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Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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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.

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

(57) Abstract: The present invention provides amino 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 and nucleic acid molecules, methods of identifying orthologs and paralogs of the transporter peptides, and methods of identifying modulators of the transporter peptides.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/04202

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C07K 1/00

US CL : 530/350

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. : 530/350

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
SPIN; WEST

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

ISSUED PATENTS_AA; SWISSPROT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WILLIAMS et al. 'Structure And Functional Characterization Of Neuronal Alpha-1E Calcium Channel Subtypes', The Journal of Biological Chemistry, 2 September 1994, Volume 269, No. 35, pages 22347-22357, see the entire document.	1, 2, 20, 21
X	WO 95/04144 A1 (NEUREX CORPORATION) 09 February 1995 (09/02/95), see the entire document.	1, 2, 20, 21



Further documents are listed in the continuation of Box C.



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 document 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 doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"G" 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

30 SEPTEMBER 2003

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Name and mailing address of the ISA/US
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/04202

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. ☐ 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:

Please See Extra 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, 2, 20, 21

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/US03/04202

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

- Group I, claim(s) 1, 2, 20 and 21, drawn to polypeptide having SEQ ID NO:2.
- Group II, claim(s) 3, drawn to antibody against polypeptide having SEQ ID NO:2.
- Group III, claim(s) 4-11, 22, 23, drawn to nucleic acid encoding polypeptide having SEQ ID NO:2.
- Group IV, claim(s) 12, drawn to method of detecting polypeptide having SEQ ID NO:2.
- Group V, claim(s) 13, drawn to method of detecting nucleic acid encoding polypeptide having SEQ ID NO:2.
- Group VI, claim(s) 14, drawn to method of detecting a modulator of polypeptide having SEQ ID NO:2.
- Group VII, claim(s) 15, drawn to method of detecting a modulator of polypeptide having SEQ ID NO:2, via nucleic acid encoding an agent.
- Group VIII, claim(s) 16, drawn to method of detecting an agent that binds to polypeptide having SEQ ID NO:2.
- Group IX, claim(s) 17, drawn to a pharmaceutical composition of the agent of Group VIII.
- Group X, claim(s) 18, drawn to a method of treating disease with agent of Group VIII.
- Group XI, claim(s) 19, drawn to method of detecting a modulator of expression of polypeptide having SEQ ID NO:2, via cell expressing SEQ ID NO:2.

1. This International Searching Authority considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

The inventions listed as Groups I-XI 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 I is drawn to a polypeptide which differs in structure and function from the antibody and the nucleic acid. The polypeptide of Group I is a voltage dependent calcium channel and is an alternative splice variant of the known alpha-1E as noted on page 6 of the specification. Therefore, allelic variants, orthologs, and fragments of SEQ ID NO:2 are known in the art. Therefore, Groups 1-11 do not relate to a single inventive concept.