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(54) Title: IGE DIRECTED DNA VACCINATION

(57) Abstract: This invention is directed to a approach for focusing and expressing DNA vaccines in Antigen Presenting Cells (APCs) mediated through targeting IgE receptors (FcεRs) on APC and driving DNA expression through provision of an APC specific regulatory element This vaccine can be used in the prevention or treatment of allergic disease.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/008028

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61K47/48 C07K16/00 C12N15/87

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 C07K C12N

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>SUDOWE ET AL: "Prophylactic and therapeutic intervention in IgE responses by biolistic DNA vaccination primarily targeting dendritic cells" JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY, MOSBY - YEARLY BOOK, INC, US, vol. 117, no. 1, January 2006 (2006-01), pages 196-203, XP005228147 ISSN: 0091-6749 the whole document</p> <p style="text-align: center;">----- -/--</p>	1-36

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
- *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.
- *G* document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/008028

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>MAURER D ET AL: "Fc epsilon receptor I on dendritic cells delivers IgE-bound multivalent antigens into a cathepsin S-dependent pathway of MHC class II presentation." JOURNAL OF IMMUNOLOGY (BALTIMORE, MD. : 1950) 15 SEP 1998, vol. 161, no. 6, 15 September 1998 (1998-09-15), pages 2731-2739, XP002449003 ISSN: 0022-1767 the whole document</p>	1-36
A	<p>SUZUKI MASATAKA ET AL: "Targeted gene delivery using humanized single-chain antibody with negatively charged oligopeptide tail." CANCER SCIENCE MAY 2004, vol. 95, no. 5, May 2004 (2004-05), pages 424-429, XP002449004 ISSN: 1347-9032 the whole document</p>	1-36
A	<p>BANCHEREAU J: "Dendritic cells: Therapeutic potentials" TRANSFUSION SCIENCE, PERGAMON PRESS, OXFORD, GB, vol. 18, no. 2, June 1997 (1997-06), pages 313-326, XP004568928 ISSN: 0955-3886 the whole document</p>	1-36
A	<p>CHAUSSABEL DAMIEN ET AL: "Dendritic cells, therapeutic vectors of immunity and tolerance." AMERICAN JOURNAL OF TRANSPLANTATION : OFFICIAL JOURNAL OF THE AMERICAN SOCIETY OF TRANSPLANTATION AND THE AMERICAN SOCIETY OF TRANSPLANT SURGEONS FEB 2005, vol. 5, no. 2, February 2005 (2005-02), pages 205-206, XP002449005 ISSN: 1600-6135 the whole document</p>	1-36
A	<p>WO 02/078608 A2 (UNIV GEORGETOWN [US]) 10 October 2002 (2002-10-10) the whole document</p>	1-36
A	<p>US 2003/064063 A1 (SAXON ANDREW [US]) 3 April 2003 (2003-04-03) the whole document</p>	1-36
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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/008028

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>LUNGWITZ U ET AL: "Polyethylenimine-based non-viral gene delivery systems" EUROPEAN JOURNAL OF PHARMACEUTICS AND BIOPHARMACEUTICS, ELSEVIER SCIENCE PUBLISHERS B.V., AMSTERDAM, NL, vol. 60, no. 2, July 2005 (2005-07), pages 247-266, XP004923301 ISSN: 0939-6411 the whole document</p>	1-36
A	<p>CRISTIANO R J: "TARGETED, NON-VIRAL GENE DELIVERY FOR CANCER GENE THERAPY" FRONTIERS IN BIOSCIENCE, FRONTIERS IN BIOSCIENCE, ALBERTSON, NY, US, vol. 3, no. CITED DEC 1, 1, 15 November 1998 (1998-11-15), pages D1161-D1170, XP001053037 ISSN: 1093-9946 the whole document</p>	1-36
A	<p>TACKEN PAUL J ET AL: "Effective induction of naive and recall T-cell responses by targeting antigen to human dendritic cells via a humanized anti-DC-SIGN antibody." BLOOD 15 AUG 2005, vol. 106, no. 4, 15 August 2005 (2005-08-15), pages 1278-1285, XP002449006 ISSN: 0006-4971 the whole document</p>	1-36
A	<p>ZHANG KE ET AL: "Inhibition of allergen-specific IgE reactivity by a human Ig Fcγ1-Fcϵ2 bifunctional fusion protein." THE JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY AUG 2004, vol. 114, no. 2, August 2004 (2004-08), pages 321-327, XP002449007 ISSN: 0091-6749 the whole document</p>	1-36
A	<p>DÉAS OLIVIER ET AL: "In vivo-targeted gene delivery using antibody-based nonviral vector." HUMAN GENE THERAPY 10 JUN 2002, vol. 13, no. 9, 10 June 2002 (2002-06-10), pages 1101-1114, XP002449008 ISSN: 1043-0342 the whole document</p>	1-36

INTERNATIONAL SEARCH REPORT

International application No.
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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:

Although claims 25-36 are 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 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:

1. As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable 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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No. PCT/US2007/008028
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 02078608	A2	10-10-2002	
		AU 2002307035 A1	15-10-2002
		CA 2442533 A1	10-10-2002
		EP 1408996 A2	21-04-2004
US 2003064063	A1	03-04-2003	
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