

NEURL-UA 210
Cellular and Molecular Neural Science – Lecture Series
Fall 2012

Instructors:

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TAs:

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Recitations: Tuesdays, 12:30-1:45 and 4:55-6.10

Schedule:

Lectures will be held in room 815, Meyer, Mon and Wed, 11-12:15
Laboratories will be held in room 612 Silver Bldg, Wed, 2-6

The following books are recommended and on reserve:

Fain: Molecular and Cellular Physiology of Neurons (AP, 1999)

MQ: Meyer and Quenzer, Psychopharmacology: Drugs, the Brain and Behavior (Sinauer, 1997)

Zigmond, Bloom, Landis, Roberts & Squire: Fundamental Neuroscience (AP, 1999)

Cooper, Bloom & Roth, The Biochemical Basis of Neuropharmacology (Oxford 1995)

Peters, Palay and Webster, Fine Structure of the Nervous System

Articles will be assigned at a later date.

Exams and Grading:

There will be two exams. The first exam (mid-term) will cover material taught through September and October and will count for 50% of the final grade. The second exam (final) will cover material taught through November and December and will count for the remaining 50% of the final grade.

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Date	Instructor	Description	Reading
Sept 5 W	Carter	Introduction: The cell biology of neurons	Fain 1
Sept 10 M	Carter	Passive electrical membrane properties	Fain 2
Sept 12 W	Carter	The resting membrane potential <i>Problem Set #1</i>	Fain 3
Sept 17 M	Carter	The action potential I: Hodgkin-Huxley experiments	Fain 5
Sept 19 W	Carter	The action potential II: Hodgkin-Huxley experiments <i>Problem Set #2</i>	Fain 5
Sept 24 M	Carter	Ion channels I: physiology	Fain 6
Sept 26 W	Carter	Ion channels II: structure <i>Problem Set #3</i>	Fain 6
Oct 1 M	Carter	Ion channels III: diversity	Fain 7
Oct 3 W	Carter	Axons, dendrites and synapses <i>Problem Set #4</i>	Fain 2
Oct 8 M		Synaptic transmission I: pre-synaptic mechanisms	Fain 8
Oct 10 W	Carter	Synaptic transmission II: post-synaptic mechanisms <i>Problem Set #5</i>	Fain 9
Oct 15 M	Carter	No Class – Fall Break	
Oct 17 W	Carter	Synaptic transmission III: integration	Articles
Oct 22 M	Carter	Review	
Oct 24 W	Carter	<i>Midterm – Covers material from Sept 5 to Oct 22</i>	
Oct 29 M	Aoki	Ultrastructure of the nervous system;	http://synapses.clm.utexas.edu/
Oct 31 W	Aoki	Glutamate I: receptors, excitation, and signaling	MQ 7 (suggested) Articles
Nov 5 M	Aoki	Glutamate II: excitotoxicity and long-term potentiation	MQ 7 Articles
Nov 7 W	Aoki	GABA: receptors, anxiety, and epilepsy	MQ 7 Articles
Nov 12 M	Aoki	Acetylcholine: receptors, nicotine/addiction and neuromuscular disease	MQ 6 and 12 (suggested) Articles
Nov 14 W	Aoki	Dopamine: receptors, Parkinson's disease, and schizophrenia	MQ 5, 11 and 18 (suggested) Articles
Nov 19 M	Aoki	Norepinephrine: receptors, vigilance, and stress	MQ 5 (suggested) Articles
Nov 21 W	Aoki	Serotonin: receptors, depression, and aggression	MQ 6, 14 and 16 (suggested) Articles
Nov 26 M	Aoki	Opiates: receptors, peptides, and pain	MQ 8 and 10 (suggested) Articles
Nov 28 W	Aoki	Hormones, mood swings and the hippocampus	Articles
Dec 3 M	Aoki	Ocular dominance plasticity and amblyopia	Articles
Dec 5 W	Aoki	Synaptogenesis: who decides? (axon or dendrite?)	Articles
Dec 10 M	Aoki	Cellular and molecular biology to reveal connectivity	Articles
Dec 12 W	Aoki	Review	
Dec 17 M	Aoki	<i>Final – covers material from Oct 29 to Dec 12</i>	