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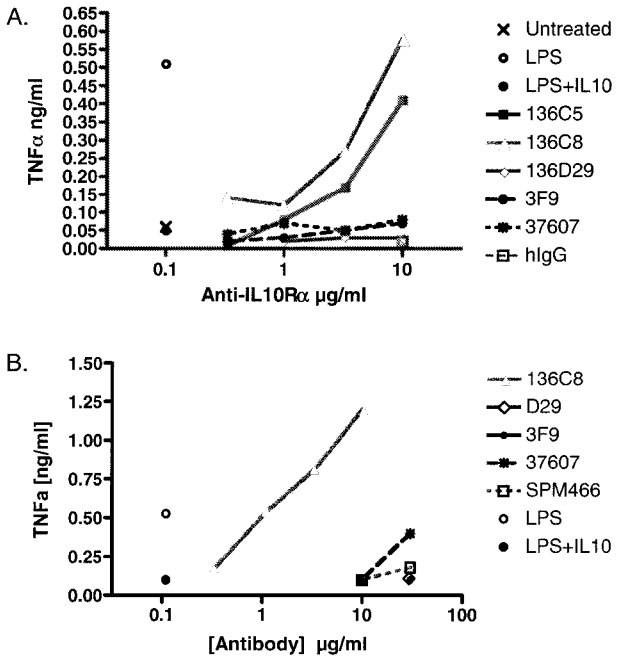
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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[Continued on next page]

(54) Title: INTERLEUKIN 10 RECEPTOR (IL-10R) ANTIBODIES AND METHODS OF USE

Figures 9A-9B



(57) Abstract: The invention relates to IL-1O Receptor alpha (IL-1ORα) antibodies and subsequences thereof, human and humanized IL-10 Receptor alpha (IL-IORα) antibodies and subsequences thereof, isolated and purified IL-10 Receptor alpha (IL- 1ORα) antibodies and subsequences thereof, compositions including IL-10 Receptor alpha (IL- 1ORα) antibodies and subsequences thereof, and methods that employ IL-10 Receptor alpha (IL-1ORα) antibodies and subsequences thereof. The invention includes among other things, methods of treating a pathogen infection, pathogen reactivation, and methods of vaccinating or immunizing against a pathogen infection, which include, for example, administering an IL-10 Receptor alpha (IL-1ORα) antibody or subsequence, to treat a pathogen infection, pathogen reactivation or for vaccination or immunization.

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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:

— *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))*

(88) Date of publication of the international search report:
15 July 2010

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/45322

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61K 39/395 (2010.01)
USPC - 424/144.1
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)
USPC: 424/144.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 424/145.1, 130.1, 143.1, 144.1, 154.1 (text search)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Electronic data bases: PubWEST (PGPB, USPT, EPAB, JPAB); Google Scholar; GenCore Sequence Search (AA)
Search Terms Used: IL-10 receptor alpha (IL-10R alpha, IL-10R1, CD210), monoclonal antibody (mAbs), chimpanzee, macaque, monoclonal antibody clones: 136C5, 136C8,136D29, 3F9, SPM466, 37607, SEQ ID NO: 29,30,31,32,49,50,51,52,56,57,58

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y -- A	LIU et al. The EBV IL-10 homologue is a selective agonist with impaired binding to the IL-10 receptor. J Immunol 15 Jan 1997 Vol 158 No 2 Pages 604-613. Especially pg 605 left col para 8, pg 609 right col para 3, pg 611 fig 7A.	3-7 ---------- 1,2, 43-45, 54 , 55, 73
Y	REINEKE et al. Mapping of the interleukin-10/interleukin-10 receptor combining site. Protein Science April 1998 Vol 7 No 4 Pages 951-960. Especially pg 952 right col para 4 continued on pg 953 right col para 1; pg 956 fig 5.	3, 4
Y	YOSHINO et al. Upgrading of flow cytometric analysis for absolute counts, cytokines and other antigenic molecules of cynomolgus monkeys (Macaca fascicularis) by using anti-human cross-reactive antibodies. Exp Anim April 2000 Vol 49 No 2 Pages 97-110. Especially abstract, pg 102 table 1.	5-7
A	US 2005/0054019 A1 (MICHAUD et al.). 10 March 2005 (10.03.2005). Esp. SEQ ID NO: 24.	1,2,14-22, 43-45, 54 and 55
A	US 2005/0287150 A1 (AMBROSINO et al.). 29 December 2005 (29.12.2005). Esp. SEQ ID NO: 50	1,2,14-22, 43-45, 54 and 55
A	US 2003/0040044 A1 (GILES-KOMAR et al.). 27 February 2003 (27.02.2003). Esp. SEQ ID NO: 4,5	48
A	US 20050123541 A1 (GILES-KOMAR et al.) 9 June 2005 (09.06.2005). Esp. SEQ ID NO: 6.	48

☒ Further documents are listed in the continuation of Box C. ☐

* 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)
"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
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 January 2010 (18.01.2010)	25 MAY 2010
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/45322

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MARCHANT et al. Interleukin-10 controls interferon-gamma and tumor necrosis factor production during experimental endotoxemia. Eur J Immunol May 1994 Vol 24 No 5 Pages 1167-1171. Abstract only.	7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 09/45322

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.: 8-13, 23-42, 47, 49-53, 56-72, and 74-128
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:

This application contains the following inventions or groups of inventions which are not so linked as to from a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I+: Claims 1-7, 14-22, 43-46, 48, 54, 55, and 73 are drawn to antibodies, and variable regions thereof, where the first named invention will be searched and includes the 136C5 and 136C8 antibodies and their respective hv chains (SEQ ID NOS: 29 and 31) and lv chains (SEQ ID NOS: 30 and 32) and their respective hv CDRs (SEQ ID NOS:49-52) and lv CDRs (SEQ ID NOS: 56-58). Applicant may have the 136D29 antibody and its hv and lv chains and hv and lv CDRs searched for an additional search fee.

----------continued on separate 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 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.:
1-7, 14-22, 43-46, 48, 54, 55, and 73, including the 136C5 and 136C8 antibodies, the hv chains (SEQ ID NOS: 29 and 31) and lv chains (SEQ ID NOS: 30 and 32) and their respective CDRs

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.

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Box III continued (Lack of Unity of Invention)

The inventions the listed groups do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The hv and lv chains of the 136C5 and 136C8 antibodies share significant sequence identity and also contain CDRs that are either identical or nearly identical. Accordingly, the 136C5 and 136C8 antibodies relate to a single invention. However, the hv and lv chains and CDRs of the 136D29 antibody do not share significant homology with the 136C5 and 136C8 antibodies.