

ADVANCED TOPICS IN SIGNAL TRANSDUCTION AND CELLULAR REGULATION

BCHM 5801, Spring 2024 (3 credits)

INSTRUCTORS: Faculty of the Signaling and Cellular Regulation Training Program

COORDINATOR: Sabrina Spencer

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CLASS TIMES: Tuesdays and Thursdays, 2:00-3:15 pm

COURSE MATERIALS: Lecture notes, research articles and reviews

OFFICE HOURS: By appointment

EXAMS AND GRADING:

Student presentation	20%
Mid-term exam (take home)	40%
Final exam (take home)	40%

ORGANIZATION AND GOAL OF THE COURSE: The goal of this course is to learn about topics in signaling and cellular regulation in depth, by CU-Boulder's own masters in this field. We will cover fundamental signaling pathways and mechanisms, methodologies and logic used to deduce targets and cellular processes responsive to signaling and discuss new concepts and directions for this fast-moving field. Our goal is for you to learn enough about key concepts and how to address problems in signaling and cellular regulation, that you will be able to design a research program to discover and characterize a novel signaling pathway. We will also cover rigor and reproducibility of results.

Class schedule

<u>Date</u>	<u>Faculty name</u>	<u>Topic</u>
Jan 16 & 18	Sabrina Spencer	Introduction to cell signaling and the MAPK pathway
Jan 23 & 25	Robin Dowell	Transcription Regulation
Jan 30 & Feb 1	Vignesh Kasinath	Gene Silencing & Transposons
Feb 6 & 8	Rob Batey	RNA-mediated cellular processes
Feb 13 & 15	Tom Cech	Telomere biology and signaling senescence
Feb 20 & 22	Dylan Taatjes	Methods to study cell signaling, and their limitations
Feb 27 & <u>29</u>	Aaron Whiteley	How do you predict the function of an unknown protein?
Mar 5 & 7	Karolin Luger	Signaling to chromatin
Mar 12 & 14	Nausica Arnoult	DNA damage signaling
Mar 19 & 21	Mary Allen	Data Science and cellular identity
Mar 26 & 28	<i>Spring break, no class</i>	<i>n/a</i>
Apr 2 & 4	Corrie Detweiler	Host-Pathogen Communication
Apr 9 & 11	Gia Voeltz	Organelle Contact and Communication
Apr 16 & 18	Lee Niswander	Neural Development
Apr 23 & 25	Sabrina Spencer	Student presentations
Apr 30 & May <u>2</u>	Sabrina Spencer	Student presentations

Midterm given out evening of Thursday Feb 29 and due back Monday March 4 before 8am

Final exam given out evening of Thursday May 2 and due back Monday May 6 before 8am

Monday May 13th: Signaling and Cellular Regulation Symposium