MOLECULAR BASIS OF EUKARYOTIC CELL SIGNALING (MCB480)

Time: 12:30pm-1:50pm Tue & Thurs
Location: Burrill Hall 140

Jan. 18 (1) Introduction
Jan. 20 (2) Receptor tyrosine kinases (RTKs)
Jan. 25 (3) RTK signaling: modular domains and adaptors
Jan. 27 (4) Ras and the small G protein superfamily
Feb. 1 (5) Protein phosphorylation and the MAPK pathway
Feb. 3 (6) Methods to study protein-protein interactions
Feb. 8 (7) Regulation of signaling: feedback, crosstalk, and specificity
Feb. 10 (8) Protein kinases
Feb. 15 (9) Protein phosphatases
Feb. 17 (10) Experimental design in studying phosphorylation and signaling cascades
Feb. 22 (11) RNAi approaches (and literature discussion overflow)
Feb. 24 (12) Cytokine receptor signaling
Mar. 1 (13) T cell receptor signaling
Mar. 3 (14) TGF-β receptor signaling
Mar. 8 EXAM I
Mar. 10 (15) Phospholipid in cell signaling
Mar. 15 (16) Signaling into the nucleus
Mar. 17 (17) Signaling into the nucleus, part 2

SPRING BREAK

Mar. 29 (18) G protein coupled receptor signaling
Mar. 31 (19) G protein coupled receptor signaling, part 2
Apr. 5 (20) Methods to study spatial and temporal regulation of signal transduction
Apr. 7 (21) Major pathways to apoptosis
Apr. 12 (22) Major pathways in development
Apr. 14 (23) Signaling pathways regulating the cell cycle
Apr. 19 (24) Signaling in cancer
Apr. 21 (25) Genomic and proteomic approaches to studying signaling networks
Apr. 26 (26) Single-cell approach to studying signal transduction
Apr. 28 (27) Modeling of signaling networks
May 3 EXAM II
Course website: [http://www.life.uiuc.edu/mcb/480/](http://www.life.uiuc.edu/mcb/480/) (log-in information provided in class)

Handout and relevant literature are available for download ~24 hr before each class. Hard copies of handouts will not be provided. Please remember to bring the handout to each class.

*There is no textbook.*

**Reference books that offer basic knowledge on signal transduction:**

   Chapter 15, “Mechanisms of Cell Communication”.

**Readings:**

1) Recommended readings: chapters above; reviews and original research articles associated with each lecture.
2) Required readings: original research articles to be discussed during some lectures and/or for exams.

**Grades:**

Both exams are in-class, 100 points each. Final score will be 40% Exam I + 60% Exam II. An “A” is guaranteed for a final score of 80.

**Instructor:**

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Questions are welcome before/during/after each class, and any time by e-mail. All questions by e-mail will be answered within 24 hours. Office meetings can be arranged whenever there is a need.