

CBPH 894
MODERN CONCEPTS IN CELL BIOLOGY II
Spring Semester 2017
T/TH 3:00-5:00 PM 6201 MBRB

Principles of Signaling (Weiss, Brenman, Major)

Thursday, January 12, 2017 (Weiss) - Basics of G-protein coupled receptor signaling
Tuesday, January 17, 2017- (Weiss) - G-protein coupled receptor signaling – Effector regulation
Thursday, January 19, 2017- (Brenman) – Introduction to Protein Kinases and Phosphatases
Tuesday, January 24, 2017- (Brenman) – Protein Kinases and Phosphatases
Thursday, January 26, 2017- (Major)- b-catenin Dependent Wnt Signal Transduction I
Tuesday, January 31, 2017- (Major)- b-catenin Dependent Wnt Signal Transduction II
Thursday, February 2, 2017 (Major) – b-catenin Independent Wnt Signal Transduction

Cell Cycle & Death (Deshmukh)

Tuesday, February 7, 2017 (Deshmukh) – Historical overview: Cyclins and CDKs
Thursday, February 9, 2017 (Deshmukh) – Cell cycle regulation by CDK inhibitors: p21, p27
Tuesday, February 14, 2017 (Deshmukh) – Cell cycle regulation by INK4a and p19ARF
Thursday, February 16, 2017 NO CLASS
Tuesday, February 21, 2017 (Deshmukh)- Cell death genes (cytochrome c and Smac)

Gene Regulation and Development (Bressan, Giudice, Hammond)

Thursday, February 23, 2017 (Bressan) Vertebrate embryonic development
Tuesday, February 28, 2017 (Bressan) Vertebrate embryonic development
Thursday, March 2, 2017 (Giudice) Alternative Splicing in Development
Tuesday, March 7, 2017 (Hammond) MicroRNA control of Development

Midterm exam – take home exam – assigned Tuesday, March 7, 2017
Exams due at noon on Monday, March 13, 2017.

No class Thursday, March 9, 2017

Cytoskeleton (Bear, Cheney, Snider)

Tuesday, March 14, 2017 (Bear) – Actin polymerization: Arp 2/3 complex
Thursday, March 16, 2017 (Bear) – Actin polymerization: Ena/VASP proteins
Tuesday, March 21, 2017 (Cheney) – Molecular motors
Thursday, March 23, 2017 (Cheney) – Filopodia and related cellular extensions
Tuesday, March 28, 2017 (Bear) - Microtubule dynamics
Thursday, March 30, 2017 (Snider) –Intermediate filaments and disease

Adhesion, signaling, and motility (Burr ridge, Jacobson)

Tuesday, April 4, 2017 (Burr ridge) – Rho proteins and the cytoskeleton
Thursday, April 6, 2017 (Burr ridge) – Focal adhesion assembly
Tuesday, April 11, 2017 (Burr ridge) - Focal adhesion disassembly
Thursday, April 13, 2017 (Burr ridge/Jacobson) – Rigid substrates and mechanotransduction
Tuesday, April 18, 2017 (Jacobson)- Amoeboid and mesenchymal migration

Final exam – take home exam – assigned Tuesday April 18, 2017
Due at noon on Monday, April 24, 2017.

Time & Place

Class will meet Tuesdays and Thursdays from 3:00 to 5:00 PM in 6201 MBRB (except when noted).

Format

Part of the class will be a lecture by one of the block leaders. The remainder of the lecture will be discussion of the primary literature. Active participation of the students, both in presentations, but also in general discussion, is required.

Student Assignments

For most of the classes groups of students will be assigned to present and lead discussion on research papers. Students listed first and marked with an asterisk are expected to present a few minutes of introduction and background information to “set the stage” for discussing the work in the paper. ***Everyone in class is expected to have read the review articles and papers and is expected to contribute to the discussion.*** Those students assigned to each paper are expected to lead the discussion of the paper.

While reading the papers, consider the following questions for each figure:

- 1) What experiment are they doing?
- 2) Why did they do this experiment?
- 3) What did they find?
- 4) Do you agree with their interpretation?
- 5) What is the next step?

Grading

Paper Presentations: ~ 25%

Class Participation: ~ 25%

Mid term exam ~ 25%

Final exam ~ 25%