Introduction to Grantsmanship –
NIH Funding Realities and Opportunities
2011
http://report.nih.gov/nihdatabook/
Funding and the Young Investigator in the Current Era

The problem:

• Most academic faculty are expected to bring in their own research support within 2-3 years of appointment as an Assistant Professor

• Obtaining funding is hard, especially for new investigators without a funding track record

• In a tight fiscal environment (NIH funding levels are approaching single digits at some institutes) funding is harder than ever
NIH Budget Authority FY 1977 – FY 2007
(Current vs. Constant 1977 Dollars Using BRDPI as the Inflation Factor)
(Dollars in Billions)
<table>
<thead>
<tr>
<th>FY 2010 Actual</th>
<th>FY 2012 Budget Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>$31,243</td>
<td>$31,987</td>
</tr>
</tbody>
</table>
Total NIH budget authority FY 2010 enacted

- **Research Project Grants**: $16,598,000,000 (53%)
- **Research Training**: $783,000,000 (3%)
- **R&D Contracts**: $3,459,000,000 (11%)
- **Research Mgmt & Support**: $1,452,000,000 (5%)
- **Research Centers**: $3,034,000,000 (10%)
- **Other Research Grants**: $1,807,000,000 (6%)
- **All Other**: $821,000,000 (3%)
- **Intramural Research**: $3,285,000,000 (11%)
The Chance of Getting Funded
R01-Equivalent grants  Applications, awards, and success rates
<table>
<thead>
<tr>
<th>FY</th>
<th>All Application by Submission Number</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>First (Original) Submission</td>
<td>12.3%</td>
</tr>
<tr>
<td>2009</td>
<td>First Resubmission (A1)</td>
<td>32.7%</td>
</tr>
<tr>
<td>2009</td>
<td>Second Resubmission (A2)</td>
<td>50.4%</td>
</tr>
<tr>
<td>2009</td>
<td>Third Resubmission (A3)</td>
<td>0.0%</td>
</tr>
<tr>
<td>2009</td>
<td><strong>TOTAL</strong></td>
<td><strong>22.2%</strong></td>
</tr>
<tr>
<td>2008</td>
<td>First (Original) Submission</td>
<td>11.9%</td>
</tr>
<tr>
<td>2008</td>
<td>First Resubmission (A1)</td>
<td>36.1%</td>
</tr>
<tr>
<td>2008</td>
<td>Second Resubmission (A2)</td>
<td>56.8%</td>
</tr>
<tr>
<td>2008</td>
<td>Third Resubmission (A3)</td>
<td>33.3%</td>
</tr>
<tr>
<td>2008</td>
<td><strong>TOTAL</strong></td>
<td><strong>23.3%</strong></td>
</tr>
<tr>
<td>2007</td>
<td>First (Original) Submission</td>
<td>12.1%</td>
</tr>
<tr>
<td>2007</td>
<td>First Resubmission (A1)</td>
<td>35.2%</td>
</tr>
<tr>
<td>2007</td>
<td>Second Resubmission (A2)</td>
<td>57.2%</td>
</tr>
<tr>
<td>2007</td>
<td>Third Resubmission (A3)</td>
<td>34.6%</td>
</tr>
<tr>
<td>2007</td>
<td><strong>TOTAL</strong></td>
<td><strong>23.6%</strong></td>
</tr>
<tr>
<td>2006</td>
<td>First (Original) Submission</td>
<td>11.7%</td>
</tr>
<tr>
<td>2006</td>
<td>First Resubmission (A1)</td>
<td>32.3%</td>
</tr>
<tr>
<td>2006</td>
<td>Second Resubmission (A2)</td>
<td>49.4%</td>
</tr>
<tr>
<td>2006</td>
<td>Third Resubmission (A3)</td>
<td>44.0%</td>
</tr>
<tr>
<td>2006</td>
<td>Fourth or later Resubmission (A4+)</td>
<td>0.0%</td>
</tr>
<tr>
<td>2006</td>
<td><strong>TOTAL</strong></td>
<td><strong>20.7%</strong></td>
</tr>
</tbody>
</table>
Funding and the Young Investigator
R01-Equivalent investigators  Number supported on competing awards, by career stage of investigator
Age Distribution of NIH RPG Investigators and Medical School Faculty 1980

Sources: IMPAC II Current and History Files and AAMC Faculty Roster
Age Distribution of NIH RPG Investigators and Medical School Faculty 2006

Sources: IMPAC II Current and History Files and AAMC Faculty Roster

NIH OFFICE OF EXTRAMURAL RESEARCH
September 2007
Age at First R01 Equivalent Award from NIH
FY 1980 to 2009

Age data for FY 2009 are preliminary

Fiscal Year

- MD-PhD
- MD Only
- PhD Only
Funding and the Young Investigator

The good news:

• The NIH is aware of the problem and is committed to improving the situation
• There are new funding programs specifically for young investigators
• There are institute commitments to support success rates for young investigators
New Extramural Principal Investigators

Number of NIH First Time R01 Equivalent Awardees FY 1980-2008

Number of Awardees

Fiscal Year


K award

FIRST

Check box
Number of New and Experienced Investigators and New Investigators as a Percentage of All Investigators on Competing R01 Equivalent Awards (FY 1990 to 2009)

Data from the Success Rate File December 24, 2009
R01-Equivalent grants, New (Type 1) Success rates, by career stage of investigator

![Graph showing success rates by fiscal year for first-time and established investigators.]

- First-Time
- Established
Getting Started –
the R01 is not the way to go

If you are still in training or
are an assistant professor,
there are better options
NIH sources of funding for post-docs
NRSA Fellowships and Training Grants (F & T Awards) for Individuals With or Earning a Research Doctorate

- Predoctoral Fellowships (F31)
- Institutional Training Grants (T32)
- Postdoctoral Fellowships (F32)
- Senior Fellowships (F33)

Time:
- College
- Graduate School
- Postdoctoral
- Independent Investigator
Non-NRSA Fellowships (F) and Training (T) Grants Funding Opportunities

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Program Description</th>
</tr>
</thead>
</table>
| F05       | Americas Fellowship in Reproductive Sciences (F05)  
The goal of this NICHD program is to provide a unique opportunity to qualified Latin American reproductive scientists, at junior or mid-career level, to receive up to three years of research training in the United States (U.S.) or Canada. |
| F37       | NLM Individual Fellowship for Informationist Training (F37)  
These NLM fellowships are intended for health sciences librarians, scientists, health professionals and others who wish to broaden their existing scientific background by acquiring the additional disciplinary knowledge and experience to function as an informationist. |
| D43       | AIDS International Training and Research Program (D43)  
The purpose of this training program is to invite applications from eligible institutions for innovative, collaborative research training programs that would contribute to the long-term goal of building sustainable research capacity in HIV-related conditions at institutions in low- and middle-income countries.  
Global Infectious Disease Research Training Program Award (D43)  
The FIC invites applications for U.S. and developing country institutions for programs to provide infectious disease (excluding HIV/AIDS) research training to scientists and health professionals in order to build sustainable research capacity at institutions in low- and middle-income endemic countries.  
Millennium Promise Awards: Non-communicable Chronic Diseases Research Training Program (NCoD) (D43)  
The purpose of this program is to support research training related to chronic, non-communicable diseases to help build capacity for research in LMICs, so-called “developing countries” as defined by the World Bank, ([http://www.worldbank.org/data/countryclass/classgroups.htm](http://www.worldbank.org/data/countryclass/classgroups.htm)). |
| D71       | Planning Grants for International Malaria Clinical, Operational and Health Services Research Training Programs (D71)  
Planning grant applications for malaria research training programs in clinical, operational and public health services for clinical, public health and social scientists and health care professionals in the countries targeted by the President’s Malaria Initiative (PMI) (Angola, Benin, Ethiopia, Ghana, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Rwanda, Senegal, Tanzania, Uganda, Zambia) are invited. |
| T15       | NIH Research Training & Research Career Opportunities: Short-Term Courses in Research Ethics (T15)  
The objective of this program is to support the development, conduct, and evaluation of short-term courses on ethical issues in research, particularly research involving human participants. |
Kirschstein-NRSA post-doctoral fellowships (F32s) Applications, awards, and success rates

![Graph showing the number of applications, awards, and success rates for Kirschstein-NRSA fellowships from 1998 to 2010. The success rate for the year 2010 is highlighted at 30%.](image)
| Career Stage | NIGMS | NIAID | NHLBI | NIMH | NINDS | NCI | NICHD | NIA | NEIHS | NIDDK | NIDA | NIDCD | NIBIB | NIDCR | NIAAA | NINR | NEI | NHGRI | NIAMS | NCCAM | NRCC |
|--------------|-------|-------|-------|------|-------|-----|-------|-----|-------|-------|------|-------|-------|-------|------|-----|------|-------|-------|-------|
| Pre-Doctoral | 3,839 | 664   | 638   | 533  | 476   | 470 | 428   | 322 | 294   | 294   | 284  | 206   | 206   | 206   | 202  | 151  | 150  | 144  | 135  | 81   | 28   | 17   |
| Post-Doctoral| 1,284 | 951   | 786   | 589  | 533   | 453 | 360   | 293 | 237   | 237   | 209  | 196   | 162   | 124   | 124  | 83   | 84   | 57   | 57   | 35   | 20   |

Legend:  c = 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 300 | 400 | 500 | 1000 | 1500 | 2000 | >2000

Kirschstein-NRSA training grants and fellowships:
Full-time training positions awarded, by Institute/Center,
FY 2010

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>NIGMS</th>
<th>NHLBI</th>
<th>NIAID</th>
<th>NIDDK</th>
<th>NIA</th>
<th>NIMH</th>
<th>NINDS</th>
<th>NICHD</th>
<th>NIAA</th>
<th>NIDCR</th>
<th>NIDCD</th>
<th>NEI</th>
<th>NIH</th>
<th>NINR</th>
<th>NHGRI</th>
<th>NIAMS</th>
<th>NCCAM</th>
<th>NRCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Doctoral</td>
<td>3,839</td>
<td>638</td>
<td>470</td>
<td>533</td>
<td>322</td>
<td>294</td>
<td>476</td>
<td>428</td>
<td>202</td>
<td>206</td>
<td>206</td>
<td>151</td>
<td>150</td>
<td>144</td>
<td>135</td>
<td>81</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>Post-Doctoral</td>
<td>533</td>
<td>1,284</td>
<td>951</td>
<td>589</td>
<td>293</td>
<td>453</td>
<td>360</td>
<td>198</td>
<td>209</td>
<td>124</td>
<td>124</td>
<td>83</td>
<td>84</td>
<td>57</td>
<td>35</td>
<td>28</td>
<td>6,786</td>
<td></td>
</tr>
<tr>
<td>Total FHTPs</td>
<td>4,372</td>
<td>1,922</td>
<td>1,421</td>
<td>1,253</td>
<td>1,080</td>
<td>809</td>
<td>886</td>
<td>541</td>
<td>327</td>
<td>326</td>
<td>297</td>
<td>285</td>
<td>263</td>
<td>228</td>
<td>207</td>
<td>170</td>
<td>100</td>
<td>74</td>
</tr>
</tbody>
</table>
Ruth L. Kirschstein National Research Service Award (NRSA)

- **Guide to Kirschstein - NRSA Programs** (graphical guide for funding opportunities at specific training stages)
  - For individuals with or working on a research doctorate
  - For individuals with or working on a health-professional doctorate

- **Institutional Research Training Grants**
  - [T Kiosk](#) - Information about NRSA Training Grants Funding Opportunities
  - [NIH Forms and Applications Page](#) (Including PHS 398 and PHS 2590 application and other Training Forms)
  - Fillable Institutional Research Training Grant Application Forms and Data Tables

- **Individual Fellowships**
  - [F Kiosk](#) - Information about NRSA Fellowship Funding Opportunities
  - [NIH Forms and Applications Page](#) (Including PHS 416-1 and 416-9 application and other Training Forms)
  - Guidelines for Reviewers (Links to review guidelines for various fellowship “F” mechanisms)
  - Revision: Streamlined Review Process to be used for Ruth L. Kirschstein National Research Service Awards (NRSA) Postdoctoral Fellowship Applications (F32) (08/09/2007)

- **Payback Service Obligation**
  - [NRSA Payback Service Center](#) - Ruth L. Kirschstein National Research Service Awards (NRSA) Home Page
  - Frequently Asked Questions
  - Contact Us
Career Development
(K) Awards
Competing applications for K04, K11, K14, K15, K16, K17, K20 and K21 were discontinued in FY 1995. Information on current K awards can be found at: [http://grants.nih.gov/training/careerdevelopmentawards.htm](http://grants.nih.gov/training/careerdevelopmentawards.htm).
Research Career Development Awards  Number of entry-level awards
Trends in Number of Individual NIH K Awards by Institute or Center Fiscal Years 1998 - 2009
PERCENT OF EXTRAMURAL AWARDS TO RESEARCH CAREER DEVELOPMENT
BY INSTITUTES AND CENTERS

6.73%

0.69%
Competing applications for K04, K11, K14, K15, K16, K17, K20 and K21 were discontinued in FY 1995. Information on current K awards can be found at: [http://grants.nih.gov/training/careerdevelopmentawards.htm](http://grants.nih.gov/training/careerdevelopmentawards.htm).
Research Degree

K02 Provides support for newly independent scientists who need a period of intensive research focus as a means of enhancing their research careers

K01 For scientists switching to a substantially new health-related research field:

- background in bio-medicine, OR
- had a hiatus in career because of illness or family care responsibilities, OR
- delayed completion of training to serve as faculty at a minority serving university

K25 Scientist switching to a biomedically-related research field AND whose background is in a quantitative science (e.g. mathematics or statistics)
Competing applications for K04, K11, K14, K15, K16, K17, K20 and K21 were discontinued in FY 1995. Information on current K awards can be found at: [http://grants.nih.gov/training/careerdevelopmentawards.htm](http://grants.nih.gov/training/careerdevelopmentawards.htm).
Health Professional Degree

K23 Professional has completed specialty or sub-specialty training and is seeking salary and research support for a full-time supervised career development experience in patient-oriented research (POR)

K08 Professional seeking salary and research support for a full-time supervised career development experience in area of health-related research that does not involve patients
NIH Success Rates for Selected $K$ Activities
Fiscal Years 1996 - 2010
NIH Success Rates for Selected $K$ Activities
Fiscal Years 1996 - 2008
Applications and Awards by Institute or Center, FY 2007

NIH K08

NIH K23
NIH is attempting to assist new investigators

**New Investigator:** An NIH research grant Program Director/Principal Investigator (PD/PI) who has not yet competed successfully for a substantial, competing NIH research grant is considered a New Investigator.

A PD/PI who has received a Small Grant (R03) or an Exploratory/Developmental Research Grant Award (R21) retains his or her status as a New Investigator.

Examples of current NIH Institute and Center practices to foster new investigator independence:

 Practices vary by Institute, but may include:

• First-time R01 investigators given an extended percentile payline (generally 5% greater than regular payline)

• Additional funds are being allocated to pay eligible applications beyond this extended payline as exceptions

• Funding new investigators for all years requested
Early Stage Investigator (ESI): An individual who is classified as a New or First-Time Investigator and is within 10 years of completing his/her terminal research degree or is within 10 years of completing medical residency (or the equivalent) is considered an Early Stage Investigator (ESI).

"Applications from ESIs will be given special consideration during peer review and at the time of funding. Peer reviewers will be instructed to focus more on the proposed approach than on the track record, and to expect less preliminary data than would be provided by an established investigator."
New Investigators as well as ESIs will be eligible for the “Full Implementation to Shorten the Review Cycle for New Investigator R01 Applications Reviewed in Center for Scientific Review (CSR) Recurring Study Sections”

• Study Sections participating will schedule meetings so that new investigators receive their summary statements no later than March 1, July 1, or November 1.

• The Summary Statements for qualifying applications will have an explicit note indicating eligibility for next cycle submission.

• Resubmission applications for consideration at the next cycle must be submitted by March 20, July 20, or November 20.

• New Investigators who do not choose the next cycle option will use the standard resubmission dates for subsequent cycle submission (March 5, July 5, or November 5).
New Investigators Program
Resources for New Investigators

[ Back to New Investigators Home Page ]

Statement of Commitment to New Investigators

New investigators are the innovators of the future - they bring fresh ideas and technologies to existing biomedical research problems, and they pioneer new areas of investigation. Entry of new investigators into the ranks of independent, NIH-funded researchers is essential to the health of this country’s biomedical research enterprise. NIH’s interest in the training and research funding of new investigators is understandably deep and long-standing. Over the years, special programs to assist new investigators in obtaining independent research funding have been created - for example the New Investigator Research Award (NIRA or R23), in 1977, and the First Independent Research Support and Transition (FIRST or R29) Award, which superceded the NIRA in 1986. Both of these special programs were discontinued because neither was able to significantly...
Age at First R01 Equivalent Award from NIH
FY 1980 to 2009

Age data for FY 2009 are preliminary

Fiscal Year
NIH Pathway to Independence Award Program K99

• Program announced by Dr. Zerhouni in 2006

• NIH will issue between 150 and 200 awards for this program in its initial year, beginning in Fall 2006

  ✓ 183 awards given out in 2007
  ✓ 180 awards given out in 2008
  ✓ 204 awards given out in 2009
  ✓ 194 awards given out in 2010

• All NIH Institutes and Centers are participating in this award program.
NIH Pathway to Independence Award Program
K99

Eligibility:

– Outstanding postdoctoral candidates who have a clinical or research doctorate (including Ph.D., M.D., D.O., D.C., N.D., D.D.S., D.V.M., Sc.D., D.N.S., Pharm.D. or equivalent doctoral degrees)

– No more than 5 years of postdoctoral research training at the time of application
The award will work as follows:

The initial 1-2 year mentored phase will allow investigators to complete their supervised research work, publish results, and search for an independent research position. $90,000/year

The second, independent phase, years 3-5, will allow awardees who secure an assistant professorship, or equivalent position, to establish their own research program and successfully apply for an NIH Investigator-Initiated (R01) grant. $250,000/year
The NIH LRP Application Cycle is Open!
The Extramural New and Renewal Application Deadline is November 15, 2011.

what’s new
1 2 3 4 5

LRPs for NIH employee researchers.

EXTRAMURAL LRP
FOR RESEARCHERS OUTSIDE NIH
- CLINICAL RESEARCH
- PEDIATRIC RESEARCH
- HEALTH DISPARITIES RESEARCH
- CONTRACEPTION AND INFERTILITY RESEARCH
- CLINICAL RESEARCH FOR INDIVIDUALS FROM DISADVANTAGED BACKGROUNDS

Application Cycle and Deadlines
Extramural New and Renewal September 1, 2011 - November 15, 2011
Intramural Renewal September 1, 2011 - February 1, 2012
Intramural New and ACGME September 1, 2011 - April 1, 2012
In exchange for a two or three-year (for Intramural General Research) commitment to your research career, NIH will repay up to $35,000 per year of your qualified educational debt.

In addition, the NIH will make corresponding Federal tax payments for credit to your Internal Revenue Service tax account at the rate of 39% of each loan repayment to cover your increased Federal taxes.

The NIH may also reimburse any increased state or local taxes and/or additional increased Federal taxes (where the Federal tax payments were not sufficient to fully cover your increased Federal taxes) that you incur as a result of your LRP benefits.
The 5 Loan Repayment Programs

- Clinical Research
- Pediatric Research
- Health Disparities Research
- Clinical Researchers from Disadvantaged Backgrounds
- Contraception and Infertility Research

DEADLINES: Extramural LRP Applications:
September 1, 2011 - November 15, 2011
http://www.lrp.nih.gov/
The Basic Eligibility Requirements for NIH Loan Repayment Programs:

- Doctoral-level degree
- Government research funding (Federal, state or local) or domestic nonprofit research funding
- Student loan debt equal to at least 20% of annual salary
- U.S. citizenship or permanent residency
- Non-Federal government job
IRAQ

BANKING CRISIS

UPCOMING ELECTIONS

STIMULUS FUNDS

TEA PARTY

STEM CELL LITIGATION

September 24, 2008

Elias A. Zerhouni stepped down as NIH Director

August 17, 2009

Francis S. Collins, M.D., Ph.D., sworn as the 16th NIH director