CAREERS

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It takes time and a team to win grants

Start and finish early, seek feedback and file before deadline, says **Ingrid Eisenstadter**.

In the 25 years that I have been director of grants for a small family foundation that supports scientific research, I have reviewed a few thousand grant proposals. All our applicants are people who were bright enough to get PhDs and MDs, but the proposals we receive tend to share the same flaws, whether they come from recent graduates or from researchers with years of experience.

Applicants often submit proposals in which the research protocol is insufficiently planned or explained. The language is sometimes too technical for reviewers who do not specialize in that discipline. The proposal text can be wordy or fails to convey the study's novelty or urgency. These problems inevitably result from applicants' failure to allow themselves enough time to write the proposal and to circulate it to colleagues, advisers and department heads for feedback. This pattern is repeated twice a year, every year, when our submission deadlines approach.

I am also amazed anew each time to find that most of our grant-seekers wait until five minutes to midnight to meet our published deadlines. Yes, we circulate and read last-minute applications, but we have less time to ask for clarification or extra information in this flood tide because the clock is ticking for our next board meeting. And foundations always get more good proposals than they can fund.

ALLOW ENOUGH TIME

Scientists cannot plan their protocols for hypotheses, goals, controls, methodologies and analyses and then write, edit, proofread, copy-edit, chart, graph and lay out their work effectively and error-free without input from colleagues. If your institution does not have an internal review process, then you are already at a disadvantage in the heated competition for funding and should take the initiative and ask your co-workers to critique your efforts. This means finishing your draft well in advance of submission dates. You need to give yourself enough time to polish your proposal — and to get useful, meaningful input on it. Two months ahead may not be too early.

Scientists are not trained as writers, and their applications would often benefit from editing. Although the proposals we receive do not usually contain vocabulary or grammatical errors, they are frequently repetitive. Often, the very point of the research is deeply buried in the proposal and does not emerge until well after a lengthy discussion of the background, when it should appear in a brief introduction or a summary at the top of the document. I also find with surprising frequency that important information — the current population of an endangered species, for example, or why a species should be studied at all — is missing, either because applicants think "everyone knows that", or because details are lost when the focus is on the big picture. Do not make this mistake — it results from being too close to your own work to read it objectively, and you can avoid it by seeking comment and by scheduling enough time into the process to let the ▶

▶ proposal rest for a week or two and then rereading it with a fresh eye.

For example, we once received a request for funds to study an endangered primate. Yet the applicant did not mention until halfway through the proposal that fewer than 300 of these animals had not yet been wiped out by *Homo sapiens*. I called the applicant and suggested that they add that number to the proposal's title before I circulated it. The person said, *"Oh! Right!"*, laughed, quickly resubmitted — and was funded. Had that single mention of this crucial number been missing altogether, there is no knowing what the result would have been, especially if it had been submitted during our biannual flood tide.

DON'T FORGET THE DETAILS

Inadequately planned or poorly explained research are other common problems. These, too, can be corrected with input from a neighbouring bench or two. For instance, we recently heard from a scientist who put considerable effort into a proposal to study the effects of forest fragmentation on a naturally occurring hybrid tree. The regions to be compared included a swamp that had been drained to become a farm in colonial times; an artificially created urban park; a new suburban park; and others — all without any explanation for these site selections or, for that matter, of the broader significance of this choice of the tree for study. The application cited no references. It was not funded.

Another time, we received a proposal for a genetic study that clearly needed to include epigenetics, considering the speed with which the change under investigation had taken place.

These proposals, as written, should never have left their home institutions. Had they been reviewed by the applicants' colleagues, perhaps these basic problems would have been spotted in time for the applicants to recast their protocols.

Almost all the grant applications that we receive seek our maximum funding level, or an amount very close to it. In addition to coverage for supplies, lab fees, travel and other outlays, most applicants want salary support — whether or not they are obliged to raise their own salaries — and a contribution to the overheads of their institutions. I have spoken to many employees at other small- to medium-sized foundations who say the same thing. 'Shooting for the Moon' does not enhance your chances of funding.

Many foundations' websites provide a history of the grants that were funded, and you should use those figures to guide your budget decisions. In the United States, some foundations' websites include their annual federal tax forms (called Form 990), which list all the grants awarded each year. You should research this information well in advance of writing a grant, and tailor your application to the standards of the foundation to which you are applying. Include a budget justification that explains each expense, so that the foundation knows what it is paying for. There is no procedure that bars bargain-hunters from serving on foundation boards, and strong proposals that seek less rather than more may be more favourably viewed.

About 20 years ago, we got a request for US$700 — which had never happened before and has not happened since — from a researcher who wanted fieldwork support to study the threatened blue copper butterfly (*Lycaena heteronea*), a beauty of the western United States. We awarded the grant without hesitation. A year later, our lepidopterist reported that his butterfly was not as threatened as he feared. Our board of directors was as delighted as he was.

It is a mistake to assume that all the grant reviewers at non-government funding organizations who will ultimately vote on your proposal are scientists. Unless you are writing about particle entanglement, use plain and non-technical language whenever possible. If you do not, or if your topic makes that impossible, your proposal may well go to referees, leaving grant decision-makers to depend on someone else's opinion. If you start the application process with a letter of inquiry — a brief memo that discusses your work — you should already have planned your research and should know how much you need in funding. Consider including the amount of your grant request in the letter, because if you later submit a full proposal that asks for much more than what the board had expected, your chances of funding are diminished.

Funders do understand that letters of inquiry are sometimes vague about research plans because investigators are seeking expressions of interest before taking the time to prepare a detailed protocol and full proposal. Nonetheless, early-career researchers as well as senior scientists should realize that it is difficult for vague letters of inquiry

to compete with those that make it clear that there is a complete research plan behind them.

Subheads are an important navigation tool for proposal evaluators. Use them to highlight the importance and novelty of your work, and be clear; for example, write 'This species is now endangered', rather than 'This species is now on the IUCN Red List'. Even when you are following a specific question-and-answer formula created by the grant-giver, consider adding subheads to emphasize your proposal's strengths and urgency. Some grant-givers have such a strict set of questions that there is little opportunity to explain the goal or necessity of your work. If so, add an 'introduction' subhead to bring out these points, and if you keep the accompanying text to a few sentences that enable you to address the issue missing from the one-size-fits-all questionnaire, you may not get into trouble.

> *"Unless you're writing about particle entanglement, use plain and non-technical language whenever possible."*

ILLUSTRATE WELL

Similarly, photos, charts and graphs should highlight and emphasize the importance and significance of your work. Now that technology has facilitated the use of photos in grant proposals, we are seeing them more often. If you plan to use them, remember that they should be informational, not decorative. You also need to remember that evaluators will look at photos, charts, graphs and their captions before they read the text on that page, so captions should underscore the significance of the work.

It is also important to explain the future ramifications of your research after you complete the current phase for which you are seeking funding. That information is often missing. If your research will facilitate others' investigations, or will continue in some other way to ripple in the water, then say so, whether your proposed research programme is basic or applied. Do not leave the evaluators of your proposal to have to figure this out.

Most of the researchers and institutions that we have funded end all communication with us when we get their final reports. But every now and again, wise researchers send us copies of their publications as the years pass, along with a note that explains the relevance of the studies to the earlier work that we funded. This practice boosts your chances of success should you ever want to seek funding again. It is also the courteous thing to do. ∎

Ingrid Eisenstadter *is director of grants for The Eppley Foundation for Research in New York.*

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