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Title:	Mathematical Modeling of Electrically Active Cells
Authors:	Kaur, Kanwal Puneet (/jspui/browse?type=author&value=Kaur%2C+Kanwal+Puneet)
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Abstract:	Electrical activity in humans has various functional roles starting from neuronal communication in the brain to pumping of blood in the heart. The idea of being able to relate this activity to certain mathematical and physical systems seems quite intelligent in itself. The next step is to model the entire biological system to be able to study it and incorporate the required changes through change in parameters and variables. In my thesis, I studied the existing model of the neuron – the Hodgkin-Huxley model, and two models of the pancreatic beta cells – the Chay Keizer model and the Phantom Burster model. I simulated the mathematical models using the mathematical software MATLAB, and standardized the programmes by repeating simulation results obtained in the original studies. To experiment with the models, the values of various parameters and variables were then changed and the relevant results were compared with existing real wet lab experiments wherever possible.
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