Leaping the Hurdles and Navigating the Maze: NIH funding and how to get it

Susan Newcomer, NICHD

September 2014
National Institutes of Health

Office of the Director

Office of Research Infrastructure Programs

http://www.nih.gov/icd

National Institute on Aging
National Institute on Alcohol Abuse and Alcoholism
National Institute of Allergy and Infectious Diseases
National Institute of Arthritis and Musculoskeletal and Skin Diseases
National Cancer Institute
National Institute of Child Health and Human Development

National Institute on Deafness and Other Communication Disorders
National Institute of Dental and Craniofacial Research
National Institute of Diabetes and Digestive and Kidney Diseases
National Institute on Drug Abuse
National Institute of Environmental Health Sciences
National Eye Institute

National Institute of General Medical Sciences
National Heart, Lung, and Blood Institute
National Human Genome Research Institute
National Institute of Mental Health
National Institute of Neurological Disorders and Stroke
National Institute of Nursing Research

National Institute on Minority Health and Health Disparities
National Center for Complementary and Alternative Medicine
Fogarty International Center
National Center for Advancing Translational Sciences
National Library of Medicine
National Institute of Biomedical Imaging and Bioengineering

NIH Clinical Center
Center for Information Technology
Center for Scientific Review
NIH Director’s office
How does NIH decide what to fund?

• Mission is based and defined in law
• Appropriations bills define congressional expectations
• NIH reports to congress on fulfillment of those expectations
• NIH funding a function of success
• NIH success based on success of its science
• THEREFORE we need you to succeed
NIH FY2014 Budget

• NIH is funded under the Consolidated Appropriations Act, 2014 (Public Law 113-76) signed by President Obama on 1/17/14
• $30.15 billion FY2014 budget
• $1 billion increase over FY2013 budget
• See NIH Fiscal Policy For Grants Awards – FY2014 NOT-OD-14-055
Where does the money go?

• Of the NIH budget, 90% will be used for extramural research
• Ongoing obligations to current grants use up perhaps 80% of those dollars, but there is

• **ALWAYS ROOM FOR A GOOD IDEA**
Institutes, Divisions and Centers

- Within each institute there are usually centers, divisions and branches
- Within each branch are program staff who are responsible for developing the research goals of the program, and who have specific areas of expertise. They’re the people to email about your ideas.
A Typical Institute

- Has a director, and staff and is advised by an outside Advisory Council

- Has an Intramural Research Program
  - Approximately 11% of the budget goes intramural research programs

- Has an Extramural Research Program
  - Grants, contracts, cooperative agreements
  - Over 81% of budget goes to extramural research
Does the NIH fund foreign institutions and research outside the US?

- Yes, both as subcontracts to US institutions and
- Directly to the foreign institution IF the research and researcher are unique, the setting exceptional and the research important for global health
- The NIH believes that all countries have an obligation to do what they can to prevent catastrophe and work to ameliorate global health problems—for the good of all.
The NIH Fogarty International Center [FIC]

- The Fogarty International Center promotes and supports international research and training

- Their website is: http://www.fic.nih.gov/about/mission.html
Why you should apply for NIH grant funding

• Hard work to get, but a GREAT way to support your research
  – You control the science
  – Few administrative requirements

• You get great input from wise people about your research

• Prestige
NIH funding of behavioral and social science research

<table>
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<th>Agency</th>
<th>FY02 $2.4 billion</th>
<th>FY07 $3.0 billion (est.)</th>
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<td>NIDDK Kidney</td>
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<td>144</td>
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Main types of RESEARCH grants for investigators

- **R01** - Research Project grant
- **R03** - NICHD Small Grant
- **R21** – Experimental Grant
- **R34** --
Special funding initiatives

RFA: Request for Applications
PA: Program Announcement

• How NIH asks researchers to consider certain topics or areas or reminds them that research is necessary
• Also how NIH notifies researchers that certain funding mechanisms are available
Remember:
Relatively few research grants result from RFAs & PAs
What should you do before applying?

• Talk with NIH staff about research ideas & funding mechanisms. **Use email**

• Check out the NIH web site to see:
  – Research areas NIH funds
  – What has been funded recently [the RePORTER]
  – Look at current FOA [Funding Opportunity Announcements]
What’s BEEN funded?

• Look at RePORTER This is a keyword [subject, institution, author etc] searchable biomedical database of federally-supported research conducted at universities, hospitals, and other research institutions.

• http://projectreporter.nih.gov/reporter.cfm
What should you do before applying?

• Work with another researcher who knows the process and who will walk you through the process, and review your draft proposal

• Be patient, it takes a while.
Grant writing is a skill

• It can be learned
• It takes practice
• You are unlikely to succeed at first
• It is helpful to have good teachers
• Once learned, it is useful in other arenas, such as writing for publication
Common sense rules for writing grant applications [1]

- Know your strengths & weaknesses
- Write about what you know
  - Don’t use your first application to completely change research directions
- Never change research directions to respond to an RFA or PA
- Don’t promise more than you can deliver
Common sense rules . . .

Have a good idea [2]

• No amount of grantsmanship can disguise a weak idea . . But poor grantsmanship can kill a good idea

• Follow the directions

REMEMBER: innovation in ideas but not in presentation.
Common sense rules
Develop the art of persuasion[3]

• Sell your ideas early in the application
• Crisply state your specific aims
• Explain your approach – Don’t assume reviewers will know what you mean, some may not be from your discipline
Common sense rules . . .

Justify your research [4]

• Tell reviewers not just what you want to do, but why:
  – Why is it important to do this research?

• Why did you choose this technical approach?
"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."
Common sense rules . . .[5]

• Develop a unified proposal with a sharp focus
• Theory, models, hypotheses, data sets, and research plan should be logically related
• Explain methods clearly and completely
Common sense rules . . .

Develop a sensible budget [6]

- Don’t inflate the budget
- Don’t minimize the budget so you don’t have enough money to do the work. Reviewers may think you don’t understand how much it will cost to do your work
Common sense rules . . .

Study the study sections [7]

• Keep in mind who will be reviewing it
• Look up the rosters of recent study sections
• www.csr.nih.gov/Committees/rosterindex.asp
Common sense rules . . .

Don’t irritate the reviewers [8]

• **Follow the directions**
  • Don’t be *sloppy*
  • Don’t use *teeny, tiny* type
  • Don’t include an appendix as *large* as a cow
Strengthening Applications – Remember:

Significance: of YOUR approach *and* of the issue

Scientific Rationale: New &/or original ideas clearly identified

Discuss the limitations – preempt criticism

Include abundant detail about the methodology

Include pilot or preliminary date, if available

Briefly describe future research directions
Small Stuff That Really Matters

TITLE: Save the snappy title for publication

ABSTRACT: write it last, make it informative

COVER LETTER: include

• A request for primary assignment to one (named) institute
• study section suggestion(s)
• areas of expertise needed
How does it the grant application process work?

**Find and download announcement, instructions and form package.**

**Prepare application per institution & agency guidelines.**

**Institution submits application to Grants.gov.**

**eRA downloads application and verifies compliance.**

**PI checks submission status and view assembled application in eRA Commons.**
There is no grantsmanship that will turn a bad idea into a good one, but........
There are many ways to disguise a good one.

• William Raub, Past Deputy Director, NIH
HERE’S THE WORLD FAMOUS SCIENTIST MAILING IN HIS LATEST APPLICATION...

I HAVE A HARD TIME BELIEVING THEY READ IT VERY CAREFULLY...
Common Problems in Applications from new applicants:

- Questionable logic of the approach
- Diffuse, unfocused research plan
- Lack of detail
- Unrealistic scope of work
- Uncertainty regarding future directions
Another common problem
not just for new investigators…

• **Failure to read the instructions**

  – **READ** the application form
  – **READ** the RFA, PA, or Notice, if applicable
  – Note that specific instructions in a Funding Opportunity Announcement [FOA] *supercede* instructions in the standard application form
Peer Reviewers

Review administrators select reviewers based on:

• Expertise: publications
• NIH experience (funding)
• Previous review experience (reliable; timely; diligent; respectful to other reviewers)
• Overall composition of panel including expertise and affiliations
Becoming a reviewer

• The Center for Scientific Review, which organizes the peer review system, is always looking for junior people to be on panels – to learn how to review – it is very helpful.

• See this website to apply:

  • http://public.csr.nih.gov/ReviewerResources/BecomeAReviewer/Pages/default.aspx
Scientific Review Panel Actions

-- Read all applications assigned to them by the review administrator
-- write reviews of each application and evaluate them on 5 criteria on a 1-9 scale
-- meet with all other reviewers to discuss all applications
-- vote a score for each discussed application during the meeting
Criterion #1: Significance

Will THIS PROJECT make a difference in the existing body of scientific knowledge and on the concepts or methods that drive this field?

Will the PI share his methodology and findings in a useable form? If not, it may be considered a weakness because it could reduce the impact of the research and the value to the scientific community of any data to be collected.
Criterion #2: Innovation

• Does the project employ novel concepts, approaches or methods?
• Are the aims original and innovative?
• Does the project challenge existing paradigms or develop new methodologies or technologies?
Criterion #3: Approach

• The scientific and technical strengths and weaknesses of the application.
• Are the conceptual framework, design, methods and analyses well integrated and appropriate to the aims as stated?
• Does the applicant acknowledge potential problem areas and consider alternative tactics?
Criterion #4: Investigator

- Is the PI appropriately trained and well suited to the project?
- What is the caliber of the PI and the rest of the investigative team?
- How strong is the organizational, scientific and technical leadership the PI would bring to the project?
- What is the credibility of the PI's past work?
Criterion #5: Environment

• Does the scientific environment in which the work will be done contribute to the probability of success of the proposed project?
• Does the proposed study take advantage of unique features of the scientific environment or employ useful collaborative arrangements?
• Is there evidence of institutional support?
Impact/Priority Score/Final Score

This is an overall score reflecting the reviewers’ assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the five core review criteria, and additional review criteria (as applicable for the project proposed). Low is good, high is bad – think golf, not bowling!
But what if I don’t get funded?

**TRY AGAIN!**

– Virtually all senior scientists have had proposals blown out of the water...and they applied again

• Even if you don’t succeed, you’ll have a well-developed proposal to market elsewhere
Addressing revisions

Criticism, even constructive criticism, is not fun. Read the summary statement but wait a few days to think about how to respond.

Reviewers do not tell you how to ‘fix’ your application, they point out areas of scientific concern.

Consider your options and justify your decisions.

- Talk to your program officer, who is named on the summary statement. S/he may have more insight into the written comments.
NICHD Mission

• Ensure that every person is born healthy and wanted
• Women suffer no harmful effects from reproductive processes
• All children have the chance to achieve their full potential for healthy and productive lives, free from disease or disability
• Ensure the health, productivity, independence, and well-being of all people through optimal rehabilitation.
Funding Information

• Office of Extramural Research
  http://grants.nih.gov/grants/oer.htm
• NIH grants tutorial:
  http://www.niaid.nih.gov/ncn/grants/
• Youtube 15 minute explanation of review
  http://www.youtube.com/watch?v=rNwsg_PR90w&feature=youtu.be
• Tips on preparing applications
  http://grants1.nih.gov/grants/grant_tips.htm
• Reviewing
Brilliant idea

Institution submits

NIH reviews

Get funding

Join French Foreign Legion

Revise proposal

Brilliant proposal
Remember

There’s always room for a good idea!