

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 November 2006 (23.11.2006)

PCT

(10) International Publication Number
WO 2006/123184 A3

(51) International Patent Classification:
A61K 31/10 (2006.01) *A61P 35/02* (2006.01)
A61P 35/00 (2006.01)

(21) International Application Number:
PCT/GB2006/050109

(22) International Filing Date: 16 May 2006 (16.05.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0509932.0 17 May 2005 (17.05.2005) GB
0521547.0 24 October 2005 (24.10.2005) GB

(71) Applicant (for all designated States except US): **MERCK SHARP & DOHME LIMITED** [GB/GB]; Hertford Road, Hoddesdon Hertfordshire EN11 9BU (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEWIS, Huw David** [GB/GB]; Terlings Park, Eastwick Road, Harlow Essex CM20 2QR (GB). **HARRISON, Timothy** [GB/GB]; Terlings Park, Eastwick Road, Harlow Essex CM20 2QR (GB). **SHEARMAN, Mark, Steven** [GB/GB]; Terlings Park, Eastwick Road, Harlow Essex CM20 2QR (GB).

(74) Agent: **BUCHAN, Gavin, MacNicol**; Merck Sharp & Dohme Limited, European Patent Department, Hertford Road, Hoddesdon, Hertfordshire EN11 9BU (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(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, 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).

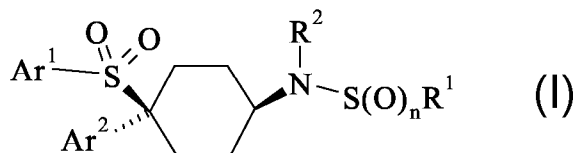
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
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: SULPHONAMIDO-SUBSTITUTED CYCLOHEXYL SULPHONES FOR TREATMENT OF CANCER



(57) Abstract: Compounds of formula (I) are disclosed for treatment of cancer.



WO 2006/123184 A3

INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2006/050109

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K31/10 A61P35/00 A61P35/02

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)

A61K

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, EMBASE, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2004/031139 A (MERCK SHARP & DOHME [GB]; CHURCHER IAN [GB]; HARRISON TIMOTHY [GB]; KE) 15 April 2004 (2004-04-15) cited in the application the whole document	1-12
Y	WO 2004/073630 A2 (ROSKAMP RES LLC [US]; PARIS DANIEL [US]; MULLAN MICHAEL J [US]) 2 September 2004 (2004-09-02) claims 1-3,15-17 ----- -/-	1-12

☒ 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.

Z document member of the same patent family

Date of the actual completion of the international search

18 January 2007

Date of mailing of the international search report

06/02/2007

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

Collura, Alessandra

INTERNATIONAL SEARCH REPORT

International application No

PCT/GB2006/050109

C(Continuation), DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WENG A P ET AL: "Activating mutations of NOTCH1 in human T cell acute lymphoblastic leukemia" SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, US, vol. 306, no. 5694, 8 October 2004 (2004-10-08), pages 269-271, XP002402577 ISSN: 0036-8075 cited in the application page 270, right-hand column, last paragraph -----	1-12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2006/050109

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.: 12
because they relate to subject matter not required to be searched by this Authority, namely:
Although claim 12 is 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 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 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.:
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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2006/050109

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004031139 A	15-04-2004	AU 2003269211 A1	23-04-2004
		CA 2500969 A1	15-04-2004
		EP 1551799 A1	13-07-2005
		JP 2006501295 T	12-01-2006
		US 2004121995 A1	24-06-2004
WO 2004073630 A2	02-09-2004	AU 2004212965 A1	02-09-2004
		BR PI0407597 A	21-02-2006
		CA 2516259 A1	02-09-2004
		CN 1777436 A	24-05-2006
		EP 1596878 A2	23-11-2005
		JP 2006517979 T	03-08-2006