

# How to write a good research grant proposal

In the following a summary of many articles (see references below) on this topic is given.

## I. Purpose of a Research Proposal

A research proposal is intended to convince others that you have a worthwhile research project and that you have the competence and the work-plan to complete it.

The purpose of a proposal is to sell your idea to the funding agency. This means that the investigator must convince the funding agency that:

- The problem is significant and worthy of study
- The technical approach is novel and likely to yield results
- The investigator and his/her research team is/are the right group of individuals to carry out and accomplish the work described in the research proposal.

## II. Typical Proposal Format

### 1. Title Page:

Most sponsoring agencies specify the format for the title page, and some provide special forms to summarize basic administrative and fiscal data for the project. The title of your proposal should be concise, descriptive and accurate, and clear. A single sentence containing ten or fewer words is best.

### 2. Abstract

As in a technical paper, the proposal abstract should “abstract” the project for the reader. It should be a brief (100 - 200 words), tightly worded summary of the project, its objectives, the problem’s significance, the project’s scope, the methods that will be employed, the identity and relevant technical expertise of the research team, and the results that are expected to result. Be sure to write this section last so that its content indeed abstracts your proposal.

### 3. Table of Contents

Long and detailed proposals may require, in addition to a table of contents, a list of illustrations (or figures) and a list of tables. If all of these are included, they should follow the order mentioned, and each should be numbered with lower-case Roman numerals. The table of contents should list all major parts and divisions (including the abstract, even though it precedes the table of contents).

### 4. Introduction

The introduction section should introduce the research problem, its significance, and the technical approach your work will take to investigate/solve the problem. It should introduce the research team that will carry out the work.

### 5. Background

- This section should present a concise review of the primary relevant literature:
- Cite the key literature sources
- Be up to date
- Critically appraise the literature
- The background section should be constructed to inform the reader concerning where your study fits in. It should clearly state why your project should be done. Does your work:
- Take science in a bold new direction?
- Build on the prior work of others (whose?) in the field

- Address flaws in previous work (again, whose?)
- Develop infrastructure (instrumentation, methodology, collaborations) that will take science in exciting new directions

## 6. Preliminary Studies

If the project builds on past studies from your laboratory, then you should include a brief section .

## 7. Research Methodology

This section should outline your plan of attack. Specific information that should be contained in this section includes information on the research team and its technical expertise as it relates to the project,

## 8. Budget

The budget should identify the anticipated cost for everything (salaries, materials, instrumentation, travel costs, etc.). A budget justification typically accompanies the budget request. The budget justification is simply an explanation, item-by-item, stating why you must spend the money requested in order to carry out the experiments planned. There are two major components in a budget:

### **Direct Costs**

- Personnel Salary. .
- Fringe benefits refers to the costs incurred by your institution/employer in providing group health insurance....
- Materials and supplies
- Major Instrumentation (allow for inflation).
- Travel Costs
- Subcontractor Costs.

### **Indirect Costs**

Indirect costs on the other hand are the facilities and administrative costs that are incurred by your institution/employer in support of your research activities. These are typically assessed as a percentage of the direct costs for the project.

## 9. Timetable

Develop a time table (if possible in table form), indicating the sequence of research phases and the time that you will probably need for each phase. Take into account that at this stage, it can only be estimated, but make clear that you have an idea about the time span that will be needed for each step.

Example of a project timeline in chart format:

| Activity   | GY1 |    |    |    | GY2 |    |    |    |
|--|-----|----|----|----|-----|----|----|----|
|  | Q1  | Q2 | Q3 | Q4 | Q5  | Q6 | Q7 | Q8 |
| • Develop items for survey   | ■   |    |    |    |     |    |    |    |
| • Review and revise items with experts' panel.                         |     | ■  |    |    |     |    |    |    |
| • Pre-test items with representative sample of target population.      |     |    | ■  |    |     |    |    |    |
| • Program software to administer survey.                               |     |    | ■  | ■  |     |    |    |    |
| • Prepare survey sites for study.                                      |     |    | ■  | ■  |     |    |    |    |
| • Recruit and train Study Reps.  |     |    | ■  | ■  |     |    |    |    |
| • Recruit 1,000 subjects and administer survey at 5 sites.             |     |    |    | ■  | ■   | ■  | ■  |    |
| • Statistical analysis of data.  |     |    |    |    |     |    | ■  | ■  |
| • Preparation and submission of manuscripts to peer-reviewed journals. |     |    |    |    |     |    |    | ■  |

## 10. SWOT

SWOT stands for Strengths, Weaknesses, Opportunities and Threats. It is a way of summarizing the current state of a managing body.

While business leaders have applied SWOT for many decades, SWOT analysis is now introduced for research projects and successful funding. In fact every project is a risk, and performing SWOT analysis could help us evaluate/eliminate unnecessary issues that may arise, or if nothing else, prepare them in the most scientific way possible.

SWOT thus includes:

**Strengths:** which may be summarized in:

What do you do well?

What unique resources can you draw on?

What do others see as your strengths?

**Weaknesses:** which may be summarized in:

What could you improve?

Where do you have fewer resources than others?

What are others likely to see as weaknesses?

**Opportunities:** which may be summarized in:

What good opportunities are open to you?

What trends could you take advantage of?

How can you turn your strengths into opportunities?

**Threats:** which may be summarized in:

What trends could harm you?

What is your competition doing?

What threats do your weaknesses expose you to?

## 11. Curriculum Vitae for Principal Investigators

### 12. Appendix

This ancillary section should be used only to provide secondary information that is relevant to the research project. For example, if you are collaborating with another investigator, it is appropriate to obtain a letter from him/her.

### 13. Literature review

The literature review serves several important functions:

- Ensures that you are not "reinventing the wheel".
- Gives credits to those who have laid the groundwork for your research.
- Demonstrates your knowledge of the research problem.
- Shows your ability to critically evaluate relevant literature information.
- Indicates your ability to integrate and synthesize the existing literature.
- Convinces your reader that your proposed research will make a significant and substantial contribution to the literature (i.e., resolving an important theoretical issue or filling a major gap in the literature).

### III. General Suggestions

- There is no substitute for a good idea.
- Read the eligibility rules: Take a hard look at the priorities of the funding body you are applying to.
- Give them what they want: Read the application instructions thoroughly and follow them carefully.
- No unexplained jargon: getting your message over in the clearest way in the available space. Make sure the reviewer "gets it" and is excited about what is proposed.
- Explain why research is needed: It's good to explain why it is important for a piece of research to be done now (at the time of application). Make sure in every paragraph you write, the message of the paragraph is contained in the first sentence.
- Ask a friend, and/or colleague to review your proposal.
- One harsh reality is that colleagues submitting proposals in parallel with you are also very good at research, so many excellent applications don't get funded with the available funding. So, interpret referees feedback carefully to be ready for the next proposal, **but also if rejected, revise your proposal and apply again.**

### IV. Common Mistakes in Proposal Writing

- Failure to delimit the boundary conditions for your research.
- Failure to cite landmark studies.
- Failure to accurately present the theoretical and empirical contributions by other researchers.
- Failure to stay focused on the research question.
- Too much detail on minor issues, but not enough detail on major issues.
- Too much rambling -- going "all over the map" without a clear sense of direction. (The best proposals move forward with ease and grace like a seamless river.)
- Too many citation lapses and incorrect references.
- Too long or too short.
- Failing to follow the APA style (Free Tutorial: The Basics of APA Style)
- Slopping writing.

### V. Writing Tips

- Prefer the active rather to the passive voice. For example, write "We will develop a cell line," not "A cell line will be developed."
- Keep related ideas and information together, e.g., put clauses and phrases as close as possible to - preferably right after the words they modify.
- Simplify and breakup long, involved sentences and paragraphs. In general, use short simple sentences; they are much easier on the reader. Your goal is communication, not literature.
- Edit out redundant words and phrases. Edit and proofread thoroughly. Look carefully for typographical and grammatical mistakes, omitted information, and errors in figures and tables. Sloppy work will definitely suffer in review. Reviewers feel that if the application is sloppy or disorganized, the applicant's research may be as well.
- Verify that the title, the abstract and the content of your proposal clearly correspond to each other!

## VI. Reviewing Process:

- The majority of grant programs recruit academic reviewers with knowledge of the disciplines and/or program areas of the grant. Thus, when writing your grant proposals, assume that you are addressing a colleague who is knowledgeable in the general area, but who does not necessarily know the details about your research questions.
- Remember that most readers are lazy and will not respond well to a poorly organized, poorly written, or confusing proposal. Be sure to give readers what they want. Follow all the guidelines for the particular grant you are applying for. This may require you to reframe your project in a different light or language. Reframing your project to fit a specific grant's requirements is a legitimate and necessary part of the process unless it will fundamentally change your project's goals or outcomes.

Review rating criteria include among others:

- Significance
- Approach
- Innovation
- Investigator
- Environment

Key questions reviewers ask:

- How high are the intellectual quality and merit of the study?
- What is its potential impact?
- How novel is the proposal? If not novel, to what extent does potential impact overcome this lack? Is the research likely to produce new data and concepts or confirm existing hypotheses?
- Is the hypothesis valid and have you presented evidence supporting it?
- Are the aims logical?
- Are the procedures appropriate, adequate, and feasible for the research?
- Are the investigators qualified? Have they shown competence, credentials, and experience?
- Are the facilities adequate and the environment conducive to the research?

Problems and Concerns Commonly Cited by Reviewers

- Lack of significance to the scientific issue being addressed.
- Lack of original or new ideas.
- Proposal of an unrealistically large amount of work (i.e., an over ambitious research plan).
- Scientific rationale not valid.
- Project too diffuse or superficial or lacks focus.
- Proposed project a fishing expedition lacking solid scientific basis (i.e., no basic scientific question being addressed).
- Studies based on a shaky hypothesis or on shaky data, or alternative hypotheses not considered.
- Proposed experiments simply descriptive and do not test a specific hypothesis.
- Rationale for experiments not provided (why important, or how relevant to the hypothesis).
- Lack of alternative methodological approaches in case the primary approach does not work out.
- Insufficient methodological detail to convince reviewers the investigator knows what he or she is doing (no recognition of potential problems and pitfalls).
- Investigator does not have experience (i.e., publications or appropriate preliminary data) with the proposed techniques or has not recruited a collaborator who does.

- The proposal lacks critical literature references causing reviewers to think that the applicant either does not know the literature or has purposely neglected critical published material.
- Not clear which data were obtained by the investigator and which others have reported.

## References:

The University of North Carolina – The Writing Center. (n.d.). Grant Proposals (or Give me the money!). [WWW page]. URL <http://writingcenter.unc.edu/handouts/grant-proposals-or-give-me-the-money/>

Economic and Social Research Council. (2014). How to write a good research grant proposal. [WWW page]. URL <http://www.esrc.ac.uk/funding-and-guidance/applicants/how-to.aspx>

The Guardian - Higher Education Network Blog. (2014). Research funding: 10 tips for writing a successful application. [News Bulletin]. URL <http://www.theguardian.com/higher-education-network/blog/2013/apr/19/tips-successful-research-grant-funding>

Jones, S. P. & Bundy, A. (n.d.). Writing a good grant proposal. [WWW page]. URL <http://research.microsoft.com/en-us/um/people/simonpj/papers/proposal.html>

Utah State University. (2014). Great Proposals. [WWW page]. URL <http://rgs.usu.edu/studentresearch/htm/skills-and-resources/great-examples/great-proposals>

Wong, P.T. P. & Psych, C. (n.d.). How to Write a Research Proposal. [WWW page]. URL [http://www.meaning.ca/archives/archive/art\\_how\\_to\\_write\\_P\\_Wong.htm](http://www.meaning.ca/archives/archive/art_how_to_write_P_Wong.htm)

National Institute of Neurological Disorders and Strokes. (2014). How to Write a Research Project Grant Application. [WWW page]. URL [http://www.ninds.nih.gov/funding/write\\_grant\\_doc.htm](http://www.ninds.nih.gov/funding/write_grant_doc.htm)

Study Guides and Strategies. (2014). How to write a research proposal. [WWW page]. URL <http://www.studygs.net/proposal.htm>

Santelmann, L. (2001). Outline for Research Proposal. [WWW page]. URL <http://web.pdx.edu/~dbls/proposals.html>

University Library - University of illinois at urbana-champaign. (2014). Writing a Research Proposal. [WWW page]. URL <http://www.library.illinois.edu/learn/research/proposal.html>