

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

Spring 2025

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

SCTR 8-146AB

Course directors:

Joe Baur – baur@pennmedicine.upenn.edu

Rob Lee – rjl@pennmedicine.upenn.edu

Will Bailis - bailisw@chop.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/Rob/Will	Organizational meeting
	Tue	21	Joe Baur	Intro to metabolism (lecture)
	Thur	23	Rob Lee	Intro to signal transduction (lecture)
			Metabolic pathways in health and disease	
	Tue	28	Katy Wellen	Acetyl CoA
	Thur	30	Mitch Lazar	Nuclear hormone receptors
February	Tue	4	Celeste Simon	Urea cycle
	Thur	6	Liming Pei	Nuclear hormone receptors 2
			Signal transduction by receptors and adapters	

	Tue	11	Becky Wells	Liver signaling [Joe out?]
	Thur	13	Paul Titchenell	Insulin/Akt/mTOR signaling [Rob/Joe out?]
	Tue	18	Natali Chanaday	Neuronal signaling
	Thur	20	Peter Klein	Wnt signaling
	Tue	25	Joe Baur	NAD metabolism [can be flexible]
	Thur	27	Rob Lee	GPCRs
March	Tue	4	Kevin Foskett	Calcium signaling
	Thur	6	Zolt Arany	Branched chain amino acids
	Tue	11	<i>Spring Break—No Class</i>	
	Thur	13	<i>Spring Break—No Class</i>	
	Tue	18	Matt Hayes	GLP-1 agonists
	Thur	20	Andrei Thomas-Tikhonenko	Aberrant signaling in cancer cells
	Tue	25	Katalin Susztak	Kidney/ferroptosis

Metabolic regulation of cell and organism physiology

	Thurs	27	Will Bailis	Immunometabolism
April	Tue	1	David Merrick	Adipogenesis
	Thur	3	Patrick Seale	Brown fat
	Tue	8	Brad Johnson	Senescence
	Thur	10	<i>Free day – No class</i>	
	Tue	15	Teji Khurana	Muscle metabolism [Joe out?]
	Thur	17	Claire Mitchell	Lysosome [Joe out?]
	Tue	22	Caroline Bartman	Glucose Flux
	Thur	24	Joe/Rob/Will	Coffee and a Chat

Faculty Contact Info:

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