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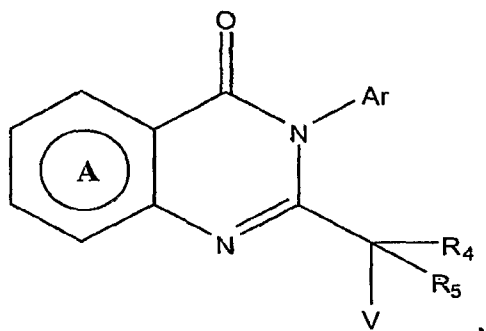
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(54) Title: N-ALKYL SUBSTITUTED PIPERAZINYLMETHYLQUINAZOLINONES AND AZEPANYLMETHYLQUINA-  
ZOLINONES



(57) Abstract: Compounds represented by Structural Formula  
(I) : are useful, for example, in the effective killing or reduction  
in rate of proliferation of cancer cells, such as in patients suf-  
fering from cancer. In addition to the compounds themselves,  
the invention provides pharmaceutical compositions of the com-  
pounds and method of treatment using the compounds.

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# INTERNATIONAL SEARCH REPORT

International application No <b>PCT/US2007/016996</b>
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
INV. A61K31/517 A61P35/00 C07D239/90		
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) C07D A61K A61P		
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, BEILSTEIN Data		
<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	DOLMA S ET AL: "Identification of genotype-selective antitumor agnets using synthetic lethal chemical screening in engineered human tumor cells" CANCER CELL, XX, US, vol. 3, 2003, pages 285-296, XP002392895 ISSN: 1535-6108 page 287; figure 2; example Erastin -----	1-58
X	US 2004/248221 A1 (STOCKWELL BRENT R [US]) 9 December 2004 (2004-12-09) page 16; claims 7,8 ----- -/--	1-58
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <span style="margin-left: 100px;"><input checked="" type="checkbox"/> See patent family annex.</span>		
* 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		
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Name and mailing address of the ISA/ 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		Authorized officer  <b>Baston, Eckhard</b>

## INTERNATIONAL SEARCH REPORT

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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.
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 885920-34-3 29 May 2006 (2006-05-29), MICROCHEMISTRY LTD.: "CHEMICAL LIBRARY" XP002466896 abstract -----	1-58
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 885920-31-0 29 May 2006 (2006-05-29), MICROCHEMISTRY LTD.: "CHEMICAL LIBRARY" XP002466897 abstract -----	1-58
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 885920-29-6 29 May 2006 (2006-05-29), MICROCHEMISTRY LTD.: "CHEMICAL LIBRARY" XP002466898 abstract -----	1-58
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 885920-17-2 29 May 2006 (2006-05-29), MICROCHEMISTRY LTD.: "CHEMICAL LIBRARY" XP002466899 abstract -----	1-58
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 885920-10-5 29 May 2006 (2006-05-29), MICROCHEMISTRY LTD.: "CHEMICAL LIBRARY" XP002466900 abstract -----	1-58
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 885919-94-8 29 May 2006 (2006-05-29), MICROCHEMISTRY: "CHEMICAL LIBRARY" XP002466901 abstract -----	1-58
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 885919-75-5 29 May 2006 (2006-05-29), MICROCHEMISTRY LTD.: "CHEMICAL LIBRARY" XP002466902 abstract -----	1-58
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## INTERNATIONAL SEARCH REPORT

International application No

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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.
X	DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 8855919-74-4 29 May 2006 (2006-05-29), MICROCHEMISTRY LTD.: "CHEMICAL LIBRARY" XPO02466903 abstract	1-58
X	----- DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 723739-52-4 8 August 2004 (2004-08-08), AMBINTER: "CHEMICAL LIBRARY" XPO02466904 abstract	24-58
X	----- DATABASE REGISTRY CHEMICAL ABSTRACTS, COLUMBUS, OHIO; REGISTRY NUMBER 723739-48-8 8 August 2004 (2004-08-08), AMBINTER: "CHEMICAL LIBRARY" XPO02466905 abstract	24-58
X	----- WO 2004/018058 A (CYTOKINETICS INC [US]; BERGNES GUSTAVE [US]) 4 March 2004 (2004-03-04) claim 1	1-58
X	----- ABDEL-ALIM A-A M ET AL: "SYNTHESIS AND BIOLOGICAL ACTIVITIES OF 6-BROMO-2,3-DISUBSTITUTED-4-(3 H)-QUINAZOLINONES" INDIAN JOURNAL OF CHEMISTRY, SECTION B: ORGANIC, INCL.MEDICINAL, PUBLICATIONS & INFORMATIONS DIRECTORATE, NEW DELHI, vol. 33B, 1 March 1994 (1994-03-01), pages 260-265, XP008066973 ISSN: 0019-5103 example 11a	1
X	----- TANI J ET AL: "STUDIES ON BIOLOGICALLY ACTIVE HALOGENATED COMPOUNDS. ÖII. CHEMICAL MODIFICATIONS OF 6-AMINO-2-FLUOROMETHYL-3-(O-TOLY)-4(3H)-QU INAZOLINONE AND THE CNS DEPRESSANT ACTIVITIES OF RELATED COMPOUNDS" CHEMICAL AND PHARMACEUTICAL BULLETIN, PHARMACEUTICAL SOCIETY OF JAPAN, TOKYO, vol. 27, no. 11, 1 November 1979 (1979-11-01), pages 2675-2687, XP000608776 ISSN: 0009-2363 examples 21h,21j           ----- -/--	1

## INTERNATIONAL SEARCH REPORT

International application No

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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,X	WO 2007/076087 A (PROLEXYS PHARMACEUTICALS INC [US]; QI LONGWU [US]; VENKAT RAJ GOPAL [U] 5 July 2007 (2007-07-05) the whole document -----	1-58
P,X	WO 2006/081337 A (WHITEHEAD BIOMEDICAL INST [US]; NEW YORK THE TRUSTEES OF COLUM [US]; S) 3 August 2006 (2006-08-03) the whole document -----	1-58
P,X	WO 2006/081331 A (PROLEXYS PHARMACEUTICALS INC [US]; WHITEHAED INST FOR BIOMEDICAL [US];) 3 August 2006 (2006-08-03) the whole document -----	1-58

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2007/016996

## Box No. 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:
  
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 No. 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 allsearchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
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.:

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- 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: 1-58 (part)

Quinazolinone compounds, in which Ar= 2-alkoxyphenyl, V= six membered optionally substituted polymethylene-1,4-diamines, ring A unsubstituted (H on all available positions), as seen in the specification.

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2. claims: 1-58 (part)

Quinazolinone compounds, in which Ar= 2-alkoxyphenyl, V= seven membered optionally substituted polymethylene-1,4-diamine, ring A unsubstituted (H on all available positions), as seen in the specification.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004248221	A1	09-12-2004	NONE
WO 2004018058	A	04-03-2004	AU 2003262747 A1 11-03-2004 EP 1539180 A2 15-06-2005 JP 2005536553 T 02-12-2005
WO 2007076087	A	05-07-2007	AU 2006330883 A1 05-07-2007
WO 2006081337	A	03-08-2006	NONE
WO 2006081331	A	03-08-2006	AU 2006208084 A1 03-08-2006 CA 2595848 A1 03-08-2006 EP 1848698 A2 31-10-2007 KR 20080009048 A 24-01-2008 US 2006211683 A1 21-09-2006