

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P/0131-WO-PCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/EP2019/056197	International filing date (<i>day/month/year</i>) 12 March 2019 (12-03-2019)	(Earliest) Priority Date (<i>day/month/year</i>) 12 March 2018 (12-03-2018)
Applicant GENMAB A/S		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 8 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6**bis**(a)).

c. ☒ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☒ **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 3
☐ as suggested by the applicant
☒ as selected by this Authority, because the applicant failed to suggest a figure
☐ as selected by this Authority, because this figure better characterizes the invention
b. ☐ none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP2019/056197

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of a sequence listing:
- a. ☒ forming part of the international application as filed:
- ☒ in the form of an Annex C/ST.25 text file.
- ☐ on paper or in the form of an image file.
- b. ☐ furnished together with the international application under PCT Rule 13~~ter~~.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
- c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
- ☐ in the form of an Annex C/ST.25 text file (Rule 13~~ter~~.1(a)).
- ☐ on paper or in the form of an image file (Rule 13~~ter~~.1(b) and Administrative Instructions, Section 713).
2. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2019/056197

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.:

1-133(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/EP2019/056197

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07K16/10 C07K16/28 C07K16/30 A61K47/68
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)

C07K 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, BIOSIS, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2015/155345 A1 (MEDIMMUNE LTD [GB]) 15 October 2015 (2015-10-15) figures 3-10; examples 1-3 -----	1-133
A	WO 2017/182672 A1 (ALLIGATOR BIOSCIENCE AB [SE]) 26 October 2017 (2017-10-26) examples 1-4 page 74, line 17 - line 18 -----	1-133
A	WO 2016/022939 A1 (US HEALTH [US]) 11 February 2016 (2016-02-11) example 1 -----	1-133
A	WO 2007/106744 A2 (WYETH CORP [US]; BOGHAERT ERWIN R [US]; DAMLE NITIN K [US]; HAMANN PHI) 20 September 2007 (2007-09-20) cited in the application examples; table 15 ----- -/-	1-133



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

"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

2 August 2019

Date of mailing of the international search report

16/10/2019

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

Loubradou, Gabriel

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2019/056197

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2017/089447 A1 (SYNTHON BIOPHARMACEUTICALS BV [NL]) 1 June 2017 (2017-06-01) examples	1-133
A	----- WO 2017/072207 A1 (F HOFFMANN-LA ROCHE AG [CH]; HOFFMANN-LA ROCHE INC [US]) 4 May 2017 (2017-05-04) cited in the application examples; table 2	1-133
A	----- WO 2017/107973 A1 (XDCEXPLORER CO LTD [CN]) 29 June 2017 (2017-06-29) examples; table 8	1-133
A	----- WO 2013/041687 A1 (AMGEN RES MUNICH GMBH [DE]; KUFER PETER [DE]) 28 March 2013 (2013-03-28) cited in the application examples	1-133
A	----- GERSHONI JONATHAN M ET AL: "Epitope mapping - The first step in developing epitope-based vaccines", BIODRUGS, ADIS INTERNATIONAL LTD, NZ, vol. 21, no. 3, 1 January 2007 (2007-01-01), pages 145-156, XP009103541, ISSN: 1173-8804, DOI: 10.2165/00063030-200721030-00002 the whole document	1-133
A	----- WO 2017/009442 A1 (GENMAB AS [DK]) 19 January 2017 (2017-01-19) cited in the application examples	1-133

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/056197

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2015155345	A1	15-10-2015	NONE
WO 2017182672	A1	26-10-2017	AU 2017252233 A1 15-11-2018 BR 112018071612 A2 19-02-2019 CA 3021618 A1 26-10-2017 CN 109195994 A 11-01-2019 EP 3445788 A1 27-02-2019 JP 2019523630 A 29-08-2019 KR 20180135454 A 20-12-2018 US 2019169308 A1 06-06-2019 WO 2017182672 A1 26-10-2017
WO 2016022939	A1	11-02-2016	NONE
WO 2007106744	A2	20-09-2007	AR 059809 A1 30-04-2008 AU 2007226696 A1 20-09-2007 BR PI0708771 A2 14-06-2011 CA 2645097 A1 20-09-2007 CN 101437850 A 20-05-2009 CR 10273 A 26-11-2008 DK 1994055 T3 25-08-2014 DK 2368914 T3 04-03-2019 EC SP088733 A 31-10-2008 EP 1994055 A2 26-11-2008 EP 2368914 A1 28-09-2011 EP 3539989 A1 18-09-2019 ES 2498517 T3 24-09-2014 ES 2712942 T3 16-05-2019 GT 200800181 A 25-05-2010 HK 1121473 A1 24-07-2015 IL 193986 A 31-08-2015 IL 240245 A 29-05-2017 JP 5523824 B2 18-06-2014 JP 2009529578 A 20-08-2009 KR 20080106345 A 04-12-2008 KR 20130018980 A 25-02-2013 MY 148763 A 31-05-2013 NZ 571208 A 22-12-2011 NZ 596295 A 25-01-2013 PA 8718601 A1 15-05-2009 PE 01192008 A1 04-03-2008 PT 1994055 E 15-09-2014 RU 2008137074 A 20-04-2010 SG 170091 A1 29-04-2011 SI 1994055 T1 29-08-2014 TW 200804424 A 16-01-2008 TW 201335189 A 01-09-2013 US 2007231333 A1 04-10-2007 US 2012064600 A1 15-03-2012 US 2014308302 A1 16-10-2014 US 2016185859 A1 30-06-2016 US 2018162937 A1 14-06-2018 WO 2007106744 A2 20-09-2007 ZA 200808075 B 28-03-2012
WO 2017089447	A1	01-06-2017	AU 2016358854 A1 10-05-2018 BR 112018010394 A2 21-11-2018 CA 3005294 A1 01-06-2017

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/056197

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		CL 2018001334 A1	21-12-2018
		CN 108348608 A	31-07-2018
		EP 3380122 A1	03-10-2018
		JP 2018538368 A	27-12-2018
		KR 20180083425 A	20-07-2018
		SG 11201803692P A	28-06-2018
		TW 201731879 A	16-09-2017
		US 2019194346 A1	27-06-2019
		WO 2017089447 A1	01-06-2017

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		EP 3184547 A1	28-06-2017
		EP 3368576 A1	05-09-2018
		JP 2019500853 A	17-01-2019
		US 2018311371 A1	01-11-2018
		WO 2017072207 A1	04-05-2017

WO 2017107973 A1	29-06-2017	CN 106916227 A	04-07-2017
		EP 3395834 A1	31-10-2018
		JP 2019508023 A	28-03-2019
		WO 2017107973 A1	29-06-2017
		WO 2018113136 A1	28-06-2018

WO 2013041687 A1	28-03-2013	AU 2012311492 A1	06-03-2014
		CA 2846432 A1	28-03-2013
		EP 2758438 A1	30-07-2014
		JP 2014533929 A	18-12-2014
		WO 2013041687 A1	28-03-2013

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		BR 112018000696 A2	18-09-2018
		CA 2992380 A1	19-01-2017
		CN 108368172 A	03-08-2018
		EA 201890305 A1	31-07-2018
		EP 3322727 A1	23-05-2018
		JP 2018526981 A	20-09-2018
		KR 20180030635 A	23-03-2018
		US 2019284278 A1	19-09-2019
		WO 2017009442 A1	19-01-2017

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-133(partially)

Subject-matter of claims 1 to 133 wherein the antibody has CDR sequences according to claim 52 (a) (f) or (g).

2. claims: 1-133(partially)

Subject-matter of claims 1 to 133 wherein the antibody has CDR sequences according to claim 52 (b).

3. claims: 1-133(partially)

Subject-matter of claims 1 to 133 wherein the antibody has CDR sequences according to claim 52 (c).

4. claims: 1-133(partially)

Subject-matter of claims 1 to 133 wherein the antibody has CDR sequences according to claim 52 (d).

5. claims: 1-133(partially)

Subject-matter of claims 1 to 133 wherein the antibody has CDR sequences according to claim 52 (e).
