Elements of a Competitive Research Grant Proposal

TAMIU
Laredo, TX
March 23, 2009

Rubén Martinez, Ph.D., C.R.A

Workshop Objectives

• Increase understanding of grant proposal development and award context
• Increase understanding of grant proposal development process
• Increase understanding of elements of competitive proposals

Award Context:
Pre-Award vs Post-Award

Pre-Award
• Research and Sponsored Programs Administration
  -- Values and Mission Context
• Grants Development
  -- Project Development
  -- Proposal Preparation
Areas not Covered

Post Award
- Project Administration
  - Award Process
  - Account Set Up
  - Project Implementation
  - Research Compliance
  - Project Close-Out

Values and Mission Context

Sponsored Research and Programs
- Contributing to the Public Good
  (Science the Endless Frontier, 1945; disease, national security, general welfare)
- Institutional Service Mission
  -- Meeting the Mission through Sponsored Activities (Research and Programs)

Contributing to the Public Good
- Externally supported projects benefit local, state, regional, and national communities
- Governments, philanthropic societies, and other sponsors seek to contribute to the common good through the advancement of knowledge, culture, facilities, programs and services, etc.
- Enhanced institutional and faculty capacities contribute to societal, institutional and individual development
Two Major Types of Grant Proposals

- Programmatic—seek funds for delivery of specific services (or the development or improvement of infrastructure or facilities to do so)
- Research—seek funds to conduct research on a specific topic (our focus)

Research Project Funding

- Competitive (everybody is in the game)
- Meritorious (strong enough to warrant funding)
- Meet funding priorities of sponsoring agency

Stages in Proposal Development

- Research Question/Hypothesis
- Matching interest with potential sponsor
- Review of sponsor guidelines
- Notification of intention (Institutional and Sponsor representatives)
- Proposal preparation
- Revisions & Institutional Review
- Submission
Developing a Research Question

- What are the critical research questions in the body of knowledge of your specialty?
  - Where are they on the Fad Curve? Timing?
- What are the next critical research steps in the research literature?
- Which questions are those that interest you?
- What is the “angle” you bring to the body of knowledge that can contribute to the development of knowledge?

Keeping Background and Significance in Mind

- Why is this an important project?
- What mechanisms and processes will be addressed by the data?
- Is the significance supported by a critical and current literature review?
- What will the reviewer think about this study after reading this section?

Proposal Development

- Defining Interests and Matching them to a potential Sponsor
  - Electronic (SPIN or SPIN Plus) sources of information on RFP’s (Internet Resources)
  - Development Officers at Organizations/Institutions
- Getting Institutional Okay to Proceed
- Developing the Proposal
- Processing the Proposal through Institution
- Submission
Sponsored Research is a Matching Game: Key Questions to Ask

- Why? Why is this project important?
- Where? Where will it be conducted?
- Who? Who will it involve? Who will it benefit?
- Who Cares? Who can sponsor it?
- When? When will it be conducted?
- How Much? How much will it cost to implement the project?

The Matching Game: Key Questions to Ask

Why?

- Developing a Sound Needs Analysis
  - Why is this needed?
- Understanding the Central Point
  - Clear statement of the problem and how it is to be addressed.

The Matching Game: Key Questions to Ask

Where?

- Where will project activities take place?
- What resources are available?
- What are the limitations/assets offered by this location?
The Matching Game: Key Questions to Ask

Who?
- Who are the research participants?
  - Are they Special Populations?
- Who will conduct the research?
  - Level of Expertise (and experience)
  - Need for Consultants, Staff
  - Staff Support Available
  - Collaborators

Who Cares?
- Targeting the Constituency
  - Groups that care
- Targeting the Sponsor
  - Funders that care
  - Fit with funding priorities
  - Oversight requirements

When?
- Time Frame for the Project
  - When will this project take place?
- Time Frame for Funding Award and Completion
**The Matching Game: Key Questions to Ask**

**How Much?**
- How much will this project cost?
  - Estimate a Budget
- Matching Funding Patterns from Sponsors
  - Does your project fit within their funding priorities
  - Are there matching requirements?

---

**The Matching Game: A Matching Matrix**

The Matching Matrix
- What are the Key Items from the Project Perspective?
- What are the Key Items from the Sponsor Perspective?
- How do they line up?

---

**The Matching Game: A Matching Matrix**

Information Needed to Complete the Matrix
- Sponsor levels of funding
- Sponsor funding patterns to similar institutions
- Abstracts/Faculty previously funded
- Stated limits
- Regulatory restrictions
Review of the Guidelines

- Funding priorities
- Funding levels
- Award periods
- Matching (cost sharing) requirements
- Manuscript specifications
- Section requirements
- Timelines/Deadlines
- Letter of intent
- Deadlines

Proposal Preparation

- Getting Started at your Institution

- Proposal Preparation (Follow the sponsor's instructions; use their forms, etc., where needed)

- Budget Development (only allowable items)
  - Comply with both funder and institutional requirements

- Proposal Review and Processing

Proposal Preparation – Getting Started: Institutional Policies

Key Policy Areas to Keep in Mind

- Institutional Process Policies
- Compliance Policies
- Related Institutional Areas Required for Compliance
Proposal Preparation – Preliminary Steps: Internal Procedures

Pre-Project Development Approvals Models
- Department Approval to Write?
- Relationship to Departmental Mission?
- Relationship to Promotion/Tenure – How will the effort be received?

Proposal Preparation – Preliminary Steps: Internal Review and Processing

Signatures and Responsibilities
- Routing Processes and Forms
- Who should Sign?
  - Streamlining the Process
- Order of Review
- Who Should Process?
- How Much Time to Process

Proposal Preparation – Getting Started

What You Must Know About a Proposal Before it is Submitted
- Institution’s Obligation
- Time Frame
- Potential Benefit
- Special Clearances Needed
- Who Must Approve
- New Programs, Initiative, etc.
- New Organizational Structures, etc.
- Equipment Issues
- Continuing Obligations
Proposal Preparation – Proposal Preparation: Internal Review and Processing

- Basic Services of the Sponsored Programs Office in Processing Proposals
- Preparation of Assurance Forms
- Copying (in the old days)
- Electronic Submission (or Mailing)
- Advocacy (w/administration and sponsor)
- Documentation

Federal Grant Proposal Guides and Instructions

- SF 424 Instructions (Adobe and PureEdge Instructions)
- NIH Instructions (NIH Grants Policy Statement-03)
- NSF Instructions (NSF Proposal and Award Policies Procedures Guide-09)
- Dept. of Education (Grantmaking at Ed; on-line materials)
- Health and Human Services (HHS Grant Policy Guide, 2007)
- Grants.gov User Guides (February, 2009)

Proposal Preparation: The Document

- The Function of a Proposal
- The Essential Elements of a Proposal
- The Research Administrator’s Role
Proposal Preparation –
The Document:
The Function of a Proposal

- Why Write Proposals (Do you have to?)
- Traditional Functions of Proposals
- Non-Traditional Functions of a Proposal

Proposal Preparation –
The Document:
The Function of a Proposal

The Traditional Functions of a Proposal

- Presents a Compelling Argument for Funding
- Represents the Individual's and the Institution's Credibility
- Describes the Project in Persuasive Terms
- Tests the Ability of the Individual to Articulate/Conceptualize
- Provides an implementation schedule that will achieve the project's aims

Proposal Preparation –
The Document:
The Function of a Proposal

The Non-Traditional Functions of a Proposal

- Provides the Sponsor with Evidence of Public Trust Obligations
- Leverages Funding for the Sponsor
- Represents the Individual and Institution in Future Applications
- Provides a Mechanism for Project Development and further pursuit of funding
- Establishes benchmarks
Proposal Preparation—
The Essential Components of a Proposal

- Abstract/Summary
- Introduction
- Statement of Need/Thesis/hypothesis
- Goals/Objectives/Methodology
- Research Environment and Institutional Support
- Budget and Budget Narrative
- Expected Outcomes
- Bibliographies
- CV’s & Appendices (if allowed)

The Essential Components of a Proposal: Introduction

- Preliminary Section of Proposal
  - Mini-proposal
    - Connects vision, goals, objectives, outcomes
- Orients the Reviewer to Your Institution
  - Provides (more or less):
    - History and Location
    - Major Purpose of Institution
    - Relates focus of proposed project to mission
    - Documents significance of the focus

The Essential Components of a Proposal: Introduction

- Establishes who is applying for funds
- Describes institution’s mission
- Describes your programs
- Describes your constituency
- Provides evidence of accomplishment
- Offers statistics to support credibility
- Offers statements or endorsements
Introduction Section Continued

- Supports credibility in program area where funds are being sought
- Leads logically to the problem statement
- Is interesting
- Is free of jargon
- Is brief

Other Sometimes Useful Elements of an Introduction

- Significant and relevant events in your history
- Prior and current activities related to project
- Accomplishments and impacts
- Funding sources and their positive comments
- Results of positive external evaluations of your programs
- Quotes from individuals who would be known to the reviewers about your efforts
- And more that relates to the sponsor’s interests

The Essential Components of a Proposal: Description of Research Project

- What will the research focus on?
- What are the hypotheses that will be tested?
- How will your research build on the existing stock of knowledge and how will it advance knowledge?
- What are the methods that will be used?
- How will research participants be selected?
- How will the data collection occur?
- What statistical analyses will be conducted?
- What are the thresholds for significance?
Research Project Continued

- Do you have pilot or preliminary data and its analysis that you can use to support your research endeavor?
- What research instruments will be used?
- Are they established in the field of study?
- Are there other instruments that might be preferred by reviewers?
- If the instrument has been modified, has it been used in a modified form?

Contextualizing Your Research Project

- Frame project within the agency's mission and research priorities
- Make sure the reviewers know that you understand the problem. Avoid a bibliographic lecture or describing individual studies in detail.
- Provide a theoretical and conceptual framework for your research project that is grounded in the scientific literature.
- Provide information to convince reviewers that this study is part of a larger context and that it has implications for other settings and populations.

Solicit Input from Colleagues

- Develop a problem statement for a proposal that you would like to write.
- Discuss this problem statement with others in your network.
- How can it be improved?
Functions of a Proposal Budget

- States the Project in $ (dollars)
- Promotes understanding of the project
- Allows use of the budget to refine the project

Budget Development

- What are the needs related to the proposed project (individuals, equipment, travel, etc.)?
- What institutional resources are needed to establish realistic cost estimates (HR, vendors, etc.)?

Types of Costs

- Direct Costs – allocable costs directly needed to carry out the project
- F&A Costs (indirect or overhead costs) – joint costs incurred by institution that are not precisely allocated to specific projects and are thus based on an institutional rate negotiated with the cognizant agency (usu. DHHS).
Components of the Budget

- Salaries and wages
- Benefits
- Consultants
- Equipment
- Supplies
- Travel
- Other direct
- Subcontracts
- F&A

Institutional Policies & Salaries

- Academic year salary recovery (course buyouts, etc.)
- Summer salary
- Student wage and benefit rates
- Clerical support
- Allowance for increases in the future

Faculty Salaries

- Can be expressed in amounts, percentages of annual salary, person months, etc.; make sure you follow the sponsor's guidelines
- NIH as a salary cap (updated every year)
Fringe Benefits

- Usually a percentage rate of the salary that yields and amount
- Differ by FTE percentage (what is the threshold? .5 FTE)
- Student rates may differ from others on the project

Consultants

- Use prevailing rates in area of expertise
- Are there thresholds or institutional requirements for consultant payments that demand special procedures?

Equipment

- Capitalization level ($5K)
- Identify in budget
- Will institutional services support the equipment?
- Software is not equipment
Supplies

- Use supply category
- Includes special supplies needed to carry out the research project (ex. Chemicals, glassware, small electronic components, software, animals, etc.)

Travel

- Must be allocable to the objectives of the project
- Use appropriate rates as established by the institution
- Things to consider:
  - In-state vs out-of-state
- Out-of-State per diem rates
- On foreign travel, follow institutional policies, etc.

Other Direct Costs

- Participant incentives
- Equipment service contracts
- Communications, publications, postage, etc.
- Rental/lease of facilities
- Other?
Subcontracts

- Subawardees must submit a budget and evidence of institutional support
- Scope of work
- Usually entered as one item with the subcontract budget attached
- Subcontract amount usually includes direct & F&A costs (except NIH, which separates them to determine of a budget exceeds a direct cost limit)

F&A

- Usually calculated using total direct costs less:
  - Costs of subawards greater than $25K (i.e., charge F&A on amounts up to $25K)
  - Tuition remission, fees, etc.
  - Scholarships and fellowships
  - Rental or lease of facilities
  - Equipment and capital expenditures
  - Charges for patient care

Project Costs

- Includes both direct and F&A costs
- Follow sponsor's requirements (detailed first year with summaries for additional years)
- Include only allowable costs
- Specify the cost sharing
- Provide for increases over the years
Budget Narrative

- Describes key personnel and their responsibilities, including their time commitments to the project
- Provides a description of how item figures were computed
- Describes in greater detail items in specific budget categories
- Other needed information to questions that might arise

OMB Circulars

- OMB Circular A-21 (allowable costs)
  [http://www.whitehouse.gov/omb/circulars/a21/a21.html](http://www.whitehouse.gov/omb/circulars/a21/a21.html)
- OMB Circular 110 (project implementation and administration)
  [http://www.whitehouse.gov/omb/circulars/a110/a110.html](http://www.whitehouse.gov/omb/circulars/a110/a110.html)
- OMB Circular 133 (project auditability)
  [http://www.whitehouse.gov/omb/circulars/a133/a133.html](http://www.whitehouse.gov/omb/circulars/a133/a133.html)

The Essential Components of a Proposal: The NIH Perspective

Abstract

- Provides basis for assignment to Internal Review Group
- Describes main purpose, hypothesis, methods of data collection, analysis, significance (potential and substantive) of the study

Budget

- Itemize, justify, be realistic
- Budget description/narrative/justification
- Key personnel
Essential Components Continued

Research Plan
- Aims (what the study will do and how you will go about it) describe variables, identify specific products or endpoints of the study - hypothesis clarity is essential
- Significance - how research will contribute to the understanding of the problem; stress national/global significance
- Timelines and Milestones -- What will be done by whom and by when? How will you know that it's been done?

The Essential Components of a Proposal: The NIH Perspective

Preliminary Studies
- Describe previous work leading to this research point
- Design and Methods
  - "How to" section provides comprehensive plan and detailed set of procedures for conducting the study
  - Discuss measurement in detail, justify selection of instrument, describe staff ability to use this method

The Essential Components
Continued

- Present detailed plan for analysis, show how it relates to conceptual framework, variables and hypothesis, give time table showing sequence, discuss plans for dissemination
- Wrap-Up
  - Reiterate significance, anticipate potential problems or limitations, check out study section after assignment to prevent possible conflicts
Completing the Proposal Package

- Re-Reading Instructions
- Completing Forms
- Submission
  - E-Submissions?
    - Grants.gov, Fastlane, and other e-grant systems (e-applications; readers; payments; reports)
    - Authorized Organizational Representative (electronic signature)

Completing the Proposal Package: Reading the Instructions

- Federal Instruction Format
- Foundation Instructions
- Items to Check:
  - Page length, type size, font, margins
  - Page limits for sections, overall length
  - Appendix (are they allowed; sometimes need approval)
  - Copies
  - Forms

Completing the Proposal Package: Completing Forms

Filling out a sample form
- SF 424
- NSF (Fastlane)
- Department of Education

Practice filling some forms out—the point is to get familiar with the information they require so you can begin pulling it together
Institutional Assurances

- Human subjects protections, animal care, conflict of interest issues, non-discrimination, drug-free workplace, etc.
- Who will fill them out?

Completing the Proposal Package: Completing Forms

Certifications and Representations
- Federal Policies Required
- Institutional Policies Required
- Who signs? (What do the signatures mean?)
- Lower Tier Transactions (are not with debarred, suspended, ineligible, or voluntarily ineligible participants)

Things to Keep In Mind Prior to Submission

- Presentation is very important
- Follow application instructions
- Proposal applications should be easy to read and free of grammatical and spelling problems
- Do not make reviewers hunt for information
- Have someone else read the application
Things to Keep in Mind Continued

- Clearly mark and label figures and tables
- Use an easy to read font if the sponsor's guidelines do not specify which to use
- Provide and use headings, underlining, bold text and extra spacing to organize, emphasize and separate
- Provide photographic quality figures when appropriate

Proposal Review Activity

- Review the Guidelines
- Pay Close Attention to the Required Sections and the Points Accorded to Each
- Review Proposal
- Provide Comments as to Strengths, Weaknesses, Fundability (they also consider PI experience and institutional reputation)

Developing the Proposal Summary/Abstract Activity

- Using your problem statement write up a carefully worded summary for your project
- Keep in mind the following:
  - Carefully selected title
  - A statement describing the main purpose of the research
  - Hypotheses/goals
  - Methods of data collection and analysis
  - and significance
Federal Review and Post Award Issues

- Review process may take up to 6 months
- If proposal is rejected, you may revise and resubmit 2 times more
- Chances of getting funded increase with resubmission
- Must address reviewers' comments in resubmission
- Discuss with Program Officer

Award Notice

- Who has received the award
- For What
- For How Much
- Start and End Dates
- Terms and Conditions

Terms and Conditions

- General – cites the Sponsor's Policy Statement
- Informational – e.g. Close Out Terms
- Grant Specific
  - What is restricted
  - What must be done to lift the restriction
  - Due date for required documents
Common Post Award Issues

- Transfers between grantee organizations
- Change in scope
- Prior approvals
- Over or under expenditure of funds
- Extensions with or without funds
- Supplements (when over expended or for minority researcher)

Items Usually Requiring Prior Approval

- Change in scope
- Change in status of key personnel or PI
- Effort
- Change of grantee organization
- Pre-award costs >90 days
- Transferring amounts from trainee costs

Concluding Remarks: Post Award Compliance Issues to Keep in Mind

- Matching Commitments
- Allowable Expenditures
- Reporting Requirements
- Time and Effort Reports (where required)
- Institutional Review Boards
Remember: Policy Contexts are Constantly Changing

- The sponsored research environment is constantly changing. Be sure to keep up with:
  - Changing institutional policies
  - Sponsors' requirements
  - Federal Government's circulars and agency policies and requirements.

Elements of a Competitive Proposal

- Addresses important problem
- Well written (grammar, etc.)
- Well organized
- Meets the sponsor's guidelines
- Logically integrated
- Advances scientific knowledge
- Do-able
- Cost-effective
- Good timing
- Good grantsmanship