BI 118 “Morphogenesis of Developmental Systems” 2021
COURSE OUTLINE

Instructor: Prof. Angela Stathopoulos (x5855, angelike@caltech.edu)
Teaching Assistant: Peiwei Chen (pcchen@caltech.edu)
Lectures 10:30am-11:50am Tuesday/Thursday, virtual

BI118 will be taught using one suggested textbook, Gilbert’s “Developmental Biology” (12th edition), plus various other materials assigned as hoc as reference. This is an advanced course, and some background in respect to molecular biology is expected. The format is lecture plus discussion. Journal articles will be assigned after each lecture, and discussed the following class. The journal articles are required reading. For those registered in the course, attendance at lectures is required (except for emergencies). The course is either given for letter grade or P/F.

Students will choose a topic to research and write a proposal over the course of the term. This year the proposal will all center on one (large) topic: the ability of viruses (such as SARS-CoV-2) to infects cells and cytopathic effects (ability to affect cells’ morphogenesis). Projects require instructor approval by Jan. 14th.

The Course Syllabus is as follows:


Project progress 1: Before class on Jan 14, arrange a 15-20 minute meeting with Prof. Stathopoulos, to get your final project approved. Arrive at the meeting with at least two final project ideas to discuss.

Tues. Jan 19. Class V. Journal Club

Project progress 2: Abstract and outline due.

Tues. Jan 26. Class VII: Journal Club
Yi et al. Keratins are asymmetrically inherited fate determinants in the mammalian embryo Nature volume 585, pages 404–409(2020)

Project progress 3: Introduction paragraphs due.

Tues Feb 2. Class XIV: Journal Club

Midterm exam distributed.
Project progress 4: Body text due.

Tues. Feb 9. Class XI: no class. Take-home midterm exam due to Prof. Stathopoulos’ office by 11:55am (by end of class). Open Book/Notes. No internet. Individual Effort. 3-5 questions based on lecture materials and manuscript discussions. Two hour time limit.

Shindo and Wallingford. PCP and septins compartmentalize cortical actomyosin to direct collective cell movement Science. 2014 Feb 7;343(6171):649-52

Tues Feb 16. Class XIII: Lecture Invasive cell behavior and the role of the extracellular matrix; apicobasal polarity. HW6 due.
Read: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5186408/
Project progress 5: First full draft due.

Thurs. Feb 18. Class XIV: Journal Club

Tues. Feb 23. Class XV: Lecture Closure of holes: wound healing; Formation and branching of tube. HW7 due.
Project Progress 6: Final full draft due.
Thurs Feb 25. Class XVI: Journal Club

Tues. Mar 2. Class XVII: PROJECT PRESENTATIONS
Thur. Mar 4. Class XVIII: PROJECT PRESENTATIONS


Final exam due by March 17. Take home exam due to Prof. Stathopoulos’ office by 5pm. Open Book/Notes. No internet. Individual Effort. 5-7 questions based on lecture materials and manuscript discussions. Four hour time limit.

HW+JC participation: 25% of grade
Midterm: 25 % of grade
Project: 20 % of grade
Final Exam: 30% of grade

Class participation. This is based on course attendance, journal club discussions, and homework. At the end of each lecture 2-3 homework questions will be assigned, which will be presented by student at the second half of the next lecture class (typically one week later).

Project. Students are expected to make progress throughout the term on a final writing project of their choosing. By the beginning of class Thursday January 12th, students are expected to have completed a 15-20 minute a meeting with the TA, Heather Curtis, to propose at least two final project ideas and have one of them approved. Project examples include writing a grant proposal, a review essay, a Wikipedia page, or conduct a modeling project. Suggested length is 3 pages, single spaced. Students will submit their progress on the project before each lecture, and on March 5th and 7th they will have 20 minutes to present them in class.

Class website: Lecture notes, Homework, Journal Articles will be posted.