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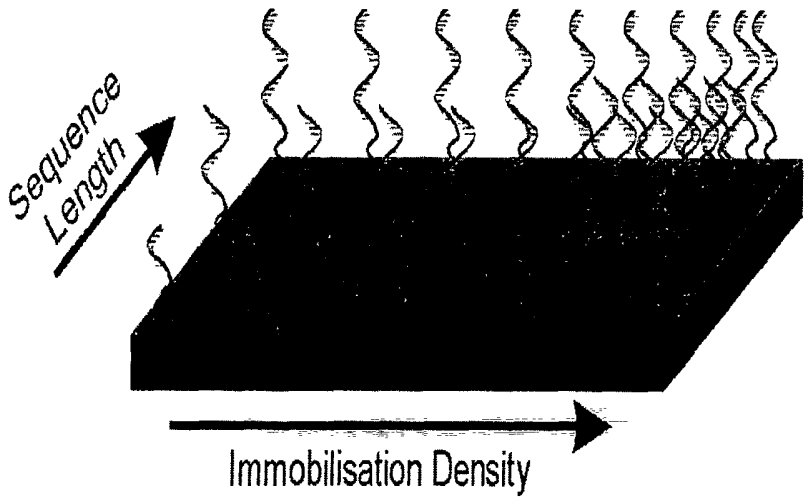
(54) Title: GRADIENT RESOLVED HYBRIDISATION PLATFORM



(57) Abstract: The invention provides improved methods and devices for the detection and identification in a sample of one or more target molecules which bind to probe molecules, particularly to nucleic acid probe molecules. The improved method is based on contacting the sample with a surface that is coated with one or more gradients of probe molecules, particularly nucleic acid or nucleic acid analog probe molecules that serve to bind target molecules in the sample, particularly nucleic acids having sequences that are complementary or partially complementary to one or more probe molecules. A probe gradient generated on the surface is formed by the variation of a physical, structural or functional property of the probes on the surface. The gradients is generated, e.g., by varying density of probe molecules bound to the surface, by varying probe sequence length, by varying probe sequence, by varying probe sequence type, by varying the orientational structure of probes, and by varying the concentration of label associated with probes. Determination of the location, speed and/or extent of hybridisation of a nucleic acid on such a gradient surface is useful to identify target molecules bound to probes and/or to quantitatively measure the amount of the target in a sample. Hybridisation of target molecules to a gradient of nucleic acid probe can be examined as a function of time and/or hybridisation conditions (e.g., temperature, salt concentration, etc.) The method and devices of this invention employ gradient surfaces to bind to one or more target molecules, particularly nucleic acids (or target sequences) in a sample, detecting their presence in the sample and quantitating the amount of one or more of such targets in a sample.

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A. CLASSIFICATION OF SUBJECT MATTER
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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 B01J G01N C12Q

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, WPI Data, PAJ, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 47613 A (SYMYX TECHNOLOGIES INC) 29 October 1998 (1998-10-29) page 3, line 19 -page 5, line 7; claims 29,57,60 paragraph 'VIII! ---	1-84
X	WO 97 33169 A (DUNNINGTON DAMIEN J ;SMITHKLINE BEECHAM CORP (US); YAMASHITA DENNI) 12 September 1997 (1997-09-12) claims 1-5 ---	1-72
X	WO 98 15832 A (BIO MERIEUX ;GINOT FREDERIC (FR)) 16 April 1998 (1998-04-16) page 32, line 14 -page 34, line 5; claims 5,23 --- -/--	1,37-72

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
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	Cuendet, P

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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	WATTERSON ET AL.: "Effects of oligonucleotide immobilization density on selectivity of quantitative transduction of hybridization of immobilized DNA" LANGMUIR, vol. 16, 2000, pages 4984-4992, XP002240955 abstract page 4992, last paragraph	73-83

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