

LS 5HA (4 units)
Biomedical Research: Concepts and Strategies

Instructors

Dr. Ira Clark: Office Hours: **Wednesday, Friday 10:30-12**
LS 2362
Tel: (310) 267-5679
iclark@ucla.edu

Dr. Rafael Romero Office Hours: **Tuesday, Thursday 10:30-12**
LS 2365
Tel: (310) 267-5679
raromer@ucla.edu

Dr. Utpal Banerjee Office Hours: **TBA**
Tel: (310) 206-5439
banerjee@mbi.ucla.edu

Course Description

In this class, you will be immersed in the world of biomedical research at UCLA. You will listen to two Faculty Research Seminars that will expose you to cutting-edge biomedical research conducted on campus. These seminars are one-hour lectures given by outstanding UCLA faculty on primary research projects from their own laboratories. They will introduce you to questions of general biological interest that are studied in UCLA research labs. This quarter we will focus on stem cells and blood development.

Each seminar will be followed by a series of classes in which we will explore the science behind the research. We will discuss scientific concepts and experimental approaches used in the talk. We will learn how to analyze a seminar in terms of its central questions, experimental data, conclusions of the speaker, significance of the work and possible future directions. We will also read and discuss papers from the primary literature with the same goals in mind. Finally, we will learn how to use the Internet to find published literature and scientific data that can enhance our research.

By the end of this class, you will have the confidence and intellectual tools to understand biomedical research!

Class Time and Location

Lecture: Tuesdays and Thursdays, 3:30-4:45 PM
Physics/Astronomy, Room 1425

Assignment and Grading

Class participation is important! Your grade will depend in part on how much you speak up or ask questions in class. Remember, there is no such thing as a foolish question. If you don't understand something, it is more foolish not to ask a question! And some of the most simple or apparently naïve questions end up being the most provocative. So speak up!

There will be several short assignments or problem sets of 4-6 questions based on material covered in class. They will be used to monitor your understanding and to encourage you to think creatively about the science.

Your midterm assignment will consist of a short paper of about 3 pages, in which you will summarize the problem(s) studied by the seminar speaker, the experiments and their results, and the conclusions and significance of the work. You will also suggest one or two future directions that you might want to investigate if you were doing the research.

The final assignment will be a 3-5 page paper, the topic of which will be revealed later in the course.

Your final grade will be calculated as follows:

Class participation –	100
Problem sets –	300
Midterm paper –	300
Final paper –	300
Total –	1000 points

Course Evaluation

Please go to the following website to fill out a pre-course survey. There will be another survey at the end of the course at the same site. The URL is:

<http://sci.grinnell.edu/surveys/prot/cure.htm>

The login name is “cureresp” and the password is “blue2white”.

(tentative schedule)

Week 0

Thursday, Sept. 27 Introduction. Components of a research seminar. Overview of development, signaling and other basic concepts.

Week 1

Tuesday, Oct. 2 Seminar 1. Dr. Luia Iruela-Arispe – “VEGF signaling in endothelial cells: Multiple presentations, multiple functions”

Thursday, Oct. 4 TBA

Reading assignment – Jain, R.K. and Carmeliet, P.F. (2001) “Vessels of death or life.”

Week 2

Tuesday, Oct. 9 TBA
Problem set 1 due.

Thursday, Oct. 11 TBA

Reading assignment – Libby, P. (2004) “Atherosclerosis: the new view”

Week 3

Tuesday, Oct. 16 TBA
Problem set 2 due.

Thursday, Oct. 18 TBA

Week 4

Tuesday, Oct. 23 TBA
Problem set 3 due.

Thursday, Oct. 25 TBA

Week 5

Tuesday, Oct. 30 Recap of Seminar 1. **Midterm assignment 1 due.**

Thursday, Nov. 1 TBA

Week 6

Tuesday, Nov. 6 TBA

Thursday, Nov. 8 Seminar 2. Dr. Alvaro Sagasti – “Wiring the nervous system – neuronal morphogenesis.”

Week 7

Tuesday, Nov. 13 Intro to Morphogenesis, trigeminal neurons, confocal microscopy.
Problem set 4 due.

Thursday, Nov. 15 How do trigeminal neuron arborizations choose their territory during development? Review on morpholinos

Week 8

Tuesday, Nov. 20 How to understand a phylogeny. Classes of repellent genes and cell migration. In situ hybridization to detect repellent genes in trigeminal neurons in zebrafish.

Thursday, Nov. 22 Thanksgiving. Yum!

Week 9

Tuesday, Nov. 27 TBA
Problem set 5 due.

Thursday, Nov. 29 TBA

Week 10

Tuesday, Dec. 4 TBA

Thursday, Dec. 6 Recap of Seminar 2. **Problem set 6 due.**

Week 11

Tuesday, Dec. 11 **Final paper due.**