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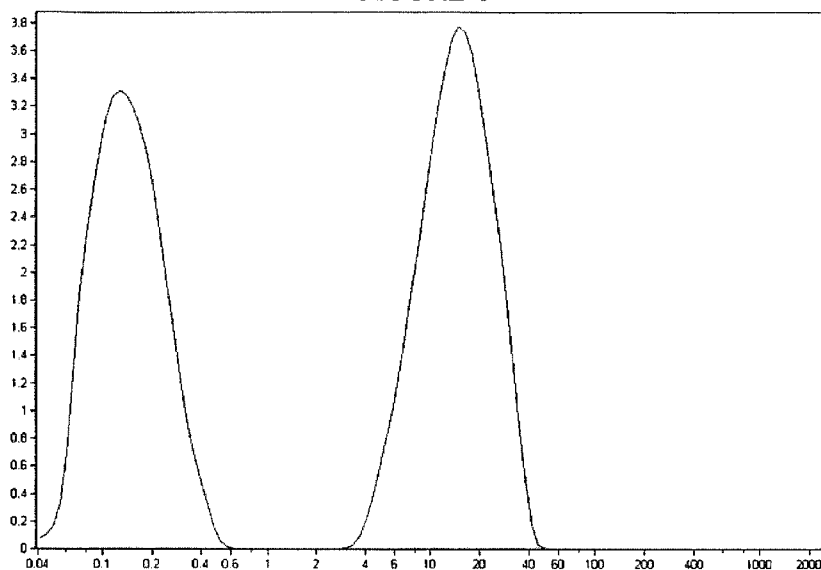
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- with sequence listing part of description (Rule 5.2(a))

[Continued on next page]

(54) Title: VACCINE ADJUVANT COMBINATIONS

FIGURE 1



(57) Abstract: An immunological adjuvant comprises an oil-in-water emulsion, an immunostimulatory oligonucleotide and a polycationic polymer, wherein the oligonucleotide and the polymer ideally associate with each other to form a complex. The adjuvant can be combined with immunogens for preparing vaccines.



(88) Date of publication of the international search report:

24 June 2010

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K39/39

ADD.

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)

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, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2008/068631 A2 (NOVARTIS AG [CH]; TSAI THEODORE F [US]) 12 June 2008 (2008-06-12) abstract page 16, lines 8-11 page 23, lines 28-35 page 24, lines 28-35 ----- -/--	1-15



Further documents are listed in the continuation of Box C.



See patent family 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

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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

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

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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>O'HAGAN D T ET AL: "Synergistic adjuvant activity of immunostimulatory DNA and oil/water emulsions for immunization with HIV p55 gag antigen" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 20, no. 27-28, 10 September 2002 (2002-09-10), pages 3389-3398, XP004378534 ISSN: 0264-410X abstract page 3390, column 1, paragraph 3 - column 2, paragraph 5 table 1</p>	1-8, 11-15
Y	<p>-----</p> <p>LINGNAU K ET AL: "Poly-l-arginine synergizes with oligodeoxynucleotides containing CpG-motifs (CpG-ODN) for enhanced and prolonged immune responses and prevents the CpG-ODN-induced systemic release of pro-inflammatory cytokines" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 20, no. 29-30, 4 October 2002 (2002-10-04), pages 3498-3508, XP004381814 ISSN: 0264-410X abstract</p>	1-8, 11-15
Y	<p>-----</p> <p>SCHELLACK C ET AL: "IC31, a novel adjuvant signaling via TLR9, induces potent cellular and humoral immune responses" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 24, no. 26, 29 June 2006 (2006-06-29), pages 5461-5472, XP025151767 ISSN: 0264-410X [retrieved on 2006-06-29] abstract page 5461, column 2, last paragraph - page 5462, column 1, paragraph 5</p>	1-8, 11-15
Y	<p>-----</p> <p>LINGHUA Z ET AL: "The efficacy of CpG oligodinucleotides, in combination with conventional adjuvants, as immunological adjuvants to swine streptococcic septicemia vaccine in piglets in vivo" INTERNATIONAL IMMUNOPHARMACOLOGY, ELSEVIER, AMSTERDAM, NL, vol. 6, no. 8, 1 August 2006 (2006-08-01), pages 1267-1276, XP024976887 ISSN: 1567-5769 [retrieved on 2006-08-01] abstract</p> <p>-----</p> <p style="text-align: center;">-/--</p>	1-9, 11-15

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2009/007111

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	HOGARTH P J ET AL: "Evaluation of adjuvants for protein vaccines against tuberculosis in guinea pigs" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 21, no. 9-10, 14 February 2003 (2003-02-14), pages 977-982, XP004402626 ISSN: 0264-410X abstract	1-9, 11-15
Y	WACK ET AL: "Combination adjuvants for the induction of potent, long-lasting antibody and T-cell responses to influenza vaccine in mice" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 26, no. 4, 26 December 2007 (2007-12-26), pages 552-561, XP022418985 ISSN: 0264-410X abstract page 557 - page 558, column 1, paragraph 2	1-9, 11-15
X	WO 2004/087203 A2 (COLEY PHARMACEUTICAL GROUP LTD [CA]; DAVIS HEATHER L [CA]; MCCLUSKIE M) 14 October 2004 (2004-10-14) page 3, paragraph 2 page 11, line 23 page 41, paragraphs 1,3	9,11-15
Y	WO 02/069369 A2 (COLEY PHARMACEUTICAL GROUP LTD; SCHETTER CHRISTIAN [DE]; VOLLMER JORG) 6 September 2002 (2002-09-06) page 2, lines 10-15 page 3, lines 23-29 page 48, line 18 - page 49, line 2	9,11-15
X	US 6 086 901 A (O'HAGAN DEREK [US] ET AL) 11 July 2000 (2000-07-11) abstract column 3, lines 23-61 page 4, lines 27-30 page 5, line 59 - page 6, line 12 column 8, lines 20-21 column 12, lines 23-63	10-15
A	WO 90/14837 A1 (CHIRON CORP [US]) 13 December 1990 (1990-12-13) example 3; table 8	10-15

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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2009/007111

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>WO 2007/098186 A2 (NOVAVAX INC [US]; SMITH GAIL [US]; SHENOY DINESH B [US]; LEE ROBERT W) 30 August 2007 (2007-08-30) abstract page 4, line 10 - page 6, line 2 page 9, lines 6-20 page 11, lines 20-23 page 12, lines 3-14 page 15, lines 13-18 page 18, lines 27-28 page 23, line 33 - page 24, line 3 example 1</p> <p>-----</p>	10-15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2009/007111

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.:
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 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:

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 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8(completely); 11-15(partially)

adjuvant composition comprising an oil in water emulsion an immunostimulatory oligonucleotide and a polycationic polymer

2. claims: 9(completely); 11-15(partially)

adjuvant composition comprising an oil in water emulsion and an immunostimulatory oligonucleotide comprising a CpI motif

3. claims: 10(completely); 11-15(partially)

adjuvant composition comprising an oil in water emulsion and an adsorptive particulate adjuvant

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2009/007111

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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