Funding Your Research
You have lots of ideas…
Now all you need is money
Funding Your Research

Where should I send my grant?

How does the review process work?

What can I do to optimize my chances for funding?
Why should you listen to me?

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NIH DEV2 Study Section ad hoc member 2006, 2009
NIH DEV1 Study Section Regular Member 2011 - 2013
NIH DEV1 Study Section Chair 2013 - 2015
Where should I send my grant?

Both NIH and NSF have review mechanisms that target predominantly research institutions OR predominantly teaching institutions. Both accept applications from foreign institutions.

Private foundations usually review applications once each year and have narrow guidelines for funding. You may qualify so check out all possible resources!
NSF awards are modest.

<table>
<thead>
<tr>
<th>Research Institution</th>
<th>13-600 Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Institution</td>
<td>14-579 RUI</td>
</tr>
<tr>
<td>Integrate Research &amp; Teaching</td>
<td>14-532 CAREER</td>
</tr>
</tbody>
</table>

Average $/year   $150,000  Direct costs
Number of Years  3

Approximate Deadlines  
Preproposal: Jan 17
Full: Aug 1; July 21 (CAREER)

Resubmission?  No. Every submission is “new”.
NIH awards more money.

Research Institution

Undergraduate Institution

Average $/year

Direct costs

$225K for R01, $125K for R21, $75K for R15

Number of Years

4-5 years for R01, 2 years for R21, 3 years for R15

~ Deadlines

New R01: Feb 5, June 5, Oct 5.


Resubmission?

Yes. There is now no limit on resubmission.
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Where should I send my grant?

How does the review process work?

What can I do to optimize my chances for funding?

Sat. July 19, 7:30-8:30 am, Funding and Dev. Biol., Kane 220
NSF reviews grants in two phases

**Phase One**

- early January: Preproposals Due (4 pages)
- NSF assigns to Integrative Organismal Systems
- Program Officer chooses 3 reviewers
- Peer Review: mid March
- Program Officer Recommendation: mid May

If NO, rewrite next year

If YES, submit Full proposal

NSF reviews grants in two phases

**Phase Two**

- ~ Aug 1 Full proposal Due (15 pages)
- Steve Klein chooses 3-8 reviewers
- Peer Review mid October “Panel”
- Program Officer Recommendation early December
- Start Date early January (one year after PreProposal due)
- Business Review
- Award Finalized
- NSF assigns to IOS
What happens at panel?

1. Grants reviewed CONFIDENTIALLY, by category
   Regular and Collaborative CAREER RUI

2. Applications encompass broad areas

How does this diversity affect your writing?
What happens during review?

Primary Reviewer:
Summarizes project
States all scores
Critiques grant

Secondary Reviewer:
Adds to strengths or notes other weaknesses
Adds insight from mail reviewers

Reader: Weighs in with big picture

Steve Klein, NSF
Sat. July 19, 1 pm
Education Workshop
What criteria guide the reviewers?

**Phase One: Preproposals**

**Intellectual Merit**
- General question,
- Innovation, Logic,
- PI qualifications

**Broader Impact**

**Phase Two: Full proposals**

**Intellectual Merit**
- More emphasis on method and feasibility,
- Overall impact

**Broader Impact**

What happens during review?

1. Primary Reviewer:
   - Summarizes project
   - States all scores
   - Critiques grant

2. Secondary Reviewer:
   - Adds to strengths or notes other weaknesses
   - Adds insight from mail reviewers

3. Reader: Weighs in with big picture

Panel Discussion:
- Clarify overall impact
- Resolve differences

Place on board (rank relative to all other grants):
- Highest, High Medium, Low Medium, Lowest Priority
Any questions so far?
NIH reviews grants 3 times/year

- Feb, June, Oct
- Full proposal Due (13 pages)
- Center for Scientific Review assigns to 1) Institute (PO); and 2) Study section (SRO)
- Scientific Review Officer chooses 3 reviewers
- Peer Review June, Oct, Feb “Study section”
- Institute and Council Review Oct, Feb, June
- Business Review
- Award Finalized
- Start Date Jan, May, Sep (one year later)

YouTube Videos & more: http://public.csr.nih.gov/Pages/default.aspx
How does Institute affect my grant?

<table>
<thead>
<tr>
<th>Institute</th>
<th>1) Institute</th>
<th><a href="http://www.nih.gov/icd/">http://www.nih.gov/icd/</a></th>
<th>Funding levels vary!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>Alcohol Abuse &amp; Alcoholism</td>
<td>Allergy &amp; Infectious Disease</td>
<td>Arthritis, Musculoskeletal, &amp; Skin</td>
</tr>
<tr>
<td>Biomedical Imaging &amp; Bioengineering</td>
<td>Cancer</td>
<td>Child Health &amp; Human Development</td>
<td>Complementary &amp; Alternative Medicine</td>
</tr>
<tr>
<td>Deafness &amp; Other Communication Disorders</td>
<td>Dental &amp; Craniofacial</td>
<td>Diabetes, Digestive, &amp; Kidney</td>
<td>Drug Abuse</td>
</tr>
<tr>
<td>Environmental Health Sciences</td>
<td>Eye</td>
<td>Fogarty International Center</td>
<td>General Medical Sciences</td>
</tr>
<tr>
<td>Heart, Lung, &amp; Blood Research</td>
<td>Human Genome Research</td>
<td>Library of Medicine</td>
<td>Mental Health</td>
</tr>
<tr>
<td>Minority Health &amp; Health Disparities</td>
<td>Neurological &amp; Stroke</td>
<td>Nursing Research</td>
<td>Research Resources</td>
</tr>
</tbody>
</table>

Which study section suits my grant?

Center for Scientific Review assigns to 2) Study Section

Five main divisions of scientific topics branch into 25 “Integrated Review Groups” with 240 “Study sections”

Some Likely IRGs for Developmental Biologists:
- Cell Biology
- Molecular, Cellular, & Developmental Neuroscience

http://public.csr.nih.gov/StudySections/IntegratedReviewGroups/Pages/default.aspx
Which study section suits my grant?

Example: Cell Biology IRG

Cell Biology IRG has 9 of the 240 Study Sections:

- Biology of the Visual System [BVS]
- Nuclear and Cytoplasmic Structure/Function and Dynamics Study Section [NCSD]
- Cellular Mechanisms in Aging and Development Study Section [CMAD]
- Cellular Signaling and Regulatory Systems Study Section [CSRS]
- Development-1 Study Section [DEV1]
- Development-2 Study Section [DEV2]
- Intercellular Interactions Study Section [ICI]
- Membrane Biology and Protein Processing Study Section [MBPP]
- Molecular and Integrative Signal Transduction study section [MIST]

http://public.csr.nih.gov/StudySections/Standing/Pages/default.aspx
Do your homework.

When you submit your grant, provide a cover letter requesting your grant go to “GM”, NIH’s General Medical Institute.

Tanya Hoodbhoy will likely be your Program Officer. 
http://www.nigms.nih.gov/About/Pages/hoodbhoy.aspx

Request a study section that fits your application. DEV1 and DEV2 both have expertise for all developmental biology applications, but other study sections may fit your work if you are a neuroscientist, reproductive biologist, or you study mating behavior. Look up the roster of reviewers to identify the experts.

http://public.csr.nih.gov/RosterAndMeetings/Pages/default.aspx
What criteria guide the reviewers?

**ALL Proposals**

**Overall Impact**

**Areas**
- Significance
- Investigator
- Innovation
- Approach
- Environment

**Possible Scores**
- **High**: 1-3 Extremely strong; No or a few minor weaknesses
- **Medium**: 4-6 Strong but… Many minor or moderate weaknesses
- **Low**: 7-9 Some strength but… Major weaknesses

What happens at study section?

1. New Investigator R01s reviewed first
   Preliminary scores rank applications
   Top 50% discussed

2. Other R01s reviewed
   Top 50%

3. All R21s
   Top 50%

4. All R15s
   Top 50%

For each category, any participant can ask to review a grant that missed the 50% cut off.
What happens during review?

1. Primary Reviewer:
   - Summarizes project
   - Discusses: Significance, Investigator, Innovation, Approach, Environment

2. Secondary Reviewer:
   - Adds to strengths or notes other weaknesses

3. Tertiary Reviewer:
   - Weighs in with big picture

Panel Discussion:
- Clarify overall impact
- Resolve differences

All members vote a score:
- Range 1-9: Based on reviewers’ scores
Questions?
Funding Your Research

Where should I send my grant?

How does the review process work?

What can I do to optimize my chances for funding?
How can I improve my chances?

1. Start with your best idea.

2. Help the reviewer help you.

3. Write like you care.
1  Start with your best idea. 

**Ask yourself:**

What is known and what are the big gaps in the field? 

Why is this process interesting and important? 

Why is your system a good model to address these questions? (How does it complement others’ efforts?)

**Talk to a senior colleague.** EARLY in the process

Get their perspective: ideas, methods, concerns.

**Be realistic.**

Create a time line and a real budget.
Help the reviewer help you.

Set the stage. Tell the reviewer:

What is known and what are the big gaps in the field?

Why is this process interesting and important?

Why is your system a good model to address these questions? (How does it complement others’ efforts?)

What have you learned so far?

What will be the impact of the proposed experiments?

Don’t assume anything.
Some reviewers will be world-renowned experts.
Some will be smart but experts in other areas.
Help the reviewer help you.

Be explicit:

What is your central question?
What is your hypothesis?

Organize each aim with sub headings:

- Logic and Rationale
- Methods
- Predicted Results and Interpretations
- Potential Problems and Alternative Strategies

Address all the review criteria:

Significance, Innovation, Investigator, Approach, Environment
Intellectual Merit Broader Impacts
3 Write like you care.

Get help.
Ask a senior colleague for an example “good” grant. Ask a colleague to critique a draft.

Demonstrate scholarship.
Show the key data, with statistics. Cite the papers that support your arguments.

Be clear and CONCISE.
Use active voice. (See also Fiske. 2010. Speak up. Nature 464: 312.) Create schematics to illustrate concepts. Spell check; grammar check; proofread your grant.

See J. M. Williams. Style: Toward Clarity and Grace
Questions?
Funding Your Research

Where should I send my grant?

Everywhere, targeting the right funding mechanism.

How does the review process work?

Learn the process so you can put it to work for you.

What can I do to optimize my chances for funding?

Use your best idea; help the reviewer; write like you care.