



Ask Professor Sarah Bellum

Professor Sarah Bellum answers your questions on navigating the often-uncharted waters of early career development. Professor Bellum is communicated by Patricia L. Clark, Associate Professor of Chemistry & Biochemistry at the University of Notre Dame and member of the Society since 1994. Do you have a question for Professor Bellum? Send it to sarahbellum@biophysics.org. Your privacy is assured!

Work More: Harder and Smarter

Q: When I started grad school three years ago, my advisor made a big deal about how he didn't care what hours I kept as long as I am productive. But today he called me into his office to lecture me about how I am not working hard enough. Here's what really made me mad: He specifically objected to me arriving at 10:00 AM and leaving at 5:00 PM, even though he keeps the same hours! This is so unfair! How can I politely point out that he is applying a double standard here?

A: First, let's clarify expectations. All advisors want their students to work long hours, but much more important than logging long hours in lab is productivity. Advisors rely on graduate student productivity to advance the lab's research projects, generate results for research articles and ultimately lay the foundation for the next round of grant proposal applications. Productivity is important for you too: productive graduate students complete more substantial dissertation projects, and a substantial dissertation project will increase the number of opportunities available to you as you contemplate the next step in your career development.

Research articles are the ultimate manifestation of your productivity. So, get your experimental system up and running as quickly as possible. Master the literature in your field and become known as someone who reads broadly and deeply. Act swiftly to resolve the technical problems that you will undoubtedly encounter so that you can pro-

duce publication-quality results as fast as possible. Discuss your project and results with your advisor in a way that makes it clear that you are spending considerable time thinking deeply about your project, its implications and future directions. When the time comes, draft manuscripts and complete other writing projects quickly.

Are you doing all of this already? If you are only working from 10:00 AM to 5:00 PM each day, I seriously doubt it. Even if you were operating as efficiently as humanly possible, seven hours a day is unlikely to provide enough time to make substantial, timely progress on all of these various dimensions of a significant research project. You need to spend more hours working per day. Even more importantly, you need to make sure that those work hours are productive. I have explored this topic in a previous column,^[1] but in a nutshell some people are very efficient at converting hours spent in lab into publication-quality results. Others are less efficient—and that is OK, as long as it is crystal clear that their lower efficiency will require more work hours in order to achieve the same level of productivity over the long term.

In your case, it sounds like you do need to increase the number of hours you are working, and perhaps also increase your per-hour productivity. It is worth noting that some advisors do find it hard to believe that their graduate students are working productively unless they can see that progress with their own eyes. This can create problems if you are a night owl but your advisor is an early bird: Your advisor only sees you roll in at 10:00 AM (or later), but since he leaves at 5:00 PM, he doesn't see you toiling late into the night, or on weekends, and hence might assume that not much (if anything) is getting done. Again, the most effective way to stop such concerns in their tracks is to produce publication-quality results at a rate that your advisor considers satisfactory (or even better, excellent).

^[1] <http://www.biophysics.org/LinkClick.aspx?fileticket=3rOkhfugSfw%3d&tabid=544>

What about the double standard you mentioned, that your advisor spends only seven hours a day in his lab/office but expects you to work much longer hours? Part of this might pertain to your relative levels of efficiency, but I suspect that a more careful inspection will also reveal that your advisor also spends many hours working from another location. Simply put, your advisor's job and workload are very different from yours. Your advisor probably teaches, and lecturing and lecture prep might occur entirely away from your view. Indeed, by the time your PI arrives at his office at 10:00 AM he might already have logged three or more hours preparing and delivering a lecture. Likewise, proposal-writing, manuscript-writing and literature-reading are all tasks that your advisor might prefer to undertake from home or another quiet location, because in the office/lab they are more likely to encounter distractions (even the good kind of distractions, like talking over your most recent results) that can seriously impede progress. In addition, your PI probably spends many hours per week tied up in service obligations such as curriculum meetings or other committee work—additional commitments that extend his work day but are not particularly visible to you.

For all these reasons, you should not use the amount of time that your PI spends in his office/lab as a ruler against which to measure the amount of time you will need to spend in lab in order to be productive at the level required to complete a PhD project in a timely fashion. Instead, ask to sit down with him and together set clear expectations about how long it might reasonably take for you to complete the tasks currently on your to-do list. These will, of course, be rough estimates, as progress in lab tends to proceed in fits and starts (with many 'stops' along the way), but going through this exercise should be an eye-opening experience for both of you, and ultimately improve the lines of communication between you and your PI. It might also require you to educate your advisor on exactly how much time and effort is required to achieve some of your goals: in general, the longer a PI has been out of the business of doing experiments themselves, the easier it can be to lose touch with exactly how long some assays or setups require. But be very careful not to fall into the trap of whining that

your advisor "just doesn't understand" how hard it all is—your advisor probably has a much better handle on graduate student time and productivity than you realize. Remember, for example, that it is relatively easy for him to compare your rate of progress against other graduate students who are working on similar problems.

It might also be illuminating to ask your advisor to estimate how many hours he works per week, where he works, and how he divides up his time between competing priorities (writing proposals versus preparing lectures versus attending committee meetings, etc.) as a guide for you. This discussion might reveal, for example, that your advisor has developed some multi-tasking strategies that you might be able to apply to your own priorities, in order to help you make more productive use of your hours in lab.

In conclusion, it sounds like you have been delivered a well-deserved warning. Take it in the best possible way, and use it as an opportunity to start a dialogue with your advisor about how to increase your productivity up to the level required to complete a substantial PhD project in a reasonable amount of time. That scenario will be win-win for both of you.

Members in the News



Amitabha Chattopadhyay, Centre for Cellular & Molecular Biology, India, and Society member since 1984, was recently admitted to the Category of Fellow of the Royal Society of Chemistry.



Cynthia Wolberger, Johns Hopkins University School of Medicine, and Society member since 1995, received the 2013 Dorothy Crowfoot Hodgkin Award from the Protein Society.



Charles Sanders, Vanderbilt University Medical School, and Society member since 1992, was awarded the 2013 Hans Neurath Award from the Protein Society.