Topics in Animal Development
Spring, 2016

BZ 692D-001 (CRN 11627) – graduate students
BZ 492C-001 (CRN 11601) – undergraduate students

The purpose of the course is to read and analyze current articles on developmental / cell biology in animal systems.

Learning Goals for this class:
- **READ**: Learn how to approach reading an article in the scientific literature. Recognize how information is organized in articles. Learn to cull out the take-home messages.
- **WRITE**: Write a mini-review article. Synthesize, highlight and objectively critique 4-5 articles on a related topic.
- **SPEAK**: Orally present an article to your peers in a way that they can understand, digest and critique the findings. Construct effective PowerPoint or visual aids. Lead the discussion of the journal club on your paper and stimulate your audience to participate.
- **THINK**: On a weekly basis, evaluate the strengths and weaknesses of the study. Evaluate the controls. Articulate positive or negative critiques as part of the class discussion.

The seminar is a journal club format; we meet once a week to discuss a recent paper relating to animal development. The course is intended for advanced undergraduates and graduate students who have a strong background in cellular and molecular biology.

Each student will present 1 paper in depth, using overheads or PowerPoint, and will lead a group discussion of that paper. The paper is distributed at least one week before it is discussed. Students are expected to come prepared to discuss the paper and be active participants in the discussion.

Students will choose a group of 4-5 related papers on a topic of interest and write a short review about them (3 pages plus references, double spaced). These are due at the last class meeting at the end of the semester.

Papers and topics must be approved by Dr. Mykles or Dr. Garrity.

Grading is based on attendance and active participation in the discussions (30%), individual presentations (50%), and short review (20%).

For more information contact

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SOME SPECIFICS:

Selecting your paper: Our time is best spent on well-crafted articles that advance the field of genetics and developmental biology, and that are of broad interest to the group. To find a worthy article you should: Select a major article from one of the best scientific journals in the field [e.g., Nature, Science, Development, Developmental Biology, Developmental Dynamics]. Read the article in its entirety. Consider the significance of the findings (Relatively minor advances or mostly descriptive findings? Answers a long-standing question in the field? Lays out a new model? Proposes a new mechanism? Contradicts a previous theory?) Evaluate the controls. Choose an article for which you support all or almost all of the findings.

Approval process:
Two weeks in advance of your presentation date, please email the selected paper (pdf) to Dr. Garrity or Dr. Mykles, and provide 1-3 sentences to answer: “Why is the selected paper of major interest, or, why does it advance the field?” One week prior to the presentation, we will post both the paper and your statement on RamCT.

Your grade for your oral presentation (50%) will be based on the following:
- A “worthy” paper is selected and submitted on time. [2 weeks: 1 week to discuss and potentially re-choose; 1 week to post ahead for class to read.]
- Introduction (state the significance of the topic; provide brief background on animal model; provide context for the work; define critical techniques)
- Results: Clearly present reasons for experiments; State the type of experiment; Point to specific features in figures; Conclusion sentence(s) posted for every figure as the slides go along.
- Analysis: State at least three strengths (why is this a strong/interesting/well-crafted study?); State at least one weakness (what is faulty/ambiguous/poorly controlled/misleading/over-interpreted about the results or conclusions?)
- Presentation skills: Are you well prepared, articulate, and organized?
- Discussion leader: Did you check to see your audience understands? Did you pose questions to the group? Did you draw them out? Can you answer questions?

Your grade for weekly participation (30%) will be based on the following. Each week you will get a score of up to three points, based on the following benchmarks:
- 0: Did not attend. Or, attended but your attention was on your phone or non-class material.
- 1 pt: Listened and followed along but did not orally participate. (“C level”)  
  - Asked a clarifying question  
  - Stated why you support a finding  
  - You elaborate on a comment by another student  
  - Stated why the approach was strong or weak  
  - Summarized the finding or tie together a part of the paper
- 2 pts: Active participation (“B level”)  
  - Asked a clarifying question  
  - Stated why you support a finding  
  - You elaborate on a comment by another student  
  - Stated why the approach was strong or weak  
  - Summarized the finding or tie together a part of the paper
- 3 pts: Critical participation (“A level”)  
  - Made comment or question that reflected preparation (deep reading of the paper before class)  
  - Made comment or question that stimulated further discussion of group
- Stated that you disagree with a finding, control or approach - and why.
- Suggested a follow-up experiment or approach.

Your grade for **written mini-review** (20%) will be based on the following:

- **Significance:** you state why the topic is interesting, important, exciting or relevant. Why do we care? Why should society spend money on this?
- **Approach:** you describe the approach [type of organism, type of experiment, rationale for experiments]
- **Major findings:** you coherently state the major findings of each included paper.
- **Analysis:** this is your critical appraisal of why these papers are important. Some ideas to address could include:
  - What is new or surprising about the genes, functions, expression, regulation or mechanism?
  - What mechanisms or models are being suggested to explain how the gene affects morphogenesis?
  - What are the next big questions as yet unanswered with regard to this specific topic?
  - What experimental question is really important but difficult to ask due to technical problems, and what approaches might overcome this?
  - What will be the impact of understanding the protein, mechanism or topic thoroughly? [Therapeutics possible? Prevention? Diagnosis? Fundamental understanding of development, of a protein family, of a new domain, of a mechanism, of a process?]
- **Craftsmanship:** Is your writing clear, easy to follow, well-organized, and logical? Is your sentence structure and grammar at a professional level reflecting a college education?
- **References** appropriately cited
- **Length** appropriate [3 full pages, double spaced, of text; references extra.] You may extend the length up to 5 pages if desired.