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- with international search report
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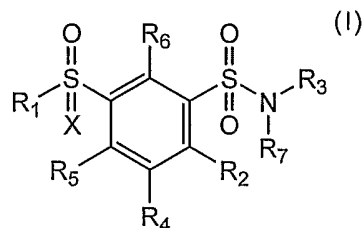
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[Continued on next page]

(54) Title: DIARYLSULFONE SULFONAMIDES AND USE THEREOF

(57) Abstract: Compounds of Formula (I), or pharmaceutically acceptable salts thereof, are provided, which are modulators of secreted frizzled related protein-1. The compounds, and compositions containing the compounds, can be used to treat a variety of disorders, including osteoporosis.





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.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/018886

A. CLASSIFICATION OF SUBJECT MATTER

INV. C07C317/20 C07C317/22 C07C317/26 C07C317/38 A61K31/445

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)
C07C

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.
X	GB 1 164 829 A (TANABE SEIYAKU CO [JP]) 24 September 1969 (1969-09-24) claims 1-12	1,11,12, 29
X	R.CREMLYN: "Chlorosulfonation of some Diphenyl Derivatives" PHOSPHORUS AND SULFUR, vol. 12, 1982, pages 341-352, XP001247192 page 343; compound 13	1,11,12, 29
Y	DE 199 20 790 A1 (BAYER AG [DE]) 9 November 2000 (2000-11-09) examples; claims	1-52
Y	WO 2005/000244 A2 (ELAN PHARM INC [US]; YEDNOCK THEODORE A [US]; FREEDMAN STEPHEN B [US];) 6 January 2005 (2005-01-06) examples; claims	1-52

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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

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/018886

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 02/072570 A2 (SCHERING CORP [US]; PHARMACOEPIA INC [US]) 19 September 2002 (2002-09-19) examples; claims -----	1-52
Y	CHANG GI CHO ET AL: "Synthesis and Characterization of poly(arylene ether sulfone) copolymers" POLYMER PREPRINTS, vol. 44, no. 2, 2003, pages 649-650, XP001247597 the whole document -----	1-52
Y	H.HORSTMANN: "Chemische Struktur und diuretische Wirkung in der Reihe der 4-Chlor-3-sulfonamido-benzolsulfonamide" ARZNEIMITTEL FORSCHUNG, vol. 17, no. 6, 1967, pages 653-659, XP009074175 the whole document -----	1-52
Y	A.V. TARASOV ET AL: "New 6-Arylsulfonyl-1,2-Benzoisothiazol-3(2H)-o ne 1,1-dioxides" CHEMISTRY OF HETEROCYCLIC COMPOUNDS, vol. 39, no. 1, 2003, pages 119-122, XP001247598 the whole document -----	1-52
Y	V.CECCHETTI ET AL: "o-Chlorobenzenesulfonamidic derivatives" J.MED.CHEM., vol. 36, 1993, pages 157-161, XP009074112 page 157; figure 1 -----	1-52
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Y	G.PAPPALARDO: "Azione degli idrati alcalini sugli o-amino-difenildisolfuri simmetrici e sintesi di fenotiazine sulfonamidiche" GAZZETTA CHIMICA ITALIANA, vol. 90, 1960, pages 648-659, XP009074103 page 649; compound VI -----	1-52

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/018886

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 50 and 51 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 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/US2006/018886

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