

Cell Physiology 2009

PBSB Program. 15 weeks X 3 hours per week

Location: Conference room, Physiology 5th floor, LC 504, 4:00 – 5:15 p.m.

Course director: Crina Nimigean – 212-746-5947, crn2002@med.cornell.edu

Course TA: Romulo Hurtado (Junior), roh2002@med.cornell.edu

Course objectives: To familiarize first and second year students with common topics in cell physiology and to provide exposure to research areas relevant to PBSB faculty

General area	Lecture topic	Lecturer	Date
	Course introduction	Crina Nimigean	9/1
Cell membranes and biophysics of the cell	Cell membranes and phospholipids	Olaf Andersen	9/3
	Compartments, electrolytes, osmosis	Olaf Andersen	9/8
	Electrodiffusion, membrane potential, HH	David Christini	9/10
Genes, proteins	Transcription	Lucy Skrabanek	9/15
	Translation	Scott Blanchard	9/17
	Quiz 1		9/22
Proteins in the cell	Protein structure/function and modification	Olga Boudker	9/24
	Enzyme kinetics and energetics	Crina Nimigean	9/29
	Ion channels and transporters	Larry Palmer	10/1
	Trimeric G-proteins and GPCRs	Harel Weinstein	10/6
	Kinases, phosphatases and other effectors	Xin-Yun Huang	10/8
	Quiz 2		10/13
Signaling in the cell	Transcription factors	Yutaka Nibu	10/15
	Ca ²⁺ - a ubiquitous signaling molecule	Geoff Abbott	10/20
	Adrenergic signaling, PKA, PKC, cAMP	Mark Rosenblatt	10/22
	MAP kinase pathways	Gregoire Altan-Bonnet	10/27
	Renin-Angiotensin signaling	Alicia Reid	10/29
	Quiz 3		11/3
Cells as complex systems	The neuron as a cell system	Emre Aksay	11/5
	Neuronal communication	Emre Aksay	11/10
	Neuronal plasticity	Jeremy Dittman	11/12
	The cancer cell as a complex system	Franziska Michor	11/17
	Quiz 4		11/19
	<i>Thanksgiving Break</i>		1/24-26
	The cardiac myocyte as a complex system	Cathy Hatcher	12/1
	Apoptosis and cell death	Hao Wu	12/3
	Chondrocyte differentiation and bone growth	Chisa Hidaka	12/8
	Retinal phototransduction and neural circuitry	Sheila Nirenberg	12/10
	Quiz 5		12/15

Course textbooks:

Cellular Physiology by [Mordecai P. Blaustein, Mordecai P. Blaustein, Donald R. Matteson, Joseph P. Y. Kao](#)

Recommended:

1. **Ion Channels of Excitable Membranes** by [Bertil Hille](#)
2. **Molecular Biology of the Cell** by [Bruce Alberts, Julian Lewis, Alexander Johnson](#)