

# Mathematical Foundations of Neuroscience - Sample Questions - Lecture 3 - Electrophysiology of neurons II

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November 2, 2009

Questions marked with \* are not obligatory.

1. Describe the voltage clamp experiment.
2. Explain the ideas behind the voltage gated currents.
3. Formulate the Hodgkin-Huxley model. Briefly describe which which equations are responsible for what.
4. What happens to the membrane when the action potential ignites? Describe the main phases of the spike.
5. What is the hyper-excitability?
6. What are the multi compartment models and how are they constructed?
7. Formulate the cable equation. Give a conceptual explanation of its formulation. \*