Title: FUSION PROTEINS OF MYCOBACTERIUM TUBERCULOSIS

Abstract: The present invention relates to compositions and fusion proteins containing at least two *Mycobacterium* sp. antigens, and nucleic acids encoding such compositions and fusion proteins. The compositions of the invention increase serological sensitivity of sera from individuals infected with tuberculosis, and methods for their use in the diagnosis, treatment, and prevention of tuberculosis infection.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 49/00, 39/00, 39/28, 39/02, 39/04, 45/00, 47/00; A01N 63/00; C12N 1/00
US CL : 424/9.1, 9.2, 184.1, 185.1, 190.1, 192.1, 200.1, 234.1, 248.1, 278.1, 93.1, 93.2; 435/440, 471, 243

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. : 424/9.1, 9.2, 184.1, 185.1, 190.1, 192.1, 200.1, 234.1, 248.1, 278.1, 93.1, 93.2; 435/440, 471, 243

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

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

Date of the actual completion of the international search: 17 November 2004 (17.11.2004)

Date of mailing of the international search report: 10 DEC 2004

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. (703) 305-3230

Authorized officer

Rodney P. Svartz, Ph.D. [Signature]
Telephone No. (571) 272-1600

Form PCT/ISA/210 (second sheet) (July 1998)
## INTERNATIONAL SEARCH REPORT

### 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.: 1-15,30-38,48-57,70-76 and 84

### 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(1)) (July 1998)
BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING
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) 1-15, 30-38, 48-57, 70-76, and 84, drawn to DNA, vector, transformed host and methods of use.

Group II, claim(s) 16-29, 39-47, 58-69, 77-83, and 85, drawn to protein, kit, and method of use.

The inventions listed as Groups I and II 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 groups are drawn to structurally and functionally different molecules. The special technical feature of Group I is nucleic acid while the special technical feature of Group II is protein.

Continuation of B. FIELDS SEARCHED Item 3:
BIOSIS, CABA, CAPLUS, EMBASE, JAPIO, LIFESCI, MEDLINE, SCISEARCH, USPATFULL, SEQUENCE SEARCH