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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(U))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))

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- with sequence listing part of description published separately in electronic form and available upon request from the International Bureau

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9 October 2008

(54) Title: ANTI-IL-6 MONOCLONAL ANTIBODIES AND USES THEREOF

(57) Abstract: The present invention provides novel monoclonal antibodies that bind specifically to IL-6. The antibodies of the invention comprise a variable heavy chain (VH) region selected from any of the VH regions disclosed herein as well as amino acid variants thereof, and/or a variable light chain (VL) region selected from any of the VL regions disclosed herein as well as amino acid variants thereof. The invention also provides methods of treating diseases and disorders associated with IL-6 expression and/or activity.



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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER

INV. C07K16/24 A61K39/395 A61P35/00 A61P19/02

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 A61P

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, WPI Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 39 39 706 C1 (CENTRE REGIONAL DE TRANSFUSION SANGUINE, BESANCON, FR; BIOTEST PHARMA) 21 March 1991 (1991-03-21)	1-19, 26-66, 81,82, 84,85, 89-93
Y	the whole document	1-93
X	WIJDENES J ET AL: "Human recombinant dimeric il-6 binds to its receptor as detected by anti-il-6 monoclonal antibodies" MOLECULAR IMMUNOLOGY, ELMSFORD, NY, US, vol. 28, no. 11, 1 January 1991 (1991-01-01), pages 1183-1192, XP002974189 ISSN: 0161-5890 the whole document	1-19, 26-66, 84,85
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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

¹A¹ document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document 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)

¹O" document referring to an oral disclosure, use, exhibition or other means

¹P^L 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^A underlying the invention

¹X¹ 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

4 July 2008

Date of mailing of the international search report

15/07/2008

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/017337

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim.No.
X	EP 0 312 996 A (KISHIMOTO TADAMITSU [OP]) 26 April 1989 (1989-04-26) the whole document -----	1-19 , 26-66, 81-84, 89,90
X	EP 0 399 429 A (TORAY INDUSTRIES [JP]) 28 November 1990 (1990-11-28) page 2, line 39 - page 6, line 31 -----	1-1-9 , 26-66, 81-84, 89-91
X	EP 0 410 813 A (FUJIREBIO KK [JP] ; KISHIMOTO TADAMITSU [JP]) 30 January 1991 (1991-01-30) page 3, line 7 - page 8, line 21 -----	1-19 , 26-66
X	SHIMAMURA T ET AL: "ANALYSIS OF INTERLEUKIN 6 (IL-6)/IL-6 RECEPTOR SYSTEM USING MONOCLONAL ANTI-IL-6 ANTIBODIES" MOLECULAR IMMUNOLOGY, ELMSFORD, NY, US, vol . 28, no. 11, 1 November 1991 (1991-11-01), pages 1155-1161 , XP000764448 ISSN: 0161-5890 the whole document -----	1-19, 26-66
Y	wo 2004/039826 A (CENTOCOR INC [US]) 13 May 2004 (2004-05-13) page 14, line 24 - page 83, line 18 -----	1-93
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A	US 2005/196755 AI (ZAUDERER MAURICE [US] ET AL) 8 September 2005 (2005-09-08) cited in the application the whole document -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/017337

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:

Although claims 81-87 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 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:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable 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.:

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

Information on patent family members

International application No

PCT/US2007/017337

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