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(54) Title: METAL-BINDING PROTEINS

(57) Abstract: This invention relates to an isolated nucleic acid fragment encoding a metal-binding protein. The invention also relates to the construction of a recombinant DNA construct encoding all or a portion of the metal-binding protein, in sense or antisense orientation, wherein expression of the recombinant DNA construct results in production of altered levels of the metal-binding protein in a transformed host cell.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/25052

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.:
1-15

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/US02/25052

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A01H 3/00; C07H 21/04; C07K 14/415; C12N 5/14, 9/00

US CL : 435/6, 183, 419, 320.1; 530/370; 536/23.2, 23.6; 800/278, 295

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. : 435/6, 183, 419, 320.1; 530/370; 536/23.2, 23.6; 800/278, 295

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)
sequence databases

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Database PIR73. Accession No. T05686, BEVAN et al. Gene sequence, Direct Submission, 23 April 1999.	1-15



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

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/25052

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s) 1-15, drawn to an isolated polynucleotide and a method of using.

Group II, claim(s) 16-21, drawn to an isolated polypeptide.

In addition to an election of one of inventions I-II listed above, applicant is required to elect one of the following inventions A-G to which the claims must be restricted.

Group A, drawn to a polynucleotide of SEQ ID NO: 1 or corresponding polypeptide of SEQ ID NO: 2.

Group B, drawn to a polynucleotide of SEQ ID NO: 3 or corresponding polypeptide of SEQ ID NO: 4.

Group C, drawn to a polynucleotide of SEQ ID NO: 5 or corresponding polypeptide of SEQ ID NO: 6.

Group D, drawn to a polynucleotide of SEQ ID NO: 7 or corresponding polypeptide of SEQ ID NO: 8.

Group E, drawn to a polynucleotide of SEQ ID NO: 13 or corresponding polypeptide of SEQ ID NO: 14.

Group F, drawn to a polynucleotide of SEQ ID NO: 15 or corresponding polypeptide of SEQ ID NO: 16.

Group G, drawn to a polynucleotide of SEQ ID NO: 17 or corresponding polypeptide of SEQ ID NO: 18.

The inventions listed as Groups I-II and A-G do not relate to a single 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 a polynucleotide and method of using the polynucleotide which is structurally and functionally divergent from the polypeptide of Group II. The inventions listed as Groups A-G 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: Though each of the listed polynucleotides is asserted to encode a metal binding polypeptide, each of the polynucleotides is structurally divergent and each of the polynucleotides encodes a divergent polypeptide. Accordingly, the recited polynucleotides lack a common special technical feature.