

NEURL-UA 210
Cellular and Molecular Neurobiology (CMNB)
Lecture Series 2018

Instructors:

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Office hours: Mon and Wed, 12:45-1:45

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TAs:

Aaron Katzman (ack420@nyu.edu)
Simon Sun (sds553@nyu.edu)
Recitations: Tuesdays, 12:30-1:45 and 4:55-6.10

Schedule:

Lectures will be held in room 411 Silver Bldg on Mon and Wed, 11-12:15
Laboratories will be held in room 612 Silver Bldg or Meyer labs on Wed, 2-6

The following books are recommended:

Fain: Molecular and Cellular Physiology of Neurons (2014) (available online)

MQ: Meyer & Quenzer. Psychopharmacology: Drugs, the Brain and Behavior (2013)

PPW: Peters, Palay & Webster. Fine Structure of the Nervous System

FMQ: Feldman, Meyer & Quenzer. Principles of Neuropsychopharmacology (1997)

Cajal: Newman, Araque, Dubinsky, eds. The Beautiful Brain: The Drawings of Santiago Ramon y Cajal (2017)

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

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

Articles will be assigned at a later date and made available on NYU Classes.

Exams and Grading:

There will be three 1-hr exams and one 2-hour exam. Each test will count for 20% of the final grade. If you miss an exam for any reason, you must schedule and take a makeup exam within a week. A signed doctor's note is required for requesting a makeup exam.

There will also be weekly homework assignments, which together will count for 20% of the final grade. Homeworks #1 through 9 must be submitted at the beginning of the recitation session of the immediately following week. Homework #10 must be submitted at the beginning of the following week's Monday lecture on Dec 10. If homework is late, any earned points will be halved.

The grading scale is as follows (grade: min. %):

A:93%, A-:90%, B+:87%, B:83%, B-:80%, C+:77%, C:73%, C-:70%, D+:67%, D:63%

NEURL-UA-210: Cellular & Molecular Neurobiology – Lecture Series 2018

Date	Instructor	Description	Reading
Sept 5 W	Carter	Introduction to CMNB	Fain 1
Sept 10 M	Carter	Passive membrane properties	Fain 2
Sept 12 W	Carter	Resting membrane potential Homework #1	Fain 3
Sept 17 M	Carter	Action potential I: Hodgkin-Huxley experiments	Fain 5
Sept 19 W	Carter	Action potential II: Hodgkin-Huxley experiments Homework #2	Fain 5
Sept 24 M	Carter	Ion channels I: Single channel recordings	Fain 6
Sept 26 W	Carter	Ion channels II: Structure / function Homework #3	Fain 6
Oct 1 M	Carter	Ion channels III: Diversity	Fain 7
Oct 3 W		Exam #1 – Covers material from Sept 5 to Sept 26	
Oct 8 M		No class – Fall Recess	
Oct 9 Tu*	Carter	Axons & dendrites	Fain 2 + articles
Oct 10 W	Carter	Presynaptic release Homework #4	Fain 8
Oct 15 M	Carter	Postsynaptic response I	Fain 9 & 10
Oct 17 W	Carter	Postsynaptic response II Homework #5	Fain 9 & 10
Oct 22 M	Carter	Synaptic & dendritic integration	Articles
Oct 24 W		Exam #2 – Covers material from Oct 1 to Oct 22	
Oct 29 M	Aoki	Glutamate and Synaptic plasticity	MQ4 (method) & MQ8
Oct 31 W	Aoki	GABA Homework #6	MQ4 (method), MQ8 & MQ18
Nov 5 M	Garcia-Marin	“On Cajal and Ultrastructure of the nervous system”	PPW; <i>The Beautiful Brain: The Drawings of S. Ramon y Cajal</i>
Nov 7 W	Aoki	Acetylcholine Homework #7	MQ7 & MQ13
Nov 12 M	Aoki	Dopamine	MQ4 (method), MQ5, MQ9, MQ20 & MQ21
Nov 14 W	Aoki	Serotonin Homework #8	MQ6, MQ15 & MQ19
Nov 19 M		Exam #3 – Covers material from Oct 29 to Nov 12	
Nov 21 W		No class – Thanksgiving Recess	
Nov 26 M	Aoki	Noradrenaline	MQ5 & FMQ8
Nov 28 W	Aoki	Opioids and Hormones Homework #9	MQ11 & original articles
Dec 3 M	Aoki	Review: Cell biology of neurons and glia Homework #10 (due on Dec 10)	MQ2 & PPW
Dec 5 W	Aoki	Review: The influence of glutamate, GABA, NE, ACh and glia in developmental plasticity	Original articles
Dec 10 M	Aoki	Review: Ketamine and psychedelics	Original articles
Dec 12 W	Aoki	Review: Developmental plasticity and vulnerability of adolescent brains	Original articles
Dec 17 M		Exam #4 – Covers material from Oct 29 to Dec 12	