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— with international search report

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12 September 2008

(54) Title: SUBSTITUTED 1,3-DIOXANES AND THEIR USES

(57) Abstract: The present invention relates to compounds containing 1,3-dioxane moiety, pharmaceutical compositions thereof, and the use of the compounds and compositions for the modulation of thromboxane A2 or a peroxisome proliferator-activated receptor. The compounds, analogs, and pharmaceutically acceptable salts thereof, and pharmaceutical compositions can be used in the treatment and prevention of cancer.



WO 2008/089463 A3

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/51523

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A01N 43/04 (2008.04); A61K 31/70 (2008.4)

USPC - 514/25

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)

USPC - 514/25 (see search terms below)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC - 514/452, 536/4.1 ; 549/229, 549/375 (see search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

USPTO-WEST - PGPB,USPT,USOC,EPAB,JPAB keywords. 2,4-diphenyl-1,3-dioxanes, PPAR, pharmaceutically acceptable salts, 4-phenyl-1,3-dioxan-5-yl, thromboxane A2, antagonist, treatment of hypertension, sustained release, hydroxypropyl methyl cellulose. INTERNET search - Google - same as for USPTO-WEST.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,775,685 A (BREWSTER et al.) 04 October 1988 (04.10.1988), col 1, ln 10-27, 56-67; col 2, ln 1-34; col 6, ln 42 - col 7, ln 10; col 20, ln 18-22, col 22, ln 1 - col 23, ln 50, Claim 1	1-20, 22-23, 25, 27-29, 33 and 35
Y		21, 24, 26, 37 and 39
Y	Molecular Cancer 2003 Vol. 2, Issue 10, pp 1-12, Lipoxygenase and cyclooxygenase metabolism: new insights in treatment and chemoprevention of pancreatic cancer, (DING et al ), pg 5.	21
Y	WO 2007/021460 A2 (HELLSTROM) 22 February 2007 (22 02 2007), pg 7, ln 17-24; pg 8, ln 28-31; pg 9, ln 28-33; pg 10, ln 5-16; pg 14, ln 1-24, pg 49, ln 14 - pg 50, ln 18.	24, 26, 37 and 39

## D

Further documents are listed in the continuation of Box C.



\* 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 application or patent 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 April 2008 (30.04.2008)

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27 JUN 2008

Name and mailing address of the ISA/US

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# INTERNATIONAL SEARCH REPORT

International application No

PCT/US 08/51523

## 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
- 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 30-32, 34, 36 and 38  
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 all searchable claims
- 2 ☐ As all searchable claims could be searched without effort justifying 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 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 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