



(43) International Publication Date
1 November 2012 (01.11.2012)

- (51) International Patent Classification:
C12N 1/36 (2006.01) *C12N 1/20* (2006.01)
- (21) International Application Number:
PCT/US2012/035052
- (22) International Filing Date:
25 April 2012 (25.04.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/478,746 25 April 2011 (25.04.2011) US
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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, 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,

[Continued on next page]

(54) Title: METHODS AND SYSTEM FOR INTERFERING WITH VIABILITY OF BACTERIA AND RELATED COMPOUNDS AND COMPOSITIONS

(57) Abstract: Provided herein are methods and systems for interfering with viability of bacteria and related compounds and compositions.

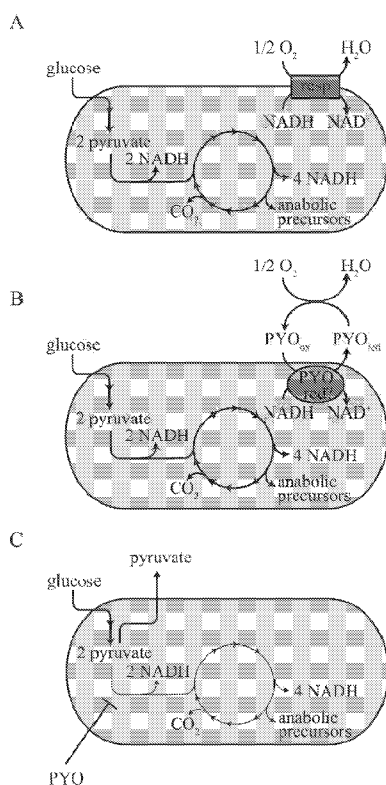


FIG. 15

SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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:

3 January 2013

A. CLASSIFICATION OF SUBJECT MATTER*C12N 1/36(2006.01)i, C12N 1/20(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)

C12N 1/36; A61K 39/40; A61K 31/7088

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: bacteria viability, antimicrobial, antibiotic, phenazine, phenazine related pathway, Pseudomonas aeruginosa, etc.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010-0124554 A1 (DIANNE K. NEWMAN et al.) 20 May 2010	1,2,21-23
Y	See claims 17-19; paragraphs 0086-0091, 0094, 0095, 0125, and 0153-0155.	3,4,12-16
Y	LELAND S. PIERSON III and ELIZABETH A. PIERSON "Metabolism and function of phenazines in bacteria: impacts on the behavior of bacteria in the environment and biotechnological processes" In: Applied Microbiology and Biotechnology. Published Online 30 March 2010, Vol.86(6), pp.1659-1670, ISSN 0175-7598. See "Electron shuttling and iron chelation" section in page 1664; page 1665, right column, lines 13-18.	3,4,12-16
A	MARIA E. HERNANDEZ et al. "Phenazines and other redox-active antibiotics promote microbial mineral reduction" In: Applied and Environmental Microbiology. February 2004, Vol.70(2), pp.921-928, ISSN 0099-2240. See the whole document.	1-4,12-16,21-23
PA	YUN WANG et al. "Phenazine-1-carboxylic acid promotes bacterial biofilm development via ferrous iron acquisition" In: Journal of Bacteriology. Published Online 20 May 2011, Vol.193(14), pp.3606-3617, ISSN 0021-9193. See the whole document.	1-4,12-16,21-23

 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

31 OCTOBER 2012 (31.10.2012)

Date of mailing of the international search report

31 OCTOBER 2012 (31.10.2012)

Name and mailing address of the ISA/KR

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City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/035052

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PA	<p>NATHAN J. HARE et al. "Proteomic profiling of Pseudomonas aeruginosa AES-1R, PA01, and PA14 reveals potential virulence determinants associated with a transmissible cystic fibrosis-associated strain" In: BMC Microbiology. 22 January 2012, Vol.12, Issue 16, ISSN 1471-2180. See the whole document.</p>	1-4, 12-16, 21-23

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.: 24-30
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 24-30 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.: 6,7,11
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, 7, and 11 are unclear, because they refer to multiple dependent claims which are not drafted in accordance with PCT Rule 6.4(a).
3. Claims Nos.: 5,8-10,17-20,27-30
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/US2012/035052

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010-0124554 A1	20.05.2010	None	