Spring 2-1-2022

BIOB 467.01: Molecular Analysis of Development

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BIOB 567/467 Molecular Analysis of Development

Spring 2021
Tuesdays 12-2pm, Skaggs Rm 270
Zoom option: https://umontana.zoom.us/j/92231709095

Instructor: Ekaterina Voronina, ekaterina.voronina@umontana.edu

This course covers key topics in developmental biology through a detailed study of the primary literature. Seminar topics are updated for each year the course is offered and are provided in each syllabus. With help of the instructor, the students present each topic and lead a discussion each class period based on the assigned research paper and one or two review articles to provide background on the topic and research.

Learning outcomes:

- Know and understand basic developmental mechanisms
- Be able to critically read and interpret scientific literature
- Discuss and critique scientific publication
- Practice presentations among your peers

Class Format:

The class is based on presentation and detailed analysis of primary journal articles, which are required reading. Topics and papers for students' presentations will be assigned in advance to allow sufficient time for preparation. The student's presentation should start with introducing the topic drawing on the recent reviews. When presenting the paper, keep in mind the important questions addressed in the reading summaries assignments, and bring them up for discussion in class. Discuss the experiments performed in the paper, with an eye to whether the experiments address the stated question, is the interpretation of the experiments valid, and are proper controls included? It is very important for our own scientific development to look critically at the data, the methods, and the interpretations in published manuscripts.

All students in the class need to read the paper assignments before class in order to productively participate in discussion. You will complete reading summaries assignments for each class in order to encourage this practice. All students *will be required* to ask questions of the presenter. The instructor will ask questions about the experimental techniques used in the paper; the *participants are expected* to understand the published approaches or approach the instructor with questions before class. Participation includes: bringing up significant questions regarding the paper and being able to describe each figure in terms of how the data was generated, and how to interpret it to draw conclusions.

Assignments and Assessments:

1. **Reading Summaries**. Assigned readings can be obtained for free through DOI links (on campus), or will be distributed to the class by email/Moodle shell. Before each session, students will prepare five items regarding the assigned reading:

- What is the major question, problem or a technical issue addressed in the paper?
- What is the hypothesis or idea leading the authors to perform the described experiments?
- What experiment you think is the most interesting or important, and why?
- Do the experiments address the hypothesis? Do the experimental results support the authors' conclusions?
- Additionally, include two questions to ask of the presenter.

Each of required answers can be 1-2 sentences. Reading summaries are expected of all students, except the presenter(s) of the day.

2. **Oral Assignments**.

Long Presentation: Each student will use PowerPoint or similar presentation software to present the paper, including a brief introduction, figures, and a summary. Students should present a critical analysis of the paper. For each figure, answer the following questions: what is the hypothesis that the authors are addressing? What are the experiments and techniques used to address the question? What are the controls for the experiments? What is the conclusion stated by the authors? Is this conclusion substantiated? Most importantly, students should identify the key figure(s)/table(s) of the paper and the key control experiment(s) for that figure or table.

Conference-Style Presentation. Much cutting-edge research is presented in scientific conferences, where the time allotted for each speaker is quite brief. To gain practice in this presentation format, one of the class meetings will be in the format of Developmental Biology Mini-Conference. Each student will select with help from the instructor a recent (within the past 3 years) publication in the field of Developmental Biology, which they will present in the final class session. All presentations will be limited to 10 minutes, with 5 minutes for questions. Presentation will have 1 or 2 introduction slides, 4 figures, and a brief summary.

Grading:

The students may choose traditional grade or credit/no credit

Students with disabilities:

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

Class Schedule

Week 1 (Jan 18). Introduction to the class, discussion of topics and expectations for presentations

Weeks 2-9. Manuscript discussions. The paper assignments and the order for presentations will be determined during the first class.
Jan 25, Feb 1, Feb 8, Feb 15, Feb 22, Mar 1, Mar 8, Mar 15

week 10 (March 22) – Spring Break, no class

Weeks 11-14. Manuscript discussions. Mar 29, Apr 5, Apr 12, Apr 19

Weeks 15-16. Developmental Biology mini-conference (short presentations, students' choice). Apr 26, May 3