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(54) **Title:** APPARATUSES FOR CELL MAPPING VIA IMPEDANCE MEASUREMENTS AND METHODS TO OPERATE THE SAME

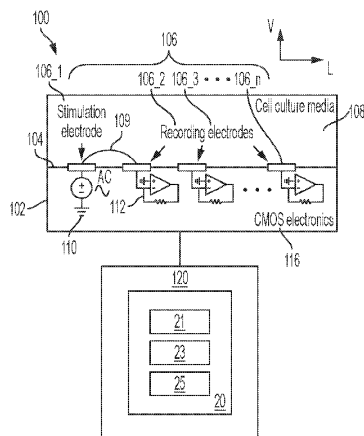


FIG. 1a

(57) **Abstract:** Disclosed herein are an apparatus for electrically assessing and/or manipulating cells. One aspect is directed to electrically mapping cells on the surface of the semiconductor substrate via cross-electrode impedance measurements. Further according to some aspects, the electrode array allows for spatially addressable electrical stimulation and/or recording of electrical signals in real-time using the CMOS circuitry. Some of these aspects are directed to using an electrode array to perform cell patterning through electrochemical gas generation, and extracellular electrochemical mapping.

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