

V80.0210 (Fall 2011)
Cellular and Molecular Neurobiology

Instructors:

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TA:

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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

Reading Material:

The required text readings appear as 'Fain' in the syllabus:

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

For supplemental reading, the following books are recommended and on reserve:

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 2-hour exams. The first exam will cover material taught through September and October and will count for 50% of the final grade. Material taught in November and December will be included in the second and final exam, which will count for 50% of the final grade.

V80.0210 Cellular & Molecular Neurobiology – Lecture Series

Date	Instructor	Description	Reading
Sept 7 W	Carter	Introduction: The cell biology of neurons	Fain 1
Sept 12 M	Carter	Passive electrical membrane properties	Fain 2
Sept 14 W	Carter	The resting membrane potential <i>Problem Set #1</i>	Fain 3
Sept 19 M	Carter	The action potential I: Hodgkin-Huxley experiments	Fain 5
Sept 21 W	Carter	The action potential II: Hodgkin-Huxley experiments <i>Problem Set #2</i>	Fain 5
Sept 26 M	Carter	Ion channels I: physiology	Fain 6
Sept 28 W	Carter	Ion channels II: structure <i>Problem Set #3</i>	Fain 6
Oct 3 M	Carter	Ion channels III: diversity	Fain 7
Oct 5 W	Carter	Axons, dendrites and synapses <i>Problem Set #4</i>	Fain 2
Oct 10 M		No Class – Columbus Day	
Oct 12 W	Carter	Synaptic transmission I: pre-synaptic mechanisms	Fain 8
Oct 17 M	Carter	Synaptic transmission II: post-synaptic mechanisms <i>Problem Set #5</i>	Fain 9
Oct 19 W	Carter	Synaptic transmission III: integration	Articles
Oct 24 M	Carter	Review	
Oct 26 W	Carter	Midterm – Covers material from Sept 7 to Oct 19	
Oct 31 M	Farb/Klann	Ultrastructure of the nervous system; neuroanatomical techniques	http://synapses.clm.utexas.edu/
Nov 2 W	Farb/Klann	EM Demo for those not taking lab section	http://synapses.clm.utexas.edu/
Nov 7 M	Klann	Glutamate I: receptors, excitation, and signaling	MQ 7 (suggested) Articles
Nov 9 W	Klann	Glutamate II: excitotoxicity and long-term potentiation	MQ 7 (suggested) Articles
Nov 14 M	Klann	GABA: receptors, anxiety, and epilepsy	MQ 7 and 7 (suggested) Articles
Nov 16 W		No Class – Society for Neuroscience	
Nov 21 M	Klann	Acetylcholine: receptors, nicotine/addiction and neuromuscular disease	MQ 6 and 12 (suggested) Articles
Nov 23 W	Klann	Dopamine: receptors, Parkinson's disease, cocaine/addiction, and schizophrenia	MQ 5, 11, and 18 (suggested) Articles
Nov 28 M	Klann	Norepinephrine: receptors, signaling, plasticity, and memory	MQ 5 (suggested) Articles
Nov 30 W	Klann	Serotonin: receptors, depression, and aggression	MQ 6, 14, and 16 (suggested) Articles
Dec 5 M	Klann	Opiates: receptors, peptides, and pain	MQ 8 and 10 (suggested) Articles
Dec 7 W	Klann	Alzheimer's disease	Articles
Dec 12 M	Klann	Fragile X syndrome	Articles
Dec 14 W	Klann	Review	
Dec 19 M	Klann	Final – covers material from Oct 31 to Dec 12	