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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: HUMAN LYASES

(57) Abstract: The invention provides human lyases (HLYA) and polynucleotides which identify and encode HLYA. 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 aberrant expression of HLYA.



WO 02/000840 A3

INTERNATIONAL SEARCH REPORT

Inte ial Application No
PCT/US 01/19166

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/60 C12N9/88 C12N5/10 C07K16/40 C12Q1/68
G01N33/68 A01K67/027

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 C12Q G01N A01K

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)

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 00 61748 A (HUMAN GENOME SCIENCES INC ;ROSEN CRAIG A (US); RUBEN STEVEN M (US)) 19 October 2000 (2000-10-19) SEQ ID Nos. 37 and 120; claims 1-23	1-19,22, 25-44
E	WO 01 62927 A (INCYTE GENOMICS, INC.) 30 August 2001 (2001-08-30) SEQ ID Nos. 4 and 215; claims 1-27	1-19,22, 25-44

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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

21 February 2002

Date of mailing of the international search report

22. 05. 2002

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INTERNATIONAL SEARCH REPORT

Inter al Application No
PCT/US 01/19166

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	LOWE N ET AL: "STRUCTURE AND METHYLATION PATTERNS OF THE GENE ENCODING HUMAN CARBONIC ANHYDRASE I" GENE (AMSTERDAM), vol. 93, no. 2, 1990, pages 277-283, XP002190991 ISSN: 0378-1119 the whole document ---	
A	US 5 972 684 A (CORLEY NEIL C ET AL) 26 October 1999 (1999-10-26) the whole document ---	
A	WO 88 04688 A (FLOREY HOWARD INST) 30 June 1988 (1988-06-30) the whole document ---	
A	HEWETT-EMMETT DAVID ET AL: "Functional diversity, conservation, and convergence in the evolution of the alpha-, beta-, and gamma-carbonic anhydrase gene families." MOLECULAR PHYLOGENETICS AND EVOLUTION, vol. 5, no. 1, 1996, pages 50-77, XP002190992 ISSN: 1055-7903 cited in the application the whole document -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/19166

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.: **20,21,23 and 24**
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.:
1-44 (partially); 45, 48 (completely)

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/US 01/19166

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Although claims 18, 35 and 38 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 claim(s) 32, 33 and 34 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.2

Claims Nos.: 20,21,23 and 24

Present claim 20, 21, 23 and 34 relate to a composition comprising an agonist and /or antagonist and a method for treating a disease, comprising administering to a patient in need of such treatment said agonist and/or antagonist without giving a true technical characterization. Moreover no such compounds are defined in the application. 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 purely speculative claims whose wording is, in fact, a mere recitation of the results to be achieved. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to antibodies, antisense molecules, ribozymes, polypeptides and nucleic acids, the structure which can be directly derived from SEQ ID Nos. 1 and 4.

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

International Application No. PCT/US 01/19166

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: (45,48)-complete; (1-44)-partially

An isolated polypeptide sequence of SEQ ID Nos. 1; an isolated polynucleotide sequence of SEQ ID No. 4 encoding said polypeptide; a cell transformed with said polynucleotide sequence; a transgenic organism comprising said polynucleotide sequence; a method for producing said polypeptide encoded by said polynucleotide sequence; an isolated polyclonal and/or monoclonal antibody which binds to said polypeptide sequence; a method for detecting a target polynucleotide sequence comprising SEQ ID No. 4; a composition comprising said polypeptide and a pharmaceutical acceptable excipient; a method for screening a compound for effectiveness as an agonist and/or antagonist of said polypeptide; a method for assessing toxicity of a test compound using said polynucleotide sequence; a diagnostic test for a condition or disease using said antibody; a method for detecting said polypeptide in a sample;

2. Claims: (46,49)-complete, (1-44)-partially

Idem as invention 1 but limited to SEQ ID Nos. 2 and 5;

3. Claims: (47,50)-complete, (1-44)-partially

Idem as invention one but limited to SEQ ID Nos. 3 and 6;

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter- al Application No
PCT/US 01/19166

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