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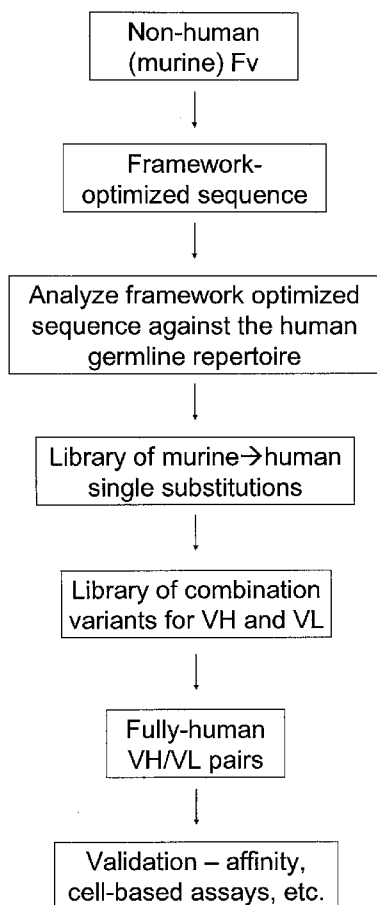
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[Continued on next page]

(54) Title: HUMAN EQUIVALENT MONOCLONAL ANTIBODIES ENGINEERED FROM NONHUMAN VARIABLE REGIONS

Figure 1.



(57) Abstract: The present invention is directed to the creation of human equivalent CDRs and antibodies containing them by a method of producing an antibody which specifically binds to an antigen.



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OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER

INV. C07K16/00 C07K16/28 C07K16/22
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 practical, search terms used)

EPO-Internal, BIOSIS, Sequence Search, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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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
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"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

30 March 2010

Date of mailing of the international search report

11/05/2010

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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.
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/041144

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DAVIES J ET AL: "Affinity improvement of single antibody VH domains: residues in all three hypervariable regions affect antigen binding" IMMUNOTECHNOLOGY, ELSEVIER SCIENCE PUBLISHERS BV, NL, vol. 2, no. 3, 1 September 1996 (1996-09-01), pages 169-179, XP004070292 ISSN: 1380-2933 the whole document	9-12
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/041144

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.:

1-8(completely); 9-12(partially)

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-8

A method of producing an antibody which specifically binds to an antigen, the method comprising the steps of (a) providing a parent antibody variable region amino acid sequence comprising less than 85% identity in the V- and J-segments to any human germline V- and J-segment, (b) comparing said parent antibody variable region amino acid sequence to a collection of human germline V- and J-segment amino acid sequences, (c) scoring said collection based on the identity of each germline sequence to said parent antibody variable region amino acid sequence, (d) picking the germline sequence with the highest identity as the germline parent sequence, (e) constructing a library of variant immunoglobulin proteins each comprising said parent antibody variable region amino acid sequence with at least one amino acid substitution at a position in which the parent sequence differs from said germline parent sequence, wherein the substitution is to the same amino acid found at the position in the germline parent sequence and (f) measuring the antigen binding of each of said library variant immunoglobulin proteins.

2-18. claims: 9, 10(partially)

Antibodies that bind to CD25 (also termed IL2R), wherein each of said antibodies comprises a variable heavy chain sequence as set forth in SEQ ID N°1-17, respectively (each sequence being associated to one invention or group of inventions).

19-43. claims: 11, 12(partially)

Antibodies that bind to VEGF, wherein each of said antibodies comprises a variable heavy chain sequence as set forth in SEQ ID N°18-42, respectively (each sequence being associated to one invention or group of inventions).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/041144

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