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Published:
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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.

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(54) Title: SOLUBLE ZCYTOR 11 CYTOKINE RECEPTORS

(57) Abstract: Novel polypeptide combinations, polynucleotides encoding the polypeptides, and related compositions and methods are disclosed for soluble zcytor 11 receptors that may be used as novel cytokine antagonists, and within methods for detecting ligands that stimulate the proliferation and/or developemnt of hematopoietic, lymphoid and myeloid cells in vitro and in vivo. Ligand-binding receptor polypeptides and antibodies can also be used to block TIF activity in vitro and in vivo, and may be used in conjuction with TIF and other cytokines to selectively stimulate the immune system. The present invention also includes methods for producing the protein, uses therefor and antibodies thereto.

INTERNATIONAL SEARCH REPORT

International Application No
PC., .S 01/24838

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/12 C07K14/715 C12N5/10 C12N15/62 C07K16/28
A61P37/00

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 C07K A61P 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)
EPO-Internal, WPI Data, PAJ, BIOSIS, MEDLINE, SEQUENCE SEARCH, EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 07848 A (ZYMOGENETICS INC) 18 February 1999 (1999-02-18) the whole document ---	1-42
X	XIE M-H ET AL: "Interleukin (IL)-22, a novel human cytokine that signals through the interferon receptor-related proteins CRF2-4 and IL-22R" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 275, no. 40, 6 October 2000 (2000-10-06), pages 31335-31339, XP002164307 ISSN: 0021-9258 published online 29-6-2000 the whole document --- -/--	1-47

[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

"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	Date of mailing of the international search report
3 December 2002	17. 03. 2003

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	Kools, P

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	WO 00 39161 A (BUSFIELD SAMANTHA J ;MILLENNIUM PHARM INC (US)) 6 July 2000 (2000-07-06) See TANGO 241, Seq ID No 1 and 2. the whole document	1-47
A	ZHANG ET AL: "Identification, purification, and characterization of a soluble Interleukin (IL)-13 binding protein" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, BALTIMORE, MD, US, vol. 272, no. 14, 4 April 1997 (1997-04-04), pages 9474-9480, XP002104158 ISSN: 0021-9258 the whole document	1-47
P,X	WO 01 16318 A (EATON DAN L ;GENENTECH INC (US); FILVAROFF ELLEN (US); GODDARD AUD) 8 March 2001 (2001-03-08) figures 163,164	1-47
P,X	BLUMBERG H ET AL: "INTERLEUKIN 20: DISCOVERY, RECEPTOR IDENTIFICATION, AND ROLE IN EPIDERMAL FUNCTION" CELL, CELL PRESS, CAMBRIDGE, NA, US, vol. 104, 12 January 2001 (2001-01-12), pages 9-19, XP000996379 ISSN: 0092-8674 the whole document	35-37
P,A	XU WENFENG ET AL: "A soluble class II cytokine receptor, IL-22RA2, is a naturally occurring IL-22 antagonist" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 98, no. 17, 14 August 2001 (2001-08-14), pages 9511-9516, XP002186667 ISSN: 0027-8424 printed online 31-7-2001 the whole document	1-47

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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.
P,A	DUMOUTIER L ET AL: "Cloning and characterization of IL-22 binding protein, a natural antagonist of IL-10-related T cell-derived inducible factor/IL-22" JOURNAL OF IMMUNOLOGY, THE WILLIAMS AND WILKINS CO. BALTIMORE, US, vol. 166, no. 12, 15 June 2001 (2001-06-15), pages 7090-7095, XP002206182 ISSN: 0022-1767 the whole document ---	1-47

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/24838

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 claims 46 and 47 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.

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:

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. [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.:

1-38, completely; and 39-47 partially

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

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

1. Claims: 1-38, completely, and 39-47 partially

Polynucleotides encoding a polypeptide having an identity of at least 90% with Seq ID No 3. Expression vectors comprising said polynucleotides and cultured cells transformed with said expression vectors. DNA constructs encoding a fusion protein comprising a DNA segment encoding a polypeptide with the sequence with Seq ID No 3 and another DNA segment encoding a soluble class I or class II cytokine. Expression vectors comprising said DNA molecule and cultured cells comprising said vectors. Isolated polypeptides having an identity of at least 90% with the aminoacid sequence with Seq ID No 3. Isolated protein complexes comprising said polypeptide. Method of producing said polypeptide.

Methods of producing antibodies agianst said polypeptide, antibodies produced by said methods. Methods of inhibiting IL-TIF induced cellular proliferation comprising adding the polypeptide of the present invention. Method of reducing IL-TIF or IL-9 induced inflammation comprising adding the polypeptide of the present invention. Method of reducing an immune response in a mammal comprising adding the polypeptide of the present invention.

2. Claims: 39-47 (all partially)

Methods of producing antibodies against the polypeptide with Seq ID NO 33, antibodies produced by said methods. Methods of inhibiting IL-TIF induced cellular proliferation comprising adding the polypeptide of the present invention. Method of reducing IL-TIF or IL-9 induced inflammation comprising adding the polypeptide of the present invention. Method of reducing an immune response in a mammal comprising adding the polypeptide of the present invention.

3. Claims: 39-47 (all partially)

Methods of producing antibodies against the polypeptide with Seq ID NO 34, antibodies produced by said methods. Methods of inhibiting IL-TIF induced cellular proliferation comprising adding the polypeptide of the present invention. Method of reducing IL-TIF or IL-9 induced inflammation comprising adding the polypeptide of the present invention. Method of reducing an immune response in a mammal comprising adding the polypeptide of the present invention.

4. Claims: 39-47 (all partially)

Methods of producing antibodies against the polypeptide with

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Seq ID NO 35, antibodies produced by said methods. Methods of inhibiting IL-TIF induced cellular proliferation comprising adding the polypeptide of the present invention. Method of reducing IL-TIF or IL-9 induced inflammation comprising adding the polypeptide of the present invention. Method of reducing an immune response in a mammal comprising adding the polypeptide of the present invention.

INTERNATIONAL SEARCH REPORT

ormation on patent family members

International Application No
PC., JS 01/24838

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