



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : C12N 15/31, C07K 14/22, A61K 39/095, G01N 33/53, C12Q 1/68, C07K 16/12</p>	<p>A3</p>	<p>(11) International Publication Number: WO 99/36544</p> <p>(43) International Publication Date: 22 July 1999 (22.07.99)</p>								
<p>(21) International Application Number: PCT/IB99/00103</p> <p>(22) International Filing Date: 14 January 1999 (14.01.99)</p> <p>(30) Priority Data:</p> <table border="0"> <tr> <td>9800760.2</td> <td>14 January 1998 (14.01.98)</td> <td>GB</td> </tr> <tr> <td>9819015.0</td> <td>1 September 1998 (01.09.98)</td> <td>GB</td> </tr> <tr> <td>9822143.5</td> <td>9 October 1998 (09.10.98)</td> <td>GB</td> </tr> </table> <p>(71) Applicant (for all designated States except US): CHIRON S.P.A. [IT/IT]; Via Fiorentina, 1, I-53100 Siena (IT).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (for US only): MASIGNANI, Vega [IT/IT]; Via Pantaneto, 105, I-53100 Siena (IT). RAPPUOLI, Rino [IT/IT]; Via delle Rocche, 1, Vagliagli, I-53019 Castelnuovo Berardenga (IT). PIZZA, Mariagrazia [IT/IT]; Strada di Montalbucco, 160, I-53100 Siena (IT). SCARLATO, Vincenzo [IT/IT]; Via Firenze, 3/37, I-53134 Colle Val d'Elsa (IT). GRANDI, Guido [IT/IT]; 9° Strada, 4, I-20090 Segrate (IT).</p> <p>(74) Agent: HALLYBONE, Huw, George; Carpmaels & Ransford, 43 Bloomsbury Square, London WC1A 2RA (GB).</p>	9800760.2	14 January 1998 (14.01.98)	GB	9819015.0	1 September 1998 (01.09.98)	GB	9822143.5	9 October 1998 (09.10.98)	GB	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 14 October 1999 (14.10.99)</p>
9800760.2	14 January 1998 (14.01.98)	GB								
9819015.0	1 September 1998 (01.09.98)	GB								
9822143.5	9 October 1998 (09.10.98)	GB								
<p>(54) Title: <i>NEISSERIA MENINGITIDIS</i> ANTIGENS</p>										
<p>(57) Abstract</p>										
<p>The invention provides proteins from <i>Neisseria meningitidis</i> (strains A and B), including amino acid sequences, the corresponding nucleotide sequences, expression data, and serological data. The proteins are useful antigens for vaccines, immunogenic compositions, and/or diagnostics.</p>										

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 99/00103

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12N15/31 C07K14/22 A61K39/095 G01N33/53 C12Q1/68
C07K16/12

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 6 C12N C07K A61K G01N C12Q

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 30519 A (WASHINGTON UNIV (US);ST LOUIS UNIV (US);ST.GEME J.W III; BARENKAMP S.J) 3 October 1996 (1996-10-03) abstract Seq.ID:1,2,3,4 page 48 - page 73 Seq.ID:14,15 page 80 - page 84 page 86 - page 88; claims --- -/--	5-8, 10-16

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

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"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 31 May 1999	Date of mailing of the international search report 31.08.99
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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 Macchia, G
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 99/00103

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DIAZ ROMERO J. AND OUTSCHOORN I.M.: "Current status of meningococcal group B vaccine candidates: capsular or noncapsular?" CLINICAL MICROBIOLOGY REVIEWS, vol. 7, no. 4, 1 October 1994 (1994-10-01), pages 559-575, XP002039373 cited in the application</p> <p style="text-align: center;">---</p>	
A	<p>WO 95 03413 A (ROCKEFELLER UNIV (US); NORTH AMERICAN VACCINE INC (US); BLAKE ET AL) 2 February 1995 (1995-02-02)</p> <p style="text-align: center;">---</p>	
A	<p>WO 95 33049 A (PASTEUR MERIEUX SERUMS ET VACCINS (FR) TRANSGENE SA (FR); MILLET ET AL) 7 December 1995 (1995-12-07)</p> <p style="text-align: center;">---</p>	
A	<p>WO 96 29412 A (IAF BIO VAC INC. (CA); BRODEUR B.R.; MARTIN D.; HAMEL J.; RIOUX C.) 26 September 1996 (1996-09-26) cited in the application</p> <p style="text-align: center;">---</p>	
A	<p>ROKBI B. ET AL.: "Heterogeneity of <i>tbpB</i>, the transferrin-binding protein B gene, among serogroup B <i>Neisseria meningitidis</i> strains of the ET-5 complex" CLINICAL AND DIAGNOSTIC LABORATORY IMMUNOLOGY, vol. 4, no. 5, 1 September 1997 (1997-09-01), pages 522-529, XP002086938</p> <p style="text-align: center;">---</p>	
A	<p>ROKBI B. ET AL: "Evaluation of recombinant transferrin-binding protein B variants from <i>Neisseria meningitidis</i> for their ability to induce cross-reactive and bactericidal antibodies against a genetically diverse collection of serogroup B strains" INFECTION AND IMMUNITY, vol. 65, no. 1, 1 January 1997 (1997-01-01), pages 55-63, XP002086937</p> <p style="text-align: center;">-----</p>	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 99/00103

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 SHEETS

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.:

1-3 all totally; 4-17 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

1. Claims: 1-3 all totally; 4-17 all partially

Protein comprising an aminoacid sequence as in Seq.ID:2,4,6, fragments and homologous proteins thereof. Nucleic acid molecule encoding said protein, comprising a nucleotide sequence as in Seq.ID:1,3,5, fragments or homologous sequences thereof. Antibody binding to said protein. Application of said protein, nucleic acid molecule or antibody in therapy or diagnostics.

2. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:7-12.

3. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:13-16.

4. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:17-22.

5. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:23-24.

6. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:25-30.

7. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:31-34.

8. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:35-38.

9. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:39-40.

10. Claims: 4-17 all partially

As invention 1 but concerning seq.ID:41-44.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

11. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:45-50.
12. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:51-56.
13. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:57-62.
14. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:63-64.
15. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:65-66.
16. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:67-72.
17. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:73-78.
18. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:79-84.
19. Claims: 4-17 all partially
As invention 1 but concerning seq.ID:85-90.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 99/00103

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