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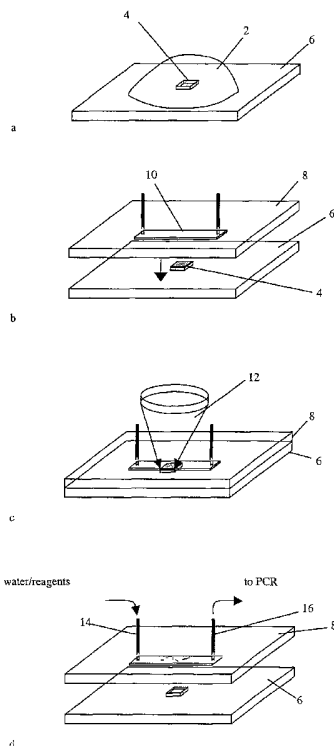
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR SPORE DISRUPTION AND/OR DETECTION

(57) Abstract: A method and apparatus for spore disruption and/or detection is provided. The method involves irradiating a sample with laser light (12), conveniently ultraviolet radiation, to disrupt any spores present and collecting any disrupted material for analysis. The disruption can involve breaking the spore open to release intrasporal DNA which is useful for fast screening and detection equipment. The disrupted material may be collected in a collection chamber (10) which can be flushed with an extraction fluid to collect the disrupted material. The sample is preferably concentrated in a nanovial (4) prior to being irradiated to give sample enrichment.





PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

- *of inventorship (Rule 4.17(iv)) for US only*

Published:

- *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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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

Inter I Application No
PCT/GB2004/002472

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12Q1/68 A61L2/00 C12M1/33 H01J49/16

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)

IPC 7 C12Q A61L C12M H01J

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, BIOSIS, PAJ, 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	ULLOM J N ET AL: "Discrimination between bacterial spore types using time-of-flight mass spectrometry and matrix-free infrared laser desorption and ionization." ANALYTICAL CHEMISTRY. 15 MAY 2001, vol. 73, no. 10, 15 May 2001 (2001-05-15), pages 2331-2337, XP002296692 ISSN: 0003-2700 the whole document page 2331, right-hand column, paragraph 2 ----- -/--	1-31

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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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Date of mailing of the international search report

31.01.05

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2004/002472

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category ^a	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	RYZHOV VICTOR ET AL: "Rapid characterization of spores of Bacillus cereus group bacteria by matrix-assisted laser desorption-ionization time-of-flight mass spectrometry" APPLIED AND ENVIRONMENTAL MICROBIOLOGY, vol. 66, no. 9, September 2000 (2000-09), pages 3828-3834, XP002296693 ISSN: 0099-2240 the whole document table 1	1-31
X	EP 1 284 495 A (MICROMASS LTD) 19 February 2003 (2003-02-19) figures 1,2	26-38
X	EP 1 271 609 A (SEQUENOM INC) 2 January 2003 (2003-01-02) figures 1-9	26-38
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/002472

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:
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:

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 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.:

1-38

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

International Application No
PCT/GB2004/002472

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