I am a firm believer in the idea that you can be both a good researcher and a good teacher. In fact, Feldon et al. (2011) recently published a paper in *Science* suggesting that teaching may actually improve your research skills. I find that I engage much more deeply with material when I am expected to teach it to someone else, forcing me to comprehend and integrate details that I glossed over when I was an undergraduate. In addition, teaching also requires you to think on your feet, problem-solve, and express yourself clearly and professionally—skills that are valuable to any researcher.

Unfortunately, many rising neuroscientists are encouraged to dedicate themselves fully to research, and resist full engagement with teaching because it is a distraction from the research and grant writing that are necessary to keep a lab running. However, I have been particularly fortunate during my graduate school career, in that my faculty mentor and the head of my program both value teaching and have served as my mentors in teaching, in addition to research. Furthermore, the Duke Graduate School offers the unique opportunity to earn a Certificate in College Teaching, which has provided me with a more formalized and interdisciplinary introduction to teaching that I would not be able to experience within my own department.

My experience with teaching thus far has been extremely rewarding, despite the challenges of starting from scratch. As a first-time teaching assistant for Fundamentals of Neuroscience, I took on the task of re-making the traditional "recitation sessions" into engaging periods of "team-based learning" that complemented and expanded upon the concepts presented in lecture, while simultaneously teaching students how to critically read and think about scientific papers (skills that are also crucial to any researcher). I re-wrote the syllabus, chose the assigned readings for each week, wrote quizzes for the students to take both individually and in their teams about the assigned reading, and came up with the format of "mini-presentations", in which each team was required to present a piece of the assigned reading of the week to the rest of the class. I found that this active learning method was successful in getting students to more deeply engage with the readings than they would have in a traditional discussion section, in which the TA lectures to them about the reading and periodically asks questions to spark discussion, which are, more often than not, met with silence. Even the weekly quizzes were engaging because each student had to argue with their team for the answer they thought was correct, which often provoked stimulating discussions. Through these debates, the students were able to learn from each other and gain a deeper understanding of the material.

Because of this rewarding teaching experience, my view of teaching has been altered such that I now believe teaching must be bidirectional and student-centric in order to improve student learning. Students must not only "learn" in the traditional sense of the word by passively absorbing information, but they must also turn around and teach the information to their peers to truly engage with and cement the information. It is ironic that psychology & neuroscience research has provided so much evidence for the superiority of active learning in forming stronger, long-term memories, yet many psychology & neuroscience faculty have not yet made the switch from traditional lecture to active learning. As I saw first-hand with team-

based learning, students learn best from each other, and I plan to incorporate this into my future classes in many different ways. I believe lectures can still be valuable, as long as some aspects of active learning are incorporated. For example, large lectures can be broken up with activities such as think-pair-share, when students turn to their neighbors and answer a series of thought-provoking questions I have posed, and then I call on a few pairs to share their answers with the larger group, which can prompt further discussion and debate.

The use of instructional technology can be invaluable in bringing active learning concepts into traditional lectures, as well as increase first-hand engagement with material during smaller discussion-based classes. During my first teaching experience in Fundamentals of Neuroscience, I delved into the use of instructional technology to promote team-based learning. I posted the weekly quizzes that assessed the students' understanding of the assigned reading on Blackboard, an online course management system, so that they would only be available for the first 10 minutes of class, and were only accessible with a password that I provided at the beginning of class. This use of technology encouraged the students to arrive on time and prepared to class, which was a nice change from the lecture portion of the course, in which some of the same students were known to show up as much as 30 minutes late. Blackboard also facilitated the assessment process, as the multiple-choice quizzes were automatically graded and the grades immediately posted online. Following the online quiz, I had the students split into their teams and take the same quiz together, but this time on a scratch-off card. This may not sound like sophisticated technology, but it really is a great tool to provide instantaneous feedback to the students, and many of them were thrilled by the fact that it felt like they were playing the lottery. Finally, for the mini-presentations part of the class, I provided PowerPoint slides containing the figures from the paper for each team to use to present to the class, which was helpful for the groups to be able to interact with the data and point out the key points to the rest of the class.

In addition to more formal teaching, I have thoroughly enjoyed the one-on-one mentoring I am able to do in my laboratory. Mentoring is as student-centric as teaching can get, and it often produces more readily observable student learning outcomes, with a product that benefits my research as well as the student's future career aspirations. Again, this style of teaching directly improves my research abilities because I am forced to more fully understand the laboratory techniques I use everyday and the rationale behind the research questions we ask by virtue of having to explain them to someone else. I find that undergraduates often have better, more probing questions about my work than do other people in my field, just because they are able to think more "outside the box" of the field of thought we so often confine ourselves to. I feel like I have grown right alongside my mentees, both in my mentoring abilities, as well as in my dedication to science, as I help to mold the next generation of scientists. Not all students I mentor will go on to become scientists themselves, but even causing a small change in their perspective on the world around them makes it all worthwhile.

As part of earning my Certificate in College Teaching, I was able to participate in peer observations of teaching, such that I observed two fellow graduate students in other disciplines, and they in turn observed me. This experience was quite

valuable to me and opened my eyes to other ways of teaching. For example, observing a math class made me realize that writing on the board can be a great use of instructional technology—just because it's not electronic, doesn't mean it doesn't work well. I found that as an observer in that math class, I was able to keep up with the pace of the lecture and found myself trying to solve the math problems alongside the teacher and really interacting with the concepts. In addition, I received valuable feedback from my peers that gave me ideas of how to enhance my teaching and allowed me to see myself the way my students must see me. For example, my observers pointed out that I was turning my back to the class while I pointed to figures on a slide, which was causing me to lose my audience's attention. Problems like these are easily fixable once you are aware of them, and addressing them can do a lot to improve your teaching. I hope to continue receiving feedback about teaching from my peers in the future, as I believe your teaching practices should never stop developing and improving to match the needs of your students.

Teaching and mentoring are, I believe, some of the more directly rewarding aspects of a research faculty's job description. However, to be truly successful in terms of student learning outcomes, it is crucial that the research in psychology & neuroscience inform the teaching practices of the faculty in the field, as we move towards a more student-centric teaching style. In addition, a bidirectional relationship between research and teaching is key to maintain vitality in the field and continue attracting students to become researchers themselves. In this way, teaching can make you a better researcher, as well as improve the outlook for the field as a whole in future generations. For me, teaching is a non-static, stimulating endeavor that will help keep me enthusiastic and engaged throughout my career, as the act of teaching itself requires that learning never stop.