



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, founder of the Early Careers Committee and a member of Council. Do you have a question for Professor Bellum? Send it to sarahbellum@biophysics.org. Your privacy is assured!

Who is sliding here?

Q: Since I started grad school three years ago, the PhD program in my department has been sliding downhill. Students who are clearly weak (and in my opinion have no business being in grad school) have nevertheless passed their oral exams, and every year it seems like the entrance standards for new students get lower. Some of my classmates agree that they see the same trends. I am worried that by the time I graduate my degree will not carry as much prestige as it should. This is really affecting my motivation: my advisor just had me in for a chat/scold regarding how scarce I have been in lab over the past month. I am really beginning to wonder: Should I finish my PhD here, or transfer to a better school?

A: It sounds like what is sliding downhill here is not your PhD program, but your personal progress through graduate school. You need to spend more time worrying about yourself and your own progress, rather than worrying how your classmates' successes or failures reflect upon you.

My suggestion for you is to first look inwards, and clarify why you want a PhD degree. Be honest with yourself: Do view a PhD as a prestige thing, a validation of how smart you are? That is unfortunate, because a surprisingly small percentage of what makes a graduate student successful has to do with being smart. PhD

degrees are awarded for a significant body of independent study and research. Achieving this requires a mixture of smarts, creativity, technical skills, hard work, self-motivation, time management, teamwork, and excellent communication skills (oral and written). Of these skills, “smarts” is by far the easiest to quantify, in the form of exam and course grades. But grades alone are a lousy predictor of success in graduate school. Every PhD program could produce a long list of non-graduates who entered the program with stellar GRE scores and/or undergraduate transcripts and flamed out before they made it to their thesis defense. Science is, however, full of success stories built on hard work, perseverance, and self-knowledge. Even *Louis Pasteur* confided: “My strength lies solely in my tenacity.” Hence while those “weak” students in your PhD program might not be as smart as you, it sounds like they have successfully demonstrated to their committee that they have the broader skill set required to succeed in graduate school.

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Under the best of circumstances, succeeding in graduate school is hard. The hours are very long, the pay is very low, a lot of the day-to-day tasks are very repetitive, and most experiments fail. It is very hard to have Pasteur-like tenacity under these conditions unless you really want something that you can get only if you have a PhD degree—often, this is a career in research and/or teaching, but other motivations are certainly possible. If you do indeed want something that requires having a PhD, the next step is to critically evaluate your skills. Are you determined? Can you work hard? Are you known for seeing projects through to completion, even through a stage that is boring to you? Are you open to new ideas, and willing to put in the time and

effort required to learn new things? Are you motivated to do things on your own, or do you need a rigid structure (and constant reminders) in order to be productive? Notice that these considerations are entirely independent from how smart you are, what your GRE scores were, or how much you loved your undergraduate research project.

You sound like a smart student with high grades who has now hit the wall of graduate school. You have finished your structured course work and oral exams, and started that long slow trudge through your research project. As a third-year student, you are probably still at the stage where your experiments fail much more often than they succeed, and your mastery of the literature and techniques relevant to your project is far from complete. An honest look forward at what the next few years of graduate school holds for you includes a lot of hard work, and this work will only be accomplished if you learn how to avoid procrastinating and manage your time better.

Be honest with yourself: Can you succeed in that environment? Do you have the tenacity to persevere with your research project? I fear not, given that you are already having troubles staying motivated. Sit down and carefully re-evaluate your career goals. It does not matter that you were the smartest student in your entering class: if you cannot master the other skills required to succeed in graduate school, it is unlikely you will make it through your PhD program. And changing programs is unlikely to improve your chances of success. That can be a very discouraging, scary realization, but the sooner you come to grips with your situation, the sooner you can change your trajectory towards a goal better suited for your skill set.

Success in graduate school is a personal journey. When it works well, graduate school comes with a large dose of self-discovery and skill-building. In contrast, students who fail at graduate school often lack self-awareness. This can lead them to

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blame others (their advisor, thesis committee, classmates) for their failures, rather than looking inwards. Other students gain self-awareness, but ultimately realize that graduate school is not for them. In my eyes, this too is a different form of success, because they have come one very big step closer towards figuring out what will work for them.



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