

CAMB 692 – Advanced Topics in Cell Biology, Physiology, and Metabolism II: Cell Signaling and Metabolism

Spring 2023

Tuesdays and Thursdays 10:15am-11:45am

SCTR 11-146AB

Course directors:

Joe Baur – baur@pennmedicine.upenn.edu

Rob Lee – rjl@pennmedicine.upenn.edu

Cells in complex organisms are required to adapt rapidly in a changing environment. Maintaining homeostasis while performing specialized functions requires that cells respond to extracellular signals as well as fluctuations in a host of intracellular metabolites. This course will cover selected topics and general principles related to signal transduction and the control of metabolic flux in living cells.

Two lectures at the beginning of the course will provide an overview of metabolic and signal transduction pathways. The rest of the course will be student team-led discussion sessions both providing an overview of a topic as well as focusing on important papers from the primary literature. Students will select topics of interest to them, and the course directors will assign students to topics in line with their interests as much as possible. Each student will give 2-3 presentations over the course of the semester. Most sessions will include guest faculty member who will attend the class as subject matter experts and pick the papers (both primary papers and reviews) for the class. The presenting students are encouraged to meet with these faculty and/or the course directors prior to their presentations to discuss the topic and papers. All students are expected to read the papers for each class and contribute to class discussion. Students will be evaluated on their presentations and participation in class discussion.

Course Schedule

Date	Faculty	Topic	
Course Introduction			
January	Tue 24	Joe Baur & Rob Lee	Org meeting/Intro to metabolism (lecture)
	Thur 26	Rob Lee	Intro to signal transduction (lecture)
Metabolic pathways in health and disease			
	Tue 31	Katy Wellen	Acetyl CoA
February	Thur 2	Zolt Arany	Branched chain amino acids
	Tue 7	Celeste Simon	Urea cycle
	Thur 9	Joe Baur	NAD
Signal transduction by receptors and adapters			
	Tue 14	Paul Titchenell	Insulin/mTOR signaling
	Thur 16	Mitch Lazar	Nuclear hormone receptors 1
	Tue 21	Liming Pei	Nuclear hormone receptors 2

	Thur	23	Peter Klein	Wnt signaling
	Tue	28	Christoph Thaiss	Gut microbiome signaling
March	Thur	2	Katalin Sustak	Kidney
	Tue	7	<i>Spring Break—No Class</i>	
	Thur	9	<i>Spring Break—No Class</i>	
	Tue	14	Becky Wells	Liver signaling
	Thur	16	Kevin Foskett	Calcium signaling
	Tue	21	Will Bailis	Immunometabolism
	Thur	23	Andrei Thomas-Tikhonenko	Aberrant signaling in cancer cells
	Tue	28	Rob Lee	GPCRs

Metabolic regulation of cell and organism physiology

	Thurs	30	Baur & Lee	Raf Inhibitor Paradox
April	Tue	4	Brad Johnson*	Senescence
	Thur	6	Natali Chanaday	Neuronal Signaling
	Tue	11	David Merrick	Adiogenesis
	Thur	13	Patrick Seale	Brown fat
	Tue	18	Claire Mitchell (or 20th)	Lysozyme
	Thur	20	Teji Khurana	Muscle Metabolism
	Tue	25	Baur + Lee	Coffee and a Chat

Faculty Contact Info:

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