

NIH Grant Writing Tips

One Person's Perspective !

Gary Tearney MD PhD
gtearney@partners.org

My Perspective

- I make and test new imaging devices
- My grants focus on R2I and R0I mechanisms
- I have served on several ad hoc study sections and standing Microscopic Imaging (MI) study section for 5-years (EBIT)

Outline

- Before you start
- Abstract, Specific Aims
- The Criteria: [Significance, Innovation, Approach], Environment, Investigators
- Overall Impact
- Timing
- The study section and reviewer
- Final tips

Before you start

- Pick something that excites you
- You need high marks on all scoring criteria
 - Significance, Innovation, Approach, Environment, Investigators
- Know your topic
- Be able to tell a good story

Tell a Good Story

- There is a big problem out there
- What the edges of knowledge/capabilities are
- What the problems/questions/controversies are (what is unmet need or critical barrier)
- How you will solve/answer them
- What this will mean in the end
 - Advance knowledge
 - Provide new capabilities
 - Change clinical care

Abstract

Most reviewers will read this

- Rewrite a condensed, new version of specific aims page
- Do not cut and paste from specific aims page

Specific Aims

Most reviewers will read this

1-page

Summarize your story

- 1-3 para summary of grant, tying in scoring criteria
- List aims 2-5 (3,4)
 - rationale sentence
 - what you will do (explicit)
 - How you will interpret/validate results
- Impact

Important lingo when writing specific aims

- State grant's goals, objectives, aims in specific aims page
- Goals: 30,000 feet
- Objectives 10,000 feet
- Aims 1,000 feet

Comment on Aims

- Interdependence of aims
- Problem aim:
 - Do the aim (nearly) before you write grant
 - Have other strategies that allow you to complete grant if one aim does not work out
 - Yet does not compromise your scores in other areas
 - Example:

Research Strategy

The main body of the grant (6 or 12 pages)

- a. Significance
- b. Innovation
- c. Approach

3 of the key scoring criteria

Significance

- Lots of ways to be significant
- Know your topic
- Bounce your ideas off multiple experts with different perspectives
- Learn, learn, learn until you are current
- In the end, advance forefront of knowledge/capabilities/clinical care
- How this research will be applied to cure/treat/prevent disease

Significance - how much background?

- Know your study section
 - If study section knows your field, then less background
 - If study section is not expert in field, put in more background
 - cite those in your study section who are experts if possible
 - play it safe if in doubt

Example Significance Section

- Background (numbers, severity, mortality rates, morbidity) - be explicit
- The problem and critical barriers in the field that prevent this problem from being solved
- What you will do in this grant to address this unmet need (emphasize innovation, your experience, and environment)
- How the conduct of this research will transform field and improve human health

Other Significance Tips

- Be up to date (references), do not use old citations that are not as relevant
- Know study section when citing
- Highlight awareness of potential barriers and alternate approaches
- Broaden the impact beyond grant and to other fields if possible

Innovation

- This is sometimes hard
- Innovation takes many forms
 - Concepts
 - Approaches, Methodologies
 - Technology, Instrumentation
 - Study design
 - Outcomes, New knowledge
- Help the reviewers
- Explicitly state the innovative elements of your grant in the text - !!!
- Use words: new, innovative, novel, unique

Approach

- Focus
- Don't make too ambitious
- Logical, stepwise plan
- Explicit milestones and expected results
- Impact of those results on the field
- For every hole, have an answer

Preliminary Data

- Can separate out into its own section or weave in with specific aim details
- Show you are an expert
- Strengthen criteria (investigators, environment)
- Pretty pictures
- Fill holes
- Summarize and tie in

Identify and Fill Holes

- Think like a reviewer
- Have other objective people read grant
- Find problems (all)
- Have answers to all possible problems in text
- Potential Difficulties and Limitations and Preliminary Data

Approach

- Overview (pictures, diagrams)
- Experience is important here
- Tips for old, tips for new
- Use references (ideally to your own work)
- Statistics! and other experts
- OPT's and Milestones (tech R01, R21, and SBIR/STTR)
- Potential Difficulties and Limitations

Investigators and Environment

- Biosketch Narrative
- Bring in expertise where it is lacking
 - MPI
 - Consultants
 - Regulatory
 - Biostatistics
 - Pathology
- Strong letters of support are important

Overall Impact

- The actual score that is used
- Significance = is project worth doing
- Overall Impact = significance + likelihood that your project as written will make a difference in field and improving human health
 - Synthesis of all scoring criteria
 - Likelihood of success (approach, investigators, environment)
 - Sustained, powerful influence in field (significance and innovation)
- Good to emphasize overall impact in each section when possible

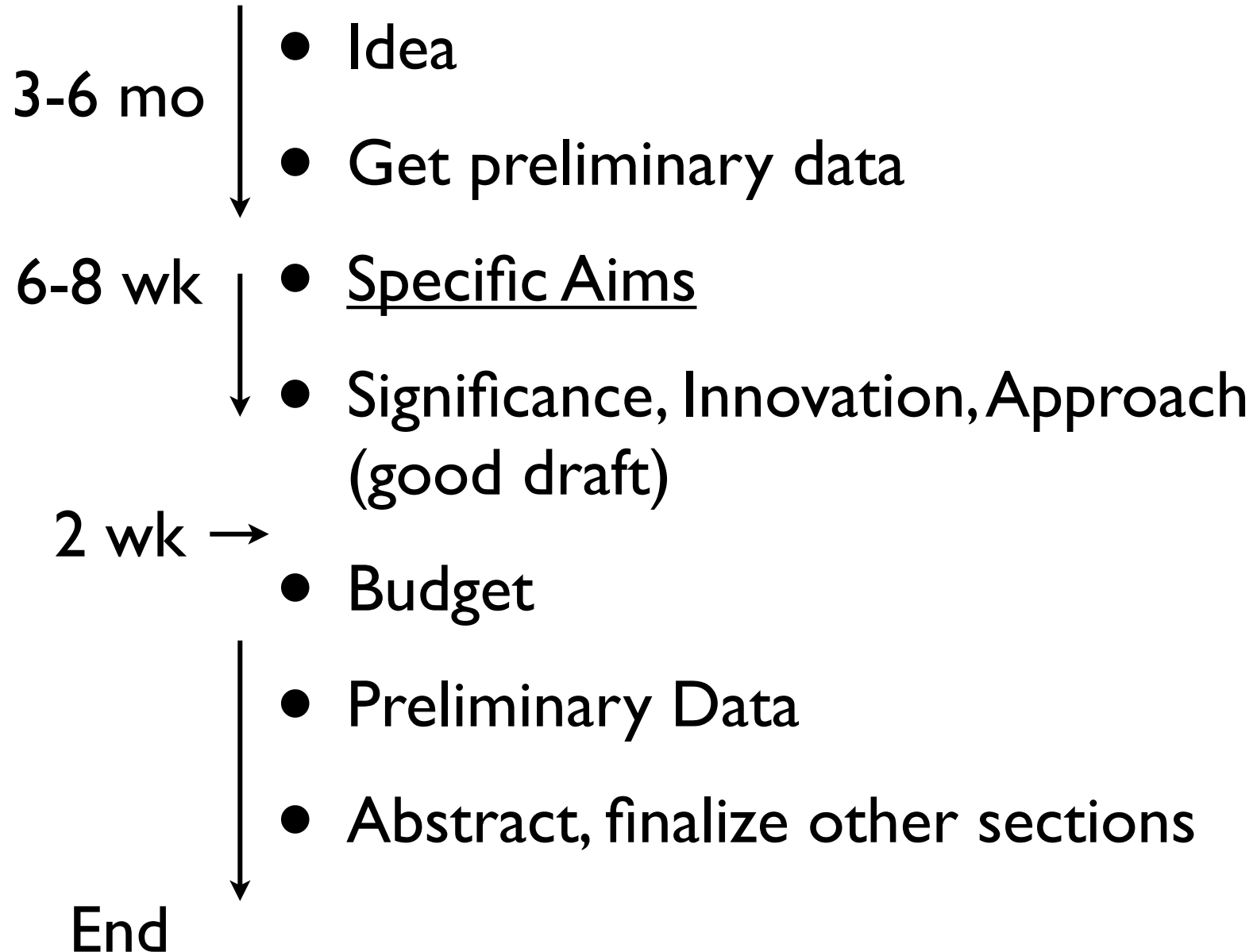
Budget

- For technology development proposals:
 - Do not be afraid to ask for what you need and can justify

Timing

- Leave enough time to get objective readers

My ideal timing



Revisions

- Original reviewers will likely see the revision
- Try not to challenge reviewers
- Answer critiques as thoroughly and completely as possible (back up in text)
- Do additional experiments (if needed)

The Review Process

- Composition
 - 3-5 primary reviewers
 - Rogues
 - Everyone else
- The process of review and scoring

Study Section Tips

- Check who is on your study section (probably)
- Try and anticipate who will review your grant
- Consider this when you write grant
- Process of excluding reviewers
- Include preferred study section in cover letter
- Institute

Primary Reviewers

- Do not have time
- Longer grants do not mean better grants
- Make grant simple, yet elegant
- Make their lives easier - makes them happier

Other Random Tips

- Don't pad
- Use a template that works for you
- Do not make figures or captions too small
- Get good examples for Human Studies, Vertebrate Animals
- Use summaries at the end of each section (if possible)
- Appendix (if possible)

Final Tips (summary)

- Hit all 5 criteria hard
- Address overall impact throughout grant
- Tell a good story
- Fill all holes
- Find objective readers
- Do not be afraid to ask for what you need
- Work out timing that works for you
- Consider reviewers, study section, other factors

GOOD LUCK!