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(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, 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, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

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:

27 December 2012

(54) Title: CHRYSOPHAENTIN ANALOGS THAT INHIBIT FTSZ PROTEIN

(57) Abstract: Embodiments of antimicrobial chrysophaentin compounds, pharmaceutical compositions including the chrysophaentin compounds, methods for using the chrysophaentin compounds, and methods for synthesizing the chrysophaentin compounds are disclosed. Certain embodiments of the chrysophaentin compounds inhibit FtsZ protein, thereby inhibiting the growth of clinically relevant bacteria, including drug-resistant strains.



WO 2012/116254 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/026438

A. CLASSIFICATION OF SUBJECT MATTER
 INV. C07C15/50 C07C17/266 C07C25/24 C07C41/05 C07C43/275
 C07C43/285 C07C43/295 A61K31/085
 ADD.
 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 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 practicable, search terms used)
 EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	F. HUBALEK ET AL: "Demonstration of Isoleucine 199 as a Structural Determinant for the Selective Inhibition of Human Monoamine Oxidase B by Specific Reversible Inhibitors", JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 280, no. 16, 1 April 2005 (2005-04-01), pages 15761-15766, XP055027610, ISSN: 0021-9258, DOI: 10.1074/jbc.M500949200	1,5
A	----- scheme 1;; abstract ----- -/--	2,6-27

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 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 23 May 2012	Date of mailing of the international search report 23/10/2012
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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, Fax: (+31-70) 340-3016	Authorized officer Kleidernigg, Oliver
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/026438

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.:
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:

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 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.:

see annexe

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 2, 5, 23-27(completely); 1, 6-22(partially)

compounds of formula IX

2. claims: 1, 3, 6-22(all partially)

compound of formula VII

3. claims: 1, 3, 6-22(all partially)

compound of formula VIII

4. claims: 1, 4, 6-22(all partially)

compound of formula X

5. claims: 1, 4, 6-22(all partially)

compound of formula XI

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/026438

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>KATHLEEN ENGLAND ET.AL.: "Substituted diphenyl ethers as a broad-spectrum platform for the development of chemotherapeutics for the treatment of tularaemia", JOURNAL OF ANTIMICROBIAL CHEMOTHERAPY, vol. 64, 4 September 2009 (2009-09-04), pages 1052-1061, XP002676376, page 1053, left column paragraph 3 - right column, paragraph 1; figure 5 -----</p>	1,2,5-27