

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 March 2001 (08.03.2001)

PCT

(10) International Publication Number
WO 01/16180 A3

- (51) International Patent Classification⁷: C07K 14/705, 16/28, A61K 38/17, 39/395, A61P 19/10
- (21) International Application Number: PCT/US00/23276
- (22) International Filing Date: 24 August 2000 (24.08.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/151,250 27 August 1999 (27.08.1999) US
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- (88) Date of publication of the international search report:
13 September 2001
- 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: CD40 AGONIST COMPOSITIONS AND METHODS OF USE

(57) Abstract: Disclosed are uses of compositions containing one or more CD40 agonists, such as CD40 ligands and/or agonistic anti-CD40 antibodies, to reduce or prevent cell death, or apoptosis, in bone cells. Methods of treating or preventing bone loss, including osteoporosis, as well as methods of reducing or eliminating the bone loss associated with steroid administration are also provided. Further provided are a variety of therapeutic kits and cocktails.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/23276

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K14/705 C07K16/28 A61K38/17 A61K39/395 A61P19/10

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

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, BIOSIS, WPI Data, STRAND, MEDLINE, SCISEARCH, BIOTECHNOLOGY ABS, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>EP 0 823 478 A (SMITHKLINE BEECHAM CORP) 11 February 1998 (1998-02-11) cited in the application</p> <p>page 3, line 10 - line 15 page 3, line 32 - line 34 page 3, line 51 - line 55 ---</p>	<p>1,2, 19-24, 28,29, 34, 36-38,40</p>
A	<p>EP 0 585 943 A (SQUIBB BRISTOL MYERS CO) 9 March 1994 (1994-03-09) cited in the application abstract; figures 7,8 page 2, line 55 -page 3, line 14 --- -/---</p>	<p>1-3,35</p>



Further documents are listed in the continuation of box C.



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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

27 February 2001

Date of mailing of the international search report

07/03/2001

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INTERNATIONAL SEARCH REPORT

Intr ional Application No

PCT/US 00/23276

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 93 08207 A (IMMUNEX CORP) 29 April 1993 (1993-04-29) abstract page 3, line 17 - line 24; figure 3 page 5, line 20 -page 6, line 34 page 9, line 34 -page 10, line 7 page 25, line 11 - line 36 page 42, line 5 - line 32 ---	1-6
A	BUSKE C ET AL: LEUKEMIA, vol. 11, no. 11, November 1997 (1997-11), pages 1862-1867, XP000926204 cited in the application abstract ---	7-10
A	BJÖRCK P. ET AL.: IMMUNOLOGY., vol. 83, no. 3, November 1994 (1994-11), pages 430-437, XP000926198 OXFORD GB ISSN: 0019-2805 cited in the application abstract ---	7-10
A	LEDBETTER J A ET AL.: CIRCULATORY SHOCK, vol. 44, no. 2, October 1994 (1994-10), pages 67-72, XP000926202 NEW YORK US cited in the application abstract ---	7-10
X,P	AHUJA S.S. ET AL.: "CD40 ligand is an anti-apoptotic factor for bone cells" JOURNAL OF BONE AND MINERAL RESEARCH, vol. 14, no. sup.1, September 1999 (1999-09), page S345 XP000926192 GB abstract -----	1-6, 18-25, 28-32, 34-40

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Present claims 1-40 relate to a compound defined by reference to a desirable characteristic or property, namely being a CD40 agonist, especially a CD40 ligand.

The claims cover all compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only one of such compounds, namely CD40L (see example page 87-89). In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the compound by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the CD40 ligands as defined in Table 1 (see page 25 of description) or oligomeric forms thereof and those defined in claims 3 and 6 as well as the antibodies defined in claim 10 and fragments thereof.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/23276

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