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Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
22 May 2003

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: MULTIVALENT MENINGOCOCCAL POLYSACCHARIDE-PROTEIN CONJUGATE VACCINE

(57) Abstract: The present invention describes a combined vaccine that offers broad protection against meningococcal disease caused by the pathogenic bacterial *Neisseria meningitidis*. The vaccine is comprised of four distinct polysaccharide-protein conjugates that are formulated as a single dose of vaccine. Purified capsular polysaccharides from *Neisseria meningitidis* serogroups A, C, W-135, and Y are chemically activated and selectively attached to a carrier protein by means of a covalent chemical bond, forming polysaccharide-protein conjugates capable of eliciting long-lasting immunity to a variety of *N. meningitidis* strains in children as well as adults.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 02/01963

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K47/48

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 7 A61K

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)
CHEM ABS Data, EMBASE, BIOSIS, EPO-Internal, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GIEBINK G S ET AL: "Pneumococcal capsular polysaccharide-meningococcal outer membrane protein complex conjugate vaccines: immunogenicity and efficacy in experimental pneumococcal otitis media." THE JOURNAL OF INFECTIOUS DISEASES. UNITED STATES FEB 1993, vol. 167, no. 2, February 1993 (1993-02), pages 347-355, XP008015590 ISSN: 0022-1899 abstract	1,5-9,17
X	WO 98 45312 A (UNIV EMORY) 15 October 1998 (1998-10-15) page 5, line 7 - line 12; claims 13,14 page 21, line 24 - line 28; table 4	1-17

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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	Date of mailing of the international search report
31 March 2003	07/04/2003

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Berte, M

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inte nal Application No
PCT/US 02/01963

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	CAMPAGNE G. ET AL: "Safety and immunogenicity of three doses of a Neisseria meningitidis A + diphtheria conjugate vaccine in infants from Niger." PEDIATRIC INFECTIOUS DISEASE JOURNAL, (2000) 19/2 (144-150). , XP008015581 page 144, column 2, paragraph 4 ---	1-17
A	PAOLETTI L C ET AL: "Neonatal mouse protection against infection with multiple group B streptococcal (GBS) serotypes by maternal immunization with a tetravalent GBS polysaccharide-tetanus toxoid conjugate vaccine." INFECTION AND IMMUNITY. UNITED STATES AUG 1994, vol. 62, no. 8, August 1994 (1994-08), pages 3236-3243, XP001148813 ISSN: 0019-9567 abstract -----	1-17

national application No.
PCT/US 02/01963

INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claim 9, 17 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

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 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:

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.:

Remark on Protest

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

[ ] No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int ɔnal Application No
PCT/US 02/01963

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9845312 A	15-10-1998	US 6403306 B1	11-06-2002
		AU 6956198 A	30-10-1998
		WO 9845312 A1	15-10-1998