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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

29 December 2011

(54) Title: GELATINASE INHIBITORS AND PRODRUGS

(57) Abstract: The invention provides compounds, compositions, and methods for the treatment of diseases, disorders, or conditions that are modulated by matrix metalloproteinases (MMPs). The disease, disorder, or condition can include, for example, stroke, neurological disorders, or ophthalmological disorders. The treatment can include administering a compound or composition described herein, thereby providing a prodrug compound that metabolizes to an active MMP inhibitor in vivo. The MMP inhibition can be selective inhibition, for example, selective inhibition of MMP-2, MMP-9, and/or MMP-14. Thus, the invention provides non-mutagenic prodrug compounds of the formulas described herein that result in the inhibition of MMPs upon in vivo administration.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/027282**A. CLASSIFICATION OF SUBJECT MATTER***C07D 331/02(2006.01)i, A61K 31/38(2006.01)i, A61P 35/00(2006.01)i, A61P 25/00(2006.01)i*

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 331/02; A61K 31/38; A61P 33/00; A61P 25/00

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 practicable, search terms used)

eKOMPASS (KIPO internal), NCBI (PubMed, MeSH), STN (Registry, CAPlus)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	SEBASTEIAN A. TESTERO et al., 'Sulfonate-Containing Thiiranes as Selective Gelatinase Inhibitors', ACS Medicinal Chemistry Letters, 13 December 2010, Vol. 2, No. 2, pp. 177-181, ISSN 1948-5875 See figure 1; schemes 1-2; tables 1-2; abstract.	1-4
X	WO 2006-125208 A1 (MIJOUN LEE et al.) 23 November 2006 See compound 2.3 and 2.5; scheme 2, 4 and 11; table 2; figures 4-5 and 8; pp. 56-57; abstract.	1-4
X	MASAHIRO IKEJIRI et al., 'Potent Mechanism-based Inhibitors for Matrix Metalloproteinases', Journal of Biological Chemistry, 2005, Vol. 280, No. 40, pp. 33992-34002, ISSN 0021-9258 See pp. 33992-33993; figures 1 and 3-7; compounds 3 and 7; table 1; abstract.	1-4
X	MIJOUN LEE et al., 'A Potent Gelatinase Inhibitor with Anti-Tumor-Invasive Activity and its Metabolic Disposition', Chemical Biology & Drug Design, 2009, Vol. 73, No. 2, pp. 189-202, ISSN 1747-0277 See pp. 189-190; compound 2; figure 1; table 1; abstract.	1-4



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 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 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/US2011/027282**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.: 15-20
because they relate to subject matter not required to be searched by this Authority, namely:
The claims pertain to methods for treatment of the human body by therapy, and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(I) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
2. ☒ Claims Nos.: 6, 8, 14, 16, 18-20, 22
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:
Claims 6, 8, 14, 16, 18-20 and 22 are unsearchable, because they are worded in reference to multiple dependant claims.
3. ☒ Claims Nos.: 5, 7, 9-13, 15, 17, 21
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 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 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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/027282

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006-125208 A1	23.11.2006	US 2009-0005420 A1 US 7928127 B2	01.01.2009 19.04.2011