

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PC072498A	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/IB2021/050464	International filing date (<i>day/month/year</i>) 21 January 2021 (21-01-2021)	(Earliest) Priority Date (<i>day/month/year</i>) 24 January 2020 (24-01-2020)
Applicant PFIZER INC.		

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. 7
☒ 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

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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:

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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.: 1, 5, 7-40(all partially)
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:
see FURTHER INFORMATION sheet PCT/ISA/210
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:

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.:

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.

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A. CLASSIFICATION OF SUBJECT MATTER

INV. A61P7/00 C07K16/28
ADD. A61K39/00

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)

A61P A61K C07K

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.
X	OWENS R ET AL: "The in vivo and in vitro characterisation of an engineered human antibody to E-selectin", IMMUNOTECHNOLOGY, ELSEVIER SCIENCE PUBLISHERS BV, NL, vol. 3, no. 2, 1 June 1997 (1997-06-01), pages 107-116, XP004126673, ISSN: 1380-2933, DOI: 10.1016/S1380-2933(97)00066-3	1-13,15, 19-23, 26-36,38
Y	abstract page 110, right-hand column, paragraph 2 - page 112, left-hand column, paragraph 1 page 112, left-hand column, paragraph 2 figures 2-5 page 115, left-hand column, paragraph 2 ----- -/-	24,25, 37,39,40

☒ 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

20 April 2021

Date of mailing of the international search report

07/05/2021

Name and mailing address of the ISA/

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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.
X	WO 96/40942 A1 (CYTEL CORP [US]) 19 December 1996 (1996-12-19)	1-21,23, 28-35
Y	abstract example 2 page 51, line 17 - line 19	24,25, 37,39,40
X	US 5 632 991 A (GIMBRONE JR MICHAEL A [US]) 27 May 1997 (1997-05-27)	1-13,15, 21,23, 28-35
Y	example 3	24,25, 37,39,40
X	WO 93/02702 A1 (BOEHRINGER INGELHEIM PHARMA [US]; BAYLOR COLLEGE MEDICINE [US]) 18 February 1993 (1993-02-18)	1-13,15, 20-23, 26-36,38
Y	page 13, paragraph 4 - page 14, paragraph 1 page 16, paragraph 2	24,25, 37,39,40
X	WO 95/34324 A1 (PROTEIN DESIGN LABS INC [US]; BERG ELLEN L [US]) 21 December 1995 (1995-12-21)	1-13,15, 21,23, 28-35
Y	page 36 - line 3738 page 40, line 5 - line 10	24,25, 37,39,40
X	REPO H ET AL: "Binding of human peripheral blood polymorphonuclear leukocytes to E- selectin (CD62E) does not promote their activation", THE JOURNAL OF IMMUNOLOGY, vol. 159, no. 2, 15 July 1997 (1997-07-15) , pages 943-951, XP055796841, US ISSN: 0022-1767 Retrieved from the Internet: URL:https://www.jimmunol.org/content/jimmu nol/159/2/943.full.pdf>	1-13,15, 21,23, 28-35
Y	abstract	24,25, 37,39,40
X	BENJAMIN C ET AL: "A blocking monoclonal antibody to endothelial-leukocyte adhesion molecule-1 (ELAM1)", BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, ELSEVIER, AMSTERDAM NL, vol. 171, no. 1, 31 August 1990 (1990-08-31), pages 348-353, XP024771364, ISSN: 0006-291X, DOI: 10.1016/0006-291X(90)91400-M [retrieved on 1990-08-31]	1-13,15, 21,23, 28-35
Y	abstract	24,25, 37,39,40

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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.
Y	J. CHANG ET AL: "GMI-1070, a novel pan-selectin antagonist, reverses acute vascular occlusions in sickle cell mice", BLOOD, vol. 116, no. 10, 27 May 2010 (2010-05-27), pages 1779-1786, XP055136339, ISSN: 0006-4971, DOI: 10.1182/blood-2009-12-260513 page 1781, right-hand column, paragraph 1 page 1783, left-hand column, paragraph 1 page 1783, right-hand column, paragraph 2 page 1784, right-hand column, paragraph 2 - page 1785, left-hand column, paragraph 1 -----	24,25, 37,39,40

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Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9640942	A1	19-12-1996	AU 6155896 A 30-12-1996
		WO 9640942 A1	19-12-1996
US 5632991	A	27-05-1997	NONE
WO 9302702	A1	18-02-1993	AT 173503 T 15-12-1998
		AU 663332 B2	05-10-1995
		CA 2083273 A1	01-02-1993
		DE 69227618 T2	06-05-1999
		DK 0551501 T3	02-08-1999
		EP 0551501 A1	21-07-1993
		ES 2123570 T3	16-01-1999
		HU 215549 B	28-01-1999
		JP H06502195 A	10-03-1994
		KR 930702025 A	08-09-1993
		US 5843441 A	01-12-1998
		WO 9302702 A1	18-02-1993
WO 9534324	A1	21-12-1995	AT 248605 T 15-09-2003
		AU 2821195 A	05-01-1996
		CA 2191870 A1	21-12-1995
		DE 69531679 T2	08-07-2004
		EP 0765172 A1	02-04-1997
		HK 1016018 A1	22-10-1999
		JP H10502168 A	24-02-1998
		US 5622701 A	22-04-1997
		US 6210670 B1	03-04-2001
		WO 9534324 A1	21-12-1995

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 1, 5, 7-40(all partially)

The present application comprises claims relating to several thousand possible anti-E-selectin antibodies. According to Rule 6.1(a) PCT, the number of claims shall be reasonable in consideration of the nature of the invention claimed, which is not the case here.

The application relates to sequence combinations, which may or may not generate an antibody with defined technical properties. The examiner is unable to search the thousands of combinations claimed without undue burden.

For the purposes of an incomplete search, the applicant was requested to identify the subject matter to be searched in more detail, for example, with reference to fully defined antibodies disclosed in the application and claims.

In their reply to invitation to provide informal clarification according to PCT/GL/IPSE paragraphs 9.34 and 9.35, the applicant requested that antibody 1444 (optimized) is searched.

Present search is thus restricted to the subject matter relating to antibodies comprising the particular CDR combinations with the order as shown in table 3 on p. 87 as far as relating to antibody 1444 (optimized), i.e. an antibody comprising HCDR1-3 with SEQ ID No 8-10, and LCDR1-3 with SEQ ID No 2-4, respectively.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) PCT declaration be overcome.