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Published:
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27 February 2003

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.

(54) Title: NOVEL HUMAN TRANSPORTER PROTEINS AND POLYNUCLEOTIDES ENCODING THE SAME

(57) Abstract: Novel human polynucleotide and polypeptide sequences are disclosed that can be used in therapeutic, diagnostic, and pharmacogenomic applications.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/19106

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K; C07K; C12N

US CL : 514/2; 536/23.1

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)

U.S. : 514/2; 536/23.1

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 practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KIPP et al. Trafficking of canalicular ABC transporters in hepatocytes. Annu. Rev. Physiol. 2002, Vol. 64, pages 595-608.	1-6
A	BORSTet al. Mammalian abc transporters in health and disease. Annu. Rev. Biochem. 2002, Vol. 71, pages 537-592.	1-6
A	DRESSER et al. Transporters involved in the elimination of drugs in the kidney: organic anion transporters and organic cation transporters. J. Pharm. Sci. April 2001, Vol. 90, No. 4, pages 397-421.	1-6
A	TAYLOR. The impact of efflux transporters in the brain on the development of drugs for CNS disorders. Clin. Pharmacokinet. 2002, Vol. 41, No. 2, pages 81-92.	1-6
A	WRIGHT. Renal Na(+)-glucose cotransporters. Am. J. Renal Physiol. January 2001, Vol. 280, No. 1, pages F10-F18.	1-6

☐ 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 application or patent 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	Date of mailing of the international search report
07 October 2002 (07.10.2002)	18 DEC 2002
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer Felicia D. Roberts for Christopher James Nichols, Ph.D. Telephone No. 703-308-1235

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/19106

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

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 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:
Please See Continuation 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. ☒ 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.: 1-6

Remark on Protest

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

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/19106

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group 1, claim(s) 1-6, drawn to an isolated nucleic acid molecule comprising SEQ ID NO: 1 or SEQ ID NO: 2, recombinant expression vectors and host cells comprising same, and a substantially isolated protein comprising SEQ ID NO: 3 or SEQ ID NO: 4.

Group 2, claim(s) 7-13, drawn to an isolated nucleic acid molecule comprising SEQ ID NO: 6 or SEQ ID NO: 8, recombinant expression vectors and host cells comprising same.

Group 3, claim(s) 7-13, drawn to an isolated nucleic acid molecule comprising SEQ ID NO: 10 or SEQ ID NO: 12, recombinant expression vectors and host cells comprising same.

Group 4, claim(s) 14, drawn to a substantially isolated protein comprising SEQ ID NO: 7 or SEQ ID NO: 9.

Group 5, claim(s) 14, drawn to a substantially isolated protein comprising SEQ ID NO: 11 or SEQ ID NO: 13.

The inventions listed as Groups 1-5 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group 1 requires search and consideration of SEQ ID NO's: 1-4, which is not required by any of the other Groups.

Group 2 requires search and consideration of SEQ ID NO's: 6 and 8, which is not required by any of the other Groups.

Group 3 requires search and consideration of SEQ ID NO's: 10 and 12, which is not required by any of the other Groups.

Group 4 requires search and consideration of SEQ ID NO's: 7 and 9, which is not required by any of the other Groups.

Group 5 requires search and consideration of SEQ ID NO's: 11 and 13, which is not required by any of the other Groups.

Continuation of B. FIELDS SEARCHED Item 3:
MEDLINE/Pubmed
SEQ ID NO: 1
SEQ ID NO: 2
SEQ ID NO: 3
SEQ ID NO: 4