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- 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))

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(54) Title: AUTOMATED SELECTION OF MICROORGANISMS AND IDENTIFICATION USING MALDI

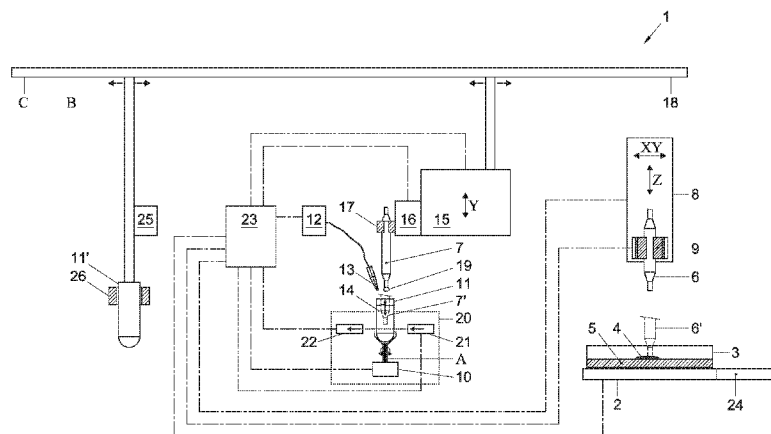


Fig. 1

(57) Abstract: A method and apparatus for locating and selecting a colony of microorganisms on a culture dish and identifying microorganisms in said selected colony using MALDI. The method comprises the automated steps of locating and selecting a colony of microorganisms on a culture dish; obtaining a sample of said selected colony of microorganisms; depositing at least some of said sample of said selected colony of microorganisms on a target plate; and transferring said target plate with said sample in an apparatus for performing MALDI for identification of said sample of said selected colony of microorganisms. A sample of a colony of microorganisms is automatically deposited on a depositing spot such that the sample covers at most approximately half of said one of the depositing spots of the target plate. A suspension of a sample of microorganisms is automatically prepared by automatically picking the sample with a picking tool and submerging the picking tool with said sample in a suspension, after which the picking tool is vibrated in vertical sense only to release the sample from the picking tool.

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/NL2013/050239

## A. CLASSIFICATION OF SUBJECT MATTER

INV. G01N35/10 G01N35/00 C12M1/26 H01J49/16 C12M1/22  
C12M1/36  
ADD. G01N1/04

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)

G01N H01J C12M

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, 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	DE 10 2004 020885 A1 (FRAUNHOFER GES FORSCHUNG [DE]; ANAGNOSTEC GES FUER ANALYTISCH [DE] BIO) 24 November 2005 (2005-11-24) paragraphs [0002], [0005], [0015] - [0022]; figure 1 -----	1,2,4,6, 30,33
X	US 2012/009558 A1 (ARMSTRONG ROBERT EDWARD [US] ET AL) 12 January 2012 (2012-01-12)	3,5,7,8, 13-29, 31-33, 49-54
A	paragraphs [0004] - [0005], [0015] - [0065], [0075] - [0077], [0083]; figures 1,2 abstract ----- -/--	1,2,4,6, 30

☒ 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

4 November 2013

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# INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010/209293 A1 (IKAWA SATOSHI [JP] ET AL) 19 August 2010 (2010-08-19) paragraphs [0098] - [0099] -----	13
A	JP 2004 305062 A (ASAHI CHEMICAL CORP) 4 November 2004 (2004-11-04) paragraph [0027] -----	13
X	WO 2012/004545 A1 (BIOMERIEUX SA [FR]; CHARRIER JEAN-PHILIPPE [FR]; COLIN BRUNO [FR]; DRA) 12 January 2012 (2012-01-12) page 15, lines 3-18 -----	1,2,4,6, 30,33

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/NL2013/050239

### 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.:  
  
1-8, 13-33, 49-54
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.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

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

1. claims: 1, 2, 4, 6, 30(completely); 33(partially)

Invention 1 is directed to direct deposition of a colony sample on a target plate.

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2. claims: 3, 5, 7, 8, 13-29, 31, 32(completely); 33, 49-54(partially)

Invention 2 is directed to preparing and depositing a sample suspension on a target plate.

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3. claims: 9-13, 29, 31, 32(completely); 33, 47-54(partially)

Invention 3 is directed to automatically locating and selecting a colony of micro-organisms.

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4. claims: 34-46, 54(completely); 47-53(partially)

Invention 4 is directed to automatically preparing a suspension of a micro-organism sample.

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5. claims: 55-57

Invention 5 is directed to depositing a colony sample such that the sample covers at most approximately half of a depositing spot on a target plate.

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6. claims: 58-60

Invention 6 is directed to depositing a drop of suspension containing a colony sample on a target plate using a pipetting tool.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2013/050239

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102004020885 A1	24-11-2005	NONE	
US 2012009558 A1	12-01-2012	NONE	
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