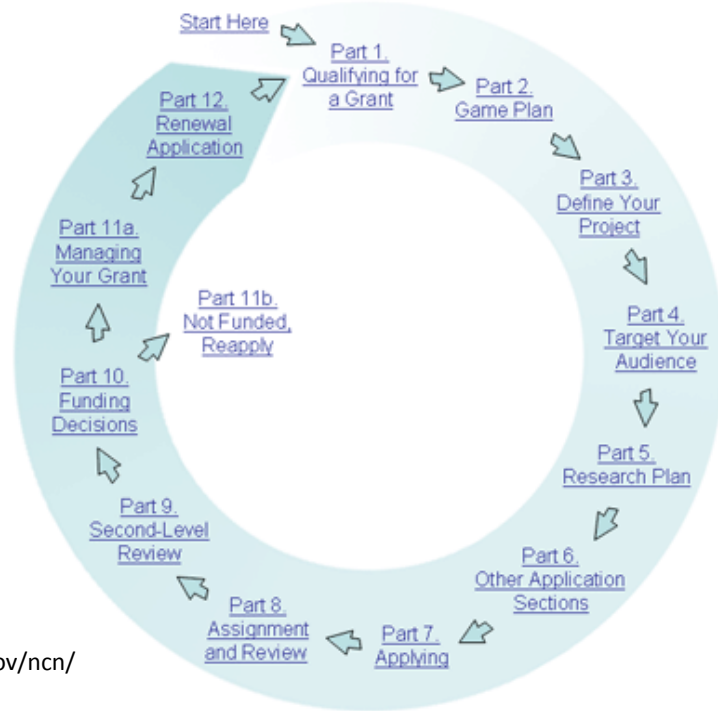


Approaching Grant Writing

Know Your Audience

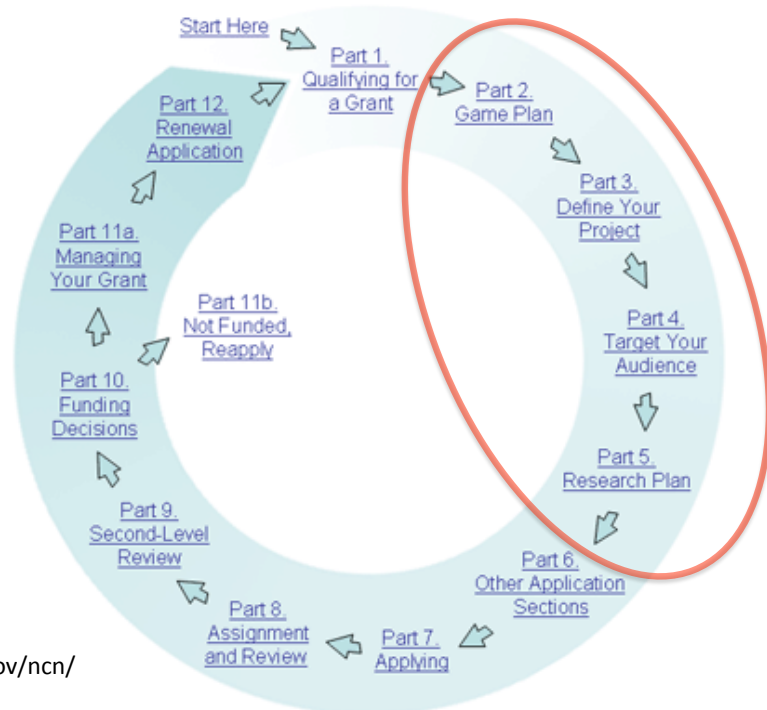
- Funding agencies and foundations have unique areas of interest, foci, styles and expectations.
- Examples of federal agencies:
 - National Institutes of Health (NIAID, NIGMS, NIMH, NCI... etc.)
 - National Science Foundation
 - Environmental Protection Agency
 - Department of Defense (DARPA, DTRA, USAMRMC... etc.)
 - National Air and Space Association
- Examples of state and local funding sources:
 - Commonwealth Health Research Board
- Examples of Private Foundations:
 - Bill and Melinda Gates Foundation
 - American Chemical Society
 - American Cancer Society
 - American Lung Association
 - Research Corporation
 - The Jeffress Memorial Trust

NIH Grant Cycle



From:
<http://funding.niaid.nih.gov/ncn/grants/cycle/default.htm>

NIH Grant Cycle



From:
<http://funding.niaid.nih.gov/ncn/grants/cycle/default.htm>

NIH Peer Review Criteria

- **Significance:** Does the proposed research address an important problem?
- **Approach:** Are the approach and experiments well thought out and adequately developed?
- **Innovation:** Is the proposed research innovative or novel?
- **Investigator:** Do the PI or PI's have adequate training and experience applicable to the proposed research?
- **Environment:** Are the resources available to the PI sufficient for the proposed research?

Planning your Proposal

- Get started early – preparing a proposal takes longer than you think.
- Must lay the foundation before you start writing.
 - Identify funding opportunities.
 - Develop a strategy for approaching the proposal.
 - Additional considerations.
- Notify the Office of Sponsored Programs or The GMU Foundation.
- Know the regulations (i.e. human subjects, vertebrate animals, select agents, stem cells and recombinant DNA)

Developing the Concept/Idea

- Make sure that the concept is well thought out.
 - Clear hypotheses.
 - Make sure plan and experiments address central hypotheses.
 - Consider timeline and budget requirements
 - Be realistic in scope and timing.
- Familiarize yourself with the relevant literature.
 - State of the field
 - Novelty
 - Precedent
 - Need
- Does the proposal fit the Agency/Foundation mission?
- How well does it fit the scope and/or stated goals of the FOA.

Funding Opportunities

- Search for funding opportunities
 - Agencies and Foundations
 - Active funding opportunity announcements (FOAs) - such as RFPs, RFAs, PA and BAAs
- Look for announcements that fit your research or broad/general announcements.
- After finding FOA, make sure that you are eligible and that your research fits the stated objective/scope of the FOA.
- Read FOA and provided instructions to determine specified:
 - Application process
 - Formatting
 - Budget (including whether grant covers indirects)
 - Determine application submission date(s) – and whether the deadline refers to receipt or postmark date/time.

The Research Plan

- Research Plan:
 - Specific Aims: state concisely the goals of the project and summarize anticipated outcomes. (usually 1 page)
 - Research Strategy: (number of pages often varies)
 - Background and Significance
 - Innovation
 - Approach

Objectives, Hypotheses and Specific Aims

- First step in the grant writing process is to establish your objective and develop your hypothesis or hypotheses.
- Provide a brief project summary that contains the significance statement, the objective and the hypothesis.
- You can use the specific aims to frame/structure your proposal.

Significance Statement

- Significance statement is the broadest and most general description of the research.

Understanding how metal pollutants affect crops and forests is obviously of great importance to U.S. agriculture.

We wish to understand the biological implications of projected increases in global temperature on fish populations

Objectives and Hypotheses

- Objectives usually refers to broad and scientifically far reaching aspects of the proposed project.

We will quantify responses of salmon to predicted increases in summer temperatures in their rearing grounds

-
- Hypotheses are more focused and usually put forth a specific set of testable conjectures.
 - The hypotheses should relate directly to the experiments.
 - Usually want to aim for five or fewer hypotheses.

A water temperature increase of 18C in May will advance the hatching date of Atlantic salmon by 2 weeks.

Advancing the hatching date of Atlantic salmon by 2 weeks will reduce survival rates.

Specific Aims

- Specific aims are more focused than hypotheses.
- Proposals should generally have 2-4 specific aims.
- Each specific aim should address a specific question or hypothesis, relevant experimental methods or strategies, and anticipated outcomes.
- Proposal frequently can be organized around the specific aims.
- Use the significance statement to unify the specific aims... channel towards common over all goal.

From: "Writing Successful Science Proposals", 2nd ed., by A. Friedland and C. Folt.

Involvement of Others

- As a new investigator, you may want to consider collaborating with or including more experienced and established colleagues or mentors.
- Consultants and Collaborators: can be included in order to fill gaps in your expertise and experience. Also may contribute resources that enhance capabilities.
 - Consultants may provide advice, services or even contribute in research, and they get paid for their contributions.
 - Collaborators play an active role in the research effort and may draw support from grant.
- Multiple PI Applications can present a dilemma:
 - Collaborative and multidisciplinary research where each PI contributes critical expertise.
 - NIH: funding rate for multi-PI grant proposals is much lower than for single PI proposals.

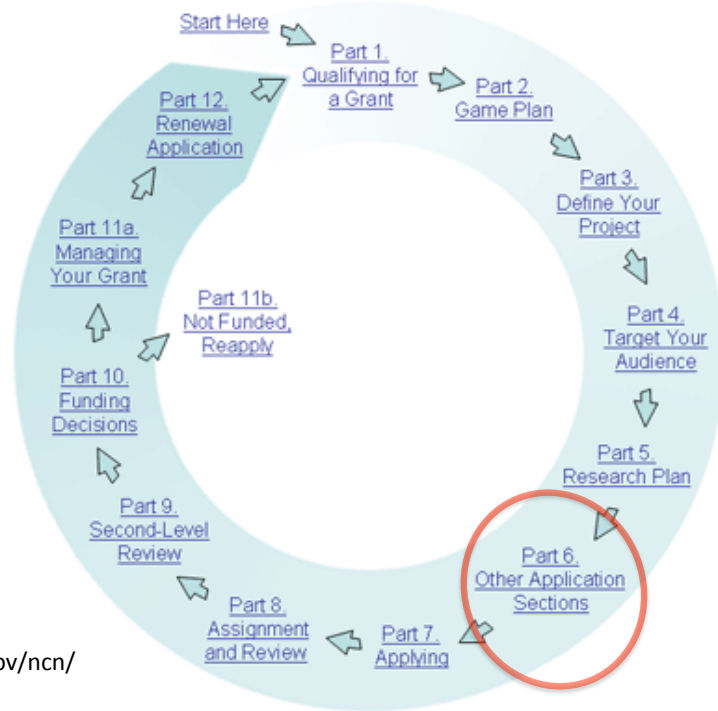
Devil is in the Details

- Use clear and concise language, and keep paragraphs on point. (remember you will probably need to be able to address both the expert and the non-expert reviewer).
- Avoid jargon.
- Use active, rather than passive, voice.
- Use subheadings, and make the text easy to follow.
- Each paragraph should have a central point/focus.
- Spell out acronyms when they are introduced.
- Make sure to follow suggested formatting and proposal organization if provided.

Proofreading/Edits

- Allow enough time:
 - to set the proposal aside for a period of time so that you can get a fresh perspective for final edits and proofreading.
 - for review by collaborators.
 - for possible review by independent expert.
 - to allow a final review of the entire proposal/application.
- Proposals with multiple contributors (such as when multiple PI's are involved) should have a single person serving as overall editor.
- Pay attention to details... misspellings, typos, grammatical mistakes... even formatting.
- How your proposal is written reflects on you and how you approach science and research.

NIH Grant Cycle



From:
<http://funding.niaid.nih.gov/ncn/grants/cycle/default.htm>