

Marine Biotechnology I

Scripps Institution of Oceanography, SIOB242A
Tuesdays 2-5pm

6 Oct – 15 Dec

Fall 2020

Join Zoom

Meeting <https://ucsd.zoom.us/j/94420764154?pwd=WjJadU1YOWcyMlFwbGJJeW1HK3ArUT09> (Links to an external site.) Meeting ID: 944 2076 4154 Password: 247142

One tap mobile +16699006833,,94420764154# US (San Jose) +12133388477,,94420764154# US (Los Angeles) **Dial by your location** +1 669 900 6833 US (San Jose) +1 213 338 8477 US (Los Angeles) +1 669 219 2599 US (San Jose) 877 853 5257 US Toll-free 888 475 4499 US Toll-free 833 548 0276 US Toll-free 833 548 0282 US Toll-free Meeting ID: 944 2076 4154

Find your local number: <https://ucsd.zoom.us/u/aeKqZO1nt> (Links to an external site.)

Instructors: Dr. Jack Gilbert (jagilbert@health.ucsd.edu); Dr. Amro Hamdoun (ahamdoun@ucsd.edu)

Secondary Instructor: Dr. Holly Lutz (hllutz@health.ucsd.edu)

Course Description and Goals

This course is intended to expose graduate students to a diverse array of cutting edge tools and techniques so that research questions can be addressed in the best, most precise way possible. Topics covered will include:

- Microbial ecology methods and technologies
- Bioinformatics and introduction to 'omics' analyses
- Metabolomic modeling
- Structural biology of membranes
- Evolutionary developmental biology
- Light microscopy methods and applications

Course Logistics & Materials

Lectures for each week will be pre-recorded and made available via Dropbox, where students will also find peer-reviewed publications to be read before class each week. Lectures will be approximately 30 minutes in length. Students will be notified when new material is added to Dropbox.

Tuesdays 2-5pm

- **2-3pm** reserved for students to access and view the pre-recorded lecture and take quiz
- **3-4pm** students convene via zoom to discuss the presentation with guest lecturer
- **4-5pm** student presentations on assigned readings, followed by open discussion

Dropbox Link: <https://bit.ly/3cKiaAG>

Course Grading

Grading will be based on class attendance, quiz participation, and individual presentations. Students will be asked to prepare one 30-minute presentation outlining one of the assigned papers and discussing the techniques and tools used, e.g. Why did the authors choose particular approaches, and do you agree with their choices? What other tools or techniques might have been considered?

Explanation of Grading System

- Lecture attendance: **40%**
- Module quiz: **10%**
- Individual presentation: **50%**

A = 90-100%, B = 80-90%, C = 70-80%

Preliminary Schedule of Topics, Readings, and Assignments

Date	Lecture Topic and Speaker	Assigned Reading Folder	Student Presenters
Oct 6	Systems Biology: Genomics, transcriptomics, and metabolomics (Dr. Brin Rosenthal)	W1	Emily Kunselman Sho Kodera
Oct 13	Microbial Ecology: Introduction to Cytoscape and network modeling (Dr. Dexter Pratt)	W2	Doug Sweeney Neil Gottel
Oct 20	Bioinformatics I: Overview of QIIME analytics and statistics (Dr. Daniel McDonald)	W3	Siyun Luo Tristin Rammel

Oct 27	Bioinformatics II: Metabolomics and integrated 'omics' analyses (Dr. Jamie Morton)	W4	Ralph Torres Jamee Adams
Nov 3	Metabolic Modeling: From simple to complex communities (Dr. Karsten Zengler)	W5	Yifan Roderick
Nov 10	Structural Biology of Membrane Proteins: Current and emerging methods (Drs. Steve Rees and Geoffrey Chang)	W6	Zhifei Li
Nov 17	Evolutionary Developmental Biology: Emerging systems and tools (Dr. Deirdre Lyons)	W7	Melissa Chiang Grant Batzel
Nov 24	THANKSGIVING (No lecture, no assignments)		NONE
Dec 1	CRISPR and Gene Drives (Dr. Ethan Bier)	W9	Angus Theis Michelle Bautista Layton
Dec 8	Light Microscopy (Dr. Amro Hamdoun)	W10	Carl Whitesel Kara Wiggin
Dec 15	FINALS (No lecture, no assignments)		NONE