NIH Grant Application: 101

National Institute of Biomedical Imaging and Bioengineering

Why Is Good Grant Writing So Important?

- **Reviewers are very busy people**

- **Committees review many grants**

- **Reviewers have a very limited amount of time to make the case for *your* grant**

- **Even in times of plenty, there are more meritorious applications than can be paid**

Getting Started

- **Start Early!!!!!**

- **Contact scientific program staff to ensure your application is appropriate for Institute goals and mechanism before writing**

Write Your Application Early

- **Contact references and/or collaborators early**

- **Leave plenty of time for colleagues review your draft**

- **Leave plenty of time to get your institutional signatures**

- **Leave plenty of time to react to new electronic processes**

Cover Letter - Optional

- **Include a cover letter with application**

  - **Request Institute assignment**
    - **Based on conversation with scientific program staff (cite name)**

  - **Request specific study section, if appropriate**

  - **Mention scientific expertise needed to review your application**
    - **Do not list specific names of reviewers**

Organize Your Application

- **Read ALL Application Instructions Carefully**
  - Use proper font size, margins, page numbering

- **Use Section Headings, Table of Contents & Budget Pages (as instructed)**
  - Application should be easy to follow

What reviewers REALLY want to know

- **WHAT are you proposing to do?**

- **WHY is this important?**

- **Can YOU do it?**

WHAT are you proposing to do?

Clearly Explain All Concepts

- **State rationale of proposed investigation**

- **Include thorough literature review**

- **Never assume that reviewers "will know what you mean"**

- **Include well-designed and informative tables and figures**

- **Present an organized and lucid research plan**

Help The Reviewers Do Their Jobs

- **Give your application a "reviewer-friendly" format**

- **Reviewers will not likely read your entire application in one sitting**

- **Present the application in "bite sized bits"**
  - Use section headings, bold type, etc.
  - Clearly identify ideas, experiments, outcomes, interpretations, implications, etc.

- **Walk the reader through the experiments**
  - Don't just present a list of methods

- **Have an Explicit Timeline**

Don't Be Sloppy!

- **Use spell check AND carefully read the final version**

- **Include all required sections**
  - **e.g., Animal Welfare, Human Subjects**
  - **present in the order and with the section headings used in the PHS 398 (or PHS 416-1) kit.**

- **Clarity counts. Watch grammar. Avoid jargon.**

Solicit (and Heed!) Constructive Criticism

- **Obtain Feedback**
  - **From someone who has an NIH grant**
  - **From colleagues/mentors whose opinion you respect**

- **Revised Applications**
  - **Respond to ALL reviewer critiques**
  - **If you disagree, provide a THOROUGH justification**
  - **Put your ego aside**

WHY is this important?

Acknowledge the Realities of Peer Review

- **The competition is tough**
  - **It is not enough to reach the minimum standard**

- **A good idea, interesting preliminary findings, and promising investigator are <u>not</u> enough**

    - **YOU NEED TO PRESENT A SIGNIFICANT AND/OR INNOVATIVE IDEA!!!!**

Can YOU Do It?

Highlight Your Strengths

- **Propose experiments that make good use of YOUR training, YOUR expertise, and YOUR environment.**

- **Maximize these through a multidisciplinary team of collaborators, consultants, mentors, etc.**

    – **Include appropriate clinical or technical expertise as part of research team**

- **If research team does not have experience or knowledge in a needed field, reviewers will notice**

Don't Be Overly Ambitious

- **Present focused specific aims**
  - **Make sure every aim is clearly related to the overall goal of the application**

- **Include adequate resources and collaborators**

Demonstrate Command of Relevant Material

- **Cite the appropriate literature**

- **State rationale and/or hypotheses explicitly**

- **Include preliminary data, where appropriate**

- **Identify limitations of techniques or technologies**

- **Identify alternative hypotheses or uses of the technology**

Common Weaknesses

- **Lack of new or original ideas**

- **Unfocused or vague research plan**

- **Lack of appropriate expertise on the research team**

- **Lack of sufficient experimental detail**

- **Lack of knowledge of published relevant work**

- **Unrealistically large amount of work**

Additional Suggestions

- **For junior/starting investigators**
  - Collaborate with a more senior colleague on your application
  - Over ambitiousness - do not propose to do too much
  - Apply for a reasonably sized budget early in your career
  - Make sure you check the new investigator box on the face page if appropriate
  - If you are invited to be on a review panel, try hard to accept
- **For more senior investigators**
  - You still need to write a strong grant
  - Do not "rest on your laurels"
  - Bring your junior collaborators into the grant writing process and mentor them

Easily Avoidable Problems

- **Use appropriately sized font**
  - Print out and measure your characters per inch, 15 cpi or less
  - Use 12 point font if at all possible
- **Going over the page limit**
- **Human subjects**
  - Address the four points in the humans subjects section
  - Address the inclusion of women, minorities, and children
  - Include the targeted/planned enrollment table
- **Animal subjects**
  - Address the five points concerning the use of vertebrate animals

Writing Styles

- Monitor for blatant self-promotion
  - "world-class", "uniquely positioned"
  - "one of only three labs", "pioneered", "discovered"
- Avoid writing arrogantly, especially in revisions
- Be appreciative of reviewers comments and remember the work they did on your review
- When you must disagree, do so politely and professionally

The Revision

- **Fixable**
  - Pilot data
  - Methodology
  - Collaborators/Expertise
  - Environment/Institutional Commitment
- **Fatally flawed**
  - Significance – could be fatal, could be fixable due to poor writing
  - Identical to other work being done
- **Unscored does NOT mean fatally flawed**
- **Study Section will receive previous summary statement**

Take Home Message

CLEARLY tell reviewers what they REALLY want to know

- WHAT are you proposing to do?

- WHY is this important?

- Can YOU do it?