GRANT WRITING WORKSHOP

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OVERVIEW

- Overall Concepts
- Parts of the Grant
- Discussion of Each Component
- How to Approach the Research Design
- Exercise
OVERALL CONCEPTS

It is critical to understand the the overall goal of writing the grant and what the approach must be in preparing the document.
WHAT IS THE OVERALL GOAL?

To get $$$ money $$$ to do the work!!
SO WHAT IS THE APPROACH TO ACCOMPLISH THE GOAL?

You must “SELL” the ideas!!

IMPACT!

WHY YOU! (vs someone else) GET THE $$$

KNOWLEDGE GAPS
## Parts of the Typical Grant

(may be more applicable to STEM fields)

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Aims</td>
<td>1</td>
<td>1  WHAT do you intend to do? HYPOTHESIS. IMPACT</td>
</tr>
<tr>
<td>Background/Significance</td>
<td>2-3</td>
<td>3-4 WHAT has already been done? WHY is your proposal important? WHERE are the knowledge gaps?</td>
</tr>
<tr>
<td>Prelim. Results</td>
<td>3-4</td>
<td>6-8 WHAT have you done to support your proposal? HOW do the results support the central hypothesis?</td>
</tr>
<tr>
<td>Research</td>
<td>7-9</td>
<td>12-15 WHAT is the rationale for each SA? HOW will you accomplish the SA? 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>25</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

Rationale/Broad Objectives

This should be one or two paragraphs.

May or may not include REFERENCES

Hit major rationale for the study and highlight the knowledge gaps and most recent findings.

Include the HYPOTHESIS in BOLD TYPE.
SPECIFIC AIMS

HYPOTHESIS

Include the **HYPOTHESIS** in BOLD TYPE.
Locate the hypothesis either in the middle or at the end of the SA paragraph
Tie proposed outcomes to the hypothesis
SPECIFIC AIMS

Specific Aims

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

Aims should be stated in the **ACTIVE VOICE**

Use **ACTIVE** terms
SPECIFIC AIMS

ACTIVE TERMS that suggest completion

DETERMINE, CHARACTERIZE, EVALUATE, QUANTIFY, GENERATE

Never make statements that suggest it will not work.....

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

SUB-AIMS

OK to include if there is room, but not necessary if specific aims page is strong and space is an issue.
SPECIFIC AIMS

COHESION

Each SA should be able to STAND ALONE

If the whole grant is based on the success of ONE experiment of the completion of ONE aim it will not be reviewed successfully
BACKGROUND AND SIGNIFICANCE

This section provides the reviewers with an OVERVIEW of the MOST RELEVANT literature in support of your proposal.

DO NOT ASSUME THE REVIEWER WILL BE FAMILIAR WITH THE DETAIL OF YOUR EXPERIMENTAL SYSTEM.
BACKGROUND AND SIGNIFICANCE

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

At the end of each section, there should be a statement that relates the content back to your proposal.

......the studies detailed in the current proposal will...

Use ITALIC or BOLD to bring this out.
BACKGROUND AND SIGNIFICANCE

Pick the topic areas for this section carefully.

*Do not waste time on items that are not directly relevant to your proposal*

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

Suggested starting points for background section

Start more broad and work your way to detail

Overview of your pathway
Overview of work on your pathway in your model
Detail of your protein/gene
How your protein/gene impact disease
BACKGROUND AND SIGNIFICANCE

A picture or figure is worth 1000 words!!!

- 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 addresses the specific problem that you outlined.
RESEARCH PLAN

SOME GENERAL POINTERS

• A grant is not a research paper
• Each SA section should be structured in the same way
  (SA and sub aims that address a specific question)
• Each section should have a rationale or statement of purpose
  (see the demo grant)
• Each section should flow and build on the previous
• Each section should have Outcomes and Alternatives presented
RESEARCH PLAN

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 PLAN

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.

You need to indicate **WHY** you are choosing to do a particular experiment, **WHAT** it will tell you and **HOW** you will interpret it and ultimately use the results.
RESEARCH PLAN

TELL THEM WHAT YOU WANT TO DO AND WHY

Many junior investigators try to state things in a complex or round about manner

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

THE EXPERIMENTS SHOULD FLOW AND COMPLEMENT EACH OTHER

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

EACH SECTION SHOULD END WITH:
EXPECETED OUTCOMES AND ALTERNATIVE APPROACHES

Each SA should be wrapped up with a discussion of the expected outcomes as well as a presentation of alternative approaches
HOW TO BEGIN THE PROCESS

Start with a good idea
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

FROM A SURVEY

Time spent on the following:

Developing and revising the OUTLINE (60%)
Writing the research plan (10%)
Revising the grant (30%)
HOW TO BEGIN THE PROCESS

OUTLINE SUGGESTIONS

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

HAVE FIGURES READY

- 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

Write to EXPRESS, NOT to IMPRESS!!!
HOW TO BEGIN THE PROCESS

WRITING THE PROPOSAL

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

Just get it down and do not worry about length, spelling etc. as you will edit it MANY, MANY times later
HOW TO BEGIN THE PROCESS

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

PRESENTATION

Use Arial type fonts

Keep fonts, spacing and format the same!

Try to have some open spaces

Spend some time making the “look” of the grant clean
START WITH AN OUTLINE

More time should be spent on preparing a detailed working outline to be used as a checklist/guide than on actually writing the prose!

If you have a well prepared guide, writing the details will take very little effort
GRANT WRITING 101

JUST SAY IT!!!!!!

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

BE DIRECT, DO NOT TRY AND BE CLEVER IN YOUR WORDING!!!
GRANT WRITING 101

Put yourself in the position of the reviewer

Don’t make the damn thing hard to read or make the reviewer SEARCH for rationale or reasons why you are doing something
GRANT WRITING 101

Important web sites

NIH.gov

NSF.gov
REFERENCES

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