Grantsmanship 101: How to Write a Successful Grant

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Outline

- Mentorship
- Hypothesis generation
- Planning and writing your application
  - Specific aims
  - Research Strategy
- Top reasons for application failure
- Revised applications
- Resources

Mentorship

A mentor with an established track record in writing and reviewing NIH grants is invaluable to:

- Share a recent NIH application and summary statement
- Review an outline of the proposal prior to writing the full application
- Critique the full application
- Provide advice on how to revise for a resubmission if needed

Hypothesis

- Most funded applications are driven by strong hypotheses
  - Applications should ask questions that prove or disprove a hypothesis
  - The hypothesis should be testable and focused, increasing understanding of biology, diseases, or treatments
  - Hypothesis should be based on previous research
  - Reiterate the hypothesis throughout the application using different wording
- If not hypothesis-driven (e.g. technology-driven) state that it isn't and indicate why it is important

Planning your application 1

- Know your audience
  - Understand how to write for 2 audiences – assigned reviewers (experts in your field) and the others (experts in other fields)
  - Make it easy for your assigned reviewers to grasp the essentials and explain to the others
  - Convince **all** reviewers how your project can drive knowledge in your field to a higher level

Planning your application 2

- To gauge a project's impact, NIH reviewers use five criteria: significance, innovation, approach, investigator, and environment
- Your application will need to convince the reviewers reviewing your application that your project can have a high impact on its field and is important to NIH's mission

Writing your application

- Create an appealing application
  - Use graphics as visual aids
  - Add emphasis with **bold** or ***bold italics***
  - Leave spaces between paragraphs and sections
  - Follow instructions to a tee, including font and page restrictions

Specific aims

- Start by writing your Specific Aims
  - In one page, write the Specific Aims you decided on when you designed your project.
- Include two sections:
  - Start with the rationale and significance of your planned research in one to two paragraphs. Include a sentence that states your project's goals.
  - List your aims, and describe each in one to three sentences
  - Each aim should be a specific test of the overall hypothesis
  - Organize and define your aims so that you can relate them directly to your research strategy

Research Strategy 1

- Significance
  - Explain the importance of the problem or critical barrier to progress in the field that the project will address
  - Explain how the project will improve scientific knowledge, technical capability and/or clinical practice in one or more broad field
  - Describe how the field will be changed if the aims are achieved

Research Strategy 2

- Innovation
  - Explain how the application challenges and seeks to shift research or clinical practice paradigms
  - Describe novel theoretical concepts, approaches or methodologies to be developed or used and any advantage over the status quo
  - Explain refinements, improvements or new applications of concepts or approaches

Research Strategy 3

- Approach
  - Describe the overall strategy, methodology and analyses to be used to accomplish the specific aims
  - Provide evidence of feasibility - include enough background and preliminary data to give reviewers the context and significance of your plan
  - Discuss potential problems, alternative strategies and anticipated benchmarks for success
  - Conclude with a summary of what you expect to achieve at the conclusion of the specific aims

Why applications fail 1

1. Poorly formatted, typos, grammatical errors, lack of proofreading, unappealing presentation
2. Insufficient preliminary data, or preliminary data do not support project feasibility
3. Overly ambitious Specific Aims or Research Strategy
4. Unimportant question without significance to field or public health
5. Lack of investigator expertise or collaborators

Why applications fail 2

6. Lack of innovation or new ideas
7. Lack of a strong, original hypothesis ("fishing expedition") and Specific Aims
8. Failure to identify potential pitfalls and lack of alternative approaches
9. Failure to demonstrate knowledge of the field (didn't cite relevant references or account for alternative viewpoints)
10. Failure to request a study section or get advice on study section so the application ended up in the wrong study section

Resubmission 1

- You only get one resubmission, so make it as strong as possible even if it means skipping a cycle
- Include a one page introduction that responds to the critique, and a cover letter
- Discuss each of the reviewers' points respectfully one by one. If you disagree explain why, and provide additional information if possible

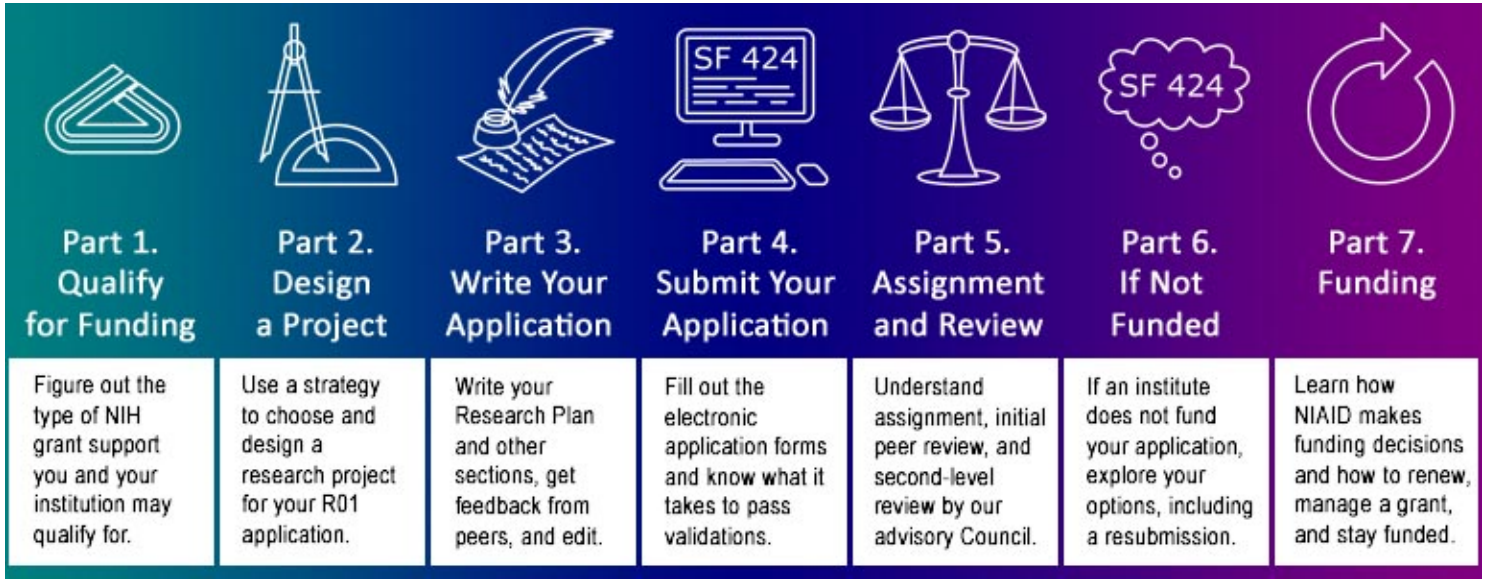
Resubmission 1

- Identify all changes in the body of the Research Plan using bold, italics, brackets or indents (but not color, underlining or shading) unless they are so extensive that most text would be affected - then explain them in the Introduction only

- Add new findings and your own improvements – you're not limited to revising only items mentioned in the summary statement
  - In the Preliminary Studies/Progress Report, add any new findings made since the previous application.
  - Don't hesitate to make other changes. Strengthen the application as much as you can

Resources 1

- The NIAID website provides a step by step guide to application
  http://www.niaid.nih.gov/researchfunding/grant/strategy/Pages/default.aspx



- The website also provides sample applications
  http://www.niaid.nih.gov/researchfunding/grant/strategy/Pages/default.aspx
  (website subject to change)

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Resources 2

- The April issue of ASBMB Today included a concise 2 page summary: “Navigating the NIH grant application process”

http://www.asbmb.org/asbmbtoday/asbmbtoday_article.aspx?id=16457

(website subject to change)