(54) Title: ANTI-ICAM-1 HUMAN ANTIBODIES AND USES THEREOF

Variable Heavy Chain DNA

1855 VH2 (SEQ ID NO: 1):

(11) CACGTGCTCAT TGGAGAAGGC CCGCCACGCA CCCGCCGCAG
(12) GCCGCGCGCG CGCGGGCAGT CGCGCGCGCG CGCGCGCGCG
(13) GCCGCGCGCG CGCGCGCGCG CGCGCGCGCG CGCGCGCGCG
(14) GCCGCGCGCG CGCGCGCGCG CGCGCGCGCG CGCGCGCGCG
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3040 VH1b (SEQ ID NO: 2):

(11) CACGTGCTCAT TGGAGAAGGC CCGCCACGCA CCCGCCGCAG
(12) GCCGCGCGCG CGCGGGCAGT CGCGCGCGCG CGCGCGCGCG
(13) GCCGCGCGCG CGCGCGCGCG CGCGCGCGCG CGCGCGCGCG
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3041 VH3 (SEQ ID NO: 3):

(11) CACGTGCTCAT TGGAGAAGGC CCGCCACGCA CCCGCCGCAG
(12) GCCGCGCGCG CGCGGGCAGT CGCGCGCGCG CGCGCGCGCG
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3043 VH1a (SEQ ID NO: 4):

(11) CACGTGCTCAT TGGAGAAGGC CCGCCACGCA CCCGCCGCAG
(12) GCCGCGCGCG CGCGGGCAGT CGCGCGCGCG CGCGCGCGCG
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(57) Abstract: The present invention provides recombinant antigen-binding regions and antibodies and functional fragments containing such antigen-binding regions that are specific for ICAM1, which plays an integral role in various disorders or conditions. These antibodies, accordingly, can be used to treat rheumatoid arthritis, psoriasis, deep dermal burn, diabetic retinopathy and other various disorders associated with inflammation. Antibodies of the invention also can be used in the diagnostics field, as well as for investigating the role of ICAM-1 in the progression disorders associated with inflamed tissue. The invention also provides nucleic acid sequences encoding the foregoing antibodies, vectors containing the same, pharmaceutical compositions and kits with instructions for use.
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:
4 May 2006
### INTERNATIONAL SEARCH REPORT

#### A. CLASSIFICATION OF SUBJECT MATTER
C07K16/28 A61K39/395

#### B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
C07K A61K

#### 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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<tr>
<td>X</td>
<td>KNAPPIK A ET AL: &quot;Fully synthetic human combinatorial antibody libraries (HuCAL) based on modular consensus frameworks and CDRs randomized with trinucleotides&quot; JOURNAL OF MOLECULAR BIOLOGY, LONDON, GB, vol. 296, no. 1, 11 February 2000 (2000-02-11), pages 57-86, XP004461525 ISSN: 0022-2836 cited in the application abstract; table 4</td>
<td>1-42</td>
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</tbody>
</table>

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**X** Further documents are listed in the continuation of box C. **X** Patent family members are listed in annex.

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**A** document defining the general state of the art which is not considered to be of particular relevance
**E** earlier document 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

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**X** 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 person skilled in the art

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**A** document member of the same patent family

**Date of the actual completion of the international search**
21 February 2006

**Date of mailing of the international search report**
09/03/2006

**Name and mailing address of the ISA**
European Patent Office, P.B. 5818 Patentlaan 2
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Authorized officer
Favre, N
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<td>X</td>
<td>KREBS B ET AL: &quot;High-throughput generation and engineering of recombinant human antibodies&quot; JOURNAL OF IMMUNOLOGICAL METHODS, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, NL, vol. 254, no. 1-2, 1 August 2001 (2001-08-01), pages 67-84, XP004245443 ISSN: 0022-1759 cited in the application abstract; tables 1, 3</td>
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<td>A</td>
<td>WO 03/035696 A (PERLAN THERAPEUTICS, INC; FANG, FANG; LUO, GUANG-XIANG; KOHLSTAEDT, LO) 1 May 2003 (2003-05-01) the whole document</td>
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<td>A</td>
<td>FRISCH C ET AL: &quot;From EST to IHC: human antibody pipeline for target research&quot; JOURNAL OF IMMUNOLOGICAL METHODS, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, NL, vol. 275, no. 1-2, 1 April 2003 (2003-04-01), pages 203-212, XP004416756 ISSN: 0022-1759 cited in the application the whole document</td>
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<td>A</td>
<td>BELLA JORDI ET AL: &quot;The structure of the two amino-terminal domains of human ICAM-1 suggests how it functions as a rhinovirus receptor and as an LFA-1 integrin ligand&quot; PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 95, no. 8, 14 April 1998 (1998-04-14), pages 4140-4145, XP002368956 ISSN: 0027-8424 the whole document</td>
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# INTERNATIONAL SEARCH REPORT

**Box 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. **X** Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
   
   Although claims 40–42 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

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 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:

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 fee, this Authority did not invite payment of any additional fee.

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.:

### Remark on Protest

- **☐** The additional search fees were accompanied by the applicant's protest.
- **☐** No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2004)
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