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28 September 2000 (28.09.00)

(54) Title: PROTEIN KINASE HOMOLOGS

(57) Abstract

The invention provides human protein kinase homologs (PKH) and polynucleotides which identify and encode PKH. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for diagnosing, treating or preventing disorders associated with expression of PKH.

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INTERNATIONAL SEARCH REPORT

Intern nal Application No
PCT/US 99/24202

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/54 C12N9/12 C12Q1/68 A61K38/45 C07K16/40

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 41639 A (INCYTE PHARMA INC ;BANDMAN OLGA (US); GUEGLER KARL J (US); LAL PRE) 24 September 1998 (1998-09-24) page 42 -page 47; claims 1-16 ---	1-16,19
X	US 5 698 445 A (ABO ARIE ET AL) 16 December 1997 (1997-12-16) abstract column 3, line 49 -column 4, line 56 claims 1-15 --- -/--	1-16,19

[X] Further documents are listed in the continuation of box C.

[X] 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

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"P" document published prior to the international filing date but later than the priority date claimed

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 March 2000	14. 06. 00

Name and mailing address of the ISA	Authorized officer
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	Muller-Thomalla, K

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Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE EMBL SEQUENCE DATABASE [Online] EMBL, Heidelberg Accession number: P78362, 1 May 1997 (1997-05-01) WANG ET AL.: "SRPK2: a differentially expressed SR protein-specific kinase involved in mediating the interaction and localization of pre-mRNA splicing factors in mammalian cells" XP002133279 abstract ---	1-16,19
X	DATABASE EMBL SEQUENCE DATABASE [Online] EMBL, Heidelberg Accession number: O54781, 1 June 1998 (1998-06-01) KUROYANAGI ET AL.: "Serine/arginine-rich protein specific kinase 2 (SRPK2)" XP002133280 abstract ---	1-16,19
X	DATABASE EMBL SEQUENCE DATABASE [Online] EMBL, Heidelberg Accession number: AB006036, 5 January 1998 (1998-01-05) KUROYANAGI: "Novel SR-protein-specific kinase, SRPK2, disassembles nuclear speckles" XP002133281 abstract ---	1-16,19
X	DATABASE EMBL SEQUENCE DATABASE [Online] EMBL, Heidelberg Accession number: C05422, 29 July 1996 (1996-07-29) TANAKA ET AL.: "Construction of a normalized directionally cloned cDNA library from adult heart and analysis of 3040 clones by partial sequencing" XP002133282 abstract ---	1-16,19
X	DATABASE EMBL SEQUENCE DATABASE [Online] EMBL, Heidelberg Accesssion number: AA427795, 25 May 1997 (1997-05-25) HILLIER ET AL.: "WashU-Merck EST Project 1997" XP002133283 abstract --- -/--	1-16,19

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INTERNATIONAL SEARCH REPORT

Intern nal Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KENTRUP H ET AL: "Dyrk, a dual specificity protein kinase with unique structural features whose activity is dependent on tyrosine residues between subdomains VII and VIII" JOURNAL OF BIOLOGICAL CHEMISTRY,US,AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, vol. 271, no. 7, 16 February 1996 (1996-02-16), pages 3488-3496, XP002069625 ISSN: 0021-9258 page 3488, column 1, line 1 -page 3489, column 2, paragraph 3 figures 1,2 -----	1-16,19

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/24202

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. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claim 19 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. [X] Claims Nos.: 17,18,20
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:

The "agonist" and "antagonist" of claims 17,18 and 20 are not defined. The broad and indefinite scope covered by said claims renders a meaningful search of the prior art impossible.

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. [X] 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 (partly) - 16 (partly) and 19 (partly)

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

Continuation of Box I.2

Claims Nos.: 17,18,20

The "agonist" and "antagonist" of claims 17,18 and 20 are not defined. The broad and indefinite scope covered by said claims renders a meaningful search of the prior art impossible.

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 1 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:10. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 10. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

2. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 2 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:11. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 11. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

3. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 3 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:12. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 12. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

4. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 4 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:13. Expression vectors comprising the polynucleotide and host cell comprising the expression

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 13. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

5. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 5 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:14. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 14. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

6. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 6 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:15. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 15. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

7. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 7 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:16. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 16. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

8. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 8 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:17. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 17. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

9. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 9 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:18. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 18. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal Application No
PCT/US 99/24202

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9841639 A	24-09-1998	US 5965365 A	12-10-1999
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