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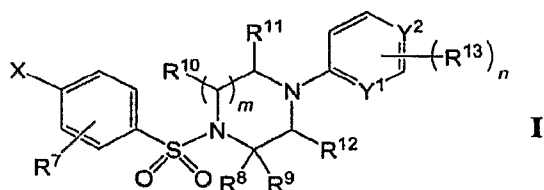
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- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, 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, ZM, ZW.
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13 December 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:** DIAZA HETEROCYCLIC SULFONAMIDE DERIVATIVES AND THEIR USES



(57) **Abstract:** Diaza heterocyclic sulfonamide derivatives according to formula I have therapeutic utility, particularly in the treatment of diabetes, obesity and related conditions and disorders: I where R⁷, R⁸, R⁹, R¹⁰, R¹¹, R¹², R¹³, X, Y¹, Y², m, and n are set forth in the description.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/047353

A. CLASSIFICATION OF SUBJECT MATTER
 INV. C07D295/22 C07D401/04 C07D403/06 A61P3/06 A61K31/496

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 A61P 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, WPI Data, EMBASE, BEILSTEIN Data, CHEM ABS Data

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/092117 A (KALYPSYS INC [US]; LIU KEVIN [US]; MALECHA JAMES WILLIAM [US]; NOBLE S) 28 October 2004 (2004-10-28) page 5, line 22; claims 1,12,14,115; examples	1,28
X	WO 97/28128 A (ZENECA LTD [GB]; BROWN GEORGE ROBERT [GB]; STOKES ELAINE SOPHIE ELIZAB) 7 August 1997 (1997-08-07) page 2, line 15 - page 8, line 24; claims; example 26	1,28
X	WO 93/12086 A (SS PHARMACEUTICAL CO [JP]) 24 June 1993 (1993-06-24) page 1 - page 2; claims; example 46	1,28
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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.
 - * & * document member of the same patent family

Date of the actual completion of the international search 30 May 2007	Date of mailing of the international search report 12/09/2007
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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 Härtinger, Stefan
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/047353

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/063247 A (AMGEN SF LLC [US]; JAPAN TOBACCO INC [JP]; DEGRAFFENREID MICHAEL R [US] 14 July 2005 (2005-07-14) paragraphs [0151], [0172]; claims; compound 19 page 9, line 16 - line 17 -----	1,28
X	US 2005/234046 A1 (ZHAO CUNXIANG [US] ET AL) 20 October 2005 (2005-10-20) paragraph [0112]; claims; examples; table 1 -----	1,28
X	WO 2005/115983 A (KALYPSYS INC [US]; ZHAO CUNXIANG [US]; MALECHA JAMES W [US]; NOBLE STE) 8 December 2005 (2005-12-08) claims; examples -----	1,28
X	WO 2005/113542 A (ELAN PHARM INC [US]; NEITZEL MARTIN L [US]; MARUGG JENNIFER L [US]) 1 December 2005 (2005-12-01) page 32, paragraph 2; claims; examples page 7, line 26 -----	1-37
A	WO 2004/037251 A (STERIX LTD [GB]; VICKER NIGEL [GB]; SU XIANGDONG [GB]; GANESHAPILLAI D) 6 May 2004 (2004-05-06) page 5, line 15 - line 17; claims; examples -----	1-37
A	FOTSCH C ET AL: "11[beta]-Hydroxysteroid dehydrogenase-1 as a therapeutic target for metabolic diseases" EXPERT OPINION ON THERAPEUTIC PATENTS, ASHLEY PUBLICATIONS, GB, vol. 15, no. 3, 1 March 2005 (2005-03-01), pages 289-303, XP002376609 ISSN: 1354-3776 the whole document -----	1-37
P,X	WO 2006/105127 A (TAKEDA SAN DIEGO INC [US]; AERTGEERTS KATHLEEN [US]; BRENNAN NANCY K [US]) 5 October 2006 (2006-10-05) page 90; claims; example 22 -----	1-37
P,X	WO 2005/118538 A (AMGEN INC [US]; DEGRAFFENREID MICHAEL R [US]; POWERS JAY P [US]; SUN D) 15 December 2005 (2005-12-15) claims; examples -----	1-37

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/047353

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:

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.:

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.:

see annex

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: 1-7(part),8,9-37(part)

Compounds with Y1 = Y2 = carbon

2. claims: 1-7(part),9-37(part)

Compounds with Y1 = carbon and Y2 = nitrogen; or Y2 = carbon and Y1 = nitrogen

3. claims: 1-7(part),9-36(part)

Compounds with Y1 = Y2 = nitrogen

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/047353

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