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(71) Applicant (for all designated States except US): **DAKO DENMARK A/S** [DK/DK]; Produktionsvej 42, DK-2600 Glostrup (DK).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **WINTHER, Lars** [DK/DK]; Tulipanhaven 80, DK-2765 Smørum (DK).

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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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:

5 November 2009

(54) Title: SYSTEMS AND METHODS FOR BIOLOGICAL AND CHEMICAL DETECTION, COMPRISING AUTOMATIC SELECTION OF REAGENT SETS

(57) Abstract: The instant invention relates to systems of reagents and methods for the detection of chemical and biological targets in a sample. Some embodiments comprise methods for automatically selecting a set of reagents to detect one or more targets in a sample, wherein the set of reagents comprises at least two layers for detection of a first target, and at least two layers for detection of a second target, wherein the set comprises reagents that are at least partially redundant. In some embodiments, the redundancy is created by at least one degenerate reagent such that the reagent may interact specifically with more than one other component of a detection system or sample. In some embodiments, the system or method also includes reagent containers with a computer-generated code which may further serve to match targets to appropriate reagents.



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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2007/004708

## A. CLASSIFICATION OF SUBJECT MATTER

INV. G01N33/48 G01N33/52 G01N33/53 G01N33/50 G01N35/00

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

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)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                                                                                                            | Relevant to claim No. |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| X         | <p>"Dako autostainer plus hanbook" [Online]<br/>           July 2006 (2006-07), DAKO , XP002532396<br/>           Retrieved from the Internet:<br/>           URL:http://pri.dako.com/0000621_rev_-_manu<br/>           al_autostainer_plus_handbook.pdf&gt;<br/>           [retrieved on 2009-06-16]<br/>           the whole document</p> <p style="text-align: center;">-----<br/>-/--</p> | 1                     |

☒ 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 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.

\*G\* document member of the same patent family

Date of the actual completion of the international search

18 June 2009

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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

Landré, Julien

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2007/004708

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Relevant to claim No. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| X         | <p>NICKERSON D A ET AL: "AUTOMATED DNA<br/>DIAGNOSTICS USING AN ELISA-BASED<br/>OLIGONUCLEOTIDE LIGATION ASSAY"<br/>PROCEEDINGS OF THE NATIONAL ACADEMY OF<br/>SCIENCES OF USA, NATIONAL ACADEMY OF<br/>SCIENCE, WASHINGTON, DC.; US,<br/>vol. 87, no. 22,<br/>1 November 1990 (1990-11-01), pages<br/>8923-8927, XP000209335<br/>ISSN: 0027-8424<br/>abstract<br/>page 8923, column 1, line 45 - page 8923,<br/>column 2, line 37; figure 1<br/>page 8924, column 1, lines 5-64<br/>page 8924, column 2, lines 2-10<br/>page 8924, column 2, line 18 - page 8925,<br/>column 1, line 12<br/>page 8926, column 1, line 28 - page 8926,<br/>column 2, line 7</p> <p>-----</p> | 1                     |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2007/004708

## 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 allsearchable 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 reportcovers 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.:

Invention 1 (Claim 1):

### 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:

Invention 1 (Claim 1):

A system suitable for detecting at least 2 targets.  
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Invention 2 (Claims 2-19 completely; Claims 30-32 partially):

Method comprising automatic selection of a set of reagents to detect one or more targets. A detection apparatus suitable for carrying out the method.  
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Invention 3 (Claims 20-29; Claims 30-32 partially):

A method of detecting one or more targets in a sample. A detection apparatus suitable for carrying out the method.  
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