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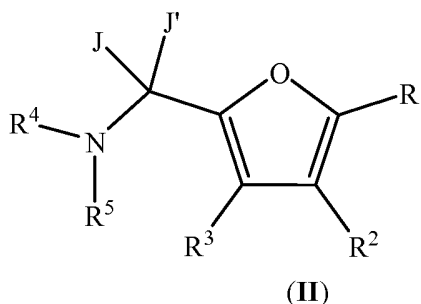
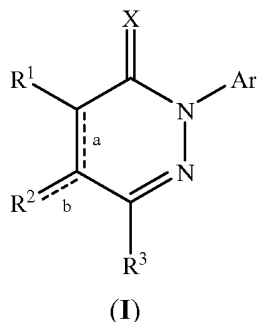
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(88) Date of publication of the international search report:

18 December 2008

(54) Title: PYRIDAZINONES AND FURAN-CONTAINING COMPOUNDS



(57) Abstract: The present invention is directed to pyridazinone compounds of formula (I) and furan compounds of formula (II), pharmaceutical compositions of compounds of formula (I) and (II), kits containing these compounds, methods of syntheses, and a method of treatment of a proliferative disease in a subject by administration of a therapeutically effective amount of a compound of formulae (I) or (II). Both classes of compounds were identified through screening of a collection of small molecule libraries.

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2007/088543

## A. CLASSIFICATION OF SUBJECT MATTER

INV. C07D237/14 C07D237/22 C07D401/04 C07D403/04 C07D403/12  
C07D405/04 C07D405/12 C07D405/14 C07D409/14 C07D471/04  
C07D495/04 A61K31/50 A61K31/501 A61K31/5025 A61P35/00

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)

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, WPI Data, BEILSTEIN 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>WO 03/059891 A (PHARMACIA CORPORATION) 24 July 2003 (2003-07-24)</p> <p>page 56, line 10 - page 58, line 4; claims; examples; tables</p> <p style="text-align: center;">----- -/--</p>	<p>1-3,5, 12-14, 18-21, 23,34, 42,43, 45, 52-54, 58-61, 75,81-83</p>

☒ 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.

\*G\* document member of the same patent family

Date of the actual completion of the international search

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/088543

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	J. W. LYGA: "The Reaction of 2-Substituted 4,5-dichloro-3(2H)pyridazinones with Alkoxides and Alkylthiolates." JOURNAL OF HETEROCYCLIC CHEMISTRY, vol. 25, 1988, pages 1757-1760, XP009098016 table 1	1-3,5,7, 12-15, 18,23, 24,35, 36,41
X	Y. MAKI ET. AL.: "The Ring contraction of Pyridazinones to Pyrazoles" CHEMICAL AND PHARMACEUTICAL BULLETIN, vol. 19, no. 8, 1971, pages 1635-1640, XP009098013 tables 1-4	1-3,5-7, 12-14, 18,23, 35,36,41
X	W. SCHREIBER: "Die Eignung von 4,5-Dichlor-pyridazinonen-(6)-zur selektiven Umsetzung von Mercaptogruppen." HOPPE-ZEYLERS ZEITSCHRIFT FÜR PHYSIOLOGISCHE CHEMIE, vol. 348, 1967, pages 371-377, XP009098012 table 8	1-3,5, 12-14, 18,23
X	Y. MAKI ET. AL.: "Studies of Rearrangement Reaction. VIII. Ring-contraction from Pyridazinone Derivatives to Pyrazolone Derivatives." CHEMICAL AND PHARMACEUTICAL BULLETIN, vol. 12, no. 2, 1964, pages 176-182, XP009098014 Charts 1-4, Experimental Section	1-3,5,6, 12-14, 18,23, 35,36,41
X	R. N. CASTLE ET. AL.: "Pyridazines. III. The Synthesis of Substituted Pyridazines. I." JOURNAL OF HETEROCYCLIC CHEMISTRY, vol. 2, 1965, pages 463-472, XP009098015  page 464; tables II,VI	1-3,5,7, 12-14, 18,23, 35,36, 41,42, 52-54, 58,60, 63,75, 76,81
X	B. D. SCHÖBER ET. AL.: "Pyridazines with Hetero-Atom Substituents. in Positions 3 and 5, Part VII. Halogenation of 2-Aryl-5-hydroxy-pyridazin-3(2H)-ones in Position 4." MONATSCHEFTE FÜR CHEMIE, vol. 121, 1990, pages 565-569, XP002475412 page 565 - page 566	1,2, 12-14, 18,19, 23-25, 35,36
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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/088543

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	H. R. HENSCHER ET. AL.: "Über neue Baumwollfarbstoffe" ANGEWANDTE CHEMIE, vol. 77, no. 7, 1965, pages 303-313, XP002475413 page 303 - page 306	1-3,5, 14,18, 19,22, 23,35,36
X	J. J. KIM ET. AL.: "Efficient N-arylation of Pyridazin-3(2H)-ones." TETRAHEDRON LETTERS, vol. 45, 2004, pages 8781-8784, XP002475414 page 8782, scheme 1	1-3,5, 12-14, 18,19, 22,23, 35,36,41
X	J ZHANG ET. AL.: "Confirmation and prevention of halogen exchange: practical and highly efficient one-pot synthesis of dibromo- and dichloropyridazinones." TETRAHEDRON LETTERS, vol. 47, 2006, pages 8733-8735, XP002475415 table 1	1-3,5, 12-14, 18,19, 23,28, 29,35, 36,41
X	EP 0 003 805 A (BASF) 15 February 1979 (1979-02-15)  claims; tables 2-6	1-3,6, 18,19, 21, 23-25,35
X	DE 14 20 969 A (BASF) 24 October 1968 (1968-10-24)  claims; examples	1-3,5, 14,18, 19,23, 35,36,41
X	US 3 555 026 A (REICHENDER ET. AL.) 12 January 1971 (1971-01-12)  claims; examples	1-3, 12-14, 18,35
X	DE 14 20 011 B (BASF) 23 June 1959 (1959-06-23)  claims; examples	1-3,14, 18,19, 21,23, 28,29, 35,36
X	DE 19 30 002 A (BASF) 17 December 1970 (1970-12-17)  example 4	1-3,14, 18,19, 22,23, 26,27, 35,36,41

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/088543

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 25 26 643 A (BASF) 30 December 1976 (1976-12-30)  claims; examples	1,2, 12-14, 18,19, 24,25,35
X	GB 1 124 659 A (BASF) 21 August 1968 (1968-08-21)  claims; examples	1-3,7, 14,18, 19, 21-25, 28,29, 35,36
X	GB 917 849 A (BASF) 6 February 1963 (1963-02-06)  claims; examples	1-3, 12-14, 18,23, 35,36
X	K. DURY: "Neue Wege in der Chemie der Pyridazone" ANGEWANDTE CHEMIE, vol. 77, no. 7, 1965, pages 282-290, XP002475416 page 283, paragraph 2 - page 289, paragraph 9; tables 1,2	1-3,5-8, 12-14, 18,23,35
X	A. OSTROWICZ ET. AL.: "Vicarious Nucleophile Substitution of Hydrogen in Pyridazines." TETRAHEDRON LETTERS, vol. 33, no. 33, 1992, pages 4787-4790, XP002475417 page 4787; figure 1	1-4,14, 18,23, 35,36
X	Y-M PU ET. AL.: "An efficient copper catalysed N-arylation of pyridazinones with a structurally well- defined copper complex." TETRAHEDRON LETTERS, vol. 47, no. 2, 9 January 2006 (2006-01-09), pages 149-153, XP002475418 tables 1,2	1-4,14, 18, 23-25,35
X	EP 1 130 015 A (NIHON NOHYAKU CO. LTD.) 5 September 2001 (2001-09-05)  claims; examples; table 1	1,2, 14-19, 21-25, 35,42, 52-59, 61-65, 68,69, 75,81

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2007/088543

## 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.: 42-83  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claims 42-83 are drawn to a therapeutic method of treatment, the search has been carried out based on the alleged effects of the compounds and compositions.
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 all searchable 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.:  
1-83, 99

### 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: 1-83, 99

Pyridazine derivatives and their use for the treatment of proliferative diseases

2. claims: 84-98

Furan derivatives and their use for the treatment of proliferative diseases.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/088543

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/088543

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