

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
4 March 2004 (04.03.2004)

PCT

(10) International Publication Number
WO 2004/018649 A3

- (51) International Patent Classification⁷: **A61K 39/395**
- (21) International Application Number:
PCT/US2003/027450
- (22) International Filing Date: 21 August 2003 (21.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
10/226,795 23 August 2002 (23.08.2002) US
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
- (88) Date of publication of the international search report:
17 June 2004
- 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.*

(54) Title: MONOCLONAL ANTIBODIES AND COMPLEMENTARITY-DETERMINING REGIONS BINDING TO EBOLA GLYCOPROTEIN

(57) Abstract: In this application are described Ebola GP monoclonal antibodies, epitopes recognized by these monoclonal antibodies, and the sequences of the variable regions of some of these antibodies. Also provided are mixtures of antibodies of the present invention, as well as methods of using individual antibodies or mixtures thereof for the detection, prevention, and/or therapeutical treatment of Ebola virus infections in vitro and in vivo.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/27450

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(7) : A61K 39/395
 US CL : 424/130.1
 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)
 U.S. : 424/130.1

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)
 Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 01/016183 A1 (U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES) 08 March 2001 (08.03.2001), see the claims.	1-6
Y	WO 00/00617 A2 (U.S. MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES) 06 January 2000 (06.01.2000), see the claims.	1-6
Y	WILSON et al. Ebola Virus: the search for vaccines and treatments. CMLS cellular and Molecular Life Sciences. November 2001, Vol. 58, pages 1826-1841, see pages 1836, right column.	1-6
Y	MARUYAMA et al. Recombinant Human Monoclonal Antibodies to Ebola Virus. The Journal of Infectious Diseases. February 1999, Vol. 179 (Suppl 1), pages S235-239, see the abstract.	1-6
Y	MARUYAMA et al. Ebola Virus Can Be Effectively Neutralized by Antibody Produced in Natural Human Infection. Journal of Virology. July 1999, Vol. 73, No. 7, pages 6024-6030, see page 6025.	1-6
Y	WILSON et al. Epitopes Involved in Antibody-Mediated Protection from Ebola Virus. Science. 03 March 2000, Vol. 287, pages 1664-1666, see the entire document.	1-6

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"P"	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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search
20 February 2004 (20.02.2004)

Date of mailing of the international search report
10 MAR 2004

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PCT/US03/27450

INTERNATIONAL SEARCH REPORT

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KUDOYAROVA-ZUBAVICHENE et al. Preparation and Use of Hyperimmune Serum for Prophylaxis and Therapy of Ebola Virus Infections. The Journal of Infectious Diseases. February 1999, Vol. 179 (Suppl 1), pages S218 to 223, see the abstract.	1-6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/27450

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claim 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. Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation 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 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.: 1-6

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

The inventions listed as Groups I-XII do not relate to a single 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: Since the invention of Group I is known in the prior art as evidence by U.S. Army Medical Research Institute of Infectious Diseases (WO 01/061683) wherein the reference teaches monoclonal antibody that binds Ebola virus GP (see the claims, and the abstract), the unity of invention is lacking. The cited evidence proves that the technical feature of Group I does not make a contribution over the prior art. The above cited art prove that the invention of Group I does not make a contribution over the prior art. Thus, the claims are not so linked by a special technical feature within the meaning of PCT Rule 13.2 so as to form a single inventive concept, accordingly, the unity of invention is lacking among all groups.

This application contains the following inventions or groups of inventions which are not so linked as to form 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, claim(s) 1-6, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (1st product)
Group II, claim(s) 7-12, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (2nd product)
Group III, claim(s) 13-18, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (3rd product)
Group IV, claim(s) 19-24, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (4th product)
Group V, claim(s) 25-30, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (5th product)
Group VI, claim(s) 31-36, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (6th product)
Group VII, claim(s) 37-42, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (7th product)
Group VIII, claim(s) 43-48, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (8th product)
Group IX, claim(s) 49-54, drawn to an isolated monoclonal antibody which binds Ebola virus GP. (9th product)
Group X, claim(s) 55-64, 68, 69, drawn to composition comprising the isolated Ebola virus antibodies, and method of preventing Ebola virus. (10th product, and 1st method)
Group XI, claim(s) 65-67, drawn to method of detecting Ebola virus. (2nd method)
Group XII, claim(s) 70, 71, drawn to a kit for detecting. (11th product)

INTERNATIONAL SEARCH REPORT

PCT/US03/27436

Continuation of B. FIELDS SEARCHED Item 3:
NPL, MEDLINE, CAPLUS, DERWENT, EPA, JPA, BIOSIS

search terms: Ebola, immunoglobulin?, EBOV, antibod?