

NEURL-UA 211 (formerly V80.0210)
Fall 2015
Cellular and Molecular Neurobiology

Instructors:

Prof. Alex Reyes, 1057A Meyer
Phone: 212-998-3994
alex.reyes@nyu.edu
Office hours: By Appointment

Prof. Eric Klann, 1006 Meyer
Phone: 212-992-9769
ek65@nyu.edu
Office hours: By Appointment

TA:

Lecture: Ben Suutari, Simon Sun
Lab: Devyani Ulja
Recitations: Tuesdays, 12:30-1:45 and 4:55-6.10

Schedule:

Lectures will be held in 815 Meyer, Mon & Wed, 11-12:15 (Tues, Oct. 13, 11-12:15)
Laboratories will be held in 612 Silver Bldg, Wed, 2-6

The following books are recommended and on reserve:

Fain: Molecular and Cellular Physiology of Neurons (AP, 2014)

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 one two-hour exam and three one-hour quizzes. The first and second one-hour quizzes will each count for 20% of the final grade and will cover material taught through September and October. Another 10% of the final grade will be based on weekly homework assignments. The second 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. If you miss an exam for any reason, you must take a make-up exam within a week. Please note that the make-up exam will be much more difficult than the in-class exam.

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

Date	Instructor	Description	Reading
Sept 2 W	Reyes	Introduction: The cell biology of neurons	Fain 1
Sept 7 M	Reyes	No class: Labor Day	
Sept 9 W	Reyes	Passive electrical membrane properties	Fain 2
Sept 14 M	Reyes	The resting membrane potential <i>Problem Set #1</i>	Fain 3
Sept 16 W	Reyes	The action potential I: Hodgkin-Huxley experiments	Fain 5
Sept 21 M	Reyes	The action potential II: Hodgkin-Huxley experiments <i>Problem Set #2</i>	Fain 5
Sept 23 W	Reyes	Ion Channels 1: diversity	Fain 6
Sept 28 M	Reyes	Quiz on materials from Sept. 9 to Sept. 21 (20%)	
Sept 30 W	Reyes	Ion channels II: physiology/Structure	Fain 6
Oct 5 M	Reyes	Axons: conduction of Action Potentials <i>Problem Set #3</i>	Fain 7
Oct 7 W	Reyes	Dendrites: Active properties	Fain 2 + Articles
Oct 13 T	Reyes	Synaptic transmission I: pre-synaptic mechanisms <i>Problem Set #4</i>	Fain 9
Oct 14 W	Reyes	Synaptic transmission II: post-synaptic mechanisms	Fain 8
Oct 19 M	Reyes	From Synapse to Action Potentials: Putting it all together <i>Problem Set #5</i>	Articles
Oct 21 W	Klann	Glutamate: receptors, excitation, and signaling	MQ 8 Articles
Oct 26 M	Reyes	Midterm – Covers material from Sept 9 to Oct 21 (20%)	
Oct 28 W	Klann	GABA: receptors, anxiety, and epilepsy	MQ 8 & 18 Articles
Nov 2 M	Garcia Marin	Ultrastructure of the nervous system	http://synapses.clm.utexas.edu/
Nov 4 W	Farb	EM Demo – optional	
Nov 9 M	Klann	Acetylcholine: receptors, nicotine/addiction and neuromuscular disease	MQ 7 and 13 Articles
Nov 11 W	Klann	Dopamine: receptors, Parkinson's disease, and schizophrenia	MQ 5, 12 and 20 (suggested) Articles
Nov 16 M	Klann	Norepinephrine: receptors, vigilance, and stress	MQ 5 (suggested) Articles
Nov 18 W	Klann	Quiz on materials from Oct 21 to Nov 11 (20%)	
Nov 23 M	Klann	Serotonin: receptors, depression, and aggression	MQ 6, 19 and 15 (suggested) Articles
Nov 25 W	Klann	No class: Thanksgiving Recess	
Nov 30 M	Klann	Opiates: receptors, peptides, and pain	MQ 8 and 9 (suggested) Articles
Dec 2 W	Klann	Hormones, mood swings and the hippocampus	Articles
Dec 7 M	Klann	Review: Excitatory synapses. Synaptogenesis, LTP, LTD, excitotoxicity	Articles, MQ7
Dec 9 W	Klann	Review: Amblyopia, ocular dominance plasticity and the role of GABA, GLU and NE	Articles
Dec 14 M	Klann	Review: Cellular and molecular biological techniques that reveal connectivity	Articles
Dec 21 M	Klann	Final – covers material from Oct 27 to Dec 10 (25%)	