

**Undergraduate Educator Network Webinar:
Enhancing the Undergraduate Research Experience for BOTH Mentor
and Mentee
March 4, 2020**

Responses to Questions that Couldn't Be Addressed During the Webinar

Do you discuss with the students benefits of a career in toxicology as opposed to medicine??

Dr. Vaughan: I do address different career options and the benefits/challenges of each. Many of our students come in with the intention of going to medical school. They are good at science and that is the only career path with which they are familiar (around here successful careers are doctor, lawyer, nurse, teacher, and engineer)—again the importance of role models. Research helps to expose them to a wider variety of careers. We have students pursuing graduate degrees in public health, neuroscience, oceanography, biochemistry, etc., in addition to medicine. I have found that many of our students are drawn to toxicology because it provides a good intersection between chemistry, biology, health, etc., and the application of those fields to interesting/important questions. So even though they don't have formal classes they get exposed through research and it broadens their horizons.

Dr. DeWitt: I talk with students about their career interests and interests in the lab...why medicine? Why research? What about this lab interests/excites you? Why do you want research experience in this lab? I also find that many students have not been exposed to the breadth of scientific careers and have had several students who thought they wanted to go to med school decide that toxicology (or another research-oriented career) was a much better fit for their interests. Because toxicology is not common to most undergraduate educational programs, we really only have the chance to "teach" toxicology to undergrads through lab experiences. But I still think it's most important to support a student in his/her chosen career path and help them to achieve their goals, even if it means going to medical school and getting vomited on by patients instead of exploring the great unknowns associated with emerging environmental contaminants!

Dr. Brown: Absolutely. The majority of our students come into the program not knowing much about career opportunities outside of medicine and health care so one of the major goals of our program is to educate students about careers in environmental health and toxicology. We provide students some basic toxicology lectures combined with career discussions. Each faculty member who comes and talks to them about toxicology spends at least half of the time speaking about their careers and other career opportunities. We also bring in program directors to talk about toxicology graduate programs.

How do you deal with personality conflicts? When is it time to ask someone to leave the lab?

Dr. Vaughan: I have unfortunately dealt with this and in a small program it is important to manage this promptly and effectively otherwise it runs the risk of poisoning the whole environment. I do work upfront to select students to join my lab who I think will have a good dynamic. Having students take ownership of their own project also helps with attitudes. I have one student who I initially asked to leave the lab because of attitude issues—despite many

ongoing conversations. (It also helps if you can gain a picture of what is going on outside of the lab—students are people, too). I took one last chance of letting her rejoin (somewhat at the bequest of a respected senior colleague) with the stipulation that any attitude would mean dismissal AND she had to find a project she was invested in—once the pieces fell together she became one of the leaders of the lab and one of my best students. Frequent conversations are important, as is re-calibrating your, and the student's, expectations. If it becomes necessary to dismiss someone from the lab then I have found it best to have a frank, un-emotional, conversation without laying blame on any one individual. It's a tough place to be in, so preempting any issue is time and energy well spent.

Dr. DeWitt: I fortunately have not had to deal with this to a great degree. I find that as undergraduates are still navigating the process of "adulting," they sometimes forget that lab research is a professional endeavor and that I am technically their boss/supervisor. While I am friendly with my students and will occasionally socialize with them in a group setting, I maintain a fair amount of distance between myself and my students. I remind them that I have power over them (i.e., grades, evaluations, etc.) but that I also want them to succeed and want to advocate for them when they run into problems. I can't advocate or support when they are absent or uncommunicative. I agree that a consistent presence in the lab and frequent communication will reduce the probability of conflict. If there is conflict between individuals in the lab, I force them to have an open conversation to fix the problem because the lab is a team!

Dr. Brown: I've had to remove several students from labs either due to the mentor or the student. We've had one mentor who was not following the guidelines of our program and only having the student wash dishes and change cell media but not working on their own project. That was an easy solution and I found a new lab for the student and I no longer include that mentor in our undergraduate training program. The more difficult situation has been when a student has created personality issues for either the mentor or lab or both. In this case, I speak with the student so they are aware of the issues (often the mentor does not want to do this) and just letting them know they are being disruptive is often times enough to solve the issue. In a few instances, the mentor has too high expectations for the student and that requires a discussion with the mentor. Again, these discussions usually resolve issues. In the case of repetitive issues, I have moved students to another lab and sometimes it is just a change in environment that is needed, and things turn out for the better. If the second chance does not work, it's time to ask the student to leave the program.

How to handle students with unprofessional behavior?

Dr. Vaughan: I would also like to address how to handle students with unprofessional behavior in the lab like taking phone calls from family members. With my students their families do not understand what research is. They do, however, understand that at a job their student wouldn't be able to answer the phone. I try to educate the students in ways to discuss their research and other responsibilities) with their families in ways that the family can relate to.

Dr. Brown: I approach this issue the same way as described in the previous question. It requires a discussion about professionalism and that this opportunity should be treated as a real-world job.