Mentoring Philosophy and Practices – Tia-Lynn Ashman

Philosophy

Mentoring is connecting meaningfully with individuals in their pursuit of personally-defined aspirations. Every student is unique and has different strengths and weaknesses and thus mentoring is an individualized relationship. My mentoring nevertheless adheres to several basic underlying principles: I seek to aid students in identifying and leveraging their unique talents, to make space for their novel discoveries, and to support them as they confront challenges. I create a laboratory environment where students have the information, resources, and opportunities for growth that they need to be their best, in research, in education and in outreach.

Mentoring Style

My mentoring style is ‘hands-on’ and collaborative, but at the same time I acknowledge that no single person can fulfill all of a student’s mentoring needs, so I cultivate a community of mentors within the lab and encourage my students to seek out other mentors during their graduate careers. An individual student’s mentoring community could include a network of other graduate students, postdocs, research collaborators, or educational partners, who together create a holistic mentorship experience for that student. These relationships also may shift as roles are fluid and relational: Over time the mentee too becomes part of a mentoring network for others.

Mentoring Practices

Individuality– An individual’s interest in science is shaped by their unique background, by what aspects of the natural world inspire them and what questions sufficiently pique their interest to motivate them to pursue answers. Thus, I seek to foster students’ unique perspectives and to cultivate their sense of excitement and research ownership. I work with each of my students to develop a thesis project that aligns with their interests and falls under the umbrella of my own expertise, as well as one that is pushing boundaries of knowledge but also has a high likelihood of success (at least some large part of it). To accomplish this, I meet with each of my students individually every week, not only to discuss primary literature, brain storm ideas and establish a common topical background, but to get to know what drives them, what excites them about nature and science and what they wish to gain from graduate school. From this foundation we establish a model for communication and collaboration as the student’s thesis research takes shape. My mentee’s thesis topics are diverse and have ranged from the functional roles of floral pigmentation or scent (e.g., mentees Koski, Majetic) to ecological drivers of the pollen virome (Fetters) and whole genome duplication effects on bacteria-plant interactions (Forrester).

My students develop key aspects of critical thinking, gain the ability to successfully convey their ideas in written and oral forms and become empowered to direct their project’s next step. I support them in writing competitive applications for research grants (>50 awarded) and fellowships (e.g., National Science Foundation Graduate Research Fellowship: 4 awarded, 1 honorable mention; Mellon Fellowships: 5 awarded) not only because it builds their records of grant acquisition but more importantly because the process crystalizes their ideas and they gain practice effectively arguing for them. Their ability to secure independent research grants immediately upon graduation is a testament to this training (e.g., Mentee Koski – two NSF grants, Arceo-Gomez- CONACYT and NSF grant). I likewise emphasize written communication skills by working with my mentees on publications very early in their tenure in my lab: I work with

them through each and every step of every draft and their precocious publishing has lasting effects as evidenced by their universally high level of productivity. Moreover, several of my mentees have won ‘best paper’ awards (e.g., Majetic from the British Ecological Society, Arceo-Gomez from the Department of Biological Sciences). I support my students’ involvement in world class specialized training beyond the walls of UPitt. For instance, my students have been admitted to nationally competitive workshops on insect taxonomy (Univ of Arizona Bee Lab: Fetters, LeCroy), plant evolutionary development (Arnold Arboretum: Forrester) and microbiome (Woods Hole: Iriart). Dissemination of novel research and forming professional networks are key aspects of each student’s development and thus I enthusiastically support my student’s attendance and presentations at regional and national meetings. They receive focused guidance from me when preparing their presentations as well as workshopping the final products with the entire lab. This has led to several mentees receiving awards for their presentations (e.g., Meindl, Knight, Iriart).

Over the course of their tenure in my lab the frequency of student-mentor meetings may increase or decrease depending on student needs but is always enhanced by impromptu interactions-a quick run up to the greenhouse to see a plant or to the lab to look under a microscope, or via text or Slack when an exciting result is obtained or a natural disaster requires an immediate ‘pivot’. By the end of the student’s PhD the relationship has evolved beyond student-adviser, beyond mentor-mentee and to one of colleagues for whom the learning relationship is reciprocal.

Collaboration - I seek to provide opportunities for my students to form collaborations to enhance their thesis projects and to expand their experience beyond these. I create an environment within the lab that encourages collaboration, cross training, and interactions that lead to discourse and conceptual synthesis. I think it is critical to recognize that each of us has limits to our knowledge and to appreciate that in team work we can not only tackle problems that extend beyond our own expertise but build synergism that can transform ideas and accelerate discovery. For instance, my students have collaborated and coauthored publications with members of the departments of Biological Sciences (mentee Fetters-Dr. Pipas, Dr. Hatful) and Geology and Environmental Sciences (mentee Meindl – Dr. Bain) as well as outside the University (mentee Forrester -Dr. Sachs, University of California, Irvine). In this latter case, Forrester went on a semester-long ‘sabbatical’ to receive specialized training and perform key experiments for her thesis.

My lab models global scientific citizenry and effective collaboration skills by welcoming international scholars and participation in international working groups. For example, my mentees have been key research participants and coauthors on synthetic publications on the state of pollination on a global scale (Steets, Knight, Arceo-Gomez, Meindl, Wolowski), and local research projects with visiting scholars from China (Koski, Cullen), Spain and Brazil (Arceo-Gomez, Meindl).

I support the development of the whole student. Thus, for those interested in education I promote participation in the Teaching Minor program offered within the Biological Sciences department and several students have completed this program (e.g., Fetters, Majetic, Meindl, Iriart). I also encourage co-design of novel educational activities in association with my undergraduate course in Plant Biology (BioSci 1350). One such example is our ‘Plant Love Stories’ Blog project (Iriart, Forrester). This broad pedagogical expertise has led several of my students to winning teaching awards (Meindl, Fetters, Majetic), and set mentee Majetic on her

path to a faculty position at an elite women's college where she has risen to Chair of her department. Likewise, my lab's partnership with Introductory Biology Research Labs to develop discovery-based curriculum ('Flower Microbiome') further provided opportunity for educational growth by mentee Cullen and authorship of the resultant publication. Likewise, for those students that want to pursue careers in science communication, I support their efforts and facilitate their winning positions in world class externships (mentee Forrester – AAAS Mass Media Fellow).

In my lab, graduate students also learn important mentoring skills themselves by working with undergraduates or high school students on independent research projects. Several of my mentees have mentored undergraduate projects from execution through to publication (Meindl, Koski, Arceo-Gomez). Because being a good mentor requires not only experience but also skills in listening and teaching, graduate students also engage in lab-based community and K-12 outreach and in communication of science via blogs, providing opportunities for growth and broader scientific conversations. Students in my lab are regular presenters at Science Days at the Carnegie Science Center, BioBlitz at Phipps and a Market Science booth at the Bloomfield Farmer's market.

Environment - I seek to provide a lab environment that honors scientific rigor, fosters appreciation of differences and mutual respect among members. Lab practices acknowledge and confront difficult topics, integrate life-work balance, and expose unwritten rules of academia. For example, every lab meeting starts with 'Celebrations and Commiserations' where we celebrate successes or commiserate on frustrations associated with work and life -- large and small (e.g., seeds germinated or not, papers accepted or not, proposals submitted, experiments flopped, tennis games won, new pets). These activities cultivate a mutual support structure, normalize failure and lead to community mentoring as creative solutions to problems are formulated. Lab meetings include a diverse set of styles that engage and foster introspection, evaluation, and discussion: 'research round table' (five minutes-one slide from each member), 'literature lightning round' (one slide of a paper read that week), 'research spotlight' (deep dive into one member's research), discussions/workshops (on graphics or statistics, unwritten rules of success in grad school or how we can be an anti-racist lab). Numerous lab activities and social functions build community outside of work.

In conclusion, my mentoring philosophy is based on embracing and fostering the student's unique outlook in an environment that celebrates diversity and collaboration. I view every student as 'hand-crafted' and as such my lab functions as an artisanal workshop, not a factory. I work to create a space for scientific discovery and personal growth where every lab member contributes to the aspirations of all.