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AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
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LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ,

[Continued on next page]

(54) Title: IL-17A AND IL-17F ANTAGONISTS AND METHODS OF USING THE SAME

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      10      20      25
IL17RCx1  M P V F W F L L S L A L G R S P V V L S L E R L V
           |               |
           | Signal sequence | exon 1
IL17RCx1  G P Q D A T H C S P I G L S C R L W I D S D I L C L F
           |               |
           |               | exon 2
IL17RCx1  G D I V P A P G P V L A P T H L Q T E L V L R C Q
           |               |
           |               | exon 3
IL17RCx1  K E T D C D L C L R V A V H L A V E I G H W E E P E
           |               |
           |               |
IL17RCx1  D E E K F G G A A D S G V E E P R N I A S L Q A Q V
           |               |
           |               | exon 4
IL17RCx1  V L S F Q A Y P T A R C V L L E V Q V P A A L V Q
           |               |
           |               | exon 5
IL17RCx1  F G Q S V I G S V V Y D C F E A A L G S E V R I W S
           |               |
           |               | exon 6
           |               |
           |               | exon 7 (spliced out)
IL17RCx1  Y T Q P R Y E K E L N H T Q Q L P I A L P W L N V S
           |               |
           |               | exon 8
IL17RCx1  A D G D N V H L V L N V S E E Q H F G L S L Y W N
           |               |
           |               |
IL17RCx1  Q V Q G P P K P R W H K N L I T G P Q I I T L N H T
           |               |
           |               | exon 9
IL17RCx1  D L V P C L C I Q I V W P L E P D S V R T N I C P F
           |               |
           |               | exon 10
IL17RCx1  R I E D P R A H Q N L W Q A A R L R L L T L Q S W L
           |               |
           |               |
IL17RCx1  L D A P C S L P A E A A L C W R A P G G D P C Q P
           |               |
           |               | exon 11

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(57) Abstract: The present invention relates antagonists
of IL-17A and IL-17F. The antagonists of the invention are
based on IL-17RC alone or on both IL-17RC and IL-17RA
("IL-17RC/IL-17RA") . Such antagonists serve to block, inhibit,
reduce, antagonize or neutralize the activity of IL-17F, IL-17A, or
both IL-17A and IL-17F. IL-17A and IL-17F are cytokines that are
involved in inflammatory processes and human disease. IL- 17RA
is a receptor for IL-17A and IL-17RC is a common receptor for
both IL-17A and IL-17F. The present invention includes soluble
IL-17A and IL-17F antagonists, as well as methods for using the
same.

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NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

- (88) Date of publication of the international search report:**
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/037950

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07K14/00 C07K16/28

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)
C07K

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, BIOSIS, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HAUDENSCHILD D ET AL: "Soluble and transmembrane isoforms of novel interleukin-17 receptor-like protein by RNA splicing and expression in prostate cancer" JOURNAL OF BIOLOGICAL CHEMISTRY, AMERICAN SOCIETY OF BIOCHEMICAL BIOLOGISTS, BIRMINGHAM,, US, vol. 277, no. 6, 8 February 2002 (2002-02-08), pages 4309-4316, XP002238284 ISSN: 0021-9258 the whole document ----- -/--	8,11-13, 20-32

☒ Further documents are listed in the continuation of Box C.

☒ See patent family 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

2 February 2007

Date of mailing of the international search report

16/05/2007

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Authorized officer

Romano, Alper

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/037950

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2005/010044 A2 (GENENTECH INC [US]; ARNOTT DAVID [US]; GURNEY AUSTIN [US]; HASS PHILIP) 3 February 2005 (2005-02-03) pages 79-101; claims 34,53-57 -----	1-7,9, 10, 14-19, 22,23, 31-52
Y	WO 2005/065711 A2 (SCHERING CORP [US]; GORMAN DANIEL M [US]) 21 July 2005 (2005-07-21) page 54; example 3 -----	1-7,9, 10, 14-19, 22,23, 31-52
A	US 2005/147609 A1 (FILVAROFF ELLEN H [US]) 7 July 2005 (2005-07-07) claims 1-16; examples 11,12 -----	
A	WO 02/058717 A2 (IMMUNEX CORP [US]; MOHLER KENDALL M [US]) 1 August 2002 (2002-08-01) pages 3-5; claims 1-5; example 3 -----	
A	WO 2004/019866 A2 (IMMUNEX CORP [US]; BURTON PAUL B [US]; DEISHER THERESA A [US]) 11 March 2004 (2004-03-11) the whole document -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/037950

Box II Observations where certain claims were found unsearchable (Continuation of item 2 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:

Although claims 31-52 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 III Observations where unity of invention is lacking (Continuation of item 3 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.:

1-7, 9, 10, 14-19, 33-52 (completely), 22, 23, 31, 32 (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: 1-7,9,10,14-19,33-52 (completely), 22,23,31,32
(partially)

soluble chimeric IL-17 receptors, comprising IL-17RA and
IL-17RC, and methods related thereto.

2. claims: 8,11-13,20,21,24-30 (completely), 22,23,31,32
(partially)

IL-17RC polypeptides and methods related thereto.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2006/037950

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material

☒

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☒

on paper

☒

in electronic form

c. time of filing/furnishing

☒

contained in the international application as filed

☒

filed together with the international application in electronic form

☐

furnished subsequently to this Authority for the purpose of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/037950

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005010044	A2	03-02-2005	
		AU 2004259638 A1	03-02-2005
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