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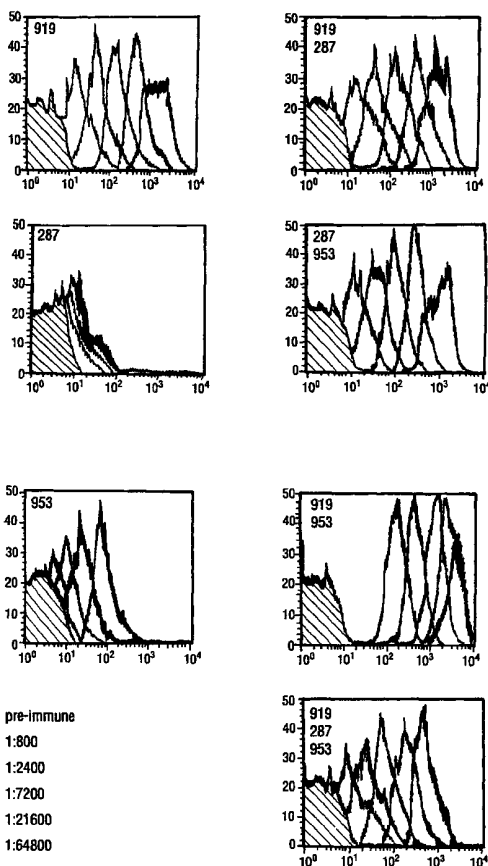
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- (71) Applicant (for all designated States except US): **CHIRON S.P.A.** [IT/IT]; Via Fiorentina, 1, I-53100 Siena (IT).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): **GIULIANI, Marzia, Monica** [IT/IT]; Chiron S.p.A., Via Fiorentina, 1, I-53100 Siena (IT). **PIZZA, Mariagrazia** [IT/IT]; Chiron S.p.A., Via Fiorentina, 1, I-53100 Siena (IT). **RAPPUOLI, Rino** [IT/IT]; Chiron S.p.A., Via Fiorentina, 1, I-53100 Siena (IT).
- (74) Agents: **HALLYBONE, Huw, George et al.**; Carpmaels & Ransford, 43 Bloomsbury Square, London WC1A 2RA (GB).
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[Continued on next page]

(54) Title: COMBINATION NEISSERIAL COMPOSITIONS



(57) Abstract: Compositions comprising a first biological molecule from a *Neisseria* bacterium and a second biological molecule from a *Neisseria* bacterium. The term "biological molecule" includes proteins and nucleic acids. Preferred *Neisseria* species are *N. meningitidis* and *N. gonorrhoeae*



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 00/00828

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C12N15/31 C07K14/22 A61K39/095

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 C07K 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)

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	NL 8 901 612 A (NEDERLANDEN STAAT) 16 July 1990 (1990-07-16) page 3, line 34 - line 40; claims 6,8,10-22	1,10
X	---	
X	VAN DER LEY P ET AL: "Construction of a multivalent meningococcal vaccine strain based on the class 1 outer membrane protein" INFECT.IMMUN., vol. 60, no. 8, 1992, pages 3156-61, XP000946454 abstract	1,10
X	---	
X	US 4 239 749 A (BUCHANAN THOMAS M) 16 December 1980 (1980-12-16) column 4, paragraph 3 - paragraph 4	1,10

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Further documents are listed in the continuation of box C.

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
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- "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

26 September 2000

Date of mailing of the international search report

08. 01. 2001

Name and mailing address of the ISA

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

Authorized officer

Gurdjian, D

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 00/00828

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>CHRISTODOULIDES, MYRON ET AL: "Immunization with a multiple antigen peptide containing defined B- and T-cell epitopes: production of bactericidal antibodies against group B Neisseria meningitidis" MICROBIOLOGY (READING, U. K.) (1994), 140(11), 2951-60, XP000946423 abstract; figure 1</p> <p style="text-align: center;">---</p>	1,10
X	<p>VAN DER LEY P. ET AL: "Construction of Neisseria meningitidis strains carrying multiple chromosomal copies of the porA gene for use in the production of a multivalent outer membrane vesicle vaccine" VACCINE, 1995, 13/4 (401-407), XP002148366 United Kingdom abstract; figure 11</p> <p style="text-align: center;">---</p>	1,10
X	<p>WO 97 10844 A (US ARMY MEDICAL RESEARCH MATER ;LOWELL GEORGE H (US); ZOLLINGER WE) 27 March 1997 (1997-03-27) example 2</p> <p style="text-align: center;">---</p>	1,10
X	<p>WO 97 28273 A (NORTH AMERICAN VACCINE INC) 7 August 1997 (1997-08-07) cited in the application claims 23,25; figures 4,9,13; example 16</p> <p style="text-align: center;">---</p>	1,10
A	<p>WO 96 29412 A (IAF BIO VAC INC ;BRODEUR BERNARD R (CA); MARTIN DENIS (CA); HAMEL) 26 September 1996 (1996-09-26) cited in the application abstract; figures SEQ.ID.1-26</p> <p style="text-align: center;">---</p>	1-10
A	<p>WO 95 03413 A (NORTH AMERICAN VACCINE INC ;UNIV ROCKEFELLER (US)) 2 February 1995 (1995-02-02) cited in the application figures SEQ.1-23</p> <p style="text-align: center;">---</p>	1-10
P,A	<p>WO 99 36544 A (PIZZA MARIAGRAZIA ;SCARLATO VINCENZO (IT); RAPPUOLI RINO (IT); CHI) 22 July 1999 (1999-07-22) cited in the application figures SEQ.1-90</p> <p style="text-align: center;">---</p>	1-10
P,A	<p>WO 99 24578 A (PIZZA MARIAGRAZIA ;SCARLATO VINCENZO (IT); RAPPUOLI RINO (IT); CHI) 20 May 1999 (1999-05-20) cited in the application figures SEQ.1-892</p> <p style="text-align: center;">---</p>	1-10

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 00/00828

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	WO 99 57280 A (PIZZA MARIAGRATIA ;MORA MARIROSA (IT); RAPPUOLI RINO (IT); GALEOTT) 11 November 1999 (1999-11-11) cited in the application figures SEQ.1-3020 -----	1-10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 00/00828

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. 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 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:

see additional 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.:

1-10 all partially

Remark on Protest

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

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:

1. Claims: Invention 1 ; claims 1-10 partially

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of SEQ ID NOS: 1-8 , related to ORFs corresponding to example 1 , as disclosed in W09924578 .

2. Claims: Invention 2-104 ; claims 1-10 partially

Idem as subject 1 but limited to seq.id's related to ORFs corresponding to examples 2-104 , as disclosed in W09924578 , characterized by SEQ ID NOS: 9-892. (Invention 2 is limited to SEQ ID NOS: 9-10; Invention 3 is limited to SEQ ID NOS: 11-18; Invention 4 is limited to SEQ ID NOS: 19-28;; Invention 104 is limited to SEQ ID NOS: 885-892).

For the sake of conciseness, the first subject matters are explicitly defined, the other subject matters are defined by analogy hereto.

3. Claims: invention 105. Claims: 1-10 partially

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of Seq.ID:893-898

4. Claims: Invention 106 . Claims: 1-10 partially

As invention 105 but concerning seq.ID:899-904

5. Claims: Invention 107. Claims: 1-10 partially

As invention 105 but concerning seq.ID:905-908

6. Claims: Invention 108. Claims: 1-10 partially

As invention 105 but concerning seq.ID:909-914

7. Claims: Invention 109. Claims: 1-10 partially

As invention 105 but concerning seq.ID:915-916

8. Claims: Invention 110. Claims: 1-10 partially

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

As invention 105 but concerning seq.ID:917-922

9. Claims: Invention 111. Claims: 1-10 partially

As invention 105 but concerning seq.ID:923-926

10. Claims: Invention 112. Claims: 1-10 partially

As invention 105 but concerning seq.ID:927-930

11. Claims: Invention 113. Claims: 1-10 partially

As invention 105 but concerning seq.ID:931-932

12. Claims: Invention 114. Claims: 1-10 partially

As invention 105 but concerning seq.ID:933-936

13. Claims: Invention 115. Claims: 1-10 partially

As invention 105 but concerning seq.ID:937-942

14. Claims: Invention 116. Claims: 1-10 partially

As invention 105 but concerning seq.ID:943-948

15. Claims: Invention 117. Claims: 1-10 partially

As invention 105 but concerning seq.ID:949-954

16. Claims: Invention 118. Claims: 1-10 partially

As invention 105 but concerning seq.ID:955-956

17. Claims: Invention 119. Claims: 1-10 partially

As invention 105 but concerning seq.ID:957-958.

18. Claims: Invention 120. Claims: 1-10 partially

As invention 105 but concerning seq.ID:959-964.

19. Claims: Invention 121. Claims: 1-10 partially

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

As invention 105 but concerning seq.ID:965-970.

20. Claims: Invention 122. Claims: 1-10 partially

As invention 105 but concerning seq.ID:971-976.

21. Claims: Invention 123. Claims: 1-10 partially

As invention 105 but concerning seq.ID:977-982.

22. Claims: Invention 124. Claims: 1-10 partially

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of seq.id.983-984 .

23. Claims: Invention 125-1633 .Claims: 1-10 partially

Idem as invention 124 but for biological molecules limited to SEQ ID NOs:985-4002 . E.g., invention 125 limited to 985-986, invention 126: limited to SEQ ID NO:987-988... , invention 1633: limited to SEQ ID NO:4001-4002 .

For the sake of conciseness, the first above subject matters are explicitly defined, the latter subject matters are defined by analogy hereto.

24. Claims: Invention 1634.Claims 1,2, 4-10

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of seq.id.4003-4004 .

25. Claims: Invention 1635.Claims 1,2, 4-10

A composition comprising a first biological molecule protein, wherein said first biological molecule is seq.id.4005 .

26. Claims: Invention 1636.Claims 1,2, 4-10

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of seq.id.4006-4007 .

27. Claims: Invention 1637.Claims 1,2, 4-10

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of seq.id.4008-4033 .

28. Claims: Invention 1638.Claims 1,2, 4-10

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of seq.id.4034-4056 .

29. Claims: Invention 1639.Claims 1,2, 4-10

A composition comprising a first biological molecule protein, wherein said first biological molecule is selected from the group consisting of seq.id.4057 for DNA and seq.id 6217 for encoded proteins .

30. Claims: Invention 1640-3798.Claims 1,2, 4-10

Same as invention 1639 but for DNA limited to the SEQ ID NOs:4058-6216 for encoded proteins limited to the corresponding SEQ ID NOs:6218-8376. E.g., invention 1640: limited to SEQ ID NO:4058 and SEQ ID NO:6218, invention 16414: limited to SEQ ID NO:4059 and SEQ ID NO:6219, ... , invention 3798 : limited to SEQ ID NO:6216 and SEQ ID NO:8376.

For the sake of conciseness, the first above subject matters are explicitly defined, the latter subject matters are defined by analogy hereto.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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