Corridor Talk: necessary informal inside information

NIH, Its Institutes, and Its Funding Mechanisms for Medical Research

Terry S. Yoo
Office of High Performance Computing and Communications
National Library of Medicine
National Institutes of Health
U.S. Department of Health and Human Services
United States of America, North American Continent, Earth
cor - ri - dor talk n 1: the practice of passing on tips, insights, and strategies about the means of production of academic work (as at professional conferences, where, it is frequently remarked, the most important business takes place “out in the corridor” rather than inside the meeting rooms) 2: nonascribable (off-the-record) but necessary information; practical gossip 3: common-sense, informal (not publicly taught) mentoring; the unsaid, but frequently said anyway (though not to everyone).
Survey:

Computer scientists?
Computer Engineers?
Graduate Students?
Postdoctoral Fellows?
Assistant Professors?
NSF Funding?
DOE?
DARPA?
NIH?

How many of you know your project officer’s name? On sight?
An experiment:

1. Raise your hand.
2. If I get to a term you don’t know, please lower your hand.

Grant
RFP (Request for Proposals)
Research Contract
Cooperative Agreement
PAR (Program Announcement)
BAA (Broad Agency Announcement)
RFA
SBIR
STTR
R01
P41
CRADA
P01, R03, R21, R33, U01, U54, T32, T15, K13, …
Goals

1. Overview of NIH.
2. Briefly cover NIH procedures.
3. Describe the NIH peer-review process.
4. Survey NIH funding opportunities past and present.

Provide researchers new to NIH with information to help improve the overall quality of new proposals in biomedical engineering research.
Chance favors the prepared mind.

- Louis Pasteur

Luck is when preparation meets opportunity.

- Seneca (quoted by Roy Williams)
Acknowledgements:

NSF:
   Debbie Crawford
Slides:
   Helen Fraser
   Lee Rosen
The Government is a very big place. NIH is a pretty big place.

Give a basic introduction to the National Institutes of Health.
Give a basic introduction to the NIH funding picture and some basic differences from NSF

DARPA: $3.048 Billion  NSF: $7.768 Billion
NASA: $18.724 Billion  DOE: $29.547 Billion
NIH: $31.829 Billion

Source: the 2012 Presidential budget request
Some basic notes across Feds:

1. Grants - Proposals
   - Panel has less time to think through your idea than you do.
   - Proposal writing as story telling
   - Volunteer

2. Budgets - rising in science and technology
   - DOE is optimistic (2012 Presidential request +4%)
   - NSF is optimistic (2012 Presidential request +5%)
   - NIH is cautious (2012 Presidential request +3%)
   - Funding is a zero sum game?

Domestic spending capped planned for 2012 doesn’t seem to have happened?
Which way is up?
NIH Mission

Improve human health through biomedical and behavioral research, research training and communications.
A mistaken view…
NIH is 27 separately funded Institutes and Centers…

Bethesda, MD:
    NIH Campus
Rockville, Poolesville, MD
    NCI, NINDS, NIBIB, NIMH, NCRR
Baltimore, MD
    Bayview Campus: NIDA, NIA
Frederick, MD
    Frederick Cancer Research Center
Research Triangle Park, NC
    NIEHS
Hamilton, MT
    Rocky Mountain Laboratory
Another view...

Check out: http://deathandtaxesposter.com
A Little more reality?
A zero sum game?

Mission of the NIH

Promoting the nation’s health through research.

1. Intramural research (NIH labs) - 10% of the budget, 6,000 scientists
2. Extramural research (grants) - 80-90% of the budget

Not a monolithic Agency - 28 Institutes and Centers

<table>
<thead>
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<tr>
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Research Project Grants
Applications, awards, and success rates
NIH is PEOPLE

• There is a human being on the other end.
• There is an institute at the other end.
• GET TO KNOW THEM.
Types of NIH Grants

- Mentored Quantitative Research Career Development Award (K25)
- NIH Research Project Grant (Investigator Initiated) (R01)
- NIH Small Business Innovation Research (SBIR)
- NIH Small Business Technology Transfer (STTR) Programs
- NIH Small Grant Program (R03)
- NIH Support for Conferences and Scientific Meetings (R13 and U13)
- NIH Project Grants (P01)
- NIH Biotechnology Resource Grant (Biotechnology Resource Center) (P41)
- NIH Cooperative Agreements (U01 and U54)
- NIH Academic Research Enhancement Award (AREA) Grants – (R15)
- NIH Exploratory/Developmental Research Grant Award (R21)
- NIH Clinical Trial Planning Grant (R34) Program
- NRSA Institutional Research Training Grants (T32)
- NRSA Short-Term Institutional Research Training Grants (T35)
- NRSA Predoctoral Fellowship Minority Students (F31)
- NRSA Predoctoral Fellowship Students w/Disabilities (F31)
- NRSA Individual Postdoctoral Fellowships (F32)
- NRSA Senior Fellowships (F33)
Alphabet soup!

- **K** - implies career development grant
  Mentored, individual awards
- **R** - implies research grant
- **U** - implies cooperative agreement
- **T** - implies training grant
- **F** - implies fellowship
- **P** - implies project grant

Example: R13 is a conference grant. U13 is a conference cooperative agreement.
Examples

• NAMIC (NCBC) - U54 with NIBIB
• LIDC - U01 with NCI
• MIP - P01
• BTRCs - P41 with NCRR
• P50 - Center for Systems Biology

Go to:
http://grants.nih.gov/grants/oer.htm
Computer Retrieval of Information on Scientific Projects
http://crisp.cit.nih.gov

also
http://grants.gov
R21/R33 - Technology development programs
   Can be two linked grants… when the R21 finishes, the R33 can be automatic.
   Not renewable
   Short - R21 is at most 3 years

U01 and U54s - Cooperative agreements
   Uncooperative agreements?
   Why? When you see NIH coming, it means more work!
   NIH doesn’t contribute value, just administration, so why cooperate?
   Pis want to be left alone, and thus resist direction from NIH.
   A GOOD cooperative agreement - both NIH and PI contribute.

P20 - Center planning grants
   BISTI and the NIH Roadmap ran P20 grants
   Significant difference between Center of Excellence and Program of Excellence - EDUCATION component.

P41 - Centers of Excellence
   require site visits
   Big projects - lots of administration, almost not worth the trouble.

R01 - renewable, individual, PI-guided
Notes (continued):

1. **R13 - Conference grant**
   1. Reviewed internally within an institute.
   2. Possibly multiple years.
   3. Up to $30K. Takes almost a year to obtain funding.

2. **SBIR - Small Business Innovation Research**
   1. Submitted by a Small Business
   2. Usually linked with a university program.
   3. Phase 1 v. Phase 2

3. **STTR - Small Business Technology Transfer Research**
   1. Submitted by a university program.
   2. ALWAYS linked with a small business
   3. Phase 1 v. Phase 2

Peer Review of NIH Support Mechanisms

**Who Reviews What?**

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<tr>
<th><strong>CSR</strong></th>
<th><strong>Institutes</strong></th>
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<tr>
<td>Research Project Grant <em>(R01)</em>&lt;br&gt;Postdoctoral Fellowship <em>(F32)</em>&lt;br&gt;Senior Fellowship <em>(F32)</em>&lt;br&gt;Fogarty International Center Fellowship <em>(F05, F06)</em>&lt;br&gt;Short-Term Training <em>(T35)</em>&lt;br&gt;Small Business Grants <em>(R41, R42, R43, R44)</em>&lt;br&gt;Academic Research Enhancement Award <em>(R15)</em>&lt;br&gt;Biomedical Research Support Shared Instrumentation Grant <em>(S10)</em>&lt;br&gt;</td>
<td>Program Project Grant <em>(P01)</em>&lt;br&gt;Center Grant <em>(P30, P50, P60)</em>&lt;br&gt;Institutional Fellowship <em>(T32)</em>&lt;br&gt;Academic Career Award <em>(K07)</em>&lt;br&gt;Mentored Clinical Scientist Development Award <em>(K08)</em>&lt;br&gt;Conference Grant <em>(R13)</em>&lt;br&gt;Marc Fellowships <em>(F34, F36, T34)</em>&lt;br&gt;Minority Biomedical Support Grant <em>(S06)</em>&lt;br&gt;Resource Grant <em>(P40, P41, R24, R26, R28)</em>&lt;br&gt;RFA - Request for Applications R&amp;D - Contracts</td>
</tr>
</tbody>
</table>
The best way to predict the future is to invent it.

- Alan Kay
Care and Feeding of the Young Grant Proposal

1. Normal pathway for a grant proposal
2. Roles of NIH
3. Roles of PI
4. Ways you can help in process
5. Things not to do
REVIEW PROCESS FOR NIH RESEARCH GRANTS

Principal Investigator Initiates Research Idea

Research Grant Application (PI)

School or Other Research Center (Applicant)

Submits application

Center for Scientific Review

Assign to IC and IRG

Scientific Review Group

Review for Scientific Merit

Institute

Evaluate for Relevance

Advisory Council or Board

Recommends Action

Institute Director

Allocates Funds $$

Takes final action for NIH Director

National Institutes of Health
Applications Submitted to NIH

1. Approximately 80,000 grant applications were submitted to NIH in FY2003, of which 25-30% are funded

2. Competing grant applications are received for three review cycles per year

3. Applications are now sent online: grants.gov
# STANDARD RECEIPT DATES AND REVIEW AND AWARD CYCLES

## TYPES OF APPLICATIONS

<table>
<thead>
<tr>
<th>Application Receipt Dates *</th>
<th>CYCLE I</th>
<th>CYCLE II</th>
<th>CYCLE III</th>
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<tbody>
<tr>
<td><strong>All</strong> (new, competing, revised, and supplemental)</td>
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<tr>
<td>Program Project and Center Grants</td>
<td>February 1</td>
<td></td>
<td>October 1</td>
</tr>
<tr>
<td>Competing Continuation, Supplemental, and Revised Grants</td>
<td>March 1</td>
<td>July 1</td>
<td>November 1</td>
</tr>
<tr>
<td><strong>Individual</strong> NRSA (Standard) ***</td>
<td>April 5</td>
<td>August 5</td>
<td>December 5</td>
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</table>

## Review and Award Schedule

<table>
<thead>
<tr>
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<th>CYCLE I</th>
<th>CYCLE II</th>
<th>CYCLE III</th>
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<tbody>
<tr>
<td>Scientific Merit Review</td>
<td>June-July</td>
<td>October-November</td>
<td>February-March</td>
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<tr>
<td>Advisory Council Review</td>
<td>September-October</td>
<td>January-February</td>
<td>May-June</td>
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<tr>
<td>Earliest Project Start Date</td>
<td>December</td>
<td>April</td>
<td>July</td>
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</table>
IRG = SRG = Panel = Study Section
Conducts the scientific review

Primary Reviewer
Secondary Reviewer
Reader

Closed ballot for scores
Reviews are penned before
(Score can seem disconnected)

Others in room, but non-voting
1. Each CSR standing study section has 12-24 members who are primarily from academia

2. CSR standing study sections convene face-to-face meetings

3. As many as 60-100 applications are reviewed by each study section
Perceived Study Section
<table>
<thead>
<tr>
<th>Study Section Acronym</th>
<th>Study Section Description</th>
<th>SRO (EMAIL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE</td>
<td>AIDS Clinical Studies and Epidemiology Study Section</td>
<td>HILARY SIGMON</td>
</tr>
<tr>
<td>ACTS</td>
<td>Arthritis, Connective Tissue and Skin Study Section</td>
<td>AFTAB ANSARI</td>
</tr>
<tr>
<td>ADDT</td>
<td>AIDS Discovery and Development of Therapeutics Study Section</td>
<td>SHIV PRASAD</td>
</tr>
<tr>
<td>AED</td>
<td>Anterior Eye Disease Study Section</td>
<td>JERRY TAYLOR</td>
</tr>
<tr>
<td>AICS</td>
<td>Atherosclerosis and Inflammation of the Cardiovascular System Study Section</td>
<td>LARRY KINKUS</td>
</tr>
<tr>
<td>AIP</td>
<td>AIDS Immunology and Pathogenesis Study Section</td>
<td>SHIV PRASAD</td>
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<tr>
<td>AMC8</td>
<td>AIDS Molecular and Cellular Biology Study Section</td>
<td>KENNETH ROEUCK</td>
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<tr>
<td>AQIC</td>
<td>AIDS-associated Opportunistic Infections and Cancer Study Section</td>
<td>EDUARDO MONTALVO</td>
</tr>
<tr>
<td>APDA</td>
<td>Adult Psychopathology and Disorders of Aging Study Section</td>
<td>ALFONSO LATONE</td>
</tr>
<tr>
<td>ASG</td>
<td>Aging Systems and Genetics Study Section</td>
<td>FRANCOIS RULLER</td>
</tr>
<tr>
<td>AUD</td>
<td>Auditory System Study Section</td>
<td>EDWIN CLAYTON</td>
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<tr>
<td>BACP</td>
<td>Bacterial Pathogenesis Study Section</td>
<td>RICHARD KOSTELNEN</td>
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<tr>
<td>BMM</td>
<td>Biochemistry and Biophysics of Membranes Study Section</td>
<td>NURA ASSA-HUNT</td>
</tr>
<tr>
<td>BCH</td>
<td>Biomedical Computing and Health Informatics Study Section</td>
<td>BILL BURNAG</td>
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BIOMEDICAL IMAGING TECHNOLOGY STUDY SECTION
Center For Scientific Review
(Terms end 6/30 of the designated year)

CHAIRPERSON
LINS, JONATHAN M., PHD, (08)
PROFESSOR
DIVISION OF TOXICOLOGICAL SCIENCE
SCHOOL OF PUBLIC HEALTH
JOHNS HOPKINS UNIVERSITY
Baltimore, MD 21205

MEMBERS
BIGIO, IRVING J., PHD, (11)
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DEPARTMENT OF BIOMEDICAL ENGINEERING
COLLEGE OF ENGINEERING
BOSTON UNIVERSITY
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BRADLEY, WILLIAM G., MD, PHD, (08)
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UNIVERSITY OF CALIFORNIA, SAN DIEGO
SAN DIEGO, CA 92103

CLEARY, KEVIN R., PHD, (09)
ASSOCIATE PROFESSOR
DEPARTMENT OF RADIOLOGY
IMAGING SCIENCES AND INFORMATION SYSTEMS CENTER
Institute Council makes funding decision

Score
Relevance
Mission concerns

Program Officer often in room, but non-voting
If you win: you get an award letter

1. Start date might be flexible
   At times sooner is better for the Institute

2. If you don’t win: you get a sad letter
   Revise or start over?
   Introduction is key
   (3 pg summary of revision)

AS OF 2009 - APPLICANTS ARE ONLY PERMITTED A SINGLE RESUBMISSION!
So who are the people who help you through this process at the NIH?

1. Program Officer
2. Scientific Review Officer

Your number one goal must be to become a face or name, rather than a proposal number!
How do you decide where to send your grant?

• Many institutes to choose from
  Which one is right?
    Look at mission statements of likely institutes
    Does your research fit?
• Is there a PA or RFA on your research area?
  How to find out about these?
    Use the NIH website to search them
    www.nih.gov
• No PA or RFA? OK if no RFA ("Investigator Initiated" R01)
• Which institute(s) is right?
  1. Mission statements
  2. How to narrow them down?
    • Look at portfolio for those institutes
  3. Perhaps it is better not to narrow them down
    • Double listing can be best
    • Paylines and priorities differ
• Speak with Program Officers
Regarding NIH…

If it was up to the NIH to cure polio through a centrally directed program instead of an independent investigator driven discovery, you’d have the best iron lung in the world, but not a polio vaccine.

Samuel Broder
Former Director of the National Cancer Institute
Ask ADVICE from the Program Officer

• Tell him/her about your research goals
  – What type of grant are you going for?

• Ask:
  – Is this the right institute?
  – Should I have a dual funding assignment?
  – What study section would be good for my grant?
  – Any comments on the science?

• How are new PIs helped?
  – On your PHS398, check the box for new investigators
    You are new until you get your first RO1, smaller grants don’t count
  – If you have a good relationship with Program officer and he/she needs
    your app to fill in a gap in his portfolio
    You might get rescued from the no fund pile and put in for funding even
    with a worse score than others

Your number one goal must be to become a face or name, rather than a proposal number!
Investigate study section

- Make sure that someone on that panel knows your field and the techniques you will be using
- If no one is available on panel
  - Once you get your SRO and study section assignment, write a letter asking for someone in a particular field or area of expertise to be added to the study section
1. From your cover letter, keywords and abstract
   (remember your abstract will go on CRISP once you are funded… so be discreet about prelim results and details)

2. Your cover letter can have a big impact
   – Present rationale for a particular request
   – Suggest, don’t demand
   – Whenever plausible request double assignment (allows two different Councils to consider your grant application)

3. Program Officer assigned in Institute
   May have been defined in RFA or RFP

4. SRA goes with the Panel
What not to do?

1. Never Demand
2. Never ask for snap decision (ask advice)
3. Never contact IRG members!
4. Never assume that the IRG member you don’t like did you in in the meeting.
5. Never ignore comments, even from “stupid” reviewers
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