



# Developmental Biology Laboratory

## BIOSC 1530

### Syllabus Spring 2022

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#### Instructor

**Dr. Gerard Campbell**

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**Office hours:** Th 5:00-6:00 PM on Zoom (link can be found on Canvas); e-mail instructor for meetings at other times.

#### Course Objectives

- (i) Broad: learn how to conduct an original research project in Developmental Biology.
- (ii) Specifically: participate in a study designed to identify repression domains in developmentally important transcription factors.
- (iii) Become familiar with how *Drosophila* develops both as an embryo and post-embryologically and characterize the role the *brinker* (*brk*) gene plays during this development. This will require mastering standard and immunofluorescence microscopy techniques, and dissection and tissue preparation techniques.
- (iv) Become familiar with how transcriptional repressors function.
- (v) Understand how repression domains can be identified in transcriptional repressors.
- (vi) Design experiments to test specific regions of developmentally important transcription factors for repression activity.
- (vii) Perform these experiments; this will require mastering of standard recombinant DNA techniques including the use of restriction enzymes, cloning plasmids using *E. coli*, PCR, *Drosophila* genetics, generating transgenics in *Drosophila* to generate reporter constructs and for misexpression of specific genes or modified genes. Understand the theory behind each of these approaches.
- (viii) Learn how to regularly record experimental observations, and write up and present materials and methods, results and discussion of results.
- (ix) Write a final lab report documenting all approaches and results.

#### Laboratory Schedule and Location

**Time:** Tuesday OR Wednesday 1:00 – 4:50 PM.

**Location:** A148 Langley

All labs will be in person apart from the first two, which will be on-line, unless additional restrictions are put in place due to COVID.

#### Missed labs

If any labs are missed for valid reasons, including COVID diagnosis, sheltering in place, other illness, Medical School interviews, you must inform the Instructor as soon as possible, ideally prior to the class, detailing the reason for absence and you must provide documentation. For any absence you must discuss with the

Instructor how to make up anything that was missed. An absence will not excuse any expectations for subsequent labs.

### **Laptop**

You must bring a laptop to lab each week to access LabArchives, perform activities and record data.

### **Textbook**

There is no assigned text book. The book used for the lecture course, Principles of Development, by Lewis Wolpert; Cheryl Tickle; Alphonso Martinez Arias, will help in understanding many of the subjects covered in these laboratory classes. Also, some of the topics will have been covered in 0350 Genetics, so review your notes from that course.

### **Communication**

The Instructor may contact you via your official Pitt e-mail so that it is important that you read this regularly. The official Pitt e-mail communication policy can be found [here](#).

### **Canvas**

A Canvas site is available for this course and will be used to post announcements, some other materials, and grades.

**Discussion.** Post course-related questions here.

### **LabArchives**

A LabArchives (Electronic Research Notebooks) site will be made available for this course. This site can be found on your main my.pitt page. You will be sent an e-mail inviting you to join the site for this lab. Most files for use in the course will be posted on LabArchives. Before each class download and read any files found in the folder for that particular lab. Read the protocol file for the lab; this will identify additional protocol files that you need to download and read. The Quiz at the beginning of lab is designed to test whether you have read those files.

### **Top Hat**

A Top Hat site will be made available for this course. You will be sent an e-mail inviting you to join the site for this lab.

### **Assignments**

#### **Activities**

Specific 'Activities' will be assigned to be completed before, during or after lab. This will include Quizzes, but may include other miscellaneous tasks that will vary from week to week. Quizzes will be conducted on Canvas or Top Hat at a specific time for which you will be given notification. Details of other activities will be provided later. For each activity you will be given a percentage grade. All activities for which you did not get 100% must be retaken, unless indicated otherwise; the number of retakes will be limited, how many are available will vary with specific activity. To pass the course you must get 100% on all the activities after retake, if necessary. Your final grade will be based on your initial scores, as outlined below.

### **Lab Notebook and Record Files**

There is a folder on your LabArchives page with this name. Here you will record everything you do each week. Rules and advice on how to do this can be found in the 'Lab Notebooks' protocol file in the Protocols folder on LabArchives. You will also record experimental material and data in specific Record Files; how to do this and

what to record will be explained in each lab. Your notebooks and Record Files will be reviewed 3 times; before each review you will be provided with a rubric of what is expected to have been recorded. Each review will be classified based on the expectations outlined in the rubric into the following classes:

A = Exceptional  
B = Meets Expectations  
C = Needs Improvement  
F = incomplete or far below expectations

For any grades below B you must update your notebook for a regrade. To pass the course you must achieve at least a B on each of the reviews after regrade, if necessary. Your final grade will be based on your initial grade, as outlined below.

### **Lab report**

This will have a format similar to that of most research papers, i.e. Abstract, Introduction, Materials and Methods, Results and Discussion. You will write up two preliminary 'draft' versions of sections of the report after specific labs and then update those based on comments and include more recent data to produce a final report. For each of these three you will be provided with details on how to do this along with expectations in a rubric. Each draft and the final report will be graded as for the Lab Notebooks into A, B, C and F classes based on the expectations outlined in the rubric. For any grades below B the draft or final report must be revised and resubmitted. To pass the course you must achieve at least a B on each of the reviews after regrade, if necessary. Your final grade will be based on your initial grade, as outlined below.

### **Get Help!**

#### **Office hours (on line with Zoom).**

The office hour at 5 PM on Thursdays will be communal, so all participants will be present in the same Zoom meeting.

**Individual meeting with Instructor:** If you would like one-on-one time with the Instructor, e-mail to arrange for an individual meeting.

**Personal questions:** e-mail instructor directly questions that are personal or not relevant to the rest of the class, such as an issue with a grade. If an answer is not received within 48 hrs, resend. But questions regarding course information should be asked on Discussions on Canvas.

### **Final Grade**

As indicated above, to pass the course (get a C or above) you must:

- (i) Get 100% on all the activities after retake, if necessary
- (ii) Achieve at least a B on each of the three Lab Notebook and Record File reviews after regrade, if necessary.
- (iii) Achieve at least a B on each of the three reviews of the Lab report drafts and final version after regrade, if necessary.

Your final grade will be assessed on a Specification Grading approach where you have to meet specific expectations in different Assignment categories to achieve a particular grade; these categories are Activities, Lab Notebook and Record Files and Lab report. Expectations are outlined in the following table:

| Grade | Activities | Lab Notebook and Record Files    |              |            | Lab report                       |         |       |
|-------|------------|----------------------------------|--------------|------------|----------------------------------|---------|-------|
|       |            | Labs 2-4                         | Labs 5,7,8,9 | Labs 10-14 | Draft 1                          | Draft 2 | Final |
| A     | >92%       | A                                | A            | A          | A                                | A       | A     |
| A-    | >90%       | At least two As, no lower than B |              |            | At least one A, no lower than B  |         |       |
| B+    | >87%       | B                                | B            | B          | B                                | B       | B     |
| B     | >83%       | B                                | B            | B          | At least two Bs, no lower than C |         |       |
| B-    | >80%       | At least one B, no lower than C  |              |            | At least one B, no lower than C  |         |       |
| C+    | >75%       | C                                | C            | C          | C                                | C       | C     |
| C     | >70%       | At least two Cs                  |              |            | At least two Cs                  |         |       |
| C-    | >60%       | At least one C                   |              |            | At least one C                   |         |       |
| D     | >50%       | F                                | F            | F          | F                                | F       | F     |
| F     | <40        | F                                | F            | F          | F                                | F       | F     |

**SO YOUR GRADE IS NOT BASED ON A COMBINED AVERAGE OF ALL YOUR SCORES; THERE IS NO 'FINAL PERCENTAGE' UPON WHICH YOUR GRADE WILL BE BASED**

To achieve a specific grade you have to meet all the expectations for that grade, so that for an A you have to get more than an average of 92% on the 1<sup>st</sup> attempt of the Activities, have an A in all Lab Notebook reviews and Lab report grades.

### G Grades

If you wish to petition for a G grade, you must submit a request for this grade in writing via e-mail to Dr. Campbell, and you must document your reason(s). If approved, you will be assigned specific tasks that you must complete to remove the G grade. Remember that G grades, according to SAS guidelines, are to be given only when students who have been attending a course and have been making regular progress are prevented by circumstances beyond their control from completing the course after it is too late to withdraw. If you miss the final exam, you may receive a G grade if the above conditions are met. If you have a valid issue affecting your performance in the course then it is not appropriate to finish the course and then petition for a G grade after you have failed: you must make the instructor aware of any issues before completing the course. After completing the course, any request for a G grade will be ignored. Also note that the final decision on the award of a G grade is that of the Dean and not Dr. Campbell.

### COVID 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 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](https://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 Dr Campbell as soon as possible to discuss arrangements.

### **Academic integrity and student code of conduct**

**Activities:** how these are conducted and whether you can discuss anything with your fellow students will vary from activity to activity. Clear instructions will be given.

**Lab Notebooks and Record files:** Your Notebook entries will be your own work, they may be very similar to other students in your group but should not be identical if you are making your own entries. Do not copy from another student, but you can discuss with other students how you are documenting your work. Your Record Files should usually be identical to other students in your group, you can compare these files with your fellow students to ensure this is the case.

**Lab report:** You are encouraged to talk to other students in the class, particularly within your group, about your results and also discuss how you might write up your report. But your own report (both draft and final) is your own work and you must not work together with other students on the actual write-up and you must not show your report to anyone else in the class.

*Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, from the February 1974 Senate Committee on Tenure and Academic Freedom reported to the Senate Council, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz or exam will be imposed. View the complete policy at [www.cfo.pitt.edu/policies/policy/02/02-03-02.html](http://www.cfo.pitt.edu/policies/policy/02/02-03-02.html).*

### **Turnitin**

*Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com page service is subject to the Usage Policy and Privacy Pledge posted on the Turnitin.com site.*

### **Students with disabilities**

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, 216 William Pitt Union, (412) 648-79890/(412) 383-7355 (TTY), as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

### **Recordings**

Some parts of the lab may be recorded on Zoom. These recordings will be available on Canvas and are only for use by students in this course during this term.