Title: ANTIBODIES AGAINST CDM1 FOR THE DIAGNOSIS AND TREATMENT OF CANCER

Abstract: The present invention relates to antibodies/binding molecules that specifically bind to CDM1. The use of these antibodies in human and veterinary medicine, for example in the treatment and diagnosis of cancer, is also subject of the present invention.
1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
   a. (means)
      - [ ] on paper
      - [X] in electronic form
   b. (time)
      - [X] in the international application as filed
      - [ ] together with the international application in electronic form
      - [ ] subsequently to this Authority for the purpose of search

2. [ ] In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07K16/18 C07K16/28 C07K16/30 A61K39/395 A61P35/00

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)

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, WPI Data, BIOSIS, CHEM ABS Data, Sequence Search, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>X</td>
<td>WO 2010/102175 A1 (MEDAREX INC [US]; OXFORD BIOThERAPEUTICS LTD [GB]; TERRETT JONATHAN AL) 10 September 2010 (2010-09-10) the whole document in particular the examples 1-10 -----</td>
<td>1-9, 14-17, 22-72</td>
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<td>X</td>
<td>US 2009/053243 A1 (KUROSawa YOSHIKAZU [JP] ET AL) 26 February 2009 (2009-02-26) the whole document in particular the examples -----</td>
<td>1-9, 14-17, 22-72</td>
</tr>
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</table>

[X] Further documents are listed in the continuation of Box C.  [X] 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)
  "C" 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

"Z" document member of the same patent family

Date of the actual completion of the international search: 11 July 2012

Date of mailing of the international search report: 07/09/2012

Name and mailing address of the ISA:
European Patent Office, P.B. 5018 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-3040,
Fax: (+31-70) 340-3016

Authorized officer: Bernhardt, Wiebke

Form PCT/ISA/210 (second sheet) (April 2005)
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<th>Relevant to claim No.</th>
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<tbody>
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<td>A</td>
<td>DAVIES J ET AL: &quot;Affinity improvement of single antibody VH domains: residues in all three hypervariable regions affect antigen binding&quot;, IMMUNOTECHNOLOGY, ELSEVIER SCIENCE PUBLISHERS BV, NL, vol. 2, no. 3, 1 September 1996 (1996-09-01), pages 169-179, XP004070292, ISSN: 1380-2933, DOI: 10.1016/S1380-2933(96)00045-0 abstract</td>
<td>1-9, 14-17, 22-72</td>
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INTERNATIONAL SEARCH REPORT

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. [X] 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.:

   9, 17(completely); 1-8, 14-16, 22-72(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.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 9, 17(completely); 1-8, 14-16, 22-72(partially)

   Antibody that specifically binds to CADM1 comprising a VL CDR1 region having an amino acid sequence as depicted in SEQ ID NO:19, a VL CDR2 region having an amino acid sequence as depicted in SEQ ID NO:31, and a VL CDR3 region having an amino acid sequence as depicted in SEQ ID NO:.43, or a CDR sequence having 75% or more amino acid identity to one or more of said CDRs; and comprising a VH CDR1 region having an amino acid sequence as depicted in SEQ ID NO: 55, a VH CDR2 region having an amino acid sequence as depicted in SEQ ID NO: 67, and a VH CDR3 region having an amino acid sequence as depicted in SEQ ID NO:.79, or a CDR sequence having 75% or more amino acid identity to one or more of said CDRs [AB3]; an antibody that blocks or inhibits the binding of said antibody to CADM1; an antibody that binds to an epitope on CADM1 recognized by said antibody; a nucleic acid encoding said antibody; a vector comprising said nucleic acid; a host cell comprising said nucleic acid; a process for the production of said antibody; a pharmaceutical composition comprising said antibody; said antibody for use in medicine; said antibody for the use in the treatment of cancer; a method of diagnosing prostate cancer using said antibody

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2. claims: 10, 18(completely); 1-8, 14-16, 22-72(partially)

   Antibody that specifically binds to CADM1 comprising a VL CDR1 region having an amino acid sequence as depicted in SEQ ID NO: 26, a VL CDR2 region having an amino acid sequence as depicted in SEQ ID NO:38, and a VL CDR3 region having an amino acid sequence as depicted in SEQ ID NO:.50, or a CDR sequence having 75% or more amino acid identity to one or more of said CDRs; and comprising a VH CDR1 region having an amino acid sequence as depicted in SEQ ID NO: 62, a VH CDR2 region having an amino acid sequence as depicted in SEQ ID NO: 74, and a VH CDR3 region having an amino acid sequence as depicted in SEQ ID NO:.86, or a CDR sequence having 75% or more amino acid identity to one or more of said CDRs [AB10]; an antibody that blocks or inhibits the binding of said antibody to CADM1; an antibody that binds to an epitope on CADM1 recognized by said antibody; a nucleic acid encoding said antibody; a vector comprising said nucleic acid; a host cell comprising said nucleic acid; a process for the production of said antibody; a pharmaceutical composition comprising said antibody; said antibody for use in medicine; said antibody for the use in the treatment of cancer; a method of diagnosing prostate cancer using said antibody

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3. claims: 11, 19(completely); 1-8, 14-16, 22-72(partially)

Antibody that specifically binds to CADM1 comprising a
VL_CDR1 region having an amino acid sequence as depicted in
SEQ ID NO:18, a VL_CDR2 region having an amino acid sequence
as depicted in SEQ ID NO:30, and a VL_CDR3 region having an
amino acid sequence as depicted in SEQ ID NO:42, or a CDR
sequence having 75% or more amino acid identity to one or
more of said CDRs; and comprising a VH_CDR1 region having an
amino acid sequence as depicted in SEQ ID NO: 54, a VH_CDR2
region having an amino acid sequence as depicted in SEQ ID
NO: 66, and a VH_CDR3 region having an amino acid sequence
as depicted in SEQ ID NO:78, or a CDR sequence having 75%
or more amino acid identity to one or more of said CDRs
[AB1]; an antibody that blocks or inhibits the binding of
said antibody to CADM1; an antibody that binds to an epitope
on CADM1 recognized by said antibody; a nucleic acid
encoding said antibody; a vector comprising said nucleic
acid; a host cell comprising said nucleic acid; a process
for the production of said antibody; a pharmaceutical
composition comprising said antibody; said antibody for use
in medicine; said antibody for the use in the treatment of
cancer; a method of diagnosing prostate cancer using said
antibody

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4. claims: 12, 20(completely); 1-8, 14-16, 22-72(partially)

Antibody that specifically binds to CADM1 comprising a
VL_CDR1 region having an amino acid sequence as depicted in
SEQ ID NO:17, a VL_CDR2 region having an amino acid sequence
as depicted in SEQ ID NO:29, and a VL_CDR3 region having an
amino acid sequence as depicted in SEQ ID NO:41, or a CDR
sequence having 75% or more amino acid identity to one or
more of said CDRs; and comprising a VH_CDR1 region having an
amino acid sequence as depicted in SEQ ID NO: 53, a VH_CDR2
region having an amino acid sequence as depicted in SEQ ID
NO: 65, and a VH_CDR3 region having an amino acid sequence
as depicted in SEQ ID NO:77, or a CDR sequence having 75%
or more amino acid identity to one or more of said CDRs
[AB1]; an antibody that blocks or inhibits the binding of
said antibody to CADM1; an antibody that binds to an epitope
on CADM1 recognized by said antibody; a nucleic acid
encoding said antibody; a vector comprising said nucleic
acid; a host cell comprising said nucleic acid; a process
for the production of said antibody; a pharmaceutical
composition comprising said antibody; said antibody for use
in medicine; said antibody for the use in the treatment of
cancer; a method of diagnosing prostate cancer using said
antibody

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5. claims: 13, 21(completely); 1-8, 14-16, 22-72(partially)

Antibody that specifically binds to CADM1 comprising a
VL CDR1 region having an amino acid sequence as depicted in SEQ ID NO:24, a VL CDR2 region having an amino acid sequence as depicted in SEQ ID NO:36, and a VL CDR3 region having an amino acid sequence as depicted in SEQ ID NO.:48, or a CDR sequence having 75% or more amino acid identity to one or more of said CDRs; and comprising a VH CDR1 region having an amino acid sequence as depicted in SEQ ID NO: 60, a VH CDR2 region having an amino acid sequence as depicted in SEQ ID NO: 72, and a VH CDR3 region having an amino acid sequence as depicted in SEQ ID NO.:84, or a CDR sequence having 75% or more amino acid identity to one or more of said CDRs [AB10]; an antibody that blocks or inhibits the binding of said antibody to CADM1; an antibody that binds to an epitope on CADM1 recognized by said antibody; a nucleic acid encoding said antibody; a vector comprising said nucleic acid; a host cell comprising said nucleic acid; a process for the production of said antibody; a pharmaceutical composition comprising said antibody; said antibody for use in medicine; said antibody for the use in the treatment of cancer; a method of diagnosing prostate cancer using said antibody

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