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(54) Title: VACCINATION COMPOSITIONS OR COMBINATIONS AGAINST CANCER

(57) Abstract: Vaccine compositions and methods for their use in the stimulation of immune responses in mammals, including humans, are provided. Also provided are methods for the prevention and treatment of cancer. These relate to breaking immune tolerance to selfantigens, inducing CD4+ and CD8+ T-cell responses, and inducing antibody responses in subjects without recourse to complex prime-boost schedules.

INTERNATIONAL SEARCH REPORT

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|---|---|---------------------------------------|
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| According to International Patent Classification (IPC) or to both national classification and IPC | | |
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| Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, EMBASE, BIOSIS | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | WO 2005/035779 A2 (POWDERJECT VACCINES INC [US]; BRAUN RALPH PATRICK [US]; DONG LICHUN [U] 21 April 2005 (2005-04-21) page 85; claim 1 pages 2-18,24 pages 28,38,47 | 1-7,9, 16,17, 20,21, 23-28 |
| Y | ----- | 22 |
| X | WO 98/56919 A2 (ISIS INNOVATION [GB]; MCMICHAEL ANDREW JAMES [GB]; HILL ADRIAN VIVIAN) 17 December 1998 (1998-12-17) pages 14-24,37 pages 66,69; claims 1,28 | 1,2,6-8, 10,17, 20,21, 23-28 |
| Y | ----- | 22 |
| -/-- | | |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex. | | |
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| *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 | |
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/054479

| 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 2005/105139 A2 (GLAXOSMITHKLINE BIOLOG SA [BE]; BRUCK CLAUDINE ELVIRE MARIE [US]; BRIC) 10 November 2005 (2005-11-10) pages 2-3,8 ----- | 11-15 |
| A | US 5 750 110 A (PRIEELS JOHN PAUL [BE] ET AL) 12 May 1998 (1998-05-12) pages 2,3 ----- | 11-15 |
| A | BANGARI D S ET AL: "Development of nonhuman adenoviruses as vaccine vectors" VACCINE, BUTTERWORTH SCIENTIFIC, vol. 24, no. 7, 13 February 2006 (2006-02-13), pages 849-862, XP025151912 GUILDFORD, GB ISSN: 0264-410X [retrieved on 2006-02-13] pages 6-7 ----- | 18,19 |
| Y | HUTCHINGS CLAIRE L ET AL: "Combination of protein and viral vaccines induces potent cellular and humoral immune responses and enhanced protection from murine malaria challenge" INFECTION AND IMMUNITY, vol. 75, no. 12, December 2007 (2007-12), pages 5819-5826, XP002549178 ISSN: 0019-9567 the whole document ----- | 22 |
| Y | KWISSA M ET AL: "Codelivery of a DNA vaccine and a protein vaccine with aluminum phosphate stimulates a potent and multivalent immune response" JOURNAL OF MOLECULAR MEDICINE, vol. 81, no. 8, 16 July 2003 (2003-07-16), pages 502-510, XP002404711 SPRINGER VERLAG, DE ISSN: 0946-2716 page 507; figure 4 figure all ----- | 22 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/054479

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|--|------------|------------------|-------------------------|------------------|
| WO 2005035779 | A2 | 21-04-2005 | AU 2004280630 A1 | 21-04-2005 |
| | | | BR PI0415202 A | 05-12-2006 |
| | | | CA 2542295 A1 | 21-04-2005 |
| | | | CN 1889963 A | 03-01-2007 |
| | | | EP 1675596 A2 | 05-07-2006 |
| | | | JP 2007508319 T | 05-04-2007 |
| | | | KR 20060123138 A | 01-12-2006 |
| | | | MX PA06003977 A | 27-06-2006 |
| | | | SG 146662 A1 | 30-10-2008 |
| | | | US 2007026015 A1 | 01-02-2007 |
| | | | WO 9856919 | A2 |
| AT 391784 T | 15-04-2008 | | | |
| AT 391783 T | 15-04-2008 | | | |
| AT 230437 T | 15-01-2003 | | | |
| AU 737780 B2 | 30-08-2001 | | | |
| AU 8026698 A | 30-12-1998 | | | |
| CA 2293692 A1 | 17-12-1998 | | | |
| CN 1266459 A | 13-09-2000 | | | |
| DE 69810459 D1 | 06-02-2003 | | | |
| DE 69810459 T2 | 23-10-2003 | | | |
| DE 69839357 T2 | 02-07-2009 | | | |
| DE 69839359 T2 | 20-05-2009 | | | |
| DE 69839405 T2 | 20-08-2009 | | | |
| DK 1335023 T3 | 18-08-2008 | | | |
| DK 979284 T3 | 22-04-2003 | | | |
| EP 1335023 A2 | 13-08-2003 | | | |
| EP 2058399 A1 | 13-05-2009 | | | |
| EP 0979284 A2 | 16-02-2000 | | | |
| ES 2189185 T3 | 01-07-2003 | | | |
| JP 4282095 B2 | 17-06-2009 | | | |
| JP 2002506346 T | 26-02-2002 | | | |
| JP 2007023044 A | 01-02-2007 | | | |
| US 6663871 B1 | 16-12-2003 | | | |
| WO 2005105139 | A2 | 10-11-2005 | AU 2005237256 A1 | 10-11-2005 |
| | | | BR PI0510570 A | 20-11-2007 |
| | | | CA 2564470 A1 | 10-11-2005 |
| | | | CN 1980691 A | 13-06-2007 |
| | | | EP 1755657 A2 | 28-02-2007 |
| | | | JP 2007536326 T | 13-12-2007 |
| | | | NZ 550967 A | 31-01-2009 |
| | | | US 2007243196 A1 | 18-10-2007 |
| US 5750110 | A | 12-05-1998 | AP 408 A | 27-09-1995 |
| | | | AT 156710 T | 15-08-1997 |
| | | | AT 188613 T | 15-01-2000 |
| | | | AU 661404 B2 | 20-07-1995 |
| | | | AU 4326393 A | 24-01-1994 |
| | | | CA 2138997 A1 | 06-01-1994 |
| | | | CN 1086142 A | 04-05-1994 |
| | | | CZ 9403296 A3 | 16-08-1995 |
| | | | DE 69313134 D1 | 18-09-1997 |
| | | | DE 69313134 T2 | 26-02-1998 |
| | | | DE 69327599 D1 | 17-02-2000 |
| | | | DE 69327599 T2 | 10-08-2000 |
| | | | DK 671948 T3 | 01-09-1997 |
| | | | DK 0761231 T3 | 08-05-2000 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/054479

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|-------------------------|------------------|
| US 5750110 | A | WO 9400153 A1 | 06-01-1994 |
| | | EP 0671948 A1 | 20-09-1995 |
| | | ES 2108278 T3 | 16-12-1997 |
| | | ES 2143716 T3 | 16-05-2000 |
| | | FI 946064 A | 22-02-1995 |
| | | GR 3025184 T3 | 27-02-1998 |
| | | HK 1010097 A1 | 15-09-2000 |
| | | HK 1022074 A1 | 30-03-2001 |
| | | HU 71208 A2 | 28-11-1995 |
| | | IL 106109 A | 18-02-1997 |
| | | JP 3755890 B2 | 15-03-2006 |
| | | JP 7508512 T | 21-09-1995 |
| | | MA 22911 A1 | 31-12-1993 |
| | | MX 9303773 A1 | 31-05-1994 |
| | | NO 945003 A | 23-12-1994 |
| | | NZ 253137 A | 27-08-1996 |
| | | PL 170980 B1 | 28-02-1997 |
| | | PT 761231 E | 30-06-2000 |
| | | RU 2118164 C1 | 27-08-1998 |
| | | SG 49909 A1 | 15-06-1998 |
| | | SG 90042 A1 | 23-07-2002 |
| | | SI 9300335 A | 31-12-1993 |
| | | SK 159294 A3 | 09-08-1995 |
| | | US 7147862 B1 | 12-12-2006 |
