Emerging Fields in Biochemistry and Molecular Biology: Advanced Cell Signaling (1hr)

Course Instructors: Darren Boehning (Darren.F.Boehning@uth.tmc.edu; Course Director), Vasanthi Jayaraman (Vasanthi.Jayaraman@uth.tmc.edu), Mariah Baker (Mariah.R.Baker@uth.tmc.edu), and John Spudich (John.L.Spudich@uth.tmc.edu)

Course Objectives

A) Learn advanced tenets of cell signaling by experts in the respective fields.
B) Learn cutting edge technical approaches to studying cell signaling pathways.
C) Develop critical analysis skills.
D) Develop effective presentation skills.

Course Description: The goal of this Minicourse is for students to develop critical analysis and presentation skills in the context of learning cell signaling. The class will be divided into 11 modules (twice per week) that are each 1hr 15 minutes long focused on new topics in second messenger signaling with a focus on calcium signaling and associated cutting edge technical approaches for monitoring cell signaling pathways in vivo. The course will be divided into two lectures followed by a presentation and critical analysis of current literature.

Course Requirements: The class is graded A-F. Grading is determined by attendance, active participation in the literature discussion, one page reviews of two research papers, and presentation of one research paper (see below). The paper presentation, depending upon enrollment, may be presented individually or as a team. The presentations will be assigned in the first class. The presentations will be graded by the faculty instructor and written feedback will be provided. If a student is not able to attend a class, the instructor for that week must be notified ahead of time. If it is your week to submit the one page review of the research paper, it is due before class on the day of the literature discussion.

Grading rubric:
40% One page review of two assigned research papers, each worth 20%.
40% Presentation of an assigned research paper. The presentation will be graded on 10 criteria, each worth 10 points (100 points total). See attached grading sheet.
20% Attendance and class participation
Emerging Fields in Biochemistry and Molecular Biology: *Advanced Cell Signaling (1hr Course) – SPRING 2016*

All classes to be held on Mondays and Thursdays, 1:00-2:15 p.m.  
Medical School Building **room B.621 (exceptions highlighted)**  
Course Director: Darren Boehning, Ph.D. (MSB 6.161, 713-500-6167)

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<td>B.621</td>
<td>Introduction and presentation skills</td>
<td>Boehning</td>
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<td>Thursday</td>
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<td>Ca2+ signaling mechanisms</td>
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<td>MARTIN LUTHER KING HOLIDAY</td>
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<td>Thursday</td>
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<td>Cell adhesion and Ca(^{2+}) signaling in neurons</td>
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<td>Monday</td>
<td>01/25/16</td>
<td>B.621</td>
<td>Literature discussion: Gating machinery of InsP3R channels revealed by electron cryomicroscopy [Nature 527, 336-341 (19 Nov2015)]</td>
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<td>Light initiated activity in cellular function- Caged compounds</td>
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<td>Light initiated activity in cellular function-Optogenetics</td>
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<td>Thursday</td>
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<td>Literature discussion: Pick a paper using caged compounds or optogenetics in your field (Paper needs to be approved by Dr. Jayaraman)</td>
<td>Jayaraman</td>
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<td>Literature discussion: Ultrasensitive fluorescent proteins for imaging neuronal activity [Nature 499, 295–300 (18 July 2013)]</td>
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<td>Monday</td>
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<td>Wide-field epifluorescence imaging</td>
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Presentation Evaluation Form

Speaker: ______________________

A numerical score (1-10, where 1 is poor and 10 is exceptional) for each question will be provided with justification.

1. Were the *slides* easy to read, clear, and informative?
   Score:_______

2. Was the *introduction* sufficient for understanding the paper and the implications of the research?
   Score:_______
3. Following the introduction, was it clear what **major questions** would be addressed in the paper?

Score:________

4. Were the **experimental procedures** described sufficiently well that you could understand the information they would generate?

Score:________

5. Was the **rationale** for doing each experiment clearly stated?

Score:________
6. Could you follow how each experiment was carried out?
Score:_______

7. Was a conclusion clearly stated at the end of each experiment?
Score:_______

8. Was the work presented in a logical sequence?
Score:_______
9. Did the speaker tie together all the important points at the end of the paper presentation? Did he/she include a model to help visualize the overall conclusions?
Score:________

10. Did the speaker answer each question directly or did he/she talk around the question without actually answering it?
Score:________