Identifying Funding Opportunities & Proposal Preparation

*Making the Right Moves: Key Issues for Post-doctoral Professionals & New Faculty*

---

Workshop Series – October 19, 2006
Terry A. May
517.432.7140
mayte@msu.edu

Research & Graduate Studies
Office of the Vice President for Research
http://www.msu.edu/unit/vprgs/
The Graduate School
http://grad.msu.edu/
http://grad.msu.edu/all/respconduct.htm
http://www.msu.edu/~biomed/epi827/

In Cooperation with
the Office of Faculty & Organizational Development
http://www1.provost.msu.edu/facdev/
[http://www.hhmi.org/labmanagement](http://www.hhmi.org/labmanagement)

**Chapter 1** — Obtaining and Negotiating a Faculty Position and Planning for Tenure  
**Chapter 2** — The Scientific Investigator Within the University Structure  
**Chapter 3** — Defining and Implementing Your Mission  
**Chapter 4** — Staffing Your Laboratory  
**Chapter 5** — Mentoring and Being Mentored  
**Chapter 6** — Time Management  
**Chapter 7** — Project Management  
**Chapter 8** — Data Management and Laboratory Notebooks  
**Chapter 9** — Getting Funded  
**Chapter 10** — Getting Published and Increasing Your Visibility  
**Chapter 11** — Understanding Technology Transfer  
**Chapter 12** — Setting Up Collaborations  
**Chapter 13** — Course in Scientific Management: An Overview and Lessons Learned
Acknowledgements

Anthony M. Coelho, Jr., Ph.D.
Review Policy Officer
Office of the Director, NIH
Office of Extramural Research

Outreach Activities and Resources
http://grants.nih.gov/grants/outreach.htm
Applying for Funding
Great Expectations
Peer Review

+ [Light bulb] + [Public Health Service Grant] + [Money] = Nobel Prize

[Dr. Me]
Questions, Comments & Concerns

What do you foresee as the difficulties & impediments
The Current Funding Environment

- An increase in Competitiveness
- MSU’s perspective
  - We expect faculty to be successful
  - We want faculty to be successful
  - We need faculty to be successful
- Strategies for increasing competitiveness
  - Recruit “the best”
  - Market strengths
  - “Carrots & Sticks”
  - Collaborate for strength
  - Targeted research investments
  - Reduced “Cascade of Negativity”
  - Become Reviewers for existing funding programs
## Expectations - ???

Table 1. Number of proposals submitted and awards received (bolded) from Table 2, by fiscal years. Number of MS and PhD graduates are also listed by advisor for Summer 2000 - Spring 2005. Faculty listings were compiled from various sources, including the MSU Directory, the Contract & Grants database, and MSU listing of Academic Programs. Faculty submitting proposals in the past but not currently listed are crossed out.

<table>
<thead>
<tr>
<th>Fiscal Years</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>Total</th>
<th>MS graduates</th>
<th>PhD graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposals as PI (Funded)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Assistant Professor**

<table>
<thead>
<tr>
<th></th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>Total</th>
<th>MS graduates</th>
<th>PhD graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Elements of Grant Success

- Good Ideas
- Good Timing
- Good Presentations
- Good Reviewers
- Good Luck
- Good Grantsmanship
Objective Assessment

- Disciplinary Interest
- Sponsor Interest
- Technical Expertise
- Reputation & Track Record
- Resources (Time and $$) for the Proposal/Project
- Availability of Preliminary Data
- Access to Population or Materials for Study
- Time for the Project
Proposal Preparation ...
Table of Contents

NIH

Face Page
Desc., Perf. Sites, & Personnel
Table of Contents
Detailed Budget for Initial Budget Period
Budget for Entire Period of Support
Budgets for Consortium Arrangements
Biographical Sketches
Other Support for Investigators
Institutional Resources
Research Plan
Introduction
Specific Aims
Background & Significance
Preliminary Studies/Progress Report
Research Design and Methods
Human & Animal Subjects
Literature Cited
Consortium/Contractual Arrangements
Consultants
Checklist & Appendix

NSF

Project Summary
Table of Contents
Project Description (including Results from Prior NSF Support)
References Cited
Biographical Sketches
Budget (cumulative & annual, including subawards) with Justification
Current and Pending Support
Facilities, Equipment and Other Resources
Special Information & Suppl. Doct.
Appendices
Program Planning & Proposal Writing

Expanded Version

By Norton J. Kiritz

In language, clarity is everything. —Confucius

Program Planning & Proposal Writing (PP&PW) is designed to assist both grantmaking agencies and applicants for funding. Its proposal format has been adopted by many governmental agencies and private foundations. Applicants have used PP&PW where the funding source extols its specific guidelines for proposal content. They have also used it as a guide to an explanation of their agency's overall planning.

A proposal should reflect the thoughtfully planning of an applicant seeking funds from a grantmaking agency with which to increase or improve its services to its constituency. Too often, though, this is not the case. Why? Perhaps because the funding source does not know what questions to ask of the agency. Perhaps because it seems to be known or taken for the process. Or perhaps because the agency does not know how to plan for the best effective use of its resources.

As a proposal format, PP&PW will help you create the requirements of most funding sources. As an organizational planning instrument, it will help you to identify differences in your agency's planning. Organizations that provide sufficient time and support to the program planning and proposal writing process can derive many benefits beyond the funds awarded. These can include:

- improved record-keeping systems
- enhanced visibility
- clarity of goals
- the development of tangible objectives
- increased knowledge in the program area
- better program evaluation
- better financial management

Norton J. Kiritz is the president of The Grantsmanship Center

The components of PP&PW are:

| I. Summary | Clearly and concisely summarizes the request |
| II. Problem Statement or Needs Assessment | Documents the needs to be met or problems to be solved by the proposed funding |
| III. Objectives | Establishes the benefits of the funding in measurable terms |
| IV. Methods | Describes the activities to be employed to achieve the desired results |
| V. Evaluation | Presents a plan for determining the degree to which objectives are met and methods are followed |
| VI. Future or Other Necessary Funding | Describes the activities beyond the grant period and the availability of other resources necessary to implement the grant |
| VII. Budget | Clearly delineates costs to be met by the funding source and those to be provided by the applicant or other parties |


http://www.tgci.com/
Good Idea

SIGNIFICANT?

• Does it address an important problem?
• How will scientific knowledge be advanced?

INNOVATIVE?

• Builds upon or expands knowledge base
• Capable of making a difference

UNDERSTANDABLE?
Good Timing

- Will the idea be understood by others?
- Does it build upon existing knowledge?
- Does it build upon similar ideas?
- Do you have preliminary data?
- How will the idea be received?
Good Presentation

Organize the Application

- What do you want to do?
- Why do you want to do it?
- How are you going to do it?
- What is the expected outcome?
- Why is it a good thing?
Good Presentation:  
Organize the Application

- Develop a logical outline (presentation sequence)
- **Use Section Heading** - help reviewers “find things”
- Use both major and minor section headings
- **Make it easy for reviewers** - **Don’t make them work**
- Use a detailed table of contents
- Do everything to help reviewers:
  Understand your idea,
  Why it is important and
  Why it is reasonable and feasible
Good Presentation

Address Review Criteria:

Significance
Approach
Innovation
Investigator
Environment
Good Presentation: Address Review Criteria

(1) SIGNIFICANCE:

• Does this study address an important problem?
• If the aims of the application are achieved, how will scientific knowledge be advanced?
• What will be the effect of these studies on the concepts or methods that drive this field?
Good Presentation: Address Review Criteria

(2) APPROACH:

• Are the conceptual framework, design, methods, and analyses adequately developed, well-integrated, and appropriate to the aims of the project?

• Does the applicant acknowledge potential problem areas and consider alternative tactics?
Good Presentation: Address Review Criteria

(3) INNOVATION:

- Does the proposed research employ novel concepts, approaches or method?
- Are the aims original and innovative?
- Does the project challenge existing paradigms or develop new methodologies or technologies?
Good Presentation:
Address Review Criteria

(4) INVESTIGATOR:
• Is the investigator appropriately trained and well suited to carry out this work?
• Is the work proposed appropriate to the experience level of the principal investigator and other researchers (if any)?
Good Presentation:
Address Review Criteria

(5) ENVIRONMENT:

- Does the scientific environment, in which the work will be done, contribute to the probability of success?
- Do the proposed experiments take advantage of unique features of the scientific environment or employ useful collaborative arrangements?
- Is there evidence of institutional support?
Good Grantsmanship

Principles for Success:

• Understand the Agency Mission
• Understand Peer Review
• Secure collaborators for areas in which you lack experience and training
• There are no competitors in science, there are only potential collaborators.
• Grant writing is a learned skill
• Grantsmanship is a full time job
• You are in control of your life
Good Reviewers

Reviewer ➔ Good Reviewer

- Organize and make reviewers “Happy”
- Make it easy for them to understand things
- Make it easy for them to find things
- Make it easy for them to be your advocate
- Don’t make them “work hard”
Good Reviewers

Factors Involved in Reviewer Assignment

- Abstract
- Specific Aims
- Methods Section
- Self Referral Letter - request specific study section
- Research the background of the review committee
- Letter to SRA recommending types of reviewers

TYPES OF REVIEWERS NOT NAMES OF REVIEWERS
Good Reviewers

Know who the potential reviewers are and do what you can to control the selection process.

Self Referral Letter - request specific study section

- Research the background of the review committee
  - CRISP Database
  - Rosters of Committees
- Letter to SRA recommending types of reviewers

**TYPES OF REVIEWERS NOT NAMES OF REVIEWERS**
Good Luck

The consequence of:

- Good Ideas
- Good Presentation
- Good Timing
- Good Reviewers
- Good Grantsmanship
Learning of the Sponsor’s Interests & Needs

NIH Regional Seminars on Program Funding and Grants Administration

✓ http://grants.nih.gov/grants/seminars.htm
  ✷ http://or.ucr.edu/event/TocItemDisplay.aspx?i=11
    - http://or.ucr.edu/NihConferenceFiles/PresentationFiles/PPT/Concurrent%20C%20Peer_Review%20COELHO.ppt
    - http://or.ucr.edu/NihConferenceFiles/PresentationFiles/PPT/Concurrent%20D%20Grant%20Writing%20COELHO.ppt

NSF Regional Grants Conferences

Sources of Information

Program Planning & Proposal Writing
✓ http://www.msu.edu/~biomed/epi827/propaids.htm

Sources for Funding Information – Electronic & As Needed
✓ http://www.msu.edu/~biomed/epi827/sources.htm
Checklists for Applicants and Grantees

Grants Checklists

- Before You Begin
- Documentation
- New Applicant
- Hypothesis
- Research Plan
  - Planning
  - Process
- Specific Aims
- Background and Significance
- Preliminary Data
- Design and Methods
  - General
  - Approach
  - Results
- Cited Literature
- Abstract
- Performance Site
- Consultant
- Biosketches
- Other Support
- Budget
- Resources
- Cover Letter
- Request an Institute
- Request an Institute Review Group
- Writing
  - General
  - Presentation of Information
  - Mechanics
  - Editing and Proofreading
- Revising
- Just-in-Time Information
- Notice of Grant Award
- Before Beginning Research
- While Doing Research
- Ongoing Reporting Requirements

Human Subjects Checklists

- Human Subjects (General)
- Planning a Human Subjects Application
- Planning an Investigator-Initiated Clinical Trial
- Human Subjects Documentation
- Human Subjects Research Plan
- Human Subjects Data Sharing Plan
- Human Subjects Protocol
- Data and Safety Monitoring Plan
- Phase III Clinical Trials
- Target Study Enrollment
- IND or IDE Requirements
- rDNA Requirements
- Before Enrolling Participants
- Revising a Human Subjects Application
- Human Subjects Reporting Requirements
  - General
  - When to Report to Your Program or Project Officer
  - IRB and IEC
  - IND or IDE
  - rDNA

Preparation Timeline

Use this timeline as a guide to plan how much time you'll need to complete your application, or work backward from the due date to calculate your prep time. Find receipt dates for all grant types at NIH's Standard Receipt Dates and Review and Award Cycles.

<table>
<thead>
<tr>
<th>Planning Phase</th>
<th>Writing Phase</th>
<th>Submission Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months before receipt date</td>
<td></td>
<td>Receipt date</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Assess yourself, your field, and your resources</td>
<td>First outline your application's structure; then write your application</td>
<td>Get feedback; edit and proofread</td>
</tr>
<tr>
<td>Brainstorm; research your idea; call NIAID program staff</td>
<td></td>
<td>Meet institutional deadlines</td>
</tr>
<tr>
<td>Set up your own review committee; determine human and animal subject requirements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To return to the page you came from, use your browser's "back" button. Or, view the supplemental materials index for "All About Grants".

Direct & Indirect (F&A) Costs of Research

Allowability determined by Federal Cost Principles

- People (Salary & Benefits)
  - Senior Investigators; Postdoctoral Associates; Technical Professionals; Students – Graduate & Undergraduate; Staff
- Equipment
- Non-capital Goods
- Travel
- Participant Support Costs
- Patient Care
- Collaborating Organizations
- Alterations & Renovations
- Other
  - Consultants; Technical Services; Publication; Animal Care; Dissemination; Program Evaluation
Evaluation

- No single model, template, or algorithm to be applied universally
  - Quantitative vs. Qualitative (combination)
- Important questions
  - For formative evaluation; mid-course corrections
  - Robust design; address the main questions to rule out threats to validity
  - Sound data collection instruments; reliable and valid
  - Must be objective to eliminate bias
  - Use appropriate analysis procedures
  - A reasonable budget given the size of the project itself (5 to 10 percent of overall project expenditures)

http://www.nsf.gov/ehr/rec/evaldesign.jsp
Successful Proposals

Annotated R01 Grant Application – NIAID

Last updated on January 11, 2005.

If you’d like to bookmark this or send the link to others, please use this link instead, http://www.niaid.nih.gov/ncn/grants/app/default.htm, which includes download instructions and other information.

Introduction

One of the most difficult tools to find -- and one of our most requested -- is an example of a well-written NIH grant application.

We are truly indebted to Dr. Mark Smeltzer for permitting us to use his outstanding basic science application, which he wrote as a new investigator in 1998, to help the next generation of investigators write their applications. Please note that the application is copyrighted.

Dr. Smeltzer’s application appears as he submitted it to NIH except for changes we made to some forms to reflect PHS 398 version 09/2004. For example, we changed the budget request to a modular budget.


http://www.nsf.gov/ehr/rec/role.jsp
NSF Application Review Process
(from NSF 04-539)

“An advisory panel consisting of biologists, information and computer scientists, mathematicians, and statisticians, among others, will review the applications. ... Applicants need to be aware that the make-up of the panel necessitates that the proposal be written for both the specialist and an interdisciplinary reader. The NSF will select the Fellows on the basis of the panel's recommendations, staff review, program priorities, the effect of the selections on the infrastructure of science in the U.S., and the NSF's education and human resource goals.”

“All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.”

- Intellectual Merit
- Broader Impacts
"How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?"
Broader Impacts
(from NSF 04-539)

 Fist: “How well does the activity advance discovery and understanding while promoting teaching, training, and learning?”

Second: “How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?”

Third: “To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?”

Fourth: “Will the results be disseminated broadly to enhance scientific and technological understanding?”

Fifth: “What may be the benefits of the proposed activity to society?”

NIH Merit Review Process

Reviewers will be asked to evaluate the application in order to judge the likelihood that the proposed research will have a substantial impact on the pursuit of these goals:

- Significance
- Approach
- Innovation
- Investigators
- Environment

Additional Review Criteria
The NIH Criteria for Merit Review

**Significance**: Does this study address an important problem? If the aims of the application are achieved, how will scientific knowledge or clinical practice be advanced? What will be the effect of these studies on the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field? Does the application propose to investigate organisms and exposures of health concern in occupational environments?

**Approach**: Are the conceptual or clinical framework, design, methods, and analyses adequately developed, well integrated, well reasoned, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics? Does the application propose improved strategies, methods or approaches to detect, quantify, establish exposure–dose relationships, or controls to improve prevention of airborne infectious diseases in occupational settings?
The NIH Criteria for Merit Review

- **Innovation**: Is the project original and innovative? For example: Does the project challenge existing paradigms or clinical practice; address an innovative hypothesis or critical barrier to progress in the field? Does the project develop or employ novel concepts, approaches, methodologies, tools, or technologies for this area?

- **Investigators**: Are the investigators appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the principal investigator and other researchers? Does the investigative team bring complementary and integrated expertise to the project (if applicable)?

- **Environment**: Does the scientific environment in which the work will be done contribute to the probability of success? Do the proposed studies benefit from unique features of the scientific environment, or subject populations, or employ useful collaborative arrangements? Is there evidence of institutional support?
Gathering Background Information

- Use available information concerning previous awards
  - NIH's CRISP system
    - Search for individual awards with links to funding details and abstracts
  - NSF Recent Awards
    - Weekly list of new awards (includes abstracts)
Grants.gov allows organizations to electronically find and apply for competitive grant opportunities from all Federal grant-making agencies. Grants.gov is the single access point for over 1000 grant programs offered by the 26 Federal grant-making agencies. The US Department of Health and Human Services is proud to be the managing partner for Grants.gov, an initiative that will have an unparalleled impact on the grant community.

Navigation of Grants.gov is simple. Use the colored tabs and/or links at the top of the screen to access primary sections of the site or the links to the left and below to access information on specific topics.
Community of Science (COS) is the leading global resource for hard-to-find information critical to scientific research and other projects across all disciplines. We aggregate valuable information so you spend less precious time and money searching for the information you need, leaving more time and money for your projects.

Find funding with COS Funding Opportunities: search the world's most comprehensive funding resource, with more than 22,000 records representing nearly 400,000 opportunities, worth over $33 billion.

Identify experts and collaborators with COS Expertise: search among 60,000 profiles of researchers from 1,600 institutions throughout the world. Discover who's doing what — current research activity, funding received, publications, patents, new positions and more.

Promote your research with a COS Profile: showcase your research and expertise among researchers and scholars from universities, corporations and nonprofits in more than 170 countries. Use convenient tools to keep your CV updated and accessible.

© Copyright 2005 Community of Science, Inc. | Privacy Policy | Site Map
Search COS Funding Opportunities

To help hurricane-ravaged universities, research institutions and non-profit organizations find funding to recover, COS is offering free no-strings subscriptions to COS Funding Opportunities. Please help us pass the word. Details at www.cos.com/katrina or katrina@cos.com

The most comprehensive source of funding information available on the Web, with more than 22,000 records, representing over 400,000 funding opportunities, worth over $33 billion.
Questions & Further Discussion