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**Declarations under Rule 4.17:**

— of inventorship (Rule 4.17(iv))

**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))
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- (88) Date of publication of the international search report:  
23 April 2015

(54) Title: ANTI-B7-H5 ANTIBODIES AND THEIR USES

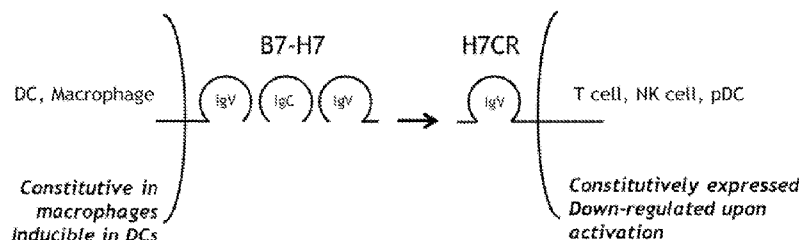


FIG. 1

(57) Abstract: The present invention relates to antibodies and their antigen-binding fragments and to other molecules that are capable of immunospecifically binding to the B7-H5 ligand of the B7-H5:CD28H pathway, and to the uses of such molecules in the treatment and diagnosis of autoimmune disease, transplant rejection and other inflammatory diseases.

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2014/039621

A. CLASSIFICATION OF SUBJECT MATTER  
INV. C07K14/705 C07K16/28 A61K39/00  
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, Sequence Search, WPI Data, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	L. WANG ET AL: "VISTA, a novel mouse Ig superfamily ligand that negatively regulates T cell responses", NATURE REVIEWS IMMUNOLOGY, vol. 8, no. 6, 14 March 2011 (2011-03-14), pages 467-592, XP055080701, ISSN: 1474-1733, DOI: 10.1038/nri2326 abstract ----- -/--	1-37

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p>
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Date of the actual completion of the international search <b>22 September 2014</b>	Date of mailing of the international search report <b>06/03/2015</b>
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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 <b>Turri, Matteo</b>
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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2014/039621

## 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.:

1-50(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/US2014/039621

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	D. B. FLIES ET AL: "Cutting Edge: A Monoclonal Antibody Specific for the Programmed Death-1 Homolog Prevents Graft-versus-Host Disease in Mouse Models", THE JOURNAL OF IMMUNOLOGY, vol. 187, no. 4, 18 July 2011 (2011-07-18) , pages 1537-1541, XP055140738, ISSN: 0022-1767, DOI: 10.4049/jimmunol.1100660 -----	1-50
A	MOUSTAFA A. SAKR ET AL: "GI24 enhances tumor invasiveness by regulating cell surface membrane-type 1 matrix metalloproteinase", CANCER SCIENCE, vol. 101, no. 11, 13 July 2010 (2010-07-13), pages 2368-2374, XP055140743, ISSN: 1347-9032, DOI: 10.1111/j.1349-7006.2010.01675.x -----	1-50
A	WO 2011/020024 A2 (UNIV JOHNS HOPKINS [US]; CHEN LIEPING [US]) 17 February 2011 (2011-02-17) paragraph [0153] paragraph [0656] - paragraph [0659] -----	1-50
A	LINSLEY PETER S ET AL: "The clinical utility of inhibiting CD28-mediated costimulation", May 2009 (2009-05), IMMUNOLOGICAL REVIEWS, VOL. 229, PAGE(S) 307-321, XP055139830, ISSN: 0105-2896 -----	1-50
A	MARTIN F FLAJNIK ET AL: "Evolution of the B7 family: co-evolution of B7H6 and Nkp30, identification of a new B7 family member, B7H7, and of B7's historical relationship with the MHC", IMMUNOGENETICS, SPRINGER, BERLIN, DE, vol. 64, no. 8, 11 April 2012 (2012-04-11) , pages 571-590, XP035083875, ISSN: 1432-1211, DOI: 10.1007/S00251-012-0616-2 -----	1-50

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2014/039621

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011020024 A2	17-02-2011	AU 2010282340 A1	01-03-2012
		CA 2769822 A1	17-02-2011
		EP 2464661 A2	20-06-2012
		JP 2013501814 A	17-01-2013
		US 2012219559 A1	30-08-2012
		WO 2011020024 A2	17-02-2011
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**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

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

1. claims: 1-50(partially)

All subject-matter relating the antibody binding to B7-H5 and characterized by heavy chain variable region SEQ ID NO:9 and light chain variable region SEQ ID NO:11 (clone 2D3); pharmaceutical compositions comprising the antibodies, uses of the antibodies, methods.

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2. claims: 1-50(partially)

All subject-matter relating the antibody binding to B7-H5 and characterized by heavy chain variable region SEQ ID NO:13 and light chain variable region SEQ ID NO:15 (clone 18C3); pharmaceutical compositions comprising the antibodies, uses of the antibodies, methods.

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3. claims: 24-37, 48-50(all partially)

All subject-matter relating to CD28H: pharmaceutical compositions comprising a CD28H-Ig fusion. Use of a CD28H-Ig fusion protein in the manufacture of a medicament. Pharmaceutical compositions for use in methods of treating subjects for diseases characterized by increased expression of CD28H.

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