

<b>CELLULAR AND MOLECULAR NEUROBIOLOGY (NBIO 722 and 723)</b>			
SCHEDULE 2009-2010		(version 10 Aug 2009)	
MWF 10-11:50 Neurosci Res Bldg 3rd Floor Conf Room (3118 NRB)			
<b>BLOCK 1: INTRODUCTORY MATERIAL &amp; DEVELOPMENTAL NEUROBIOLOGY (722A) 13 SESSIONS</b>			
<b>*POLLEUX, CHENEY, CREWS, DESHMUKH, NICHOLAS, PEVNEY, PHILPOT, RUSTIONI</b>			
Aug.	26 W	RC	Neuronal cell biology
	28 F	staff	Molecular biology applied to neurons I
	31 M	staff	Molecular biology applied to neurons II
Sept.	2 W	staff	Molecular biology applied to neurons III
	4 F	AR	Human brain dissection
	7 M		<b>LABOR DAY - NO CLASSES HELD</b>
	9 W	LP	Genetic toolkit for molecular neuroscience
	11 F	FP	Imaging technologies for neuroscience
	14 M	SC	Induction and patterning of the developing nervous system
	16 W	SC	Neuronal and glial cell fate specification
	18 F	FP	Neuronal migration, axon growth and guidance
	21 M	FP	Dendrite development, establishment of synaptic connections
	23 W	BP	Synaptic plasticity and remodeling
	25 F	MD	Cell death and neurotrophin function during CNS development
	25 F		<b>*TAKE HOME EXAM BLOCK 1 POSTED</b>
	25 F		<b>*Noon meeting of faculty Blocks 1 and 2</b>
	28 M		<b>No class. Exam day.</b>
	28 M		<b>TAKE HOME EXAM BLOCK 1 DUE AT 4PM</b>
<b>BLOCK 2: NEUROTRANSMITTER RECEPTORS (722B) 10 SESSIONS</b>			
<b>*HODGE, HARDEN, NICHOLAS, WEISS</b>			
Sept	30 W	RN/EW	Intro to cell signaling; overview of G-protein coupled receptor superfamily
Oct	2 F	EW/RN	G Protein signaling
	5 M	EW/RN	Regulation of effectors by G proteins
	7 W	KH	Receptor theory
	9 F		<b>BLOCK 1 EXAM HANDED BACK TO STUDENTS</b>
	9 F	KH	Ligand binding analysis
	12 M		<b>UNIVERSITY DAY- no classes held</b>
	14 W	KH	Demo and discussion: critical evaluation of binding data
	16 F	CH	DA receptors - neurobiology, pharmacology, and regulation
	19 M		<b>NEUROSCIENCE MEEETINGS</b>
	21 W		<b>NEUROSCIENCE MEEETINGS</b>
	23 F		<b>FALL BREAK</b>
	26 M	CH	Metabotropic glutamate receptors
	28 W	CH	GABA-gated ion channels: pharmacology and molecular biology
	30 F	CH	Ionotropic glutamate receptors
	30 F		<b>TAKE HOME EXAM BLOCK 2 POSTED</b>
	30 M		<b>*Noon meeting of faculty Blocks 2 and 3</b>
Nov	2 M		<b>No class. Exam day.</b>
	2 M		<b>TAKE HOME EXAM BLOCK 1 DUE AT 4PM</b>
<b>BLOCK 3: ELECTRICAL SIGNALING (722C) 14 SESSIONS</b>			
<b>*SEALOCK, CHENEY</b>			
Nov	4 W	RS	Membrane potentials, Nernst, GHK, I/V relations; prob set #1
	6 F	RS	Capacitance, equivalent circuits, passive membrane; prob set #2

	9	M	RS	Hodgkin-Huxley experiments, voltage clamp, single channels
	11	W	RS	Discussion of problem set #3
	13	F	RS	Propagation of action potentials
	13	F		<b>BLOCK 2 EXAM HANDED BACK TO STUDENTS</b>
	16	M	RS	Ion channel selectivity
	18	W	RS	Voltage-dependent activation; inactivation
	20	F	RS	Channel diversity
	23	M	RS	Modulation of Ca and K channels by signal transduction processes
	25	W		<b>THANKSGIVING BREAK, NO CLASS</b>
	27	F		<b>THANKSGIVING BREAK, NO CLASS</b>
Dec	30	M	RS	Regulation of action potential frequency: Ih, IA, BK & SK channels
	2	W	RS	Discussion of problem set #5
	4	F	RC	Mechanosensory channels: transduction
	7	M	RC	Mechanosensory channels: adaptation; freq tuning
	9	W	RC	The cochlea and vestibular organs; function of the hair cell arrays
	9	W		<b>TAKE HOME EXAM BLOCK 3 POSTED</b>
	9	W		<b>*Noon meeting, faculty of Blocks 3 and 4</b>
	14	M		<b>TAKE HOME EXAM BLOCK 3 DUE AT 4 PM</b>
				<b>EXAM 3 MAILED TO STUDENTS IN ENVELOPE THEY PROVIDE</b>
				<b>CHRISTMAS BREAK</b>
<b>BLOCK 4: SYNAPTIC MECHANISMS AND INTRACELLULAR SIGNALING (723A) 22 SESSIONS</b>				
<b>*MANIS, *MANESS, BRENNAN, CARELLI, MCCARTHY, PHILPOT, WEISS, WIGHTMAN</b>				
Jan	11	M	PBM	Electrophysiological analysis of neurotransmitter release
	13	W	PBM	Molecular mechanisms of neurotransmitter release
	15	F	MW/RC	Approaches to assessing transmitter release
	18	M		<b>MARTIN LUTHER KING HOLIDAY</b>
	20	W	PBM	Uniquantal and multiquantal release in the CNS
	22	F	PBM	Modulation of release; short-term plasticity
	25	M	BP/PBM	Synaptic plasticity: introduction to LTP and LTD
	27	W	BP/PBM	Synaptic plasticity: expression and maintenance of LTP
	29	F	BP/PBM	Synaptic plasticity: long term depression
Feb	1	M	KM	Ca signaling #1
	3	W	KM	Ca signaling #2
	5	F	KM	Ca signaling #3
	8	M	PFM	Receptor/nonreceptor protein tyrosine kinases as regulators of neural functions
	10	W	PFM	The RAS-MAPK pathway links receptors to gene expression
	12	F	PFM	The PI3 Kinase pathway for neuronal survival
	15	M	PFM	Regulation of actin dynamics by Rho family GTPases
	17	W	PFM	Local protein synthesis in synaptic plasticity
	19	F	Faculty	Is plasticity presynaptic or postsynaptic? A review through debate
	22	M	JB	Neurotransmitter receptor trafficking and localization
	24	W	EW	Phototransduction: detection of single quanta
	26	F	EW	Phototransduction: cGMP channels, adaptation, rhodopsin shutoff
	26	F		<b>TAKE HOME EXAM BLOCK 4 POSTED</b>
				<b>*noon meeting, faculty of Blocks 4 and 5</b>
Mar	1	M		No class -- exam day
	1	M		<b>TAKE HOME EXAM BLOCK 4 DUE 4 PM</b>

<b>BLOCK 5: CNS: ANATOMY AND FUNCTION OF SENSORY AND MOTOR SYSTEMS (723B) 19 SESSIONS</b>			
<b>*RUSTIONI, BOETTIGER, FITZPATICK, MANIS, PHILPOT, SEGAL, STUART, ZYLKA</b>			
	<b>3 W</b>	AR	Nuclei and pathways in the brain
	<b>5 F</b>	AR	Nuclei and pathways in the brain
	<b>8 M</b>		<b>SPRING BREAK</b>
	<b>10 W</b>		<b>SPRING BREAK</b>
	<b>12 F</b>		<b>SPRING BREAK</b>
	<b>15 M</b>	CB	Imaging of the CNS
	<b>17 W</b>	AS	Vertebrate retina
	<b>17 W</b>		<b>EXAM 5 HANDED BACK TO STUDENTS</b>
	<b>19 F</b>	BP	Organization and basic function of primary visual cortex
	<b>22 M</b>	BP	Visual cortex function and processing: lessons from modern methods
	<b>24 W</b>	BP	Beyond primary visual cortex
	<b>26 F</b>	PM	Computational approaches to vision 1
	<b>29 M</b>	PM	Computational approaches to vision 2
	<b>31 W</b>	PM/DF	Hearing: The eighth nerve and cochlear nucleus
<b>Apr</b>	<b>2 F</b>		<b>GOOD FRIDAY/EASTER HOLIDAY</b>
	<b>5 M</b>	PMDF	The auditory brainstem, coincidence detection, auditory cortex
	<b>7 W</b>	AR	Sensory organs: Taste
	<b>9 F</b>	AR	Sensory pathways: Olfaction
	<b>12 M</b>	Faculty	General principles of CNS organization I
	<b>14 W</b>	MZ	Pain - Peripheral mechanisms
	<b>16 F</b>	MZ	Pain - Central mechanisms
	<b>19 M</b>	MZ	Touch and the somatosensory cortex
	<b>21 W</b>	RS	Motor organization: central and peripheral components
	<b>23 F</b>	RS	Spinal circuits and central pattern generating motor units
	<b>26 M</b>	RS	Basal ganglia, cerebellum, and motor cortex
	<b>28 W</b>	Faculty	General principles of CNS organization II
			W, APRIL 28- LAST DAY OF CLASSES
			<b>TAKE HOME EXAM BLOCK 5 POSTED</b>
			<b>TAKE HOME EXAM BLOCK 5 DUE 4 PM</b>
			<b>EXAM 5 AVAILABLE FOR PICKUP AFTER 1:00PM</b>