Undergraduate Research Plan: Fall 2020 - Fall 2021

Requirements for each semester:

- Actively participate[1] in journal club/lab meeting 1 - 1.5 hours/week, and lead at least one journal club each semester[2]
- Engage in at least one outreach or DEI[3] project per semester and provide a short blog format post (200-500 words and a picture, if possible/appropriate) that will be included in the "accountability for action" portion of our website[4]
- Perform research duties (hours do not include lab meeting and are minimum requirements)
  1 credit hour = 3 hrs/week
  2 credit hours = 6 hrs/week
  3 credit hours = 9 hrs/week
- Complete "Undergraduate Research Semester Report" (available on lab website "Portal"[5])

Note: I generally require undergraduates to commit at least 10 - 15 hrs/week in the lab, regardless of research credits requested. As we have already discussed, when physically in the lab, any time less than 10 hours a week is too little to gain a meaningful experience for yourself and too little to generate the amount of data useful to the lab as a whole to "compensate" for time lost during your training. My time commitment requirement will be more flexible while we are still under pandemic restrictions.

General goals and skills:

- Gain an intellectual foundation through reading primary literature and literature reviews, and engaging in scientific discussions with lab members
- Learn to write and communicate your ideas for/to your scientific community
- Learn how to access and evaluate resources, both intellectual and technical, efficiently and effectively
- Promote DEI in academic sciences by actively engaging with your scientific and broader communities
- Gain intellectual and technical autonomy through mastering basic skills and demonstrating a commitment to the principles our lab values (e.g., hard work, ethical integrity, reliability, professionalism, respect)
- Earn research credit through a fulfilling and meaningful experience

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[1] Active participation includes coming to the meeting prepared to discuss whatever papers we have scheduled and to discuss the details of your research project and progress.

[2] Leading a journal club will mean that you initiate conversation and write a summary using a journal article summary form that I will distribute and include on the protal

[3] Diversity, equity, and inclusion

[4] https://www.tracyalarson.org/blog Outreach and inclusion have always been important aspects to any academic researcher's success. Until recently, many actions I and other scientists have taken have been largely "behind the scenes" and we have not necessarily been very transparent about how we engage in outreach and inclusion efforts. To increase transparency in the actions my lab members are taking, I have created a blog on our website that I will update at least once a semester to highlight the work we have been doing and hold us accountable for the larger goals I/we propose. In doing so, I hope to inspire other scientist to hold themselves accountable and increase the overall effectiveness of our/their actions.

[5] https://www.tracyalarson.org/portal or to navigate, go to "people" then click "portal" in upper corner

Undergraduate Research Plan: Fall 2020 - Fall 2021

Fall 2020

I want to be explicitly clear: you will very likely NOT be able to enter the research laboratories for Fall 2020 semester. This plan has been specifically designed by me to facilitate your continuation of undergraduate research. While my proposed plan might seem less than optimal and might not meet your expectations for your undergraduate research experience, I can attest that I have put considerable thought into how to create an experience as close as possible to that which you would achieve in person. Frankly, I'm pretty bummed that we won't be able to meet in person but I am very excited about the opportunities for future projects this plan offers.

Research goals:
Complete data entry and identify a research project or area of interest using the FMP database[6].

Research duties:
Enter experimental bird information into FMP database using an excel template provided to you. For each credit hour, you will be assigned 150 birds to enter into the database. On average each bird card should take less than 10 minutes to enter into the database. Bird experimental information will be provided in the form of scanned bird cards (we physically write the details on a card during a given experiments). The cards will need to be separated from the parent document by bird ID and saved as a jpeg with the bird ID as the file name. Data from each bird often includes song files and analyses, morphometrics, and immunohistochemical cell counts. These data will be copied into another database excel template for song or histology. Compiling these data will take a considerable amount of time, which will vary based on the type of data being compiled. We will come up with a plan together once I have access to all of the data files.

The birds you will be entering will include every experimental bird that my lab has used in addition to that from the lab of Dr. Eliot Brenowitz (my PhD advisor at the University of Washington) and one of the "fathers of the field" as we know it today. Our model species, Gambel's white-crowned sparrow, has been used in research since the 1960s and we are fortunate to have access to much of this data. This data is what you will be entering into the database. Included in this data are experiments that have already been published and some that have not for various reasons. All of this data, just like all of that in the lab, is considered sensitive information and should not be shared freely or accessible to anyone outside of the lab. You will need to work on data in a manner that protects its sensitivity.[7]

Initially you will have access to the overall experimental concepts that will be included in the entire database. As data accumulate in each respective sub-database you will gain access to these as well. You will be able to use the previous experiments and the associated data to "design" a new experiment that either re-evaluates existing data from a given experiment or compiles data across experiments to address your research question.

By actively participating in our journal club, you will no doubt identify outstanding research questions that could probably be addressed with existing data. I will ask you to compile a list of 5 - 10 research questions you've had throughout the semester to include in your "Undergraduate Research Semester Report". We will use this list in Spring 2021 to proceed with generating a unique research project for you.

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[6] FMP = FileMakerPro, a software program that we use to catalog research subjects' (usually birds) experimental information and resulting data

[7] We will go over how to keep data secure and safely backed up on our servers.

Undergraduate Research Plan: Fall 2020 - Fall 2021

Spring 2021

Research goals:

Draft a proposal using the NSF GRFP format[8] and work toward securing additional resources to complete research proposal.

Research duties:

As of now, the details are still to be determined and will largely depend on the state of the pandemic and restrictions on personnel in the laboratory. We will discuss the plan for Spring semester in greater detail at the end of Fall semester. At minimum I will use one of our lab meetings to discuss how to write a research proposal and get you a few past proposals (of mine and other graduate students) and resources for starting your proposals. We will create a schedule to encourage you to complete the different sections of your proposals. Included in this schedule will be several times that you will exchange your proposals with your peers (and probably at least one reviewer from outside the lab) to receive feedback on clarity of your ideas and research design. You and I will work together to address the feasibility of your proposal. I do not want this to be busy work, but rather for you to actually be able to execute the project you are proposing. Assuming that research labs will remain closed to in person undergraduate research for Spring of 2021, we will likely perform our meeting online rather than in person.

Fall 2021

Research goals:

Complete additional data collection on existing resources and propose follow up study that could be performed in the lab in Spring 2022 and beyond.

Research duties:

Again, as of now, this is still to be determined and will largely depend on the state of the pandemic and restrictions on personnel in the laboratory.

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[8] The NSF GRFP is a grant that graduate students can apply for before starting graduate school to fund their salary. This grant often offers incoming grads more flexibility in their dissertation project because the lab primary investigator (PI; i.e., the boss/head of lab) does not need to cover that student's salary and tuition on their research grants.