MCB 166 BIOPHYSICAL NEUROBIOLOGY F 2015

T/Th 11-12:30 (125 Li Ka Shing) Discussion M 3-4 (2062 VLSB)
W 4-5 (183 Dwinelle)

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1. 8/27 Introduction: Excitable cells of the nervous system.

2. 9/1 Origin of the Membrane Potential 1.
3. 9/3 Origin of the Membrane Potential 2.

4. 9/8 Origin of the Membrane Potential 3.
5. 9/10 Origin of the Membrane Potential 4.

6. 9/15 Membrane Equivalent Circuits of Transport Structures
7. 9/17 Electrical properties of neurons and axons.

8. 9/22 Threshold Switch Model of Excitation
9. 9/24 The Voltage Clamp: Ionic currents underlying excitation; voltage clamp.

10. 9/29 Hodgkin-Huxley theory and Predictions 1
11. 10/1 Hodgkin-Huxley theory and Predictions 2.

16. 10/6 Gated ion channels; single-channel currents, noise
17. 10/8 Statistical physics of gating; stochastic models

18. 10/13 Molecular biology & structure of ion channels (Isacoff)
19. 10/15 Survey of ion channels, review of excitability (Isacoff)

20. 10/20 No lecture – Midterm due in class
21. 10/23 Synaptic excitation

22. 10/27 Excitatory & inhibitory synapses; synaptic channels
23. 10/29 Pre-synaptic processes

20. 11/3 Post-synaptic processes; Neural integration
21. 11/5 Neural modeling—neural networks

22. 11/10 Neurons in networks, network topology
23. 11/12 Computational neuroanatomy – 1

24. 11/17 Organization of sensory receptors
25. 11/19 Sensory neural networks, lateral inhibition

26. 11/24 Photo-transduction; absolute sensitivity of vision
27. 11/26 THANKSGIVING HOLIDAY

28. 12/1 Sensory transduction - hearing and olfaction
29. 12/3 Color vision (or review)

12/7 - 12/11 Reading Week