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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.*



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(54) Title: ISOLATED HUMAN TRANSPORTER PROTEINS, NUCLEIC ACID MOLECULES ENCODING HUMAN TRANSPORTER PROTEINS, AND USES THEREOF

(57) Abstract: The present invention provides amino acid sequences acid sequences of peptides that are encoded by genes within the human genome, the transporter peptides of the present invention. The present invention specifically provides isolated peptide adnf nucleic acid molecules, methods of identifying orthlogs and paralogs of of the transporter peptides, and methods of identifying modulators of the transporter peptides.

**INTERNATIONAL SEARCH REPORT**

Intern al Application No  
PCT/US 01/42809

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 C12N15/12 C12N15/11 C07K14/705 C07K16/28 C12N1/21  
 C12N5/10 C12N15/63 A01K67/027 C12Q1/68 G01N33/68

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 C07K A01K C12Q G01N

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)  
 EMBL, SEQUENCE SEARCH, EPO-Internal, WPI Data, PAJ, BIOSIS, MEDLINE, CHEM ABS Dat

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE EMBL 'Online! 9 April 2000 (2000-04-09) FAHRENKRUG S C ET AL: "114735 MARC 1PIG Sus scrofa cDNA 5', mRNA sequence." Database accession no. AW670616 XP002193549 ---	1-13
X	DATABASE EMBL 'Online! 11 September 1997 (1997-09-11) NCI-CGAP: "nn44h12.s1 NCI_CGAP_GC5 Homo sapiens cDNA clone IMAGE:1086791 3', mRNA sequence." Database accession no. AA582196 XP002193550 ---	1-13
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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
  - \*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

Date of the actual completion of the international search <b>9 December 2002</b>	Date of mailing of the international search report <b>18/12/2002</b>
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Name and mailing address of the ISA 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	Authorized officer  <b>Devijver, K</b>
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## INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/42809

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DATABASE WPI Section Ch, Week 199932 Derwent Publications Ltd., London, GB; Class B04, AN 1999-378999 XP002193557 -& JP 11 146790 A (SUMITOMO SEIYAKU KK), 2 June 1999 (1999-06-02) SEQ ID NO: 1 abstract ---	1-23
A	DATABASE EMBL 'Online! 15 July 1999 (1999-07-15) WOOD V ET AL: "PROBABLE SULFATE PERMEASE C3H7.02." Database accession no. 074377 XP002193551 ---	1-23
X	WO 00 58473 A (CURAGEN CORP ;LEACH MARTIN (US); SHIMKETS RICHARD A (US)) 5 October 2000 (2000-10-05) SEQ ID NO: 3901; SEQ ID NO: 3902 claims 1-32 ---	1-23
E,L	WO 01 81412 A (PE CORP NY) 1 November 2001 (2001-11-01) (L: Priority) the whole document ---	1-23
P,X	WO 01 46258 A (INCYTE GENOMICS INC ;AZIMZAI YALDA (US); KHAN FARRAH A (US); REDDY) 28 June 2001 (2001-06-28) SEQ ID NO: 17; SEQ ID NO: 44 page 25, line 25 - line 30; claims 1-28; examples 1-18 page 40, line 5 - line 9 ---	1-23
L	DATABASE EMBL 'Online! 6 November 2001 (2001-11-06) OTA T ET AL: "Human polypeptide, SEQ ID NO: 4156." Database accession no. AAM93955 XP002193552 L document cited to provide information on the relevant sequence disclosed in EP1130094A ---	1-23
P,X	-& EP 1 130 094 A (HELIX RESEARCH INSTITUTE) 5 September 2001 (2001-09-05) claims 1-23 ---	1-23

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## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/US 01/42809

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
L	DATABASE EMBL 'Online! 6 November 2001 (2001-11-06) OTA T ET AL: "Human cDNA clone representative sequence, SEQ ID NO: 2278." Database accession no. AAK93818 XP002193553 L document cited to provide information on the relevant sequence disclosed in EP1130094A	1-23
P,X	-& EP 1 130 094 A (HELIX RESEARCH INSTITUTE) 5 September 2001 (2001-09-05) claims 1-23 ---	1-23
L	DATABASE EMBL 'Online! 6 November 2001 (2001-11-06) OTA T ET AL: "Human full-length cDNA, SEQ ID NO: 4155." Database accession no. AAK94922 XP002193554 L document cited to provide information on the relevant sequence disclosed in EP1130094A	1-23
P,X	-& EP 1 130 094 A (HELIX RESEARCH INSTITUTE) 5 September 2001 (2001-09-05) claims 1-23 ---	1-23
P,X	DATABASE EMBL 'Online! 26 June 2001 (2001-06-26) OTA T ET AL: "Human protein sequence SEQ ID NO:16355." Database accession no. AAB94916 XP002193555	1-23
P,X	-& EP 1 074 617 A (HELIX RESEARCH INSTITUTE) 7 February 2001 (2001-02-07) claims 1-23 ---	1-23
P,X	DATABASE EMBL 'Online! 26 June 2001 (2001-06-26) OTA T ET AL: "Human cDNA sequence SEQ ID NO:16354." Database accession no. AAH17049 XP002193556	1-23
P,X	-& EP 1 074 617 A (HELIX RESEARCH INSTITUTE) 7 February 2001 (2001-02-07) claims 1-23 ---	1-23
A	SILBERG DEBRA G ET AL: "The Down Regulated in Adenoma (dra) Gene Encodes an Intestine-specific Membrane Sulfate Transport Protein." JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 270, no. 20, 1995, pages 11897-11902, XP002193548 ISSN: 0021-9258 -----	

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: in part: 17,18

Claim 17 refers to a pharmaceutical composition comprising an agent that binds to any of the peptides of claim 2 without giving a true technical characterization of such an agent. The claim covers all 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 compounds, namely antibodies that selectively bind to a peptide of claim 2. In consequence, the scope of said claim is ambiguous and vague, and its subject-matter is not sufficiently disclosed and supported (Art. 5 and 6 PCT). An attempt is made to define the compound by reference to a result to be achieved. 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 claim which appear to be clear, supported and disclosed, namely those parts relating to antibodies that selectively bind to a peptide of claim 2.

The above comment also applies for claim 18.

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

In International application No.  
PCT/US 01/42809

## 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:  
  
Although claim 18 (in part) 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.  Claims Nos.: in part: 17,18  
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:

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.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

