

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

Spring 2021

Tuesdays and Thursdays 10:30am-12pm

via Zoom (<https://penncmedicine.zoom.us/j/96479922312?pwd=ZGFTOWtqZnVoOVZCTWhTbFZmUXMyUT09>)

Meeting ID: 964 7992 2312

Passcode: 12345

Course directors:

Joe Baur – baur@penncmedicine.upenn.edu

Rob Lee – rjl@penncmedicine.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 indicate 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 3 presentations over the course of the semester. Most sessions will include guest faculty 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 should also post questions on the class discussion board prior to each session. We expect an average of about 1 question per session from each student over the course of the semester. Two or three students will also be assigned as discussion leaders for each session. These students will curate interesting or relevant questions from the class discussion board and bring these questions up in class if not covered by the presenters. Students will be evaluated on their presentations and participation in class discussion.

### **Course Schedule**

	<b>Date</b>		<b>Faculty</b>	<b>Topic</b>
			<b>Course Introduction</b>	
January	Tue	19	Joe Baur & Rob Lee	Org meeting
	Thur	21	Joe Baur	Intro to metabolism (lecture)
	Tue	26	Rob Lee	Intro to signal transduction (lecture)
			<b>Metabolic pathways in health and disease</b>	
	Thur	28	Katy Wellen	Acetyl CoA
February	Tue	2	Joe Baur	NAD
	Thur	4	Zolt Arany	Branched chain amino acids
	[9:30am!!!!] Tue	9	Celeste Simon	Urea cycle

Thur 11 Rotonya Carr Hepatic lipid metabolism

### Signal transduction by receptors and adapters

Tue 16 Paul Titchenell Insulin signaling

Thur 18 Joe Baur & Rob Lee IRS/FRS

Tue 23 Joe Baur mTOR

Thur 25 Andrei Thomas-Tikhonenko Aberrant signaling in cancer cells

March Tue 2 Mitch Lazar Nuclear hormone receptors 1

Thur 4 Liming Pei Nuclear hormone receptors 2

Tue 9 *Spring Break—No Class*

Thur 11 *Spring Break—No Class*

Tue 16 Peter Klein Wnt signaling

Thur 18 Eric Witze EGFR signaling

Tue 23 Kevin Foskett Calcium signaling

Thur 25 Ulf Beier T Cell signaling

Tue 30 *Penn Civic Engagement Day—No Class*

### Metabolic regulation of cell and organism physiology

April Thur 1 Will Bailis Immunometabolism

Tue 6 Patrick Seale Brown fat

Thur 8 David Merrick Adipogenesis

Tue 13 Katalin Susztak Kidney metabolism

Thur 15 Teji Khurana Muscle metabolism

Tue 20 Baur + Lee Raf inhibitor paradox

Thur 22 Brad Johnson Senescence

Tue 27 Lee GPCR signaling in immunity

Thur 29 Baur + Lee Chat & Course Feedback

### Faculty Contact Info:

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