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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, 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, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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Published:
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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.

WO 02/044320 A3

(54) Title: HUMAN ELONGASE GENES AND USES THEREOF

(57) Abstract: The present invention relates to elongase genes, their polypeptides and their control regions, and the use of such genes, polypeptides and control regions in determining compositions for use in the treatment of disease. The identified compositions regulate the expression of the elongase genes or modulate the activity of their protein products. The nucleotide and amino acid sequences are taught for ELG4, ELG6 and ELG7. The control sequences and function are taught for ELG1, ELG2, ELG3, ELG4, ELG5, ELG6 and ELG7.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 01/01705

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/54 C12N9/10 C12Q1/02 C12Q1/68

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 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)
WPI Data, BIOSIS, EPO-Internal, MEDLINE, EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 12720 A (ABBOTT LAB) 9 March 2000 (2000-03-09) figure 30 -& DATABASE EMBL [Online] 3 June 2000 (2000-06-03) ABBOTT LAB.: "Human elongase MAELO putative homolog HS2" Database accession no. AAY79252 XP002208698 abstract -/--	8,17, 47-56, 69, 71-75, 78-82, 87-97, 101-103, 105,106, 108,109, 111,112, 114,115

[X] Further documents are listed in the continuation of box C.

[X] 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

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"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	Date of mailing of the international search report
5 August 2002	24.10.02

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Bilang, J

Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.

X	TVRDIK P ET AL: "ROLE OF A NEW MAMMALIAN GENE FAMILY IN THE BIOSYNTHESIS OF VERY LONG CHAIN FATTY ACIDS AND SPHINGOLIPIDS" THE JOURNAL OF CELL BIOLOGY, ROCKEFELLER UNIVERSITY PRESS, US, vol. 149, no. 3, 1 May 2000 (2000-05-01), pages 707-717, XP000986889 ISSN: 0021-9525 the whole document	8,17, 47-56, 69, 71-75, 78-82, 87-97, 101-103, 105,106, 108,109, 111,112, 114,115

X	LEONARD AMANDA E ET AL: "Cloning of a human cDNA encoding a novel enzyme involved in the elongation of long-chain polyunsaturated fatty acids." BIOCHEMICAL JOURNAL, vol. 350, no. 3, 2000, pages 765-770, XP002208697 ISSN: 0264-6021 the whole document	8,17, 47-56, 69, 71-75, 78-82, 87-97, 101-103, 105,106, 108,109, 111,112, 114,115

X	DATABASE EMBL [Online] 27 January 2000 (2000-01-27) OTTENWAELDER B, ET AL.: "Homo sapiens mRNA" Database accession no. AL137506 XP002208699 abstract	1-22

X	DATABASE EMBL [Online] 29 September 2000 (2000-09-29) SUGANO S, ET AL.: "Homo sapiens cDNA" Database accession no. AK027216 XP002208700 abstract	1-22

X	DATABASE EMBL [Online] 30 September 2000 (2000-09-30) NIH, STRAUSBERG R, ET AL.: "601492901F1 NIH_MGC_69 Homo sapins cDNA clone" Database accession no. BE878648 XP002208701 abstract	1-22

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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	CHAPKIN R S ET AL: "UTILIZATION OF GAMMA LINOLENIC ACID BY MOUSE PERITONEAL MACROPHAGES" BIOCHIMICA ET BIOPHYSICA ACTA, vol. 1085, no. 3, 1991, pages 365-370, XP001094761 ISSN: 0006-3002 the whole document ---	
A	KELLS A P ET AL: "RT-PCR OF FATTY ACID ELONGASES" BIOCHEMICAL SOCIETY TRANSACTIONS, COLCHESTER, ESSEX, GB, vol. 25, no. 1, February 1997 (1997-02), page 20S XP000881473 ISSN: 0300-5127 the whole document ---	
A	BARRETT P B ET AL: "Effects of pebulate and pebulate sulphoxide on very long chain fatty acid biosynthesis" PHYTOCHEMISTRY, PERGAMON PRESS, GB, vol. 48, no. 3, June 1998 (1998-06), pages 441-446, XP004294053 ISSN: 0031-9422 the whole document ---	104
A	DATABASE EMBL [Online] 1 June 1999 (1999-06-01) LAI C-H, ET AL: "Homo sapiens CGI-88 protein mRNA" Database accession no. AF151846 XP002208702 abstract ---	
P,X	WO 01 87921 A (LI WEN ;MERCK & CO INC (US); ZHANG KANG (US); PETRUKHIN KONSTANTIN) 22 November 2001 (2001-11-22) the whole document --- -/--	1-8,17, 47-56, 69, 71-75, 78-82, 87-97, 101-103, 105,106, 108,109, 111,112, 114,115

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 00 70945 A (KAROLINSKA INNOVATIONS AB ;ASADI ABULFAZL (SE); NEDERGAARD JAN (SE) 30 November 2000 (2000-11-30) the whole document	8,17, 47-56, 69, 71-75, 78-82, 87-97, 101-103, 105,106, 108,109, 111,112, 114,115
P,X	DATABASE EMBL [Online] 4 July 2001 (2001-07-04) EDWARDS AO, ET AL: "Homo sapiens elongation of very long chain fatty acids protein (ELOVL4)" Database accession no. AY037298 XP002208703 abstract	1-8,17, 47-56, 69, 71-75, 78-82, 87-97, 101-103, 105,106, 108,109, 111,112, 114,115
P,A	WO 01 04636 A (UNIV OHIO) 18 January 2001 (2001-01-18) page 19, line 10-23	
P,A	CHUANG L T ET AL: "Inhibitory effect of conjugated linoleic acid on linoleic acid elongation in transformed yeast with human elongase." LIPIDS. UNITED STATES OCT 2001, vol. 36, no. 10, October 2001 (2001-10), pages 1099-1103, XP001094757 ISSN: 0024-4201	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 01/01705

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claim 104 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. [X] Claims Nos.: 36-40,62-68,83-86,98-100,107,110,113
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:

see FURTHER INFORMATION sheet PCT/ISA/210

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 II Observations where unity of invention is lacking (Continuation of item 2 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. [X] 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.:

see PCT/ISA/210

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: 1-22,44-56,62,63,69,73-75,78-82,87-97,104-106, 108 (complete); 36-43,65-68,71,72,98-103,107, 109-115 (partially)

Polynucleotide sequence coding for the coding sequence of a human fatty acid elongase, and uses thereof

1.1. Claims: 1-22,36-56,62,63,65-69,71-75,78-82, 87-115 (all partially)

Polynucleotide sequence coding for human fatty acid elongase ELG4 and uses thereof

1.2. Claims: 1-22,36-56,62,63,65-69,71-75,78-82, 87-115 (all partially)

Polynucleotide sequence coding for human fatty acid elongase ELG6 and uses thereof

1.3. Claims: 1-22,36-56,62,63,65-69,71-75,78-82, 87-115 (all partially)

Polynucleotide sequence coding for human fatty acid elongase ELG7 and uses thereof

2. Claims: 23-35,57-61,64,70,76,77,83-86 (complete); 36-43, 65-68,71,72,98-103,107,109-115 (partially)

Polynucleotide sequence representing the control region of the fatty acid elongase genes, and uses thereof

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 36-40,62-68,83-86,98-100,107,110,113

Present claims 36-40,62-68,83-86,98-100,107,110,113 relate to a product/compound defined by reference to a desirable characteristic or property, namely their ability to modulate a polynucleotide or polypeptide.
The claims cover all products/compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such products/compounds. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the product/compound by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to antibodies which are immunoreactive with ELG4, ELG6, or ELG7.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/CA 01/01705

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0012720 A	09-03-2000	US 6403349 B1	11-06-2002
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