

## Writing a Grant Proposal

*(by Michaela Panter, Yale University, July 2012)*

This resource is intended to provide guidance to students writing grant proposals, including in the form of a dissertation prospectus or fellowship application.

The main sections of a grant proposal are as follows:

The **Title** briefly summarizes your research topic and captures the reviewer's interest.

The **Abstract** details your research question, preliminary and proposed work, and the significance of the project in a concise paragraph. Again, this section should pique the reviewer's interest and prepare him or her for the rest of the proposal.

The **Specific Aims** should be novel without proposing too much. Clearly state two to four aims that are each focused on supporting your hypothesis, which should also be explicitly stated. Ideally, the aims should be independent, so that if one does not come to fruition, you can still pursue the others.

The **Background/Significance** section demonstrates your thorough understanding of the literature and provides justification for your proposed work. Unresolved issues and gaps in the field should be mentioned here. Note that many reviewers will read this section carefully, particularly because they may not be experts in your area.

The **Preliminary Results** section is relatively straightforward, outlining your recent research. This work should help to justify your hypothesis and demonstrate your capability as a scientist.

The **Proposed Work** section details specific potential experiments supporting each aim, as well as alternative approaches to pursue if obstacles arise. Similar to the preceding section, this section should demonstrate that completion of your aims is feasible and that you are technically prepared to complete the work, in terms of both resources and skills.

As you work on these sections, here are a few other pointers to keep in mind:

**Tailor your proposal.** Crafting your proposal for a specific funding institution requires a two-pronged approach. First, you should familiarize yourself with the specific guidelines detailed on the organization's website and tick these off a list as you write. Second, you should tailor your grant proposal to the specific funding institution's mission and focus. For example, the National Science Foundation (NSF) is known to frown upon proposals that are too clinical or applied, such as research on a specific drug or disease, while the National Institutes of Health (NIH) welcome research with clinical applications as well as basic science work.

**Sell yourself.** You need to prove to the reviewers that you are capable of performing the proposed work, which includes a deep understanding of the literature and issues in your field and the ability to plan, carry out, and possibly revise the appropriate experiments.

**Be explicit.** The reviewers may be trained in a field other than your own, so you should clearly define all terms and techniques and avoid making assumptions about your readers' background. However, reviewers who are not at all familiar with your topic are still intelligent scientists, so avoid oversimplification. To keep your reader on track, do consider periodically reiterating your hypothesis, aims, findings, and/or conclusions. Bolding or underlining your hypothesis and/or aims may also help to emphasize key points.

**Ask around.** Speak with colleagues who have previously passed their qualifying exams or successfully applied for funding to learn more about what your department or target institution prefers in a proposal. Discuss the proposal with your research advisor, if applicable, to verify the feasibility of your proposed experiments. Finally, consider asking a friend (or a writing advisor!) in a different scientific field to read over your proposal to ensure that it is clear to non-experts.