

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
3 July 2008 (03.07.2008)

PCT

(10) International Publication Number  
WO 2008/079521 A3

## (51) International Patent Classification:

*C07D 471/16 (2006.01)* A61K 31/435 (2006.01)  
*C07D 471/22 (2006.01)* A61K 31/495 (2006.01)  
*C07D 487/16 (2006.01)* A61P 11/06 (2006.01)  
*A61K 31/395 (2006.01)* A61P 37/06 (2006.01)

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## (21) International Application Number:

PCT/US2007/083134

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, 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, ZW

## (30) Priority Data:

60/855,862 1 November 2006 (01.11.2006) US

(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, MT, 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).

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## Published:

— with international search report

## (72) Inventors; and

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

9 October 2008

WO 2008/079521 A3

## (54) Title: TRICYCLIC HETEROARYL COMPOUNDS USEFUL AS INHIBITORS OF JANUS KINASE

(57) Abstract: The present invention relates to compounds useful as inhibitors of protein kinases, particularly of JAK family kinases. The invention also provides pharmaceutically acceptable compositions comprising said compounds and methods of using the compositions in the treatment of various disease, conditions, or disorders.

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2007/083134

A. CLASSIFICATION OF SUBJECT MATTER	INV. C07D471/16	C07D471/22	C07D487/16	A61K31/395	A61K31/435
	A61K31/495	A61P11/06	A61P37/06		

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, CHEM ABS Data, BEILSTEIN Data, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006/096270 A (VERTEX PHARMA [US]; LEDEBOER MARK W [US]; PIERCE ALBERT C [US]; BEMIS) 14 September 2006 (2006-09-14) examples 1-31	1-23

 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<sup>1</sup>" 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	Date of mailing of the international search report
7 July 2008	17/07/2008
Name and mailing address of the ISA/ EPO European Patent Office, P.B. 5818 Patentlaan 2 NL- 2200 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl Fax: (+31-70) 340-3016	Authorized officer  Scheid, Günther

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2007/083134

### 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:  
Although claims 17-20 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/composition.
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:

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 inventions for which fees were paid. The search report is not restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.
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, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

### 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.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No

PCT/US2007/083134

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 2006096270	A 14-09-2006	AU 2006221065	A1	14-09-2006
		CA 2596830	A1	14-09-2006
		CN 101142218	A	12-03-2008
		EP 1844050	A1	17-10-2007
		KR 20070104641	A	26-10-2007
		NO 20074431	B	31-08-2007