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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND SYSTEM FOR CLASSIFYING A SCENARIO

(57) Abstract: Living cells can be used to identify or quantify bioactive conditions, including without limitation, chemicals, biological pathogens, and environmental conditions, such as pH, in samples based on changes in, for example, cell color, morphology and/or physiology. Such changes can be directly detected or detected with the aid of instrumentation. One embodiment of the method comprises exposing a system to a bioactive condition, such as a chemical agent, a biological pathogen, an environmental condition, such as pH, etc., and combinations of such conditions. The system then exhibits a response to the bioactive condition. The response of the system, or a portion thereof, to the bioactive condition is then represented, such as by digital images. The method then involves attempting to classify a scenario by database comparison. Classification can be in terms of numeric or non-numerical classifiers. Typically, the system comprises living cells. Living cells useful for practicing the method experience a detectable change in response to an interaction with a bioactive condition. A likely living cell for use with the method and apparatus of the present invention is a chromatophore. The present method has a number of uses, including classifying unknown drug candidates, classifying unknown toxins, classifying chemical warfare agents, etc. The method can be implemented using a computer program encoding the method. Moreover, a computer-readable medium is described on which is stored a computer program having instructions for executing the method. A cytosensor apparatus also is described.



WO 03/023366 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/29085

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(7) : C12Q 3/00; C12M 1/36, 3/02, 1/34; G06F 19/00
 US CL : 435/3, 286.5, 288.5; 702/19
 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)
 U.S. : 435/3, 286.5, 288.5; 702/19

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)
 STN, WEST, facs, computer, control\$, chromatophore, betta, splendens

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	THE NEW ENGLISH BIBLE, 1970, Oxford University Press, Genesis, pages 33-34, see especially page 33, line 46 through page 34, line 25.	1-4 and 116
X	US 5,900,361 A (KLEBE) 04 May 1999 (04.05.1999), see entire document.	104, 106, and 107
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Y		1-103, 105, and 108-117
X	US 5,641,644 A (KLEBE) 24 June 1997 (24.06.1997), see entire document.	104, 106, and 107
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Y		1-103, 105, and 108-117
X	US 5,998,212 A (CORIO et al) 07 December 1999 (07.12.1999), see entire document.	104, 106, and 107
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Y		1-103, 105, and 108-117
Y	US 4,401,755 A (WEAVER) 30 August 1983 (30.08.1983), see entire document.	1-117
X	US 5,462,856 A (LERNER et al) 31 October 1995 (31.10.1995), see entire document.	1-117

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer <i>James Martinell</i> James Martinell Telephone No. (703) 308-0196

INTERNATIONAL SEARCH REPORT

PCT/US02/29085

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,985,353 A (ELVING) 15 January 1991 (15.01.1991), see entire document.	1-117
Y	US 5,919,646 A (OKUN et al) 06 July 1999 (06.07.1999), see entire document.	1-117

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/29085

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

- 1. Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

- 2. Claim 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. Claim 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:
Please See Continuation 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.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-103 and 108-117, drawn to classification methods, kits, computer programs, and computer-readable media.

Group II, claim(s) 104-107, drawn to detection apparatus.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The apparatus of Group II may be used to detect, measure, and analyze chemical reactions which are not biological in nature. Thus there is no corresponding special technical feature that connects Group II to Group I.