

Graduate Advising Statement

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Mentoring credo

I believe that scientific mentorship is a symbiotic relationship, wherein both partners have as much to give as to gain. For each partner, the degree of gain is proportional to the amount given. The success of this partnership is dependent on continuing commitments by both mentor and mentee not only to the other person's individual motivations and concerns, but also to the principles of scientific inquiry, integrity of the work, and a culture of mutual respect.

Expectations for graduate trainees

- Incentives: I expect that graduate trainees will carry out their research primarily out of self-motivation in seeking further education and a personal interest in the science.
- Autonomy: The development of scientific intellectual and technical independence are primary goals of graduate training. These are gained gradually over time with the exercise of autonomy. I expect that graduate trainees will personally engage intellectually with their project as they gradually develop technical autonomy and expertise in their area of focus. I aim to empower graduate trainees to experiment with independence at every stage of training, fully conscious of the fact that adequate guidance, oversight, and mentorship are also essential components of scientific development. I anticipate that graduate trainees will require more faculty input in the early stages of training than in later stages.
- Project development: Graduate research projects are inherently amorphous at the start but take shape with deliberate attention and guidance from preliminary results. After multiple discussions with the individual trainee, I seek to provide a graduate training opportunity in an area of focus that is overlapping between our own lab's priorities and the trainees stated interests. These lab priorities and personal interests are expected to evolve over time. A culture of open communication and mutual respect ensures that this natural evolution is well-understood by both parties, and that this mentor-mentee relationship remains productive for both throughout the training period.
- Education: Gaining deep expertise and knowledge in well-defined area of biological science, while also becoming very familiar with important elements of the broader field, is a primary goal of graduate training. To the extent that coursework helps accomplish this, I will support graduate trainees in taking particular classes, but it is also clear that the bulk of this education occurs through personal engagement with the scientific literature. I intend to keep the trainee abreast of important new publications and help guide the process of interpreting the work of others, as independence develops.
- Experimentation: Graduate research is accomplished through the process of full-time dedication for a period of years to laboratory (either wet lab or computational) scientific experimentation in an effort to rigorously test an important hypothesis or answer an important question. I expect that graduate trainees will take primary responsibility for their experiments, but I also aim to provide collateral support thorough the assistance of other lab members and collaborators to help facilitate this. Overcoming logistical or technical challenges is an important part of graduate training, but not to the extent that it should significantly prevent progress or impair education.
- Funding: I expect that a graduate trainee will apply for independent fellowship funding in the first several years of training, but given the uncertainty of all scientific funding mechanisms, I do not anticipate nor require that all trainees will be successful in this effort. The main purpose of this is to gain experience in writing high quality grant proposals that have a good chance at funding, and to

personally engage with the process of scientific review at this level.

- Presentation: I will expect the graduate trainee to present their work in multiple forums, ranging from informal conversations to formal presentations at national/international meetings. Learning strategies to effectively communicate scientific work is an essential component of graduate training. I will provide input on all components of this ranging from the formatting of data visualizations to poster design to the creation of effective presentations.
- Productivity: Scientific productivity is inherently unpredictable, and although it is related to the amount of effort expended, these variables are not directly proportional. I expect that a typical graduate student will have 1-3 first author scientific publications, and likely at least one middle author publication resulting from their time in my group. It is imperative that each trainee have a dominant project for which they are the primary person responsible for publication. I aim to design graduate training projects that can result in a publication ready for submission in the middle years of training, if the data can support this.

Continuing commitments

Principles of scientific inquiry

- Motivation: We seek to advance knowledge of the fundamental mechanisms underlying biology, especially as it pertains to human disease. Our particular goal is to make important, new insights about infections and immunity that may contribute to efforts to improve the health of people around the world.
- Curiosity: Our work is driven by a passion for uncovering new facts and details about biological processes. In a pursuit for answers to these questions we are hypothesis-driven, but we appreciate open-mindedness as well, valuing high quality scientific evidence above all else.
- Education: Personal enrichment through academic study is a hallmark of the scientific enterprise. Research projects should not only capitalize on existing knowledge and skill sets, but also provide opportunities to learn new topics and develop in ways that enable individual growth.
- Rigor: We aim to design experiments that are intrinsically rigorous, producing data that is dependable, and as conclusive as possible. Clear documentation and reproducibility are key attributes of such rigorously generated data. We routinely apply stringent and honest statistical analyses.
- Productivity: Our charge as scientists is to generate data that advances knowledge. Each trainee is expected to be productive in this capacity, respective to their role and the extent of their training. I believe in a balanced approach toward productivity, with a portions of effort dedicated both toward surefire projects with targeted goals, as well as higher risk projects with less certain but more far reaching implications.

Integrity of the work

- Accountability: Mentorship partners depend upon one another and hold each other accountable for their stated contribution and commitments. The expectation is in no way for perfection. Rather, we expect from each other an optimal effort that manifestly demonstrates personal dedication to the relationship and project.
- Cooperation: Science is an inherently collaborative enterprise. We value individual achievements and make attribution for unique personal contributions. But we also place a premium on teamwork, and we particularly celebrate joint accomplishments. Lab members must satisfy the sandbox criterion: *plays well with others*.
- Publication: Reporting of scientific findings is both our obligation and the ultimate purpose of our work. Learning to publish and communicate results successfully are key educational components of scientific training. The default expectation is that a trainee's work will result in publication, to which

the trainee will contribute to a respect commensurate to their involvement, capability, and training requirements.

- Funding: Seeking and obtaining independent funding is a key concern of all scientists. However, writing scientific proposals is not just a central function of academic researchers, but also a method to improve communication skills. Furthermore, the process of peer review both strengthens and refines our work. I therefore expect trainees to make an effort to obtain independent funding when possible.

Culture of mutual respect

- Individuality: Each trainee has a different set of motivations, skills, and ambitions. I seek to understand these to the best of my abilities, in order to craft a unique mentorship relationship that serves and is served by these characteristics. I believe in individual ownership over a scientific project, but one that also actively seeks outside input and collaboration.
- Diversity: I am interested in building a team of individuals with a diverse set of backgrounds and personal experiences. In a culture of mutual respect and inclusivity, when scientific priorities are shared, diversity strengthens a team. I especially welcome and seek to promote the training and careers of women and individuals from minority communities traditionally underrepresented in science.
- Communication: I aim to optimize the mentoring relationship with clearly stated expectations, open lines of communication, and continuously elicited and offered feedback mechanisms. I intend to be reachable and available for my trainees at all reasonable and expected times, to my best ability.
- Honesty: Although symbiotic, the mentorship relationship is inherently asymmetric. There exists a differential in terms of knowledge, experience, and responsibilities. A culture of earned, reciprocal trust and trustworthiness provides an essential balance for this differential.