



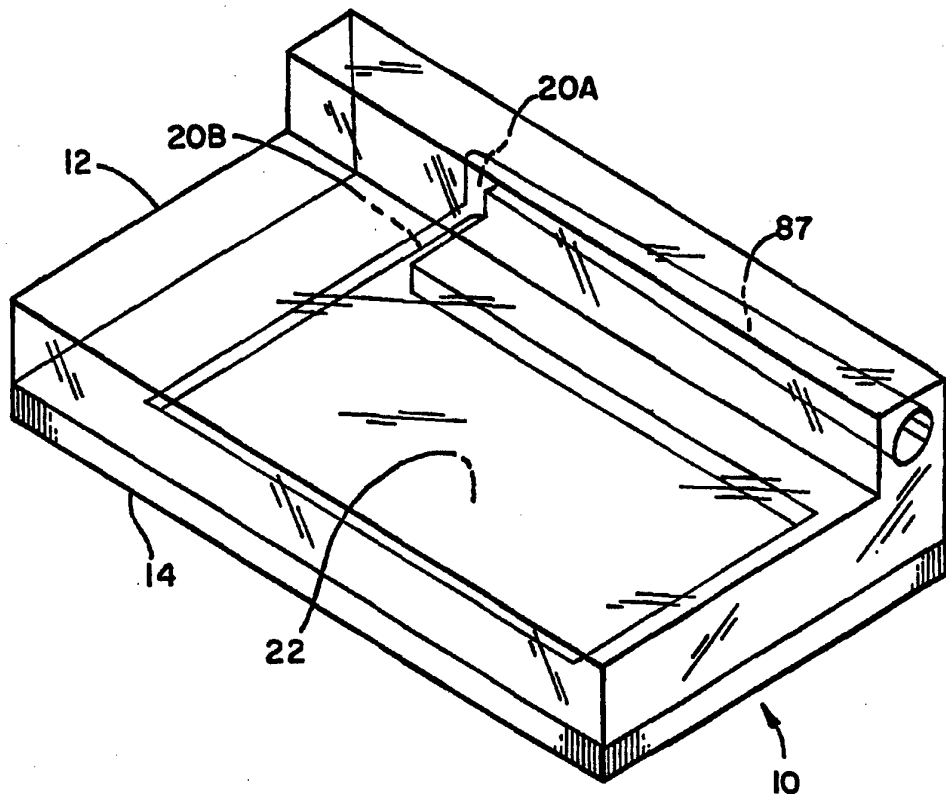
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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|---|-----------------------------|---|----|------------|-----------------------------|----|------------|-----------------------------|----|--|
| <p>(51) International Patent Classification⁶ : C12Q 1/68, B01L 3/00, 7/00</p> | <p>A3</p> | <p>(11) International Publication Number: WO 96/15269</p> <p>(43) International Publication Date: 23 May 1996 (23.05.96)</p> | | | | | | | | |
| <p>(21) International Application Number: PCT/US95/14823</p> <p>(22) International Filing Date: 13 November 1995 (13.11.95)</p> <p>(30) Priority Data:</p> <table border="0"> <tr> <td>08/338,728</td> <td>14 November 1994 (14.11.94)</td> <td>US</td> </tr> <tr> <td>08/338,380</td> <td>14 November 1994 (14.11.94)</td> <td>US</td> </tr> <tr> <td>08/338,369</td> <td>14 November 1994 (14.11.94)</td> <td>US</td> </tr> </table> <p>(71) Applicant: TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA [US/US]; Suite 300, 3700 Market Street, Philadelphia, PA 19104 (US).</p> <p>(72) Inventors: WILDING, Peter; 208 Darby Road, Paoli, PA 19301 (US). KRICKA, Larry, J.; 886 Nathan Hale Road, Berwyn, PA 19312 (US).</p> <p>(74) Agents: HAGAN, Patrick, J. et al.; Dann, Dorfman, Herrell and Skillman, Suite 720, 1601 Market Street, Philadelphia, PA 19103-2307 (US).</p> | 08/338,728 | 14 November 1994 (14.11.94) | US | 08/338,380 | 14 November 1994 (14.11.94) | US | 08/338,369 | 14 November 1994 (14.11.94) | US | <p>(81) Designated States: AU, CA, CN, JP, MX, RU, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 21 November 1996 (21.11.96)</p> |
| 08/338,728 | 14 November 1994 (14.11.94) | US | | | | | | | | |
| 08/338,380 | 14 November 1994 (14.11.94) | US | | | | | | | | |
| 08/338,369 | 14 November 1994 (14.11.94) | US | | | | | | | | |

(54) Title: MESOSCALE POLYNUCLEOTIDE AMPLIFICATION DEVICES

(57) Abstract

Disclosed are devices for amplifying a preselected polynucleotide in a sample by conducting a polynucleotide amplification reaction. The devices are provided with a substrate microfabricated to include a polynucleotide amplification reaction chamber, having at least one cross-sectional dimension of about 0.1 to 1000 μm . The device also includes at least one port in fluid communication with the reaction chamber, for introducing a sample to the chamber, for venting the chamber when necessary, and, optionally, for removing products or waste material from the device. The reaction chamber may be provided with reagents required for amplification of a preselected polynucleotide. The device also may include means for thermally regulating the contents of the reaction chamber, to amplify a preselected polynucleotide. Preferably, the reaction chamber is fabricated with a high surface to volume ratio, to facilitate thermal regulation. The amplification reaction chamber also may be provided with a composition which diminishes inhibition of the amplification reaction by material comprising a wall of the reaction chamber, when such treatment is required.



Preferably, the reaction chamber is fabricated with a high surface to volume ratio, to facilitate thermal regulation. The amplification reaction chamber also may be provided with a composition which diminishes inhibition of the amplification reaction by material comprising a wall of the reaction chamber, when such treatment is required.

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INTERNATIONAL SEARCH REPORT

Int. Application No
PCT/US 95/14823

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 C12Q1/68 B01L3/00 B01L7/00

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)
 IPC 6 B01L F16K

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

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

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| Date of the actual completion of the international search 9 September 1996 | Date of mailing of the international search report 16. 10. 96 |
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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, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016 | Authorized officer Hocquet, A |
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 International Application No
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INTERNATIONAL SEARCH REPORT

International Application No
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 95/ 14823

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims : 1-37

Claims : 38-44

(See further PCT/ISA/206)

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.

No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

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