD JUNIOR [US]; WEISSMAN IRVING L [US] ET AL.) 5 June 2008 (2008-06-05) cited in the application page 3, paragraph 12 - page 4, paragraph 15; page 11, paragraph 39; page 13, paragraph 44; claims -----	1-13, 15-36
A	WO 2004/002425 A2 (BIO TRANSPLANT INC [US]) 8 January 2004 (2004-01-08) abstract; claims; examples -----	1-13, 15-36
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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2019/055178

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 2017/219029 A2 (MAGENTA THERAPEUTICS INC [US]) 21 December 2017 (2017-12-21) page 1, line 25- page 5, line 9; page 13, line 34-page 15, line 3; page 31, line 5 - page 32, line 9; page 41, lines 31- 35 with page 47, lines 9-22 and page 26, lines 1ff; page 74, lines 16-20; claims; examples</p> <p style="text-align: center;">-----</p>	1-13, 15-36

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-13, 15-36(all partially)

A conjugate of Formula (I): A-(Lb-(D)n)y, wherein A is an antibody fragment that specifically binds to human cKIT; Lb is a linker; D is a cytotoxic agent of Formula (A) or Formula (B); n and y are integers from 1 to 10

2. claims: 14, 37-41(completely); 1-13, 15-36(partially)

An antibody or antibody fragment that specifically binds to human cKIT such as defined in claims 37-41; a conjugate thereof

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2019/055178

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