

BIOSC 1510 Cell Biology Lab, Fall 2021

Department of Biological Sciences, University of Pittsburgh

Instructor: Dr. Jeffrey Hildebrand

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Class time and location: Tuesday 1:00-4:50 pm, Langley 146. You will be required to enter the building through the main entrance of Langley Hall and swipe in to verify that you are allowed to enter the building. Masks will be required for entry.

In-person participation: The course will be delivered 100% in-person. Based on the current University guidelines, synchronous remote instruction will not be available.

Online participation will be limited to special circumstances and should be arranged with the instructor as soon as possible.

This course is designed to function fully in person beginning September 13. Requests for remote attendance will not be reviewed by myself or the department. If you believe you have a qualifying disability that prevents you from attending in-person instruction this semester, please contact Disability Resources and Services. If you are quarantined due to COVID-19, you may temporarily participate remotely by providing documentation. Under either of these circumstances, you may elect to preserve your privacy by not using video and by identifying yourself in Zoom using your initials or an alias that you have shared with me.

AS PER THE UNIVERSITY GUIDELINES: “Regardless of your vaccination status, face coverings are required when indoors...” Therefore, you will be required to wear a proper fitting mask at all times while in class. I understand that the class is fairly long in duration and thus you will be permitted to leave during any downtime to go outside or to a designated eating area to have a mask break (I will let you know about these once I have a location). Additional masks will be available in case you need to replace yours during class (yes, we have all sneezed into our masks at some point and that’s just gross).

Office hours: I will be available Friday 10:00-11:00am for office hours via Zoom or in the 146 Langley. It will probably work best if you email me ahead of time so that I will be certain to be on Zoom or in the room during that time. Alternatively, feel free to email me and we can set up a time to talk via Zoom. Also see “open lab hours” below.

Communication: You may contact Dr. Hildebrand via email at jeffh@pitt.edu or through the inbox feature of Canvas. You may text me at 412-496-1064, but please reserved this for more urgent situations.

All course information and materials will be available and accessible through Canvas. This will include access to all documents, assignments, the gradebook, Zoom meetings, Panopto videos, and Lab Archives. You should use Canvas to join Zoom meetings, if needed, so that you are authenticated.

Open lab hours: TBD, but these may not be possible depending on the university's posture. These opportunities may be available and will be by appointment. These will be times when students may use the microscopes to collect additional images or similar data collection, under the supervision of the instructor. Since the lab is in use most afternoons, these times will probably be in the mornings.

Course approach and objectives: You will be employing several methods used in cell biology to investigate the ways proteins and pathways are targeted to specific subcellular locations within a cell. You will generate hypotheses based on observations/current knowledge and will attempt to test these hypotheses using molecular, pharmacological, biochemical, and imaging methods.

Learning objectives: To design and carryout authentic research through all parts of the scientific process, including developing and modeling hypotheses, analyzing data, making ethical decisions, problem solving, and science communication.

Required Materials: A laptop or tablet that is WiFi enabled. A WiFi (not cellular) method for dual login authentication (duo Mobile) to the Pitt-provided platforms Lab Archives and Canvas.

- If you do not have a laptop computer with WiFi, please let us know and we will help find a solution.
- Dual authentication: The lab space does not have particularly robust cellular access. Pitt IT can provide a manual dual authentication code generator for students without smart phones.

Reading and Assignments: Readings and assignments will be posted online, through Lab Archives and Canvas, and will be included in the weekly syllabus and updates from instructor. Expect weekly assignments and in-class work.

Grading: Final grades will be determined using the following assessments:

- Homework, take home assignments, and research lab notebook: 70%
- lab/class time work quality, participation, presentations, professionalism, teamwork: 30%.

Lab notebooks: You will be using Lab Archives, an electronic research notebook program. You will have assignments to set up your lab notebook, record your findings, and analyze your results. In recording data- Always record what YOU did and what YOU see, not what the protocol says you should have done and what you predicted you

might see. However, you should add commentary about your analysis and how it relates to your hypothesis or other comments that will help other people understand your finding. You can add notes about what other people see or think about your results, but make clear who the observer is, by name. Changes to protocols must be recorded. You should not start an experiment before your notebook is set up.

- I will set up the basic outline of the lab notebook page but you are responsible for filling it out with the hypothesis/objectives, background, protocols/methods, collected, data analysis, conclusions (including what may have gone wrong if that's the case), and proposed future experiments.

Homework/out of class assessments will typically be assigned weekly and due 1 hour before the start of class. Many of these assignments will be based on the research and data you collect in lab. **You must have participated in the research process in order to complete and get credit for the assignment.** I encourage you to talk about the science with your peers, instructors, and outside sources. However, the work you turn in must be your own. There are obvious exceptions to this, such as group presentations. *Ask your instructor for help when you are uncertain about following these guidelines.* Plagiarism cannot be tolerated in science and in universities. See the Academic Integrity Policy of the University.

Late assignments including notebook entries will be docked 10% when turned in within 12 hours of the assigned due date. Late assignments will be docked 20% when turned in more than 12 hours but less than 48 hours after the due time. Assignments more than 48 hours late will not receive credit. In-class-time work (whether in person or online) must be immediately turned in when requested by the instructor to receive any credit. You cannot receive credit for this in-class work if you were not on-time to class or skip class.

Attendance and participation: Lab time will be busy since we meet only once a week. Arrive on time and do not plan to leave early. Do not schedule appointments during this time. Do not text or receive phone calls during this time unless it is truly urgent. You are responsible for the research work and materials missed as the result of any late arrivals. To take the course, you must participate in the first class so that you understand the course structure, meet your peers and instructor and understand the research questions. Two missed lab periods for which you did not provide a written explanation and documentation (ex. record of visitation to Student Health or hospital on date of class), within one week of the missed lab period, will result in a grade drop by a full letter grade. If you miss more than three lab periods for *any* reason, it will be suggested that you drop or withdraw from the course as you will not be able to complete the research necessary to achieve the course goals. You are responsible for the research work and materials missed as the result of any absences.

I understand that many of you may be in the final year of your undergraduate education and may have the opportunity to interview for med school, grad school, jobs, etc. If you

must miss class for these sorts of opportunities, I understand completely and hope they go well. However, you will need to provide some form of documentation regarding the time and place of the interview. A copy of an email or some other form of communication from the interviewing institution, company, etc is sufficient.

In reality, this semester may have some rough spots due to the continued pandemic. So please keep in touch and let me know how you are doing and if there are issues that we need to address. I will obviously need to be flexible regarding content delivery, attendance, and participation based on the COVID status on campus and in the region.

Research ethics: As a scientist on this research project, you must observe carefully, be skeptical and questioning, and accurately report what you actually see in your experiments. It can be tempting to report what you *hoped* to see instead of what you *actually* see, especially if your data does not support your hypothesis. Often data will NOT support your hypothesis. This is real science. Ask your peers and instructors to help you analyze your data-second opinions are important.

Lab work quality includes (but is not limited to): Doing focused work independently *and* with your team. Paying attention and asking questions during group discussions to get clarification. Getting help when you need it, not when you weren't paying attention or could have thought through the answer with your teammates. Labeling lab materials clearly with expected detail. *If your notebook is not set up, you cannot do the lab work.*

Professionalism and participation requires focusing on lab, during lab. It includes (but is not limited to) not using cell phones or computers for anything other than lab work. Keep conversations directed to lab work. Take notes. Offer to answer questions before being called on. Ask thoughtful questions in group discussion. Follow safety practices.

Teamwork- Consult your teammates when you have a question or need help. Talk problems through with classmates. Recognize the strengths of your teammates, helping them when they need help. Plan ahead for team meetings outside of class and be a prepared, active participant.

Health and Safety Statement : During this pandemic, it is extremely important that you abide by the [public health regulations](#) , the University of Pittsburgh's [health standards and guidelines](#), and [Pitt's Health Rules](#). These rules have been developed to protect the health and safety of all of us. Universal [face covering](#) is required in all classrooms and in every building on campus, without exceptions, regardless of vaccination status. This means you must wear a face covering that properly covers your nose and mouth when you are in the classroom. If you do not comply, you will be asked to leave class. It is your responsibility to have the required face covering when entering a university building or classroom. For the most up-to-date information and guidance,

please visit coronavirus.pitt.edu and check your Pitt email for updates before each class.

If you are required to isolate or quarantine, become sick, or are unable to come to class, contact me as soon as possible to discuss arrangements.

No food or drink is allowed in the lab. Long hair should be pulled back. Clothing and accessories with dangling parts should not be worn. Backpacks and coats must be stored in the entry way, not at your bench.

Take Care of Yourself: Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep, and taking time to relax. Despite what you might hear, using your time to take care of yourself will actually help you achieve your academic goals more than spending too much time studying. All of us benefit from support and guidance during times of struggle. There are many helpful resources available at Pitt. An important part of the college experience is learning how to ask for help. Take the time to learn about all that's available and take advantage of it. Ask for support sooner rather than later – this always helps. If you or anyone you know experiences any academic stress, difficult life events, or difficult feelings like anxiety or depression, we strongly encourage you to seek support. Consider reaching out to a friend, faculty or family member you trust for assistance connecting to the support that can help.

The University Counseling Center is here for you: call 412-648-7930 and visit their website.

If you or someone you know is feeling suicidal, call someone immediately, day or night: University Counseling Center (UCC): 412 648-7930

University Counseling Center Mental Health Crisis Response: 412-648-7930 x1

Resolve Crisis Network: 888-796-8226 (888-7-YOU-CAN)

If the situation is life threatening, call the Police:

- On-campus: Pitt Police: 412-268-2121
- Off-campus: 911

UNIVERSITY POLICIES:

Disability Resources

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and [Disability Resources and Services \(DRS\)](#), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Academic Integrity Policy

Students in this course will be expected to comply with the [University of Pittsburgh's Policy on Academic Integrity](#). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the assessment of any individual suspected of violating

University Policy. To learn more about Academic Integrity, visit the [Academic Integrity Guide](#) for an overview of the topic. For hands-on practice, complete the [Understanding and Avoiding Plagiarism tutorial](#).

E-mail Communication Policy

Each student is issued a University e-mail address (username@pitt.edu) upon admittance. This e-mail address may be used by the University for official communication with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g., Hotmail, AOL, Yahoo). Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address.

Equity, Diversity, and Inclusion

The University of Pittsburgh does not tolerate any form of discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, familial status, sex, age, sexual orientation, veteran status or gender identity or other factors as stated in the University's Title IX policy. The University is committed to taking prompt action to end a hostile environment that interferes with the University's mission. For more information about policies, procedures, and practices, visit the [Civil Rights & Title IX Compliance web page](#).

I ask that everyone in the class strive to help ensure that other members of this class can learn in a supportive and respectful environment. If there are instances of the aforementioned issues, please contact the Title IX Coordinator, by calling 412-648-7860, or e-mailing titleixcoordinator@pitt.edu. Reports can also be [filed online](#). You may also choose to report this to a faculty/staff member; they are required to communicate this to the University's Office of Diversity and Inclusion. If you wish to maintain complete confidentiality, you may also contact the University Counseling Center (412-648-7930).

Gender Inclusive Language Statement

Language is gender-inclusive and non-sexist when we use words that affirm and respect how people describe, express, and experience their gender. Just as sexist language excludes women's experiences, non-gender-inclusive language excludes the experiences of individuals whose identities may not fit the gender binary, and/or who may not identify with the sex they were assigned at birth. Identities including trans, intersex, and genderqueer reflect personal descriptions, expressions, and experiences. Gender-inclusive/non-sexist language acknowledges people of any gender (for example, first year student versus freshman, chair versus chairman, humankind versus mankind, etc.). It also affirms non-binary gender identifications, and recognizes the difference between biological sex and gender expression. Students, faculty, and staff may share their preferred pronouns and names, and these gender identities and gender expressions should be honored.

BIOSC 1510, Cell Biology Lab, 2021 proposed schedule of lab work and assignments.

Week	Lab work overview	Assignments to complete <u>before the next class</u>
Aug 31	<p>Introduction to our research project.</p> <p>Canvas and Lab Archives introduction and notebook set up.</p> <p>Experiment 1: cytoarchitecture in different cell types.</p>	<p>Due September 7 before class.</p> <p>Set up LabArchives page for staining cells to detect intracellular proteins.</p> <p>Read: Dietz et al: "Differential Actin-dependent Localization Modulates the Evolutionarily Conserved Activity of Shroom Family Proteins".</p>
Sep 7	<p>Discuss Dietz et al.</p> <p>Begin imaging cells, intro to ImageJ and analysis of cells.</p>	<p>Due September 14 before class.</p> <p>Experiment 1 notebook page</p>
Sept 14	<p>Experiment 2, part 1: Assess the expression and distribution of Tropomyosin protein isoforms in vivo.</p>	<p>Due September 21 before class.</p> <p>Set up notebook page for experiment 2.</p>
Sept 21	<p>Experiment 2, part 2:</p> <p>Distribution of tropomyosin following treatment with agents that target the cytoskeleton or cytoskeletal regulators.</p>	<p>Due September 28.</p> <p>Update notebook for experiment 2, part 1.</p> <p>Set up notebook for part 2 of experiment 2.</p>
Sept 28	<p>Imaging and analysis cells for Experiment 2</p>	<p>Due September Oct 5.</p> <p>Submit experiment 2 notebook page.</p> <p>Set up page for experiment 3.</p>
Oct 5	<p>Experiment 3: Co-distribution of Tropomyosin isoform and Shroom proteins.</p>	<p>Due October 12.</p> <p>Update notebook page</p>
Oct 12	<p>Imaging cells from experiment 3.</p>	<p>Due October 19.</p> <p>Submit experiment 3 notebook page.</p>
Oct 19	<p>Experiment 4: Production of tagged Tropomyosins</p> <p>PCR amplification and DNA digest.</p>	<p>Due October 26</p> <p>Make slides to present group data about tropomyosin expression and Shroom protein distribution.</p>

Oct 26	Gibson assembly of PCR and vector DNA In class presentations of Tropomyosin and Shroom distribution.	Due Nov. 2 Update notebook page. Submit notebook page for experiment 4. Prep notebook for experiment 5.
Nov 2	Election Day! Please vote! Experiment 5: Ectopic expression and distribution of Tropomyosin proteins.	Due Nov 9 Update notebook for experiment 5.
Nov 9	Image cells from experiment 5.	Due Nov 16 Submit notebook page for Experiment 5. Prep notebook page for experiment 6.
Nov 16	Experiment 6: Distribution of Shroom and tropomyosin proteins.	Due Nov 30 Work on slides for final for final presentation.
Nov 23	NO CLASS	
Nov 30	Collect data from Experiment 6. Work on final presentation slides	Due Dec 7. Submit final set of slides for presentation:
Dec 7	Final presentations and wrap-up.	Due Dec 14. Submit Experiment 6 notebook page.