Title: METHODS, KITS AND COMPOSITIONS PERTAINING TO NUCLEIC ACID PROBES USING FLUORESCENCE QUENCHING

Abstract: Disclosed for instance, are methods suitable for the detection, identification and/or quantitation of nucleic acid target sequences using probes. Suitable probes include those consisting of peptide nucleic acid (PNA) or locked nucleic acid (LNA) units. Binding of the probes to adjacent target sequences results in fluorescent quenching. Analysis of changes in the fluorescent signal is used to detect, identify or quantitate a target sequence in a sample. The invention is more specifically directed to methods for improving the sensitivity, specificity and/or reliability of diagnostic tests using suitable probes. It is particularly well-suited for real-time PCR and related amplification reaction.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. C12Q1/68

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)

C12Q

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
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</table>

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

"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 doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"C" 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 data claimed

Date of the actual completion of the international search

20 January 2006

Date of mailing of the international search report

12 05 2006

Name and mailing address of the ISA

European Patent Office, P. B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx 31 651 epo nl Fax. (+31-70) 340-3016

Authorized officer

Wimmer, G.

Form PCT/ISA/210 (second sheet) (January 2004)
<table>
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<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<td>A</td>
<td>DEMIDOV V V: &quot;PNA and LNA throw light on DNA&quot; TRENDS IN BIOTECHNOLOGY, ELSEVIER PUBLICATIONS, CAMBRIDGE, GB, vol. 21, no. 1, January 2003 (2003-01), pages 4-7, XP004397629 ISSN: 0167-7799 the whole document</td>
<td>22-25</td>
</tr>
</tbody>
</table>
INTERNATIONAL SEARCH REPORT

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.:因为 they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:因为 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.:

   1–31

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-31

A method for analysis of a target sequence, comprising contacting the sample with a probe A labeled with a fluorophore which hybridizes to a target sequence, and with a probe B labeled with a quencher which hybridizes to a target sequence adjacent to that of probe A.

2. claims: 32-41

An array comprising a probe immobilized to a surface support.
<table>
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<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
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<tr>
<td>WO 2005003373 A</td>
<td>13-01-2005</td>
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