Philosophy and Policies for Undergraduate Researchers in the Larson Lab

Prior to officially joining our lab as an active researcher, we will invite undergraduate students to attend our lab meetings and lab journal clubs to determine if our lab would be good fit for you. In the past we have found giving undergrads the opportunity to see a bit more of what we do and how we do it through attending our lab meeting and journal club during their first semester, helps students sort out if they are really interested in the work. You would be able to register for credit for your first semester, with the expectation that you would actively participate in discussions and presentation of relevant literature. If you register for credit, requirements for receiving a grade or credit is detailed below and in the example syllabus online.

The following semester, if you are still interested in joining the lab as an active researcher and the lab feels you would be a good addition, you and Tracy will discuss options of projects and your primary mentor, and get you started in the lab at the bench. The process of deciding on a project occurs through discussions with Tracy in one-on-one meeting, through active engagement with the readings, and through awareness of the current projects in the lab as discussed in our lab meetings.

Once in the lab, we ask students to commit at least 10 hrs a week, ideally 15hrs, to lab work for at least one full year, with the general expectation that students will stay for the remainder of their time at UVA. We generally aim to have a given undergrad helping with a project for their first semester in the lab at the bench with the goal to settle on a project or part of a project that the student will lead (with guidance, of course) by their second semester at the bench. We treat all undergraduates with the same respect and expectations that we have for the graduate students, staff and fellows in the lab and expect everyone in the lab to do the same. Everyone is expected to take ownership of themselves, their projects, and their lab community. Tracy views her role primarily as helping everyone in the lab obtain resources (financial, technical and intellectual) they need to succeed both in the lab and outside of the lab. Depending on the project, your primary mentor – i.e., the person helping with your technical and intellectual training – might be Tracy, a graduate student, a post-doctoral fellow, or even a more senior undergraduate student.

A few policies, to be explicitly clear:

- Tracy is the final decision maker as to whether or not you are admitted or can stay in the lab. Tracy's "boss" is the chair of the biology department and the deans, but they are not involved in decisions of "hiring and firing" of undergraduate researchers. "Firing" of undergrads is not a common occurrence in our lab or any lab, but dismissal does on occasion happen.
- Two things that will rapidly lead to dismissal from the lab: mistreating our animal research subjects and lying. Science is built on trust and integrity, and if we can not trust an individual in the lab, then we can not trust their data to be presented outside of the lab.
- Undergraduate researchers will not be permitted to take two consecutive semesters for research credit until their second year in the lab. Students occasionally join research labs with the intent to solely participate in research activities for the purposes of not needing to take academic lab courses. We, specifically Tracy, feel(s) that research in courses is not equivalent to research in a research lab: the skills and experience in a formal research lab for one to two semesters will not provide you the opportunity to see an experiment from conception to completion like you would in a lab course. In a research lab you will be very lucky to see an experiment from conception and design to execution and analysis within two years (assuming 10 hrs/wk). Leaving the lab after two semesters is also not enough time for the students to return the efforts of their training in the form of data. So, this type of lab experience tends to not only be a sub-optimal form of education for students, but also a big drain on our lab's time and resources. Finally, there are lots of students who are

seeking careers in research and are struggling to find a lab for the experience required for graduate or professional school. It is not fair to these students to be competing for slots in labs with students who are not serious about research. For all of these reasons, we will not be allowing students in the future to take two semesters of research credit in consecutive semesters in our lab for their first year.

Requirements for first semester:
- Actively participate in journal club/lab meeting 1 - 1.5 hours/week, and lead at least one journal club each semester
- Engage in at least one outreach or DEI[1] 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[2]

Requirements for each subsequent semester:
- Actively participate in journal club/lab meeting 1 - 1.5 hours/week, and lead at least one journal club each semester
- Engage in at least one outreach or DEI 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
- Perform research duties (hours do not include lab meeting and are minimum requirements)
  1 credit hour = 4 hrs/week
  2 credit hours = 8 hrs/week
  3 credit hours = 12 hrs/week
- Complete "Undergraduate Research Semester Report" (available on lab website "Portal")

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

Outreach and Inclusion:
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. I will expect you to provide a brief 3-5 sentence write-up on your service activity in the "Undergraduate Research Semester Report"

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[1] Diversity, equity, and inclusion

[2] https://www.tracyalarson.org/blog

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Active Participation:

For first semester students

Students are expected to attend every lab meeting or every journal club of the semester, depending on which the student is attending. If you can attend both, they are encouraged to do so, and will only be required to lead the discussion in one meeting. Leading a discussion entails presenting the background, major questions, hypotheses, methods, results, conclusions and limitations of the article to the Larson Lab group. Missing one meeting will not be counted against the student, but more than one without a reason that is out of the student's control will result in a decrease in grade. Beyond attendance and your presentation, active participation includes coming to the meeting prepared to discuss whatever papers we have scheduled (i.e., having read the papers) and to discuss the details of your research project and progress. By actively participating in our lab meeting and/or journal club, you will no doubt identify 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 to proceed with generating a unique research experience for you.

Past first semester

Students are expected to be working on lab work in the lab for an average of 10 hours a week. Progress in data collection is expected. You will be expected to attend lab meeting and be ready to discuss your project and data in round table discussions in addition to present your research progress in a formal 10-12 min presentation during one lab meeting.