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Published:

— with international search report (Art. 21(3))

— with sequence listing part of description (Rule 5.2(a))

(88) Date of publication of the international search report:
18 March 2010

(54) Title: METHOD FOR STIMULATING IMMUNE RESPONSE AGAINST MORAXELLA CATARRHALIS

(57) Abstract: Provided is a method for stimulating in an individual an immune response against *M. catarrhalis*. The method is performed by administering to an individual a composition that contains at least one isolated *M. catarrhalis* protein in an amount effective to stimulate an immune response against *M. catarrhalis* in the individual. The *M. catarrhalis* proteins used in the method of the invention are *M. catarrhalis* proteins Msp22, Msp75, Msp78, Protein 28, Protein 99, Protein 238, and combinations thereof.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/88469

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - C07H 21/04; C12N 15/09 (2009.01)

USPC - 536/23.7; 435/69.3

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 - 536/23.7; 435/69.3

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)
 PubWEST(PGPB,USPT,USOC,EPAB,JPAB), Google Scholar: Moraxella catarrhalis vaccine, immune response
 GenCore 6.3: SEQ ID NO:1

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,673,910 B1 (BRETON) 6 January 2004 (06.01.2004); SEQ ID NO: 3555	1, 3-13, 15
X, P	RUCKDESCHER et al. Mining the Moraxella catarrhalis Genome: Identification of Potential Vaccine Antigens Expressed during Human Infection. INFECTION AND IMMUNITY EPub 28 January 2008, 76(4):1599-1607; Abstract, pg 1600-1601, MATERIALS AND METHODS; pg 1604, Human antibody responses.; pg 1604-1606, DISCUSSION	1, 7-8, 13

☐

Further documents are listed in the continuation of Box C.

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* 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

9 November 2009 (09.11.2009)

Date of mailing of the international search report

03 DEC 2009

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/88469

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:

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+: claims 1-15, drawn to a composition comprising at least one isolated *Moraxella catarrhalis* protein and method of using said composition. The first invention (claims 1, 3-13, 15) encompasses a composition comprising a polypeptide of SEQ ID NO:1. Should an additional fee(s) be paid, Applicant is invited to elect an additional polypeptide(s) to be searched. The exact claims searched will depend on the specifically elected SEQ ID NOs.

The inventions listed as Group I+ 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:

***** See Supplemental 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, 3-13, 15, restricted to SEQ ID NO:1

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.

***** Supplemental Box *****

Continuation of Box No. III

The inventions of Group I+ share a technical feature of a composition for stimulating in an individual an immune response against *Moraxella catarrhalis*. However, this shared technical feature does not represent a contribution over the prior art of US 2007/0010665 A1 (Breton) (11 Jan 2007) that discloses "a vaccine composition for prevention or treatment of an *M. catarrhalis* infection comprising an *M. catarrhalis* polypeptide" (claim 18). As the above composition for stimulating in an individual an immune response against *Moraxella catarrhalis* was known at the time of the invention, this cannot be considered a special technical feature that would otherwise unify the groups.

Another technical feature of the inventions listed as Group I+ is the specific polypeptide sequence recited therein. However, said technical feature is not special because 1) no significant structural similarities can readily be ascertained among the claimed polypeptide sequences, and 2) US 2004/0029129 A1 to Wang et al discloses a polypeptide 100% identical to the claimed polypeptide of SEQ ID NO:3 (Wang et al., SEQ ID NO: 62975).

The inventions of Group I+ therefore lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature