Part 2: Doctoral Advising Mentoring Philosophy

It's been pointed out to me that I am now an academic grandmother with a multi-generational academic lineage, i.e. my graduate students have now graduated their own graduate students! While I am obviously far too young to be a grandmother, this milestone encapsulates the main goals of mentoring students, to have them carry on intellectual traditions and develop their own skills as mentors. Of all the roles we play in the academic setting, mentoring doctoral students has been the most rewarding. I view my role as a graduate mentor to foster inclusivity, model and facilitate excellent research, teaching and service, open my networks and help students realize their potential and attain career goals.

At this point of my career, I believe I'm an excellent candidate for the Excellence in Doctoral Student Mentoring Award for several reasons that go beyond the numbers (students graduated or number of coauthored

publications) but are focused on what I have learned and how the lab has evolved since I recruited my first PhD student in 2007. My mentoring style has changed and reflects a change in the way the Mydlarz lab does science (moving to large genomic datasets and collaborative projects), the changes in research trends and navigating the scientific landscape in general (more competitive and need for tangible outcomes), and changes in me. I have refined and focused my graduate student mentorship philosophy and approaches and adopted much of what I have learned as an academic leader into the lab. I have also integrated my passion for promoting women in science, in both training of women scientists and teaching about how to successfully promote diversity, equity, and inclusion in the workplace and academia

One of the most important things that I've learned is to be a good mentor, one must be intentional. To me that means being deliberate and having a purposeful approach to mentorship relationships. I have taken this philosophy a step further in the training of my graduate students to also be intentional about their PhD careers. This involves setting clear goals and expectations, while regularly evaluating and adjusting the path. As mentor, I continuously look for opportunities for growth and development for my students not only in their research activities but also in extracurricular training and award nominations important for their specific career goals. I am proud of the graduate students that have come from my lab and their continued success on their chosen career paths continues to inspire me. In this statement I will share some of the stories and points that I am most proud of including how productive my PhD students are, the variety of experiences they get in my lab, my intentional transition from research advisor to mentor to sponsor, and the success of the students who graduate from the lab. I will also discuss how I've had the opportunity to be a student advocate as part of my administrative and service roles within UTA and in service to my scientific societies.

Mentoring Students for Success in Research

Any discussion of student success in a science PhD program centers around productivity. As the field of science grows, the emphasis on measuring success through published papers and grants has increased. To this end my students have been extremely successful in graduating with multiple published papers and impactful work as seen in my CV and the Part 6 of this application. Going beyond these numbers is important to me and each published paper tells a story of advisor-student communication, mutual learning, the process of science and storytelling.

The main responsibility I have as an advisor is to set up my students for success. This is integrated in my philosophy of being intentional with every action. I take an active role in facilitating the growth and development of my students and am proactive in creating structured opportunities for learning and building important PhD skills. One concrete example of this approach is that new students to the lab are encouraged to jump right into research with an existing student. This work may not end up the main thrust of their research, but the experience gets them further than simply reading about research and taking classes. In many cases this first research project is published and does become part of the dissertation (for example: Fuess et al. 2016; Dimos et al, 2019; Emery et al. 2021). I also am intentional about planning students research and protective of their time. I have seen the pitfalls of having students get involved in many lines of research and run experiments that are not directed towards a product. I have many conversations with my students about the direction of their dissertations and planning out the chapters as

publishable units. This helps focus the work and stay on track. It is also my philosophy that students are continually writing chapters of their dissertations for publication and not waiting until the end to write it all up. This simple change of pace has led to more independence and higher impact work as students learn the process of writing and revisions earlier that helps shape the next steps of their project.

In the last few years my lab has been working with large next gen genomic datasets, we've changed the way we communicate about data and papers. In analyzing large transcriptomic datasets it's often about making sense of thousands of data points and crafting the story to be told in the manuscript. This has led to one of the most enjoyable experiences with my students as we work through the data often in a one-onone

setting on a regular basis. The back and forth collaboration and feedback on the design of figures and distilling the work down to the most impactful points has not only taught students how to interpret and appreciate the bigger picture of their work, but it's also led to some of the most high impact publications that the lab has had in the last 15 years in journals such as Proceedings of the Royal Society B (IF 5.5), Molecular Ecology (IF 6.6), Frontiers in Immunology (IF 8.7) and Science Advances (IF 14.1).

There are many challenges to mentoring students in today's science climate and I am confident that my students will leave my lab prepared to tackle all of them. One of the main challenges is securing funding for research; therefore, training in successful grant writing is a cornerstone of a good graduate education. My students have been very successful in writing and acquiring funding for their research and travel to conferences or field work. Students who garner their own funding for research are highly regarded when applying for post-doctoral or faculty positions. Therefore, I place high value on time spent by my students to apply for funding. I mentor them in the writing process by providing feedback on framing and selling their work to the funding agency as well as clarity of their ideas and most importantly, the purpose for conducting the research. Lauren Fuess applied for and was awarded the prestigious NSF GRFP while in the lab. Dr. Fuess and Dr. Bradford Dimos applied for NSF postdoctoral grants, and both won those as well. I have also engaged students in the process of writing large grants to national funding agencies, this has been very rewarding in helping exchange new ideas and exposing the student to the process up close. I have valued the input of my students in all my large grants proposals.

Mentoring Students for Success as Holistic Scientists

My lab's focus is on marine and coral reef diseases. By nature, we study a declining ecosystem with many heartbreaking events. Mentoring students in this atmosphere can be challenging, as we all struggle with the grief of losing coral and the study system we love and value. I feel we are always balancing exciting data with the reality that we study sick corals. It is therefore of critical importance for my students to get out into the field and see the reef firsthand so they can see that there are still healthy coral and collaborate (and commiserate) with colleagues who all share the same experiences. All my PhD students have had field experience that acts complimentary to their lab work and gives them the opportunities to observe the disease patterns on the reef and gain knowledge that helps inform our hypotheses and interpretation of our data. This field experience can be diving and collecting samples or running experiments in a field setting. For example, my students have been on collecting and field missions at Mote Tropical Marine Lab in Florida, the Isla Magueyes Marine Laboratory field station in Puerto Rico, Marine in St. Thomas, US Virgin Islands, Roatan Institute of Marine Science, ITEC Coral Reef Ecology Course in Bocas del Toro, Panama, Coral Light and Photosynthesis Course in Puerto Morales, Mexico, Ecology of Infectious Disease Course in Friday Harbor and Cassiopea workshop in Florida Keys.

One of the most exciting experiences we have as a lab, is to participate in the LSAMP-SCUBA project and be mentors to students from Midland college (a community college in Odessa, TX). Since 2017 we have travelled to Roatan Institute of Marine Science as part of a collaborative project through UTEP and Midland College. We are the coral expert mentors to students who are participating in international research experiences for the first time. All my students since 2017 have had this experience and it's an amazing experience filled with diving and mentorship of students. This experience complements the regular outreach events to K-12 public schools and the public that we participate in throughout the year.

Graduate Student Advocacy and Women in Science Activities

Since becoming Associate Chair of Biology and Associate Dean in the College of Science, I've had

opportunities to enact change on behalf of graduate students and act as a student advocate. In Biology, I changed the process of award nominations and increased transparency in the graduate student departmental awards. This allowed students to communicate with their research advisors and ask to be nominated, in the end this increased not only the number of students being nominated for each award but also diversity of the nomination pool. I also started being more intentional about graduate teaching assignments with the goal of keeping students teaching the same course for as long as possible to increase their comfort with teaching and lowering the time to prepare for each new semester. The students ended up feeling less erratic about their teaching assignments and built up their confidence and refine their teaching skills. On the College level we created a new graduate research fellowship to award 10 excellent students from all departments time off teaching and to focus on their research. I also run the Research Symposium known as DISCOVER so students can present posters about their research to the entire college and win awards. This provides many students opportunities to interact with faculty and students in different departments.

One of the most rewarding activities I am involved in, that has direct impact on my graduate student mentorship, is women in science activities. I am excited to have a platform to foster an inclusive and supportive environment and provide guidance on navigating gender-specific challenges in academia. One of the main activities to promote visibility of woman, is the Distinguished Women in Science Speaker Series designed to bring amazing women scientists on campus. As part of each seminar visit, we have a small discussion group with female graduate students. The main thrust of my women in science activities are workshops for graduate students about the differences between mentorship and sponsorship. The main point being that a mentor advises the mentee on career goals, for example, but sponsors act to bring those goals to life. Specifically, women can be over-mentored and under-sponsored leading to gender imbalances in STEM careers. I learned this distinction very late in my academic career and I am determined to make sure our graduate students understand this to help curate their support team for success in graduate school and once they leave.

Mydlarz Lab Student Success

I am extremely proud of the success of my current former graduate students. I have graduated 7 PhD students and currently have 5 more training in the lab. Four of my first graduates are in academia, two as teaching faculty and two in tenure track positions. Three students are currently training in post-doctoral positions. I am happy to support and motivate the next group of graduates in any career path they choose. I am confident that as a result of being an intentional mentor, my students are achieving their goals and developing their own skills and knowledge as mentors.