Biol 4464/8803 Developmental Biology, Spring 2012

Jung Choi - jung.choi@biology.gatech.edu, rm 213 Cherry Emerson
Office hrs by appointment.

Text: readings from recent review articles, primary literature and on-line resources, including ***Developmental Biology Interactive***: www.devbio.biology.gatech.edu

Learning Outcomes: Students should think like a developmental biologist, and be able to:

1. Pose questions and hypotheses concerning developmental processes that are amenable to experimental testing.

2. Outline experiments or experimental strategies to test specific hypotheses concerning developmental processes.

3. Analyze published experimental procedures and data to determine if the authors' conclusions are warranted.

4. Identify appropriate model organisms for testing hypotheses or models about different aspects of development.

5. Communicate current findings, ideas and models of developmental processes to peers, both orally and on the web.

Assessment (Grading):

Various in-class assignments - 20%
3 midterm exams - 20% x 3 = 60%
Final group project - 20% (*Biol 8803 graduate students will construct and maintain a public web page dedicated to their group topic, with their own and group member contributions.)*

My Philosophy of What Is Important:
Even an expert can no longer command more than a fraction of the information in even a subfield of biology. That's why we have textbooks and databases. The names of genes and proteins, their particular activities in particular pathways - will change as our understanding advances. What is more important is that we integrate the information to build models and hypotheses, test them rigorously, and properly interpret experimental results.

Honor Code:
You are expected to abide by Georgia Tech's honor code (www.honor.gatech.edu). I will specify for each assignment what is and is not allowable in terms of collaboration. **Plagiarism is never allowable** - you must cite or acknowledge all sources of ideas, text, and images or figures that you obtained from others in your documents, including reports, presentations and web pages.

Date	Topic	Resources
9-Jan	Questions of developmental biology	video: Attenborough, First Life clip
11-Jan	Model organisms	http://www.ceolas.org/VL/mo/ & http://en.wikipedia.org/v
13-Jan	Research blogging	Bio blogs
16-Jan	MLK Holiday	http://www.youtube.com/watch?v=rj5cqkMtCjg&NR=1
18-Jan	B subtilis sporulation	http://www.devbio.biology.gatech.edu/?page_id=15 & ht
20-Jan	B subtilis sporulation	http://microbewiki.kenyon.edu/index.php/Bacillus_subtili
23-Jan	Cell differentiation in a single-celled eukar	http://www.devbio.biology.gatech.edu/?page_id=30
25-Jan	Yeast mating type differentiation	http://en.wikipedia.org/wiki/Mating_of_yeast
27-Jan	Asymmetric cell division in yeast	http://www.wikigenes.org/e/gene/e/853650.html
30-Jan	Intercellular signalling - Dictyostelium	http://www.devbio.biology.gatech.edu/?page_id=34
1-Feb	Dictyostelium slug patterning	http://dictybase.org/
3-Feb	Dictyostelium slug patterning; take-home c	http://en.wikipedia.org/wiki/Dictyostelium_discoideum
6-Feb	Quiz1 discussion	
8-Feb	C. elegans as model system	http://www.wormbase.org/ & http://www.devbio.biology.
10-Feb	maternal effect mutations	http://www.bio.unc.edu/faculty/goldstein/lab/movies.htm
13-Feb	Drosophila gametogenesis and embryoger	http://www.devbio.biology.gatech.edu/?page_id=44
15-Feb	Drosophila maternal genes	http://www.sdbonline.org/fly/aimain/1aahome.htm
17-Feb	Drosophila A-P axis determination	
20-Feb	Drosophila dorso-ventral axis patterning	
22-Feb	Drosophila dorso-ventral axis patterning	
24-Feb	Drosophila homeotic genes; quiz 2 posted	
27-Feb	Quiz 2 discussion & web page assignments	
29-Feb	Metazoan embryology & classification	Degnan et al. 2005 & http://scienceblogs.com/pharyngu
2-Mar	Sea urchins	http://www.devbio.biology.gatech.edu/?page_id=396
5-Mar	Fertilization	http://biology.kenyon.edu/courses/biol114/Chap13/Chap
7-Mar	vertebrates	
9-Mar	amphibian axis formation	http://www.devbio.biology.gatech.edu/?page_id=49
12-Mar	Spemann's organizer	
14-Mar	mesoderm induction	
16-Mar	Quiz 3 in class	
19-Mar	Spring Break	
21-Mar	Spring Break	
23-Mar	Spring Break	
26-Mar	Limb development	http://www.devbio.biology.gatech.edu/?page_id=52
28-Mar	Limb development	
30-Mar	Limb development	
2-Apr	Sex determination in mammals	http://www.devbio.biology.gatech.edu/?page_id=55
4-Apr	Sex determination in mammals	
6-Apr	Sex determination in mammals	

9-Apr	Neural induction
11-Apr	Neural development
13-Apr	topics in cell differentiation
16-Apr	topics in cell differentiation
18-Apr	topics in cell differentiation
20-Apr	Quiz4 in class
23-Apr	Stem Cells
25-Apr	Regeneration
27-Apr	Looking to the future

wiki/Model_organism

tp://en.wikipedia.org/wiki/Bacillus_subtilis
is

gatech.edu/?page_id=41
l

ula/2007/05/ascidian_evodevo.php

pter_13B.html ; http://www.ncbi.nlm.nih.gov/books/NBK26843/