

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number
WO 2004/113371 A3

(51) International Patent Classification⁷: **C07K 14/285**

(21) International Application Number:
PCT/IB2004/002351

(22) International Filing Date: 25 June 2004 (25.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0315022.4 26 June 2003 (26.06.2003) GB

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
13 October 2005

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: VIRULENCE-ASSOCIATED ADHESINS

(57) Abstract: Virulence-associated antigens involved in adhesion have been identified in several organisms: Haemophilus influenzae biogroup aegyptius; Escherichia coli K1; EHEC E.coli; Actinobacillus actinomycetemcomitans; Haemophilus somnus; Haemophilus ducreyi; EPEC E. coli; EA EC E. coli; uropathogenic E.coli; Shigella flexneri; Brucella melitensis; Brucella suis; Ralstonia solanacearum; Sinorhizobium meliloti; Bradorhizobium japonicum; and Burkholderia fungorum. Although the degree of sequence identity between the adhesins is low, they share a common arrangement of domains from N-terminus to C-terminus, namely: a leader peptide; a globular head; a coiled-coil region; and a transmembrane anchor region.



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/002351

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07K14/285

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

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, BIOSIS, EMBASE, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SMOOT LAURA M ET AL: "Genomic analysis of the F3031 Brazilian purpuric fever clone of Haemophilus influenzae biogroup aegyptius by PCR-based subtractive hybridization" INFECTION AND IMMUNITY, vol. 70, no. 5, May 2002 (2002-05), pages 2694-2699, XP002317587 ISSN: 0019-9567 cited in the application abstract page 2696; table 2 page 2698, right-hand column, paragraphs 2,3	1-13
A	WO 94/00149 A (MICROCARB INC) 6 January 1994 (1994-01-06) the whole document ----- -/--	1-13

☒ 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

"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

14 February 2005

Date of mailing of the international search report

30.06.2005

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB2004/002351

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/010194 A (CHIRON SPA; ARICO, MARIA; COMANDUCCI, MAURIZIO; CHIRON SRL) 6 February 2003 (2003-02-06) the whole document	1-13
A	----- KOMATSUZAWA H ET AL: "Identification of six major outer membrane proteins from Actinobacillus actinomycetemcomitans" GENE: AN INTERNATIONAL JOURNAL ON GENES AND GENOMES, ELSEVIER SCIENCE PUBLISHERS, BARKING, GB, vol. 288, no. 1-2, 17 April 2002 (2002-04-17), pages 195-201, XP004358912 ISSN: 0378-1119 the whole document	1-13
A	----- HOICZYK EGBERT ET AL: "Structure and sequence analysis of Yersinia YadA and Moraxella UspAs reveal a novel class of adhesins" EMBO (EUROPEAN MOLECULAR BIOLOGY ORGANIZATION) JOURNAL, vol. 19, no. 22, 15 November 2000 (2000-11-15), pages 5989-5999, XP002317588 ISSN: 0261-4189 cited in the application the whole document -----	1-13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2004/002351

Box 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:
Although claim 13 is 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 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:

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.:
1-6 (partially), 7, 8-13 (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: 1-6 (partially), 7, 8-13 (partially)

Antigen shown in SEQ ID N0:51 and embodiments involving the use thereof.

2. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:1 and embodiments involving the use thereof.

3. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:2 and embodiments involving the use thereof.

4. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:3 and embodiments involving the use thereof.

5. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:4 and embodiments involving the use thereof.

6. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:5 and embodiments involving the use thereof.

7. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:6 and embodiments involving the use thereof.

8. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:7 and embodiments involving the use thereof.

9. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID N0:8 and embodiments involving the use thereof.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

10. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:9 and embodiments involving the use thereof.

11. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:10 and embodiments involving the use thereof.

12. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:11 and embodiments involving the use thereof.

13. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:12 and embodiments involving the use thereof.

14. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:13 and embodiments involving the use thereof.

15. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:14 and embodiments involving the use thereof.

16. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:15 and embodiments involving the use thereof.

17. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:16 and embodiments involving the use thereof.

18. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:17 and embodiments involving the use thereof.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

19. claims: 1-6 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:18 and embodiments involving the use thereof.

20. claims: 1-5 (partially), 8-13 (partially)

Antigen shown in SEQ ID NO:54 and embodiments involving the use thereof.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/002351

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