

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 56029-WO-PCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/IB2015/055986	International filing date (<i>day/month/year</i>) 6 August 2015 (06-08-2015)	(Earliest) Priority Date (<i>day/month/year</i>) 7 August 2014 (07-08-2014)
Applicant NOVARTIS AG		

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. 1A
☒ 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.:
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, 2(completely); 4-6, 28-33(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.

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A. CLASSIFICATION OF SUBJECT MATTER

INV. C07K16/22 A61K39/395 A61P3/00
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)

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, 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	E-C. LEE ET AL: "Identification of a New Functional Domain in Angiopoietin-like 3 (ANGPTL3) and Angiopoietin-like 4 (ANGPTL4) Involved in Binding and Inhibition of Lipoprotein Lipase (LPL)", JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 284, no. 20, 15 May 2009 (2009-05-15), pages 13735-13745, XP055035574, ISSN: 0021-9258, DOI: 10.1074/jbc.M807899200 figure 2 abstract	1,2,4-6, 28-33
X	WO 2006/074228 A1 (LEXICON GENETICS INC [US]; LEE E-CHIANG [US]; LANDES GREGORY M [US]; C) 13 July 2006 (2006-07-13) paragraph [0272]; claims 1,3,5, 9, 54, 55, 57-60; figure 15 ----- -/-	1,2,4-6, 28-33



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

5 November 2015

Date of mailing of the international search report

05/04/2016

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 2011/079257 A2 (REGENERON PHARMA [US]; SLEEMAN W MARK [US]; GUSAROVA VIKTORIA [US]; KI) 30 June 2011 (2011-06-30) claims 19, 22,23; example 5 -----	1,2,4-6, 28-33

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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 2006074228	A1	13-07-2006	
		AU 2006204001 A1	13-07-2006
		BR PI0606432 A2	30-06-2009
		CA 2594233 A1	13-07-2006
		CN 101128485 A	20-02-2008
		EA 200701452 A1	28-02-2008
		EP 1846452 A1	24-10-2007
		IL 184235 A	31-10-2012
		JP 5366406 B2	11-12-2013
		JP 2008526857 A	24-07-2008
		KR 20070107696 A	07-11-2007
		US 2006222645 A1	05-10-2006
		US 2011008359 A1	13-01-2011
		US 2012171217 A1	05-07-2012
		WO 2006074228 A1	13-07-2006
		ZA 200705980 A	28-01-2009

WO 2011079257	A2	30-06-2011	
		AR 079708 A1	15-02-2012
		AU 2010336369 A1	12-07-2012
		CA 2785158 A1	30-06-2011
		CN 102741284 A	17-10-2012
		EP 2516466 A2	31-10-2012
		JP 2013515486 A	09-05-2013
		JP 2015145424 A	13-08-2015
		KR 20120104613 A	21-09-2012
		NZ 600768 A	26-09-2014
		RU 2012131547 A	27-01-2014
		SG 181784 A1	30-07-2012
		TW 201132354 A	01-10-2011
		US 2011159015 A1	30-06-2011
		US 2013266574 A1	10-10-2013
		UY 33144 A	30-06-2011
		WO 2011079257 A2	30-06-2011

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, 2(completely); 4-6, 28-33(partially)

antibodies against angiopoietin-like 4 (ANGPTL4) or fragments thereof which inhibit the binding of LPL to ANGPTL4; compositions comprising such antibodies and therapeutic uses of such antibodies

2. claims: 3(completely); 4-6, 28-33(partially)

antibodies against ANGPTL4 or fragments thereof which bind to human ANGPTL4 with a KD of 45 pM or less (measured by ForteBio kinetic binding assay) or 24 pM or less (measured by SET assay); compositions comprising such antibodies and therapeutic uses of such antibodies

3. claims: 14, 21(completely); 7-13, 28-33(partially)

antibodies against ANGPTL4 which comprise a heavy chain CDR3, heavy and/or light chain variable regions or all six CDRs of the exemplified antibodies NEG276 and NEG276-LALA; compositions comprising such antibodies and therapeutic uses of such antibodies

4. claims: 15, 22(completely); 7-13, 28-33(partially)

antibodies against ANGPTL4 which comprise a heavy chain CDR3, heavy and/or light chain variable regions or all six CDRs of the exemplified antibody NEG278; compositions comprising such antibodies and therapeutic uses of such antibodies

5. claims: 16, 23(completely); 7-13, 28-33(partially)

antibodies against ANGPTL4 which comprise a heavy chain CDR3, heavy and/or light chain variable regions or all six CDRs of the exemplified antibody NEG310; compositions comprising such antibodies and therapeutic uses of such antibodies

6. claims: 17, 24(completely); 7-13, 28-33(partially)

antibodies against ANGPTL4 which comprise a heavy chain CDR3, heavy and/or light chain variable regions or all six CDRs of the exemplified antibody NEG313; compositions comprising such antibodies and therapeutic uses of such antibodies

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

7. claims: 18, 25(completely); 7-13, 28-33(partially)

antibodies against ANGPTL4 which comprise a heavy chain CDR3, heavy and/or light chain variable regions or all six CDRs of the exemplified antibody NEG315; compositions comprising such antibodies and therapeutic uses of such antibodies

8. claims: 19, 26(completely); 7-13, 28-33(partially)

antibodies against ANGPTL4 which comprise a heavy chain CDR3, heavy and/or light chain variable regions or all six CDRs of the exemplified antibody NEG318; compositions comprising such antibodies and therapeutic uses of such antibodies

9. claims: 20, 27(completely); 7-13, 28-33(partially)

antibodies against ANGPTL4 which comprise a heavy chain CDR3, heavy and/or light chain variable regions or all six CDRs of the exemplified antibody NEG319; compositions comprising such antibodies and therapeutic uses of such antibodies
