



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C12N 15/12, 5/10, C12Q 1/68, A01K 67/00, C12N 15/00, C07K 16/28, 14/705	A3	(11) International Publication Number: WO 00/08157 (43) International Publication Date: 17 February 2000 (17.02.00)
(21) International Application Number: PCT/US99/17823 (22) International Filing Date: 6 August 1999 (06.08.99) (30) Priority Data: 60/095,835 7 August 1998 (07.08.98) US (71) Applicant (for all designated States except US): AXYS PHARMACEUTICALS, INC. [US/US]; 180 Kimball Way, South San Francisco, CA 94080 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): LAUBERT, Boris [US/US]; 4550 Bancroft Street #4, San Diego, CA 92116 (US). CARDOSO, Gizela [US/US]; 721 North Main Street, Brockton, Maine 02401 (US). HU, Ping [US/US]; 5807 Folkstone Road, Bethesda, MD 20817 (US). MILLER, Andrew, P. [US/US]; 3271 Countryside Drive, San Mateo, CA 94403 (US). BUCKLER, Alan, J. [US/US]; 2315 Lagoon View Drive, Cardiff, CA 92007 (US). (74) Agent: SHERWOOD, Pamela, J.; Bozicevic, Field & Francis LLP, Suite 200, 285 Hamilton Avenue, Palo Alto, CA 94301 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 23 November 2000 (23.11.00)
(54) Title: HUMAN ANION TRANSPORTER GENES ATNOV (57) Abstract Methods for isolating ATnov genes are provided. The ATnov nucleic acid compositions find use in identifying homologous or related proteins and the DNA sequences encoding such proteins; in producing compositions that modulate the expression or function of the protein; and in studying associated physiological pathways. In addition, modulation of the gene activity in vivo is used for prophylactic and therapeutic purposes, such as identification of cell type based on expression, and the like.		

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INTERNATIONAL SEARCH REPORT

International Application No

PC./US 99/17823

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/12 C12N5/10 C12Q1/68 A01K67/00 C12N15/00
 C07K16/28 C07K14/705

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 C07K A61K C12Q

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KULLAK-UBLICK ET AL: "Molecular and functional characterization of an organic anion transporting polypeptide cloned from human liver" GASTROENTEROLOGY, vol. 109, 1 October 1995 (1995-10-01), pages 1274-1282, XP002092892 ISSN: 0016-5085 cited in the application the whole document	1
A	WO 97 31111 A (INTROGENE BV ;AMC AMSTERDAM (NL); KANKER INST NL (NL); OUDE ELFERI) 28 August 1997 (1997-08-28) the whole document --- -/-	1

☒ Further documents are listed in the continuation of box C.☒ 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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- *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.
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Date of the actual completion of the international search

9 March 2000

Date of mailing of the international search report

11 3. 07. 00

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INTERNATIONAL SEARCH REPORT

International Application No

P./US 99/17823

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	Embase accession number AB026257.1 Created 08-JUN-1999 , Sequence characterization: Homo sapiens mRNA for organic anion transporter OATP-C, complete XP002132655 the whole document ---	1-3
T	HSIANG B.H., ZHU Y., WANG Z., WU Y., SASSEVILLE V., YANG W.-P.,: "A novel human hepatic organic anion transporting polypeptide (OATP2) Identification of a liver-specific human organic anion transporting polypeptide and identification of rat and human hydroxymethylglutaryl-coa reductase inhibitor transporter." JOURNAL OF BIOLOGICAL CHEMISTRY (MICROFILMS), vol. 274, no. 52, 24 December 1999 (1999-12-24), pages 37161-37168, XP002131865 MD US the whole document ---	1-3
T	ABE T., ET AL.: "Identification of a Novel Gene Family Encoding Human Liver-specific Organic Anion Transporter LST-1" J. BIOL. CHEM., vol. 274, no. 24, 11 June 1999 (1999-06-11), pages 17159-17163, XP000877288 the whole document -----	1-4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/17823

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. ☐ 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 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:

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. ☒ 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.:

Claims 2, 3, 15-17 completely, and 1, 4-14 partially.

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

1. Claims: 2 3 15-17 and partially 1 4-14

An isolated nucleic acid comprising a nucleotide sequence selected from the group of SEQ NO:3, SEQ NO:5, SEQ NO:7, and SEQ NO:9, or encoding a mammalian ATnov3 protein, having an amino acid sequence selected from the group of SEQ NO:4, SEQ NO:6, SEQ NO:8 and SEQ NO:10; an expression cassette comprising it; a cell comprising said expression cassette; a method for producing a protein using said cell; mammalian ATnov3 polypeptide; a monoclonal antibody binding to said protein; a non human transgenic animal model for ATnov3 gene function; an isolated nucleic acid probe comprising an ATnov3 sequence polymorphism; an array of oligonucleotides comprising probes for detection of ATnov3 locus polymorphisms.

2. Claims: partially 1 4-14

An isolated nucleic acid comprising the nucleotide sequence as set forth in SEQ NO:1 or encoding a mammalian ATnov1 protein; an expression cassette comprising it; a cell comprising said expression cassette; a method for producing a protein using said cell; mammalian ATnov1 polypeptide; a monoclonal antibody binding to said protein; a non human transgenic animal model for ATnov1 gene function;

3. Claims: partially 1 4-14

An isolated nucleic acid comprising the nucleotide sequence as set forth in SEQ NO:2 or encoding a mammalian ATnov2 protein; an expression cassette comprising it; a cell comprising said expression cassette; a method for producing a protein using said cell; mammalian ATnov2 polypeptide; a monoclonal antibody binding to said protein; a non human transgenic animal model for ATnov2 gene function;

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PL /US 99/17823

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9731111 A	28-08-1997	AU 1736697 A EP 0900273 A	10-09-1997 10-03-1999
