NIAID funding for junior scientists and how to submit a strong proposal

Pointers for maximizing your interactions with the NIH

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Radiation & Nuclear Countermeasures Program (RNCP)
DAIT, NIAID, NIH
27 Institutes and Centers (ICs) – NIH **LOVES** Acronyms!

Diagram showing the structure of the NIH with the National Institutes of Health (NIH) at the top, followed by the Office of the Director, and then various institutes and centers. The National Institute of Allergy and Infectious Diseases (NIAID) is highlighted.

- Office of the Director
  - National Institute of Aging
  - National Institute on Alcohol Abuse and Alcoholism
  - National Institute of Allergy and Infectious Diseases
  - National Institute of Arthritis and Musculoskeletal and Skin Diseases
  - National Cancer Institute
  - National Institute of Child Health and Human Development
  - National Institute on Deafness and Other Communication Disorders
  - National Institute of Dental and Craniofacial Research
  - National Institute of Diabetes and Digestive and Kidney Diseases
  - National Institute on Drug Abuse
  - National Institute of Environmental Health Sciences
  - National Eye Institute
  - National Institute of General Medical Sciences
  - National Heart, Lung, and Blood Institute
  - National Human Genome Research Institute
  - National Institute of Mental Health
  - National Institute of Neurological Disorders and Stroke
  - National Institute of Nursing Research
  - National Center for Complementary and Alternative Medicine
  - Fogarty International Center
  - National Center for Research Resources
  - National Library of Medicine
  - National Institute of Biomedical Imaging and Bioengineering
  - National Center on Minority Health and Health Disparities
  - Clinical Center
  - Center for Information Technology
  - Center for Scientific Review

**Note:** The diagram indicates no funding authority.
RNCP focus on normal tissue radiation injury
NIAID Training Continuum: PhD and MD Tracks

**PhD**
- F30, F31, DF31
- T32
- R25
- T32
- F32
- K01, K25
- K22
- K99/R00
- or K99 phase
- or R00 phase

**MD**
- F30
- T32
- T35
- F32, LRP
- K01, K08, K23
- K22
- K99/R00s
- or K99 phase
- or R00 phase

College Student

Graduate Student

PhD

Med Student

MD

Faculty Position

Independent Investigator

Diversity Supplement Program (DSP)
Fellowships “Fs”

- Individual Awards
- **Graduate (F31)** or Dual-Degree (F30) students or **Postdoc Fellows (F32)** who work with a mentor to submit application to NIH
- F32 – service payback requirement
- Point of Contact at NIAID for Fellowships: Diane Adger-Johnson - DAdger@niaid.nih.gov
Fellowships - Websites

- F30 (MD/PhD) https://grants.nih.gov/grants/guide/pa-files/PA-16-305.html


NIAID Application Tips - https://www.niaid.nih.gov/research/fellowship-grants
Research Training - T32

- Institutional awards
- Up to 5 years (renewable)
- Pre-doctoral or post-doctoral trainees
- Training centered on a theme - includes participation of many mentors (basic or clinical)
- Domestic institutions only
- Funds training in any science area within NIAID’s mission
- Multi-slot awards
- Trainees work in faculty mentor’s lab

https://grants.nih.gov/grants/guide/pa-files/PA-16-152.html
Research Training - T35: Short Term

- Short-term training (at least 8, but no more than 12 weeks in a grant year) for full-time training with supervision from experienced researchers

- Institutional awards; up to 5 years (renewable)

- Must be U.S. citizens, non-citizen nationals, or permanent residents

- **NIAID only supports predoctoral trainees in health professional schools**

## Stipend Levels (Fs and Ts), 2017

- **Predoctoral (F30, F31, T32, and T35)**

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>Annual Stipend</th>
<th>Monthly Stipend</th>
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<tbody>
<tr>
<td>ALL</td>
<td>$23,844</td>
<td>$1,987</td>
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- **Postdoctoral (F32 and T32)**

<table>
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<th>Years of Experience</th>
<th>Annual Stipend</th>
<th>Monthly Stipend</th>
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<tr>
<td>0</td>
<td>$47,484</td>
<td>$3,957</td>
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<tr>
<td>1</td>
<td>$47,844</td>
<td>$3,987</td>
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<tr>
<td>2</td>
<td>$48,216</td>
<td>$4,018</td>
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<tr>
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<td>$50,316</td>
<td>$4,193</td>
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<tr>
<td>4</td>
<td>$52,140</td>
<td>$4,345</td>
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<tr>
<td>5</td>
<td>$54,228</td>
<td>$4,519</td>
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<tr>
<td>6</td>
<td>$56,400</td>
<td>$4,700</td>
</tr>
<tr>
<td>7 or more</td>
<td>$58,560</td>
<td>$4,880</td>
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## Career ("K") Development Awards

<table>
<thead>
<tr>
<th>K Mechanism</th>
<th>Learn More</th>
</tr>
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</table>

NIAID Application Tips: [https://www.niaid.nih.gov/research/career-development-grants](https://www.niaid.nih.gov/research/career-development-grants)
NEW Training Programs at NIAID

- NIAID Research Education Program (R25): for Courses, Research and Mentoring Activities for trainees

- NIAID Limited Competition: Small Research Grant (R03) Program for NIAID K01, K08, K23 recipients - “bridges to R01 from K”  https://grants.nih.gov/grants/guide/pa-files/PAR-17-439.html


Writing Competitive Grant Applications
Submission & Award Process

Use a cover letter to request study section and Institute assignments – request dual IC’s!

Do your HW and request the best study section! Do you recognize reviewer names on the rosters (which are publicly available)?

NIH BLACK BOX

Watch a mock study section meeting online
https://www.youtube.com/watch?v=fBDxl6l4dOA

Get to know NIH Program Officers BEFORE submission!
New investigators

- **New and Early Stage Investigator Policies**
  grants.nih.gov/grants/new_investigators

- **Definition**
  A principle investigator who has not previously competed successfully for a significant NIH independent research award.

- **Designations**
  - Early Stage Investigator (ESI): Within 10 years of receiving terminal (e.g., Ph.D.) degree
  - New Investigator (NI): No record of significant independent support

- **Commitment to New Investigators**
  - Over the past three years about ~25% of all R01 awards have gone to new investigators.
  - Institutes maintain success rates for new investigators - better paylines
  - Longer award length
  - Separate clustering during review

**Average age of first R01 award**
grants.nih.gov/grants/oer.htm
NIH Guide to Grants and Contracts

- Official notification of NIH policies, notices and availability of funds
- Contains all Funding Opportunities (PAs/RFAs) for new or ongoing interest from one or more Institutes in supporting research, training or resources.
- Sign up to receive weekly NIH Guide updates

Program Announcement (PA)
- Addresses a broad category of research
- No set-aside budget
- Submit on regular receipt dates
- Regular review criteria for mechanism of application

Request for Applications (RFA)
- Addresses a well defined area of research
- Set-aside budget
- Submit on special, one-time receipt date
- Often special eligibility and/or review criteria
- Often special application format and/or submission instructions
All the details are here!

- Participating Organizations
- Title
- Announcement Type
- Program Announcement Number
- Link to Apply Electronically
- Key Dates
- Summary / Overview
- Specifics
  - Objectives
  - Award Information
  - Eligibility
  - Application / Submission
  - Review Information
  - Award Administration
  - Agency Contacts
What gets funded?

Key Features of Successful Applications

Hypothesis
- A meaningful hypothesis AND a means of testing it
- A sound rationale for the hypothesis

Preliminary Data
- Documents feasibility of the proposed project
- Shows training for research proposed and ability to interpret results
- Include alternative interpretations and address limitations of methods

Well Organized Research Plan
- Aims focused (relate to each other and the hypothesis)
- Rationale for methods proposed, with alternatives
- Research flow and priorities clearly indicated
- Sufficient experimental detail to show you understand methods
- Emphasize MECHANISM (avoid “descriptive data gathering”)
What’s your strategy?

**Preparing to Write a Grant Application**

**Critically Assess Yourself**
- Do you have the necessary **expertise, resources, personnel and preliminary data** to be competitive?
- Include **DOSIMETRY**!

**Assess the Potential for Your Idea**
- What has already been done, reported and funded in your area?
- What are the “gaps”?
- How can you take it a step farther?

**Assess the Competition**
- Who are the important contributors to the field?
- Remember they might be your reviewers!
- What have they accomplished?
- Search the literature and the [NIH RePORTER database](http://www.projectreporter.nih.gov) of funded grants in the field

Have co-investigators, consultants and your mentor read the application!!!
Convey Impact in Limited Detail & Space!

- Focus on strategy
  - Rather than detailing all your experiments, describe your strategy
- Detail experiments that highlight your work
  - Rather than detailing all your experiments, describe your strategy
- Limit your aims
  - ~1 aim per year funding
- Know when detail is needed
  - Preliminary data to show you’re on the right track.
  - New or unique methods
- Know details to skip
  - Published methods (e.g. PCR)
  - If you’ve used a method before, point it out, cite and skip the description

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<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td><strong>Introduction to Revision</strong></td>
<td>1 page</td>
</tr>
<tr>
<td><strong>Specific Aims</strong></td>
<td>1 page</td>
</tr>
<tr>
<td><strong>Research Strategy</strong></td>
<td>6 pages</td>
</tr>
<tr>
<td>(R03, 13, R21, R36, R41, R43), Fellowship (F)</td>
<td>12 pages</td>
</tr>
<tr>
<td>(R01, R10, R15, R18, R21/33, R24, R25, R33, R34, R42, R44)</td>
<td>12 pages</td>
</tr>
<tr>
<td>Career (K) (Combined Candidate Information &amp; Research Strategy)</td>
<td>25 pages</td>
</tr>
<tr>
<td>Institutional Training (Ts &amp; K12) (Research Training Plan)</td>
<td>See FOA</td>
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<td>all other activity codes, including Cs, Ps, Ss, Us</td>
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<tr>
<td><strong>Biosketch</strong></td>
<td>4 pages</td>
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<tr>
<td><strong>Appendices</strong></td>
<td>Unlimited</td>
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</table>
### Review Criteria

**Significance**
- Does this study address an important problem?
- How will scientific knowledge or clinical practice be advanced?
- What will be the effect of these studies this field?

**Approach**
- Are the conceptual or clinical framework, design, methods, and analyses adequately developed, well-integrated, well-reasoned, and appropriate to the aims of the project?
- Does the applicant acknowledge potential problem areas and consider alternative tactics?

**Innovation**
- Is the project original and innovative?
- Does the project challenge existing paradigms or clinical practice?
- Does the project develop or employ novel concepts, approaches or methodologies for this area?

**Investigators**
- Are the key personnel appropriately trained and well suited to carry out this work?
- Is the work proposed appropriate to the experience level?
- Does the investigative team bring complementary and integrated expertise to the project?

**Environment**
- Does the scientific environment in which the work will be done contribute to the probability of success?
- Do the proposed studies benefit from unique features of the scientific environment?
- Is there evidence of institutional support?
An application has two audiences of reviewers: a small number who are likely to be familiar with your techniques or field and the majority who are not.

Reviewers are . . .
- Over committed, over worked and tired
- Inherently skeptical and critical
- Informed strangers

Make their job easier
- Guide reviewers with graphics - flow diagrams, charts, figures
- Well organized, clearly written and labeled
- Clear timelines
- Sell your application, show why NIH should fund your application
- Demonstrate enthusiasm, use strong active verbs

Avoid things that irritate
- Exceeding page limits, small margins, and/or font too small,
- Information in the wrong section
- Omitting or mislabeling references/figures
- Spelling, grammar . . .
- Math errors
Review process

- Scientific Review Officer (SRO) assigns your application to 3 primary reviewers
- Reviewers submit preliminary scores (1-9) with comments through eRA Commons
- SRO determines Review Order
  - Best scoring application first
  - New investigators (best-to-worst)
  - Everyone else (best-to-worst)
- Application by application discussion
  - Persons with conflicts of interest excused
  - Primary reviewers (3) give preliminary scores (1-9)
  - Discussion of application’s scientific and technical merit
  - Other panel members join discussion
  - Primary reviewers give final scores (1-9)
  - All panel members (except those in conflict) score privately
  - Assignment of codes for animals and human subjects protection
  - Budget recommendations.
- About 50% applications will be discussed, remainder triaged (ND, not discussed)
Reviewer feedback

- **Priority Score & Percentile**
  - 1-2 days after review meeting
  - Impact/Priority Score is average reviewer score (1-9) times ten (10-90)
  - Percentile: relative ranking of application with last 3 meetings of study section
  - Not all applications get percentiled

- **Summary Statement**
  - SRO prepares and releases
  - 4-6 weeks after meeting
  - Summary of discussion written by SRO
  - Criteria scores from assigned reviewers
  - Critiques from assigned reviewers
  - Budget recommendations
  - Administrative notes
  - Codes for Animal Vertebrates and Human Subjects

- **Assigned Program Officer**
  - Typically present at review meeting
  - Interpret comments
  - Provides you with advice on resubmission

```
Significance: 2
Investigator(s): 1
Innovation: 1
Approach: 3
Environment: 1
```
So you’re been triaged...

**Most Common Reasons for Unscored or Not Recommended for Further Considerations**

- Rationale for hypothesis or methods not sound or not supported by preliminary data
- Unfocused or superficial research plan
- Aims do NOT address hypothesis
- Flaws in experimental approaches
- Models not relevant to human situation
- Unrealistically large amount of work proposed
- **Work not new or original** *(lack of appreciation of published relevant work)*
- Lack of experience in essential methods
- Insufficient experimental detail
- Serious risks to human subjects or use of animals
NIH staff roles

**Scientific Review Officer (PhD/MD)**
- CSR or Institute Staff
- Organizes and manages study section
- Liaison between applicant and reviewers
- Prepares summary statements

**Program Officer (PhD/MD)**
- Institute Staff
- Manages a portfolio of awarded grants
- Monitors scientific progress made on grant
- Inform, interpret, intervene, facilitate and advise applicants and grantees
- Stewardship of scientific area

**Grants Management Officer**
- Institute Staff
- Fiscal stewardship of portfolio of awarded grants
- Negotiates fiscal aspects of awards
- Monitors financial progress made on grants

Make this person your best friend!
Grant writing resources

https://www.niaid.nih.gov/grants-contracts/apply-grant

Apply for a Grant

Sample Applications and More

Some useful samples and examples that are part of the grant application from NIAID and NIH, including sample applications and summary statements, data sharing, and model organism sharing plans.

Determine Eligibility for NIAID Grants

Before you contemplate applying for funding, see if and how you may fit in at NIH by assessing whether your area of science falls within the NIH mission. You can also learn about qualifying for an independent grant, view options at earlier career stages, get the scoop on the NIH "new investigator" status, and see how to qualify as an investigator or organization working outside the United States.

Preparing Your Application

Draft Specific Aims
Sign up for RNCP updates on the NIAID website

Keep Informed

NIAID is happy to offer a free email subscription service that allows website users to receive notifications by email when new information is available. With a subscription profile, you get the updated information on the items of interest to you automatically without having to return to the website and check for changes.

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Questions

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