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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: PROTEIN PHOSPHATASES

(57) Abstract: The invention provides human protein phosphatases (PP) and polynucleotides which identify and encode PP. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides for diagnosing, treating, or preventing disorders associated with aberrant expression of PP.



WO 02/024924 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/29451

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/55 C12N9/16 C12N15/63 C12N5/10 A01K67/027
C12P21/00 C07K16/40 C12Q1/68 A61K38/46 C12Q1/42
G01N33/573

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)

SEQUENCE SEARCH, EPO-Internal, WPI Data, PAJ, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE EM EST [Online] EMBL; 9 November 1999 (1999-11-09) HILLIER ET AL.: "EST" retrieved from EBI, accession no. AW157506 Database accession no. AW157506 XP002198951 the whole document	13
X	DATABASE EM EST [Online] EMBL; 7 January 1998 (1998-01-07) NCI-CGAP: "EST" retrieved from EBI, accession no. AA719066 Database accession no. AA719066 XP002198952 the whole document	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

15 May 2002

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25. 09. 2002

Name and mailing address of the ISA

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Authorized officer

CEDER O.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/29451

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 874 052 A (BIOPH BIOTECH ENTW PHARM GMBH) 28 October 1998 (1998-10-28) abstract; claims ---	1-56,68
A	US 5 853 997 A (CORLEY NEIL C ET AL) 29 December 1998 (1998-12-29) column 1, line 65 -column 3, line 15 ---	1-56,68
A	US 5 948 902 A (DEAN NICHOLAS M ET AL) 7 September 1999 (1999-09-07) column 2, line 25 - line 52 ---	1-56,68
A	HOOFT VAN HUIJSDUIJNEN R: "Protein tyrosine phosphatases: counting the trees in the forest" GENE, ELSEVIER BIOMEDICAL PRESS. AMSTERDAM, NL, vol. 225, no. 1-2, 28 December 1998 (1998-12-28), pages 1-8, XP004153614 ISSN: 0378-1119 ---	
A	TRAVIS S M ET AL: "PP2Cgamma: a human protein phosphatase with a unique acidic domain" FEBS LETTERS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 412, no. 3, 1 August 1997 (1997-08-01), pages 415-419, XP002085149 ISSN: 0014-5793 ---	
P,X	WO 01 16156 A (HUMAN GENOME SCIENCES INC ;NI JIAN (US); RUBEN STEVEN M (US); YOUN) 8 March 2001 (2001-03-08) Seq Id Nos 7, 13 abstract; claims -----	1-56,68

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/29451

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:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☒ Claims Nos.: 21, 22, 24, 25
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. ☒ 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.:
1-55 partially and 56 and 68 completely

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: 1-55 partially and 56 and 68 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 1 and 13, respectively.

2. Claims: 1-55 partially and 57 and 69 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 2 and 14, respectively.

3. Claims: 1-55 partially and 58 and 70 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 3 and 15, respectively.

4. Claims: 1-55 partially and 59 and 71 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 4 and 16, respectively.

5. Claims: 1-55 partially and 60 and 72 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 5 and 17, respectively.

6. Claims: 1-55 partially and 61 and 73 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 6 and 18, respectively.

7. Claims: 1-55 partially and 62 and 74 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 7 and 19, respectively.

8. Claims: 1-55 partially and 63 and 75 completely

An isolated polypeptide and an isolated polynucleotide

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 8 and 20, respectively.

9. Claims: 1-55 partially and 64 and 76 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 9 and 21, respectively.

10. Claims: 1-55 partially and 65 and 77 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 10 and 22, respectively.

11. Claims: 1-55 partially and 66 and 78 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 11 and 23, respectively.

12. Claims: 1-55 partially and 67 and 79 completely

An isolated polypeptide and an isolated polynucleotide encoding it and their uses, where the polypeptide and polynucleotide are Seq Id Nos 12 and 24, respectively.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claims 19, 22 and 25 are 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.

Although claims 33 and 35 are directed to a diagnostic method practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

Continuation of Box I.1

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

Rule 39.1(iv) PCT - Diagnostic method practised on the human or animal body

Continuation of Box I.2

Claims Nos.: 21, 22, 24, 25

Claims 21, 22, 24 and 25 refer to agonists/antagonists of the polypeptide of claim 1 without giving a true technical characterization. Moreover, no such compounds are specifically defined in the description. It is only indicated that they "may include proteins" (such as antibodies)", nucleic acids, carbohydrates, small molecules, or any other compound or composition which modulates the activity of PP either by directly interacting with PP or by acting on components of the biological pathway in which PP participates." (page 12 lines 26-28; page 13 lines 26-29). In consequence the scope of said claims is ambiguous and vague, and their subject-matter is not sufficiently disclosed and supported (Art. 5 and 6 PCT). No search can be carried out for such claims whose wording is, in fact, a mere recitation of the results to be achieved.

Claim 8 has only been searched as far as it concerns non-human transgenic organisms.

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/US 01/29451

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0874052	A	28-10-1998	EP 0874052 A2	28-10-1998
US 5853997	A	29-12-1998	AU 7954298 A	30-12-1998
			EP 0988382 A1	29-03-2000
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			US 6436637 B1	20-08-2002
US 5948902	A	07-09-1999	AU 1420899 A	15-06-1999
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			WO 0116156 A1	08-03-2001