NIH Efforts to Support Early Career Scientists

Health Research Alliance Members Meeting
March 21, 2023

Tara A. Schwetz, PhD
Acting Principal Deputy Director
National Institutes of Health
“Science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce illness and disability.”
Early Stage Investigators
Trends in Research Project Grants by Career Stage
NIH Early Stage Investigators

**Definition**
An ESI is a Program Director/Principal Investigator who has completed their terminal research degree or end of post-graduate clinical training, whichever is later, **within the past 10 years** and who **has not previously competed successfully** as a PD/PI for a substantial NIH independent research award.

**ESI Policy**
- **Prioritized** for R01-equivalent funding
- Reviewed for **potential over achievement**
- Summary statements **released first** where possible

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**Early Stage Investigators Funded on R01-Equivalents Over Time**

![Graph showing the number of ESI-funded projects over fiscal years 2000 to 2020](graph.png)

![Fiscal Year](fiscal_year.png)
Funding Rates of Early Stage Investigators

ESI Person-Based R01-Equivalent Funding Rates

FY20 ESI Funding Rates by Demographic

By Gender:
- 27% Female
- 28.2% Male

By Race:
- 26.8% Asian
- 20.7% Black or African American
- 28.4% White

By Ethnicity:
- 26.6% Hispanic or Latino
- 27.7% Not Hispanic or Latino

FY22 Funding Rates: 29.6% ESI, 17.4% New Investigators
# Early Career Reviewer Program

**Strengthens peer review** by building a pool of well-trained, experienced, diverse reviewers

## ELIGIBILITY
- Assistant professors or similar with no prior NIH review experience
- Have not successfully competed for an R01 or equivalent
- Must have submitted an NIH grant application and received the summary statement
- Recent senior-author publications

## TRAINING
- Modules on key topics (bias, review integrity)
- Pre-meeting, **1:1 training by the scientific review officer**
- Review of submitted critiques and **further 1:1 guidance**
- **Follow up** with scientific review officer after the meeting

## IMPACT
- Provides first-hand experience to early career scientists that can be used to write competitive grant applications of their own
- **7,254 early career reviewers** from **828 institutions**
- ECRs are more diverse than CSR Contact PIs
Additional Efforts for ESIs

- **Katz Early Stage Investigator Research Grant Program** - no preliminary data required
- **Expansion of NIH Loan Repayment Programs**
- **Extramural Trainee Reporting and Career Tracking (xTRACT) and ORCID iDs**
- **Public Resources for Early Career Scientists**
  - Advice for New and Early Career Scientists on OER’s *All About Grants* Podcast
  - YouTube Channel @NIHgrants
Postdoc numbers steadily increased after 1980, stayed relatively flat for the last decade, and declined since 2019

https://ncses.nsf.gov/pubs/nsf23312
NIH postdoc fellowship applications and awards are decreasing

Kirschstein-NRSA Post-Doctoral Fellowships (F32s):
Competing Applications, Awards and Success Rates

Data for this report are available at NIH Data Book - https://report.nih.gov/nihdatabook/report/62
Decreasing percentage of earned doctorates commit immediately to academia

Employment Sector of Science & Engineering Doctorate Recipients with Definite Postgraduation Commitments for U.S. Employment

Employment Sector of Science & Engineering Doctorate Recipients in 2021

- Industry/Business: 57%
- Academia: 26%
- Other: 3%

Academia
Industry / Business
Government
Nonprofit Organization
Other / Unknown

Forces driving decline in postdocs are multifactorial and complex

Increasing expectations:
- Work/life balance
- Cost of living

Limited opportunities in academia

Lengthening time to publish

New opportunities in pharma/biotech

Expanding research expectations
**Existing NIH Support for Postdocs**

**NIH NRSA Stipend Level, 2010-2023**

- **NIH NRSA Stipend Increases**
  - Steadily growing for last decade
  - Up to $56,484 for a first-year postdoc

**Childcare Allowance**
- $2,500 / year / fellow
- Children < 13 years, disabled < 18 years
- Licensed childcare provider
- Recipient responsible for documentation
Advisory Committee to the Director (ACD) Working Group on Re-envisioning NIH-Supported Postdoctoral Training

- **Evaluate** evidence on the perceived shortage in PhDs seeking U.S. postdocs
- **Assess and consider** factors influencing the scope and persistence of the issue
- **Review and compare** other approaches to postdoctoral training
- **Consider** ways to support postdocs’ quality of life and work-life balance, increase retention
- **Engage** key internal and external parties
Working Group Activities

Gather Community Feedback*

- Request for Information – open through April 14, 2023!
- Listening Sessions - four public sessions held March 8-20, 2023

Consult Experts

- Workforce Economists
- Heads of Graduate Student and Postdoc Offices
- Industry Scientists
- International Student Organizations

Review Available Data

- National Science Foundation
- NIH RePORTER
- Surveys and Polls e.g., National Postdoc Association, Nature workforce surveys

*Focus on those most impacted—postdocs and grad students
Timeline of Activities

- Nov 2022: Invite WG Members
- Dec 2022—May 2023: Meet & Work
- June 2023: Draft Recommendations
- Dec 2023: Final Recommendations
Additional Efforts
Broadening Experiences in Scientific Training (BEST) Awards

Common Fund program launched in 2013 to broaden graduate/postdoctoral training

**SCOPE**

- **New training approaches** to reflect a wide range of potential career options
- Goal for trainees to **acquire working knowledge** needed to pursue their desired career options
- **17 awardees** worked as a **consortium** and participated in a cross-site evaluation

**IMPACT**

- Robust trainee participation
- 75% of graduate students and 85% of postdocs felt BEST had been **very/extremely helpful** in providing information on a wide range of careers
- All BEST institutions **secured additional funding or integrated activities** into their regular programs
- 2020 publication of evaluation results
NIH is the Largest Supporter of Small Business R&D in the Life Sciences

$1.4 billion supporting over 1,400 small businesses each year

seed.nih.gov
SUCCESS STORIES
Academic innovators and small businesses supported by NIH to develop innovative technologies that improve health and save lives.

87 stories across 42 states
Thank you!
Improvements to Early Career Investigator Grant Programs
Lindsay Redman Rivera, Ph.D., Grants Officer at Health Resources in Action

March 21, 2023

HRiA evaluated ECI grant programs (senior postdocs & clinician scientists)
• Patterson Trust Mentored Research Awards Program
• Charles A. King Trust Postdoctoral Research Fellowship Program

Findings
ECI’s face challenges related to:
• High competition/funding challenges
• Low pay/limited benefits
• Administrative burdens
• Work/life balance
• Job security
• Discouragement from conducting innovative/risky research

ECI’s want/need:
• Flexible funding
• Networking opportunities
• Experience in grants management
• Increased support

Program Changes
Provide support & allow flexibility
• Increase award amounts & stipends
  › Fringe allowance
  › Cost of living expenses
• Allow/increase flexible funding
• Reduce administrative burdens
• Host office hours & include grant writing tips
• Require Project Ownership Plan
• Encourage innovative research

Future Change: Provide networking opportunities

Metrics of Success
Still assessing:
• Application Number
• Application Quality
• Awardee career transition & progression

Why? Decreasing application numbers and lack of applicants from certain institutions despite substantial marketing efforts. - Opportunity to improve support
AACR Academic-Industry Fellowships

Judy Quong, PhD, Director, Scientific Review and Grants Administration

- Two programs intended to facilitate collaborations between academia and industry
  - AACR Stimulating Therapeutic Advances through Research Training (START) Grants
  - AACR Clinical Oncology REsearch (CORE) Fellowships
- Status/Outcomes
  - START: 10 of 10 grants awarded
  - CORE: 6 of 12 grants awarded
- Challenges
Supporting a Changing Biomedical Workforce

CHALLENGE:
Support research faculty/healthcare professionals who are or would like to be more entrepreneurial, in turn driving innovation for the benefit of patients

RESPONSE:
• Translational Seed Grants program;
  • Clinicians/scientists addressing real clinical problems (10 projects per year)
  • Funding and opportunities to interact with industry and commercialization expertise
  • Follow-on funding for the 2 most successful projects

HAS IT WORKED:
• Short-term
  # of applicants, institutions engaging, nature of the teams
• Medium-term
  # projects that successfully secure follow on funding, IP generated, licensing agreements
• Longer-term
  # Products on the market

https://flinn.org/bioscience/bioscience-grantmaking/seed-grants-program/
Career Development at the Burroughs Wellcome Fund

since our independence in 1993

CGT Program $2.7 M 63 projects and 10 fellows
MRC Canada $1 M 920 med students’ summer research
Science’s NextWave $842,000 3 projects over 10 years, 1995-2005
National Academies $700,000 15 studies over 25 years
MD Scientist portal $590,000
+ Small ad hoc grants
  ▪ Postdoc issues into the AAMC GREAT Meeting
  ▪ National Research Mentors Network
  ▪ spreading BEST practices
  ▪ AAMC-accelerating physician scientist training
  ▪ many, many, many others