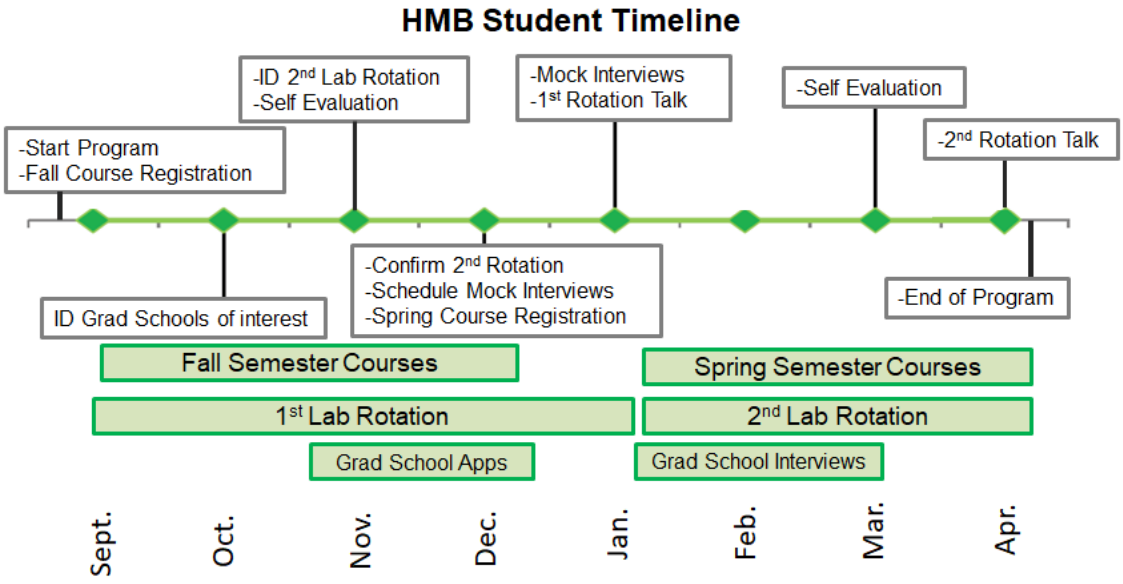
Manual to the Hot Metal Bridge Program (HMB) in the Department of Biological Sciences for Fellows

Developed by the Hot Metal Bridge Subcommittee of CODIE, Spring 2021

1. **Overview of HMB program**
    a. **Expectations and Goals:** The **Hot Metal Bridge Program** (HMBP) is a two-semester training fellowship program offered by the Dietrich School of Arts and Sciences to help bridge the gap between completion of an undergraduate degree and entrance into a graduate program for students from backgrounds traditionally underrepresented in their program area. The program is for US citizens and permanent residents only. Fellows receive a two-term (fall and spring) fellowship with a stipend, full remission of tuition and fees for the two terms, a laptop to use for the duration of their fellowship, and the option to purchase health insurance. The HMBP is designed to mentor fellows in the program to best prepare them to compete successfully for admission into top-tier graduate programs.

    The Department of Biological Sciences' HMB program (website in need of updates) offers training experiences in all areas of modern biology in a supportive environment, works one-on-one with each fellow to develop a course of study and research training customized to fit their individual needs and objectives, and provides an individualized mentoring committee that advises and benchmarks each fellow's progress through the program.

    b. **Timeline:**



2. **Lab Rotations**
    a. **Purpose/Goals:** You will complete two research rotations in two different labs within the department, which will be chosen based on your scientific interests. During these rotations, you will take on the role of an active lab member by conducting a research project, attending lab meetings, and gaining mentorship from the PI and senior lab mates. These experiences should help refine your research interests and provide you with the practical skills necessary for graduate-level research.

    b. **Length of Rotation:** Each Rotation is a semester long, and occurs during the fall and spring terms. During each rotation, you will assume the role of a lab citizen. The extent of your responsibilities is determined by your PI, and may include a variety of responsibilities (such as attending lab meetings, journal clubs, reading primary literature, learning new lab skills, etc.) . However, these duties will be weighted to allow you to successfully balance your classes and research responsibilities while you gain an understanding of conducting research and being a productive lab member in your rotation lab (e.g., will I need to be in the lab on weekends? On holidays? When can I take a vacation?).

    c. **How to Choose Rotation Labs:** Choosing a lab for rotation is a tough choice, and should not be taken lightly. Although priorities for choosing a rotation lab may differ from person to person, it is recommended to consider the following: What are your research interests? Does the lab in question align with those interests in some way? Are there any research skills or techniques that would be valuable for you to learn that this lab does? What do current or past lab members say about working with the PI of the lab? Before contacting a PI about a rotation, read their biography and recent publications on the department website to get a grasp of their research interests. When meeting with a PI, ask them about their current/ongoing research projects to determine if any suit your interests. It is equally important to ask about their expectations for lab members with regards to work hours, shared lab responsibilities, lab culture, etc.. Ask current or past lab members these questions as well. Performing research in a lab is not always a linear process. Setbacks will happen, and so joining a lab environment that promotes work-life balance is a too often undervalued factor.

    d. **Rotation Talks:** You will give two rotation talks to the department over the course of the program, one in February following your first rotation, and one in April following your second rotation. Your presentation will be given alongside first year graduate students in the department, who will also share research from their rotation lab. It is important to note that because the talks are aligned with the schedules of first year graduate students, your first rotation talk occurs ~1 month after the first rotation ends. These talks are your opportunity to share the awesome science you completed with your peers and mentors, while helping you gain formal presentation experience. Talks are ~15 minutes and include introductory material, methods, actual or expected results, data interpretation/conclusions, and future directions. Additionally, you will have the opportunity to answer questions about your research from members of the department.

Prior to the formal presentation, you will be able to practice your talk in front of your committee and rotation lab to get constructive feedback.

e. **Evaluation:** At the end of your rotation, you will have a chance to reflect on what you've learned, what went well, and what could have been improved. Specifically, you will complete a self-evaluation form to assess your overall strengths and weaknesses in both research skills and general interactions with other lab members. Your rotation advisor will also complete this evaluation. This time is also a good opportunity to reflect on what you've learned about yourself, and your needs from a graduate school lab, regardless of what program you end up in. Some things to think about include: Have your research interests changed since the beginning of the rotation, and if so, how? Did the PI's mentoring style work for you, and what might work better? Were you able to cultivate a healthy work-life balance during your rotation?

3. Courses for HMB students

a. **How to register:** Per the requirements of the HMB program, you are required to take at least 9 credit hours per term to be considered a full time student. Your research rotation covers up to 6 credit hours per term, and the rest is filled with courses. To register for courses, you will need to contact the department Graduate Administrator. You should receive an email from the Graduate Administrator with the list of available courses for the coming terms 4-6 weeks prior to the registration date for each term. You are required to take specific courses as part of the HMB program requirements, but you are able to fill your other required credit hours with electives of your choice, as discussed below. You will email the Graduate Administrator with the courses you would like to take before the registration date and he/she will do the registration. There is an approximately one month long period following the registration date where you can make changes to your course schedule without paying a fine. However, if you make changes after this deadline, you will have to pay a $7 fee per course change, including adding or dropping. Importantly, the credit hours of these courses are tuition free as part of your HMB fellowship!

b. **Required courses:** For the Fall and Spring terms, the required courses that will fill up the majority of your minimum 9 credit hours will be Research Rotation (BIOSC 2025, 1-6 credits), Departmental Seminar (BIOSC 2960, 1 credit), Student Research Seminar (MCDB or EEB, BIOSC 2050, 1 credit) and Introduction to Graduate School (BIOSC 2950, 1 credit). The Graduate Administrator will automatically register you for these courses, but you will need to check with him/her, and discuss with your mentoring committee, how many additional credit hours you need to reach at least 9 credit hours but no more than 12 per term.

c. **How to pick courses to fill your remaining credit hours:** The potential courses for you will be in the list of available departmental courses you receive from the Graduate

Administrator, and these change from year to year. Courses spanning a wide range of topics are available, covering different aspects of ecological, evolutionary, molecular, or cellular biology. It is highly recommended that you take courses that are related to the fields of research you are considering for graduate school. Other courses, such as those related to scientific ethics or posters/presentations, will be excellent preparation for graduate school as well. If you have questions about specific courses, ask more senior graduate students about their impressions of each course, ask your mentoring committee, or contact the course instructors. Graduate courses offered outside of the department or undergraduate courses from within the department can be taken, but in these cases registration requires permission from the department head. A list of pre-approved out-of-department and undergraduate courses can be obtained from the Graduate Administrator. If you find a course that piques your interest but is not on the pre-approved list of courses, you have two options: petition the department head to get the course approved or audit the course. Discuss courses like this with your committee before seeking the approval of the Graduate Administrator and department head. To audit a course means to sit in and participate but not receive a grade or credits. This can be an option that allows you to gain experience and participate at your own pace or as your time allows. However, any audited courses will not show up on your transcripts.

4. **Mentoring committee**
    a. **Purpose of Committee**: You will be given a 3-faculty member committee who will meet with you monthly. The purpose of this committee is to help you succeed by providing mentorship and guidance through various aspects of the student experience. The committee will not be composed of your lab PI or course instructors, which means they are not evaluating you in any way. The committee members will help guide you through the 8-month program and help with your next steps. Feel free to contact your committee members at any time, with questions regarding your courses, lab, grad school applications, or anything else.

    b. **Monthly meetings**: You will meet with the committee at least once per month. In every meeting, you should discuss with your committee how your classwork and lab rotation are both going. If you are having any issues, you should tell your committee so they can help you resolve these issues. Prior to each meeting, you should do a self reflection to help prompt conversation. You do not have to share written responses with the committee, but are welcome to if you would like. Each meeting has specific goals, which are detailed here:

        1. End of August/early September: This is a welcome meeting where you will meet your committee members and get to know each other.

        2. September: In this meeting, the committee will ask you to start thinking about what graduate programs you are considering.

        3. October: During this meeting you will discuss which graduate programs you are planning to apply to. Your committee may have advice on other programs to

consider, or have advice on the programs you have identified. Also, in this meeting you should start to discuss potential labs for your second rotation.

4. November: The focus of this meeting will be to discuss your graduate program applications. Outside of the meeting (either before or after this meeting) you should share your application package with the committee members so they can provide feedback. Feel free to send them multiple copies for additional feedback. Also, you should inform the committee of which lab(s) you are most interested in rotating next, and the committee chair will help you arrange your next rotation.

5. December: During this meeting, you will discuss wrapping up the rotation. You will also discuss good interview tips.

6. January: During this meeting, you should tell the committee how you are settling into your new lab and new classes. If you are having any issues, you should tell your committee so they can help you resolve these issues. Also, outside of this meeting you should have one-on-one interviews with all or some of the committee members to prepare for upcoming graduate school interviews. Finally, during this meeting you should give a practice rotation talk in preparation for the rotation talk you will give on your work in Rotation 1 in February.

7. February: During this meeting, you should update the committee on how your interviews are going, if applicable. If you would like more feedback on interview tips, let your committee know. In addition, you should update the committee on how your courses and second rotation are going.

8. March: During this meeting you should give your practice rotation talk over the work you completed during your second rotation. The final rotation talk will take place in April. In addition, you should tell the committee how your courses and rotation are going.

9. April: This will be your final meeting. You should discuss wrapping up in the program with the committee and let them know what your plans are moving forward. You are encouraged to stay in contact with your committee members and other members of the department even after finishing the program.

5. Peer Mentor: Role and Plans

a. **Who They Are:** You will be mentored by the Ivy McManus fellow, a graduate student chosen for their commitment to support inclusion, diversity and equity in the Department of Biological Sciences. They will welcome you into the graduate student community and encourage open, casual discussions about anything from graduate student life to graduate school applications. In the past, fellows have planned info panels and casual get-togethers with other graduate students.

b. Why Have One: Your graduate student mentor is an additional layer of support for you in this program. Because they have experience in the department and are your peer,

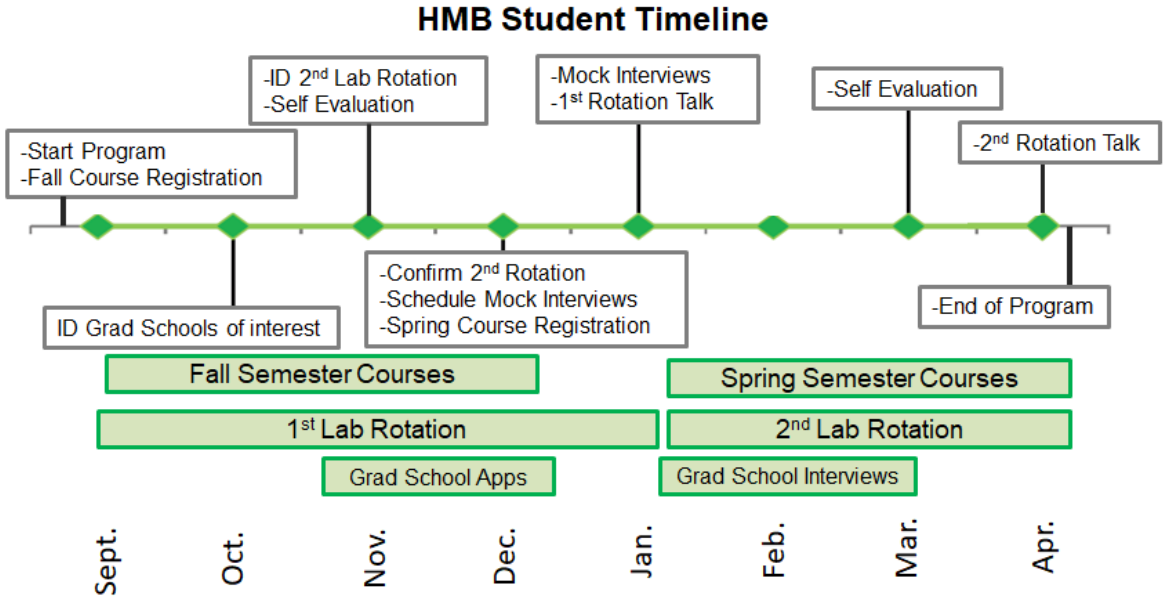
they can provide a different perspective from your faculty mentoring committee. Feel free to contact your student mentor at any time throughout your HMB experience.

c. **Responsibilities:** Your graduate student mentor is responsible for checking in with you weekly. During pre-COVID times, this would often come in the form of coffee, lunch, or dinner breaks. Your graduate student mentor is also responsible for scheduling your monthly mentoring committee meetings. They may attend your monthly mentoring committee meetings to support you at your discretion.

6. **Applying to Grad school**
   a. **Ecology and Evolution vs Molecular/Cellular Type Programs:** Every graduate program you may be interested in applying to will likely have a different configuration, and it is worth exploring their websites to determine how each program operates. In general, **Ecology and Evolution (EE) programs** tend to have students applying directly to participating labs. In this case, it is extremely important to reach out to prospective mentors several months in advance to open a dialogue and discuss 1) your research interests to begin feeling out whether you and the mentor would be a good fit, and 2) whether the lab you are applying to is recruiting students. On the other hand, **Molecular/Cellular programs** (like MCDB) often tend towards a pool of students who are not committed to join a particular lab. Over the course of the first year of these Molecular/Cellular programs, students will identify a lab in which to pursue their doctoral studies based upon their research rotations. Thus, it is very important for MCDB applicants to find programs that have multiple faculty in the student's broad interest area, while EE students will want to focus on the work of individual professors whose labs they would apply to. However, there are exceptions to these guidelines, and it is definitely worth taking a careful look at the website and instructions for programs you are considering applying to. For example, many smaller Molecular/Cellular programs recruit students directly into labs, while very large EE programs may not recruit directly. In all cases, it doesn't hurt to send an email with questions to faculty members and/or contact persons in these programs! Everyone wants to recruit the best candidates and will be quite eager to provide you advice to submit the most compelling and productive application possible! How to reach out to prospective PhD advisors and how to decide whether a lab is a good fit for you are topics you will want to discuss with your Mentoring Committee during monthly meetings.

   b. **Timeline:** Each program will have a different deadline for applications to be submitted. Many of these occur in December, but may be earlier or later, or in the event of programs that recruit students directly, may be on a rolling admission schedule (recruiting students at all times). Interviews will occur within a month or two after the application deadline (see HMBP timeline figure below). This is because the reviewing committee must read and rank all of the applications. For example, the deadline for EE and MCDB programs in Pitt BioSciences was December 7th in 2020, and interviews occurred on January 15 and 29 that year. After the interview, candidates are ranked

based upon faculty (and in some cases grad student) feedback to determine the order that offers are extended.



c. **Application:** A graduate school application has several components that must be assembled in advance of the application dates:

1. **Undergraduate transcript**

2. **Graduate (including HMBP) transcript (if applicable)**

3. **Graduate Record Examination (GRE) scores (if applicable):** Some graduate programs (ours at Pitt does not) require students to have taken one or more Graduate Record Examinations and applicants must have their scores on these examinations submitted to the program directly for inclusion within the application packet. The exam most often required is the GRE General Test, though some programs may also require or suggest that scores from a more specialized Subject Test (e.g., the Biology Subject Test) be submitted as well. If programs you are considering applying to require these scores it is important to determine when these tests are offered and devise a plan to prepare for and take them very early on in your HMBP year. This is something you may want to discuss with your Mentoring Committee and/or Rotation Mentor during your first meeting(s) in the summer/fall.

4. **Personal Statement:** The personal statement allows you to share with the admissions committee how your experiences have motivated you to pursue a Ph.D., express your research interests. The personal statement is an opportunity to expand on details that aren't covered by other parts of your application, as well as to share with the admissions committee how you think

about science. You should also feel free to include other information that would help the reviewer better understand the context of your college or career trajectory, academic performance, and/or scientific pursuits. The practice of science includes both successes and setbacks, and there is no perfect set of experiences. So, try to use your own voice and be frank, rather than anticipate what you think the reviewer might want to hear. Importantly, look at each program's website for the instructions and specifics they look for in personal statements. Each program will require a personal statement in some form (sometimes in two seperate documents), and so you will need to tailor your personal statement to each program being applied to. Your mentoring committee is an excellent resource for you in receiving constructive feedback on drafts of this document.

5. **Curriculum Vitae ("CV"), aka resume:** The CV is an opportunity to list your professional history. What schools you have attended, research experiences, poster presentations, volunteering/community building activities you have contributed to. Check the program website for specifics on formatting, as well.

6. **Reference Letters (typically 3 letters):** The reference letters are very important for your graduate school application. Three letters are required by most graduate programs. You will want to ask the letter writers who you feel will write you a strong letter for your graduate school application. It is important to have letters from mentors who have worked with you on research projects, as these letters speak directly to your promise in research. It is highly recommended that you request a letter from at least one mentor from the HMBP, likely your first rotation advisor. It is also worth keeping in mind that you want your letters to sample multiple aspects of your career trajectory. So having both postbac and undergrad letter writers is a good idea!

d. Interview: Usually the interview is a 3 day trip often centered on a Friday - arrive on a Thursday afternoon, interview all day Friday and return home on Saturday (in years without COVID). The interview is a two-way street: it is a chance for the faculty and students to interact, and get to know you, but it is also worth remembering that the ultimate goal is to recruit you to their program, and it is a great way to learn more about the programs and labs you might be interested in.

Be prepared for meetings with faculty: be ready to talk in depth about your research experiences and interests, and be attentive and interactive with faculty about their research. Showing honest excitement about your work and the work of others goes a long way in making a good impression. You will generally receive a list of faculty who you will be meeting with. It really helps to read a little bit about the faculty you will meet. You don't need to thoroughly analyze all of their papers, but browse their lab website to get a feel for what they are interested in. Maybe read a review article from their lab, as these are generally written for a wider audience. If you are applying directly to a lab (e.g. in an EE program), it is definitely expected that you will have spent more time reading the work that the lab has produced.

e. **Offer:** Offers have a universal deadline for acceptance by the Council of Graduate Schools of April 15th. Offers may be extended beyond this deadline, but no school participating in this organization can require a student to accept an offer before April 15th.

7. **Links to additional information:**
   a. **Applying to Graduate School**
      i. How to Apply to Pitt Biological Sciences
      ii. Pitt Biological Sciences Application FAQ
      iii. Advice on sending a graduate school inquiry email
      iv. Guide to applying to graduate school in biology (by the German Lab, UC Irvine)

   b. **Information about Pitt's Department of Biological Sciences [*Andrea*]**
      i. Departmental website
      ii. Graduate Student Organization website
      iii. Departmental forms & Faculty-written grad guide
      iv. Peer-written grad guide
      v. Seminars info

Table of regular seminar timing and location

Seminar	Day and Time	Location
Departmental seminar	Mondays, 11:00am-12pm	Crawford 169
E&E noon seminar	Wednesdays, 12:10pm-1pm	
MCDB noon seminar	Fridays, 12:10pm-1pm	Langley A219B

c. **Who Should I Contact With Questions?**

For questions about...	Person	Location/email
Administrative issues (e.g., paychecks, registering for classes	Graduate Administrator, Cathy Barr	Main office, cbarr@pitt.edu
Building access	Dave Malicki	malicki@pitt.edu
Computers and internet	Dietrich School IT	Submit a Help Request online

		Call the helpdesk: 4-4357 or 412-624-4357 or (4-HELP) Chat Live with a Help Desk Analyst
Diversity, Equity, and Inclusion resources	Department's CODIE Chair, Cori Richards-Zawacki Dietrich School resources	105 Clapp Hall, cori.zawacki@pitt.edu Philippa Carter (pkc3@pitt.edu) https://www.asgraduate.pitt.edu/equity-diversity-inclusion
Ordering and DNA sequencing	Pat Dean	patdean@pitt.edu
Mental health resources	Graduate Mentoring and Advising Committee (GMAC) Chair: Karen Arndt University-wide resources University Crisis counseling (immediately speak with an on-call therapist) UPMC's RESOLVE crisis network	arndt@pitt.edu https://www.studentaffairs.pitt.edu/cc/ (412) 648-7930 ext 1 (888) 796-8226
Questions for all graduate students	bio-grad listserv	bio-grad@list.pitt.edu
Questions about life in Pittsburgh	Ivy McManus fellow, any graduate student, any member of the department!	https://www.biology.pitt.edu/people/graduate-students

d. **Mailboxes:** Mailboxes are located in A230 LH. You will have a mailbox labeled with your last name. Place outgoing mail in a basket in the Main Office in the cabinet to your right as you enter. Personal mail should have proper postage attached. Postage for University business will be added for you. For express mail service (UPS or FedEx), see the Administrative Assistant in the Main Office.

e. **Computer:** You will be given a laptop computer for your use as an HMBP student. You will need to return it at the end of your fellowship.

f. **Photocopies:** the photocopiers are located in A226 LH. The room is open during standard business hours. If you need early morning or evening access, the code is 1,2,3,45. If you have trouble, ask one of the Main Office Personnel for help.

g. **Printing:** to use the printers in the Life Sciences Complex on campus, you must install Pulse Secure for VPN, which can be downloaded through the software tab under my.Pitt.edu. You will need to use your Pitt ID/Password to login. The second request for input should be the word push. This will push the secondary authentication to your DUO app on your phone.

h. Life sciences complex information:

Building	**Abbreviation**	**Access information**	**notes**
Langley Hall	LANG	Keycard required between 7pm-7am	Lobby: Library, coffee stand, wireless printing Main Office (A234): Cathy Barr, Chair's office, keys for waste room, projectors, laptops, cords, and adaptors Mailboxes (A230) Copier room (A226): photocopiers/scanners (code 25000), departmental color printer, paper cutter Elevators: Access to freight elevator Access to loading dock Chemical and radiation waste closet in basement Access to greenhouse; requires keycard
Crawford Hall	CRAW	Keycard required between 7pm-7am	Rickety elevator Doors between Langley and Crawford are controlled by push buttons
Clapp Hall	CLAP	Keycard required	Lactation room (room L13; obtain code

		between 7pm-7am	from Dave Malicki) Access to loading dock
Life Sciences Annex	LSA	Keycard always required	Freight elevator Animal facility

i. **Wifi:** setup your access to Pitt wifi using the SETUP wireless network. After that, you should be able to log into WIRELESS-PITTNET or eduroam using your credentials. The latter will require your email as your login name.

j. **Personal Protective equipment:** Personal protective equipment will be provided by your laboratory PI.