



Some tips on preparing a proposal for an Israeli grant

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Much of an Israeli researcher's year revolves around grant funding cycles. We spend the summer writing proposals, submit them in the fall, read proposals and write reviews in the winter, and anxiously await a verdict in the spring. Because the competition is very tough, successful "grantsmanship" demands more than just good science; it requires an excellent grant proposal. The basic skills needed to produce such a proposal – to formulate and clearly articulate research ideas and sell them to knowledgeable peers – must be learned. In fact, these skills are taught rigorously in American colleges and graduate programs. Unfortunately, most Israeli researchers usually get thrown directly into the funding cycle with little or no preparation. In response to requests from a few colleagues, I here present a brief, incomplete list of suggestions which reflects my own personal experience as an Israeli grant proposer and reviewer. I hope it helps.

1. Identify an important topic and pinpoint your niche.

Any competently executed study can get published in some journal, but many reasonable grant proposal get a grade of, "good, but not good enough for funding" because the reviewers aren't convinced that the project is scientifically important enough. Although each of us is excited about the object of his own research, this enthusiasm is not necessarily shared by others in the field. If very few papers have appeared in excellent journals on this subject in the last few years, is that because it's new or because it's overlooked or rejected. Can you convince top researchers that it is important after all? If this subject has been the focus of intense research activity by many groups, what will be unique about your contribution. Is there a controversy you plan to resolve, or a novel approach you will introduce.

2. Articulate specific aims that are genuinely specific, and make it clear how you will know whether each aim has been achieved.

If you get this grant, you will sign a contract to get a lot of money to deliver answers to specific research questions. Of course, there is always a general aim such as contribute to the understanding of a disease, helping to improve the economy or shedding more light on one of biology's secrets. But this must be accompanied by a list of focused aims, that specifies what you propose to deliver. The more specific each aim is, the more likely the reviewer is to conclude that you plan to honestly assess whether it has been achieved. Aims such as "...to study..." or "...to explore..." are not very useful in this regard,. Better are, "...to determine (specific parameters)..." and "to distinguish between (two or more testable hypotheses)".

The gold standard of hypothesis-driven research proposals is the NIH grant. Look up the abstracts of funded NIH projects in your field, which are available on the web (http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen), to get examples of properly formulated specific aims. (Be very careful. Reviewers usually recognize prose they've seen before.)



3. Write a background section that makes your series of experiments seem logically inevitable.

The “Scientific Background” section of an Israeli grant proposal is often an obvious cut-and-paste mosaic from previous articles and proposals, with little specific focus on the central issues to be addressed by the experiments. While this doesn’t necessarily damage the proposal’s chances, it certainly doesn’t help them. Ideally, this section should focus on the objectives of the proposed research, and be presented in such a way that each paragraph summarizes an issue in a way that logically leads to the experiments you are proposing.

4. Demonstrate that you are a scholar.

While the bibliography should include some very early classical studies that reflect an appreciation for the history of the subject, it should rely most heavily on recent literature. Emphasis should be placed on original articles rather than reviews. Of course, one should cite work of those likely to be asked to review the proposal.

5. Demonstrate that you are technically a master of your craft.

Your published work is the best testament to your research abilities. If you plan to use a technique that is new to you, you should include preliminary data which shows that you have implemented it in your laboratory. Control experiments and statistical approaches should be explicitly elaborated. It is helpful to have a detailed materials and methods section, but unfortunately, space limitations often make this impossible. One possible solution is to write a brief methods section in the proposal, and refer to a very detailed description on a web page you have created specifically for this grant proposal.

6. Design experiments that directly address the specific aims.

7. Show that you are aware of potential pitfalls.

There are always potential pitfalls – technical difficulties, alternative explanations, uncontrollable factors, etc. Don’t try to ignore them, because the reviewers won’t. It’s a good idea to confront potential problems head-on, making it clear that you have thought about them and either have a strategy to deal with them, or a reason why they are not fatal. Also, if experiment B will be contingent on the outcome of experiment A, you should address the question, “What if experiment A doesn’t work, or its outcome is significantly different than expected?”

8. Be realistic about the amount of work that can be accomplished in the course of the funding period.

In Israel, it is common for a researcher to propose an overly ambitious project with far more experiments than could possibly be accomplished in the course of a 3 or 4 year grant period. This makes him appear impractical and lacking in experience. I have never heard of a proposal that was rejected because it was too focused and didn’t include enough work.

9. Don’t forget the specific needs of the granting agency.

Every funding source is governed by specific criteria, and it behooves you to read their literature carefully and understand their motivation. I once applied for a fellowship from a foundation that funds only basic science. In my proposal, I cut and



pasted a discussion that stressed the relevance of my work to a prevalent disease, and was told that I didn't get the fellowship because the board feared my work may not be basic enough. Two of the three primary sources available in Israel are binational foundations which were created to fund collaborative research. Both the BSF and the GIF take this collaborative nature of their mission very seriously. When you ask for their money, so should you. One approach is to travel to the proposed partner laboratory for a few days to discuss and plan the project together and to outline the specific nature of the collaboration.

10. Write in a style that is clear, simple and direct.

You want the reviewer to be happy, and the amount of time he is willing to devote to your proposal is limited. He should get your point at once, without having to plow through complicated, flowery text. All scientific style manuals agree that it is best to use short sentences and to write in the active rather than the passive voice. If English is not your mother tongue, have a native speaker go over your draft.

11. When asking colleagues to help you critically review your proposal, don't bring your ego.

With the possible exception of theoretical physicists, most of us will make an effort to avoid unpleasant confrontation, even if it means lying. When you ask a colleague's opinion, let him give it and don't argue with him. If he doesn't get what you're trying to say, perhaps you're wrong or perhaps he's wrong, or perhaps you're just not getting your message across. Listen, ask questions, and decide later what to do about his comments. Also, be tuned to subtleties of expression when talking to polite non-Israelis. When an American colleague says, "what you plan is very difficult and ambitious", he may not be saying "good for you!", but rather, "I think this won't work".

If, in the end, your proposal isn't funded, you will read the reviews carefully and try to figure out why. If you're in luck, a few of the reviewers will have made the effort to clarify in detail what bothered them. Often, however, even grants that don't make it get reviews that all seem to be positive. To help evaluate your situation, find out what grants in your field were funded, and seek opportunities to read successful proposals.

If you did get funded, congratulations. Now write another proposal! You celebrated at the beginning of the summer, which leaves you a few months to prepare for submission to a different agency in the fall. You'll find it easier and more interesting when there's a cushion of funding to take some of the pressure is off.