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(54) Title: METHODS OF THERAPY FOR B-CELL MALIGNANCIES

(57) Abstract: Methods of therapy for B-cell malignancies are provided. The methods comprise administering a therapeutically effective amount of an antagonist anti-CD40 antibody or antigen-binding fragment thereof to a patient in need thereof. The antagonist anti-CD40 antibody or antigen-binding fragment thereof is free of significant agonist activity when the antibody binds a CD40 antigen on a normal human B cell, exhibits antagonist activity when the antibody binds a CD40 antigen on a malignant human B cell, and can exhibit antagonist activity when the antibody binds a CD40 antigen on a normal human B cell. Antagonist activity of the anti-CD40 antibody or antigen-binding fragment thereof beneficially inhibits proliferation and/or differentiation of malignant human B cells.



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INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61P35/00 A61K39/395 //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)

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)

BIOSIS, EMBASE, WPI Data, PAJ, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	S. FUNAKOSHI ET AL.: "Inhibition of human B-cell lymphoma growth by CD40 stimulation." BLOOD, vol. 83, no. 10, 15 May 1994 (1994-05-15), pages 2787-2794, XP001064643 New York, NY, USA abstract materials and methods - antibodies ---	1-5, 8-11, 13-18
A	EP 0 945 465 A (CHIRON CORPORATION) 29 September 1999 (1999-09-29) examples claims --- -/--	1-5, 7-18, 20, 21



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

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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.
A	J. KWEKKEBOOM ET AL.: "CD40 plays an essential role in the activation of human B cells by murine EL4B5 cells." IMMUNOLOGY, vol. 79, no. 3, July 1993 (1993-07), pages 439-444, XP002029781 Oxford, GB cited in the application the whole document	1-21
P,X	WO 01 24823 A (CHIRON CORPORATION) 12 April 2001 (2001-04-12) page 3, line 22 - line 24 page 7, line 18 - line 20 examples claims	1-21
E	WO 01 83755 A (GEMINI SCIENCE, INC.) 8 November 2001 (2001-11-08) example 3 claims	1,2,6,8, 9,13-15, 19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/30961

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 945465	A	29-09-1999	US 5397703 A	14-03-1995
			US 5869050 A	09-02-1999
			US 5677165 A	14-10-1997
			EP 0945465 A1	29-09-1999
			CA 2125472 A1	20-01-1994
			EP 0651797 A1	10-05-1995
			JP 7509359 T	19-10-1995
			WO 9401547 A2	20-01-1994
			US 5747034 A	05-05-1998
			US 6056959 A	02-05-2000
			US 6004552 A	21-12-1999
			US 6315998 B1	13-11-2001
			US 5874082 A	23-02-1999
WO 0124823	A	12-04-2001	AU 1072701 A	10-05-2001
			WO 0124823 A1	12-04-2001
WO 0183755	A	08-11-2001	AU 5921501 A	12-11-2001
			WO 0183755 A2	08-11-2001