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(54) Title: IL-17 LIKE MOLECULES AND USES THEREOF

(57) Abstract: Novel IL-17 like polypeptides and nucleic acid molecules encoding the same. The invention also provides vectors, host cells, selective binding agents, and methods for producing IL-17 like polypeptides. Also provided for are methods for the treatment, diagnosis, amelioration, or prevention of diseases with IL-17 like polypeptides, agonists, or antagonists thereof.



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**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US02/40247

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>				
IPC(7) : C12N 15/00, 15/85, 1/15; C07H 21/04; C07K 14/52, 16/00; A61K 38/19; C12P 21/00 US CL : 435/69.52, 320.1, 252.3, 325, 6, 7.1; 536/23.5; 530/351, 387.9; 424/85.2; 800/13 According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) U.S. : 435/69.52, 320.1, 252.3, 325, 6, 7.1; 536/23.5; 530/351, 387.9; 424/85.2; 800/13				
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, STN (Medline, Biosis), EAST				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	Database EST, Accession Number W88186, MARRA et al., 12 September 1996.	1-5, 7, 11 and 57		
X	WO 00/42187 A1 (SCHERING CORPORATION) 20 July 2000, pages 19, 21, 35-40, 44, 47, and SEQ ID NO:21, 22, 25 and 26.	1-11, 13-26, 57-61 and 68		
X	LEE et al. Locus AF305200 (GenEmbl 09 January 2001), IL-17E, a novel proinflammatory ligand for the IL-17 receptor homolog IL-17Rh1. J. Biol. Chem., 09 January 2001, Vol. 276, No. 2, pages 1660-1664, especially Figure 1, and "Experimental Procedures".	1-11, 13-17, and 57-61		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.				
* Special categories of cited documents: <table border="0" style="width:100%"> <tr> <td style="width:50%">           "A" document defining the general state of the art which is not considered to be of particular relevance            "E" earlier application or patent 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         </td> <td style="width:50%">           "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            "&amp;" document member of the same patent family         </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent 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
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent 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 06 June 2003 (06.06.2003)		Date of mailing of the international search report <b>11 DEC 2003</b>		
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230		Authorized officer <i>Yvonne Eyer</i> Yvonne Eyer Telephone No. 703-308-0196		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/40247

**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.  Claim Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
- 2.  Claim 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.  Claim 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 Continuation 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.: 1-11, 13-26, 57-61 and 68, directed to SEQ ID NO:1-4, 9 and 10.
  
- 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.:

- 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 IS LACKING**

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

Group I, claim(s) 1-11, 13-26, 57-61, and 68, drawn to an isolated nucleic acid, a vector containing same, a host cell thereof, a method of recombinantly producing the encoded polypeptide, a composition comprising the nucleic acid, the polypeptide encoded thereby, and a fusion protein thereof.

Group II, claim(s) 12, drawn to a process for determining the polypeptide inhibiting activity of a compound.

Group III, claim(s) 27-30, 32-47, 49, and 50, drawn to an antibody or fragment thereof, and a hybridoma thereof.

Group IV, claim(s) 31, drawn to a method of detecting or quantifying the polypeptide with the antibody.

Group V, claim(s) 48 and 69-73, drawn to a method of treating, preventing, or ameliorating a IL-17 like polypeptide related disease, condition, or disorder with the antibody.

Group VI, claim(s) 51-56, 62, and 78, drawn to a composition of the polypeptide, and a method of treatment using the polypeptide.

Group VII, claim(s) 63, drawn to a method of diagnosis by determining the presence or amount of the polypeptide.

Group VIII, claim(s) 64, drawn to a device.

Group IX, claim(s) 65, drawn to a method of identifying a compound binding to the polypeptide.

Group X, claim(s) 66, drawn to a method of modulating levels of the polypeptide in an animal by administering the nucleic acid.

Group XI, claim(s) 67, drawn to a transgenic non-human mammal comprising the nucleic acid.

Group XII, claim(s) 74-76, drawn to a method of antagonizing the activity of an IL-17 like polypeptide, or treating a condition with an IL-17 like polypeptide antagonist.

Group XIII, claim(s) 77, drawn to a method of treating a condition with an IL-17 like polypeptide antagonist.

Within each group listed above, there is more than one invention, which are not so linked as to form a single general inventive concept under PCT Rule 13.1, and are listed below. In order for all inventions to be examined *in one group*, the appropriate additional examination fees must be paid.

Group A - SEQ ID NO:1 and 2,

Group B - SEQ ID NO:3 and 4,

Group C - SEQ ID NO:9 and 10,

Group D - SEQ ID NO:18,

Group E - SEQ ID NO:20.

The inventions listed as Groups I-XIII 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:

With respect to Groups I-XIII, this authority considers that the main invention in the instant application comprises the first-recited product, an isolated nucleic acid encoding a polypeptide, the composition thereof, an expression vector and a host cell containing the nucleic acid; and the first-recited method of using that product, namely a process of recombinant expression and purification of the encoded polypeptide. Note that there is no method of making the nucleic acid. Also included in this group is the product made, namely the encoded polypeptide. The materially and functionally dissimilar products of groups III, VI, VIII and XI do not share a special technical feature within the meaning of PCT Rule 13.2, and thus do not relate to a single invention concept within the meaning of PCT

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

## INTERNATIONAL SEARCH REPORT

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Rule 13.1. Further, Groups II, IV, V, VII, IX, X, XII and XIII are directed to various methods, which are designed for different purposes, use different compounds or reagents, involve different method steps, and produce different products and/or different results, which are not coextensive and do not share the same technical feature within the meaning of PCT Rule 13.2 so as to form a single general inventive concept.

With respect to Groups A-E, they are directed to different nucleic acids and/or polypeptides encoded thereby. Each SEQ ID NO set forth above has distinct chemical, and structural properties, and therefore, each does not share a special technical feature with the other within the meaning of PCT Rule 13.2, and thus do not relate to a single invention concept within the meaning of PCT Rule 13.1.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for more than one species to be examined, the appropriate additional examination fees must be paid.

The species election applies to *Group XII only*. The species are as follows:

- (a) said polypeptide,
- (b) a IL-17LP selective binding agent,
- (c) a small molecules,
- (d) an antisense oligo nucleotide,
- (e) a peptide or derivatives having specificity for IL-17LP.

The claims are deemed to correspond to the species listed above in the following manner:

Claim 74 - species a,  
Claim 74 - species b,  
Claim 74 - species c,  
Claim 74 - species d,  
Claim 74 - species e.

The following claim(s) are generic: none.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

Each species set forth above has distinct chemical, and structural properties, and therefore, these species do not share a special technical feature within the meaning of PCT Rule 13.2, and thus do not relate to a single invention concept within the meaning of PCT Rule 13.1.