

Developmental Biology
Biology 576

Meeting Time: Tuesdays and Thursdays
12:30-1:45, LS 132

Robert W. Zeller, Fall 2007
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Be sure to put Bio576 at the beginning of the subject line

Office Hours: Tues/Thurs 9:30-10:30

Required Text: Developmental Biology, 7th edition, by Scott F. Gilbert. Sinauer Associates, Inc. Primary literature papers as assigned. Additional reading materials will be provided via Blackboard.

Prerequisites: Chem 365 and Bio 366; Bio567 strongly recommended.

Course/Learning Objectives: This course will examine the cellular and molecular mechanisms controlling embryonic development in a number of different organisms. The course will focus on comparative mechanisms of development and will examine the development of a variety of invertebrate and vertebrate embryos. Students will learn cellular and molecular biological mechanisms of development and cell differentiation.

Topics to be covered: Major events in embryonic development; principles of experimental embryology; differential gene expression; of cell-cell communication; axis specification; invertebrate and vertebrate development through gastrulation; mesoderm induction; neural induction; neural crest and derivatives; germ line formation and evolutionary developmental biology.

The format of the course will be 2 weekly lectures. We will discuss 5-7 primary literature papers – these discussions will usually occur on a Tuesday lecture. Students will be responsible for participating in class discussions and provide a written assignment on the paper before the discussion begins. This assignment usually consists of a 400-500 word abstract of the paper as well as five exam questions with answers. Instructions on the written assignments will be provided in class. 15% of your final grade will be based on your participation during paper discussions.

The lectures will present material that is important for understanding developmental processes. It is important that you read as well as come to lecture. Exams will cover both lecture and assigned reading materials.

All information for the course will be posted on Blackboard. Please be sure to consult Blackboard for scores, PDF files, notes, etc.

There will be four exams in the course; three midterms and a final exam. These exams will each cover about 1/4 of the material.

A series of quizzes will be given during the course. These quizzes will be presented on Blackboard or in class and focus on each of the papers. These quizzes will count as 5% of your grade.

There will be no make-up exams unless the student provides a valid written excuse, such as from a doctor, etc. Excuses for work-related activities are not valid.

Grading:

Quizzes:	5%
Papers:	15%
Midterm 1	20%
Midterm 2	20%
Midterm 3	20%
Final (non-cumulative)	20%

Final grades will be on a straight percentage basis, 90% = A/A-, 80-89% = B/B-, etc, although the instructor may alter the grading scheme at his discretion.

There is no tolerance for academic dishonesty. All matters of academic dishonesty will be referred to the appropriate University authorities.

Bio576 Course Lecture Schedule

Class Meeting	Day	Month	Date	Topics	Ch
1	Tues.	Aug.	28	Introduction	
2	Thurs.	Aug.	30	Principles of Experimental Embryology	3
3	Tues.	Sep.	4	Genetic Core of Development	4
4	Thurs.	Sep.	6	Differential Gene Expression	5
5	Tues.	Sep.	11	Paper 1	
6	Thurs.	Sep.	13	Cell Signaling	6
7	Tues.	Sep.	18	Gene Regulatory Networks	
8	Thurs.	Sep.	20	Exam I	
9	Tues.	Sep.	25	Spiralian Development	8
10	Thurs.	Sep.	27	Paper 2	
11	Tues.	Oct.	2	Sea Urchin Development	8
12	Thurs.	Oct.	4	Sea Urchin Development	8
13	Tues.	Oct.	9	Paper 3	
14	Thurs.	Oct.	11	Exam II	
15	Tues.	Oct.	16	Ascidian Development	8
16	Thurs.	Oct.	18	Ascidian Development	8
17	Tues.	Oct.	23	Paper 4	
18	Thurs.	Oct.	25	C. elegans	8
19	Tues.	Oct.	30	Drosophila	9
20	Thurs.	Nov.	1	Drosophila	9
21	Tues.	Nov.	6	Exam III	
22	Thurs.	Nov.	8	Amphibians and the Organizer	10
23	Tues.	Nov.	13	Paper 5	
24	Thurs.	Nov.	15	Amphibians and the Organizer	10
25	Tues.	Nov.	20	Fish, Birds and Mammals	11
26	Thurs.	Nov.	27	CNS Specification	12
27	Tues.	Nov.	29	Paper 6	
28	Thurs.	Nov.	4	Neural Crest and Placodes	13
29	Tues.	Dec.	6	Evo-Devo	23
30	Thurs.	Dec.	13	Final, 13:00-15:00	