GRANT WRITING WORKSHOP

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OVERVIEW

1. Overall Goal of the Proposal
2. Parts of a Grant
3. Discussion of the Components
4. How to Approach the Research Design
WHAT IS THE OVERALL GOAL?

The goal of the grant proposal is to get $$$ money $$$ to do the work!!
Know the agency you’re applying to:

• Do you qualify to apply?
• Does your interest match the aim of the grant?
• Is the agency really interested in your project?
• Is the timeframe realistic?
• Is the amount offered sufficient?
• Who will review the proposals?

• Understand & follow published application process!
SO WHAT IS THE APPROACH TO ACCOMPLISH THE GOAL?

You must “SELL” the POTENTIAL

Convince Reviewers of the IMPACT!

Convince Reviewers YOU should do it.

Convince Reviewers to PAY you to do it.
Reviewer’s Perspective

• Will reviewer ask:
  • So what?!  
  • Why is s/he wasting my time?
  • What the heck is s/he talking about?
COMPONENTS OF PROPOSALS

Often include:

• Abstract
• Budget
• Key Personnel
• Research Plan
• Protection of Human/Animal Subjects
• Letters of Support
• Etc.
# PARTS OF A RESEARCH PLAN

(may be more applicable to STEM fields)

<table>
<thead>
<tr>
<th>Section</th>
<th>Approx. Length</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Aims</td>
<td>1</td>
<td>WHAT do you intend to do? HYPOTHESIS. IMPACT</td>
</tr>
<tr>
<td>Background/Significance</td>
<td>2-3</td>
<td>WHAT has already been done? WHY is your proposal important? WHERE are the knowledge gaps?</td>
</tr>
<tr>
<td>Preliminary Results</td>
<td>3-4</td>
<td>WHAT have you done to support your proposal? HOW do the results support the central hypothesis?</td>
</tr>
<tr>
<td>Research Design &amp; Methods</td>
<td>7-9</td>
<td>WHAT is the rationale for each Specific Aim? HOW will you accomplish the Specific Aim? HOW will you analyze the results? WHAT are the expected outcomes? WHAT are the alternative approaches?</td>
</tr>
<tr>
<td>Total Pages</td>
<td>15</td>
<td>12</td>
</tr>
</tbody>
</table>
SPECIFIC AIMS

Very important part of the grant
Sets the tone for the reviewer

Writing style/content

*Can turn a reviewer off right away if this section is poorly laid out*
SPECIFIC AIMS

• Typically should fit on ONE PAGE
  • Has THREE parts

1) Rationale/Broad Objectives
2) HYPOTHESIS
  • 3) Specific Aims
SPECIFIC AIMS

1. Rationale/Broad Objectives

• This should be one or two paragraphs

• Give “fundamental reason” for the study

  • Highlight the knowledge gaps

  • Highlight most recent findings
SPECIFIC AIMS

2. HYPOTHESIS

What is it?

1. NOT merely a description
2. Not a “fishing expedition”
SPECIFIC AIMS

HYPOTHESIS, cont.

What is it?

Statement of a problem that can be tested & predict a possible outcome
SPECIFIC AIDS

HYPOTHESIS, cont.

IT IS A STATEMENT!

NOT A QUESTION.

IF . . . THEN . . .

Must be Testable!
SPECIFIC AIMS

HYPOTHESIS, cont.

• Discuss the hypothesis either in the middle or at the end of the Specific Aims paragraph

• Tie proposed outcomes to the hypothesis

• Include the HYPOTHESIS in BOLD TYPE
SPECIFIC AIMS

3. Specific Aims
to reach Broad Objectives

Directly address (test) the hypothesis
SPECIFIC AIMS

Specific Aims, cont.

There should be NO MORE THAN ONE AIM FOR EACH YEAR OF THE GRANT
SPECIFIC AIMS

USE ACTIVE TERMS that suggest completion

DETERMINE, CHARACTERIZE, EVALUATE, QUANTIFY, GENERATE

Never make statement suggesting it won’t work

You will not ATTEMPT . . . you will DETERMINE
SPECIFIC AIMS

Each SA should be able to STAND ALONE

If the whole project is based on:
the success of ONE experiment or
the completion of ONE aim

... it will not be reviewed successfully
SPECIFIC AIMS

3.a. SUB-AIMS

• OK to include if there is room

• Not necessary if specific aims page is strong

• Avoid if space is an issue
BACKGROUND AND SIGNIFICANCE

Provides an OVERVIEW of the MOST RELEVANT literature in support of your proposal

DO NOT ASSUME THAT THE REVIEWER WILL BE FAMILIAR WITH THE DETAILS OF YOUR EXPERIMENTAL SYSTEM
BACKGROUND & SIGNIFICANCE

• 2-3 pages
• Demonstrate your understanding
• Justify need for the study
• “Assess” the knowledge gaps
• “Evaluate” most recent findings
• Remain scientific/unbiased
• Avoid inflammatory/provocative statements
BACKGROUND AND SIGNIFICANCE

Pick the topic areas for this section carefully

Do not waste space on items that are not directly relevant to your project

Prepare a DETAILED OUTLINE prior to writing any prose
BACKGROUND AND SIGNIFICANCE

Use subheads and have the topics “flow” and “build” on each other

At the end of each section, include a statement that relates the content back to your Specific Aim

The studies detailed in the current proposal will . . . 

Use ITALIC or BOLD to bring this out
BACKGROUND AND SIGNIFICANCE (STEM Fields)

Suggested starting points for background section

Start more broadly - work your way to detail

Overview of your pathway
Summary of work on your pathway in your model
Detail of your protein/gene
How your protein/gene impacts disease
BACKGROUND AND SIGNIFICANCE  
(non-STEM Fields)

Suggested starting points for background section

Start more broadly - work your way to detail

Overview of literature published in your research area

What are the gaps in the literature?

How does your project “add new information”?

What is your project’s connection to other areas?
BACKGROUND AND SIGNIFICANCE

A picture or figure is worth 1,000 words!!!

STEM Fields

Schematics of the pathway
Schematic of protein domains
Table of relevant genes and their names etc.
BACKGROUND AND SIGNIFICANCE

Last subhead of this section should be titled:

SIGNIFICANCE OF PROPOSED RESEARCH

Reiterate how your work will:

- fill in the knowledge gaps that you identified or
- address the specific problem that you outlined
PRELIMINARY RESULTS (2-4 pages)

• Establishes your experience/competence for this project

• Shows study is feasible

• Show YOU can do it
PRELIMINARY RESULTS, cont.

• Discuss studies you have done related to this project

• Add anything else showing your competence
  – Preliminary data that RELATES TO THIS PROJECT

• Give references for related publications, manuscripts submitted or accepted
RESEARCH DESIGN & METHODS

SOME GENERAL POINTERS

• A grant proposal is not a research paper

• Each SA section should have consistent format
  (SA and sub aims that address a specific question)

• Each aim should have a rationale or statement of purpose

• Each section should flow and build on the previous

• Each section should have Outcomes and Alternatives presented
RESEARCH DESIGN & METHODS

KEEP IT SIMPLE, STUPID (KISS)

It may seem intuitive that you want the grant to be complex to show your abilities

it is better to keep it simple and straightforward
RESEARCH DESIGN & METHODS

KEEP IT SIMPLE, STUPID (KISS)

Don’t get bogged down in experimental detail. You do not need to explain standard techniques in a step-by-step manner.

Indicate:
• WHY you chose to do a particular experiment
  • WHAT it will tell you
• HOW you will interpret it & ultimately use the results
RESEARCH DESIGN & METHODS

TELL THEM WHAT YOU WANT TO DO AND WHY

Many NEW investigators try to state things in a complex or “overly intellectual”

The simplest way to get a point across is to just state it as is. No embellishment.

Eschew obfuscation!
RESEARCH DESIGN & METHODS

THE EXPERIMENTS SHOULD FLOW AND COMPLEMENT EACH OTHER

Each set of studies should be presented in sequence and be complementary

Reviewer shouldn’t lose the trail or Have to look back
RESEARCH DESIGN & METHODS

EACH SECTION SHOULD END WITH:

• EXPECTED OUTCOMES &
• ALTERNATIVE APPROACHES

Each section should conclude with:

• a discussion of the expected outcomes
• a presentation of alternative approaches
HOW TO BEGIN THE PROCESS

Start with a good idea
HOW TO BEGIN THE PROCESS

Considerations of a “good idea”:

- Addresses a Specific Problem (knowledge gap)
  - Has Significance/Rationale
    - Has Innovation
      - Has Focus
  - Moves the field forward
HOW TO BEGIN THE PROCESS

START WITH AN OUTLINE!!
HOW TO BEGIN THE PROCESS

Successful grant writers distribute their time:

- Developing and revising the OUTLINE (60%)
- Writing the research plan (10%)
- Revising the grant (30%)
GRANT WRITING 101

START WITH AN OUTLINE

• More time should be spent preparing a detailed outline than on actually writing the prose!
  
  • Use the outline as a checklist/guide
  
  • If you have a well prepared guide, writing the details will take very little effort
HOW TO BEGIN THE PROCESS

Suggestions for Constructing OUTLINES

- Index Cards
- Post it notes (different colors)
- White board
- Outline Processor
HOW TO BEGIN THE PROCESS

START WITH FIGURES & TABLES

• Use figures and tables to help GUIDE the writing and development of the outline
  
  • Make figures simple
  
  • Always have a legend

• Use schematics to show a process
HOW TO BEGIN THE PROCESS

WRITING THE PROPOSAL

Try to write each section in one sitting
(SA, background, each aim)

• Just get it down
• Don’t worry about length, spelling etc.
• You will edit it MANY, MANY times later
HOW TO BEGIN THE PROCESS

DO NOT THINK ABOUT STYLE
UNTIL YOU HAVE WRITTEN
THE FULL PROPOSAL
AND ARE READY
TO EDIT
HOW TO BEGIN THE PROCESS

WRITING THE PROPOSAL

Write to EXPRESS, NOT to IMPRESS!!

Ask a friend to read the proposal & explain it
HOW TO BEGIN THE PROCESS

PRESENTATION

• Use Arial type fonts

• Keep fonts, spacing and format the same!

• Leave room for “white space”

• Proposal should be uncluttered - “a clean look”
GRANT WRITING 101

JUST SAY IT!!!!!!

JUST SAY WHAT YOU ARE GOING TO DO!!!!

BE DIRECT.

DON’T TRY TO BE CLEVER IN YOUR WORDING!!!
GRANT WRITING 101

Put yourself in the position of the reviewer

• Don’t make it hard to read
  • Don’t make it hard to understand
  • Don’t make the reviewer SEARCH for your rationale

• If you can’t organize the proposal well
  how will you be able to organize the project?
GRANT WRITING 101

Important web sites

NIH.gov

NSF.gov
REFERENCES

Grant Application Writer’s Handbook
Liane Reif-Lehrer
ISBN 0-7637-1642