Statement of Mentoring Philosophy - Eric Wang (Mol. Genetics & Micro.)

Foundational philosophy. The role of a PhD mentor in the biological sciences is to foster development of independent thinkers who can effectively contribute their knowledge and problem-solving abilities in a diversity of settings. Essential to this process is that each individual fully owns the questions they ask, masters the pursuit of answers through experimentation, and enjoys the satisfaction of uncovering new concepts earlier than anyone else in the entire world. Scientists who can also effectively communicate their findings to disparate audiences further amplify their impact, ultimately for greater benefit to society. My mentorship style is built on these foundational concepts, and the way that I teach, coach, and support doctoral students begins with these overall goals.

The start of a PhD initiates independence. The decision to pursue a PhD is a significant commitment of time, energy, and even financial opportunity cost. Furthermore, the act of making discoveries about the natural world, required to earn a PhD in the biological sciences, is very difficult. Thus, it is of utmost importance to me that each doctoral student plays a major role in choosing their specific line of investigation. My own PhD mentor had a rule that new postdocs in the lab were not allowed to perform experiments (wet lab or computational) for at least the first month; they were to spend this time reading literature, identifying gaps in knowledge, and thinking critically about potential research directions. While new graduate students will have typically performed experiments in my lab during their rotations, the first months after officially joining might include deeply surveying literature, performing exploratory experiments, or learning techniques. The freedom and undirected nature of this period can be unnerving for some, but contributes to building future independence, confidence, and intellectual leadership. Along the way, I provide support not by serving ready-to-eat meals, but by providing quality ingredients, a recipe book, and a lab full of experienced sous-chefs that can provide additional assistance. This initial process is a discovery in itself - a journey of self-realization in which students develop an intense focus on specific research topics, both leveraging my lab's strengths and seeking to fill important gaps in the field.

Supporting individuals through the PhD. In the thick of the PhD, the ending of the story can often be difficult to visualize. I vividly recall the moment in which a specific piece of data flashed onto my laptop screen, a ray of sunshine burning off the fog shrouding the functions of a protein I studied. My path was winding, leading me through multiple biological disciplines, some distant from that of my home lab. I recall feelings of frustration and despair, but also remember frequent punctuations of optimism after further reading or discussion with other scientists. Now having worked with a number of PhD candidates, I witness every student facing ups and downs – and see that barriers for each student are distinct, highly unique, and often peripheral to doing experiments. I take a highly individualized approach, primarily by asking questions and listening. I have learned tremendously from students through this process, and it has led me to adopt multiple strategies to foster a diverse, equitable, and inclusive environment for training. Like a toddler, I ask "why" – not just about results or deliverables – but why certain assumptions or thoughts might be held, or why a certain action is being taken if the goal is one thing or another. Rather than give pointed, directed feedback, I ask questions to facilitate a methodical, student-led pronouncement of their own catalysts for success, hurdles to overcome, and directions for growth. Instead of focusing on generating desired experimental results or achieving certain outcomes, such as publishing in a particular journal or obtaining a certain grant application score, we focus on doing high quality, well-controlled experiments, and communicating in simple, clear, terms. We focus on behaviors of our own that *we control*, and not on specific outcomes that *others control*.

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At the core of this approach is to empower each student to build increased scientific, emotional, and behavioral self-awareness, so they can self-regulate sustainable behaviors that ultimately lead to outcomes used by the world to measure success.

The importance of effective communication. I have benefited from working extensively with professionals to improve presentation skills and have learned to write more effectively in part by serving on grant study sections. For better or worse, communication can either amplify or obfuscate impact of scientific efforts, and for this reason, I extensively train students how to effectively speak and write. I emphasize to students that, likely in contrast to their entire educational lives thus far, *the role of scholarly communication is not to demonstrate their knowledge - it is to change how others think*. This dramatic shift in the purpose of communication thus requires careful consideration of the audience and their feelings, biases, and relationship to the work. Writing by lab members is reviewed not only by me, but other lab members who may have expert *or* novice familiarity with the topic. Each oral presentation from lab members is followed by critiques and discussion by peers. Grant applications, including my own, are posted for lab members to provide feedback. As a result, lab members are often complimented for the clarity, effectiveness, and value of their presentations.

Building an ecosystem in which science and its participants thrive. While I invest extensive time to work with each student, I also assume the critical role of building an environment in which science and its participants can thrive. I strive to provide resources, support, and stimulation so that the only remaining barriers are our own creativity, resourcefulness, and boundaries of knowledge itself. Through one of my grant mechanisms, I received weekly coaching sessions over the past year, focused on leadership, management, and mentoring strategies. I grew immensely through this process and found myself transferring many lessons to the lab, so that I could also start teaching others how to lead. Many approaches involve mental reframing of obstacles and improving clarity of thought with respect to goals. These parallel how we troubleshoot experiments in the lab yet deal with how we work with ourselves and others. Doctoral students practice these skills in my lab by working with undergraduates and technicians. Some additional concrete ways in which I have built a stimulating, connected environment include frequent use of surveys to make decisions, use of online platforms to facilitate rapid yet asynchronous communications among lab members, real-time sharing of conference notes, grant/manuscript applications and reviews, and formation of subgroups focused on specific scientific topics. A distributed model of leadership and responsibility allows me to devote my energy primarily to securing resources and developing each individual so they can thrive independently and in teams.

In closing, an analogy to summarize my mentorship style is to imagine that my lab is the base camp of an extensive mountain range in the Himalayas. Each student might seek to scale a mountain visible in the distance. Some may be of greater interest to certain students, given their background and overall goals. However, I cannot make the journey with every student, and I have no knowledge of all the crevasses, weather events, or wildlife they may encounter. My role is to equip each student with the skills and tools they need so they can successfully scale each peak. I am honored to have now helped equip 6 PhDs in the 7 years I have been at UF; 3 are presently academic postdocs, a 4th an associate at a venture capital firm, and 2 are (or shortly will be) scientists in the biomedical industry. It has been profoundly gratifying to watch them set up their own base camps, and I look forward to reuniting with them in future times to share and recount each of our own adventures.