Course Policies:

Please, No:

- Recording of Presentation
- Screen Shots of Presentation
- Posting to Social Media
- Sharing of Course Material with those Outside of Course

Thanks, Jaime Rubin
Types of Support and Review Processes for Research and Career Development Activities
- Government Agencies -

Jaime S. Rubin, Ph.D.
Dept. of Medicine
College of Physicians and Surgeons
Columbia University

Course: “Funding and Grantsmanship for Research and Career Development Activities”
http://grantscourse.columbia.edu/
Topics to be Discussed

- Funding Agencies
  - Federal
    - National Institutes of Health, Dept. of Defense
  - Voluntary Health Organizations, Professional Societies, Foundations, Industry

- Types of Awards
  - Grants, Contracts, Cooperative agreements,
    - e.g. Research grants, fellowships, career development awards

- Funding Announcements

- Grant Review Processes
  - National Institutes of Health
Topics to be Discussed

- Funding Agencies
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  - Grants, Contracts, Cooperative agreements,
    - e.g. Research grants, fellowships, career development awards

- Funding Announcements

- Grant Review Processes
  - National Institutes of Health

Federal Agencies

- Dept. of Agriculture
- Dept. of Defense
  - Congressionally Directed Medical Research Programs (CDMRP)
- Dept. of Education
- Dept. of Energy
- Dept. of Health & Human Services
  - National Institutes of Health
- Dept. of Homeland Security
- Dept. of Justice
- Environmental Protection Agency
- National Aeronautics & Space Administration
- National Science Foundation
DoD Congressionally Directed Medical Research Programs (CDMRP)

Who is the CDMRP?


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DoD Congressionally Directed Medical Research Programs (CDMRP)

1992-2022: $19.4 Billion (appropriations)
1992-2020: 19,792 grants/contracts awarded

- Peer Reviewed Medical: $$3.4507 B (1999-06, 08-22)
- Prostate Cancer: $2.150 B (1997-22)

Additional Supported DoD Programs/Projects

- Psychological Health/Traumatic Brain Injury: $1.1906 B

https://cdmrp.health.mil/about/fundinghistory
DoD Congressionally Directed Medical Research Programs (CDMRP)

Congressionally Directed Medical Research Programs (CDMRP)

- Leadership
- Organization Chart

The CDMRP originated in 1992 via a Congressional appropriation to foster novel approaches to biomedical research in response to the expressed needs of its stakeholders—the American public, the military, and Congress.

Hallmarks of the CDMRP include:
- investing in groundbreaking research
- targeting critical gaps
- reviewing application using a two-tier formal review with no standing peer review panels and no "pay line"
- involving consumer advocates throughout the program cycle
- supporting both the next generation of researchers and established scientists.
- funding the full pipeline of research development, including basic, translational, and clinical research.
- fostering (or employing) collaboration and synergy

https://cdmrp.health.mil/aboutus
CDMRP Application Process Overview

Step 1
- Submit Preapplication in eBRAP
  - Preproposal
  - Receive Invitation to Submit Full Proposal Application
  - Letter of Intent

Step 2
- Submit Full Application to Grant.gov
- BO

Step 3
- Verify Application in eBRAP
  - PI

BO: Business official from applicant organization
PI: Principal Investigator from the applicant organization
eBRAP: CDMRP's Electronic Biomedical Research Application Portal
SAM: System of Award Management

https://cdmrp.health.mil/funding/apply
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DoD Congressionally Directed Medical Research Programs (CDMRP)

Research Programs fund different types of “Funding Opportunities”

Funding announcements typically have “Topic Areas” or “Overarching Challenges, one of which must be addressed in the application, and “Areas of Encouragement” or “Strategic Goals”.

e.g., Peer Reviewed Medical Research Program (PRMRP) – FY2022
Peer Reviewed Medical Research Program (PRMRP) (FY2022):

“Funding Opportunities”

**Award Mechanism**

- **Clinical Trial Award**
  - Go to: [Program Announcement](#)
  - [General Application Instructions](#)
  - Grants.gov Funding Opportunity Number: W81XWH-22-PRMRP-CTA

- **Discovery Award**
  - Go to: [Program Announcement](#)
  - [General Application Instructions](#)
  - Grants.gov Funding Opportunity Number: W81XWH-22-PRMRP-DA

- **Focused Program Award**
  - Go to:
    - [Program Announcement](#)
    - [General Application Instructions](#)
  - Grants.gov Funding Opportunity Number: W81XWH-22-PRMRP-FPA

- **Investigator-Initiated Research Award**
  - Go to:
    - [Program Announcement](#)
    - [General Application Instructions](#)
  - Grants.gov Funding Opportunity Number: W81XWH-22-PRMRP-IIRA

- **Technology/Therapeutic Development Award**
  - Go to:
    - [Program Announcement](#)
    - [General Application Instructions](#)
  - Grants.gov Funding Opportunity Number: W81XWH-22-PRMRP-TTDA

[https://cdmrp.health.mil/researchprograms](https://cdmrp.health.mil/researchprograms)

PRMRP (FY2022):
“Portfolio Categories”

- Autoimmune Disorders and Immunology
- Cardiovascular Health
- Hemorrhage Control and Blood Products
- Infectious Diseases
- Internal Medicine
- Neuroscience
- Nutrition and Metabolism
- Orthopaedic Medicine
- Respiratory Health

https://cdmrp.health.mil/researchprograms
PRMRP (FY2022)

“Topic Areas” and “Strategic Goals”

**Autoimmune Disorders and Immunology**

**Topic Areas**
- Food Allergies
- Guillain-Barré Syndrome
- Inflammatory Bowel Disease
- Rheumatoid Arthritis
- Sustained Release Drug Delivery

**Strategic Goals**

**Foundational Studies**
- Identify factors, to include environmental exposures, lifestyle triggers, and past medical history, impacting the onset and progression of associated immune-mediated diseases
- Determine the impact of the microbiome on associated immune-mediated diseases

**Diagnosis**
- Develop innovative noninvasive methods for continuous monitoring of inflammation
- Identify biomarkers to predict onset and/or progression of associated immune-mediated diseases

**Treatment**
- Develop and test therapeutic interventions to promote tissue healing
- Develop and test new treatments and/or refine existing treatment strategies to minimize toxicity, and mitigate the inflammatory and/or allergic disease state

**Epidemiology**
- Conduct patient-centered research on onset, exacerbation, outcomes, and treatment preferences for associated immune-mediated diseases

https://cdmrp.health.mil/researchprograms
National Science Foundation

Directorates: Science and engineering research and education

- Biological Sciences
- Computer and Information Science and Engineering
- Engineering
- Geosciences
- Mathematical and Physical Sciences
- Social, Behavioral and Economic Sciences
- STEM Education
- Technology, Innovation and Partnerships

Office of the Director (includes)

- Office of Integrative Activities
- Office of International Science and Engineering

U.S. Dept. of Health and Human Services
Agency for Healthcare Research and Quality (AHRQ)

“Mission is to produce evidence to make health care safer, higher quality, more accessible, equitable and affordable…”

- “invests in research on the Nation's health delivery system that goes beyond the "what" of health care to understand "how" to make health care safer and improve quality…

- creates materials to teach and train health care systems and professionals to put the results of research into practice…

- generates measures and data used by providers and policymakers.”


https://www.ahrq.gov/cpi/about/mission/index.html
https://www.ahrq.gov/cpi/about/profile/index.html
Centers for Disease Control and Prevention (CDC)

Supports programs to “protect America from health, safety and security threats, both foreign and in the U.S.”

https://www.cdc.gov/about/organization/mission.htm
https://www.cdc.gov/about/pdf/organization/cdc-org-chart.pdf

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Funds grants and cooperative agreements to support public health programs (national and international)

- **National Institute for Occupational Safety and Health**
  - Research Grants (R01, R21, R03)
  - Mentored Research Scientist Development Award (K01)
  - Cooperative agreements (U’s)
  - Workforce Development
  - Conference grants

- **Center for Global Health**
  - Division of Global HIV & TB
    - President's Emergency Plan for AIDS Relief (PEPFAR)
Food and Drug Administration (FDA)

- “ensuring the safety, efficacy, and security of human and veterinary drugs, biological products, and medical devices; and by ensuring the safety of our nation's food supply, cosmetics, and products that emit radiation.”

- “regulating the manufacturing, marketing, and distribution of tobacco products…”

- “helping to speed innovations that make medical products more effective, safer, and more affordable…”

- “plays a significant role in the Nation’s counterterrorism capability…”
Orphan Products Clinical Trials Grants Program

“Orphan products clinical trials grants are a proven method of successfully fostering and encouraging the development of new safe and effective medical products for rare diseases/conditions.”

[“prevalence, not incidence, of fewer than 200,000 persons in the United States... There are over 7,000 rare diseases that affect ~30 million Americans...”]

Orphan Products Natural History Grants Program

“A natural history study describes the course of a disease over time, identifying demographic, genetic, environmental, and other variables that correlate with its development and outcomes.”
<table>
<thead>
<tr>
<th>Funding Opportunity Title</th>
<th>Funding Opportunity Announcement (FOA) Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Studies of Orphan Products Addressing Unmet Needs of Rare Diseases (R01) Clinical Trials Required</td>
<td>RFA-FD-23-001</td>
</tr>
<tr>
<td>Pediatric Device Consortia Grants Program (P50) Clinical Trials Optional</td>
<td>RFA-FD-23-024</td>
</tr>
</tbody>
</table>


U.S. Food and Drug Administration (FDA)

NOTE: The policies, guidelines, terms, and conditions stated in this announcement may differ from those used by the NIH. Where this Funding Opportunity Announcement (FOA) provides specific written guidance that may differ from the general guidance provided in the grant application form, please follow the instructions given in this FOA.

The FDA does not follow the NIH Page Limitation Guidelines or the NIH Review Criteria. Applicants are encouraged to consult with FDA Agency Contacts for additional information regarding page limits and the FDA Objective Review Process.


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Health Resources and Services Administration (HRSA)

Mission:

“To improve health outcomes and achieve health equity through access to quality services, a skilled health workforce, and innovative, high-value programs.”

Goals

Goal 1: Take Actionable Steps to Achieve Health Equity and Improve Public Health

Goal 2: Improve Access to Quality Health Services

Goal 3: Foster a Health Workforce and Health Infrastructure Able to Address Current and Emerging Needs

Goal 4: Optimize HRSA Operations and Strengthen Program Engagement

http://www.hrsa.gov/about/index.html
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Health Resources & Services Administration

- **Bureau of Health Workforce**
  - “administers programs that are designed to strengthen the health workforce and connect skilled professionals to rural, urban, and tribal underserved communities nationwide.”

- **Bureau of Primary Health Care**

- **Healthcare Systems Bureau**

- **HIV/AIDS Bureau**
  - Ryan White HIV/AIDS Program: Parts A-F

- **Maternal and Child Health Bureau**
  - health care/public health services: “mothers, children, and families across their lives”

https://www.hrsa.gov/about/organization/bureaus/index.html

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
To which programs can individuals apply?

Individuals can apply to these scholarship and loan repayment programs.

- National Health Service Corps (NHSC)
- Nurse Corps Loan Repayment Program
- Nurse Corps Scholarship Program
- Faculty Loan Repayment Program
- Native Hawaiian Health Scholarship Program

To which programs can schools apply?

Schools can apply to these scholarship and loan programs.

- Scholarships for Disadvantaged Students (SDS).
- Loans for Disadvantaged Students (LDS).
- Health Professions Student Loans (HPSL).
- Nursing Student Loans (NSL).
- Primary Care Loans (PCL).

https://bhw.hrsa.gov/about-us

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Substance Abuse and Mental Health Services Administration (SAMHSA)

- “leads public health efforts to **advance the behavioral health** of the nation. SAMHSA's mission is to **reduce the impact of substance abuse and mental illness** on America's communities.

Centers for Medicare & Medicaid Services (CMS)

- Medicare, Medicaid, the Children’s Health Insurance Program (CHIP)
<table>
<thead>
<tr>
<th>U.S. Department of Health and Human Services</th>
<th>Mission</th>
<th>Select Collaborations with NIH</th>
</tr>
</thead>
</table>
| **AHRQ**
Agency for Healthcare Research and Quality | Produces evidence to make health care safer, higher quality, more accessible, equitable, affordable. Partners with others to ensure such evidence is understood and used. | **U.S. Preventive Services Task Force (USPSTF)** |
| **CDC**
Centers for Disease Control and Prevention | Works to protect Americans from health, safety, security threats. Conducts science and provides health information to protect against such threats. | **SEARCH for Diabetes in Youth** |
| **CMS**
Centers for Medicare and Medicaid Services | Administers Medicare, Medicaid, the Children’s Health Insurance Program (CHIP), and parts of the Affordable Care Act (ACA). | Data sharing between CMS and NCI’s SEER (Surveillance, Epidemiology, and End Results) Program, NIDDK’s U.S. Renal Data System, and NHLBI’s Research Cohorts |
| **FDA**
Food and Drug Administration | Protects public health by ensuring safety, efficacy, and security of drugs, biological products, medical devices, food, cosmetics, and radiation-emitting products. Helps speed innovations to make medical products safer, more affordable, and effective. | **Accelerating Medicines Partnership®** |

**NIH-Wide Strategic Plan Fiscal Years 2016-2020**


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<table>
<thead>
<tr>
<th><strong>HRSA</strong> Health Resources and Services Administration</th>
<th>Works to improve health and achieve equity through access to quality services, a skilled health workforce, and innovative programs.</th>
<th><strong>Maternal and Child Health Research Network Programs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indian Health Service</strong></td>
<td>Raises the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level.</td>
<td><strong>Native American Research Center for Health (NARCH),</strong> (also with AHRQ, HRSA)</td>
</tr>
<tr>
<td><strong>ASPR</strong> Assistant Secretary for Preparedness and Response</td>
<td>Leads the country in preparing for, responding to, and recovering from the adverse health effects of emergencies and disasters by supporting our communities’ ability to withstand adversity, strengthening our health and response systems, and enhancing national health security.</td>
<td><strong>Public Health Emergency Medical Countermeasures Enterprise (PHEMCE),</strong> (also with CDC, FDA, VA, DoD, USDA, Homeland Security, USDA)</td>
</tr>
<tr>
<td><strong>SAMHSA</strong> Substance Abuse and Mental Health Services Administration</td>
<td>Reduces the impact of substance abuse and mental illness on America’s communities.</td>
<td><strong>Patient-Reported Outcomes Measurement Information System® (PROMIS®),</strong> (also with CDC, CMS, FDA)</td>
</tr>
</tbody>
</table>
NIH’s Frequent Federal Partners

<table>
<thead>
<tr>
<th>Other Federal Agencies</th>
<th>Mission</th>
<th>Select Collaborations with NIH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department of Defense</strong></td>
<td>Provides the military forces needed to deter war and to protect the security of our country.</td>
<td>Federal Interagency Traumatic Brain Injury Research (FITBIR) database, (also with VA)</td>
</tr>
<tr>
<td><strong>Defense Advanced Research Project Agency</strong></td>
<td>Makes pivotal investments in breakthrough technologies for national security.</td>
<td>Tissue Chip for Drug Screening, (also with FDA)</td>
</tr>
<tr>
<td><strong>Department of Energy</strong></td>
<td>Ensures America’s security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.</td>
<td>Structural biology with linear accelerator beam lines</td>
</tr>
</tbody>
</table>

NIH-Wide Strategic Plan Fiscal Years 2016-2020
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Department of Veterans Affairs</th>
<th>Fulfills President Lincoln’s promise “to care for him who shall have borne the battle, and for his widow, and his orphan,” by serving and honoring the men and women who are America’s Veterans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Protection Agency</td>
<td>Protects human health and the environment.</td>
</tr>
<tr>
<td>National Science Foundation</td>
<td>Promotes the progress of science to advance the national health, prosperity, and welfare; to secure the national defense, and for other purposes.</td>
</tr>
<tr>
<td>USDA</td>
<td>Provides leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science, and effective management.</td>
</tr>
<tr>
<td></td>
<td><strong>Interagency Pain Research Coordinating Committee (IPRCC), (also with AHRQ, CDC, DoD, FDA)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Toxicology Testing in the 21st Century (Tox21), (also with FDA)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>BRAIN Initiative®, (also with DARPA)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>National Collaborative on Childhood Obesity Research</strong></td>
</tr>
</tbody>
</table>
National Institutes of Health

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Typical NIH Institute/Center

- National Advisory Council
- Office of the Director
- Board of Scientific Counselors

Extramural
- Scientific Programs
  - Grants
  - Cooperative Agreements
  - Contracts

Intramural
- Laboratory Studies
- Clinical Studies

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Total NIH Budget Authority: FY 2021 Final

- **All Others**: $633,000,000 (1.52%)
- **Research Mgmt & Support**: $2,050,000,000 (4.93%)
- **Intramural Research**: $4,539,000,000 (10.93%)
- **R&D Contracts**: $3,335,000,000 (8.03%)
- **Research Training**: $926,000,000 (2.23%)
- **Other Research**: $2,941,000,000 (7.08%)
- **Centers**: $2,770,000,000 (6.67%)
- **RPGs**: $24,347,000,000 (58.61%)

Total NIH Budget Authority: $41,541,000,000
Topics to be Discussed

- Funding Agencies
  - Federal
    - National Institutes of Health, Dept. of Defense
  - Voluntary Health Organizations, Professional Societies, Foundations, Industry

- Types of Awards
  - Grants, Contracts, Cooperative agreements,
    - e.g., Research grants, fellowships, career development awards

- Funding Announcements

- Grant Review Processes
  - National Institutes of Health
Types of Awards

- Individual fellowships
- Training grants
- Career transition awards
- Career development awards
- Research grants
- Cooperative agreements
- Administrative supplements
- Contracts
- Institutional Clinical & Translational Science Award (CTSA)
- Loan Repayment Program

Not All Funding Opportunities Are the Same

Different mission statements
- Fellowships (F’s)/Training grants (T’s)
- Career development (K’s)/Scholar awards
- Research project (R’s)/Multi-Project (P’s)

Different funding
- Stipend/Salary
- Pilot awards vs. Comprehensive research costs

Different time frames
- Not renewable: e.g. 5 years (K’s), 3 years (F’s), 2 years (T’s)
- Renewable: 4 - 5 years (R01) each competitive period
## NIH Extramural Program

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>NIH Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant</td>
<td>Patron (Assistance, encouragement)</td>
</tr>
<tr>
<td>Cooperative</td>
<td>Partner (Assistance but substantial program involvement)</td>
</tr>
<tr>
<td>Agreement</td>
<td>Purchaser (Procurement)</td>
</tr>
<tr>
<td>Contract</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Research Grant (NIH R01)

- Supports a discrete, specified project
  - Specific Aims
- “Comprehensive” funding
- Modular budgets up to $250,000/year
- Multi-year
- Flexibility
- Most NIH-supported investigator-initiated research is through this funding mechanism

Research Grant (NIH R01)

- Funds research project
  - Salaries of PI and other research personnel
  - Supplies, reagents, etc
  - Animal costs
  - Patient care costs
  - Core facilities
  - Travel to national meetings

- Multi-Year (4yrs – 5yrs)

- Renewable
  - e.g., original grant + 2 renewals = 15yrs

Small Research Grants (R03)

- Supports, e.g.:
  - Pilot or feasibility studies;
  - Collection of preliminary data
  - Secondary analysis of existing data
  - Small, self-contained research projects
  - Development of new research technology

- 2 years of funding
- Budget: Direct costs up to $50,000/yr
- Not renewable
- Some Institutes only accepts applications in response to their specific funding opportunity announcements

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Exploratory/ Developmental Grants (R21)

- Encourages new, exploratory and developmental research projects by providing support for the early stages of project development. Sometimes used for pilot and feasibility studies.
- 2 years of funding
- Budget: $275,000 (D.C.) over two years
- Investigator-initiated R21 studies not funded by all Institutes
R01-Equivalent New (Type 1) Grants: Competing Applications, Awards, and Success Rates
## Success Rates – R01 vs. R21

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Competing Status (Type)</th>
<th>NIH Institutes / Centers</th>
<th>Activity Code</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>New</td>
<td>NCI</td>
<td>R01</td>
<td>5,807</td>
<td>696</td>
<td>12.0%</td>
<td>$368,281,142</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NCI</td>
<td>R21</td>
<td>2,130</td>
<td>250</td>
<td>11.7%</td>
<td>$65,726,584</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NHLBI</td>
<td>R01</td>
<td>3,246</td>
<td>588</td>
<td>18.1%</td>
<td>$360,299,862</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NHLBI</td>
<td>R21</td>
<td>279</td>
<td>35</td>
<td>12.5%</td>
<td>$6,699,931</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIDCR</td>
<td>R01</td>
<td>426</td>
<td>79</td>
<td>18.5%</td>
<td>$39,511,246</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIDCR</td>
<td>R21</td>
<td>221</td>
<td>27</td>
<td>12.2%</td>
<td>$6,172,108</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIDDK</td>
<td>R01</td>
<td>2,523</td>
<td>464</td>
<td>18.4%</td>
<td>$240,084,519</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIDDK</td>
<td>R21</td>
<td>284</td>
<td>46</td>
<td>16.2%</td>
<td>$10,051,770</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIHDS</td>
<td>R01</td>
<td>2,326</td>
<td>409</td>
<td>17.6%</td>
<td>$231,792,140</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIHDS</td>
<td>R21</td>
<td>1,076</td>
<td>204</td>
<td>19.0%</td>
<td>$80,057,951</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIAID</td>
<td>R01</td>
<td>3,618</td>
<td>494</td>
<td>13.7%</td>
<td>$299,684,033</td>
</tr>
<tr>
<td>2021</td>
<td>New</td>
<td>NIAID</td>
<td>R21</td>
<td>4,146</td>
<td>647</td>
<td>15.6%</td>
<td>$147,918,673</td>
</tr>
</tbody>
</table>

1. Success Rate is calculated as the number of applications approved divided by the number of applications reviewed, multiplied by 100.
2. Total Funding is the total amount of funding awarded for each type of application.
Success Rate: Number of awards made divided by the sum of the applications reviewed (in a specific fiscal year). Resubmissions submitted in the same fiscal year are “combined” and counted as one application.

Metric represents success of a specific project in receiving funding, rather than of the success of an individual application.
**Award Rate:** Number of **awards** (in a specific fiscal year) divided by the absolute number of applications (resubmissions (A1’s) are not combined)

- Increases the denominator (applications) for the same number of awards (in the numerator)
- Award Rates are lower than Success Rates
- Similar to Institute Paylines which are based on all the applications considered for funding

Funding Rate: Number of individual investigators applying for and receiving funding (in a given specific year).

- Person-based rather than application-based metric
  - Counts individual applicants as funded whether they receive one or more than one award (in a given fiscal year). The numerator is the number of applicants receiving any funding and the denominator is the number of applicants.

- Funding rates are higher than either Award or Success Rates
Funding, Award and Success Rates* for R01 Equivalents
Fiscal Years 1990-2013

*Excludes awards made with American Recovery and Reinvestment Act (ARRA) funds, and ARRA-solicited applications.

A3+ revisions phased out
A2 revisions phased out
Research Program Projects
and Centers

Research Program Projects (P01)

- Broadly-based, multidisciplinary, often long-term research program
- Specific major objective or a basic theme
- Directed toward a range of problems having a central research focus
- Usually 3 or more Research Projects (“R01-like”) and Cores (administrative and technical)
Exploratory Grants (P20)

- **Planning** for new programs
- Expansion or modification of existing resources
- **Feasibility studies** to explore various approaches to the development of interdisciplinary programs
- May lead to specialized (P50) or comprehensive (P60) centers

Center Core Grants (P30)

- **Shared resources and facilities** for a number of investigators who focus on a common research problem
Specialized Center (P50)

- Full range of research, from the very basic to the clinical
- Multidisciplinary attack on a specific disease or biomedical problem area
- Usually in response to an announcement (e.g., RFA) of the programmatic needs of an NIH Institute
Comprehensive Center (P60)

- Multi-purpose unit designed to bring together into a common focus, divergent but related facilities.

- Usually includes basic and clinical research; community education, screening and counseling; and the education of medical and allied health professionals concerning the diagnosis and treatment of a specific disease.

- May include specialized centers, program projects, research projects as integral components.
# NIH Extramural Program

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>NIH Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant</td>
<td>Patron</td>
</tr>
<tr>
<td></td>
<td>(Assistance, encouragement)</td>
</tr>
<tr>
<td>Cooperative</td>
<td>Partner</td>
</tr>
<tr>
<td>Agreement</td>
<td>(Assistance but substantial program involvement)</td>
</tr>
<tr>
<td>Contract</td>
<td>Purchaser</td>
</tr>
<tr>
<td></td>
<td>(Procurement)</td>
</tr>
</tbody>
</table>

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Cooperative Agreements

Since cooperative agreement funding frequently involves a “network” of awards, there may be NIH Institute funding considerations [e.g., programmatic priorities, diversity of research subjects in clinical research (ethnicity, socioeconomic status, age, gender, disease-related, geographic)] that are in addition to the “usual” NIH review criteria (e.g., Significance, Investigators, Innovation, Approach, Environment).

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Cooperative Agreements

**Example RFA:** “Following initial peer review, recommended applications will receive a second level of review... The following will be considered in making funding decisions:

- **Scientific and technical merit** of the proposed project as determined by scientific peer review.
- **Availability of funds.**
- **Relevance of the proposed project to program priorities.**
- **Complementarity** to and **synergy** with other funded projects
- **Programmatic balance** among diseases to be studied, healthcare settings, and approaches to be implemented”
Cooperative Agreements

- “Ability to work effectively in large collaborative efforts or research consortia
- Public health importance of conditions to be studied
- Diversity of study patients, particularly with respect to inclusion of minority or underserved populations in the U.S., and relevance of proposed research questions related to diversity and health disparities
- Ability to recruit and study large sample sizes efficiently and cost-effectively
- Applicability of the proposed approach to other healthcare settings”
Cooperative Agreements

Example Notice of Grant Award (NGA):
“This award is issued as a cooperative agreement, a financial assistance mechanism in which substantial NIH scientific and/or programmatic involvement is anticipated in the performance of the activity.”
Cooperative Agreements

- **U01: Research Project**
  - To support a discrete project

- **U10: Cooperative Clinical Research**
  - “To support clinical evaluation of various methods of therapy and/or prevention in specific disease areas… usually conducted under established protocols

- **U19: Research Program**
  - Supports “a research program of multiple projects directed toward a specific major objective, basic theme or program goal, requiring a broadly based, multidisciplinary and often long-term approach

**U54: Specialized Center**

- “To support any part of the full range of research and development from very basic to clinical; may involve ancillary supportive activities such as protracted patient care necessary to the primary research or R&D effort. The spectrum of activities comprises a multidisciplinary attack on a specific disease entity or biomedical problem area…Centers may also serve as regional or national resources for special research purposes, with funding component staff helping to identify appropriate priority needs.”

Training Programs

Institutional Training Award (T32)

- Pre-docs/Post-docs (e.g., PhD, MD) selected by institution
- Research training in specific area
- Defined number of slots
- Stipend, tuition, training related expenses (e.g., health fees), travel, childcare

Short-Term Research Training (T35)

- Short term (e.g. summer) support
- e.g., Medical students in summer after 1st year
Fellowship Programs

Predoctoral Individual Fellowship (F31)

Dual-Degree Predoctoral Individual Fellowship (F30)

- Supports specific individual in research degree program (e.g., PhD, MD/PhD candidate)
- Stipend, tuition, institutional allowance (e.g., health fees, travel), childcare

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Pret-doc Fellowships (F31’s) Applications, awards, and success rates

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
### Pre-doc Fellowships (F31’s)
Applications, awards, and success rates

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute/Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate 1</th>
<th>Total Funding 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>F31</td>
<td>NCCIH**</td>
<td>18</td>
<td>7</td>
<td>38.9%</td>
<td>$230,095</td>
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<tr>
<td>2021</td>
<td>F31</td>
<td>NCI</td>
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<td>145</td>
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<td>F31</td>
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<tr>
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<td>F31</td>
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<td>$4,687,931</td>
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<tr>
<td>2021</td>
<td>F31</td>
<td>NIA</td>
<td>207</td>
<td>53</td>
<td>25.6%</td>
<td>$2,233,168</td>
</tr>
<tr>
<td>2021</td>
<td>F31</td>
<td>NIAAA</td>
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<tr>
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</tr>
<tr>
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<td>NIBIB</td>
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<tr>
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<tr>
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<tr>
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<td>F31</td>
<td>NIDCD</td>
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<td>34</td>
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<tr>
<td>2021</td>
<td>F31</td>
<td>NIDCR</td>
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<td>21</td>
<td>52.5%</td>
<td>$884,884</td>
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<tr>
<td>2021</td>
<td>F31</td>
<td>NIDDK</td>
<td>203</td>
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<td>23.6%</td>
<td>$1,948,931</td>
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<tr>
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<td>F31</td>
<td>NIEHS</td>
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<td>F31</td>
<td>NIGMS</td>
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<td>33</td>
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<td>F31</td>
<td>NIMHD</td>
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<tr>
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<td>F31</td>
<td>NINDS</td>
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<td>$3,017,357</td>
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<td>NINR</td>
<td>57</td>
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<td>$754,160</td>
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<td>NLM</td>
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<tr>
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<td>F31</td>
<td>OD ORIP</td>
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<td>0</td>
<td>0.0%</td>
<td>$0</td>
</tr>
</tbody>
</table>

Total Funding 2: $37,903,181

Success Rates

## Pre-doc Fellowships (F31’s)

**Applications, awards, and success rates**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute/Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate 1</th>
<th>Total Funding 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>F31</td>
<td>NIDDK</td>
<td>31</td>
<td>9</td>
<td>29.0%</td>
<td>$332,454</td>
</tr>
<tr>
<td>2013</td>
<td>F31</td>
<td>NIDDK</td>
<td>29</td>
<td>9</td>
<td>31.0%</td>
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<tr>
<td>2014</td>
<td>F31</td>
<td>NIDDK</td>
<td>51</td>
<td>15</td>
<td>29.4%</td>
<td>$490,924</td>
</tr>
<tr>
<td>2015</td>
<td>F31</td>
<td>NIDDK</td>
<td>137</td>
<td>45</td>
<td>32.8%</td>
<td>$1,660,371</td>
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<tr>
<td>2016</td>
<td>F31</td>
<td>NIDDK</td>
<td>152</td>
<td>36</td>
<td>23.7%</td>
<td>$1,285,280</td>
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<tr>
<td>2017</td>
<td>F31</td>
<td>NIDDK</td>
<td>162</td>
<td>43</td>
<td>26.5%</td>
<td>$1,653,871</td>
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<tr>
<td>2018</td>
<td>F31</td>
<td>NIDDK</td>
<td>172</td>
<td>53</td>
<td>30.8%</td>
<td>$1,993,026</td>
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<tr>
<td>2019</td>
<td>F31</td>
<td>NIDDK</td>
<td>189</td>
<td>55</td>
<td>29.1%</td>
<td>$2,190,246</td>
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<tr>
<td>2020</td>
<td>F31</td>
<td>NIDDK</td>
<td>176</td>
<td>60</td>
<td>34.1%</td>
<td>$2,313,659</td>
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<tr>
<td>2021</td>
<td>F31</td>
<td>NIDDK</td>
<td>203</td>
<td>48</td>
<td>23.6%</td>
<td>$1,948,931</td>
</tr>
</tbody>
</table>


Postdoctoral Individual Fellowship (F32)

- Supports specific individual (e.g., PhD or MD trained)
- May be in degree program
- Stipend, tuition, institutional allowance (e.g., health fees, travel), childcare
Post-doc Fellowships (F32’s)
Applications, awards, and success rates

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Pre-doc Fellowships (F32’s) Applications, awards, and success rates

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute/Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>F32</td>
<td>NCCIH**</td>
<td>6</td>
<td>1</td>
<td>16.7%</td>
<td>$68,010</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>NCI</td>
<td>198</td>
<td>47</td>
<td>23.7%</td>
<td>$3,266,787</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NEI</td>
<td>53</td>
<td>15</td>
<td>28.3%</td>
<td>$1,011,774</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>NHGRI</td>
<td>2</td>
<td>1</td>
<td>50.0%</td>
<td>$65,994</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>NHLBI</td>
<td>193</td>
<td>73</td>
<td>37.8%</td>
<td>$5,181,804</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>NIA</td>
<td>101</td>
<td>29</td>
<td>28.7%</td>
<td>$1,952,476</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>NIAAA</td>
<td>22</td>
<td>10</td>
<td>45.5%</td>
<td>$683,468</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>NIAID</td>
<td>181</td>
<td>22</td>
<td>12.2%</td>
<td>$1,483,884</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NIAMS</td>
<td>40</td>
<td>5</td>
<td>12.5%</td>
<td>$331,854</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NIBIB</td>
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<td>20.0%</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NICHD</td>
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<td>36</td>
<td>34.0%</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NIDA</td>
<td>51</td>
<td>14</td>
<td>27.5%</td>
<td>$331,466</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>NIDCD</td>
<td>51</td>
<td>18</td>
<td>35.3%</td>
<td>$1,242,604</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NIDCR</td>
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<td>6</td>
<td>35.3%</td>
<td>$409,192</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NIDDK</td>
<td>138</td>
<td>40</td>
<td>29.0%</td>
<td>$2,856,930</td>
</tr>
<tr>
<td>2021</td>
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<td>13.3%</td>
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<td>2021</td>
<td>F32</td>
<td>NIGMS</td>
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<td>103</td>
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<td>$6,825,091</td>
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<tr>
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<td>F32</td>
<td>NIMHD</td>
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<tr>
<td>2021</td>
<td>F32</td>
<td>NINDS</td>
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<td>41</td>
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<td>$2,789,035</td>
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<tr>
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<td>F32</td>
<td>NINR</td>
<td>5</td>
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<td>0.0%</td>
<td>$0</td>
</tr>
<tr>
<td>2021</td>
<td>F32</td>
<td>TOTAL</td>
<td>1,747</td>
<td>493</td>
<td>28.2%</td>
<td>$33,721,632</td>
</tr>
</tbody>
</table>

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
**Pre-doc Fellowships (F32’s)**

Applications, awards, and success rates

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute/Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>F32</td>
<td>NIDDK</td>
<td>165</td>
<td>60</td>
<td>36.4%</td>
<td>$3,190,158</td>
</tr>
<tr>
<td>2013</td>
<td>F32</td>
<td>NIDDK</td>
<td>176</td>
<td>49</td>
<td>27.8%</td>
<td>$2,627,518</td>
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<td>2014</td>
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<td>NIDDK</td>
<td>163</td>
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<td>NIDDK</td>
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<tr>
<td>2017</td>
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<td>NIDDK</td>
<td>183</td>
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<td>25.7%</td>
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<td>NIDDK</td>
<td>153</td>
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<td>NIDDK</td>
<td>136</td>
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<td>$2,873,899</td>
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<td>NIDDK</td>
<td>140</td>
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<td><strong>F32</strong></td>
<td><strong>NIDDK</strong></td>
<td><strong>138</strong></td>
<td><strong>40</strong></td>
<td><strong>29.0%</strong></td>
<td><strong>$2,856,930</strong></td>
</tr>
</tbody>
</table>

Success Rates


Post-doc Fellowships (F32’s)  
Applications, awards, and success rates, by degree of applicant

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Fellow Degree¹</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded²</th>
<th>Success Rate³</th>
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<tbody>
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<td>PhD</td>
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<td>378</td>
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<td>MD-PhD</td>
<td>39</td>
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</tr>
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<td>2021</td>
<td>Other</td>
<td>298</td>
<td>58</td>
<td>19.5%</td>
</tr>
<tr>
<td>2021</td>
<td>TOTAL</td>
<td>1,747</td>
<td>493</td>
<td>28.2%</td>
</tr>
</tbody>
</table>

¹ Fellow Degree: MD, PhD, MD-PhD, Other  
² Number of Applications Awarded  
³ Success Rate

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NRSA Training Grants and Fellowships: Funding in Current and Constant Dollars
**Correction to Stipend Levels for Ruth L. Kirschstein National Research Service Award (NRSA) Stipends, Tuition/Fees and Other Budgetary Levels Effective for Fiscal Year 2022**

**Notice Number:**
NOT-OD-22-132

---

**Predoctoral Trainees and Fellows:** For institutional training grants (T32, T35, T90, TL1) and individual fellowships (F30, F31), one stipend level is used for all predoctoral candidates, regardless of the level of experience.

<table>
<thead>
<tr>
<th>Career Level</th>
<th>Years of Experience</th>
<th>Stipend for FY 2022</th>
<th>Monthly Stipend</th>
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<td>Predoctorial</td>
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Correction to Stipend Levels for Ruth L. Kirschstein National Research Service Award (NRSA) Stipends, Tuition/Fees and Other Budgetary Levels Effective for Fiscal Year 2022

**Notice Number:**
NOT-OD-22-132

### Postdoctoral Trainees and Fellows:

<table>
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<th>Stipend for FY 2022</th>
<th>Monthly Stipend</th>
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Training Grants and Fellowships: Pre- and Post-Doctoral Positions

Training Grants and Fellowships: Pre- and Post-Doctoral Positions

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Improving graduate student and postdoctoral training

- A. Put individual development plans in place for all trainees
- B. Reduce the length of graduate training
- C. Provide F30 and F31 awards from all Institutes/Centers
- D. Increase postdoctoral stipends and consider policies on benefits
- E. Increase support for K99/R00 and shorten eligibility period
- F. Increase support for Early Independence Awards

http://acd.od.nih.gov/bwf.htm

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (Parent F31)

National Center for Complementary and Integrative Health (NCCIH)
National Cancer Institute (NCI)
National Eye Institute (NEI)
National Human Genome Research Institute (NHGRI)
National Heart, Lung, and Blood Institute (NHLBI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of Mental Health (NIMH)
National Institute on Minority Health and Health Disparities (NIMHD)
National Institute of Nursing Research (NINR)
National Institute of Neurological Disorders and Stroke (NINDS)
National Library of Medicine (NLM)
Office of Research Infrastructure Programs (ORIP)
National Institute on Drug Abuse (NIDA)

PA-21-051

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship to Promote Diversity in Health-Related Research (Parent F31-Diversity)

National Center for Complementary and Integrative Health (NCCIH)
National Cancer Institute (NCI)
National Eye Institute (NEI)
National Human Genome Research Institute (NHGRI)
National Heart, Lung, and Blood Institute (NHLBI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of Mental Health (NIMH)
National Institute on Minority Health and Health Disparities (NIMHD)
National Institute of Nursing Research (NINR)
National Institute of Neurological Disorders and Stroke (NINDS)
National Library of Medicine (NLM)
Office of Research Infrastructure Programs (ORIP)
National Institute on Drug Abuse (NIDA)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
National Institute of General Medical Sciences (NIGMS)

PA-21-052
“For the purpose of this announcement, institutions are encouraged to recruit potential student participants from diverse backgrounds, such as:

A. Individuals from racial and ethnic groups that have been shown by the National Science Foundation to be underrepresented in health-related sciences on a national basis (see data at http://www.nsf.gov/statistics/showpub.cfm?TopID=2&SubID=27 and the report Women, Minorities, and Persons with Disabilities in Science and Engineering). The following racial and ethnic groups have been shown to be underrepresented in biomedical research: Blacks or African Americans, Hispanics or Latinos, American Indians or Alaska Natives, Native Hawaiians and other Pacific Islanders. In addition, it is recognized that underrepresentation can vary from setting to setting; individuals from racial or ethnic groups that can be demonstrated convincingly to be underrepresented by the grantee institution should be encouraged to participate in NIH programs to enhance diversity. For more information on racial and ethnic categories and definitions, see the OMB Revisions to the Standards for Classification of Federal Data on Race and Ethnicity https://www.govinfo.gov/content/pkg/FR-1997-10-30/html/97-28653.htm).

B. Individuals with disabilities, who are defined as those with a physical or mental impairment that substantially limits one or more major life activities, as described in the Americans with Disabilities Act of 1990, as amended. See NSF data at, https://www.nsf.gov/statistics/2017/nsf17310/static/data/tab7-5.pdf”.
C. **Individuals from disadvantaged backgrounds**, defined as those who meet **two or more** of the following criteria:

1. Were or currently are homeless, as defined by the McKinney-Vento Homeless Assistance Act (Definition: [https://nche.ed.gov/mckinney-vento/](https://nche.ed.gov/mckinney-vento/));
2. Were or currently are in the foster care system, as defined by the Administration for Children and Families (Definition: [https://www.acf.hhs.gov/cb/focus-areas/foster-care](https://www.acf.hhs.gov/cb/focus-areas/foster-care));
3. Were eligible for the Federal Free and Reduced Lunch Program for two or more years (Definition: [https://www.fns.usda.gov/school-meals/income-eligibility-guidelines](https://www.fns.usda.gov/school-meals/income-eligibility-guidelines));
4. Have/had no parents or legal guardians who completed a bachelor’s degree (see [https://nces.ed.gov/pubs2018/2018009.pdf](https://nces.ed.gov/pubs2018/2018009.pdf));
5. Were or currently are eligible for Federal Pell grants (Definition: [https://www2.ed.gov/programs/fpg/eligibility.html](https://www2.ed.gov/programs/fpg/eligibility.html));
6. Received support from the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) as a parent or child (Definition: [https://www.fns.usda.gov/wic/wic-eligibility-requirements](https://www.fns.usda.gov/wic/wic-eligibility-requirements)).
7. Grew up in one of the following areas: a) a U.S. rural area, as designated by the Health Resources and Services Administration (HRSA) Rural Health Grants Eligibility Analyzer ([https://data.hrsa.gov/tools/rural-health](https://data.hrsa.gov/tools/rural-health)), or b) a Centers for Medicare and Medicaid Services-designated Low-Income and Health Professional Shortage Areas (qualifying zipcodes are included in the file). Only one of the two possibilities in #7 can be used as a criterion for the disadvantaged background definition.
D. Literature shows that women from the above backgrounds (categories A, B, and C) face particular challenges at the graduate level and beyond in scientific fields. (See, e.g., From the NIH: A Systems Approach to Increasing the Diversity of Biomedical Research Workforce https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5008902/).

Women have been shown to be underrepresented in doctorate-granting research institutions at senior faculty levels in most biomedical-relevant disciplines, and may also be underrepresented at other faculty levels in some scientific disciplines (See data from the National Science Foundation National Center for Science and Engineering Statistics: Women, Minorities, and Persons with Disabilities in Science and Engineering, special report available at https://www.nsf.gov/statistics/2017/nsf17310/ especially Table 9-23, describing science, engineering, and health doctorate holders employed in universities and 4-year colleges, by broad occupation, sex, years since doctorate, and faculty rank).

Upon review of NSF data, and scientific discipline or field related data, NIH encourages institutions to consider women for faculty-level, diversity-targeted programs to address faculty recruitment, appointment, retention or advancement.
Ruth L. Kirschstein National Research Service Award (NRSA) Individual Fellowship for Students at Institutions with NIH-Funded Institutional Predoctoral Dual-Degree Training Programs (Parent F30)

PA-21-049

National Center for Complementary and Integrative Health (NCCIH)
National Cancer Institute (NCI)
National Eye Institute (NEI)
National Heart, Lung and Blood Institute (NHLBI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Drug Abuse (NIDA)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of Mental Health (NIMH)
National Institute on Minority Health and Health Disparities (NIMHD)
Office of Research Infrastructure Programs (ORIP)

Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship (Parent F32)

National Center for Complementary and Integrative Health (NCCIH)
National Cancer Institute (NCI)
National Eye Institute (NEI)
National Human Genome Research Institute (NHGRI)
National Heart, Lung and Blood Institute (NHLBI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of General Medical Sciences (NIGMS)
National Institute of Mental Health (NIMH)
National Institute of Nursing Research (NINR)
National Institute on Drug Abuse (NIDA)
National Institute on Minority Health and Health Disparities (NIMHD)

“The purpose of this award is to support outstanding scientific training of highly promising postdoctoral candidates with outstanding mentors. Candidates are eligible to apply for support from this program from ~12 months prior to the start of the proposed postdoctoral position to within 12 months after starting in the proposed postdoctoral position. This NINDS F32 seeks to foster early, goal-directed planning and to encourage applications for bold and/or innovative projects by the candidate that have the potential for significant impact. Inclusion of preliminary data is strongly discouraged; rather, this F32 seeks innovative research ideas and thoughtful plans for training and mentorship that will facilitate the development of the postdoctoral fellow into an outstanding scientist. Applications are expected to incorporate strong training in quantitative reasoning and the quantitative principles of experimental design and analysis. Support by this program is limited to the first 4 years of a candidate's activity in a specific laboratory or research environment, so as to further encourage early, thoughtful planning and timely completion of “mentored training” within a particular lab or environment.”
Eligibility:

- Citizenship:
  - US citizens, Nationals, Permanent Residents

- Degree Requirements:
  - Rules with regard to degree status (undergraduate vs. graduate student), joint degree programs, # of applications

- Research Areas not Eligible:
  - “goals are directly human disease- or health-related, including the etiology, diagnosis, and/or treatment of physical or mental disease, disorder, abnormality, or malfunction…”

https://www.nsfgrfp.org/

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
National Science Foundation: Graduate Research Fellowship Program

**Fields of Study:** Chemistry, Computer and Information Sciences and Engineering, Engineering, Geosciences; **Life Sciences:** Materials Research; Mathematical Sciences; Physics and Astronomy; Psychology; Social Sciences; STEM Education and Learning Research

- **Life Sciences:** Artificial Intelligence, Biochemistry, Bioinformatics and Computational Biology, Biophysics, Cell Biology, Computationally Intensive Research, Developmental Biology, Ecology, Environmental Biology, Evolutionary Biology, Genetics, Genomics, Microbial Biology, Neurosciences, Organismal Biology, Physiology, Proteomics, Quantum Information Science, Structural Biology, Systematics and Biodiversity, Systems and Molecular Biology, Other (specify)

https://www.nsfgrfp.org/

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Application includes:

- Personal, Relevant Background and Future Goals
- Graduate Research Plan
- Reference Letters
- Transcripts

Funding:

- Stipend
- Cost-of-education allowance

https://www.nsfgrfp.org/

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Pathway to Independence Award

- **Career Transition Award** (K99/R00)

- **No citizenship requirement**

- **Applicants must:**
  - Have earned a clinical or research doctorate
  - Have no more than 4 years of research experience since completing the requirements of the doctoral degree
  - Have not been the principal investigator of an NIH research grant (e.g., R01, R03, R21), career development award (e.g., K01, K07, K08, K23, K25), other peer-reviewed NIH or non-NIH research grant over $100,000 direct costs per year, or have been a project leader on a sub-project of a program project (P01) or a center (P50) grant

https://researchtraining.nih.gov/programs/career-development/k99-r00

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Pathway to Independence Award

- 1-2 years as a mentored K award for “post-docs”
  - Funding level is Institute-specific
    - Salary and Research Support
  - 75% effort

- 3 years as a Research award for independent investigators
  - Total/year:=$249,000 (salary and research expenses)
    - D.C. + institution’s I.C. rate
  - Must have an independent research position


[https://researchtraining.nih.gov/programs/career-development/k99-r00](https://researchtraining.nih.gov/programs/career-development/k99-r00)
Pathway to Independence Award

“Eligibility Window”

“no more than 4 years of postdoctoral research experience as of the relevant application due date regardless of whether it is a new or resubmission application... must be in mentored, postdoctoral training positions to be eligible”

“Parental, medical, or other well-justified leave for personal or family situations of generally less than 12 months duration is not included in the 4-year eligibility limit, nor is clinical training with no research involvement (e.g., full-time residency training).

NIH will approve an extension of one year for childbirth within the 4 year K99 eligibility window...

Only time dedicated to research activities would count toward the 4-year limit.”
“Candidates for the K99/R00 are strongly encouraged to obtain confirmation of their eligibility from the relevant IC before they begin to prepare their applications. It is incumbent upon the candidate to provide evidence that they meet all of the eligibility criteria…

Additional clarifications are provided under [Frequently Asked Questions](#). Potential candidates are encouraged to discuss their individual situation with an [NIH Institute or Center Scientific Program Contact](https://grants.nih.gov/grants/guide/contacts/parent-K99-CT-not-allowed.html) before applying.
NIH remains strongly committed to enhancing biomedical research workforce diversity.

Applicants for the K99 awards listed in this NOT must have no more than 4 years of postdoctoral research experience at the time of the initial (new) or subsequent resubmission application. NIH considers requests for extension of the K99 eligibility window for various reasons, including medical concerns, disability, family care, extended periods of clinical training, natural disasters, and active duty military service. Each of these requests is reviewed on a case by case basis.

Consistent with the NIH Extension Policy for Early Stage Investigator Status (ESI), effective immediately, NIH will approve an extension of one year for childbirth within the 4 year K99 eligibility window.”
Research Career Development Awards

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute / Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
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<td>K99</td>
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<tr>
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<td>18</td>
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<td>6</td>
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<tr>
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<td>13</td>
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<td>21</td>
<td>13</td>
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<td>$1,636,978</td>
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<tr>
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<td>K99</td>
<td>NCCIH**</td>
<td>5</td>
<td>2</td>
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<td>$204,851</td>
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<td>6</td>
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<td>K99</td>
<td>ACTIVITY TOTAL</td>
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<td>24.6%</td>
<td>$41,003,216</td>
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<tr>
<td>Fiscal Year</td>
<td>Activity Code</td>
<td>NIH Institute / Center</td>
<td>Number of Applications Reviewed</td>
<td>Number of Applications Awarded</td>
<td>Success Rate</td>
<td>Total Funding</td>
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<tr>
<td>2012</td>
<td>K99</td>
<td>NHLBI</td>
<td>130</td>
<td>39</td>
<td>30.0%</td>
<td>$4,121,559</td>
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<tr>
<td>2013</td>
<td>K99</td>
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<td>112</td>
<td>25</td>
<td>22.3%</td>
<td>$2,680,777</td>
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<tr>
<td>2014</td>
<td>K99</td>
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<td>167</td>
<td>40</td>
<td>24.0%</td>
<td>$4,590,006</td>
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<tr>
<td>2015</td>
<td>K99</td>
<td>NHLBI</td>
<td>111</td>
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<td>24.3%</td>
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<tr>
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<td>K99</td>
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<td>124</td>
<td>32</td>
<td>25.8%</td>
<td>$4,066,065</td>
</tr>
<tr>
<td>2017</td>
<td>K99</td>
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<td>99</td>
<td>24</td>
<td>24.2%</td>
<td>$3,072,290</td>
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<tr>
<td>2018</td>
<td>K99</td>
<td>NHLBI</td>
<td>113</td>
<td>28</td>
<td>24.8%</td>
<td>$3,341,524</td>
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<tr>
<td>2019</td>
<td>K99</td>
<td>NHLBI</td>
<td>112</td>
<td>33</td>
<td>29.5%</td>
<td>$4,096,354</td>
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<tr>
<td>2020</td>
<td>K99</td>
<td>NHLBI</td>
<td>133</td>
<td>31</td>
<td>23.3%</td>
<td>$4,269,580</td>
</tr>
<tr>
<td>2021</td>
<td>K99</td>
<td>NHLBI</td>
<td>139</td>
<td>36</td>
<td>25.9%</td>
<td>$4,831,804</td>
</tr>
</tbody>
</table>


Ph.D. (or equivalent research doctorate degree) candidates in positions other than postdoctoral fellow positions: It is recognized that some institutions appoint postdoctoral fellows in positions with other titles although they are still in non-independent, mentored training positions. Candidates in such positions are encouraged to obtain confirmation of their eligibility from the relevant IC before they begin to prepare their applications …

Clinicians (including those with M.D., D.D.S, D.V.M....) in positions not designated as postdoctoral positions: Following clinical training or fellowship training periods, clinicians often obtain a clinical faculty position that denotes independence in clinical responsibilities but not in research. A clinical faculty member who does not hold an independent research faculty position may be eligible for the K99/R00 award,… Clinicians in such positions are encouraged to obtain confirmation of their eligibility before they begin to prepare their applications. Such individuals may also wish to consider other career awards (see K Kiosk) available for junior faculty development”
**Additional Information for Physician-Scientists:** For the purposes of this program, physician-scientists include individuals with an MD, DO, DDS/DMD, DVM/VMD, or nurses with research doctoral degrees who devote the majority of their time to biomedical research. The K99/R00 is intended for those physician-scientists who already have substantial research training and are dedicated to initiating a strong, research-intensive career as physician-scientists. The K99/R00 program is designed to facilitate a timely transition of outstanding physician-scientists from mentored, research positions to independent, tenure-track or equivalent faculty positions, and to provide independent NIH research support during the transition. Individuals who need a longer period of mentored career development before they are prepared to begin the transition to research independence should consider the K08 or K23 program (see: K Kiosk).
5. NIH should establish a new physician-scientist-specific granting mechanism to facilitate the transition from training to independence. This program should be similar to the K99/R00 program whose funding currently goes almost exclusively to individuals holding a PhD degree. This new grant program could serve either as a replacement or transition from existing K Awards for physician scientists, and should provide a longer period of support, potentially lengthening the R00 phase to 5 years (with an interim staff review at year 3). This new grant series, as well as K and all other training awards, should rigorously enforce protected time of at least 75 percent effort and provide sufficient salary support to make that possible.
The purpose of the NIAID Physician-Scientist Pathway to Independence Award (K99/R00) program is to increase and maintain a strong cohort of new and talented independent physician-scientists. This program is designed to facilitate a timely transition of outstanding postdoctoral researchers with a clinical doctorate degree from mentored, postdoctoral research positions to independent, tenure-track or equivalent faculty positions. The program will provide independent NIAID research support during this transition to help awardees launch competitive, independent research careers in biomedical fields and thereby help to address the national physician-scientist workforce shortage.
Enhancing Diversity

The overarching goal of this program is to enhance the diversity of independent investigators conducting research within the NIH mission. Fostering diversity by addressing underrepresentation in the scientific research workforce is a key component of the NIH strategy to identify, develop, support and maintain the quality of our scientific human capital. In spite of tremendous advancements in scientific research, information, educational and research opportunities are not equally available to all. NIH encourages institutions to diversify their student, postdoctorate and faculty populations to enhance the participation of individuals from groups identified as underrepresented in the biomedical sciences (e.g., see the Notice of NIH's of Interest in Diversity).

For the purpose of this announcement, institutions are strongly encouraged to identify candidates who will enhance diversity on a national basis. In addition, it is recognized that underrepresentation can vary from setting to setting; individuals from racial or ethnic groups that can be demonstrated convincingly to be underrepresented by the grantee institution should be encouraged to participate in this program.
Post-doc Fellowship/ Career Transition Support to Research Grant (R01)

Post-Doc Fellowship

K99  R00

K99  R00  R01

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Career Transition Award (K22)

- **NCI, NIA, NIAID**: Transition from mentored, non-independent research position to independent faculty (or equivalent) position
- **NCI**: Promote Diversity

https://researchtraining.nih.gov/programs/career-development/K22
Research Career Programs (K)

- Provides predominantly salary support
- Minimum requirements for the amount of effort that must be devoted to research and career development (e.g. 75%, some exceptions to 50%)
- Up to 5 years
- Specified salary levels
- US citizen/permanent resident
- Can reduce effort to 50% in last 2 years if PI of NIH research grant

https://researchtraining.nih.gov/programs/career-development

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Career Development (K) Support to Independent Research Grant (R01)

K01/K08/K23 → R01

K12/KL2 → K23 → R01

K12/KL2 → K23 → R01

K01/K08/K23 → R01

K12/KL2 → R01

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Mentored Clinical Scientist Development Award (K08)

- Support to develop outstanding independent clinician research scientists
- Basic and translational science

https://researchtraining.nih.gov/programs/career-development/K08
Mentored Patient-Oriented Research Career Development Award (K23)

- For investigators just after specialty training; not renewable

https://researchtraining.nih.gov/programs/career-development/K23

Mid-Career Investigator In Patient-Oriented Research Career Development Award (K24)

- Support for clinicians to allow for time to devote to patient-oriented research and to mentor beginning clinical investigators

https://researchtraining.nih.gov/programs/career-development/K24
- **Patient-oriented research:**
  - Research conducted with human subjects (or on material of human origin, i.e. tissues, specimens, and cognitive phenomena)
  - Investigator directly interacts with human subjects

- **Research areas:**
  - Mechanisms of human disease
  - Therapeutic interventions
  - Clinical trials
  - Development of new technologies
Notice of NCI’s Withdrawal from Participation in PA-16-198 "Mentored Patient-Oriented Research Career Development Award (Parent K23)"

NCI will **no longer** be participating in PA-16-198, "Mentored Patient-Oriented Research Career Development Award (Parent K23)"

NCI will support training in Patient-Oriented Research through K08 Awards and increase K08 Salary and Research Support

**NCI K08 Career Development Awards** will support training in Basic, Translational, and Patient-Oriented Cancer Research, as well as combinations of Basic, Translational, and Patient-Oriented Research.

https://grants.nih.gov/grants/guide/notice-files/NOT-CA-17-043.html
Mentored Research Scientist Development Award (K01)

Not all NIH Institutes participate in program Participating Institutes may use for different purposes

- Specific research areas
- Increase research workforce diversity
- Train in a new field
- Hiatus in research career

- Some Institutes support the parent funding announcement, some issue their own

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

https://researchtraining.nih.gov/programs/career-development/K01
https://researchtraining.nih.gov/programs/career-development
Mentored Research Scientist Career Development Award

For support of a postdoctoral or early career research scientists committed to research, in need of both advanced research training and additional experience.

Details

View Current Funding Opportunities

https://researchtraining.nih.gov/programs/career-development/K01
https://researchtraining.nih.gov/programs/career-development
Mentored Research Scientist Development Award (Parent K01 - Independent Clinical Trial Not Allowed)

Special Note: Not all NIH Institutes and Centers participate in Parent Announcements. Applicants should consult the individual Institutes or Centers for specific information.

PA-20-190

Table of IC-Specific Information, Requirements and Staff Contacts

Release Date: May 7, 2020
Expiration Date: May 8, 2023

<table>
<thead>
<tr>
<th>NIH Institute or Center Contacts</th>
<th>Institute or Center Specific Information</th>
</tr>
</thead>
</table>

PA-20-190 - Mentored Research Scientist Development Award (Parent K01 - Independent Clinical Trial Not Allowed) is used for the submission of applications to the following Notices of Special Interest (NOSIs)

<table>
<thead>
<tr>
<th>Title</th>
<th>Notice Number</th>
<th>Organization</th>
<th>Release Date</th>
<th>Expiration Date</th>
<th>Activity Code(s)</th>
</tr>
</thead>
</table>

https://researchtraining.nih.gov/
https://researchtraining.nih.gov/programs/career-development
Mentored Research Scientist Development Awards (K01)

- **NIMH:**
  - “supports a broad spectrum of basic and translational research, including basic neuroscience, human genetics, adult and developmental translational research, services and intervention research, and AIDS-related research”

- **NIMHD:**
  - “involving research to improve minority health and reduce health disparities, organized around three main Research Interest Areas: Clinical and Health Services Research, Community Health and Population Sciences, and Integrative Biological and Behavioral Sciences”

https://researchtraining.nih.gov/programs/career-development/K01
https://researchtraining.nih.gov/programs/career-development
Mentored Research Scientist Development Awards (K01)

**NIDDK:**
- “to provide an intensive, supervised, research and career development experience for nonclinical, doctoral researchers as they transition to independent research careers”

**NIAID:**
- Epidemiology and Data Science
- “includes but is not limited to computational modeling, bioinformatics, big data and advanced statistical analyses”

https://researchtraining.nih.gov/programs/career-development/K01
https://researchtraining.nih.gov/programs/career-development
Mentored Research Scientist Development Awards (K01)

- **NINR:**
  - “must have a clear focus in science areas related to the NINR mission, which is to promote and improve the health of individuals, families, and communities. Applicants should also consider NINR areas of special interest…”

- **NICHD:**
  - (a) Medical Rehabilitation Research
  - (b) Child Abuse and Neglect
  - (c) Population Research
  - (d) Down Syndrome (temp.)
Mentored Research Scientist Development Awards (K01)

- **NHGRI:**
  1. (a) Genomes and Society
  2. (b) Genomic Sciences

- **NHLBI:**
  1. (a) Epidemiology
  2. (b) Biostatistics
  3. (c) Outcomes Research
  4. (d) Implementation Research
  5. (e) Data Science

https://researchtraining.nih.gov/programs/career-development/K01
Mentored Quantitative Research
Career Development Award (K25)

For investigators with expertise in quantitative science and engineering research (e.g., mathematics, statistics, economics, computer science, imaging science, informatics, physics, chemistry), but whose research has not been primarily focused on NIH-relevant areas of health and disease.

https://researchtraining.nih.gov/programs/career-development/K25

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Mentored Research Scientist Career Development Award

For support of a postdoctoral or early career research scientists committed to research, in need of both advanced research training and additional experience.

Details

View Current Funding Opportunities

Mentored Clinical Scientist Research Career Development Award

To provide the opportunity for promising clinician scientists with demonstrated aptitude to develop into independent investigators, or for faculty members to pursue research, and aid in filling the academic faculty gap in health profession’s institutions.

Details

View Current Funding Opportunities

Mentored Patient-Oriented Research Career Development Award

To provide support for the career development of clinically trained professionals who have made a commitment to patient-oriented research, and who have the potential to develop into productive, clinical investigators.

Details

View Current Funding Opportunities

Pathway to Independence Award

To support both an initial mentored research experience (K99) followed by independent research (R00) for highly qualified, postdoctoral researchers, to secure an independent research position. Award recipients are expected to compete successfully for independent R01 support during the R00 phase.

Details

View Current Funding Opportunities

https://researchtraining.nih.gov/programs/career-development
**Mentored Patient-Oriented Research Career Development Award**

To provide support for the career development of clinically trained professionals who have made a commitment to patient-oriented research, and who have the potential to develop into productive, clinical investigators.

<table>
<thead>
<tr>
<th>K23</th>
<th>Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Clinical Trial Required)</th>
<th>PA-20-206</th>
</tr>
</thead>
<tbody>
<tr>
<td>K23</td>
<td>Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Clinical Trial Not Allowed)</td>
<td>PA-20-205</td>
</tr>
<tr>
<td>K23</td>
<td>Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Basic Experimental Studies with Humans Required)</td>
<td>PA-20-204</td>
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</tbody>
</table>
Research Career Development Awards

![Graph showing the number of awards by fiscal year for different career development award types: K01, K08, K23, K25, and K99.](image-url)

Research Career Development Awards – by NIH Institute/Center

Awards for 2021

Institute / Center

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Research Career Development Awards

Total Funding vs. Average Funding Over Fiscal Years 1998 to 2020

- Total Funding: Shows a steady increase from $200M in 1998 to $210K in 2020.
- Average Funding: Displays a rising trend from $0 in 1998 to $210K in 2020.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute / Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>K23</td>
<td>NHLBI</td>
<td>140</td>
<td>59</td>
<td>42.1%</td>
<td>$10,749,458</td>
</tr>
<tr>
<td>2021</td>
<td>K23</td>
<td>NIDCR</td>
<td>6</td>
<td>5</td>
<td>83.3%</td>
<td>$713,411</td>
</tr>
<tr>
<td>2021</td>
<td>K23</td>
<td>NIDDK</td>
<td>96</td>
<td>35</td>
<td>36.5%</td>
<td>$6,540,890</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NINDS</td>
<td>83</td>
<td>23</td>
<td>27.7%</td>
<td>$4,409,667</td>
</tr>
<tr>
<td>2021</td>
<td>K23</td>
<td>NIAID</td>
<td>49</td>
<td>22</td>
<td>44.9%</td>
<td>$4,220,044</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NIGMS</td>
<td>3</td>
<td>3</td>
<td>100.0%</td>
<td>$544,810</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NICHD</td>
<td>73</td>
<td>14</td>
<td>19.2%</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NEI</td>
<td>15</td>
<td>6</td>
<td>40.0%</td>
<td>$1,371,279</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NIEHS</td>
<td>3</td>
<td>2</td>
<td>66.7%</td>
<td>$446,114</td>
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<td>2021</td>
<td>K23</td>
<td>NIA</td>
<td>63</td>
<td>28</td>
<td>44.4%</td>
<td>$5,036,302</td>
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<td>2021</td>
<td>K23</td>
<td>NIAMS</td>
<td>29</td>
<td>12</td>
<td>41.4%</td>
<td>$1,854,208</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NIDCD</td>
<td>5</td>
<td>3</td>
<td>60.0%</td>
<td>$577,345</td>
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<td>2021</td>
<td>K23</td>
<td>NIMH</td>
<td>96</td>
<td>39</td>
<td>40.6%</td>
<td>$7,099,483</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NIDA</td>
<td>55</td>
<td>20</td>
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<td>2021</td>
<td>K23</td>
<td>NIAAA</td>
<td>13</td>
<td>9</td>
<td>69.2%</td>
<td>$1,598,644</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NINR</td>
<td>26</td>
<td>9</td>
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<td>$1,394,471</td>
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<td>2021</td>
<td>K23</td>
<td>NCCIH***</td>
<td>14</td>
<td>2</td>
<td>14.3%</td>
<td>$288,915</td>
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<tr>
<td>2021</td>
<td>K23</td>
<td>NIMHD</td>
<td>20</td>
<td>9</td>
<td>45.0%</td>
<td>$1,481,533</td>
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<tr>
<td><strong>2021</strong></td>
<td><strong>K23</strong></td>
<td><strong>ACTIVITY TOTAL</strong></td>
<td><strong>789</strong></td>
<td><strong>300</strong></td>
<td><strong>38.0%</strong></td>
<td><strong>$54,399,112</strong></td>
</tr>
</tbody>
</table>
# NHLBI K23 Application Success Rate

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Activity Code</th>
<th>NIH Institute / Center</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>K23</td>
<td>NHLBI</td>
<td>86</td>
<td>18</td>
<td>20.9%</td>
<td>$2,635,891</td>
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<tr>
<td>2013</td>
<td>K23</td>
<td>NHLBI</td>
<td>107</td>
<td>32</td>
<td>29.9%</td>
<td>$4,639,354</td>
</tr>
<tr>
<td>2014</td>
<td>K23</td>
<td>NHLBI</td>
<td>77</td>
<td>29</td>
<td>37.7%</td>
<td>$4,147,948</td>
</tr>
<tr>
<td>2015</td>
<td>K23</td>
<td>NHLBI</td>
<td>94</td>
<td>36</td>
<td>38.3%</td>
<td>$5,393,783</td>
</tr>
<tr>
<td>2016</td>
<td>K23</td>
<td>NHLBI</td>
<td>101</td>
<td>45</td>
<td>44.6%</td>
<td>$8,086,510</td>
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<tr>
<td>2017</td>
<td>K23</td>
<td>NHLBI</td>
<td>138</td>
<td>52</td>
<td>37.7%</td>
<td>$9,311,596</td>
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<tr>
<td>2018</td>
<td>K23</td>
<td>NHLBI</td>
<td>137</td>
<td>50</td>
<td>36.5%</td>
<td>$8,957,091</td>
</tr>
<tr>
<td>2019</td>
<td>K23</td>
<td>NHLBI</td>
<td>127</td>
<td>43</td>
<td>33.9%</td>
<td>$7,613,342</td>
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<tr>
<td>2020</td>
<td>K23</td>
<td>NHLBI</td>
<td>175</td>
<td>75</td>
<td>42.9%</td>
<td>$13,407,457</td>
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<tr>
<td><strong>2021</strong></td>
<td><strong>K23</strong></td>
<td><strong>NHLBI</strong></td>
<td><strong>140</strong></td>
<td><strong>59</strong></td>
<td><strong>42.1%</strong></td>
<td><strong>$10,749,458</strong></td>
</tr>
</tbody>
</table>


Agency for Healthcare Research and Quality

“to improve the quality, effectiveness, accessibility, and cost effectiveness of health care”

**K08:** Mentored **Clinical Scientist** Research Career Development Award/ **Patient-Centered Outcomes Research (PCOR)** Mentored **Clinical Scientist** Career - for individuals with a clinical doctoral degree or Ph.D./other doctoral degree in a clinical discipline

**K01:** Mentored **Research Scientist** Career Development Award - for individuals with a research doctoral degree

https://www.ahrq.gov/funding/index.html
https://www.ahrq.gov/funding/fund-opps/index.html
Centers for Disease Control and Prevention (CDC) K01

- National Institute for Occupational Safety and Health

- Mentored Research Scientist Development Award
  - “career development experience in occupational health and safety research leading to research independence”


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Mentored Clinical Scientist Development Program Award (K12)

- Support to an institution for career development experiences for junior investigators leading to research independence

- Institutions recruit and select candidates into their programs

- Candidates must meet the same criteria as for the individual mentored clinical scientist development award

https://researchtraining.nih.gov/programs/career-development/K12
Mentored Clinical Scientist Development Program Award (K12)

- **Multi-Institute:** Women’s Health

- **Institute specific**
  - NCI: Clinical oncology
  - NIDDK: Urology research
  - NIDDK: Diabetes research for endocrinologists
  - NICHD:
    - Child health
    - Pediatric scientists
    - Reproductive scientists

https://researchtraining.nih.gov/programs/career-development

Mentored Clinical Scientist
Development Program Award (K12)

- **Institute specific**
  - NIDA: Mentored clinical scientist development
  - NEI: Physician scientist award
  - NHLBI: Late stage (T4) translation research
  - NIDCR: Dental specialty and PhD program
  - NINDS: Neurosurgeons

- **CTSA - Clinical and Translational Scientist Award: KL2**

https://researchtraining.nih.gov/programs/career-development

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Administrative Supplements

- NIH-wide program
- Supplemental funding to existing research grants-most R’s, P’s and U awards (may be Institute dependent)
- Awarded administratively, i.e., not following a peer-review competitive process
<table>
<thead>
<tr>
<th>Title</th>
<th>Announcement Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Supplements to Promote Diversity in Health-Related Research (Admin Supp Clinical Trial Not Allowed)</td>
<td>PA-21-071</td>
</tr>
<tr>
<td>Administrative Supplements to Existing NIH Grants and Cooperative Agreements (Parent Admin Supp Clinical Trial Optional)</td>
<td>PA-20-272</td>
</tr>
</tbody>
</table>
Research Supplements to Promote Diversity in Health-Related Research (Admin Supp - Clinical Trial Not Allowed)

National Cancer Institute (NCI)
National Eye Institute (NEI)
National Heart, Lung, and Blood Institute (NHLBI)
National Human Genome Research Institute (NHGRI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)

Research Supplements to Promote Diversity in Health-Related Research (Contacts, Submission Dates and Special Instructions)

PA-20-166

Release Date: April 20, 2020
Expiration Date: May 22, 2023

- NIH Institute or Center
- Scientific Contact
- Grants Management Contact

Institute or Center Specific Information

National Institute on Minority Health and Health Disparities (NIMHD)
National Library of Medicine (NLM)
Fogarty International Center (FIC)
National Center for Complementary and Integrative Health (NCCIH)
National Center for Advancing Translational Sciences (NCATS)
Division of Program Coordination, Planning and Strategic Initiatives, Office of Research Infrastructure Programs (ORIP)
Division of Program Coordination, Planning and Strategic Initiatives, Sexual & Gender Minority Research Office (SGMRO)
Office of Strategic Coordination (Common Fund)
“designed to provide support for research experiences for individuals from diverse backgrounds throughout the continuum from high school to the faculty level… must have the potential to contribute significantly to the research career development of the candidate…. Fostering diversity in the scientific research workforce is a key component of the NIH strategy to identify, develop, support and maintain the quality of our scientific human capital”

Instrumentation

National Institutes of Health

- **Shared Instrumentation Grant Program (S10)**
  - “Purchase or upgrade a single item of expensive, specialized, commercially available instruments or integrated systems”
  - Grant provides $50,000 - $600,000
  - Major User Group of ≥3 PI’s of active NIH research grants
  - Major User Group: Minimum of 35% of the Accessible User Time (AUT)
  - NIH-funded projects: Minimum of 75% of the Accessible User Time (AUT)

High-End Instrumentation Grant Program (S10)

- “Purchase or upgrade a single item of expensive, specialized, commercially available instruments or integrated systems”
- Grant provides $600,001 - $2,000,000
- Major User Group of ≥3 PI’s of active NIH research grants
- Major User Group: Minimum of 35% of the Accessible User Time (AUT) [or BRT]
- NIH-funded projects: Minimum of 75% of the Accessible User Time (AUT) [or BRT]
- Special Use Instruments: Biomedical Research Time (BRT) ≥50% of AUT

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

Instrumentation
National Science Foundation - Major Research Instrumentation Program (MRI)

- “Acquisition” or “Development” of multi-user research instrumentation
- Enhance research training of students
- Track 1: $100,000 to < $1 million
  - < $100,000 in mathematics or social, behavioral and economic sciences
- Track 2: $1 million - $4 million

https://www.nsf.gov/od/gia/programs/mri/
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5260
Instrumentation

Department of Defense (DoD) - Defense University Research Instrumentation Program (DURIP)

- Army Research Office, Office of Naval Research, and Air Force Office of Scientific Research

- “DURIP is designed to improve the capabilities of accredited United States (U.S.) institutions of higher education to conduct research and to educate scientists and engineers in areas important to national defense, by providing funds for the acquisition of research equipment or instrumentation”

- $50,000 - $1,500,000
NIH CTSA Awards: A Home for Clinical and Translational Science

Source: Zerhouni (NIH) [9/06]
Institutional Clinical & Translational Science Award

- National network of medical research institutions (hubs)
  - > 50 medical research institutions
  - “Promote partnerships and collaborations to facilitate and accelerate translational research projects locally, regionally and nationally.

- “Advance clinical and translational science: develop, demonstrate and disseminate scientific and operational innovations that improve the efficiency and effectiveness of clinical translation from identification to first-in-human studies to medical practice implementation to community health dissemination.”

https://ncats.nih.gov/ctsa/about

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Mechanism</th>
<th>NIH Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant</td>
<td>Patron (Assistance, encouragement)</td>
</tr>
<tr>
<td>Cooperative Agreement</td>
<td>Partner (Assistance but substantial program involvement)</td>
</tr>
<tr>
<td>Contract</td>
<td>Purchaser (Procurement)</td>
</tr>
</tbody>
</table>

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Contracts

- Awards for **specific inquiry** directed towards particular areas of research and development
- Funding sponsor wishes to utilize advances in knowledge and technology to search for solutions to **specific requirements**
- **Contract performance is monitored closely** to ensure accomplishment of contract goals
Review Criteria

- **Differs from that of grants**
- Offerors respond to a ‘Request for Proposal’ (RFP) or a ‘Broad Agency Announcement’ (BAA)
- Proposals evaluated against criteria specified in RFP
- Recommendations of peer reviewers, and the results of separate NIH staff reviews, provide the basis for discussions with offerors in the competitive range
Offeror is requested to submit **Best And Final Offer (BAFO)**

Final selection of offeror is made on the basis of the **BAFO**, judged most advantageous to the government, according to the **RFP evaluation criteria**
Special Instructions

- Clinical trials
  - Separate funding announcements
- Direct Costs > $500,000 per year
- Role of international institutions
- Single IRB if >1 domestic site
- Investigator-initiated epidemiology studies
- Research with human fetal tissue
- Exceptions to the standard Feb/March, June/July, and Oct/Nov deadlines

NIH’s Extramural Loan Repayment Program

http://www.lrp.nih.gov/

- Up to $50,000/year towards educational loan debt
- Conduct qualified research activities for an average of at least 20 hours per week
- Qualifying educational loan debt equals or exceeds 20% of the applicant's institutional base salary
NIH’s Extramural Loan Repayment Program

- May competitively apply for one-year renewal
- Repayments are considered taxable income and a tax payment is also made to the IRS

Eligibility:
- U.S. citizen/National/Permanent Resident
- Recipient of M.D., Ph.D., D.D.S. D.M.D., or other specified equivalent doctoral degree
NIH’s Extramural Loan Repayment Program

Extramural Programs

- Clinical Research
- Research in Emerging Areas Critical to Human Health (REACH)
- Pediatric Research
- Clinical Researchers from Disadvantaged Backgrounds
- Health Disparities Research
- Contraception and Infertility Research

### Programs Overview

**Clinical Research Program (Clin)**

<table>
<thead>
<tr>
<th></th>
<th>Number of Applications</th>
<th>Number of Awards</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8,287</td>
<td>3,850</td>
<td>46%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Mean Award</th>
<th>Mean Age of Awardees</th>
<th>Total Funding</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$71,485</td>
<td>35 Years</td>
<td>$275,219,134</td>
</tr>
</tbody>
</table>

https://www.lrp.nih.gov/data-reports

6. NIH should expand Loan Repayment Programs and the amount of loans forgiven should be increased to more realistically reflect the debt burden of current trainees. This program should also be made available to all students pursuing biomedical physician-scientist researcher careers, regardless of particular research area or clinical specialty.
HRSA: Bureau of Health Workforce

Apply for Loan Repayment

We offer programs that repay school loan debt.

- Nurse Corps Loan Repayment Program
- National Health Service Corps Loan Repayment Programs
- Faculty Loan Repayment Program

Apply for a Scholarship

We offer scholarships to help pay for health professions’ education.

- Nurse Corps Scholarship Program
- Native Hawaiian Health Scholarship Program
- National Health Service Corps Scholarship Program
Topics to be Discussed

- **Funding Agencies**
  - Federal
    - National Institutes of Health, Dept. of Defense
  - Voluntary Health Organizations, Professional Societies, Foundations, Industry

- **Types of Awards**
  - Grants, Contracts, Cooperative agreements,
    - e.g. Research grants, fellowships, career development awards

- **Funding Announcements**

- **Grant Review Processes**
  - National Institutes of Health
Funding Opportunity Announcement (FOA)

- Different types of FOA’s
- Published in the NIH Guide for Grants and Contracts (e.g., RFAs, PAs) and Grants.gov
NIH Guide for Grants and Contracts

Funding Opportunity Announcement (FOA)

Program Announcement (PA)

- Usually accepted on standard receipt dates on an on-going basis
- Parent and non-Parent Program Announcements
- Special Types
  - **PAR:** A PA with special receipt, referral and/or review considerations, as described in the PAR announcement
  - **PAS:** A PA that includes specific set-aside funds as described in the PAS announcement

Request for Application (RFA)

- Identifies a more narrowly defined area for which one or more NIH institutes have set aside funds for awarding grants
- Usually has a single receipt date
- Usually reviewed by a Scientific Review Group convened by the issuing Institute

Request for Proposal (RFP)

- Solicits contract proposals. Usually has one receipt date

Notice (NOT)

- Announces policy and procedures, changes to RFA or PA announcements, RFPs and other general information items
Funding Announcements – New Clinical Trials Policy

Policy on Funding Opportunity Announcements (FOA) for Clinical Trials

“NIH will require that all applications involving one or more clinical trials be submitted through a Funding Opportunity Announcement (FOA) specifically designed for clinical trials. This means that the NIH will no longer accept clinical trial applications through "parent" FOA announcements or through other FOAs that are not specifically designed to accept clinical trials.”

Update on Clinical Trial Funding Opportunity Announcement Policy

“New Effective Date
Effective January 25, 2018, all grant applications with plans to conduct clinical trials must be submitted in response to an FOA which specifically states that clinical trials are allowed. After that date, applications planning a clinical trial that are submitted to a non-clinical trial FOA will be returned without review.”


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
New Clinical Trials Policy: Basic Experimental Studies with Humans

“new parent Funding Opportunity Announcement (FOAs) for basic science experimental studies involving humans [BESH], referred to in NOT-OD-18-212 as “prospective basic science studies involving human participants.” These studies fall within the NIH definition of a clinical trial and also meet the definition of basic research. Types of studies that should submit under this FOA include studies that prospectively assign human participants to conditions (i.e., experimentally manipulate independent variables) and that assess biomedical or behavioral outcomes in humans for the purpose of understanding the fundamental aspects of phenomena without specific application towards processes or products in mind.”

## Comparison of Funding Opportunity Announcement Types by Clinical Trial Allowability

<table>
<thead>
<tr>
<th>Clinical Trial Not Allowed FOA</th>
<th>Clinical Trial Required FOA</th>
<th>Basic Experimental Studies with Humans Required FOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Studies not involving humans as research participants</td>
<td>- Studies of the safety, efficacy, or effectiveness of an intervention on biomedical or behavioral outcomes or processes</td>
<td>- Studies that prospectively assign interventions or experimentally manipulate independent variables with human participants and assess biomedical or behavioral outcomes for the purpose of understanding the fundamental aspects of phenomena without specific application towards processes or products in mind</td>
</tr>
<tr>
<td>- Studies of biospecimens obtained from humans in which any experimental manipulation is performed on the biospecimens, not on the humans</td>
<td>- Studies that prospectively assign interventions intended or anticipated to change the health status of human participants even if not for the purpose of assessing the safety, efficacy or effectiveness of the intervention (e.g., to study the mechanisms or pathways by which the treatment produces its effect)</td>
<td>- Studies that use an experimental manipulation or intervention probe in order to understand normal functioning or the pathophysiology of a disorder</td>
</tr>
<tr>
<td>- Human observational studies in which no experimental manipulations of independent variables and no prospective assignment of interventions are performed</td>
<td>- Studies of tests (e.g., laboratory, biomarkers, patient-report, performance, observational) in which the purpose of the study is to assess the various properties of the test (reliability, validity, sensitivity/specificity, etc.), not to assess biomedical or behavioral outcomes or processes</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Participation in Funding Opportunities will vary by NIH Institutes and Centers (ICs)


Funding Announcements – New Clinical Trials Policy

“FOAs can now have any of the following clinical trial (CT) classifications:

• CT Not Allowed
• CT Optional
• Mechanistic CT Only
• BESH Required [Basic Experimental Studies with Humans]
• CT Required

When you’re ready to submit your next application, you **must** select a FOA that accepts the type of research you wish to propose.”
Funding Announcements
Parent Funding Announcement

- Funding Opportunity Announcement (FOA) for unsolicited investigator-initiated grant applications [e.g., R’s (R01, R03, R21), K’s (K01, K08, K23, K99), F’s (F30, F31, F32)]

- Allows for the submission of grant applications that are not in response to specific Program Announcement or RFA

- Published in the NIH Guide for Grants and Contracts and Grants.gov


Jaime S. Rubin, Ph.D.; http://grantcourse.columbia.edu
Parent Announcements
(For Unsolicited or Investigator-Initiated Applications)

“Parent announcements are broad funding opportunity announcements allowing applicants to submit investigator-initiated applications for specific activity codes. They are open for up to 3 years and use standard due dates.

Not all NIH Institutes and Centers participate on all parent announcements. Before submitting your application, make sure the NIH Institute or Center that might be interested in your research is listed as a participating organization in the announcement.”
# Research (R) Announcements

<table>
<thead>
<tr>
<th>Activity Code(s)</th>
<th>Title</th>
<th>Announcement Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>R01</td>
<td>NIH Research Project Grant <em>(Parent R01 Clinical Trial Not Allowed)</em></td>
<td>PA-20-185</td>
</tr>
<tr>
<td>R01</td>
<td>Research Project Grant <em>(Parent R01 Basic Experimental Studies with Humans Required)</em></td>
<td>PA-20-184</td>
</tr>
<tr>
<td>R01</td>
<td>Research Project Grant <em>(Parent R01 Clinical Trial Required)</em></td>
<td>PA-20-183</td>
</tr>
</tbody>
</table>


NIH Research Project Grant (Parent R01 Clinical Trial Not Allowed)

National Eye Institute (NEI)
National Heart, Lung, and Blood Institute (NHLBI)
National Human Genome Research Institute (NHGRI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute on Drug Abuse (NIDA)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of General Medical Sciences (NIGMS)
National Institute of Mental Health (NIMH)
National Institute of Neurological Disorders and Stroke (NINDS)
National Institute of Nursing Research (NINR)
National Institute on Minority Health and Health Disparities (NIMHD)
National Library of Medicine (NLM)
National Center for Complementary and Integrative Health (NCCIH)
Division of Prog. Coord., Planning and Strategic Initiatives, Office of Research Infrastructure Prog. (ORIP)
National Cancer Institute (NCI)

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
The following Institutes/Centers only accept mechanistic studies that meet NIH's definition of a clinical trial.

National Heart, Lung, and Blood Institute (NHLBI)
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
National Institute of Neurological Disorders and Stroke (NINDS)
National Center for Complementary and Integrative Health (NCCIH)
Research Project Grant (Parent RO1 Clinical Trial Required)

Release Date: May 05, 2020  
Expiration Date: May 8, 2023  

RO1 Clinical Trial Required Participating Institutes and Centers:

- NIH Institutes and Centers that accept Investigator-Initiated RO1 applications in response to the Parent RO1 Announcement - (PA-20-NNN): NHGRI, NEI, NIA, NIAAA, NIAID, NIDA, NIDCD, NIEHS, NIGMS, NIMHD, NINR

- NIH Institutes and Centers that only accept Investigator-Initiated RO1 applications proposing mechanistic clinical trials in response to the Parent RO1 Clinical Trial Required Announcement (PA-20-NNN): NCCIH, NHLBI, NIAMS, NIH, NINDS

- NIH Institutes and Centers that DO NOT ACCEPT applications in response to the Parent RO1 Clinical Trial Required Announcement but ONLY accept RO1 applications proposing clinical trial(s) in response to their specific funding opportunity announcements: NCI, NIBIB, NICHD, NIDCR, NIDDK (PA-18-330), NLM, FIC, NCATS

<table>
<thead>
<tr>
<th>NIH Institute Or Center Contacts</th>
<th>Scientific/Research Contact</th>
<th>Institute/Center Specific Information</th>
<th>Financial or Grants Management Contact</th>
</tr>
</thead>
</table>

https://grants.nih.gov/grants/guide/contacts/parent-R01-CT-Required.html  

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
National Eye Institute (NEI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Institute of Dental and Craniofacial Research (NIDCR)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
National Institute on Drug Abuse (NIDA)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of Mental Health (NIMH)
National Institute of Neurological Disorders and Stroke (NINDS)
National Institute of Nursing Research (NINR)
National Institute on Minority Health and Health Disparities (NIMHD)
National Library of Medicine (NLM)
National Center for Complementary and Integrative Health (NCCIH)
**Parent Announcements (For Unsolicited or Investigator-Initiated Applications)**

“**Not all NIH Institutes and Centers** participate on all parent announcements. Before submitting your application, make sure the NIH Institute or Center that might be interested in your research is listed as a participating organization in the announcement.”

<table>
<thead>
<tr>
<th>R21</th>
<th>NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Not Allowed)</th>
<th>PA-20-195</th>
</tr>
</thead>
<tbody>
<tr>
<td>R21</td>
<td>NIH Exploratory/Developmental Research Grant Program (Parent R21 Clinical Trial Required)</td>
<td>PA-20-194</td>
</tr>
<tr>
<td>R21</td>
<td>NIH Exploratory/Developmental Research Grant Program (Parent R21 Basic Experimental Studies with Humans Required)</td>
<td>PA-20-196</td>
</tr>
</tbody>
</table>

https://grants.nih.gov/grants/guide/parent_announcements.htm

NIH Small Research Grant Program
(Parent R03 Clinical Trial Not Allowed)

National Human Genome Research Institute (NHGRI)
National Institute on Aging (NIA)
National Institute on Alcohol Abuse and Alcoholism (NIAAA)
National Institute of Allergy and Infectious Diseases (NIAID)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Institute on Drug Abuse (NIDA)
National Institute of Environmental Health Sciences (NIEHS)
National Institute of Mental Health (NIMH)
National Institute of Neurological Disorders and Stroke (NINDS)

<table>
<thead>
<tr>
<th>K08</th>
<th>Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Not Allowed)</th>
<th>PA-20-203</th>
</tr>
</thead>
<tbody>
<tr>
<td>K08</td>
<td>Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Clinical Trial Required)</td>
<td>PA-20-202</td>
</tr>
<tr>
<td>K08</td>
<td>Mentored Clinical Scientist Research Career Development Award (Parent K08 Independent Basic Experimental Studies with Humans Required)</td>
<td>PA-20-201</td>
</tr>
<tr>
<td>K23</td>
<td>Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Clinical Trial Required)</td>
<td>PA-20-206</td>
</tr>
<tr>
<td>K23</td>
<td>Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Clinical Trial Not Allowed)</td>
<td>PA-20-205</td>
</tr>
<tr>
<td>K23</td>
<td>Mentored Patient-Oriented Research Career Development Award (Parent K23 Independent Basic Experimental Studies with Humans Required)</td>
<td>PA-20-204</td>
</tr>
</tbody>
</table>

https://grants.nih.gov/grants/guide/parent_announcements.htm
In addition to the Parent Funding Opportunity Announcement, individual NIH Institutes/Center may issue “non parent” Program Announcements for specific areas of research or initiatives.

- e.g., Highlight Institute’s interest in funding a specific area of research.
- e.g., An Institute/Center may not support the Parent R21 or R03 Funding Announcements, but will support these funding mechanisms through Institute-issued funding announcements.
Program Announcement (PA)

- **No set-aside of funds**
- Describes an NIH extramural research program
- May describe new or expanded interest in a specific extramural program
- May be a reminder of a continuing interest in an extramural program
- Applications reviewed at Center for Scientific Review (CSR) not the Institute
- Being phased out for **Notices of Special Interests**
- Published in the **NIH Guide for Grants and Contracts** and **Grants.gov**

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications
Program Announcement (PA): [not a Parent Announcement]

Comprehensive Care for Adults with Type 2 Diabetes Mellitus from Populations with Health Disparities (R01 Clinical Trial Optional)

Funding Opportunity Announcement (FOA) Number
PA-21-232

Components of Participating Organizations
- National Institute on Minority Health and Health Disparities (NIMHD)
- National Eye Institute (NEI)
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

All applications to this funding opportunity announcement should fall within the mission of the Institutes/Centers. The following NIH Offices may co-fund applications assigned to those Institutes/Centers.

Office of Research on Women’s Health (ORWH)


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Program Announcement Announcement (PAR)

- Program Announcement for grant applications with “special” receipt/referral/review considerations

- Research area coincides with the programmatic interests of an NIH Institute

https://grants.nih.gov/grants/guide/description.htm
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Program Announcement (PAR)

Limited Competition: Small Grant Program for NIDDK K01/K08/K23/K25 Recipients (R03 Clinical Trial Optional)

Funding Opportunity Announcement (FOA) Number PAR-22-129

Components of Participating Organizations

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

Program Announcement (PAR)

Funding Opportunity Title

Fundamental Mechanisms of Affective and Decisional Processes in Cancer Control (R01 Clinical Trial Optional)

Funding Opportunity Announcement (FOA) Number
PAR-20-034

- Grant applications have “special” receipt/referral/review considerations
  - e.g., Reviewed at the Institute, not at the Center for Scientific Review (CSR)

- Usually, some applications are funded

- Specific focus or mission

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Program Announcement (PAS)

- Program Announcement with dedicated funding
- “Set-aside funds”
- Research area coincides with the programmatic interests of an Institute

https://grants.nih.gov/grants/guide/description.htm

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Funding Announcements

PAR “special review”
PAS “set-aside funds”
Request For Applications (RFA)

- Addresses an Institute’s initiative in a well-defined scientific area (may involve >1 Institute)
- Invitation to the scientific research community to submit applications for what is often a one-time “competition”
- Usually reviewed by a committee (Scientific Review Group) formed by the Institute(s)
- Set-aside of funds for a certain number of awards
- Published in the NIH Guide for Grants and Contracts and Grants.gov

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications
https://grants.nih.gov/grants/guide/description.htm

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
“NIH currently has a **large number of non-parent program announcements** (PAs)…  **These PAs will be phased out over time and will be replaced with Notices of Special Interest**…  We will continue to post full funding opportunity announcements (FOAs) for requests for applications (RFAs), program announcements with special receipt/referral/review considerations (PARs), and program announcements with set-aside funds (PASs).”

“**Notices of Special Interest**

• Succinctly highlight a **specific topic of interest**, for example a specific area of research or program

• **Direct applicants** to one or more **active FOAs (often parent announcements)** for submission of applications for the initiative described…”

“…Applicants must also **adhere to any additional submission guidance** described in the Notice of Special Interest…
Most Notices of Special Interest require applicants to **include the notice number** in the Agency Routing Identifier **field (4b)** of the **SF424** (R&R) form…”

“NIH currently has a large number of non-parent program announcements (PAs)… These PAs will be phased out over time and will be replaced with Notices of Special Interest… We will continue to post full funding opportunity announcements (FOAs) for requests for applications (RFAs), program announcements with special receipt/referral/review considerations (PARs), and program announcements with set-aside funds (PASs).”

“Notices of Special Interest
• Succinctly highlight a specific topic of interest, for example a specific area of research or program
• Direct applicants to one or more active FOAs (often parent announcements) for submission of applications for the initiative described…”

…Applicants must also adhere to any additional submission guidance described in the Notice of Special Interest…
Most Notices of Special Interest require applicants to include the notice number in the Agency Routing Identifier field (4b) of the SF424 (R&R)
Funding Announcements

PAR “special review”
PAS “set-aside funds”
Notice of Special Interest (NOSI): Stimulating Intervention Research to Reduce Cardiopulmonary Impacts of Particulate Matter in Air Pollution among High-Risk Populations

Notice Number: NOT-HL-20-788

Related Announcements

PA-20-183 - Research Project Grant (Parent R01 Clinical Trial Required)
PA-20-184 - NIH Research Project Grant (Parent R01 Basic Experimental Studies with Humans Required)
PA-20-185 - Research Project Grant (Parent R01 Clinical Trial Not Allowed)

Request For Proposals (RFP)

- Formal announcement describing an Institute initiative in a well-defined scientific area
- Invitation to the field to submit contract proposals for usually, a one-time “competition”
- Set-aside of funds for a certain number of awards
- Published in FedBizOpps

“Many NIH funding opportunity announcements (FOAs) have multiple due dates each year for up to three years. A lot can change over three years (e.g., application form updates, implementation of new policies, changes to due dates, institutes can add or discontinue participation on an FOA)... NIH provides at least 30-days notice prior to any substantive change in requirements. So, revisit your FOA within 30 days of your due date (pay extra attention to the Related Notices section) and you can ensure you are aware of the latest requirements before finalizing and submitting your application.”
Broad Agency Announcement (BAA)

- Describes research areas of interest to a government agency
- Describes agency’s technical objectives
- Usually requests contract proposals that use creative and innovative approaches
- Similar to RFPs, except:
  - The applicant, not the government, develops the ‘Statement of Work’
  - The applicant, not the government, develops the work requirements and performance specifications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Topics to be Discussed

- Funding Agencies
  - Federal
    - National Institutes of Health, Dept. of Defense
  - Voluntary Health Organizations, Professional Societies, Foundations, Industry

- Types of Awards
  - Grants, Contracts, Cooperative agreements,
    - e.g. Research grants, fellowships, career development awards

- Funding Announcements

- Grant Review Processes
  - National Institutes of Health

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>Activity Codes</th>
<th>Program Description</th>
<th>Cycle I Due Date</th>
<th>Cycle II Due Date</th>
<th>Cycle III Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>R01, new</td>
<td>Research Grants</td>
<td>February 5</td>
<td>June 5</td>
<td>October 5</td>
</tr>
<tr>
<td>K series, new</td>
<td>Research Career Development</td>
<td>February 12</td>
<td>June 12</td>
<td>October 12</td>
</tr>
<tr>
<td>R03, R21, R33, R21/R33, R34, R36, U34, UH2, UH3, UH2/UH3, new</td>
<td>Other Research Grants and Cooperative Agreements</td>
<td>February 16</td>
<td>June 16</td>
<td>October 16</td>
</tr>
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</table>

## RESUBMISSION AND COMPETITIVE RENEWAL APPLICATIONS

### Activity Codes

<table>
<thead>
<tr>
<th>Program Description</th>
<th>Cycle I Due Date</th>
<th>Cycle II Due Date</th>
<th>Cycle III Due Date</th>
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<tbody>
<tr>
<td>Research Grants</td>
<td>March 5</td>
<td>July 5</td>
<td>November 5</td>
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<tr>
<td>K series</td>
<td>March 12</td>
<td>July 12</td>
<td>November 12</td>
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<td>Research Career Development</td>
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<tr>
<td>Other Research Grants and Cooperative Agreements</td>
<td>March 16</td>
<td>July 16</td>
<td>November 16</td>
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### Application Due Dates

<table>
<thead>
<tr>
<th>All Activity Codes Cited Above</th>
<th>AIDS and AIDS-Related Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>new, renewal, resubmission, revision</em></td>
<td><em>Effective. Sept 5, 2015 - N/A for SBIR/STTR Applications using Standard Due Dates</em></td>
</tr>
<tr>
<td></td>
<td>NOTE: See Key Dates section of funding opportunity announcement to determine if AIDS dates apply.</td>
</tr>
<tr>
<td></td>
<td><strong>May 7</strong></td>
</tr>
</tbody>
</table>


## Application Due Dates

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<thead>
<tr>
<th>Activity Codes</th>
<th>Program Description</th>
<th>Cycle I Due Date</th>
<th>Cycle II Due Date</th>
<th>Cycle III Due Date</th>
</tr>
</thead>
</table>
| F Series Fellowships (including F31 Diversity – NOT-OD-17-029) | *Individual National Research Service Awards (Standard)*  
(see NRSA Training Page)                           | April 8                        | August 8           | December 8         |
## Application Due Dates

### Review and Award Cycles

<table>
<thead>
<tr>
<th></th>
<th>Cycle I</th>
<th>Cycle II</th>
<th>Cycle III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Due Dates</td>
<td>January 25 - May 7</td>
<td>May 25 - September</td>
<td>September 25 - January 7</td>
</tr>
<tr>
<td>Scientific Merit Review</td>
<td>June - July</td>
<td>October - November</td>
<td>February - March</td>
</tr>
<tr>
<td>Advisory Council Round</td>
<td>August or October *</td>
<td>January</td>
<td>May</td>
</tr>
<tr>
<td>Earliest Project Start Date</td>
<td>September or December *</td>
<td>April</td>
<td>July</td>
</tr>
</tbody>
</table>


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Review Process for a Research Grant Application

National Institutes of Health

Ctr for Scientific Review

Research Grant Application

School or Other Research Center

- Initiates Research Idea
- Submits Application

- Assigns to Study Section & Institute

Study Section

- Evaluates for Scientific Merit
- Evaluates for Program Relevance

Institute

- Recommends Action

Advisory Councils and Boards

- Allocates Funds

- Conducts Research

Institute Director

- Takes final action for NIH Director

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NIH REFERRAL AND REVIEW SYSTEM
REGULAR RESEARCH GRANT APPLICATIONS

PROGRAM & POLICY CONSIDERATIONS

NINDS  NIGMS  NIA

NIAID  NCI

NIDR  NEI

NINR  NIAHMS

NIHLS  NCHGR

NIHID    NICHLD

NCRR  FIC  NIDDK

FUNDING DECISIONS

SCIENTIFIC MANAGEMENT

CSR
Center for Scientific Review

CSR by the Numbers

NIH

~88,000
NIH applications received annually

~66,000
Applications reviewed by CSR annually

75%
of NIH applications are reviewed by CSR

CSR

92%
Research Project Grants (R01)

~34,000

95%
Small Business (SBIR/STTR)

~7,500

83%
Fellowship

~5,600


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>CSR</th>
<th>Institutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• *Research Grants (e.g., R01’s)</td>
<td>• Multi-Project Grants (P01, P50, etc)</td>
</tr>
<tr>
<td>• *Fellowships (F’s)</td>
<td>• Career Development (K’s)</td>
</tr>
<tr>
<td>• Small Business</td>
<td>• Research Grants/Cooperative Agreements in response to “special” PA/PAR/PAS &amp; RFA’s</td>
</tr>
</tbody>
</table>

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

NIH: one round of applications
Dual Review System for Grant Applications

First Level of Review
Scientific Review Group
• Provides initial scientific review of grant applications
• Makes recommendations for appropriate level of support and duration of award

Second Level of Review
Institute’s Council
• Assesses quality of SRG review of grant applications
• Makes recommendations to institute staff on funding
• Evaluates program priorities and relevance
• Advises on policy

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Application to CSR

CSR assigns to IRG, IC

Review by CSR IRG

Second level Council review

Fundable

NIAID negotiates award

Grant ends, renewal

Not funded

Applicant evaluated feedback

Applicant evaluated feedback

Revised application

Application can request IRG and IC

New RFAs, other*

Review by NIAID

CSR sends to NIAID

CSR to IC

R01s, revised RFAs, other*

CSR: Center for Scientific Review; IC: Institute/Center; IRG: Review Branch (Study Sections)


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Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
**CSR**: Center for Scientific Review;  **IC**: Institute/Center;  **IRG**: Review Branch (Study Sections)

[Diagram of the grant application process]

1. **Application to CSR**
   - Applicant can request IRG and IC
   - New RFAs, other*

2. **CSR assigns to IRG, IC**
   - Review by CSR IRG
   - Summary statement to applicant

3. **CSR sends to NIAID**
   - Review by NIAID

4. **Second level Council review**

5. **Fundable**
   - NIAID negotiates award
   - Grant ends, renewal

6. **Not funded**
   - Applicant notified, sent feedback
   - Applicant evaluates feedback
   - Revised application

---


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**CSR**: Center for Scientific Review; **IC**: Institute/Center; **IRG**: Review Branch (Study Sections)

[Diagram of the grant application process]

- **Application to CSR**: applicant can request IRG and IC
- **CSR assigns to IRG, IC**
- **Review by CSR IRG**
  - **Second level Council review**
  - **Fundable**
    - NIAID negotiates award
      - Grant ends, renewal
  - **Not funded**
    - Applicant evaluates feedback
    - Revised application

- **CSR sends to NIAID**
- **Review by NIAID**
- **New RFAs, other**
- **Summary statement to applicant**
- **RO1s, revised RFAs, other**

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CSR: Center for Scientific Review; IC: Institute/Center; IRG: Review Branch (Study Sections)

### NIH R01-Equivalent Grants Success Rates - FY2021

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Competing Status (Type)</th>
<th>Number of Applications Reviewed</th>
<th>Number of Applications Awarded</th>
<th>Success Rate</th>
<th>Total Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>New First Submission (A0)</td>
<td>26,352</td>
<td>3,704</td>
<td>14.1%</td>
<td>$2,541,143,257</td>
</tr>
<tr>
<td>2021</td>
<td>New with Resubmissions (A1)</td>
<td>8,422</td>
<td>2,559</td>
<td>30.4%</td>
<td>$1,512,299,217</td>
</tr>
<tr>
<td>2021</td>
<td>Continuations (A0)</td>
<td>2,001</td>
<td>858</td>
<td>42.9%</td>
<td>$509,860,668</td>
</tr>
<tr>
<td>2021</td>
<td>Continuations with Resubmissions (A1)</td>
<td>1,086</td>
<td>487</td>
<td>44.8%</td>
<td>$281,445,853</td>
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<tr>
<td>2021</td>
<td>Supplements</td>
<td>126</td>
<td>19</td>
<td>15.1%</td>
<td>$31,167,676</td>
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<tr>
<td><strong>2021</strong></td>
<td><strong>FY Total</strong></td>
<td><strong>37,987</strong></td>
<td><strong>7,627</strong></td>
<td><strong>20.1%</strong></td>
<td><strong>$4,875,916,671</strong></td>
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</table>

### NIH R01-Equivalent Grants Success Rates - FY2021

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<td><strong>20.1%</strong></td>
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Review by NIAID

New RFAs, other*

R01s, revised RFAs, other*

CSR: Center for Scientific Review; IC: Institute/Center; IRG: Review Branch (Study Sections)

Center for Scientific Review
- Review Branches (RB’s) -

- Aging and Neurodegeneration
- Basic Neuroscience
- Basic and Translational Cancer
- Biobehavioral Processes
- Bioengineering, Biodata, and Biomodeling Technologies
- Cancer Diagnosis, Prevention & Therapeutics
- Cancer Therapeutics
- Cell and Developmental Biology
- Clinical Care and Health Interventions
- Clinical Neuroscience
- Disease Control and Applied Immunology
- Endocrine and Metabolic Systems
- Epidemiology and Population Health
- Kidney, Urology, and Digestive Systems

https://public.csr.nih.gov/StudySections/ReviewBranches
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
- Health Services and Systems
- Imaging, Surgery, and Bioengineering
- Immunology and Infectious Diseases (A and B)
- Integrative and Cognitive Neuroscience
- Integrative Vascular Biology and Hematology
- Macromolecular Biophysics and Biological Chemistry
- Molecular and Cellular Sciences and Technologies
- Molecular Genetics and Genomics
- Musculoskeletal, Skin, and Oral Sciences
- Neurotechnology and Vision
- Respiratory, Cardiac, and Circulatory Sciences
- Social and Community Influences Across the Lifecourse

https://public.csr.nih.gov/StudySections/ReviewBranches
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Review Branch Summary

The Cancer Therapeutics Review Branch will consider applications involving translational and clinical investigations that encompass cancer therapeutic development and cancer treatment. Specifically, the Review Branch reviews research grant applications related to drug discovery and mechanism of action of cancer therapeutic agents in both in vitro and in vivo model systems; identification and validation of new druggable targets; development and evaluation of experimental therapies of neoplastic diseases; development or optimization of treatment modalities; and radiation biology and therapy.
# Study Sections

<table>
<thead>
<tr>
<th>Mechanisms of Cancer Therapeutics-1*</th>
<th>MCT1</th>
<th>Radiation Therapeutics and Biology Study Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ends after Summer 2022 review meetings</td>
<td></td>
<td>RTB</td>
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<thead>
<tr>
<th></th>
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</thead>
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<tr>
<th>Drug Discovery and Molecular Pharmacology Study Section*</th>
<th>DMP</th>
<th>Oncology 2 - Translational Clinical Small Business SBIR/STTR Special Emphasis Panels Radiation Therapy and Biology SBIR RTB SBIR SEP</th>
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<table>
<thead>
<tr>
<th>Developmental Therapeutics Study Section*</th>
<th>DT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ends after October/Nov 2022 review meetings</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New! Advancing Therapeutics A*</th>
<th>ATA</th>
<th>New! Mechanisms of Cancer Therapeutics A* Begins for upcoming October/November 2022 application deadlines, with first review dates in February/March 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begins for upcoming May/June 2022 application deadlines, with first review dates in Fall 2022</td>
<td></td>
<td>MCTA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New! Drug Discovery and Molecular Pharmacology C*</th>
<th>DMPC</th>
<th>New! Mechanisms of Cancer Therapeutics C* Begins for upcoming May/June 2022 application deadlines, with first review dates in Fall 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begins for upcoming October/November 2022 application deadlines, with first review dates in February/March 2023</td>
<td></td>
<td>MCTC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New! Mechanisms of Cancer Therapeutics B*</th>
<th>MCTB</th>
<th>New! Mechanisms of Cancer Therapeutics B* Begins for upcoming May/June 2022 application deadlines, with first review dates in Fall 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>MCTB</td>
</tr>
</tbody>
</table>

https://public.csr.nih.gov/StudySections/DTCS/CTH
The Radiation Therapeutics and Biology (RTB) Study Section reviews applications on therapeutic interactions of ionizing radiation, radionuclides, electromagnetic radiation, and heat at the molecular, cellular, organ, and patient levels. This ranges from basic studies of DNA damage responses and DNA repair to preclinical applications in which dose, dose rate, type of radiation, and quality of radiation are variables. RTB focuses on both clinical work and animal model.
Notice of NIH Policy to All Applicants: Meeting rosters are provided for information purposes only. Applicant investigators and institutional officials must not communicate directly with study section members about an application before or after the review. Failure to observe this policy will create a serious breach of integrity in the peer review process, and may lead to actions outlined in NOT-OD-22-044, including removal of the application from immediate review.

Maintaining Security and Confidentiality in NIH Peer Review: Rules, Responsibilities and Possible Consequences

Notice Number:
NOT-OD-22-044

The Radiation Therapeutics and Biology (RTB) Study Section reviews applications on therapeutic interactions of ionizing radiation, radionuclides, electromagnetic radiation, and heat at the molecular, cellular, organ, and patient levels. This ranges from basic studies of DNA damage responses and DNA repair to preclinical applications in which dose, dose rate, type of radiation, and quality of radiation are variables. RTB focuses on both clinical work and animal model.

Topics

Shared Interests and Overlaps

Membership Panel

The membership panel is a list of chartered members only.

> View Membership Panel

Discover Other Possible Study Sections

Review Dates

> List of Reviewers on 10/27/2022
> List of Reviewers on 06/27/2022
> List of Reviewers on 02/14/2022
The Assisted Referral Tool (ART) was developed by the NIH Center for Scientific Review (CSR) to recommend potentially appropriate study section. The information you provide ART is only used to recommend study sections and is not stored or persisted. The recommendations made by ART are solely for the benefit of the user.
## Project Details

### Agency/Institute/Center
- [ ] Admin
- [ ] Funding

### NIH Spending Category
- [ ] AND
- [ ] OR

### Funding Mechanism

### Award Type

### Project Number/Application ID
Format: 5R01CA012345:04/8515397, semicolon ";" separated

### Activity Code

### Study Section
- Radiation Therapeutics and Biology Study

### Program Officer (PO)
PO Names, semicolon ";" separated

### Project Start Date
Format: MM/DD/YYYY
How to Direct a Grant Application to the Appropriate Study Section

- Review research areas of Integrated Review Group
- Review research areas of Study Section
- Review roster of Study Section members
  - Do not contact reviewers
- Review Study Section’s funded grants in NIH RePorter
- Discuss with colleagues in similar research area
- Request via PHS Assignment Request Form in Application

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
PHS Assignment Request Form

Funding Opportunity Number:

Funding Opportunity Title:

Awarding Component Assignment Suggestions (optional)
If you have a suggestion for an awarding component (e.g., NIH Institute/Center) assignment, use the link below to identify the appropriate short abbreviation (e.g., "NCI" for National Cancer Institute) and enter it below in the boxes for "Suggested Awarding Components". All suggestions will be considered; however, not all assignment suggestions can be honored.

Information about Awarding Component can be found here: https://grants.nih.gov/grants/phs_assignment_information.htm#AwardingComponents

Suggested Awarding Components:

Study Section Assignment Suggestions (optional)
If you have a suggestion for a study section assignment, use the link below to identify a study section(s). Enter the short abbreviation for that study section in the boxes for "Suggested Study Sections." Remove all hyphens, parentheses, and spaces. All suggestions will be considered; however, not all assignment suggestions can be honored.

For example, enter "CAMP" if you wish to suggest assignment to the NIH Cancer Molecular Pathobiology study section, or "ZRG1HDMR" if you wish to suggest assignment to the NIH Healthcare Delivery and Methodologies SBIR/STTR panel for informatics.

Information about Study Sections can be found here: https://grants.nih.gov/grants/phs_assignment_information.htm#StudySection

Suggested Study Sections: Only 20 characters allowed

Rationale for assignment suggestions (optional)
Enter is limited to 1000 characters.

Up to 1000 characters.
PHS Assignment Request Form

List individuals who should not review your application and why (optional)  

Provide sufficient information (e.g., name organization affiliation) to correctly identify each individual. Provide specific reason why an individual should not review your application. Information will be considered, but listing an individual does not guarantee they will not be on review panel.

Identify scientific areas of expertise needed to review your application (optional)

Note: Do not provide names of individuals

Expertise:  
Each entry is limited to 40 characters

Limit your answers to expertise. DO NOT enter the names of individuals you'd like to review your application.
Early Career Reviewer (ECR) Program

The program aims to help early career scientists become more competitive as grant applicants through first-hand experience with peer review and to enrich and diversify CSR's pool of trained reviewers.

Benefits of ECR
Qualifications for ECR
Apply to ECR
ECR Training
ECR Webinars

ECR Qualifications

1. Work side-by-side with some of the most accomplished researchers in your field to help NIH identify the most promising grant applications
2. Learn how reviewers determine overall impact scores
3. Improve your own grant writing skills by getting an insider's view of how grant applications are evaluated
4. Serve the scientific community by participating in NIH peer review
5. Develop research-evaluation and critique-writing skills

Employment
You have at least 1 year of experience as a fulltime faculty member or researcher in a similar role. Post-doctoral fellows are not eligible.

You must be an Assistant Professor or in an equivalent role. Because the program is focused on early career scientists, Associate Professors are not eligible.

Research
You show evidence of an active, independent research program. Examples include publications, presentations, institutional research support, patents, acting as supervisor of student projects.

You have at least 1 senior-authored research publication in a peer-reviewed journal in the last 2 years plus at least 1 additional senior-authored research publication since receiving a doctorate.

- In press publications are considered; preprints are not.
- We consider "senior author" as single author, corresponding author, or first or last author.
- There is no requirement that the recent publication cover work performed at the current institution.

Grant & Review History
You have not served on an NIH study section in any capacity aside from as a mail reviewer. (Mail reviews do not include participation in the meeting.)

You have not held an R01 or R01-equivalent (R35, R37, RF1, R23, R29, DP1, DP2, DP5, U01, RL1) grant in the PD/PI role

You must have submitted a grant proposal, in the PI/PD role, to the NIH and received the associated summary statement.
How are Assignments Made?

To Study Sections Based on:
- Specific review guidelines of each Study Section

To Institutes Based on:
- Overall mission of the Institute
- Specific programmatic mandates and interests of the Institute

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Who Assigns Applications?

Referral Officers – Trained as scientists, most of whom serve as Scientific Review Officers (SROs) of Study Sections

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Scientific Review Officers

- Performs administrative and technical review of applications
- Selects reviewers
- Manages Study Sections
- Prepares summary statements
- Provides any requested information about Study Section recommendations

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Criteria for Selection of Peer Reviewers

- Demonstrated scientific expertise
- Doctoral degree or equivalent
- Mature judgment
- Balanced perspective and objectivity
- Ability to work effectively in a group context
- Interest in serving
- Adequate representation of women and diverse scientists

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Pink Sheet: Reviewers’ Comments
Initial Review Group or Study Section

Actions

- **Discussed applications:**
  - Receives Impact/Priority Scores
  - Receives Scores for individual core review criteria

- **Not Discussed:**
  - Receives Scores for individual core review criteria

- **Not Recommended for Further Consideration (NRFC)**

- **Other: e.g. Deferred**
“current criteria derive from multiple regulations; changes that conform to them well are more feasible than those that don’t. The Code of Federal Regulations (42 C.F.R. Part 52h.8) requires that research project applications be evaluated based on significance, investigators, innovation, approach, and environment. Protections for humans, animals, and the environment, adequacy of inclusion plans, and budget must be evaluated. The “21st Century Cures” Act (Public Law 114-255) requires attention to rigor and reproducibility and aspects of clinical trials. That said, there is room for improved implementation.”
NIH's Review Criteria

- **Overall Impact Score**
  - “Reviewers will provide an overall impact score to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved”
  
    (using five core review criteria, and additional review criteria)
  - “An application does not need to be strong in all categories to be judged likely to have major scientific impact.”

- **Core Review Criteria**
  A separate score is given for each

For Research Project Grant (Parent R01 Clinical Trial Not Allowed) (PA-20-185)

Check individual funding announcement if applying to another

Impact Score

- Preliminary Impact Scores determine which applications discussed at study section
- Impact Score given by each member of the study section
- Overall Impact Score (for discussed applications): Mean of reviewers’ Impact Scores $\times 10$
- 81 possible overall Impact Scores (10 – 90, whole numbers)

http://enhancing-peer-review.nih.gov/timelines.html
http://www.niaid.nih.gov/researchfunding/grant/strategy/pages/7payline.aspx
Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NIH's Review Criteria

Core Review Criteria
A separate score is given for each.

(A) Significance
(B) Investigators
(C) Innovation
(D) Approach
(E) Environment
Separate Scores for the 5 Individual Criteria

- All applications receive scores (even those not discussed at study section)
- Individually reported in summary statement
- Major strengths and weaknesses that influenced the overall impact/priority score - ¼ page per criterion

<table>
<thead>
<tr>
<th>1. Significance</th>
<th>Please limit text to ¼ page</th>
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<tbody>
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<td>Strengths</td>
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<td>Weaknesses</td>
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</tr>
</tbody>
</table>
NIH Research Grant Applications: Changes

Applications deadlines **on/after January 25, 2019**

<table>
<thead>
<tr>
<th>Form</th>
<th>Section</th>
<th>Heading</th>
<th>Current language</th>
<th>Revised language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Plan</td>
<td>Research Strategy</td>
<td><strong>Significance</strong></td>
<td>Describe the scientific premise for the proposed project, including consideration of the strengths and weaknesses of published research or preliminary data crucial to the support of your application.</td>
<td>Describe the strengths and weaknesses in the rigor of the prior research (both published and unpublished) that serves as the key support for the proposed project.</td>
</tr>
<tr>
<td>Human Subjects and Clinical Trials Information</td>
<td>Section 2 – Study Population Characteristics</td>
<td>2.4 Inclusion of Women, Minorities, and Children</td>
<td>2. Inclusion of Children [References to the Inclusion of Children in Clinical Research policy]</td>
<td>2. Inclusion Across the Lifespan [References to Inclusion of Children replaced with Inclusion Across the Lifespan]</td>
</tr>
</tbody>
</table>

**Notice Number:** NOT-OD-18-228


(A) Significance:

(1) “Does the project address an important problem or a critical barrier to progress in the field?

(2) Is the prior research that serves as the key support for the proposed project rigorous?

(3) If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved?

(4) How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?”

NIH's Review Criteria

(B) Investigators:

(1) “Are the PD(s)/PI(s), collaborators, and other researchers well suited to the project?

(2) If Early Stage Investigators or those in the early stages of independent careers, do they have appropriate experience and training?

(3) If established, have they demonstrated an ongoing record of accomplishments that have advanced their field(s)?

(4) If the project is collaborative or multi-PD/PI, do the investigators have complementary and integrated expertise; are their leadership approach, governance and organizational structure appropriate for the project?”

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu

NIH's Review Criteria

(C) Innovation:

(1) “Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions?

(2) Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense?

(3) Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?”

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NIH's Review Criteria

(D) Approach:

(1) “Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project?

(2) Have the investigators included plans to address weaknesses in the rigor of prior research that serves as the key support for the proposed project?

(3) Have the investigators presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed?”


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NIH's Review Criteria

(D) Approach:

(4) “Are potential problems, alternative strategies, and benchmarks for success presented?

(5) If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed?

(6) Have the investigators presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?”
NIH's Review Criteria

(D) Approach:

“If the project involves human subjects and/or NIH-defined clinical research, are the plans to address

1) the protection of human subjects from research risks, and

2) inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion or exclusion of individuals of all ages (including children and older adults), justified in terms of the scientific goals and research strategy proposed?”


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
NIH's Review Criteria

(E) “Environment:

(1) “Will the scientific environment in which the work will be done contribute to the probability of success?

(2) Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed?

(3) Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?”
Additional Review Criteria & Considerations

Additional Review Criteria – Evaluated for the overall impact score, but not given an individual score

- Protections for Human Subjects
- Inclusion on the Bass of Sex/Gender, Race, Ethnicity and Age in Clinical Research; Clinical Trials, Single IRB
- Vertebrate Animals
- Human Embryonic Stem Cells
- Biohazards
- Resubmissions
  - Response to previous reviewers’ comments and subsequent changes made to the proposal
- Renewals
  - Progress made in the last funding period


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Additional Review Considerations

- Not given an individual score and not considered for the overall impact score

- Authentication of Key Biological and/or Chemical Resources
  - Plans for identifying and ensuring the validity of resources

- Budget and Period of Support

- Select Agent Research

- Resource Sharing Plans
  - 1) Data Sharing Plan; 2) Sharing Model Organisms; and 3) Genomic Data Sharing Plan (GDS)


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Guidance for NIH Reviewers

- Rigor and Transparency
- Sex as a Biological Variable
- Vertebrate Animals
- Human Subjects Section
- Clinical Trials
- Single IRB for multi-site studies
- Inclusion on the Basis of Sex/Gender, Race, Ethnicity, and Age in Clinical Research
- Human Embryonic Stem Cells
- Authentication of Key Biological and/or Chemical Resources
- Select Agents
- Resource Sharing Plans
- Budget Information
- Revision Applications


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
# Guidelines for NIH Reviewers

https://grants.nih.gov/grants/policy/review-guidelines.htm

<table>
<thead>
<tr>
<th><strong>R</strong></th>
<th>R and U Awards (Research Project Grants; R01, R03, R21, SBIR/STTR, etc. and Cooperative Agreements: U01, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K</strong></td>
<td>K Awards (Career Development)</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td>F Awards (Fellowships)</td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>S10 Awards (Shared Instrumentation)</td>
</tr>
<tr>
<td><strong>T</strong></td>
<td>T Awards (Training)</td>
</tr>
</tbody>
</table>
# Guidelines for NIH Reviewers


<table>
<thead>
<tr>
<th>R and U Awards (Research Project Grants; R01, R03, R21, SBIR/STTR, etc. and Cooperative Agreements: U01, etc.).</th>
</tr>
</thead>
<tbody>
<tr>
<td>KATZ R01 GUIDE FOR REVIEWERS (01/19/2021)</td>
</tr>
<tr>
<td><strong>R01 GUIDE FOR REVIEWERS (08/20/2019)</strong></td>
</tr>
<tr>
<td>R03 GUIDE FOR REVIEWERS (08/20/2019)</td>
</tr>
<tr>
<td>R15 GUIDE FOR REVIEWERS (08/14/2020)</td>
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<tr>
<td>R21 GUIDE FOR REVIEWERS (08/20/2019)</td>
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<td>R34 GUIDE FOR REVIEWERS (08/20/2019)</td>
</tr>
<tr>
<td>R25 GUIDE FOR REVIEWERS (08/20/2019)</td>
</tr>
<tr>
<td>U01 BRP GUIDELINES FOR REVIEWERS (08/20/2019)</td>
</tr>
<tr>
<td>R13/U13 GUIDE FOR REVIEWERS (08/20/2019)</td>
</tr>
<tr>
<td>R41, R42, R43, R44 GUIDE FOR REVIEWERS (04/05/2016)</td>
</tr>
<tr>
<td>Guide for Reviewers for 1R44 SBIR Direct Phase II applications (03/18/2019)</td>
</tr>
</tbody>
</table>
### NIH Research Grant Review Criteria: Changes

- **Application deadlines on/after January 25, 2019**

<table>
<thead>
<tr>
<th>Section</th>
<th>Criteria</th>
<th>Current language</th>
<th>Revised language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scored Review Criteria</td>
<td>Significance</td>
<td>Is there a strong scientific premise for the project?</td>
<td>Is the prior research that serves as the key support for the proposed project?</td>
</tr>
<tr>
<td>Scored Review Criteria</td>
<td>Approach</td>
<td>Not Applicable</td>
<td>Have the investigators included plans to address weaknesses in the rigor of prior research that serves as the key support for the proposed project?</td>
</tr>
</tbody>
</table>

**Notice Number:** NOT-OD-18-228


NIH Research Grant Review Criteria: Changes

Application deadlines **on/after January 25, 2019**

| Scored Review Criteria | Approach | If the project involves human subjects and/or NIH-defined clinical research, are the plans to address: 1) the protection of human subjects from research risks, and 2) the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (exclusion) of children, justified in terms of the scientific goals and research strategy proposed? | If the project involves human subjects and/or NIH-defined clinical research, are the plans to address: 1) the protection of human subjects from research risks, and 2) the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (exclusion) of children of all ages (including children and older adults), justified in terms of the scientific goals and research strategy proposed? |

**Notice Number: NOT-OD-18-228**


### NIH Research Grant Review Criteria: Changes

- **Applications deadlines** on/after January 25, 2019

| Additional Review Criteria | Inclusion of Women, Minorities, and Individuals Across the Lifespan | When the proposed project involves human subjects and/or NIH-defined clinical research, the committee will evaluate the proposed plans for the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of children to determine if it is justified in terms of the scientific goals and research strategy proposed. | When the proposed project involves human subjects and/or NIH-defined clinical research, the committee will evaluate the proposed plans for the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (or exclusion) of individuals of all ages (including children and older adults) to determine if it is justified in terms of the scientific goals and research strategy proposed. |

**Notice Number:** NOT-OD-18-228

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The NIH Announces New Review Criteria for Research Project Applications Involving Clinical Trials

**Scored Review Criteria**

*Significance*

*Investigator(s)*

*Innovation*

*Approach*

*Study Design*

*Data Management and Statistical Analysis*

*Environment*

**Additional Review Criteria**

*Study Timeline*

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**Notice Number:** NOT-OD-17-118

**Key Dates**

**Release Date:** September 21, 2017

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https://grants.nih.gov/policy/clinical-trials/review-criteria.htm


Implementing Rigor and Transparency in NIH & AHRQ Research Grant Applications

Notice Number: NOT-OD-16-011

These updates focus on four areas deemed important for enhancing rigor and transparency:

1) the scientific premise forming the basis of the proposed research,
2) rigorous experimental design for robust and unbiased results,
3) consideration of relevant biological variables, and
4) authentication of key biological and/or chemical resources.

Updates include:

- Revisions to application guide instructions for preparing your research strategy attachment
- Use of a new "Authentication of Key Biological and/or Chemical Resources" attachment
- Additional rigor and transparency questions reviewers will be asked to consider when reviewing applications.

https://grants.nih.gov/grants/peer/critiques/rpg.htm

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Implementing Rigor and Transparency in NIH & AHRQ Career Development Award Applications

Notice Number: NOT-OD-16-012

These updates focus on four areas deemed important for enhancing rigor and transparency:

1) the scientific premise forming the basis of the proposed research,
2) rigorous experimental design for robust and unbiased results,
3) consideration of relevant biological variables, and
4) authentication of key biological and/or chemical resources.

Updates include:

- Revisions to application guide instructions for preparing your research strategy attachment
- Use of a new "Authentication of Key Biological and/or Chemical Resources" attachment
- Additional rigor and transparency questions reviewers will be asked to consider when reviewing applications.

https://grants.nih.gov/grants/peer/critiques/k.htm
Guidance: Rigor and Reproducibility in Grant Applications

NIH research grant and career development award application instructions and review language focus on four key areas:

1. The rigor of the prior research
2. Rigorous experimental design for robust and unbiased results
3. Consideration of relevant biological variables
4. Authentication of key biological and/or chemical resources

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
<table>
<thead>
<tr>
<th>4 AREAS OF FOCUS</th>
<th>WHAT DOES IT MEAN?</th>
<th>WHERE SHOULD IT BE INCLUDED IN THE APPLICATION?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigor of the Prior Research</td>
<td>A careful assessment of the rigor of the prior research that serves as the key support for a proposed project will help applicants identify any weaknesses or gaps in the line of research.</td>
<td>Research Strategy</td>
</tr>
<tr>
<td></td>
<td>Describe the strengths and weaknesses in the rigor of the prior research (both published and unpublished) that serves as the key support for the proposed project.</td>
<td>➤ Significance</td>
</tr>
<tr>
<td></td>
<td>Describe plans to address weaknesses in the rigor of the prior research that serves as the key support for the proposed project.</td>
<td>➤ Approach</td>
</tr>
<tr>
<td></td>
<td>*See related FAQs, blog post</td>
<td></td>
</tr>
<tr>
<td>Scientific Rigor (Design)</td>
<td>Scientific rigor is the strict application of the scientific method to ensure robust and unbiased experimental design, methodology, analysis, interpretation and reporting of results.</td>
<td>Research Strategy</td>
</tr>
<tr>
<td></td>
<td>Emphasize how the experimental design and methods proposed will achieve robust and unbiased results.</td>
<td>➤ Approach</td>
</tr>
<tr>
<td></td>
<td>*See related FAQs, blog post, examples from pilots</td>
<td></td>
</tr>
<tr>
<td>4 AREAS OF FOCUS</td>
<td>WHAT DOES IT MEAN?</td>
<td>WHERE SHOULD IT BE INCLUDED IN THE APPLICATION?</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Biological Variables</td>
<td>Biological variables, such as sex, age, weight, and underlying health conditions, are often critical factors affecting health or disease. In particular, sex is a biological variable that is frequently ignored in animal study designs and analyses, leading to an incomplete understanding of potential sex-based differences in basic biological function, disease processes and treatment response. Explain how relevant biological variables, such as the ones noted above, are factored into research designs, analyses, and reporting in vertebrate animal and human studies. Strong justification from the scientific literature, preliminary data or other relevant considerations must be provided for applications proposing to study only one sex.</td>
<td>Research Strategy ➢ Approach</td>
</tr>
</tbody>
</table>

*See related FAQs, blog posts, article*

| Authentication | Key biological and/or chemical resources include, but are not limited to, cell lines, specialty chemicals, antibodies and other biologics. Briefly describe methods to ensure the identity and validity of key biological and/or chemical resources used in the proposed studies. These resources may or may not have been generated with NIH funds and: • may differ from laboratory to laboratory or over time; • may have qualities and/or qualifications that could influence the research data; • are integral to the proposed research. The authentication plan should state in one page or less how you will authenticate key resources, including the frequency, as needed for your research. Note: Do not include authentication data in your plan. | Other Research Plan Section ➢ Include as an attachment ➢ Do not include in the Research Strategy. |

*See related FAQs, blog post, examples*
“The proposed changes will allow peer reviewers to focus on scientific merit by evaluating 1) the **scientific impact, research rigor, and feasibility** of the proposed research without the distraction of administrative questions and 2) whether or not appropriate expertise and resources are available to conduct the research, thus mitigating the undue influence of the reputation of the institution or investigator.”
<table>
<thead>
<tr>
<th>CURRENT</th>
<th>PROPOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Review Criteria</strong> (will affect Overall Impact Score)</td>
<td><strong>Factor 1: Importance of the Research</strong> (individually scored)</td>
</tr>
<tr>
<td>Individually scored:</td>
<td>Significance, Innovation</td>
</tr>
<tr>
<td>1. Significance</td>
<td><strong>Factor 2: Rigor and Feasibility</strong> (individually scored)</td>
</tr>
<tr>
<td>2. Investigator(s)</td>
<td>Approach</td>
</tr>
<tr>
<td>3. Innovation</td>
<td><strong>Factor 3: Expertise and Resources</strong> (not individually scored; affects Overall Impact Score)</td>
</tr>
<tr>
<td>4. Approach</td>
<td>Investigators, Environment</td>
</tr>
<tr>
<td>5. Environment</td>
<td></td>
</tr>
<tr>
<td><strong>Additional Review Criteria</strong> (can affect Overall Impact Score)</td>
<td></td>
</tr>
<tr>
<td>Human Subject Protections; Inclusion of Women; Minorities, and Children; Vertebrate Animal: Biohazards; Resubmission/Renewal/Revisions - some modifications expected for review of clinical trials RPGs</td>
<td></td>
</tr>
<tr>
<td><strong>Additional Review Considerations</strong> (no effect on Overall Impact Score)</td>
<td><strong>Authentication of Key Biological and/or Chemical Resources</strong></td>
</tr>
<tr>
<td>• Application from Foreign Organizations</td>
<td>• Budget and Period of Support</td>
</tr>
<tr>
<td>• Select Agent Research</td>
<td></td>
</tr>
<tr>
<td>• Resource Sharing Plans</td>
<td></td>
</tr>
<tr>
<td>• Authentication of Key Biological and/or Chemical Resources</td>
<td></td>
</tr>
<tr>
<td>• Budget and Period of Support</td>
<td></td>
</tr>
</tbody>
</table>
## NIH's Evaluation/Scoring System

9-point rating scale (1=exceptional; 9=poor)

<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
<th>Strengths/Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td>1</td>
<td>Exceptional</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
<td></td>
</tr>
<tr>
<td>Moderate Impact</td>
<td>4</td>
<td>Very Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
<td></td>
</tr>
<tr>
<td>Low Impact</td>
<td>7</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
<th>Additional Guidance on Strengths/Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1</td>
<td>Exceptional</td>
<td>Exceptionally strong with essentially no weaknesses</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
<td>Extremely strong with negligible weaknesses</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
<td>Very strong with only some minor weaknesses</td>
</tr>
<tr>
<td>Medium</td>
<td>4</td>
<td>Very Good</td>
<td>Strong but with numerous minor weaknesses</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
<td>Strong but with at least one moderate weakness</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
<td>Some strengths but also some moderate weaknesses</td>
</tr>
<tr>
<td>Low</td>
<td>7</td>
<td>Fair</td>
<td>Some strengths but with at least one major weakness</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
<td>A few strengths and a few major weaknesses</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
<td>Very few strengths and numerous major weaknesses</td>
</tr>
</tbody>
</table>

**Minor Weakness:** An easily addressable weakness that does not substantially lessen impact

**Moderate Weakness:** A weakness that lessens impact

**Major Weakness:** A weakness that severely limits impact


Research Applications

Overall Impact:
The likelihood for a project to exert a **sustained, powerful** influence on research field(s) involved

### Evaluating Overall Impact:
Consider the 5 criteria: significance, investigator, innovation, approach, environment (weighted based on reviewer’s judgment) and other score influences, e.g. human subjects, animal welfare, inclusion plans, and biohazards

<table>
<thead>
<tr>
<th>Overall Impact</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9</td>
</tr>
</tbody>
</table>

- e.g. Applications are addressing a problem of **high importance/interest** in the field. May have some or no weaknesses.
- e.g. Applications may be addressing a problem of **high** importance in the field, but weaknesses in the criteria bring down the overall impact to medium.
- e.g. Applications may be addressing a problem of **moderate/high** importance in the field, but weaknesses in the criteria bring down the overall impact to low.
- e.g. Applications may be addressing a problem of **low or no** importance in the field, with some or no weaknesses.

5 is a good medium-impact application, and the entire scale (1-9) should always be considered.
FELLOWSHIPS & CAREER AWARDS

Overall Impact:
The likelihood that the proposed training (F) or career development (K) will enhance the candidate's potential for a productive, independent scientific research career in a health-related field.

<table>
<thead>
<tr>
<th>Overall Impact</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>1 2 3</td>
<td>4 5 6</td>
<td>7 8 9</td>
</tr>
</tbody>
</table>

Evaluating Overall Impact
Consider the 5 criteria (weighting based on reviewer's judgment):

Fs
- Applicant
- Sponsor(s)
- Research Training Plan
- Training Potential
- Institutional Environment & Commitment

and other score influences, e.g. human subjects, animal welfare, inclusion plans, and biohazards

*K05 and K24: Plan to Provide Mentoring
**K02: Consultants/Collaborators

Ks
- Candidate
- Career Development Plan/Goals*
- Research Plan
- Mentor(s)**
- Environment & Institutional Commitment

e.g. Proposes training or career development of high or moderate value/benefit for the candidate who has high potential for developing into a productive, independent scientist. May have some or no weaknesses in the criteria.

e.g. Proposes training or career development of high or moderate value/benefit for the candidate who has high or moderate potential for further development, but weaknesses in the criteria reduce the overall impact to medium.

e.g. Proposes training or career development of moderate value/benefit for the candidate who shows moderate potential. May have some weaknesses in the criteria.

e.g. Proposes training or career development of low value/benefit for the candidate who shows low potential. May have some weaknesses in the criteria.

5 is a good, medium-impact application. The entire scale (1-9) should always be considered.
Impact Score

- Preliminary Impact Scores determine which applications discussed at study section
- Impact Score given by each member of the study section
- Overall Impact Score (for discussed applications): Mean of reviewers’ Impact Scores \( \times 10 \)
- 81 possible overall Impact Scores (10 – 90, whole numbers)

http://enhancing-peer-review.nih.gov/timelines.html
http://www.niaid.nih.gov/researchfunding/grant/strategy/pages/7payline.aspx

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
## Calculating Percentile

<table>
<thead>
<tr>
<th>Rank</th>
<th>Impact Score</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>15</td>
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</tr>
<tr>
<td>3</td>
<td>20</td>
<td></td>
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<tr>
<td>4</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>//</td>
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<td></td>
</tr>
</tbody>
</table>

Percentile Value Calculation

- Relative rank for each priority score on a scale from 10 to 90.

- Follows NIH convention: Inverse relationship of priority score to scientific merit - lowest percentile value represents the highest scientific merit.

- Specifies the percent of applications with scores equal to or better than (lower impact score) the application

\[ P = \frac{100}{N} \times (k^{-\frac{1}{2}}) \]

- \( P \) = Percentile Value
- \( k \) = Numerical Rank of Impact Score
- \( N \) = Total number of applications
Calculating Percentile

80 applications*, 14 of which were not recommended for further consideration

<table>
<thead>
<tr>
<th>Rank</th>
<th>Impact Score</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>0.6</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>1.9</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>3.1</td>
</tr>
<tr>
<td>4</td>
<td>21</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Rank = 3

P = 100/80 \times (3-\frac{1}{2}) = 3.1

* Study section’s last three review cycles
### NIAID Paylines for FY 2023

These paylines are for investigator-initiated applications reviewed for the September 2022, January 2023, and June 2023 Council meetings.

<table>
<thead>
<tr>
<th>Grant Type</th>
<th>Payline</th>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R01 (non-new Pls)</td>
<td>10 percentile</td>
<td>Interim</td>
<td>Research Projects for established investigators</td>
</tr>
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https://www.niaid.nih.gov/grants-contracts/niaid-paylines

## NHLBI: Payline

<table>
<thead>
<tr>
<th>Grant Program</th>
<th>Grant Program Description</th>
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<tbody>
<tr>
<td>R01</td>
<td>Research Project Grant</td>
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</tr>
<tr>
<td>R01 ESI</td>
<td>Early Stage Investigators</td>
<td>25</td>
</tr>
</tbody>
</table>

**FY2022**


What’s the problem?

Payline

Study Section A

Study Section B

Great application

Not great application

Courtesy of Dr. Jon Lorsch, NIGMS
What’s the problem?

Payline

Study Section A

Study Section B

Great application
Not great application

Courtesy of Dr. Jon Lorsch, NIGMS
Post Initial Review Group Actions

- Calculations of priority scores and percentile rankings
- Removal of applications from Council/Board consideration

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications
Council Actions

- Concurrence with Study Section action
- Modification of Study Section action based on program or policy considerations
- Deferral for further review
What Determines which Awards are Made?

- Scientific Merit
- Program Considerations
- Availability of Funds

Adapted from: NIH (DRG) - Peer Review of NIH Research Grants Applications

Figure 1. Average Age of Principal Investigators with MD, MD-PhD, or PhD at the time of First R01 Equivalent Award from NIH, Fiscal Years 1980 to 2011
“Over the past three decades, we’ve seen profound shifts in the average age at which a principal investigator receives their first R01. During the period from 1980 to 2001, the average age increased nearly 0.3 years per year. Since that time, the average age at first R01 award has leveled off near 42 for PhDs. It is higher for researchers with an MD or an MD/PhD.” [Dr. Sally Rockey, NIH Deputy Director for Extramural Research (2/3/12)]
NIH R01 Principal Investigators:
Age 36 and Younger / Age 66 and Older

http://nexus.od.nih.gov/all/rock-talk/

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Young, Brilliant and Underfunded

By ANDY HARRIS

We'll never know what medical breakthroughs were missed because young scientists were not provided with resources.

Comments

The New York Times

OCT. 2, 2014
A study for the National Bureau of Economic Research from 2005 examined the age at which over 2,000 Nobel Prize winners and other notable scientists in the 20th century came up with the idea that led to their breakthrough. Most were between 35 and 39. Yet the median age of first-time recipients of R01 grants, the most common and sought-after form of N.I.H. funding, is 42, while the median age of all recipients is 52. More people over 65 are funded with research grants than those under age 35.
“...in the late 2000’s, we implemented an Early-Stage Investigator policy... Here we present data from fiscal years 1995 to 2020 on age at first R01-equivalent grant. ... While age has been continuously increasing, the rate of increase has slowed over the last 10 years.”

Figure 2: Degree-based distributions by fiscal year of age of Principal Investigators receiving support on NIH R01 award for the first time.

Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Early Stage Investigator (ESI)

- Has not previously been awarded “significant NIH independent research award”
  - Includes R01’s, projects on P01
  - Does not include: R03’s, R21’s, F’s, K’s, loan repayment

- Within 10 years of terminal research degree/completion of post-graduate clinical training
  - Extensions permitted; e.g., medical, family care, lapses in research/research training, military service
  - “effective immediately, NIH will approve an ESI extension of one year for childbirth within the ESI period”


Jaime S. Rubin, Ph.D.; http://grantscourse.columbia.edu
Early Stage Investigator (ESI)

ESI status may give you special funding consideration when applying for certain grants.
Early Stage Investigator (ESI)

- New and Early Stage Investigator Policies

- Frequently Asked Questions
  [https://grants.nih.gov/grants/new_investigators/investigator_policies_faqs.htm](https://grants.nih.gov/grants/new_investigators/investigator_policies_faqs.htm)

- Extension to the Early Stage Investigator Period
  - Request submitted (with justification) via the Education section of an investigator’s Personal Profile in [NIH Commons](https://commons.nih.gov)

# NIAID Paylines for FY 2022

These paylines are for applications reviewed for the September 2021, January 2022, and June 2022 Council meetings.

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# Early Stage Investigators: NHLBI

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FY2022


R01-Equivalent Investigators, New (Type 1): Funding rates, by career stage of investigator

![Graph showing funding rates for first-time and established investigators over fiscal years from 1998 to 2020. The graph indicates a consistent trend with minor fluctuations.]
The 21st Century Cures Act, enacted December 13, 2016, includes a section entitled, “Investing in the Next Generation of Researchers” that requires the Director to “Develop, modify, or prioritize policies, as needed, within the National Institutes of Health to promote opportunities for new researchers and earlier research independence, such as policies to increase opportunities for new researchers to receive funding, enhance training and mentorship programs for researchers, and enhance workforce diversity”. NIH must encourage successful, independent careers for Early Stage Investigators (ESIs) in a way that enhances workforce diversity, and must create a sustainable workforce across all career stages to ensure the long term stability of the biomedical research enterprise.