Biology 428/528: Developmental Genetics  
Spring 2014  
Instructor: Bethany Rader  
Email: brader@uoregon.edu  
Class Meeting: T,Th 12:00-1:20 PM  
Class Location: Deady Hall Rm 303  
Office Hours: Klamath 373A  
M 10:00 – 11:00AM  
W 10:00 – 11:00AM  
Or by appointment

Course Description:
Bio 428/528 will examine the genetic regulation of developmental processes. We will investigate a number of genetic mechanisms by which a fertilized egg, a single cell becomes a functional multicellular organisms. The course is based on primary research literature, drawing on examples genetic regulation of development in a number of model systems to illustrate basic principles of developmental genetics. The course will emphasize critical reading of the literature and critical thinking. Students will be required to complete regular homework assignments on the readings. The midterm exam will cover material from the readings and lectures. At the end of the course each student will write and present an original research proposal that addresses an unanswered question in the field, using experimental approaches covered in the course.

Because scientific research in the topics covered in class is ongoing and continually expanding, the lectures and reading materials in the syllabus are fluid. Although required readings will remain required, supplementary reading and lecture topics may change to incorporate new material.

Learning Objectives:
• Gain a sophisticated understanding of the use of genetics in the field of developmental biology.
• Gain a working knowledge of modern developmental genetic experimental approaches using model organisms.
• Become a critical reader of scientific research articles in developmental biology literature.
• Develop the ability to formulate hypotheses about the genetic basis of developmental processes.
• Become proficient at designing experimental strategies to test hypotheses about the mechanistic bases of developmental processes.
• Learn to give a concise and compelling oral presentation that identifies a scientific question, proposes a hypothetical answer to this question, and lays out a novel strategy to test this hypothesis.
• Learn to write a compelling research proposal that identifies a scientific question, proposes a hypothetical answer to this question, and lays out a novel strategy to test this hypothesis.

Course website: All course material will be available through Blackboard (blackboard.uoregon.edu).
Assigned reading: For each topic covered, the assigned reading will consist of current review articles and original research articles by leaders in the field. These will be posted, organized by week, in the Blackboard Course Documents Folder.

Homework assignments: Homework questions on the assigned reading will be posted as quizzes on Blackboard in the Course Assignments folder. These will consist of multiple choice and short essay questions that insure that students carefully read and understand the course material. The homework questions will usually be posted Friday evening. Students may save their answers and return to the questions as many times as they wish, but they must submit their answers by noon on Tuesday. Students are permitted to discuss the questions with each other, but their answers must be their own independent work.

Lecture notes: The course format will be a combination of lectures and discussions. I will post my lecture notes on Blackboard after the lecture. These notes are not a substitute for coming to class. If you must miss class, it is your responsibility to obtain detailed notes of the class discussion from a classmate.

Office hours: My office hour will be held on Mondays and Wednesdays 10AM – 11AM. If you are not free at this time, you may schedule an appointment to meet with me at another time. You may also email me with questions or comments (brader@uoregon.edu). When emailing please include “BI428” or “BI528” in the subject line. I will try to answer your email in within 24 hours; however, I do not always check my email in the late evenings or weekends.

Students with disabilities: The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in barriers to your participation. You may also wish to contact Disability Services in 164 Oregon Hall at 346-1155 or disabsrv@uoregon.edu.

Grading policy:
Homework (30%): Homework questions on the assigned reading will be posted on Blackboard. No late homeworks will be accepted.

Midterm: (20%): The midterm exam will be a take home exam that will cover material from the readings and lectures.

Proposal: (15% oral presentation; 25% written proposal): Each student will be required to write and present a short research proposal that uses approaches covered in the course to address an unanswered question in the field of Developmental Genetics. Detailed information about the proposal will be provided later in the course.

Class participation: (10%): Class participation is crucial for the success of this course. Attendance will be taken and students will be expected to come to class having read and thought about the assigned material and to participate in all class activities.

Grading for undergraduates versus graduate students: Undergraduate and graduate students will be graded separately, based on different expectations of their background knowledge in scientific approaches. The expectations for the research proposal and scope of the project will be very different for the undergraduate and graduate students. The expectation for the undergraduate research proposal will be that the student describes a single experimental strategy to address an unanswered question. The graduate students will
be required to write a longer proposal that employ several independent approaches to address a well-defined research question.

**Academic integrity:** All students will be expected to adhere to the University’s guidelines on academic integrity as outlined in the Student Conduct Code: http://studentlife.uoregon.edu/programs/student_judi_affairs/conduct-code.htm

Students are encouraged to discuss class material with one another, including the reading and homework questions. However, all submitted written work, including answers to homework questions and components of the research proposal, must be the original work of each student. Proper citation of sources is required in all written work and oral presentations.

**Important Dates!!!**
Thursday, April 14th there will be NO CLASS
Friday April 25th the class midterm will be posted onto blackboard
Tuesday April 29th the class midterm will be due at 9AM
Tuesday June 3rd and Thursday June 5th will consist of the oral presentation of student proposals