

Grant-Writing Tips for Graduate Students

By Lisa Patrick Bentley

Financial pressures have shifted grant writing to the forefront of skills that graduate students need to survive academic life. Some students receive instant gratification and get a grant the first or second time they apply. Far more common are repeated rejections.

With any luck, the agency or foundation that denied your grant proposal sent along comments from reviewers along with the rejection letter. But what if you take their advice, revise your proposal, and it still gets turned down? Is there a secret to grant-writing success as a graduate student? In the hope that one exists, and as a postdoc myself, I surveyed 104 graduate students with 2009 fellowships in the life sciences from the National Science Foundation, 64 postdocs with 2009 NSF fellowships in biology, and 22 graduate students who applied for grants unsuccessfully.

Some of their advice was obvious: Write about a project that excites you. Make sure it's achievable and has the potential to contribute new knowledge. Make sure your results will be interesting to journal editors. But they also offered plenty of suggestions that were new to me. The tips that follow constitute a combination of my personal advice on the art of writing a grant with the science of the survey responses.

Know your grant agency. Look at an agency's calls for proposals—especially the ones that interest you the most—to see what its funding priorities are for the year. Then call the program officer or appropriate grant representative to confirm that you and your project qualify. Don't be afraid to make that call, and don't think that only experienced PI's (the grant world's jargon for "principal investigator") call an agency. In my survey, 16 percent of graduate students and 49 percent of postdocs who had received research money spoke directly with someone at NSF at least once (and sometimes more than three times) regarding their proposal.

Think, talk, write, reread, rewrite, repeat. Discuss your proposal with as many people as possible before you start writing to ensure that you have a solid experimental design. Have many different types of people (peers, mentors, family members) review your entire application proposal.

If you doubt this step is crucial, believe the statistics: 63 percent of graduate students who did not receive a grant had only one to three people read their proposals. But 21 percent of the successful graduate students had seven or more people review their grant proposal before submission. Postdocs seemed to have recognized the importance of this strategy, as well, as 32 percent reported that four or more people had reviewed their proposal before submission.

Really talk to your advisers and peers. They might be busy, but they want you to get funded. They write their own grants and have most likely overseen other students' proposals. Think about organizing weekly or monthly meetings with a group of peers to review each other's work. In addition, some universities or laboratories keep successful student-grant proposals on file that you can use for reference as you write your own.

Be specific in stating testable hypotheses. Add preliminary data (your own data, your adviser's, or from the literature) to your proposal corroborating your hypotheses, theory, and/or methodology. You want to show that your project is doable and that you have thought about a framework in which you will interpret, analyze, and present your results.

Don't forget to include relevant literature. Keep organized files of PDF's to help streamline the writing process. Invest time in learning how to use reference software. Reviewers want to know that you recognize the importance of familiarity with past research in your topic area, so cite a range of papers that includes research conducted before 2000.

In addition, list your relevant first- or co-authored publications in your application. Don't worry if you don't have a first-authored publication yet—67 percent of funded graduate students in my survey did not include any of their own publications. Just don't forget to keep publishing in graduate school if you are thinking of applying for a grant as a postdoc: 36 percent of funded postdocs in the survey listed two or more first- or co-authored publications in their grant proposals.

Start the application months early. Sure, you can pull together a quiz at the last minute for that laboratory course you are teaching, but don't put off working on your grant proposal. From the pool of graduate students I surveyed who received NSF fellowships, 27 percent spent a month preparing their proposals for submission, 24 percent spent two months, and 19 percent spent three months. Only 3 percent of the successful students spent a week preparing their submission. On the other hand, 23 percent of the unfunded students in the survey spent only a week preparing their applications.

Last but not least, don't wait until five minutes before the deadline to submit your application. Computers crash, electricity goes out, and servers go down.

Don't save the hardest bits of the application for last. Many people find the project summary, the "intellectual merit" section, and the "broader impacts" section to be the most difficult to write. Read the project summaries of successful grant recipients; many of those summaries are posted online by grant agencies for reference. If you are confused as to what really counts for intellectual merit or broader impacts, talk to your advisers or other students who have had proposals accepted. If all else fails, call the grant agency and ask!

Emphasize your most important points in a bold, concise, and logical way. Reviewers have a short amount of time to read multiple applications. Consider using bulleted lists instead of long narratives, especially in your research statement. When I was in graduate school, the consensus seemed to be that inserting statistics and numbers into your proposal would help guarantee its acceptance. But don't always believe what you hear: 74 percent of funded graduate student proposals in my survey did not include such numbers. So don't insert figures into your proposal because you think they're necessary; only add them if they improve its readability or help describe methods and preliminary results.

Don't take rejection too seriously. Every successful scientist has had grant proposals turned away. It's part of the process. Take the reviewers' comments to heart and talk to an appropriate program officer regarding resubmission.

While I recognize that this list does not cover everything, it should give you a good start for rethinking your grant writing. Preparation, perseverance, and a positive outlook can make a difference.

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