How to Plan and Prepare a Successful Grant Application

Session 1
Finding the Right Grant

Presented December 12, 2007 by the UAMS Office of Grants and Scientific Publications
Session Outline

♦ Review the submission process
  – 10 Steps for getting an NIH grant
  – Planning process
♦ Explore general resources
♦ Assess the research landscape
10 Steps for Getting a Grant

A Good Idea Is Just the Beginning . . . It’s All in the Planning
10 Steps for Getting a Grant

1. Assess the competition.
2. Gather the resources needed to compete.
3. Find out which NIH institutes/foundations supporting research in your area are seeking applications.
4. Discuss your ideas/specific aims with program staff.
5. Make sure you and your collaborators are properly trained for the research.
6. Closely examine grant applications from successful grantees.
7. Read the instructions; read them again; follow them to the letter.
8. Have several experienced grantees critique your application; follow their advice.
9. Consider requesting NIH to refer your application to a study section that has a high level of interest and expertise in your research topic.
10. Be willing to change yourself, your projects, your career.
1. Assess the competition.

- Search the CRISP database
  - Computer Retrieval of Information on Scientific Projects
- Includes projects funded by NIH, SAMHSA, HRSA, FDA, CDCP, AHRQ, OASH
- Contains information on NIH and FDA intramural programs
2. Gather the resources needed to compete.

- **Get a mentor** (NRSA F32: The sponsor should be an active investigator in the area of the proposed research who is committed to the research training of the individual and will directly supervise the candidate's research.)
- **Review current literature**
- **Look for opportunities to build research with support from various sources**
- **Identify co-I’s/statisticians/laboratory technicians/core resources**
- **Register on eCommons** (Suzanne Alstadt, 686-8846)
3. Find out which institutes are seeking applications.

- **Grants.gov**
- **National Institutes of Health**
- **Other government sources** (e.g., NSF, CDC, HRSA, VA, DOD)
- **GrantsNet** for private foundations

See the [Postdoctoral Society website](http://www.postdocsociety.org) for an extensive listing with links.
4. Discuss your ideas with program staff.

♦ Send in your specific aims
♦ Study an institute’s missions and goals
♦ Look for appropriate funding opportunity announcements (FOAs; PAs, RFAs, RFPs)
5. Make sure you and your collaborators are properly trained.

- Assemble a team with complementary areas of expertise
- Consult with others outside your area of expertise
- Form multi-disciplinary and multi-institutional collaborations
- Don’t forget a statistician!
6. Examine grant applications from successful grantees.

- Annotated grants on NIH website
- Mentor/Co-I applications

Proportion of R01 grants going to new investigators has remained at approximately 6% of the total R01s awarded—so, what was the key to their success?
7. Read the instructions and follow them.

♦ **PHS 416-1** for NRSA F32
♦ **PHS 398/SF 424** for most other NIH grants
♦ Most other funding organizations follow this outline
♦ Note exceptions/additions for a specific announcement (such as sealed letters of reference)
8. Have experienced grantees read your application.

- Follow their advice!
- Ask our office for additional help

“The NIH strongly encourages NRSA postdoctoral fellows to obtain instruction and training in grant writing in order to apply successfully for future career development and research support.”
9. Consider requesting a specific study section.

♦ Choose one that has a high level of interest/expertise in your research area

♦ Provide a cover letter with your request
10. Be willing to change yourself, your projects, your career.
Planning a Proposal Submission

The Best Way to Prepare a Successful Grant Application is to First Write a Proposal
Planning a Proposal Submission

But the best way to write a proposal is to prepare (PLAN) a grant application
Main Sections of F32

Form pages
Research Training Plan
A. Specific Aims (~½ p.)
B. Background & Significance (1½–2 pp.)
C. Preliminary Studies/Progress Report (2–3 pp.)
D. Research Design & Methods (4–6 pp.)
E. Human Subjects
F. Vertebrate Animals
G. Literature Cited
H. Resource Sharing
I. Respective Contributions
J. Selection of Sponsor and Institution
K. Responsible Conduct of Research

Appendix

≤10 pages
Allow Enough Time

- **PLANNING PHASE**
  - 8 months before receipt date:
    - Assess yourself, your field, and your resources
    - Brainstorm, research your idea, call program staff
  - 7 months before receipt date:
    - Set up your own review committee, determine human and animal subject requirements

- **WRITING PHASE**
  - 6 months before receipt date:
    - First outline your application's structure, then write your application
  - 5 months before receipt date:
    - Get feedback; edit and proofread
  - 4 months before receipt date:
  - 3 months before receipt date:
  - 2 months before receipt date:
  - 1 month before receipt date:
    - Meet institutional deadlines

- **SUBMISSION PHASE**
Allow Enough Time

♦ Give yourself at least 3 months to write your application after collecting preliminary data (3–5 hr/pg)

♦ Allow time to revise and proofread (use spell-check!)

♦ Expect catastrophes
Develop a Career/Research Plan

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- Apply for intramural funding
- Conduct intramural project
- Search for foundation funding sources
- Apply for foundation money
- Obtain bridge funding
- Conduct foundation research project
- Apply for K award, R21, R03, or other NIH funding
- Begin NIH-funded project
- Begin R01 preparation

How to Plan and Prepare a Successful Grant Application
Office of Grants & Scientific Publications
Research Funding Resources and Opportunities on the Internet

♦ Explore Some General Resources
♦ Assess the Research Landscape/Competition and Find Funding
1. Explore Some General Resources

♦ Michigan State University Libraries, “Grants and Related Resources” Metasite

♦ Information and advice on grant proposals and grantsmanship
  – Proposals to private organizations
  – NIH tutorials
  – Annotated grant and summary statement

♦ Writing, grammar/usage, and reference sites
2. Assess the Research Landscape/Competition and Find Funding

♦ Evaluating the Past
  – CRISP Database
  – NSF Award Search

♦ Assessing Current Funding Opportunities
  – NIH, Office of Extramural Research (OER)
  – Grants.gov
  – Private Funding Organizations
    • Science Careers/GrantsNet
    • Michigan State University Libraries, Postdoctorate Fellowships
    • Albert Einstein College of Medicine, Office of Grant Support
Doing your homework pays off.
Exploring General Resources
How to Plan and Prepare a Successful Grant Application

MSU Libraries
Grants and Related Resources

♦ No. 3: Grants for Individuals
♦ No. 5: Federal Funding Tools and Links
♦ No. 7: National Grant Makers
♦ No. 17: Academic Fundraising Web Resources
Search Terms

♦ writ- (includes write, writing, written)
♦ fund- (includes funding, funder)
♦ found-
♦ postdoc- (and post-doc)
♦ sample
♦ tutorial
♦ university
Found Web Resources: Articles: Advice for Postdocs

♦ “Getting Your Postdoc Grant — It Takes More Than Just Writing!”
– Dan McCurdy, 24 September 1999

(click here for pdf)
“Getting Your Postdoc Grant”
Tips from Dan McCurdy

♦ Plan ahead
  – Amount of writing time needed and possible
  – Paperwork, especially if working with animals

♦ Focus your proposal
  – Go with an established experimental model
  – Envision specific papers that can result from your proposal
“Ten Commandments of Private Foundation Grant Proposals”
– Vid Mohan-Ram, Science’s Next Wave, 10 March 2000 (click here for pdf)

“Tips for Applying to Private Foundations for Grant Money?”
– Peter J. Feibelman, University of Texas-Houston Health Sciences Center (click here for pdf)
Tips on Applying to Private Foundations

♦ Do Your Homework!
  – Private foundations differ from one another: big/small, new/established
  – Corporate institutions differ from private organizations

♦ Research
  – Nature of the funding agency
  – Specifics of the type of research that agency seeks to fund
Tips on Applying to Private Foundations

♦ Be realistic about fit of research interests with agency
♦ Don’t be overambitious
♦ Form collaborations
♦ Contact potential program officer by phone or letter of inquiry
♦ Address importance and potential impact of research
♦ Write in terms non-scientist reviewers can easily understand
Tips on Applying to Private Foundations

♦ Master the NIH format
♦ Address importance and potential impact of research
♦ Write in terms non-scientist reviewers can easily understand
Found Web Resources: Articles:

NIH Approach/Format

♦ “Evidence-Based Guide to Writing Grant Proposals for Clinical Research”

♦ “The NIH R01 Tool Kit”
  – Science Careers Editors, 27 July 2007 (click here for pdf)
“A Guide to NSF Success”
– Lynnette D. Madsen, Science Careers
27 July 2007 (click here for pdf)

“NSF Grant Reviewer Tells All”
– “Pam L. Member” [pseudonym], Science Careers 11 April 2003 (click here for pdf)
Found Web Resources: Tutorials:
All About Grants Tutorials

♦ New Investigator Guide to NIH Funding
♦ Advice on Research Training, Career Awards, and Research Supplements
♦ Annotated R01 Research Plan and Summary Statement
♦ Inside the NIH Grant Review Process
K99/R00: Pathway to Independence (PI) Award

- Goal: facilitate timely transition from mentored postdoctoral research position to stable, independent position

- Up to 5 years of support in two phases
  - Initial mentored phase (1-2 yr) (K99)
  - Follow-on independent phase (up to 3 yr) (R00)

- Follow-on phase not automatic, depends on securing
  - Independent tenure-track position
  - Equivalent research position
K99/R00: PI Award: Candidates

- Outstanding postdoctoral students
- Clinical or research doctorate
- ≤5 years of postdoctoral research training at time of application

Eligibility and citizenship
- See “Questions and Answers”
- No U.S. citizenship/permanent residency requirement
K99/R00: PI Award: Limitations

♦ Only one application allowed
♦ No pending awards or simultaneous submission of applications
  – Career development award (K series)
  – Research grant award (R series)
♦ Up to two resubmissions accepted, but all within 5-yr eligibility limit
K99/R00: PI Award

♦ Recipients expected to apply for NIH or other independent support during independent phase

♦ Anticipated number of awards each fiscal year: 150 to 200

♦ Contact relevant NIH Institute or Center for budgetary and programmatic information
NRSA Fellowship (F32) vs. PI Award (K99/R00)

♦ NRSA: restricted to U.S. citizens/nationals and permanent resident aliens
♦ PI Award: no U.S. citizenship requirements
♦ NRSA: a fellowship including both mentored and independent phases
♦ PI Award: awardees of mentored phase (K99) do not automatically move into independent phase
NRSA Fellowship (F32):
Program Announcement

♦ Special review criteria
♦ Check out the FAQs
♦ Contact appropriate staff at participating NIH Institutes and Centers
NRSA Fellowship (F32): What Are Your Chances?

♦ Between 1996 and 2003: 35% to 40% of F32 applications funded
♦ F32 success rates
♦ Contact appropriate staff at NIH Institutes and Centers
Found Web Resources: Tutorials:
Annotated R01 & Summary Statement

♦ Specific Aims section (click here for pdf)
♦ Summary Statement (click here for pdf)
Found Web Resources: Tutorials: Inside the NIH Grant Review Process

- Video of mock study section meeting
- How applications are reviewed for scientific and technical merit
- Real (but disguised) applications, real reviewers
- Tips on improving chances of positive review
CSR: Integrated Review
Groups, Study Sections ...

♦ Search engine for finding appropriate IRG and study section

♦ Links to all IRGs, with further links to study section rosters
  – CSR Study Section Roster Index
  – Fellowship Study Section Descriptions
Found Web Resources: Tutorials:
Other Online Tutorials

♦ National Cancer Institute Quick Guide for Grant Applications
♦ How to Write an Application Involving Research Animals
♦ National Science Foundation: A Guide for Proposal Writing
Found Web Resources: University Web Sites

♦ University of Pittsburgh, Office of Research, Selected Proposal Writing Websites
  – Writing-World.com
  – Bartleby.com
  – Grantsmanship Tutorial

♦ Albert Einstein College of Medicine, Office of Grant Support

♦ UAMS Office of Research and Sponsored Programs
  – Types of NIH Grant Programs
Assessing the Research Landscape/Competition and Finding Funding
### F32: Success Rates for Selected Institutes, 2004–2006

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<th>2006</th>
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<td>17/10</td>
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<td>25/9</td>
<td>36</td>
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<td>56/10</td>
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<td>336/62</td>
<td>18.5</td>
<td>234/34</td>
<td>14.5</td>
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<td>162/69</td>
<td>42.6</td>
<td>189/72</td>
<td>38.1</td>
<td>177/57</td>
<td>32.2</td>
<td>198/528</td>
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<td>161/30</td>
<td>18.6</td>
<td>138/14</td>
<td>10.1</td>
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<td>351/77</td>
<td>21.9</td>
<td>290/59</td>
<td>20.3</td>
<td>263/53</td>
<td>20.2</td>
<td>189/904</td>
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R, number of reviewed applications; F, number of funded applications.
Evaluating the Past: CRISP Database

- **Computer Retrieval of Information on Scientific Projects**
- Records on grants awarded since 1972; updated weekly
- Extramural projects funded by
  - NIH
  - Substance Abuse and Mental Health Services Agency
  - Health Resources and Services Administration
  - Food and Drug Administration
  - Centers for Disease Control and Prevention
  - Agency for Health Care Research and Quality
  - Office of Assistant Secretary of Health.
- Intramural programs of NIH and FDA
CRISP Database: Uses

- Search to confirm that your concept is original
- Search for scientific concepts and emerging trends and techniques
- Identify specific projects and/or investigators
CRISP Database: Query Form

♦ Interface designed for general public use
♦ Two types of queries
  – Keyword
  – Fielded
♦ "Hit List" of results
♦ Includes project title
♦ Hyperlinked to abstracts, with investigator and other information
CRISP Database: Fielded Search

- Searches on non-content-related information concerning awarded grants
- Search results linked to content
CRISP Database: Keyword Search

♦ Thesaurus
  – Indexing terms or keywords assigned to projects on basis of content
  – Tool for selecting appropriate terminology for querying database

♦ Global logic

♦ Expansion logic
Assessing Funding Opportunities: Private Organizations

♦ Science Careers/GrantsNet
♦ Michigan State University Libraries, Grants for Individuals
♦ Albert Einstein College of Medicine, Office of Grant Support
Assessing Funding Opportunities:

Science Careers/GrantsNet

♦ About Science Careers
♦ Create an account
♦ Funding
Some Final Tips

♦ Take advantage of the Web’s extensive literature and other resources on grantsmanship
♦ Master NIH research plan format and integration of review criteria
♦ Know your targeted funder’s mission, goals, and research interests
  – NIH Institutes and Centers
  – Private organizations
The Take-Home Message
Writing and submitting a grant is an arduous task...

Give yourself enough time and the right opportunity!