BI 117: DEVELOPMENTAL BIOLOGY

CLASS WEBSITE: http://www.its.caltech.edu/~bi117/

Professor: Professor Marianne Bronner and Staff, e-mail, mbronner@caltech.edu
Class Hours: 1:00 – 2:20 p.m., Broad 100 (Rock Auditorium) Tuesdays and Thursdays
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:

Fayth Tan (fhtan@caltech.edu) Hugo Urrutia (hurrutia@caltech.edu)
Jessica Ye (jye@caltech.edu)

TA's will hold office hours the weeks they are in charge of the weekly assignment. Time: Monday 8-9p. Location: Bronner lab conference room, B 111L Beckman Institute. Please email the TAs for access of the building.

Grading: 30% Weekly Papers/Problem Sets. 30% Midterm. 40% Final.

Required Text: Scott Gilbert "Developmental Biology", 11th edition

Recitations: Mondays or Tuesdays, 7pm

SCHEDULE OF TOPICS

Lecture 1—Tuesday Jan 7, 2020
OVERVIEW OF EVENTS IN DEVELOPMENT &
HOW TO REVIEW PAPERS & TECHNIQUES IN DEVELOPMENTAL BIOLOGY
Reading: Gilbert, Chapter 1
Distribute: Paper #1, Syllabus

Lecture 2— Thursday Jan 9, 2020
FERTILIZATION
Reading: Gilbert, Chapter 4

Lecture 3—Tuesday Jan 14, 2020
CLEAVAGE
Gilbert, Chapter 5
Distribute: Paper #2
Due: Paper #1

Lecture 4— Thursday Jan 16, 2020
EARLY DROSOPHILA PATTERNING
Reading: Gilbert, Chapter 6

Lecture 5—Tuesday Jan 21, 2020
INVERTEBRATE GASTRULATION
Reading: Gilbert, Chapter 7&8
Distribute: Problem Set #1
Due: Paper #2

Lecture 6—Thursday Jan 23, 2020
VERTEBRATE GASTRULATION
Reading: Gilbert, Chapter 7&8

Lecture 7—Tuesday Jan 28, 2020
MESODERM INDUCTION
Reading: Gilbert, Chapter 5
Distribute: Problem Set #2
Due: Problem Set #1

Lecture 8— Thursday Jan 30, 2020
NEURAL INDUCTION
Reading: Gilbert, Chapter 9

Lecture 9—Tuesday, Feb 4, 2020
LINEAGE DETERMINATION AND INDUCTIVE INTERACTIONS IN THE NEMATODE
Reading: Gilbert, Chapter 5 pp.192-199.
Due: Problem Set #2

Lecture 10—Thursday Feb 6, 2020
NEURULATION AND NERVOUS SYSTEM FORMATION
Reading: Gilbert, Chapter 9

Lecture 11—Tuesday Feb 11, 2020---– **In-Class Midterm**

Lecture 12—Thursday Feb 18, 2020
NEURAL CREST
Reading: Gilbert, Chapter 10
Distribute: Paper #3

Lecture 13—Tuesday Feb 20, 2020
HOX GENES IN FLIES AND MAMMALS
Reading: Gilbert, parts of Chapter 6&8
Distribute: Problem Set #3

Lecture 14—Thursday Feb 25, 2020
MESODERM FORMATION AND DIFFERENTIATION
Reading: Gilbert, Chapter 11
Due: Paper #3

Lecture 15—Tuesday Feb 27, 2020
HEART DEVELOPMENT
Reading: Gilbert, Chapter 12
Distribute: Paper #4
Due: Problem Set #3

Lecture 16—Thursday Feb 28, 2020
LIMB PATTERNING
Reading: Chapter 13

Lecture 17—Tuesday March 3, 2020

BONE AND CARTILAGE DEVELOPMENT
Distribute: Problem Set #4
Due: Paper #4

Lecture 18—Thursday March 5, 2020
STEM CELLS & REGENERATION
Reading: Gilbert, Chapter 15&17

Lecture 19—Tuesday March 10, 2020
DEVELOPMENT AND EVOLUTION
Reading: Gilbert, Chapter 19
Due: Problem Set #4

Take Home **FINAL EXAM**
Pick up March 12 after 3p.m., Due by 11am March 19th

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.

Extra Credit:
ATTEND A DEVELOPMENTAL BIOLOGY SEMINAR IN THE DIVISION OF BIOLOGY AND WRITE A ONE PAGE SYNOPSIS. EQUIVLANENT TO ONE PAPER REVIEW.