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31 May 2007

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Previous Correction:

see PCT Gazette No. 16/2007 of 19 April 2007

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.

(54) Title: SPHINGOSINE KINASE INHIBITORS AND METHODS OF THEIR USE

(57) Abstract: The invention relates to compounds, pharmaceutical compositions thereof, and methods for inhibiting sphingosine kinase and for treating or preventing hyperproliferative disease, inflammatory disease, or angiogenic disease.

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/030327

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07D277/48 C07D277/46 C07D277/42 C07D277/56 A61K31/426
A61K31/427 A61K31/4439 A61K31/496 A61K31/5377 A61K31/40
A61K31/4409 A61K31/4465 A61K31/167 A61K31/423 A61K31/428

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 C07C 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, 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	WO 03/105840 A (PENNSYLVANIA STATE RESEARCH FOUNDATION) 24 December 2003 (2003-12-24) the whole document, particularly page 30, compound 3, and claim 3	1-3,8-21
X	FREY R R ET AL: "Trifluoromethyl ketones as inhibitors of histone deacetylase" BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, vol. 12, no. 23, 2 December 2002 (2002-12-02), pages 3443-3447, XP001202152 the whole document, particularly compound 20	1,2,8-21

☒ 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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29/03/2007

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/030327

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WADA C K ET AL: "Alpha-keto amides as inhibitors of histone deacetylase" BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, vol. 13, no. 19, 16 October 2003 (2003-10-16), pages 3331-3335, XP002409578 the whole document, particularly compounds 28-32	1,2,8-21
X	KREUTZBERG A ET AL: "Entzündungshemmende Wirkstoffe. XI. Ringschlussreaktion an 5-Phenyl-2-thiobiuret" JOURNAL OF HETEROCYCLIC CHEMISTRY, vol. 25, 1988, pages 1821-1824, XP002409579 the whole document, particularly compounds 3	1,2,8-21
X	DATABASE CHEMCATS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; XP002409589 retrieved from STN Database accession no. 2005:1558453 RN 304864-22-0 & "Interchim Intermediates (Catalog)" 18 January 2005 (2005-01-18), INTERCHIM Order Number F0098-0280	1-3
X	DATABASE CHEMCATS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; XP002409590 retrieved from STN Database accession no. 2005:1111268 RN 444155-73-1 & "Interchim Intermediates (Catalog)" 18 January 2005 (2005-01-18), INTERCHIM Order Number BAS 01842782	1-3
X	DATABASE CHEMCATS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; XP002409591 retrieved from STN Database accession no. 2001:23459 RN 313274-50-9 & "Pharma Library Collection (Catalog)" 15 March 2005 (2005-03-15), PHARMA LIBRARY Order Number NS60852	1-3

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/030327

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 CHEMCATS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; XP002409592 retrieved from STN Database accession no. 2005:3173847 RN 313469-46-4 & "Ambinter Stock Screening Collection (Catalog)" 3 July 2005 (2005-07-03), AMBINTER Order umber T0503-5521 -----	1-3
X	DATABASE CHEMCATS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; XP002409593 retrieved from STN Database accession no. 2005:3449916 RN 802931-65-3 & "Ambinter Stock Screening Collection (Catalog)" 3 July 2005 (2005-07-03), AMBINTER Order Number T5370094 -----	1-3
X	DATABASE CHEMCATS CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; XP002409594 retrieved from STN Database accession no. 2001:1425611 RN 331739-59-4 & "Screening Collection (Catalog)" 11 August 2003 (2003-08-11), SCREENING Order Number A1344/0060704 -----	1-3
X	DATABASE REGISTRY CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; XP002409595 retrieved from STN RN 805285-51-2, 551925-08-7, 476316-86-6 and 457941-23-0 -----	1-3
X	US 2005/054627 A1 (CARTER P H ET AL) 10 March 2005 (2005-03-10) paragraphs [0616] and [0617] -----	1-3
X	WO 2004/005267 A (JANSSEN PHARMACEUTICA, N.V.) 15 January 2004 (2004-01-15) example 1, first step ----- -/--	1-3

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/030327

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	VIG O P ET AL: "Insect juvenile hormone analogues: part XI. Syntheses of some heteroaromatic undecenyl & geranyl amides & their homologues" INDIAN JOURNAL OF CHEMISTRY, vol. 21B, November 1982 (1982-11), pages 1052-1055, XP008072146 the whole document, particularly compound XIII	1-3
X	KATAGI T ET AL: "Syntheses and antiinflammatory activity of malonamic acid, malonamate and malonamide derivatives of some heterocyclic compounds" CHEMICAL AND PHARMACEUTICAL BULLETIN, vol. 33, no. 11, 1985, pages 4878-4888, XP001053177 the whole document, particularly compounds 4-10 and 21-24	6,8-21
X	CHEMICAL ABSTRACTS, vol. 54, no. 15, 10 August 1960 (1960-08-10), Columbus, Ohio, US; abstract no.: 15404e, XP002422374 abstract & JP 34 006630 B (DAI-NIPPON DRUG MANUFG. CO) 31 July 1959 (1959-07-31)	6,8-21
X	EP 1 388 341 A (AVENTIS PHARMA DEUTSCHLAND GMBH) 11 February 2004 (2004-02-11) the whole document	6,8-21
X	COBURN R A ET AL: "Potential salicylamide antiplaque agents: in vitro antibacterial activity against Actinomyces viscosus" JOURNAL OF MEDICINAL CHEMISTRY, vol. 24, 1981, pages 1245-1249, XP000992845 the whole document, particularly compounds 6 and 11	6,8-21
X	US 3 094 462 A (GARDOCKI J F ET AL) 18 June 1963 (1963-06-18) the whole document, particularly example II	6,8-21
X	US 4 171 364 A (PAGET C J ET AL) 16 October 1979 (1979-10-16) the whole document, particularly table 11	6,8-21
X	WO 01/57008 A (BASF AKTIENGESELLSCHAFT) 9 August 2001 (2001-08-09) the whole document	6,8-21

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/030327

Box 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 9-21 are directed to a diagnostic method practised on 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 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 fee, this Authority did not invite payment of any additional fee.
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.:

1-3, 6, 7, and 8-21 in part
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.
- ☒ 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: 1-3, and 8-21 in part

Thiazole derivatives and their use

2. claims: 4, 5 and 8-21 in part

Biphenyl derivatives and their use

3. claims: 6, 7 and 8-21 in part

Benzoxa(thia)zole derivatives and their use

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/030327

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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