NEURL-UA 211 (formerly V80.0210)
Fall 2013
Cellular and Molecular Neurobiology

Instructors:
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TA:
TBA
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, 2nd Edition (Sinauer, 2012)

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 2-hour exams and one 1-hr quiz. The first exam will cover material taught through September and October and will count for 50% of the final grade. The one-hour quiz will count for 20% of the final grade and the final exam will count for 25% of the final grade. Another 5% of the final grade will be based on class participation during the months of November and December.

NEURL-UA-211 Cellular & Molecular Neurobiology – Lecture Series

Date	Instructor	Description	Reading
Sept 4 W	Reyes	Introduction: The cell biology of neurons	Fain 1
Sept 9 M	Reyes	Passive electrical membrane properties	Fain 2
Sept 11 W	Reyes	The resting membrane potential *Problem Set #1*	Fain 3
Sept 16 M	Reyes	The action potential I: Hodgkin-Huxley experiments	Fain 5
Sept 18 W	Reyes	The action potential II: Hodgkin-Huxley experiments *Problem Set #2*	Fain 5
Sept 23 M	Reyes	Ion channels I: physiology	Fain 6
Sept 25 W	Reyes	Ion channels II: structure *Problem Set #3*	Fain 6
Sept 30 M	Reyes	Ion channels III: diversity	Fain 7
Oct 2 W	Reyes	Axons, dendrites and synapses *Problem Set #4*	Fain 2
Oct 7 M	Reyes	Synaptic transmission I: pre-synaptic mechanisms	
Oct 9 W	Reyes	Synaptic transmission II: post-synaptic mechanisms *Problem Set #5*	Fain 8
Oct 14 M	Reyes	No Class – Fall Break	Fain 9
Oct 16 W	Reyes	Synaptic transmission III: integration	Articles
Oct 21 M	Reyes	Review	
Oct 23 W	Reyes	***Midterm – Covers material from Sept 4 to Oct 21***	
Oct 28 M	Aoki	Glutamate I: receptors, excitation, and signaling	MQ 8 Articles
Oct 30 W	Aoki	GABA: receptors, anxiety, and epilepsy	MQ 8 &18 Articles
Nov 4 M	Aoki	Acetylcholine: receptors, nicotine/addiction and neuromuscular disease	MQ 7 and 13 Articles
Nov 6 W	Aoki	Ultrastructure of the nervous system;	http://synapses.clm.utexas.edu/
Nov 11 M	Aoki	Review of ultrastructure of the nervous system	http://synapses.clm.utexas.edu/
Nov 13 W	Aoki	***Quiz on materials from Oct 28 to Nov 11 (20%)***	
Nov 18 M	Aoki	Dopamine: receptors, Parkinson's disease, and schizophrenia	MQ 5, 12 and 20 (suggested) Articles
Nov 20 W	Aoki	Norepinephrine: receptors, vigilance, and stress	MQ 5 (suggested) Articles
Nov 25 M	Aoki	Serotonin: receptors, depression, and aggression	MQ 6, 19 and 15 (suggested) Articles
Nov 27 W	Aoki	Opiates: receptors, peptides, and pain	MQ 8 and 9 (suggested) Articles
Dec 2 M	Aoki	Hormones, mood swings and the hippocampus	Articles
Dec 4 W	Aoki	Review: Excitatory synapses. Synaptogenesis, LTP, LTD, excitotoxicity	Articles, MQ7
Dec 9 M	Aoki	Review: Amblyopia, ocular dominance plasticity and the role of GABA, GLU and NE	Articles
Dec 11 W	Aoki	Review: Cellular and molecular biological techniques that reveal connectivity	Articles
Dec 16 M	Aoki	***Final – covers material from Oct 28 to Dec 11***	

		(25%)	