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[Continued on next page]

(54) Title: NUCLEIC ACIDS, PROTEINS, AND ANTIBODIES

(57) Abstract: The present invention relates to novel proteins. More specifically, isolated nucleic acid molecules are provided encoding novel polypeptides. Novel polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human polynucleotides and/or polypeptides, and antibodies. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to these novel polypeptides. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further relates to methods and/or compositions for inhibiting or enhancing the production and function of the polypeptides of the present invention.

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INTERNATIONAL SEARCH REPORT

Inter. onal application No.
PCT/US01/01302

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :C07K 13/00; C07H 21/04; C12Q 1/68
US CL :530/350; 536/22.1, 24.3, 24.33; 435/6
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; 536/22.1, 24.3, 24.33; 435/6

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
none

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

STN searched, medline, biosis, caplus
key words: polynucleotides, 95% identical, hybridization, polypeptide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LEUVEN et al., Molecular Cloning and Sequencing of the Murine alpha-2-Macroglobulin Receptor cDNA. Biochimica et Biophysics Acta, 1993, Vol. 1173, pg. 71-74. See the attached sequence search report.	1-10

☐ 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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Form PCT/ISA/210 (second sheet) (July 1998)★

INTERNATIONAL SEARCH REPORT

Inter nal application No.
PCT/US01/01302

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.:
claims 1-10 with respect to SEQ ID NO:11

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

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) 1-10, drawn to an isolated nucleic acid comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of a polynucleotide fragment of SEQ ID NO: X or a polynucleotide fragment of the cDNA sequence contained in Clone ID NO:Z which is hybridizable to SEQ ID NO: X, a polynucleotide encoding a polypeptide fragment of SEQ ID NO: Y wherein X and Y are values that correlates to those listed in Table 1A (See pg. 16), and correspond to one of the cDNA Clone IDs, respectively, and a method of making a recombinant cell comprising the isolated nucleic acid. For example,
If Group I is elected, this correlates to cDNA clone ID NO: HBXCZ29 of Table 1A (See pg. 16), wherein X is SEQ ID NO: 11 and Y is SEQ ID NO:88.

Group II, claim(s) 11-12 and 14, drawn to an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence selected from the group consisting a polypeptide fragment of SEQ ID NO: Y or the encoded sequence contained in cDNA Clone NO:Z wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group II is elected, this correlates to cDNA Clone ID NO: HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 88.

Group III, claim(s) 13, drawn to an isolated antibody that binds to the isolated polypeptide, SEQ ID NO:Y of claim 11, wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group III is elected, this correlates to cDNA Clone ID NO:HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 88.

Group IV, claim(s) 15-16, drawn to a method of making an isolated polypeptide via culturing the recombinant host cell of claim 14 which expresses the isolated polypeptide of claim 11 wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group IV is elected, this correlates to cDNA Clone ID NO:HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 88.

Group V, claim(s) 17, drawn to a method of for preventing, treating or ameliorating a medication condition by using polynucleotide of claim 1 selected from the group consisting of a polynucleotide fragment of SEQ ID NO: X or a polynucleotide fragment of the cDNA sequence contained in Clone ID NO:Z which is hybridizable to SEQ ID NO: X, a polynucleotide encoding a polypeptide fragment of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1A (See pg. 16), and correspond to one of the cDNA Clone IDs, respectively. For example,
If Group V is elected, this correlates to cDNA clone ID NO: HBXCZ29 of Table 1A (See pg. 16), wherein X is SEQ ID NO: 11 and Y is SEQ ID NO:88.

Group VI, claim(s) 18, drawn to a method of diagnosing a pathological condition by determining the presence of a mutation in the polynucleotide of claim 1 selected from the group consisting of a polynucleotide fragment of SEQ ID NO: X or a polynucleotide fragment of the cDNA sequence contained in Clone ID NO:Z which is hybridizable to SEQ ID NO: X, a polynucleotide encoding a polypeptide fragment of SEQ ID NO: Y, wherein X and Y are values that correlates to those listed in Table 1A (See pg. 16), and correspond to one of the cDNA Clone IDs, respectively. For example,
If Group VI is elected, this correlates to cDNA clone ID NO: HBXCZ29 of Table 1A (See pg. 16), wherein X is SEQ ID NO: 11 and Y is SEQ ID NO:88.

Group VII, claim(s) 19, drawn to a method of diagnosing a pathological condition by determining the expression of the polypeptide of claim 11 selected from the group consisting a polypeptide fragment of SEQ ID NO: Y or the encoded sequence contained in cDNA Clone NO:Z wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group VII is elected, this correlates to cDNA Clone ID NO:HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 88.

Group VIII, claim(s) 20, drawn to a method for identifying a binding partner to the polypeptide of claim 11 selected from the group consisting a polypeptide fragment of SEQ ID NO: Y or the encoded sequence contained in cDNA

Clone NO:Z wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group VIII is elected, this correlates to cDNA Clone ID NO:HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 83.

Group IX, claim(s) 21, drawn to the gene corresponding to the cDNA sequence of SEQ ID NO: Y selected from the group consisting a polypeptide fragment of SEQ ID NO: Y or the encoded sequence contained in cDNA Clone NO:Z wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group IX is elected, this correlates to cDNA Clone ID NO:HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 83.

Group X, claim(s) 22, drawn to a method of identifying an activity in a biological sample comprising expressing SEQ ID NO: X in a cell selected from the group consisting of a polynucleotide fragment of SEQ ID NO: X or a polynucleotide fragment of the cDNA sequence contained in Clone ID NO:Z which is hybridizable to SEQ ID NO: X, a polynucleotide encoding a polypeptide fragment of SEQ ID NO: Y wherein X and Y are values that correlates to those listed in Table 1A (See pg. 16), and correspond to one of the cDNA Clone IDs, respectively. For example,
If Group X is elected, this correlates to cDNA clone ID NO: HBXCZ29 of Table 1A (See pg. 16), wherein X is SEQ ID NO: 11 and Y is SEQ ID NO:83.

Group XI, claim(s) 23, drawn to the product produced by the method of claim 20 wherein the polypeptide of claim 11 is selected from the group consisting a polypeptide fragment of SEQ ID NO: Y or the encoded sequence contained in cDNA Clone NO:Z wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group XI is elected, this correlates to cDNA Clone ID NO:HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 83.

Group XII, claim(s) 24, drawn to a method for preventing, treating or ameliorating a medical condition comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 selected from the group consisting a polypeptide fragment of SEQ ID NO: Y or the encoded sequence contained in cDNA Clone NO:Z wherein SEQ ID NO: Y correlates to one of these listed in Table 1A (see pg. 16), and corresponds to one of the cDNA Clones IDs, respectively. For example,
If Group XII is elected, this correlates to cDNA Clone ID NO:HBXCZ29 of Table 1A(see pg. 16) wherein Y is SEQ ID NO: 83.

The inventions listed as Groups I-XII 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:

The polynucleotides and polypeptides of each invention are unrelated, each to each other. Where, for example, claim 11, items (a)-(h) do not require polynucleotide of any degree of specificity to a sequence, it is apparent that Leuven et al. (Biochimica et Biophysica Acta, 1993, Vol. 1173, pg. 721-74) disclose a DNA encoding a polypeptide wherein said DNA renders claim 1, among the other, not novel. Thus the technical feature of the polynucleotide sequence is not special and the groups are not so linked under PCT Rule 13.1, additionally the claimed methods produce different products and/or different results which are not coextensive and which do not share the same technical feature.