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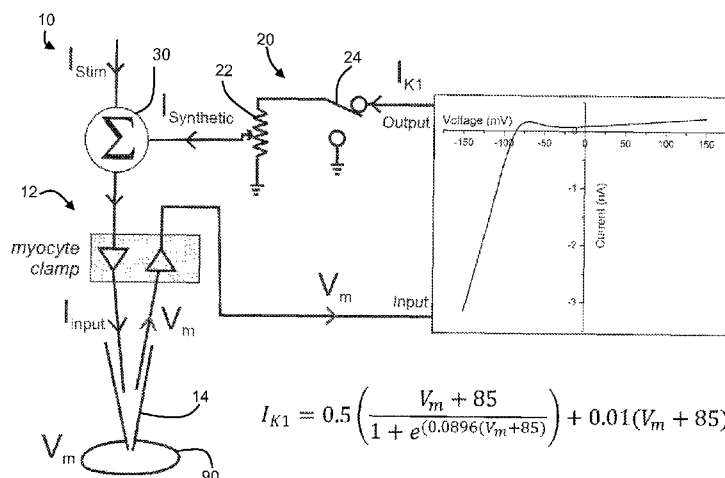


Fig. 1

(57) Abstract: Systems and methods are provided for improving action potential morphology in iPSC- derived cardiac myocytes and utilizing such myocytes. Improved morphology may include, for example, physiological resting membrane potentials. Membrane voltages of the myocyte are measured and a synthetic inward rectifying current is applied to the myocyte based on the membrane voltage.