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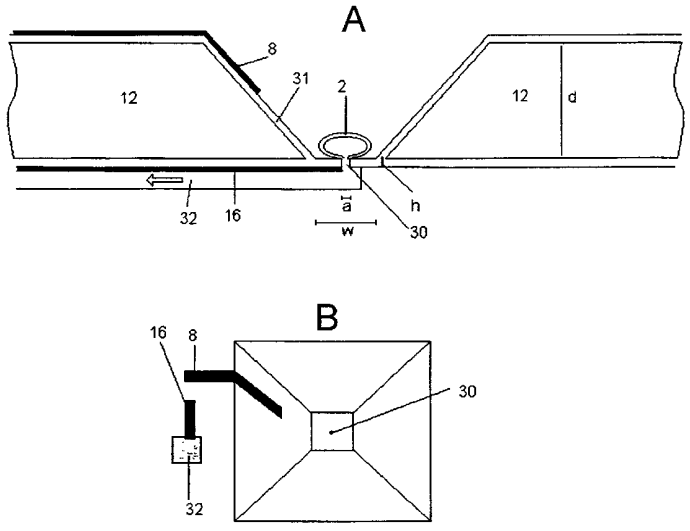
(54) Title: A SUBSTRATE AND A METHOD FOR DETERMINING AND/OR MONITORING ELECTROPHYSIOLOGICAL PROPERTIES OF ION CHANNELS



(57) Abstract: The present invention relates to a substrate and a method for obtaining an electrophysiological measuring configuration in which a cell forms a high resistive seal (giga-seal) around a measuring electrode making it suitable for determining and monitoring a current flow through the cell membrane. The substrate is typically part of an apparatus for studying electrical events in cell membranes, such as an apparatus for carrying out patch clamp techniques utilised to study ion transfer channels in biological membranes. The substrate has a plurality or an array of measuring sites with integrated measuring and reference electrodes formed by wafer processing technology. The electrodes are adapted to conduct a current between them by delivery of ions by one electrode and receipt of ions by the other electrode and are typically silver/silver halide electrodes. This allows for effective and fast measuring of cells in configurations where there is a direct electrical connection between the measuring electrode and the cell interior, a whole-cell measuring configuration.

WO 01/25769 A3

patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01N33/483 G01N27/02

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)
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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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 299 778 A (STANFORD RES INST INT) 18 January 1989 (1989-01-18) page 3; figure 11	1-28
X	US 4 225 410 A (PACE SALVATORE J) 30 September 1980 (1980-09-30) abstract; figures 6,8	1-15
X	US 4 062 750 A (BUTLER JAMES FRANCIS) 13 December 1977 (1977-12-13) abstract; figure 4	1-15
X	EP 0 299 779 A (STANFORD RES INST INT) 18 January 1989 (1989-01-18) figure 3	1-15

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[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
29 January 2001	01.03.01

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3

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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.
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P,A	WEAVER J C: "Electroporation of cells and tissues " IEEE TRANSACTIONS ON PLASMA SCIENCE, vol. 28, no. 1, February 2000 (2000-02), pages 24-33, XP002901488 abstract -----	24

3

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