Writing A Successful GSA Grant Proposal

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Each year, GSA funds approximately half of the proposed graduate student research grants. In addition to providing our graduate student members with the means to complete their research, this program gives them an introduction to the all-important skill of proposal writing. Here, we provide some suggestions to help the next generation of scientists develop this skill. To augment this piece, you can find resources at **www.geosociety.org/grants/ap_tips.htm.**

Like all grant proposals, GSA's has rules that you need to read and follow if you hope to get funded. Before you begin writing, read the policies and procedures at **www.geosociety.org/grants/gradgrants.htm.** Note the deadline—NO LATE SUBMISSIONS! Note eligibility, and what items are permitted in your budget.

Your proposal will be evaluated on six factors: how well you address each of the four sections, your figure, and the overall writing in your proposal. The four sections ask you to

1. Present the problem, hypotheses, and overall project objectives;
2. Discuss the scientific and, if appropriate, societal importance of your project;
3. State your research plan and how it will test your hypotheses; and
4. Provide an itemized budget with detailed justification for each item.

The core task of your proposal is to identify a real scientific question or problem, develop hypotheses, and convince the reviewers that it is an important problem worthy of funding, that you have a plan for testing your hypotheses, and that you have carefully identified the costs involved in conducting your study. The vast majority of funded studies follow the scientific method (i.e., problem identification, propose hypotheses, develop/conduct tests, and evaluate hypotheses based on results). A subordinate number involve discrete solutions to a problem (e.g., the probability of an area/facility being inundated by lava as part of a volcanic hazard assessment). In either case you must clearly relate why and to whom the results of your study will be important. The best proposals focus on a scientific problem rather than starting with a specific field area. The motivation for your study cannot simply be "because nobody has studied this before."

Your research plan must describe in detail the steps you will take to address your question. A common mistake here is the lack of connection between problems/hypotheses from the first two sections and the tasks proposed in this section. Your planned study should test a hypothesis and state clearly how your proposed research will accomplish this task. This can be as simple as "Since the goal of this study is to determine if this fault was active during the Sevier orogeny or Miocene extension, I will determine U/Pb zircon ages of intrusions emplaced concomitant with slip on the fault."

Show that your work plan is carefully thought out, with methods that are necessary and sufficient to address the problem. Provide specific details. If you are mapping: what features, where, and at what scale? If collecting or analyzing samples: what, how many, with what methods or equipment? The scope of work also must be reasonable for the time frame you propose.

In many proposals, the budget section is treated as an afterthought. Nothing could be further from the truth; one of the easiest means of being denied funding is to include disallowed items in your budget. Your budget should be as explicit and realistic as possible. Determine the actual costs in detail (e.g., sample analysis, campsite and vehicle rentals, airfare, and baggage fees) and provide them on a per-sample/day/night/mile basis. Justify every item listed in the budget.

Perhaps the most important part of your proposal is your figure. This is your chance to present a figure that can explain what would require paragraphs of text. Location maps and photos of the fossil/mineral/etc. you'll be working on are great, but is it the best use of your figure? The strongest proposals tend to use multi-box figures illustrating the concepts to be tested in their studies. Design a figure specifically for your study. Be sure your graphics are clear and high resolution, and use text that is legible at a normal full-page viewing scale. A well-written caption is very helpful. Include legends, scale bars, and use colors and annotations that make the figure intuitive to understand.

Finally, take care with the proposal's language and writing style. Start paragraphs with strong topic sentences and keep the rest of the paragraph on topic. Avoid unnecessary technical jargon—the reviewers are professional earth scientists, but may be outside of your study's discipline. Explain and minimize acronyms (three or fewer). Check and re-check grammar and spelling. Check the math in your budget. Cite the work of others properly (the reviewers might have published on your topic!), using the superscripted reference numbering system to save space. And make sure that you have addressed the topic of each section and connected them logically to each other (problem/hypotheses, importance, research plan, budget, and justification).

Constructing a solid proposal not only improves your chance of receiving GSA funds; it also sets the stage for a successful research plan to generate interesting and useful results that the scientific community will want to see.

—Good luck!