Bio 376 Developmental Biology Lecture Syllabus
Spring, 2010
Dr. Janet Shambaugh, HS G44, x6307

Text: Developmental Biology, 8th Edition, by Scott F. Gilbert

Date	Topic	Readings
1/27, 28	Introduction to Concepts in Development	Chapters 1 and 2
2/4	Sea Urchin fertilization	
1/29, 2/1-5	Gametogenesis and Fertilization	pp. 612-618, Chapter 7
2/11	Setting up an experiment	
2/8, 10, 12	Cleavage and Gastrulation: Invertebrate	Chapter 8, pp. 53-62, 153-5
2/15 - 2/19	Vertebrate	291-313, 67-74, 164-7, 325-358
2/18	18, 24 and 33-hour chick embryo WM	
2/22-2/24	Inductive Interactions and Neurulation	pp. 313-324, 373-385
2/25	Blastoderm Staining	
2/26	Review with Problem Solving	
3/1	**E X A M I**	
3/ 4	33-hr chick embryo cross-sections	
	Germ Layer Derivatives	
3/3 - 3/8	Ectoderm	pp. 139-146, 397-404, 408-423
3/10-3/12	Endoderm	pp. 493-503
3/11	**Chick Practical I**	
3/15- 3/19	S P R I N G B R E A K	
3/25	48-hr chick WM and cross-sections	
3/22-26	Mesoderm	pp. 151-158, 471-493, Ch. 14
3/29	Gonads/Germ Cells	pp. 529-542, 593-610
3/31-4/5	Vertebrate Limb	Chapter 16, pp. 573-579
4/1	72-hr chick WM, 7-day chick	
4/7	Paper assignment & searching the literature	
4/8	**Chick Practical II**	
4/9	Genome Equivalence	Chapter 4
4/12	Review with Problem Solving	
4/14	**E X A M II**	
4/15	X-gal staining of mouse embryos	
4/16	Selective Transcription	Chapter 5
4/19	Metamorphosis	pp. 555-573
4/21-4/23	*Drosophila* Development	Chapter 9
4/22	**Lab Proficiency Exam**	
4/26	Vertebrate axis	pp. 358-368
4/26	**Paper due**	
4/28-30	Development and Evolution	Chapter 23
4/29	Analysis of X-gal staining	
5/3	Review with Problem Solving	
5/5	**E X A M III**	

Course Organization

The lecture portion of the course is organized into three sections. The first third covers descriptive and experimental embryology of early development in selected animals. The second third focuses on vertebrate organogenesis and cellular mechanisms of morphogenesis. The remainder of the course covers the molecular basis of development, focusing on developmental genetics of model organisms: *C. elegans, Drosophila, Xenopus,* and the mouse. This system of studying the organismal level first and the molecular level last parallels the historical progress of the field and is easier to understand than the organization chosen by the textbook author, Dr. Scott Gilbert. Therefore, you will first read parts of chapters that describe developmental events and later read parts that detail progress on learning molecular mechanisms.

This textbook is written for advanced undergraduates and is the most widely recognized source but is very detailed. I expect you to learn the details we cover in class, including the experimental evidence that is used to support theories and mechanisms. The readings assigned allow more depth and should assist your learning. The main point is usually the heading of a section followed by the experiments that support it. Both are essential elements of any scientific field. The "snapshot" section at the end of each chapter summarizes the important points and key terms are in bold. You may skip over sections headed "Sidelights & Speculations," which go into greater depth (but might be fun to read) unless they are specifically assigned as separate pages. Exams will concentrate on material covered in lecture. Your final grade is divided as follows:

Review of literature paper, due 4/26	15%
Exams	15% each x 3 = 45%
Chick Embryo Practical I	5%
Chick Embryo Practical II	10%
Lab Operations Proficiency Exam	10%
Comprehensive Final Exam	15%
Completion of Review problems	Extra credit 1% each

Reminder: All students are bound by the standards of the Academic Honor Code, found at www.goucher.edu/documents/General/AcademicHonorCode.pdf

The overall goal of the course is to have you think and act like a developmental biologist. To achieve this goal we have the following objectives:

1. Know the current state of knowledge and theories about how development occurs using model organisms
2. Recognize how new knowledge either fits in or disrupts the current thinking.
3. Know which experimental evidence is used to support a developmental theory and the logic behind why it does so
4. Understand how the experimental evidence was generated
5. Demonstrate an ability to set up an experiment appropriately