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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

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Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

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- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- with sequence listing part of description published separately in electronic form and available upon request from the International Bureau

(88) Date of publication of the international search report:
10 January 2008

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: METHODS FOR PRODUCING AN IMMUNE RESPONSE TO TUBERCULOSIS

(57) Abstract: Methods for producing an immune response to Mycobacterium tuberculosis (Mtb) are disclosed herein. In several examples, the immune response is a protective immune response. In additional embodiments, methods are disclosed for preventing an infection with Mtb, or treating an infection with Mtb. Pharmaceutical compositions for the prevention and/or treatment of tuberculosis are also disclosed.



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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/006472

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01N33/569

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)
G01N

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, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99/24577 A (STATENS SERUMINSTITUT [DK]; ANDERSEN PETER [DK]; SKJOET RIKKE [DK]) 20 May 1999 (1999-05-20) sequences 182-185 page 4 claims 1-47 page 27, line 17 - page 28, line 11	1-4, 29-55
X	FLEISCHMANN R D ET AL: "Whole genome comparison of Mycobacterium tuberculosis clinical and laboratory strains" EMBL, 2002, XP002205726 the whole document -/--	1-4, 29-55

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
- *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)
- *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

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23/11/2007

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/006472

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	& FLEISCHMANN R D ET AL: "Whole-genome comparison of Mycobacterium tuberculosis clinical and laboratory strains" JOURNAL OF BACTERIOLOGY, WASHINGTON, DC, US, vol. 184, no. 19, October 2002 (2002-10), pages 5479-5490, XP002412257 ISSN: 0021-9193 the whole document	
X	EP 1 484 405 A (STATENS SERUMINSTITUT [DK]) 8 December 2004 (2004-12-08) claims 9-39 sequences 179,185 page 2, paragraph 9 page 3 page 4, paragraph 14 page 7, paragraph 37 - page 8, paragraph 41	1-4, 29-55
X	WO 01/62893 A (CORIXA CORP [US]; CAMPOS NETO ANTONIO [US]; SKEIKY YASIR [US]; OVENDAL) 30 August 2001 (2001-08-30) examples 1,2 sequences 16,18,20,22,24,26,28,30	1-4, 29-55
X	WO 98/53075 A (CORIXA CORP [US]) 26 November 1998 (1998-11-26) claims 1-24 sequence 16	1-4, 29-55
A	US 2004/141985 A1 (LALVANI AJIT [GB] ET AL) 22 July 2004 (2004-07-22) the whole document	1-4, 29-55
A	LEWINSOHN DEBORAH A ET AL: "Human dendritic cells presenting adenovirally expressed antigen elicit Mycobacterium tuberculosis-specific CD8+ T cells" AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE, vol. 166, no. 6, 15 September 2002 (2002-09-15), pages 843-848, XP002443626 ISSN: 1073-449X the whole document	1-4, 29-55
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/006472

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>LEWINSOHN DAVID M ET AL: "Characterization of human CD8+ T cells reactive with Mycobacterium tuberculosis-infected antigen-presenting cells" JOURNAL OF EXPERIMENTAL MEDICINE, vol. 187, no. 10, 18 May 1998 (1998-05-18), pages 1633-1640, XP002443627 ISSN: 0022-1007 the whole document</p>	<p>1-4, 29-55</p>
A	<p>GROTZKE J E ET AL: "Role of CD8<+> T lymphocytes in control of Mycobacterium tuberculosis infection" MICROBES AND INFECTION, ELSEVIER, PARIS, FR, vol. 7, no. 4, April 2005 (2005-04), pages 776-788, XP004904672 ISSN: 1286-4579 the whole document</p>	<p>1-4, 29-55</p>

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/006472

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 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.:

see annex

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:

Invention 1: claims 1, 29-55 [partially], 2-4 [fully]

A method for producing an immune response to Mycobacterium tuberculosis using the polypeptide of SEQ ID NO1 or at least 9 to 20 aminoacids of SEQ ID NO 1, the polypeptide with SEQ ID NO 1, and pharmaceutical composition.

Invention 2-12: claims 1, 29-55[partially], 5-28 [fully]

A method for producing an immune response to Mycobacterium tuberculosis using the polypeptide of SEQ ID NO2 or at least 9 to 20 aminoacids of SEQ ID NO 2, the polypeptide with SEQ ID NO 2, and pharmaceutical composition. (invention 2), 3 (invention 3) ... up to 12 (invention 12).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/006472

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
WO 9924577	A	20-05-1999	AU 750173 B2 CA 2319380 A1 EP 1029053 A1 NZ 504951 A	11-07-2002 20-05-1999 23-08-2000 29-06-2001
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