5 Mentoring Relationships

Finding a Mentor, Being Mentored, and Mentoring Others

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Introduction

One of the richest, most rewarding aspects of academic life is the opportunity and process of mentoring students in their research endeavors and professional development. There are fewer things more gratifying in one's career than watching graduate students develop and deepen the skills of independently conceptualizing and executing research, thinking critically, masterfully presenting information, and writing scientifically. Mentoring undergraduate research is also an enriching experience, as mentors get to see firsthand their students begin putting into practice what they learn in the classroom and the sparks of excitement that ignite as students assist in the conduct of scientific studies.

This chapter on mentoring was written by a senior research mentor in the latter part of her career and her two graduate students who, at the time of writing, are at the beginning of their third year in an experimental psychology doctoral program. We hope that sharing the perspective of a seasoned faculty member and two graduate students midway through their doctoral training provides a developmental perspective to mentoring. While this chapter was written mostly in the context of graduate research training, there are certainly bits of advice and information that also apply to mentoring undergraduate research. While we recognize there are many ways to mentor students in research, we provide our views of what has worked well in our research laboratory.

Some faculty members may envision their role with graduate training as *supervisory* only that is, more focused on training, monitoring performance, and evaluating the trainee's work and providing feedback (Leblanc et al., 2020). These aspects of the job are foundational and critical for developing strong scientists. Others also envision themselves as *mentors*, in which they perform these functions of the job, but also view their role as an *opportunity to establish and cultivate meaningful and sustaining relationships* between mentor and mentee. It has been the experience of these authors and others (see Allen et al., 2004) that mentoring leads to better job satisfaction and a more gratifying experience for the mentor. Likewise, this experience is also more fulfilling for the mentee. In this chapter, we share the experiences in the development and cultivation of the mentoring relationship.

Selecting a Mentor and Selecting Mentees

While Esquierdo-Leal (see Chapter 1) describes the many considerations in selecting a graduate program, one factor that will be explicated here is finding a mentor. Indeed, the mentoring relationship begins with identifying a strong fit between mentor and mentee as the potential student searches for an appropriate graduate program. From the perspective of a student searching for a mentor for graduate training, there are a number of considerations,

86 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

from the larger and more broad concerns of academic interests to more personal concerns of personality and how mentors interact with their students. From an academic viewpoint, graduate students should select potential mentors who have similar research interests to their own with an established record of publishing and grant awards in that area. Mentors do not necessarily need to have *identical* interests to one's own, but if a potential mentor has interests in a vastly different area, it is unlikely that a student will have opportunities to explore their interests outside of the mentor's area. If there is a question of whether a potential mentor would be willing to explore a topic tangential to their area of study, it may be worth contacting them and having a conversation beforehand. We recommend an email, phone, or online video chat with potential mentors in general to discuss the extent to which research areas overlap and what required experiences the mentor expects before applying to a program.

The interview is another opportunity for information gathering. If a student's record looks satisfactory on paper, they may be invited for an interview to visit the university campus and meet the mentor in person (online interviews are also possible, though we have found they do not characterize a program or campus as well as an in-person interview). While mentors indeed are interviewing potential students, consider that students are also interviewing potential mentors. Students should look for a mentor to whom they believe they have a good interpersonal fit, which of course means different things to different students. Even though all students will value expertise and professionalism, some students may also value friendliness, patience, or a greater amount of communication than others. They may look for these signs as compatibility when having conversations with potential mentors. When talking to a potential mentor, it will likely be for a short period of time, whether in an in-person interview (e.g., a couple of hours across a couple of days), a video chat, or a short follow-up email. Given this limited amount of interaction, holding these hopes and expectations when interacting with the potential mentor may help with drawing attention to elements of the interview that are most important to the student.

While interviewing, it is also important to identify traits or "red flags" that would make the relationship difficult. For example, if a student values kindness and personability from a mentor and during the interview the mentor comes across as cold and keeps the topic purely on academics (e.g., testing their statistics knowledge) or redirects the conversation every time the student has a question about mentoring style, that may be a sign of a poor fit. That is not to say that the mentor is bad at mentoring, of course, but they may be more focused on supervising, as opposed to mentoring. As mentioned before, the interview process tends to be brief; so to better understand a person's mentoring style, it may also be beneficial to ask other graduate students their opinions of the mentor. Graduate students tend to be more honest in private spaces of what a mentor is like, which might allow potential students to make a more informed decision.

From the mentor's perspective, selecting students is an exciting endeavor. It goes without saying that academic and laboratory experiences and potential for success are factors that most mentors look for when selecting a student to join their lab. Often objective indicators such as GRE scores have traditionally been used to predict success in graduate programs, though research shows that GRE scores at best predict only a small amount of the variability in graduate-student success (e.g., Boles, 2018; Kuncel et al., 2001; Morrison & Morrison, 1995; Moneta-Koehler et al., 2017; Sealy et al., 2019). Moreover, underrepresented groups are less likely to be selected for graduate programs when only GRE and GPA are used for selection, as opposed to more holistic approaches (ETS, 2014; Kuncel et al., 2001; Miller & Stassun, 2014; Sampson & Boyer, 2001). It is not surprising that fewer schools are using GRE scores to evaluate admissions (Benderly, 2017). Grade point averages, another more objective measure, are also indicative of student success in college (i.e., high GPAs as undergraduates often predict high GPAs in graduate school), but sometimes do not necessarily

reflect characteristics such as work ethic, perseverance, problem-solving ability, and subsequent success as a scientist (Benderly, 2017).

Student experience and expert opinion, by way of letters of recommendation, may better characterize the experience and potential a student may have (Benderly, 2017). Students who have laboratory experience that matches or complements the mentor's research program will allow for an easier transition into graduate school and earlier success in developing research projects than those without this experience. Moreover, a record of presentations at conferences and publications (though less likely for students coming from undergraduate programs) shows that a student has strong interests and some incoming skills in conducting and disseminating research. Using these indicators in addition to GPA and GRE scores represents a more holistic approach to selection and increases the odds that qualified members of underrepresented groups get selected.

As mentioned from the student perspective, interpersonal fit with the mentor and research team is also important. For example, if a mentor tries to create a collaborative tenor to their research team, a person whose personality characteristics are consistent is likely to keep the collaborative dynamic going. Even though it is not always possible to characterize someone's personality in a single interview, sometimes it is possible to detect who creates competition, or even tension, in the team dynamic. Having this information up front may prevent a potential problem in the future.

The Vertical Team Structure

Once a mentor has selected students, they may want to consider developing the structure of the research team. The organization of a research team varies from mentor to mentor. One strategy that we have employed with success is the "vertical team" approach, which ensures that each team member gains experience as both mentee and as mentor. Here, the team dynamic follows a ladder-like hierarchy with the mentor directing the overall direction of research (i.e., their program of research) from the top and each successive team member actively participating in both the mentee and mentor roles. The participation level for each role is determined by relative experience. For example, new team members may seek training in laboratory techniques from team members who most recently occupied the same role as a new team member (i.e., first-year graduate students seeking help from second- or third-year students). Second- and third-year students can also help provide guidance and advice from the student perspective on other aspects of research, such as first drafts of papers or posters for a conference before the drafts go to the mentor. Moreover, the more seasoned student's advice on "how to survive graduate school" is often a more relevant perspective than the mentor's view, though it is important for the mentor to provide their experienced views on this as well. A preprofessional student (i.e., a fourth- or fifth-year student) can provide guidance to second- or third-year students, such as how to prepare for a thesis defense, an oral presentation, or submit a grant proposal. They also serve more as a mentor as they near the end of their program training and become more independent. This approach also allows one to mentor the mentoring repertoire of a seasoned graduate student.

The vertical team approach has some benefits. First, this approach frees the faculty member to spend more time on higher-order tasks that keep their research program moving forward, such as mentoring the submission of scientific papers by their students, grant writing (which can be used for student graduate research assistantships and tuition), and preparing their students for public presentation of research at conferences or job or postdoctoral interviews. Being able to count on seasoned students to teach the specifics of data collection via an experimental protocol, for example, means more time devoted to the overarching aspects of keeping a program of research running. Faculty members have a great deal of pressure to

88 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

publish research, seek funding, teach courses, and serve on committees within the university and professional community. Therefore, providing opportunities for experienced students to take on some of this workload may be beneficial. Two, this approach is not only helpful for the mentor but allows the mentees an opportunity to practice mentoring and teaching those in the lower "rungs" through sharing the knowledge and skills imparted to them from the more sophisticated team members. Though they likely are not aware at the time, these beginnings of mentoring will become a foundation on which they will build. A fourth- or fifth-year student, for example, will likely mentor undergraduate students on how to follow an experimental protocol for data collection for their dissertation, which will nicely translate to leading independent studies at a postdoctoral fellowship or their first academic position.

Another benefit of the vertical team approach is that team members learn to work with one another, which may decrease the possibility of competition, enhance interpersonal connections, enhance the skills of interacting with others in an academic environment (i.e., collaboration), and can be building blocks for lifelong friendships. When students rely on each other, a small community and lab culture can be built, not only reinforcing efficiency of work, but allowing others to rely on one another and creating a welcoming and collaborative space for team members.

There are also potential costs of the vertical team approach. First, a mentor must be willing to relinquish a portion of control over the mentee's learning process and place it in the hands of other team members. However, if a mentor has done an effective job of training those in the higher rungs, then that trust can be easy to place. Second, the vertical team approach may mean that newer students may have less contact with the mentor in the initial year(s), given much of their training (e.g., assisting with data collection on someone else's project) is mentored by more senior team members. It should be stated, however, that a mentor's involvement at *all* levels of a student's time in graduate school is still crucial. A mentor's contact with their more junior students can occur in a number of contexts besides the laboratory. One context is regular (e.g., weekly) research team meetings in which projects can be discussed, research troubleshooting can occur, data can be presented, and presentations can be practiced in a supportive environment. Importantly, this is also a place in which interpersonal connections among the team can be established, as it is likely one of the few times during which everyone will meet at one time.

Mentors should also meet individually with more junior mentees on a basis that is individualized to their needs. Some students may need more support than others, especially during the first year and it is important to recognize the differences so that time is not wasted or opportunities are not missed to provide assistance. More on the importance of these meetings will be discussed later in this chapter. And finally, less formal research team activities or parties with members of the entire group are also important in developing the interconnections of all members of the vertical team, including the mentor. Our research team has two to three lab parties per year hosted by Rasmussen and we also join for other activities, such as mud runs, hikes, river floats, and trips to the local amusement park.

When more seasoned team members mentor less seasoned members, oversight of this mentoring should still occur to some extent. The mentor should emphasize to the more senior student mentor the importance of giving clear instructions, reminding the seasoned mentee that new students do not yet have the experience that they now have, so taking their perspective is critical. Further, when more senior students teach more junior students, there tends to be information given on *what* to do, but not *why* it is done. The *why* can be just as important as the *what*, so senior students should consider inclusion of the rationale. Finally, large amounts of training can be overwhelming to a new mentee. Therefore, it is advisable for training, especially for large tasks like writing a thesis, to be given in smaller steps. This makes tasks easier for newer lab members to learn.

Characteristics of Effective Mentoring

In this section we describe our views of what we envision as the most important aspects of mentoring.

Professionalism: Respect, Equality, and Equity

Mentors should treat their mentees with respect and professionalism when giving opportunities, resources, and offering guidance and feedback. A starting point for this assumes that all mentees are treated equally; that is, regardless of gender identity, ethnicity, sexual orientation, able-bodiedness, and the like, students will receive equal treatment in terms of research opportunities and expectations. This, of course, helps mentees feel valued and treated fairly. However, even if mentors may feel like they are treating their students equally, it is important to verify this by more objectively examining potential personal biases (implicit or otherwise). One may do this by humbly asking students or colleagues if there are ways in which more respectful and equitable practices can be improved. Mentors can also create a "brave" environment in which students feel comfortable talking to their mentors about difficult topics, such as feeling devalued. This will be discussed later in the chapter.

A mentor's time and resources should be allocated equitably and fairly among their students. For example, consider two graduate students who are similar in ability, experience, and year in the program. If one person receives lab resources (e.g., a competitive graduate research assistantship salary and tuition package) one year, the other student should be prioritized to receive the resources the next time they are offered, if possible. There should also be a conversation with the student who did not receive the resources about how this decision was made ("the decision-making body saw the two of you as equal in merit and experience and we couldn't decide, so we flipped a coin") and what will happen later to adjust for this ("you will be prioritized for this type of funding next year"). Often the easy approach for an uncomfortable conversation such as this is for a mentor to say nothing when a student is given more than an equally deserving student. Students, in the absence of information, may try to fill in the blanks of situations in which they feel overlooked. It is best to not assume they understand. We encourage mentors in most instances to have those uncomfortable conversations. The fair allocation of resources is indeed a delicate balance, where fairness and clear communication is key.

Equal treatment does not necessarily mean equitable treatment. The reality is that graduate students vary in their abilities and relative experience. Some mentors select students to mentor who have extensive experience and therefore require less mentoring, for example, students who already have master's degrees or extensive undergraduate or graduate research experience. This is advantageous to freeing the mentor up to work on the products they need to keep their research program continuing (i.e., publications and grant applications). On the other hand, some mentors may be in situations in which they are more likely to attract students with less research experience (e.g., they're at institutions with less established graduate programs, or they're an early-career faculty member) and these types of students require relatively more mentoring. Most mentors likely have a mix of abilities in their beginning students, so it is important to assess what students need based on their previous experience and current abilities. For example, a student with a master's degree and published research will need less guidance on writing and running experiments, but perhaps more attention on collaboratively writing a research grant or preparations for postgraduation interviews. A less seasoned student may need more scaffolding with foundational skills, such as how to follow an established experimental protocol or execute the steps of a research technique. Some students do well with accepting an assignment and independently completing it. Others need

Proof

90 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

regularly scheduled meetings in person such that they can review progress with their mentor on projects. As they gain experience, this scaffolding should become less frequent. Discussing the type and frequency of individualized instruction with the mentee can help clarify the expectations for each person. In addition, these conversations can also clarify long-term goals and expectations—not only for the mentor with respect to the mentee, but also the mentee's career and personal goals.

Individualized Constructive and Compassionate Feedback

Related to differences in student needs, the frequency and method of communication will be as diverse as any other need. Feedback is a necessary and consistent part of working within academia; indeed, there is nothing more useful than criticism to improve scholarship. As mentioned, frequency of feedback is one consideration, however, the *method* of relaying the feedback is also important.

Whenever possible, *compassionate feedback* is ideal. Compassionate feedback starts first with reminding oneself how it feels to receive hostile v. constructive feedback; most people are open and receptive to feedback that is constructive and corrective, as opposed to feedback that is hostile. Answering the question of "how would I respond best to this kind of feedback?" may help direct a mentor's approach. In addition, creating a context can also help with being compassionate in feedback. Consider an instance in which a mentee submits a manuscript draft for edits by their mentor. If this is a mentee's first draft, it is likely to require substantial revision and organizational change. Reminding them of the context of where they are in their writing career (i.e., at the beginning) and that they are going to experience a large learning curve with these early drafts is helpful for them in terms of what to expect for extensiveness of editorial feedback. One can also remind them on a moderately edited second or third draft, that the draft was a large improvement from the first draft, and acknowledge their use of the previous draft's feedback in getting them to this one. This not only helps the student's receptivity and understanding (e.g., the *why*) of another round of feedback, but also reminds the mentor that the student *is learning* from what they offer.

It is also important to remind students that scientific writing and speaking are lifelong skills to develop, and that expecting, accepting, and using feedback is part of learning and a part of the scientific process. In the Rasmussen lab, we always say "ink is love," meaning the more ink you see on your draft, the more your evaluator loves you and wants to see you improve as a writer (though now we might say "track changes is love"). Indeed, taking time to thoroughly review and edit a draft of a paper takes a substantial amount of time and cognitive energy, and can be viewed as an act of love. Part of this conversation can include the expectation that science is a corrective process and as such, we practice and cultivate the skills of humility, openness, and responsiveness to criticism.

Another component of compassionate feedback is to highlight the successes of the work that a mentee performs. Most of the feedback that graduate students receive is corrective, so recognition of what is done correctly is appreciated. This could be something as simple as praising a good point made in a lab meeting, a well-worded paragraph in a manuscript, or admitting a mistake (especially a big one) in the execution of an experimental protocol. It goes without saying that reaching milestones (defending a thesis, presenting at a conference, publishing a paper, getting a grant funded, winning a research award) should be shared and celebrated with the entire research team as well as the program, department, or other academic unit. These types of recognition allow the mentor to reward a small or large effort (i.e., perseverance) on the part of the student, showing that their hard work has payoffs. These recognitions may also reinforce behavioral aspects of good science, and strengthen bonds between mentor and mentee.

Mentoring Relationships 91

Mentors can also effectively communicate and strengthen a mentee's scientific writing by focusing on the content of the work rather than making assumptions or implications about the mentee's abilities (e.g., the *writing* could be improved by adding more examples of <content term> v. the *writer* is incompetent for leaving examples out). Overall, feedback should be specific and proactive in terms of how to improve rather than simply pointing out failures and expecting the necessary changes to be obvious. By incorporating the former, mentees will be given the opportunity and motivation to learn from mistakes and make proper changes to grow in their field.

Finally, because effective mentoring of students takes time, thought, and consideration, it is also important for a mentor to know limits in terms of their ideal graduate-student load. Mentoring too many students at once will spread the mentor too thin among their students, making a less satisfying experience for the students and an overworked faculty member. Too few students can allow for more high-quality mentoring, but the research program of the faculty member will not be as productive. For example, for Rasmussen, the ideal load is four graduate students. However, that load will also depend on the relative experience of each student. If she has four graduate students who have come in with less laboratory and writing experience, they will likely need more scaffolding, so taking a fifth student may stretch her beyond her capacity to give high-quality instruction. If, however, three mentees have extensive laboratory and writing experience and one is less experienced, taking a more experienced fifth student might be reasonable. In this example, the nature of the vertical team is not lost. It only works when there is an array of abilities and levels.

Appropriate Power Differentials Francis

Regardless of mentoring style, there is no circumventing the fact that there are power differentials between mentors and mentees; that is, the relationship between the mentor and the mentee has a clear hierarchy. One individual has the degree and years of experience while the other was specifically selected to learn from them. While not inherently negative, power differentials are something to be aware of within the mentoring relationship. Having this power dynamic allows a clear chain of response when help is needed. It creates an essence of professionalism and allows the vertical team to be maintained. The mentor provides training and the oversight of a high-functioning team and, when needed, can pinpoint when the team or a task is not running efficiently and can suggest alternatives of how to move forward. Therefore, power differentials have a clear function.

There are different types of power differentials that exist on teams. On one extreme, unhealthy power differentials exist, for example, those that lead to exploitation of the mentee, such as severe overwork or sexual harassment. These types of problems can have negative outcomes for mentees and require alleviation and may require the assistance of a department chair, dean, or human resources director to solve. On the other hand, there are situations in which very little to no power differential exists and mentees are treated as friends, as opposed to trainees. This makes it difficult for a mentor to train and give the necessary feedback to a mentee, and may also be challenging in terms of running a research team.

Most power differentials are somewhere in the middle of these two extremes—that is, there is a clear hierarchy, but it functions to create an effective team. One such example is the "junior-colleague" model, in which the mentee is viewed as a colleague in training. It begins with eschewing titles and using first names in interactions. The foundation is the promotion of open communication and respect between mentor and mentee and among all members of the team. Input and ideas from mentees are actively sought and encouraged through respectful interactions that shape the appropriate behaviors of a scientist, but do not discourage inquiry. Team members are also escorted into professional networks by ensuring

92 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

dissemination of their work and being introduced to professionals and included in professional conversations, e.g., networking conversations at conferences. The junior-colleague model not only allows the mentee to feel valued as a contributing member to the discipline, but it will ease their transition into the professional world.

The junior-colleague model also helps with the more subtle problems surrounding power differentials that include the fear of speaking up when something goes wrong, or having difficult conversations, such as those surrounding a research error, communication misunderstandings, or life struggles that may influence a mentee's work. When a junior colleague feels more comfortable speaking to their mentor about these types of issues, it can reduce tension and conflict in relationships between mentor and mentee (in addition to establishing lower power differentials, a mentor can help create these conditions by practicing effective communication and compassionate feedback, all discussed in this chapter). From the mentee's side, practicing brave behavior, that is verbal behavior, in which one feels uncomfortable to approach the mentor about a topic, but does so in spite of the discomfort, should be part of the repertoire. Mentors should reinforce brave behavior, even if the outcome of the conversation is not in line with mentee's expectations (e.g., "I know it took a lot of courage to ask me if you could remove one of the conditions from your study. I'm glad you feel comfortable talking to me about this. But given that we want a publishable study, it would not be in your best long-term interests to do that. Let's brainstorm if there are other ways we can reduce the time it takes to complete your study."). Indeed, if the relationship is functioning as it should, the mentee should feel comfortable approaching the mentor with all questions relating to research, professional development, and seeking support when needed.

Opportunities, Growth Mindset, and the Building of Frustration Tolerance

Like many apprenticeships, mentees enter the academic environment with a goal in mind: often graduation and/or specific career aspirations. However, there are many milestones to reach before achieving this goal, each testing students' abilities along the way. Some will be more challenging than others, e.g., thesis defenses or comprehensive exams. Students may sometimes feel ill prepared or overwhelmed for these milestones, especially because they are novel to them and have high stakes. From the mentor's standpoint, however, the mentee is often viewed as ready for these challenges, as they have the prerequisite skills in place. Therefore, the mentee. They must "learn to be comfortable with being uncomfortable," as this is a necessary step for every new scientist. Instead of avoiding situations that cause this discomfort, mentees can learn to accept and tolerate their own discomfort (i.e., frustration tolerance) as they work through the development of new skills and milestones.

Growth mindset (see Dweck, 2007) and frustration tolerance go hand in hand. Growth mindset, taken from the field of psychology and applied to education, refers to essentially training students to thrive on challenge. Errors and failure are viewed not as evidence of ineptness, but as an opportunity for correction, growth, and for expanding our existing abilities. Fixed mindset, conversely, assumes that abilities are perceived as overall unchanging. Because a standard is already set, people either seek to succeed at what they already do and if they stretch beyond that and fail, they stop trying to change and grow. In other words, with a fixed mindset, opportunities for growth are avoided and it is this avoidance that keeps people from taking risks and expanding their repertoire. Growth mindset can be incredibly valuable in that a challenging situation can be reframed as one that is an opportunity to learn. Almost any challenge can be broken down into smaller steps and specific behaviors. Consider the example of students who may enter academic programs without a strong background in statistics. When it comes to running analyses, they may encounter

Mentoring Relationships 93

frustrating barriers. Through changing a verbalization to oneself such as, "I don't know how to do this" to "I don't know how to do this *yet*, but I do know where to go for help and I will utilize these resources," and then following through, allows growth to take place, as compared to the behavior of giving up or avoidance. Others have identified the effectiveness of this method. The Think Aloud Pair Problem Solving (Whimbley et al., 2013) and Talk Aloud Problem Solving (Robbins, 2011) identify this as "keeping a positive attitude" and suggest such statements are a part of that important characteristic of a good problem solver and thus good scientist.

Frustration tolerance, also relevant to challenges, refers to an acceptance of the emotion toward what seems a challenging or insurmountable condition, as opposed to an escape or avoidance response, and is a necessary skill in the academic world (Meindl et al., 2019; Shi et al., 2021). For example, consider a common situation in experimental programs in which mentees are asked to program code for an upcoming project. Although students may have minimal coding experience, a mentor can give them the tools (e.g., a manual or access to a class) to learn this rather large and at times frustrating challenge. Being taught to expect and label such emotions when they occur, and to take short breaks when needed, but to return to the task later, helps build an insensitivity or tolerance to frustration, such that the individual feels less affected by setbacks, failures, feedback, or the instances in which part of a project must be redone. Given that mistakes are a part of learning and students are learning constantly, mistakes will be expected and emotions to those can be accepted as part of the process. When the process is complete, the student feels a tremendous sense of accomplishment and ownership in what they have done.

Mentors may also shape frustration tolerance by providing more support, especially when the student is more junior. This may occur through offering resources, conducting checkins and one-on-one chats, and then eventually allowing the student to complete tasks more independently as they progress through the program. However, as students become more independent, they may make more mistakes. As part of this, patience and support is needed. When mistakes happen, students are likely to feel bad about them, whether it be due to questioning their own abilities or feeling as though they have let the team down. It helps to provide a realistic view of how impactful the mistake is (often it is small in the grand scheme of things). Reminding the student how far they have come in the program and letting them know if they are on the right track helps reinforce their efforts.

Finally, it is important to also mention that sometimes the weight of learning some of these more challenging tasks can be compounded by other difficulties a student may be suffering, such as a personal loss. Some of these life events may require additional support than what the mentor may provide. In instances like this, normalizing the seeking of psychological support should be practiced and having some referrals of trusted counselors or psychologists on hand, especially those for students, may assist a student.

Communication

Communication about expectations and execution of tasks is an essential practice for effectively running a research team and for mentoring students. Without clear communication, confusion ensues and mistakes are made, creating conflict and disappointment. Rasmussen begins every academic year with a list of general expectations she has of her graduate and undergraduate students (see Appendix); note that the list also contains what students can expect of her (she also often gives this to potential students when they interview for graduate school, as well, so they get an idea of the type of mentoring she does). Note that the list contains not only academically related expectations, but also those related to professional and interpersonal conduct. Beginning the academic year in this manner gets everyone on

94 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

the same page in terms of what is expected and sets the tone for the year. It also allows Rasmussen to explain why these expectations are in place, rather than just stating them.

It is also important to remember that when an assignment or task is communicated, the mentee may not understand exactly what has been stated. As mentors, recall that the less experienced student may not yet have learned certain scientific terms or jargon. For example, if a mentor directs a newer student with a comment like "You should look into <some topic>," it may not be clear to the student that what the mentor means is to ask a more seasoned student about the issue or perhaps to conduct a literature search. Clearer instruction might be to "ask Luis to provide you with the protocol for how to obtain participant consent," or, "if you conduct a literature search on <content>, that might be a good first step. What databases are you familiar with and which keywords do you think would be useful to your search?" Asking a probing question like this helps the mentor get a feel for where the student is skill-wise for literature searches, for example, and then additional guidance can be given if necessary. Being clear about the steps needed to do something is important to a less experienced student.

On the student's end, particularly if they are more junior, asking clarifying questions is important. Mentors do not expect you to know everything. They may forget what you do and do not know, especially when they see a pattern of competence and success. Stating, "I am unsure which resources you would like me to consult when you ask me to look into that. Can you please give me a little more direction?" will likely lead to a mentor apologizing for forgetting that the mentee is only a first-year student, for example, and happily filling in the details. It is also important for the student to record in some way (i.e., writing it down or typing on a laptop) what the mentor says for a detailed task. It can be time consuming and therefore frustrating for mentors to repeat themselves with the same information, especially when a mentee makes no attempt to record it the first time.

Styles of communication, and preferences for those styles, vary among mentors and among mentees. For instance, when talking with a mentor, some students may have a tendency to overshare their life experiences, while others prefer to stay more private. Even though it may seem unnecessary to some mentors, the student who overshares may do so as a way of informing their mentor of life events that may impact their work and mental health, which may influence their productivity. When the individual listening does not understand this and punishes this behavior (e.g., stating, "I don't need to hear the details of your personal life"), the student may be left confused and stop sharing, which may decrease their overall communication with the mentor. Instead, when instances like this happen, it is important to try to understand the function of the behavior and shape accordingly, e.g., reinforce the overall reporting of an important life event by stating something like, "it sounds like you have a heavy emotional load right now. What can I do to support you while you work through this? Do you need an extension on a project, for example?" Of course, as a mentor, it is possible to shape this behavior and reinforce what may be the essential pieces of these conversations, such as project check-ins and overall emotional well-being of students, as opposed to details that may be more appropriate for a therapist or counselor, for example. As mentioned previously, it can be helpful to have a list of referrals on hand for students (e.g., physicians, student counseling services, etc.), so they can get the appropriate support they may need.

E-Communications

Electronic communications (email, instant messaging, texting, etc.) has transformed the amount of communication that can be had effectively and in a brief amount of time and effort without requiring an in-person meeting. Mentors and mentees can check in with one another daily (if necessary) on small matters or details of a task or project, and very little

Mentoring Relationships 95

time is taken. It is important to note, however, that there are nuances when communicating electronically. Without in-person interaction, it is more difficult to pick up on tone, facial expressions, and other nonverbal communication aspects that affect overall communication. Therefore, communication difficulties may arise, particularly for newer students who are not yet familiar with their mentor's communication style. For these students, electronic-based feedback may not provide a clear blueprint for the student to move forward on a project, for example. It is also possible for the student to misinterpret the feedback or not realize if a mistake was made, and therefore move forward in a way that does not address the issue. When these discrepancies happen repeatedly, or over an extended period of time, it may lead to escalation of strong emotions, creating tension in the relationship. In these instances, it may be best to opt for meeting in person to clarify the problems and work through the conflict. Regular in-person meetings can also prevent the problems that online communication may bring with students who require more structure and feedback. One other potential side effect of e-communications is that their use may blur the line between work-life balance by setting up expectations of when responses to emails should happen. Often individuals expect an immediate e-mail response, so if an email is sent after 5:00 p.m. or on the weekends, and a clear boundary for a mentor is that those are hours meant for their family, that barrier needs to be explained and consistently practiced by the mentor. More on this topic can be found in Donlin-Washington & Helvey (see Chapter 15).

Research Meetings

Mentors should communicate with team members one-on-one, and they must communicate to the group. No matter the team dynamic, there will always be a need for the mentor to step in and provide instruction and feedback both on an individual basis and to the entire research team. An easy and effective way to promote this cohesion is through regular, inperson meetings. This may be a time to discuss progress, roadblocks, and next steps in a way that is transparent to all team members. These group meetings allow for communication to be done all at once, as opposed to many individual meetings that may not only be time consuming, but may actually cause more communication errors as information is passed secondhand from one team member to another. The lab meeting allows everyone to be on the same page, to ask questions, and clarify information. Lab meetings also allow for professional behavior, such as the practice of presentations for a conference, discussion of data, and discussion and critique of research articles, to be shaped and modeled.

Admitting Mistakes

Despite experience, the best of communication efforts, or one's place within the team, mistakes happen and are inevitable. How one handles mistakes is important for any relationship, including that between mentor and mentee. A mentor who can admit they made a mistake models honesty and vulnerability (see Chapter 20 of this volume) for mentees and cultivates trust in the relationship. Practicing honesty and humility as a mentor also makes it easier for mentees to imitate these skills. Additionally, mentors who are "life-long learners"—a form of admitting errors—better prepare mentees in the field as they are able to embrace new knowledge that advances or contradicts old knowledge. In the Rasmussen lab, we refer to admitting mistakes as a willingness to "fall on one's sword." To do this, there is ownership for the mistake, a sincere apology, and the individual amends the situation to the best of their ability. When a mistake is ignored, defensiveness occurs, or when dishonesty is used to cover up a mistake, tension in the team may be heightened, and trust and confidence may erode.

96 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

Some conflicts and mistakes take place within the working environment. Perhaps a team member misunderstands a task and completes it in a way that is incorrect or not useful to the rest of the team, resulting in someone needing to redo the task. Although discouraging, these mistakes tend to have a clear path for amends. The individual might apologize, recomplete the task after learning what is expected instead, and ask more specific questions in the future to avoid repeating the same mistake. However, interpersonal mistakes with other team members may have a less clear path for making amends. For example, if a team member is a member of another group (e.g., a person of color or sexual minority) and something insensitive or hurtful is said to them, an apology may not completely alleviate the problem. After a sincere apology is issued, it is the role of the person who made the comment to not only learn why that comment is inappropriate and what might be said instead, but to address biases that may influence similar statements in the future. When faced with these situations, some individuals may become defensive, as it often feels like an attack on one's character. However, it is important to note that the person who informs someone of hurtful statements often does so out of respect for the individual and as an effort to continue the relationship. Mistakes and their subsequent apologies, whether academic or personal, are essential for team functioning. Not only does it provide a foundation for learning and productivity in working environments, but it allows individuals to be more aware of others' experiences and to build stronger relationships. Working through a mistake can strengthen team dynamics by promoting trust that there is room for mistakes and forgiveness.

Balancing Professional and Interpersonal Roles

Balancing Professional and Interpersonal Roles The role of a mentor in communicating can be a delicate balance between professionalism and interpersonal connection. Not only do mentors provide structure and information for their mentees, but often it is important for them to know more about the mentee to build a relationship with them. In other words, a mentorship completely founded in professionalism may be interpreted as cold, while one completely founded in interpersonal connection may inhibit the mentee's growth as a professional. While a fuller characterization of the many roles mentors may provide is explored in Chapter 6, we provide a few thoughts here.

In a perfect world, keeping the relationship strictly professional is ideal as to not blur potential boundaries within the relationship. Unfortunately, life events beyond one's control happen for which strict professionalism is ill equipped to address the needs of the mentee. These events may include, but are not limited to: a family tragedy, personal insecurities related to one's field (e.g., imposter syndrome), socioeconomic stress (e.g., paying for rent, health costs/concerns, etc.), or simply being overwhelmed. Academia is challenging. These are all instances in which allowing for interpersonal connection through compassion is needed for the emotional, physical, and educational well-being of the mentee. However, boundaries must be clean enough to avoid problems like oversharing inappropriate information or building a relationship that blurs the dynamic of mentor and mentee, which can complicate the mentor's ability to perform their professional role.

When comments are made that may blur these boundaries, it is a mentor's job to "reel in" the conversation in individual or group settings to focus more on work-related activities, allowing mentees to share information but only responding to what is appropriate in that instance (e.g., it is often not relevant to know about someone's sex life or recreational drug use, especially if it makes others uncomfortable). If the oversharing continues, having a one-on-one talk with the individual to more directly address content would be appropriate. Mentors may be friendly, but they are not their mentees' friend during the graduate school context (though, this relationship may change after graduation). It is important to remember that the goal of the program is not to build friendships, but to instead build the knowledge

Mentoring Relationships 97

and skills needed to not only earn a degree and gain employment, but also to learn about the other aspects of science not tied to these goals (such as critical thinking). There are exceptions to this general role, however. We encourage readers to consult Peterson et al. (see Chapter 6) for more information and further discussion of this topic.

On some occasions, a mentor may be the one who overshares or influences a relationship beyond what is professional and appropriate, to a point that makes the mentee uncomfortable. One strategy for dealing with this as a mentee is to diplomatically, but abruptly, leave the conversation when it happens. Hopefully, this may send the message to the mentor that the topic caused discomfort. But what happens if oversharing persists? Given the difference in the power dynamic, it may be difficult for the mentee to "reel in" the conversation or confront the mentor about the inappropriate dynamics of the relationship. However, it is important that the mentee realize the responsibility rests also on them to address the expectations (e.g., professionalism, guidance, etc.) they have for the mentor. From the mentee's side, practicing this brave behavior should be part of the repertoire. This may be an in-person conversation. For others, it may be an email (we suggest the former, as email communications, especially those with more difficult topics, may contain a tone that is unintended). Starting the conversation by stating, "I have something to talk to you about, but it is a difficult topic for me because . . ." is a good lead-in.

Talking one-on-one with the mentor may be intimidating, but we recommend it as a good strategy to reduce triangulation. Just as it would be unfair for the mentor to talk about the mentee's shortcomings with others before addressing those concerns with the mentee, the same logic applies for the mentor. We are all human and should be given the opportunity to correct our errors. However, if the issue continues after the conversation, the mentee may need to contact an outside resource such as the department chair, dean, or the human resources department.

Creating a Collaborative Environment

Research teams differ in their interpersonal dynamics for collaboration and competition. One type of environment may not necessarily be better overall than another, yet it is important for a student to know in which type of environment they will thrive. Some laboratories will be more competitive, while others are more collaborative. On one end of the continuum, competitive settings tend to be those in which opportunities are awarded to the most meritorious or those in which resources in a lab, such as paid positions, or other forms of funding are scarcer. While competitive labs may breed productivity because students may vie for these resources with one another, they may also promote a higher-stress environment and feelings of unfairness among the team.

In a collaborative environment, all team members are recognized as unique with diverse experiences, knowledge, and skill sets that are appreciated and valued. Moreover, their continued development and sharing of their skills is acknowledged and rewarded by the mentor. Because of this, competition for superiority is lessened. Some team members will have better fits for specific projects based on their own experiences and skill sets over others, but there are opportunities for everyone. A collaborative environment encourages the symbiotic sharing of these skills on projects. For example, if one student is highly statistically skilled, while another person is excellent at experimental design, placing these two individuals together on a project in which they can teach the other their area of excellence not only fosters collaboration and provides an opportunity to learn from someone else, it also teaches the values of humility and openness, which are important to the scientific process (Neuringer, 1991).

In a collaborative environment, the mentor can establish the expectation that each team member should be valued and encouraged to help others. It is not uncommon in these

98 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

environments that team members are welcome to contribute to a manuscript or poster presentation or that resources are shared such that if one person receives a low-probability (i.e., competitive) opportunity for financial resources (a higher salary graduate research assistantship) one time, another team member will receive a similar opportunity the next time.

Even though the collaborative environment is ideal for some, it is not always easy to achieve. Resources are often limited and are not always guaranteed in graduate programs, as state, federal, and local funding circumstances can change without notice. If grants or paid positions are not plentiful and decisions are not made by the mentor (i.e., made by the program, department, or college) and team members do not know when opportunities will be offered again, a more competitive environment may form. In these situations, other forms of collaboration should be reinforced as much as possible and honest conversations about the amount of control the mentor has over these decisions should happen. At the interview stage, it can be beneficial to query faculty and students in graduate program (i.e., level of collaboration v. competitiveness) and particularly the climate of the lab to make sure the environment is one that is compatible with the student. More on creating cooperative and collaborative environments can be found by Dillenburger (see Chapter 21).

Balancing Graduate School With Nonacademic Alternative Reinforcers

Graduate school is challenging in that mentees are expected to balance their program requirements, conduct and disseminate research, complete assistantships and internships, and even participate in leadership and service. This hefty load does not leave much time for developing other parts of life, such as hobbies and cultivation of relationships outside of the graduate school context. Nonetheless, these are important parts of life for which mentees should make time (see Chapters 10 and 14 for more on these issues). Importantly, mentors should not only remind their students of the balance of academic with nonacademic life, but also model it personally.

First, foundational aspects of good mental and physical health should be prioritized. Sleep, healthy eating, and exercise have long been recognized as essential (Breslow & Enstrom, 1980; Rippe, 2018). Stress-relieving activities, such as meditation, team sport participation, outdoor activities, or nonacademic group activities (e.g., painting, book groups, etc.) should be prioritized. Scheduling time for these activities can be done and should be practiced (see Chapter 14). From an alternative reinforcement perspective, nonacademic hobbies in graduate school will also help on days that are particularly challenging or difficult. Having other sources of reinforcement will ease the blows of challenges that all students face. Mentors should also normalize (as opposed to stigmatize) the process of help-seeking (e.g., when a student may be in crisis or suffer a life event) by talking about this behavior as just one more way to take care of foundational needs.

Establishing and prioritizing the development of meaningful relationships is also important. Developing an intimate relationship in graduate school or as an academic can also be exciting and add balance to life, while also being a large source of reinforcement outside of the duties of the department (see Chapter 10). Sometimes students enter a graduate program with a partner or spouse. This relationship can serve as a source of support; however, graduate students often feel spread thin with the expectations of the program and finding time to give their loved one. It is not surprising that rates of divorce and break-ups in graduate school are high (Wedemeyer-Strombel, 2018) (see Chapter 22). Having honest conversations about the challenges of graduate school and work with one's partner may assist in the balance. Making sure to allocate time for them may help with keeping these important relationships a priority.

Mentoring Relationships 99

Some graduate students are parents. Historically, academia has been a male-dominated field, and female representation has been low (Parker, 2015). Little attention was paid to the dual role of academic and parent, particularly because male academics who were parents had wives and partners at home to raise children. More recently, the dynamic is much different. Women now earn over half of the PhDs that are awarded (and 60% of the master's degrees), and therefore are more likely to enter into academia (Council of Graduate Schools, 2020). Many of them choose to have children. Moreover, all genders now play a role in parenting; it is not only for women. Therefore, changing the landscape to be more supportive of parenthood in the academic environment is important.

This change can start at the level of graduate interview. Many women with children have been instructed to not disclose this status on interviews for programs, as it may impact the way in which a mentor will see your dedication. Some mentors have historically discounted the contributions of graduate students with children because they are wrongly perceived to be not fully committed to a graduate program (Verniers & Vala, 2018). This kind of rhetoric is harmful and places women in a situation in which they feel they need to hide the fact that they are mothers. Parenthood does not need to be part of the discussion of a graduate school interview necessarily; however, if a potential student feels safe enough to disclose this information during the interview and is devalued for this (e.g., acceptance is withheld, which is also illegal), an honest examination of this issue at the individual, program, and departmental level is required.

The process of change continues with what types of comments are made to students, in particular women, about having children. Rasmussen remembers a moment at a conference when she was pregnant with her first child; she was an assistant professor at the time. A female colleague stated to her "well, you can kiss your career goodbye." It was hurtful and it was untrue. When Rasmussen considered the female former presidents of this same organization, a number of them came to mind who had children (for example, Dr. Linda Hayes, Dr. Beth Sulzer-Azaroff—see also Chapters 10 and 23). These types of caustic comments can be stated by mentors to students also. The notion that one cannot be successful both as an academic and as a mother—that you have to choose between the two—is untrue and harms the choices for a student. Instead, create spaces to have discussions about the balance of career and the choice to have children with the underlying assumption being there is no one path for all individuals.

Mentors, especially those with children, can also model the "having it all" with their students. It is okay and even beneficial for a mentor to talk about their children, and the manner by which they balance the duties of an academic with those of a parent. Part of this conversation should be that one should not sacrifice their own mental health in the process of this balance; learning to establish healthy boundaries and prioritizing some opportunities over others (i.e., saying no) should be an ongoing conversation. It is important also to model these boundaries to students so that they feel they can and should prioritize their children. Rasmussen's students know, for example, that on the weekends and after 5:00 on weekdays, this is sacred time with her family and academic issues must wait.

From the mentee's perspective, setting boundaries with oneself as a parent is also important. Sometimes the desire to "have it all" translates into "I must do it all" and an overwhelming amount of work is taken on. It is important to remember that when a mentor offers new opportunities (e.g., a new project) it is possible to say no. Like any student, it is important to recognize one's limits in order to avoid burnout. It is not a sign of weakness to decline an opportunity, rather it is a sign of maturity to identify one's capabilities. Hence, there may be a need for increased communication between mentor and mentee when the mentee is a parent. Regardless of position, children are a priority and when working within a system that did not historically account for this, mothers are deserving of a voice to

100 Erin B. Rasmussen, Sierra Baca-Zeff, and Morgan Musquez

therefore balance both school and children. Being able to have open, honest conversations about expectations, challenges, and problem solving about the balance of academic work and children is important.

Providing mentees who have children with flexibility and opportunities is crucial to their feeling like a valued team member. However, another observation that should not be overlooked is ensuring that mentees *without* children are also fairly treated. With equity being the overarching goal, it would not make sense to promote balanced workload expectations from team members with children, but not for those team members without children. For example, imagine a scenario in which one team member has a child and another does not and both need individual access to the lab. Just as it would be unreasonable to schedule the team member with children to only have access to the lab during the evenings or weekends, it would be equally unfair to have this expectation for the team member without children. In these instances, an open dialogue between both students and a *quid pro quo* arrangement ("if I do this for you, can you help me with something else . . . ?") may assuage both parties and make the parenting graduate student feel less like they are burdening another student.

Summary and Conclusions

In this chapter, we discussed how to select a mentor (for students) and mentee (for faculty members) and provided a description of an organizational strategy that has been beneficial to our research team-the vertical team approach. In addition, we discussed our views of the most critical elements of mentoring, which include professionalism, compassionate feedback, appropriate power differentials, and effective communication. Additionally, we talked about the importance of development of a growth mindset and of frustration tolerance, effective communication, the elements of collaborative environments, and balancing graduate school with nonacademic alternative reinforcers. Even though this may not be an exhaustive list of topics within the mentor-mentee relationship, we believe these topics hold great value and provide a foundation for healthy mentoring relationships to be built within the academic environment. As discussed throughout the chapter, each of these topics are complex. Mentors and mentees are likely to have come from different academic and sociocultural backgrounds and may have different communication styles. While there are many paths and facets of effective mentoring, and this is certainly not an exhaustive list, we feel that the key features of a successful mentor-mentee relationship are respect for individual differences and the promotion of effective communication.

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Appendix 5.1

Expectations of graduate and undergraduate students in the Rasmussen lab.

What My Students Can Expect of Me

- 1. I will provide high-quality, individualized research and professional mentorship. The type and structure of mentoring and the relationship with the mentor depends on each student's unique abilities and level of independence.
- 2. I will return drafts of written documents (e.g., thesis, dissertation, manuscripts) in a timely fashion (usually within 1–2 weeks). If I cannot do this because of workload, I will tell the student when to expect his/her draft. In other words, I won't leave you hanging.
- 3. I will provide opportunities and help prepare students for research presentations at conferences.
- 4. I will mentor students in submitting manuscripts for publication.
- 5. I will promote my students by nominating their meritorious work for awards and honors. I also will promote them for primary funding opportunities.
- 6. I will support my students when they are struggling with life events and difficulties. This can mean behaviors like providing flexibility on deadlines to referring them to professionals who can help. I will also help them solve time-management problems.
- 7. If a student is not making progress on a project or in the program, I will provide scaffolding to help them. This can mean many things, as each student's needs are individual. Examples may include regular verbal check-ins, meetings, or grading contracts.
- 8. I will conduct myself with honesty and integrity in all dealings with my students. Confidentiality can be assumed. There may be an occasion when I have to break a confidence, but this is only in the event of a major problem (e.g., academic dishonesty, health or welfare risk).
- 9. If I have not met one of the expectations listed here, I invite you to talk with me about it. I'm human and can make mistakes, too. But you can expect me to take responsibility for it and make it right.

My Expectations of You

1. I expect students to attend weekly lab meetings regularly. This includes summer. If you need to miss lab meeting, please contact me ahead of time to let me know. Be on time. Attendance also means being prepared and looking prepared. This means reading the articles or book chapters that are assigned, thinking about them, and being prepared to contribute. Showing up without the materials is a sure way to look unprepared.

- 2. I expect timely completion of theses, dissertations, and independent projects. Specifics of this can be found in #3 and #4. I also expect my students to submit internal and external grants to help fund their research.
- 3. The departmental expectations for work and credit is as follow: students work 4 hours for every credit of research for which they register (4483, 5583, 6650, 8850). If a student is working under a research assistantship, CPI, or other contract, they should be working whatever hours the contract specifies.
- 4. When verbal agreements have been made about progress on a research project, I expect students to fulfill these agreements. For example, if an agreement is reached about when a student proposes his/her thesis, then that agreement needs to be met. If I, or the student, foresees a legitimate problem that will interfere with the agreement, then the agreement can be renegotiated. If the agreement is not met by the student, then we will create a written contract. Failure to meet multiple agreements might lead to a question of mentor-mentee fit and the mentoring relation may need to be reconsidered.
- 5. I expect students to work on other independent research projects in the lab besides his or her own research. How much time they devote to this depends on other responsibilities they have. Each student should lead at least one project beyond their requirements for the doctorate.
- 6. I expect my students to regularly attend conferences and present their research at these conferences. Poster presentations are expected of greener students. Oral presentations are expected of more seasoned students. Students should also represent the lab by participating in departmental and university research colloquia (e.g., Research Forum, Brown Bags, Data Blitz, university conferences) by presenting research.
- 7. I expect my students to submit their completed research (i.e., theses, dissertations) for publication if their results are publishable. Of course, we will co-author these manuscripts together and I will provide appropriate mentorship of the writing of the document. Authorship is decided before the manuscript is written and we adhere to the APA ethical guidelines for decision making. In general, authorship is determined by how much relative work each author completes. If a full draft or revision is not completed by a pre-determined agreed-upon date, I have the right to reassign authorship, such that the paper can be submitted in a timely manner.
- 8. I expect my students to work interpersonally well and help each other. We function as a team. Conflicts happen sometimes but should try to be resolved internally by directly discussing the issues with the person with whom you are having conflict. Discussion of conflicts with people who are not directly implicated in the conflict (i.e., triangulation) can exacerbate the conflict. Therefore, it is highly discouraged. Also, respect the vertical team approach (i.e., consult with the person above you before going above them). If conflicts cannot be handled individually, it is important to the team to bring them to my attention for assistance or mediation.
- 9. Integrity and trust are critical to the function of a lab team. I expect my students to have integrity and honesty in coursework, in the laboratory, and professionally. Mistakes happen and forgiveness is our practice. Failing to take responsibility by covering up a mistake or being dishonest is not acceptable. Remember that your behavior is a reflection of me and mine is a reflection on you.