SCIENCE GRANTS: HOW TO APPLY

Types of Funding

• Cooperative agreement
• Fellowship
• Contract
• Award
• Gift

Types of Grants

• Research grant
• Travel grant
• Conference grant
• Curriculum development grant
• Collaborative grant
• Dissertation grant

External vs. internal Sources of Grant Funding

• Federal Government (National Institutes of Health, National Science Foundation, Department of Energy, Department of Defense, etc.)
• State/Local Government
• Corporations
• Foundations
• Your university (internal funds)

Sources of Grant Funding (2009-2010)

• Federal Gov't 63%
• State of CA 14%
• Not-for-profit 10%
• Industry 5%
• Other universities 5%
• UC 3%
• Foreign and other gov't less than 1%

Why Do I Want a Grant?

• Need money to do your research:

  – Equipment
  – Supplies
  – Personnel
  – Travel

• Build a record of funding
• Employment, tenure/promotion
• Salary

- Prestige
- Respect
- Sucker for punishment

Why Do I Want a Grant? (Graduate Students and Postdoctoral Researchers)

- Stipend/Summer salary
- Tuition/Fees
- Materials, recharge, etc.
- Travel (e.g., for conferences or collaborations)
- Independence
- Prestige

Why Do I Want a Grant? (Faculty Members)

- Summer salary
- Equipment
- Supplies
- Personnel
- Travel
- Build a record of funding
- Course Buyout

How Do I Get a Grant?

- Find a grant to apply for. (see Finding a Grant)
- Define your research question.
- Define your need.
- Match your research question to a granting agency that has a mechanism to meet your needs.
- Write a grant proposal.
- Edit the grant proposal.
- Edit the grant proposal again.

Timeline for Proposal Preparation
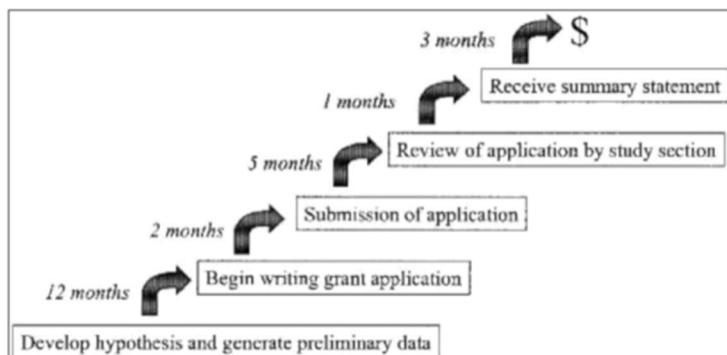
Timeline for a "perfect" NIH grant.

Define Your Research Question

• Identify a gap in knowledge in your field.
• Identify a problem whose solution will be a big step forward for the field, rather than an incremental step.
• Discern whether or not someone else has already asked your question.
• Choose a problem that is going to matter to more people than just you.

Define Your Need

• What do I need in order to do my research that I don't already have?
• How much do I need?
• Who do I need to help me?

Grantsmanship Jargon

• Grantsmanship
• Sponsor
• RFA/PA/FOA
• PI (Principal Investigator)
• Co-PI/Co-I
• Consultant
• Collaborator
• Key personnel/senior personnel
• Sponsored Projects Office
• Program Officer
• Scientific Review Officer (SRO)/Scientific Review Administrator (SRA)
• Study section
• Review panel
• Pink sheets
• Person months/percent effort
• Direct, indirect, total, modified total direct costs
• Cost sharing
• F&A/facilities and administrative costs
• Subcontract

Match Your Research Question to an Agency

• Each funding agency has a mission.

  – Your research must address their mission.
  – You can talk with them ahead of time to seek their advice on whether your topic is a good fit.

• Identify the right type of grant for your research question.

  – E.g., an equipment grant, career development grant, etc.

Write the Proposal

• First, read the instructions.
• After that, read them again.
• Then, make sure that you follow them.
• Make sure you give yourself plenty of time before the deadline.

Edit the Proposal

• Have others read and critique your proposal.
• Don't rely on spell-check.
• If English is not your first language, have a native English speaker read your proposal.
• Quid pro quo: edit your colleagues' proposals as well.

What Goes in a Grant Proposal?

• They may use different wording and order, but most include:

   – Abstract -Problem statement
   – Specific aims/goals -Background
   – Research plan -Timeline
   – Resources and facilities
   – Personnel list and biosketches/CVs
   – Budget

What Goes in a Grant Proposal?

• Traditional format for life science proposals:

   – Specific Aims
   – Background and Significance
   – Preliminary Data
   – Research Design and Methods

• Thanks, NIH, for changing things on us:

   – Specific Aims
   – Research Plan

• Significance
• Innovation
• Approach (including preliminary data)

How are proposals reviewed?

• Peer review, by and large.

   – 3-5 people will review it.
   – Agency has set review criteria.
   – Provide written critiques and a numerical score.

• Peer review plus stakeholders (For some foundations and agencies [e.g., CIRM]).
• In-house review (For some foundations)

• In-person meetings.
• Internet meetings.
• Teleconference.
• Written comments sent in.

NIH Review Criteria

• Significance:

  – Does this study address an important problem?
  – If the aims of the application are achieved, how will this advance scientific knowledge?
  – What will be the effect of this study on the concepts or methods that drive this field?

• 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?
  – For applications designating multiple Project Directors/Principal Investigators (PDs/PIs), is the leadership approach, including the designated roles and responsibilities, governance and organizational structure consistent with and justified by the aims of the project and the expertise of each of the PDs/PIs?

• 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?

• Investigators:

  – Are the PD/PI(s) and other key personnel appropriately trained and well suited to carry out this work?
  – Is the work proposed appropriate to the experience level of the PD/PI(s) and other researchers?
  – Do the PD/PI(s) and investigative team bring complementary and integrated expertise to the project (if applicable)?

• Environment:

  – Do(es) the scientific environment(s) in which the work will be conducted contribute to the probability of success?
  – Does the proposed study benefit from unique features of the scientific environment or subject populations, of employ useful collaborative arrangements?
  – Is there evidence of institutional support?

NIH Review Process

NSF Peer Review Criteria

• What is the intellectual merit of the proposed activity?
• What are the broader impacts of the proposed activity?

NSF Staff Review Criteria

• Integration of research and education.
• Integrating diversity into NSF programs, projects, and activities.

NSF Review Process