



CELL BIOLOGY **In Health and Disease**

MCDB/CHEM 103/203; BMSE 233

Winter Quarter 2013

Jamey Marth, Ph.D., Course Instructor

Peter Aziz, Teaching Assistant

Eric Terry, Teaching Assistant

Winter 2013 Cell Biology Course Schedule

| <u>Date(s)</u> | <u>General Subject</u> |
|---------------------------------------------------------|---------------------------------------|
| January 7 | Course Introduction |
| January 9, 11 | Cell Theory |
| January 14 | No Class |
| January 16, 18 | Cell Composition |
| January 21 | Holiday |
| January 23, 25, 28, 30. February 1 | Cell Composition |
| February 4, 6 | Cell Anatomy |
| <hr/> | |
| February 8 | Mid-Term Exam, LSB 1001 |
| <hr/> | |
| February 11, 13, 15 | Cell Function in Health and Disease |
| February 18 | Holiday |
| February 20, 22, 25, 27 March 1, 4, 6, 8, 11, 13, 15 | Cell Function in Health and Disease |
| <hr/> | |
| March 20 | Final Exam, 4:00pm - 7:00pm, LSB 1001 |
| <hr/> | |



Jamey Marth, Ph.D.

<http://www.mcdb.ucsb.edu/people/faculty/marth>

<http://www.sanfordburnham.org/>

<http://www.centerfornanomedicine.org/>

Biography

Jamey Marth is Director of the Center for Nanomedicine and Professor at UC Santa Barbara; and a professor of the Sanford-Burnham Medical Research Institute. Dr. Marth holds the John Carbon Endowed Chair of Biochemistry and Molecular Biology and the Duncan and Suzanne Mellichamp Endowed Chair of Systems Biology. He is a member of the Department of Molecular, Cellular, and Developmental Biology, and of the Biomolecular Science and Engineering program. He received a Ph.D. degree in Pharmacology from the University of Washington where he studied with Roger M. Perlmutter, previous Executive Vice-President of Research and Development at Amgen, and the late Edwin G. Krebs, a 1992 Nobel laureate. Dr. Marth was recruited to UC San Diego in 1995 by George Palade - a 1974 Nobel laureate, where he was appointed as an Investigator of the Howard Hughes Medical Institute and Professor in the Department of Cellular and Molecular Medicine, prior to his current positions.



Jamey D. Marth, Ph.D.

<http://www.mcdb.ucsb.edu/people/faculty/marth>

<http://www.sanfordburnham.org/>

<http://www.centerfornanomedicine.org/>

Research

Research in the Marth laboratory combines the physical and biomedical sciences often bridged by engineering and nanotechnologies to discover the metabolic origins of common disease and to devise strategies for their prevention, treatment and cure. Dr. Marth previously enumerated and published the molecular building blocks that are used to construct the four type of components of all cells. Discoveries made in the Marth laboratory are applied to the development of more sensitive diagnostics and effective therapeutics. Scientists in the Marth laboratory have identified unexpected cellular and molecular origins of diabetes, autoimmune disease, and the lethal complications of infection, and have developed new approaches to diagnosis and therapy for detecting, preventing and alleviating these syndromes. In past research, the Marth laboratory conceived of and co-developed the Cre-loxP conditional mutagenesis technology – a genetic engineering technique used throughout the world to establish gene function in health and disease.

Teaching Assistant for the Course: Peter Aziz

Biography



Peter Aziz earned his B.Sc. degree in Microbiology from UC Santa Barbara in 2012. He started his research career as an undergraduate in the laboratory of Dr. Jamey Marth, where his research focused on understanding the role of the Ashwell-Morell receptor in controlling antibody (IgM) half-life and levels in the blood.

Peter is currently a Master's degree candidate in the MCDB department and is researching the role of platelets and platelet clearance mechanisms in sepsis, in order to better understand how pathogenic bacteria induce the deleterious and often lethal toxicity commonly observed in infectious disease progression.

Peter's future plans involve obtaining an M.D. degree and to continue contributing to biomedical research.

Teaching Assistant for the Course: Eric Terry

Biography



Eric Terry earned his B.A. degree in Biochemistry from UC Berkeley in 2007. In 2008 Eric started work on his Ph.D. in the interdisciplinary program Biomolecular Science and Engineering at UCSB and is currently a member of the Rothman and Meinhardt Labs in the departments of MCDB and Mechanical Engineering, respectively. Eric's research focuses on designing and implementing microfluidic systems for conducting otherwise intractable biological experiments.

MCDB/CHEM 103/203
Instructor and Teaching Assistant
Contact Information

| | | |
|---------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jamey Marth: | office hour e-mail | Monday 12PM-1PM, LSB 2324 jmarth@lifesci.ucsb.edu |
| Peter Aziz: | office hour e-mail | Tuesday 2PM-3PM, Room TBD and by appointment peter.aziz@lifesci.ucsb.edu |
| Eric Terry | office hour e-mail | 3231G Engineering Science Building 1st Week: 11:00am Wednesday 2nd Week and onwards: TBD est@engineering.ucsb.edu |

MCDB/CHEM 103/203; BMSE 233

Discussion Sections: Winter 2013

Discussion Section Schedule

| | | | |
|--------------|--------------|--------------|--------------------------|
| Eric | 32797 | Mon | 5:00 PM-5:50 PM |
| Eric | 32763 | Mon | 6:00 PM-6:50 PM |
| Eric | 32771 | Tues | 8:00 AM-8:50 AM |
| Peter | 32755 | Wed | 8:00 AM-8:50 AM |
| Peter | 32789 | Thurs | 8:00 AM-8:50 AM |
| Peter | 32821 | Fri | 11:00 AM-11:50 AM |

Discussion Section format

-Discussion section is not mandatory and is not graded. However most students would benefit from attending section.

-Each week you will take a short, non-graded practice quiz and discuss the answers in section. Additionally relevant papers may also be assigned and discussed in detail during section. All papers will be posted to gauchospace at least 2 days prior to your discussion for you to read. Quizzes and answers will not be posted to Gauchospace except when the quiz is given during a week containing a holiday (see below).

IMPORTANT: Holidays and No Class Days

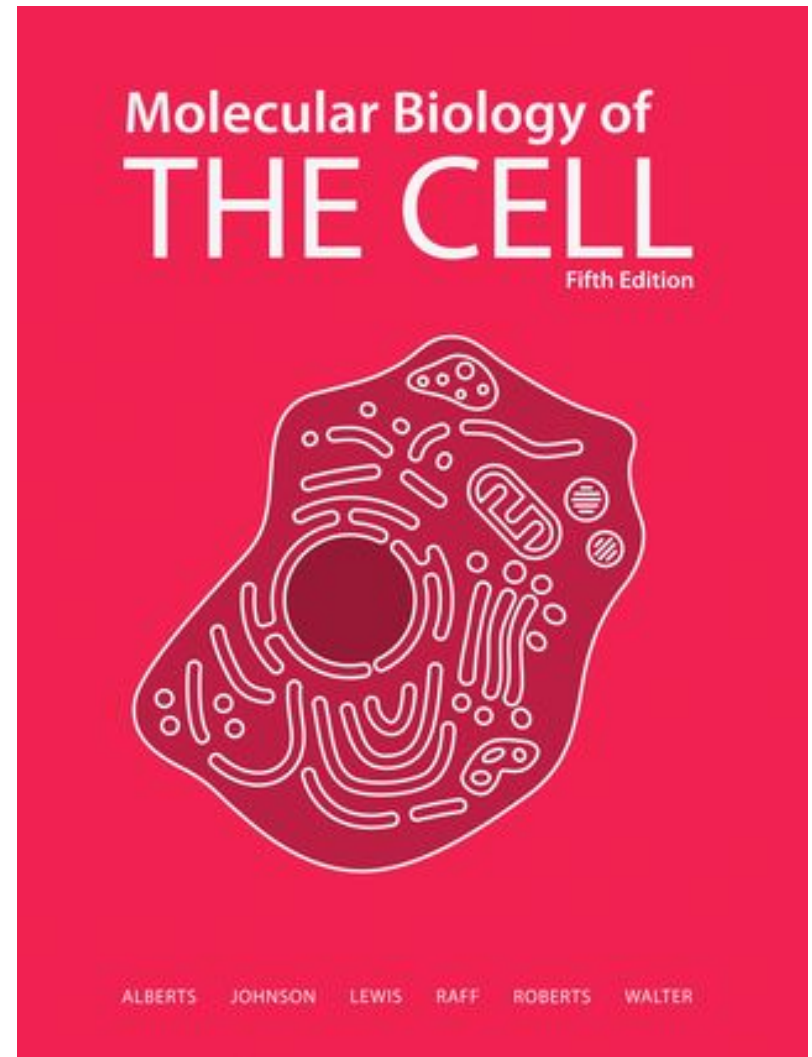
There are two Monday Holidays, January 21st and February 18th, and no class on Monday, January 14th. Students enrolled in Monday Discussion Sections can attend another non-Monday Discussion Section these weeks if they choose. No quizzes or papers will be assigned these weeks.

The Textbook

**Molecular Biology of the Cell,
5th Edition by Alberts et al.**

Textbook is in the Bookstore.

**Two copies should be available
in the library.**



Lecture Slides and Textbook Reading

Each lecture slide provides important concepts, understand the concepts rather than trying to memorize the details.

It is important to study both the lecture slides and the assigned reading from the textbook.

Textbook reading assignments for the course will be provided the first week of class.

Exams & Grades

Exams will include lecture material (50-70%),
and assigned reading (30-50%).

Midterm exam: 125 points (Feb 8, 1 pm, LSB 1001)

Final exam: 250 points (Mar 20, 4 pm, LSB 1001)

Exam questions:

- ~30% basic questions (emphasizing basic information)
- ~40% intermediate questions (emphasizing concepts)
- ~30% advanced questions (emphasizing synthesis & applying)

Past exam score distribution (out of 100 points):

Low: 10-20/100, High: 80-90/100, Mean: 45-50/100

(it is the relative, not absolute, scores which count)

Past grade distribution:

A: 20-25%, B: 35-40%, C: 35-40%, D and below: variable

Grades

the sum of Midterm and Final exam scores



preliminary grades assigned based on a curve



final grades adjusted

Studying Tips (Good Study Habits)

1. Review lecture notes, slides & reading assignments

immediately

- to learn while memory is still fresh
- to help understand future lectures
- most importantly, to allow information “fermentation”

2. Extract **key** concepts from the slides & the textbook

- difference between basic information and concept
- not every slide is equally important

3. Do sample exams **by yourself**

before asking others or checking the key

- to promote your “independent” ability to solve a problem

4. Always ask yourself **“why”** and **“why not”**

- to reinforce the general concepts
- to identify and correct concepts

5. Consider group-study if needed

- for combined brain power

Textbook Reading (up to the mid-term)

Textbook Reading Assigned for Lectures on Cell Theory, Cell Composition, and Cell Anatomy (Lectures 2-12; January 9 – February 6)

Chapter 1, All

Chapter 2, pp. 45-65

Chapter 4, pp. 200-201

Chapter 6, pp. 333, 335-336, 366-382

Chapter 10, pp. 617-625, 629-635, 642-645

Chapter 11, pp. 651-657, 667-673

Chapter 12, pp. 721-730

Chapter 13, pp. 771-772, 779-783

Chapter 14, pp. 815-823, 838-839