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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, LT, 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:

— 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))

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

4 December 2014

(54) Title: HUMAN ANTIGEN BINDING PROTEINS THAT BIND TO PROPROTEIN CONVERTASE SUBTILISIN KEXIN TYPE 9 (PCSK9)

(57) Abstract: The present invention provides compositions and methods relating to or derived from antigen binding proteins capable of inhibiting PCSK9 binding to LDLR. In embodiments, the antigen binding proteins specifically bind PCSK9. In some embodiments, an antigen binding protein is a fully human, humanized, or chimeric antibodies, binding fragments and derivatives of such antibodies, and polypeptides that specifically bind PCSK9 Other embodiments provide nucleic acids encoding such antigen binding proteins, and fragments and derivatives thereof, and polypeptides, cells comprising such polynucleotides, methods of making such antigen binding proteins, and fragments and derivatives thereof, and polypeptides, and methods of using such antigen binding proteins, fragments and derivatives thereof, and polypeptides, including methods of treating or diagnosing subjects suffering from hypercholesterolemia and related disorders or conditions.



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/024702

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07K16/40 A61K39/395 C12N15/13 G01N33/50 A61P3/06
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

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, EMBASE, BIOSIS, Sequence Search, 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	WO 2009/026558 A1 (AMGEN INC [US]; JACKSON SIMON MARK [US]; WALKER NIGEL PELHAM CLINTON []) 26 February 2009 (2009-02-26) the whole document	1-34
X	WO 2009/055783 A2 (SCHERING CORP [US]; HEDRICK JOSEPH A [US]; MONSMA FREDERICK JAMES JR []) 30 April 2009 (2009-04-30) the whole document	1-34
X	WO 2010/029513 A2 (RINAT NEUROSCIENCE CORP [US]; LIANG HONG [US]; ABDICHE YASMINA NOUBIA) 18 March 2010 (2010-03-18) the whole document	1-34
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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

"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 24 July 2014	Date of mailing of the international search report 23/10/2014
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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 Saame, Tina
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INTERNATIONAL SEARCH REPORT

International application No
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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 2010/077854 A1 (REGENERON PHARAMACEUTICALS INC [US]; SLEEMAN MARK W [US]; MARTIN JOEL) 8 July 2010 (2010-07-08) the whole document	1-34
X,P	WO 2013/091103 A1 (ADAERATA LTD PARTNERSHIP [CA]; CANADA NAT RES COUNCIL [CA]) 27 June 2013 (2013-06-27) the whole document	1-34
A	DATABASE Geneseq [Online] 23 July 2009 (2009-07-23), "Human nicotine specific antibody related protein, SEQ ID 85.", XP002727665, retrieved from EBI accession no. GSP:AXB70134 Database accession no. AXB70134 sequence	7-9
A	DATABASE Geneseq [Online] 2 February 2012 (2012-02-02), "Human angiopoietin-2 (Ang-2) antibody heavy chain variable region SEQ:45.", XP002727666, retrieved from EBI accession no. GSP:AZQ43949 Database accession no. AZQ43949 sequence	3-5

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International application No

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INTERNATIONAL SEARCH REPORT

International application No.
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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.:

1-34(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: 1-34(partially)

Claims relating to anti-PCSK9 antigen binding proteins which compete for binding to human PCSK9 with antibody 101F7 (comprising SEQ ID Nos 16 and 20) or 103B7 (comprising SEQ ID Nos 17 and 21); nucleic acids encoding such antigen binding proteins and therapeutic uses of the antigen binding proteins in cholesterol related diseases

2. claims: 1-34(partially)

Claims relating to anti-PCSK9 antigen binding proteins which compete for binding to human PCSK9 with antibody 131D12 (comprising SEQ ID Nos 18 and 22); nucleic acids encoding such antigen binding proteins and therapeutic uses of the antigen binding proteins in cholesterol related diseases
