BI 117: DEVELOPMENTAL BIOLOGY
CLASS WEBSITE: http://www.its.caltech.edu/~bi117/

Professor: Professor C. Chace Tydell, e-mail, chacetyd@caltech.edu
Class Hours: 1:00 – 2:20 p.m., Broad 100 (Rock Auditorium) Tuesdays and Thursdays
Dr. Tydell’s Office Hours: By appointment
Recitation Sections: Mondays or Tuesdays 7-8pm, Broad 100.
Note: Recitation sections cover important materials including much that will be tested. They also provide information about exams and assignments. Attendance is strongly advised and the intelligent course of action.

Teaching Assistants:
  Celia Shiau (ceshiau@caltech.edu)  Cory Tobin (ctobin@caltech.edu)
  Jane Khudyakov (janek@caltech.edu)  Ilia Shadrin (ishadrin@caltech.edu)
TA’s will hold office hours the weeks they are in charge of the weekly assignment.

Grading: 30% Weekly Papers/Problem Sets.  30% Midterm.  40% Final.
Required Text: Scott Gilbert "Developmental Biology", 8th edition
Recommended Text: Alberts’ Molecular Biology of the Cell
Also a good reference: Wolpert’s “Principles of Development”

SCHEDULE OF TOPICS

Lecture 1 — Tuesday Jan 8, 2008
OVERVIEW OF EVENTS IN DEVELOPMENT AND FERTILIZATION
Hand out: Paper #1, Guide to Writing Papers, Syllabus
Reading: Gilbert, Chapter 1,2,7

Lecture 2 — Thursday Jan 10, 2008
RELATIONSHIP BETWEEN DEVELOPMENT AND EVOLUTION – TATJANA SAUKA-SPENGLER, PHD
Reading: Gilbert, Chapter 22

Lecture 3 — Tuesday Jan 15, 2008
FERTILIZATION AND CLEAVAGE
Hand out: Problem set #1
Reading: Selections from Gilbert, Chapter 7, 8 – 11
(selected parts concerning cleavage)
Due: Paper #1

Lecture 4 — Thursday Jan 17, 2008
SEA URCHIN GASTRULATION
Reading: Selections from Gilbert, Chapter 8 – 11
(check in “Contents”)

Lecture 5 — Tuesday Jan 22, 2008
VERTEBRATE GASTRULATION
Hand out: Problem set #2
Reading: Gilbert, Chapter 6, 10
Due: Problem set #1
Lecture 6 — Thursday Jan 24, 2008
Neurulation and Nervous System Formation
Reading: Gilbert, Chapter 10-12

Lecture 7 — Tuesday Jan 29, 2008
Cell Signaling and Transcriptional Regulation
Reading: Gilbert, Chapters 5, 6
Due: Problem set #2

Lecture 8 — Thursday Jan 31, 2008
Early Drosophila Development
Reading: Gilbert, Chapter 8,9
Alberts, Molecular Biology of the Cell: 1067-1076

Lecture 9 — Tuesday, Feb 5, 2008
Hox Genes in Flies and Mammals
Reading: Gilbert, Chapter 11

Lecture 10 — Thursday Feb 7, 2008 — In-Class Midterm

Lecture 11 — Tuesday Feb 12, 2008
Lineage Determination and Inductive Interactions in the Nematode
Reading: Gilbert, Chapter 8
Alberts, Molecular Biology of the Cell: 1067-1076
Handout: Paper #2

Lecture 12 — Thursday Feb 14, 2008
Neural Crest — Marianne Bronner-Fraser, PhD
Reading: Gilbert, Chapter 13

Lecture 13 — Tuesday Feb 19, 2008
Eye Development — Peter Wigale, PhD
Reading: Gilbert, Chapter 12
Handout: Paper #3
Due: Paper #2

Lecture 14 — Thursday Feb 21, 2008
Limb Patterning
Reading: Chapters 14, 16, 18

Lecture 15 — Tuesday Feb 26, 2008
Bone and Cartilage Development
Handout: Problem set #3
Reading: Chapters 14, 16, 18
Due: Paper #3
Lecture 16 — Thursday Feb 28, 2008  
**Heart Development** — TATIANA HOCHGREG, PHD  
**Reading:** Gilbert, Chapter 15

Lecture 17 — Tuesday March 4, 2008  
**Stem Cells**  
**Handout:** Paper #4  
**Reading:** Gilbert, Chapter 21  
**Due:** Problem set #3

Lecture 18 — Thursday March 6, 2008  
**Hematopoiesis**  
**Reading:** TBA

Lecture 19 — Tuesday March 11, 2008  
**Development of Immune System**  
**Reading:** TBA  
**Due:** Paper #4

Take Home **FINAL EXAM**  
Pick up March 11 after 3pm, Due by 11 am March 13

**Weekly REQUIREMENT** — Papers or Problem Sets  
Due on most Tuesdays. See schedule above.  
1 Page Paper on Scientific Article Pertinent to Lectures of that Week  
--Papers assigned by TAs  
--Give Synopsis and Critique  
--Limit one page (typed)

General format of paper reviews (see paper review guidelines handout for details).  
I. Background and rationale of experiments.  
II. Interpretation of results.  
III. Propose the next logical experiment(s) you would do if working in this area.

**COLLABORATION POLICY** — Study groups prior to exams are acceptable.  
Absolutely **NO** collaboration on papers, problem sets, midterm or final.  
Concepts presented in papers and problem sets can be discussed but paper reviews and  
problem set answers must be derived autonomously and also written independently.  
Violation of this policy is a violation of the **HONOR CODE**.

**Extension Policy:**  
**Problem Sets/Papers:** ONLY for medical reasons with physician’s note.  
Each day late drops grade 10%. 1 week maximum extension.  
**Midterm/Final:** ONLY for medical reasons with physician’s note.