

## A GUIDE TO WRITING ANSEF GRANT PROPOSALS

This Guide is intended to help ANSEF Principle Investigators (PIs) organize and write their proposals. A good idea is a great beginning, but alone it is not sufficient to secure funding, especially when competition is very tight. The presentation of an idea is often as important as the idea itself. Each section of the proposal has a significant contribution to the reviewers' judgment of the overall quality of your research. We hope that this Guide will help new and experienced investigators hone their proposal writing techniques, and ultimately result in obtaining funding.

### 1. Get into the reviewer's mind

It is very helpful to know what the reviewers will look for when they read your proposal. The best way to write a good proposal is to judge it from a reviewer's perspective. A typical reviewer is an expert in your field but he/she may not necessarily be familiar with intricate details of your specific research area. The reviewer therefore will be inclined to recommend for funding a proposal that is clearly written and fits well with the proposal selection criteria. It is in your best interest as the PI, to make the reviewer's life easier by telling him/her how your proposal fits these criteria. Here are the decision factors that the reviewers will be using in assessing your proposal:

**Significance:** *Does this study address an important problem?*

**Approach:** *Are the concepts and design of methods and analysis adequately developed and appropriate to the aim of the project?*

**Innovation:** *Does the project employ novel concepts, approaches or methods? Are the aims original and innovative? Does the project challenge existing paradigms or develop new methodologies or technologies?*

**Investigator:** *Is the investigator appropriately trained and well-suited to carry out this work? Is the work proposed appropriate to the experience level of the principal investigator and other researchers?*

**Proposal:** *How well conceived and organized is the proposed activity? Is the review of the current state of knowledge in the field adequate?*

**Budget:** *Is the budget appropriate for the proposed project?*

Always keep these guidelines in mind when you prepare your proposal. We will be coming back to them as we discuss how each section of the proposal should be written.

## 2. What to put in the abstract

The *Abstract* is your chance to win the reviewer instantly. In order to do that you should put into one paragraph the essence of your entire proposal, and do it in a simple and compelling language. Perhaps the easiest way to write the *Abstract* is to mimic the structure of the proposal itself.

First you have to show that your project is very important. Describe in 2-3 sentences an unresolved issue that nobody has been quite successful in tackling and explain why it is imperative to resolve. This is the basic information that the reviewer should be able to get from your *Introduction* section.

Now is the time to say that you believe you can solve the problem. In 3-5 sentences describe how you propose to do it, and why you think it will work. Sometimes it is helpful to include the project *Objectives* to indicate what are the milestones that you will have to achieve in order to complete the work. This is the gist of information contained in *Objectives* and *Research Methods* sections of your proposal.

Many investigators prefer to write the *Abstract* after the proposal is prepared. If you decide to write it beforehand, you should at least re-read it after the proposal is complete, and see if any revisions are needed.

## 3. Body of the proposal

Here we follow the structure of the proposal template available on the ANSEF website. We advise that you follow this template, and the word count limits that it imposes. Please note that the template itself provides basic information about what should be described in each section of the proposal. We will now discuss each section in detail.

### INTRODUCTION

*Describe in simple terms the motivation of the proposal, its importance to the field in question, and the strategy to be used to tackle the problem.*

This is the section that the reviewers will look at to score your proposal on its *Significance* and *Innovation*. It will also give them some idea of how good an investigator you are.

Once again, try to answer reviewers' questions within your proposal. Explain why is the proposal significant, and what is innovative about it. We recommend writing this section in non-technical terms for the broader audience.

To address the *significance* of the problem, start with a literature review. A review of essential papers in the field will show the reviewer that you are familiar with the problem and aware of opportunities, gaps, and roadblocks in your field. Remember that if you leave out any important articles, reviewers will assume you're not aware of them. Make sure the literature you note here is also in your *References* section.

If you have done any previous work in the area, now is the time to present it. Be careful to separate other people's work from yours. In general, use this section to show the breadth of your knowledge of your field and highlight why you are uniquely qualified to do the research.

*Innovation* can assume different shapes. For example, you may propose an entirely new methodology/technique; or you might want to use an existing methodology in a new set of problems. In either case you should provide the following information:

1. Why is this technique preferable to existing techniques?
2. How do you propose to evaluate your technique against existing ones?
3. What specifics about the application/problem make the new technique a compelling choice? Just because it hasn't been done yet does not mean that it is worth doing.
4. What will you be able to do that no one else has been able to do so far?

## OBJECTIVES

Describe in detail the objectives of the proposal

You can look at the objectives of your research project as a list of things that you want to accomplish by the end of the grant, or in other words, your project milestones. Think of 2-4 basic goals that have to be achieved to insure the success of the project. These goals are your *Objectives*. The easiest way to present the objectives is to simply list them and provide a short explanatory paragraph to accompany each one. A well-written *Objectives* section indicates that you are capable of planning your research.

## RESEARCH METHODS

Describe in detail the research methods to be employed

When reviewers judge your application, the *Research Methods* section is likely to carry a lot of weight. It describes the experimental design and procedures, in other words it shows how you will perform the research. The reviewers will use the information contained in this section to judge the validity of your *Approach*.

There are many ways to present your *Research Methods*. Here are some possibilities that you can use, but feel free to choose any other format you like:

1. Create a timetable showing how and when you will accomplish your *Objectives*, including any overlap of experiments and alternative paths.
2. Use flow charts to show paths of experiments and how they progress, including paths that show alternatives that you will use in case you get negative results.
3. Write down in detail what you are going to do, how and when you are going to do it, and your criteria for success.

## EXPECTED RESULTS

Describe in detail what you expect the possible results to be.

This section is a good place to discuss what your expectations are, and also what you will do in case things go wrong. Examples of things that can go wrong are experiments that haven't worked, or theory that you've failed to validate. Here are some points you might consider presenting:

1. Describe the kinds of results you expect and how they would support continuing your project. Discuss other possible outcomes and contingency plans.

If your work is experimental, define the criteria for evaluating the success or failure of each experiment.

If your work is theoretical, explain how you will validate your theory.

Anticipate reviewers' questions about the feasibility of what you propose, e.g., how you will gain access to materials, equipment, or study populations.

## REFERENCES

All references used in writing the proposal should be listed in this section. If you've gained insight by discussing the problem with your colleagues (private communication), or used any unpublished results, please list these as such.

#### 4. Budget

The budget is an important part of your proposal. Most referees like to see a distributed budget rather than allocating the funds on a single item. A balanced budget includes multiple components such as personnel salary, equipment (if you plan to purchase any), materials, computer supplies, travel. In some cases a project might be purely theoretical and therefore not require much more than personnel salary.

#### 5. Personnel

The reviewers will pay a lot of attention to the team of investigators. The expertise of the PI and senior members of the team will be judged by their publications and other credentials. Student and young scientist participation is especially encouraged.

#### 6. Further reading

While this Guide has been written with specifics of the ANSEF proposal granting process in mind, the basic principles are almost invariably the same regardless of the funding agency. You will find endless resources on the art of proposal writing on the Internet. Some of the links that we have used in creating this Guide are listed below, but we encourage you to spend some time reading from other sources. Many funding agencies in the US such as National Institutes of Health ([www.nih.gov](http://www.nih.gov)) or National Science Foundation ([www.nsf.gov](http://www.nsf.gov)) have samples of successful proposals. We strongly recommend that you look at them. We wish you the best of luck in your endeavors!

<http://www.cs.wustl.edu/~cmg/NSF/nsf.html>

[http://era.nih.gov/ElectronicReceipt/prepare\\_app.htm#9](http://era.nih.gov/ElectronicReceipt/prepare_app.htm#9)

<http://www.niaid.nih.gov/ncn/grants/>

<http://www.niaid.nih.gov/ncn/grants/write/index.htm>

<http://www.niaid.nih.gov/ncn/grants/charts/checklists.htm#gbkg>