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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, BN, BR, BW, BY, BZ, CA, CH, CL, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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**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))
- with sequence listing part of description (Rule 5.2(a))

- (88) **Date of publication of the international search report:**  
27 February 2014



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(54) **Title:** ADJUVANT FORMULATIONS AND METHODS

(57) **Abstract:** The present invention is directed to methods for administering antigenic material to a patient as a vaccine against an infection comprising providing both an antigenic material specific to the desired immunological response desired plus an adjuvant comprised of a peptide of a sequence derived from the sequence of pneumococcal surface adhesin A protein (PsaA). Preferably the peptide comprises a sequences derived from one or more sequences of PsaA that contain the epitope regions or contiguous amino acids of SEQ ID NOs 1 or 2. The invention is also directed to vaccine compositions containing adjuvant of the invention and also adjuvant compositions of the invention.

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/IB 13/53890

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC(8) - A61K 45/00, A61K 47/00 (2013.01)  
USPC - 424/278.1, 424/281.1

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)  
IPC(8): A61K 45/00, A61K 47/00 (2013.01)  
USPC: 424/278.1, 424/281.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
USPC: 424/278.1, 424/281.1 (text search)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
PubWEST, PatBase, Google Scholar, Google Patents Search terms:  
pneumococcal surface adhesin A protein (PsaA), adjuvant, vaccine composition, pathogen, Vaccine, protective immune response, ad

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2010120921 A1 (TAI et al.) 21 October 2010 (21.10.2010); [0008], [0011], [0021], [0023], [0027], [0029], [0041], [0042], [0045], [0056], [0057]	1-7, 9-10, 13-17, 20-23 and 26
Y		11-12, 25
Y	WO 2011/151760 A2 (KHANDKE et al.) 08 December 2011 (08.12.2011); abstract	11-12
Y	US 20120076817 A1 (LEE et al.) 29 March 2012 (29.03.2012); Abstract, [0077], [0118]	25

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	“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
“E” earlier application or patent but published on or after the international filing date	“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
“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)	“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
“O” document referring to an oral disclosure, use, exhibition or other means	“&” document member of the same patent family
“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  
22 November 2013 (22.11.2013)

Date of mailing of the international search report

**13 DEC 2013**

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

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PCT Helpdesk: 571-272-4300  
PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 13/53890

**Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.c of the first sheet)**

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of a sequence listing filed or furnished:

a. (means)

on paper

in electronic form

b. (time)

in the international application as filed

together with the international application in electronic form

subsequently to this Authority for the purposes of search

2.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

IB13/53890: ISA/225 mailed on 17 September 2013. No electronic sequence listing was submitted in response to the ISA/225.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 13/53890

**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.: 8, 18, 19 and 24  
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:  
Claims 8, 18-19 and 24 are unsearchable because Applicant failed to submit a valid CRF to the ISA/225 mailed on 17 September 2013. Accordingly, the USPTO cannot supply a search for the sequences listed in this application.
  
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:

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.:

- 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.