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(54) Title: IL-1 α IMMUNIZATION INDUCES AUTOANTIBODIES PROTECTIVE AGAINST ATHEROSCLEROSIS

(57) Abstract: Immunization of a mammal with IL-1 α , which causes the mammal to generate IL-1 α autoantibodies, can be used to reduce the risk and severity of, or to reduce progression of, an atherosclerosis-related disease in the mammal. Progression of atherosclerosis-related diseases such as peripheral ischemic heart disease, coronary artery disease, cerebrovascular disease, and peripheral arterial disease can be reduced using this treatment.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2007/001264

A. CLASSIFICATION OF SUBJECT MATTER IPC: <i>A61K 48/00</i> (2006.01), <i>A01K 67/027</i> (2006.01), <i>A61K 31/7088</i> (2006.01), <i>A61K 35/76</i> (2006.01), <i>A61K 38/20</i> (2006.01), <i>A61K 39/00</i> (2006.01), <i>A61K 39/39</i> (2006.01), <i>A61K 47/48</i> (2006.01), <i>A61P 9/10</i> (2006.01) 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: <i>A61K 48/00</i> (2006.01), <i>A01K 67/027</i> (2006.01), <i>A61K 31/7088</i> (2006.01), <i>A61K 35/76</i> (2006.01), <i>A61K 38/20</i> (2006.01), <i>A61K 39/00</i> (2006.01), <i>A61K 39/39</i> (2006.01), <i>A61K 47/48</i> (2006.01), <i>A61P 9/10</i> (2006.01)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used) Databases: Canadian Patent Database, Delphion, Questel-Orbit, CAPlus, Pubmed and Scopus. Keywords: interleukin, IL-1, alpha, atherosclerosis, cardiovascular, disease, immunization, vaccine, autoantibod*, neutralizing, antibod*, gene therapy, injection, Simard		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/100987 A2 (REGENERON PHARMACEUTICALS, INC.) 25 November 2004	18 & 19
Y	Paragraphs 0004 - 0012, 0043 and 0044.	1 - 17 & 20 - 36
X	MERHI-SOUSSI F et al. Interleukin-1 Plays A Major Role In Vascular Inflammation And Atherosclerosis In Male Apolipoprotein E-Knockout Mice. CARDIOVASC RES. 1 Jun 2005	18 & 19
Y	Vol. 66, pages 583 - 593. ISSN 0008-6363. Whole document	1 - 17 & 20 - 36
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents :	"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	
"A" document defining the general state of the art which is not considered to be of particular relevance	"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	
"E" earlier application or patent but published on or after the international filing date	"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	
"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)	"&" document member of the same patent family	
"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		
Date of the actual completion of the international search 7 January 2008 (07 - 01 - 2008)	Date of mailing of the international search report 10 March 2008 (10-03-2008)	
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	Authorized officer Jacinth Abraham 819- 934-7598	

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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.
Y	SVENSON, M. et al. Cytokine Vaccination: Neutralising IL-1 α Autoantibodies Induced By Immunisation With Homologous IL-1 α . J IMMUNOL METHODS 6 Mar 2000 Vol.236, pages 1 - 8. ISSN 0022-1759. Whole document	1 - 17 & 20 - 36
X, P	WO 2007/015128 A1 (XBIOTECH INC.) 8 Feb 2007 Whole document	17 & 20 - 36 1 -
X, P	WO 2007/039552 A1 (CYTOS BIOTECHNOLOGY AG) 12 Apr 2007 Whole document	1 - 17 & 20 - 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 the 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. Claim Nos. : 20 - 36
because they relate to subject matter not required to be searched by this Authority, namely :

Claims 20 - 36 are directed to a method for treatment of the human or animal body by surgery or therapy, and are not required to be searched nor is a written opinion required by this Authority. Regardless, this Authority has established a written opinion based on the alleged effect or purpose/use of the product defined in claims 20 - 36.
2. Claim 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. Claim Nos. :
because they are dependant 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 :

The claims are directed to a plurality of inventive concepts as follows:

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 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 claim 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 claim 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/IB2007/001264

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
WO 2004100987A2	25-11-2004	US 2004224893A1 WO 2004100987A3	11-11-2004 26-05-2005
WO 2007015128A1	08-02-2007	None	
WO 2007039552A1	12-04-2007	None	