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(54) Title: CELL VIABILITY DETECTION USING ELECTRICAL MEASUREMENTS

(57) Abstract: A method of determining information about cell viability and other characteristics relating to cell membrane permeability is disclosed. The method involves determining the effect of a cell on current flow and relating that effect to a known standard which standard may be a known healthy cell and thereby deducing the viability of the cell being tested. The cells being tested can be subjected to different environmental conditions such as surrounding chemicals, temperature, pH and pressure to determine the effects of such conditions on cell viability and/or cell permeability. The cell being tested can be in a cell suspension, grown on a substrate, in tissue in vitro or in tissue in vivo. The method provides substantially instantaneous results and need not include the use of dyes or other markers.



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**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/05219

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b>                  IPC(7) : C12N 13/00                  US CL : 435/173.6                  According to International Patent Classification (IPC) or to both national classification and IPC</p>																				
<p><b>B. FIELDS SEARCHED</b>                  Minimum documentation searched (classification system followed by classification symbols)                  U.S. : 435/173.6</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)                  Searched West</p>																				
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p> <table border="1"> <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> </thead> <tbody> <tr> <td>Y,P</td> <td>US 6,482,619 B1(RUBINSKY et al) 19 November 2002 (19.11.2002), column 3, lines 66-67, column 4, lines 1-15.</td> <td>1-37</td> </tr> <tr> <td>Y</td> <td>US 5,991,697 A(NELSON et al) 23 November 1999 (23.11.1999), column 12, lines 54-67.</td> <td>1-37</td> </tr> <tr> <td>Y</td> <td>US 4,810,963 A(BLAKE-COLEMAN et al) 07 March 1989 (07.03.1989), abstract.</td> <td>1-37</td> </tr> <tr> <td>Y,P</td> <td>US 6,482,619 B1(RUBINSKY et al) 19 November 2002 (19.11.2002), example 4, column 23, lines 5-26.</td> <td>1-37</td> </tr> <tr> <td>Y,E</td> <td>US 6,613,211 B1(MCCORMICK et al) 02 September 2003 (02.09.2003), column 16, lines 38-55.</td> <td>1-37</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y,P	US 6,482,619 B1(RUBINSKY et al) 19 November 2002 (19.11.2002), column 3, lines 66-67, column 4, lines 1-15.	1-37	Y	US 5,991,697 A(NELSON et al) 23 November 1999 (23.11.1999), column 12, lines 54-67.	1-37	Y	US 4,810,963 A(BLAKE-COLEMAN et al) 07 March 1989 (07.03.1989), abstract.	1-37	Y,P	US 6,482,619 B1(RUBINSKY et al) 19 November 2002 (19.11.2002), example 4, column 23, lines 5-26.	1-37	Y,E	US 6,613,211 B1(MCCORMICK et al) 02 September 2003 (02.09.2003), column 16, lines 38-55.	1-37
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<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"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</td> </tr> <tr> <td>"E" earlier application or patent published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"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</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"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	"E" earlier application or patent published on or after the international filing date	"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	"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)	"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	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed									
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<p>Name and mailing address of the ISA/US                  Mail Stop PCT, Attn: ISA/US                  Commissioner for Patents                  P.O. Box 1450                  Alexandria, Virginia 22313-1450                  Facsimile No. (703)305-3230</p>		<p>Authorized officer                  Randall Winston <i>Janice Ford</i>                  Telephone No. 703-308-1235  <i>Jan</i></p>																		