

MBL Physiology Course Teaching Assistant Handbook 2018

Directors: Jennifer Lippincott-Schwartz (HHMI), Rob Phillips (Caltech) and Wallace Marshall (UCSF)

Welcome to the 125th consecutive year of the Physiology course at the Marine Biological Laboratory (MBL) in Woods Hole MA. The Physiology Course will bring together biological and physical/computational scientists, both in the faculty and the student body, to work together on cutting-edge problems in cell physiology. We will have 27 students, 60 experimental and computational faculty and teaching assistants, and 17 additional invited lecturers.

Bring a positive attitude, a lot of energy, and low sleep requirements. You will be amazed at how much fun you will have! And the students and other faculty will inspire you to do new experiments. It is an experience like no other.

General Course Organization:

Theme: The theme of the '18 course is using experimental and conceptual approaches to understanding cell structure, function, and physiology across scales.

General Schedule: The course is seven weeks beginning with a meet-and-greet at 5pm Sunday June 10 and ending on Saturday July 28. We work six days a week (M-S) with every Sunday off (although labs are open). The seven-week course is temporally divided into 4 sections, a one week Bootcamp followed by three 2-week experimental rotation sessions:

- Week 1: June 11-16: Bootcamp
- Weeks 2-3: June 18 - June 30: Session I
- Weeks 4-5: July 2-14: Session II
- Weeks 6-7: July 16 - 28: Session III

Course Leadership Team:

Course Directors	Rob Phillips	phillips@pboc.caltech.edu
	Jennifer Lippincott-Schwartz	lippincottschwartzj@janelia.hhmi.org
	Wallace Marshall	Wallace.ucsf@gmail.com
Course Manager	Carolyn Ott	ottc@janelia.hhmi.org
Head Microscopy Coordinator	Joe Brzostowski	brzostowskij@niaid.nih.gov
Microscopy Coordinator	Steven Wilbert	swilbert88@gmail.com
Course Assistants	Molly Bassette	Physio@mbi.edu
	Alec Hoyland	
	Matt Whitfield	

The Course Assistants are your lifeline. Even if your needs are urgent, please make sure to be considerate of the CAs. They want to help you, but they have many different needs to balance.

It is an expectation that faculty and TAs will take the course seriously, behave responsibly (including when it comes to drinking), and treat everyone with respect.

Bootcamp:

Bootcamp is a week designed for basic training in Biochemistry, Microscopy, and Matlab programming to get all students from diverse backgrounds “on the same page” in terms of basic skills.

The Bootcamp faculty are as follows:

- Microscopy: Heun Jin Lee (Caltech), David Wu (University of Chicago), Hesper Rego (Harvard), and Soichi Hirokawa (Caltech)
- Biochemistry: Bob Fischer (NIH-NHLBI) and Ray Alfaro-Aco (Princeton)
- Matlab: James Boedicker (USC), Hernan Garcia (UC Berkeley), Elizabeth Eck (UC Berkeley), and Meghan Turner (UC Berkeley).

Experimental Rotations:

The three **experimental sessions** (I-III) will give students the chance to work with a variety of faculty on a wide range of questions. To get the most out of this experience students are encouraged to try new areas that take them outside their comfort zone to learn new approaches and ways of thinking that are different than what they do at their home institution.

Faculty members who will be coming for each session are listed in the table below. You can find short biographies of each faculty member at: <http://www.mbl.edu/physiology/faculty/>.

Session I	Session II	Session III
Jennifer Lippincott-Schwartz (HHMI)	Tim Mitchison (Harvard)	Dan Fletcher (UC Berkeley)
Rob Phillips (Caltech)	Dyche Mullins (UCSF)	Nicole King (UC Berkeley)
Wallace Marshall (UCSF)	Clare Waterman (NIH)	Dan Goldman (GA Tech)
	Stephan Grill (TU Dresden)	Jan Kondev (Brandeis) + Rob Phillips (Caltech)

Faculty are expected to arrive Thursday before their sessions starts because on the Friday before each two-week experimental session, the faculty for that session are introduced and present the projects that they will be running for the following two-week block. It is important to be present in person for this. Each student will rank their preferences based on the presentations and then students will be matched to faculty.

Each faculty will offer a choice of projects for the 5-9 students assigned to their rotation group. The projects are designed to answer cutting edge questions that the faculty really want to answer. The Physiology course has proven to be an excellent proving ground for exciting new ideas, and many of our course projects have become important publications, not to mention a Nobel Prize for the discovery of Cyclins!!!!

On the Saturday at the terminus of each two-week session, there is a research symposium where students present to one another what they learned and their experimental results from the previous two weeks. Students take these seriously and put in a huge effort. After the research symposium, students and faculty clean up the lab area in preparation for the next session. That evening, there will be an End-of Session PARTY!!!!!! At the end of the course after the final Research Symposium, students help pack up the whole lab and put everything away for the course next year.

Project/Research Considerations:

Below are some considerations based on the experiences of past TAs. These are some things for you to consider as you design and prepare projects for the students:

- (1) Leave room in the projects for collaboration with other groups.
- (2) Look carefully at the list of microscopes that Joe put together as you plan your experiments.
- (3) Because many users want to get onto the microscopes, it is good to bring projects that involve both time on the scopes and analysis or simple assays that can be done without a microscope.
- (4) It helps to bring a few backup projects. We end up doing lots of things that weren't planned.
- (5) Don't expect things to work as they do at home.
- (6) If things go wrong, just roll with it and have fun anyway. THIS IS IMPORTANT (and it will happen)

Daily Routine:

The morning routine stays the same throughout the course. The afternoon, evening, and late night activities will vary with each rotation.

Morning Lectures - 9a.m. Monday-Saturday in Lillie Auditorium

The morning lectures are open to the MBL community. We will start promptly at 9 am. **Lecture attendance IS REQUIRED EVERY DAY.** The lecture schedule for Physiology 2017 is available at <http://www.mbl.edu/physiology/schedule/>.

Coffee Break - 3rd Floor the Loeb Building

Immediately after each lecture, students will join the lecturer and faculty for a brief coffee break outside the lab, which will then be followed by the student discussion time with the lecturer.

Students ONLY discussions with Lecturer – 10:30 in the Loeb 3rd floor conference room (aka the Sweatbox)

After each lecture and coffee break, students will have time to meet as a group with the lecturer for more details discussion. Participation in these after-lecture sessions is mandatory.

Late afternoon/evening exercise

Most days a group swims from Stoney Beach to the Dock of Truth. We also schedule softball practices to prepare for the game against Embryology and other group sports on the nearby practice fields. There is also a great bike path/running trail.

Other lectures on campus

Lunch and Learn – noon sessions to learn more technical information about methods will be held a few times per week

Campus Lectures – There will also be a few 4pm lectures here and there, and there will be lectures going on all the time on campus from totally awesome scientists in the Neurobiology, Embryology, Zebrafish, etc, etc, etc courses.

Friday Evening Lectures – These are great campus wide general lectures on variety of themes. Our own Rob Phillips will be presenting the July 7 lecture. See the schedule at: <http://www.mbl.edu/friday-evening-lectures/>

Shipping Supplies and reagents to the MBL:

Many groups ship some specialized reagents to the MBL in advance. If you are doing this, please:

- Inform the course assistants before mailing any packages and alert them if there are any special storage conditions required (physio@mbi.edu).
- **DO NOT SHIP THINGS TO ARRIVE AT THE MBL ON SAT/SUN!!!!**
- Do not ship liquids. (But if you must, then send it Fed Ex and follow these suggestions ([link to pdf](#)) and label the boxes and indicate that they contain liquids, but that the liquids are not hazardous.
- Put your own mobile phone number for notifications.
- Use this shipping address:

Physiology/ YOUR NAME
7 MBL St
Woods Hole, MA 02543

Equipment/resources

When using all equipment and lab areas, please clean up after yourself and don't leave a mess, because there is nobody to clean things up for us. We all have to take responsibility for keeping the lab in order.

Microscopes

Joe will soon have a final list of the microscopes that are available during the course. We have some amazing microscopes on loan for the course and many groups want to use the systems.

Physiology Microscopes: We have several that are on loan just for the use of Physiology. These are located in our lab space on the third floor. Sign up for these microscopes happens every night at 10 pm for the following day. This strategy facilitates negotiation between multiple groups that want to use an instrument at the same time.

MBL-Wide Microscopes: The manufacturers also showcase a variety of sophisticated imaging systems that are located in the basement of Loeb (our building). These microscopes are made available to the entire MBL community and courses and scheduling is done on line. Time on these microscopes is free to the course.

MBL Imaging Facility: The MBL imaging facility run by Louie Kerr also has a variety of imaging systems that are available to the community; however, there is an hourly charge for the course (\$25-\$28/hr). Since the budget is limited, we unfortunately need to use these scopes judiciously.

Computers

You are encouraged to bring your own laptop computers but there are also a number of PCs leased each summer and thus is totally up to date. These are available for data analysis, literature searching, word processing, email, etc.

Data Storage (**New policy!**)

Each group will be given 2 folders on the server with space for 2TB of data. These must be emptied at the end of each session to make room for data from the next session. Bring hard drives so you can bring data home.

Planning for the end of each session

At the end of each session you and your students will be expected to clean up the lab area so it is ready for the next group. You will return reagents and materials purchased by the course and the TAs will add these things to the inventory for future use.

It is possible to ship stuff back to your home institution, but you need to work closely with the course assistants to make this work. It is best to just ship what you need, and then you don't have to ship a lot back. If you are in the last session, plan to ship packages out at the end of the last week because there will not be anyone to send things out the following Monday.

- Don't plan to ship things back out from the MBL that are 'hazardous' ie. in chloroform for example.
- Make sure you keep all your shipping boxes if you want to ship things back. They tend to disappear. Especially certified boxes for dry-ice shipping were hard to find at the end of the course.
- Please consult the Course Assistants (CAs) as you plan your dry ice shipments from the MBL. A small amount of dry ice is available most of the time, but if multiple groups require dry ice at the same time a couple days notice is needed to order it. **DRY ICE WILL ONLY BE AVAILABLE THROUGH THE COURSE ASSISTANTS. NO TAs WILL BE ALLOWED TO GET IT WITHOUT A CA!**

Course Events:

Sunday, June 10 2018 at 5:00 p.m. in Lillie Auditorium – Welcome Dinner

We will have a “meet and greet” event to welcome everyone to the course. This event will be formatted as a “Lightning Symposium.” Each student has 90 seconds to present a single-slide. After the Lightning Symposium, we will have a BBQ together to give everyone a chance to get further acquainted.

End of Session Parties **

We will have a party to celebrate the end of Bootcamp and each session. Sometimes we have had these outdoors if the weather was nice.

4th of July

The town of Woods Hole celebrates each year with a parade. The Physiology Course and other courses each come up with a science theme and participate in the parade. At the end of the parade route on MBL property there is a giant water fight between all the courses. In the evening, we will walk out to a beach where we can watch fireworks.

Physio vs Embryology Softball Game

The Physiology course has an annual softball game against long-time rival Embryology. The game is scheduled at 4PM on Sunday, June 8.

**The MBL has a strict policy on alcohol consumption that will be explained at the beginning of the course. **

Life in Woods Hole

Woods Hole is a very small (and beautiful) town and so we recommend that you bring any important personal supplies or medicine with you. The weather in Woods Hole can vary between cold and foggy to hot and humid, so make sure to pack a range of clothing. There is a convenience store in town, the Woods Hole Market. While they have a limited supply of most toiletries, they are fairly expensive and have some limited options in some things. If you have

specific wants or needs, you may want consider bringing a supply of your own from home.

Some things to consider bringing:

- Extra sundries & convenience items: make up, sunblock, feminine hygiene needs, necessary drugs, condiments, toys, and what have you.
- There will be parties, one way or another. If you have a favorite party hat/dress/leather outfit, and you have room, by all means, bring it along.
- Some warm sweater/jumper or the like. The lecture hall is about 16C, by my reckoning. Early in the summer it is usually pretty cool most (60F/15C), of the time, but will heat up later.
- Swimwear if you want to go swimming at the nearby beaches
- Above all, bring a sense of adventure and a sense of humor.