



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



National Institutes of Health
Turning Discovery Into Health

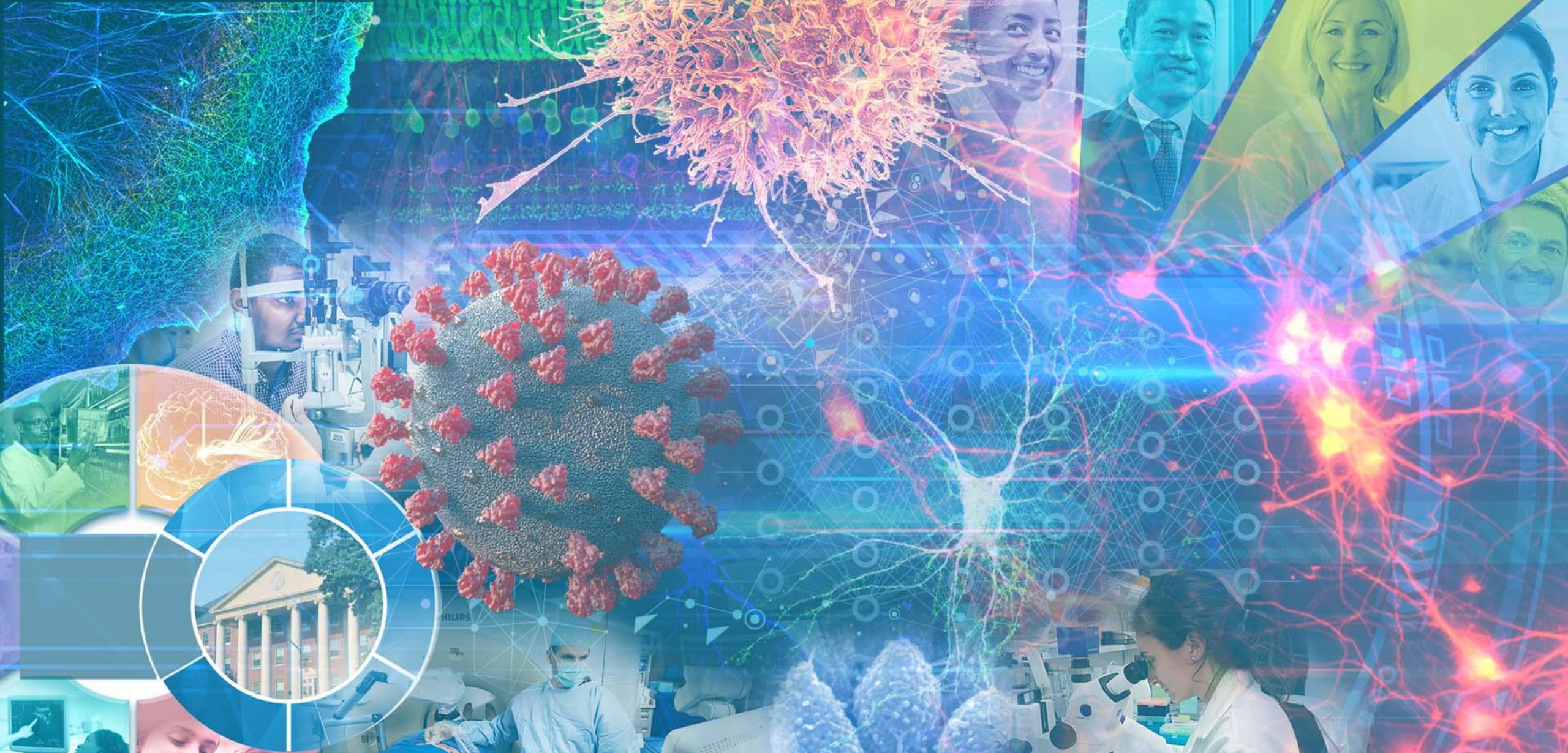
The National Institutes of Health

The Nation's Steward of Medical and Behavioral Research



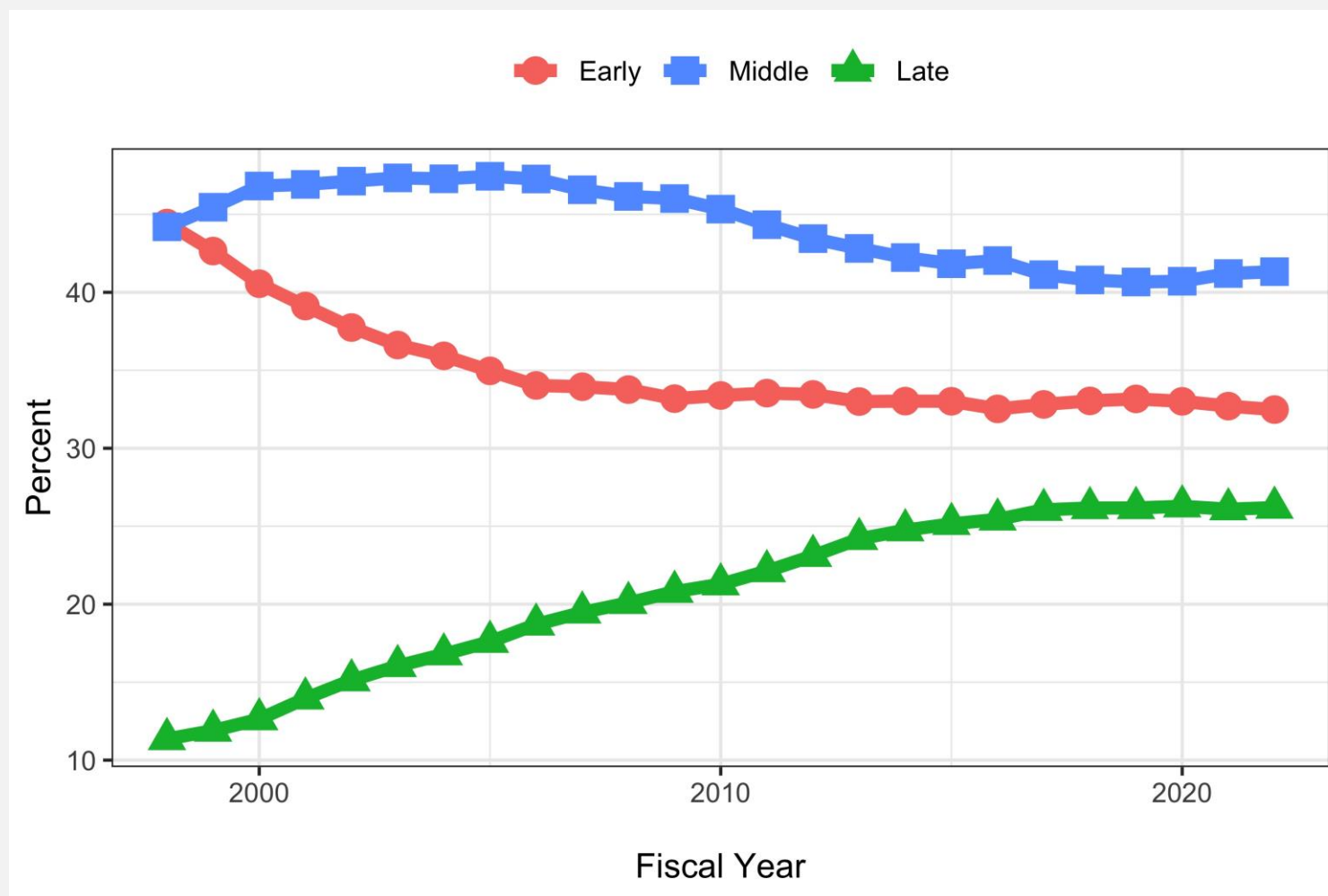
“Science in pursuit of **fundamental knowledge** about the nature and behavior of living systems and the **application of that knowledge** to extend healthy life and reduce illness and disability.”





Early Stage Investigators

Trends in Research Project Grants by Career Stage



NIH Early Stage Investigators

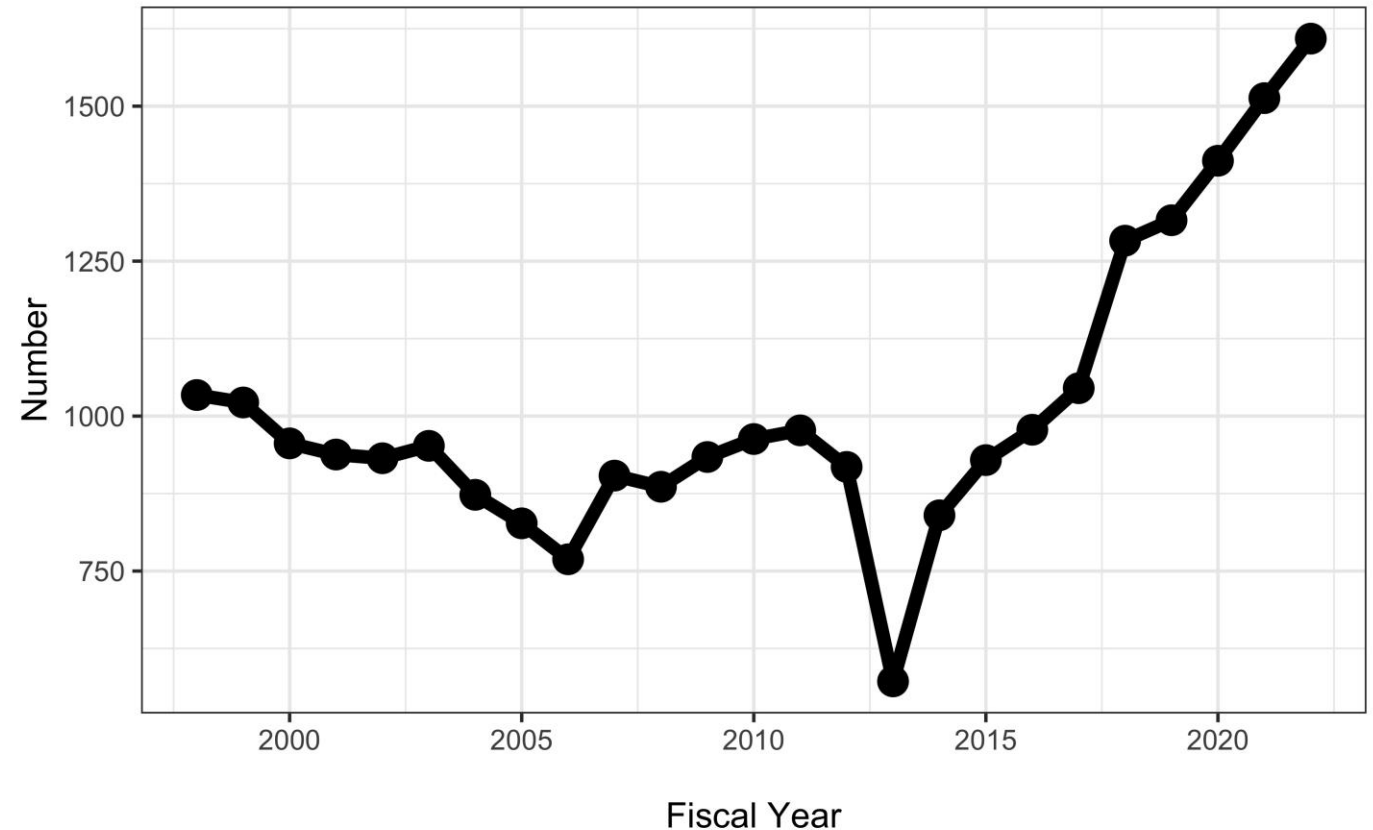
Definition

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

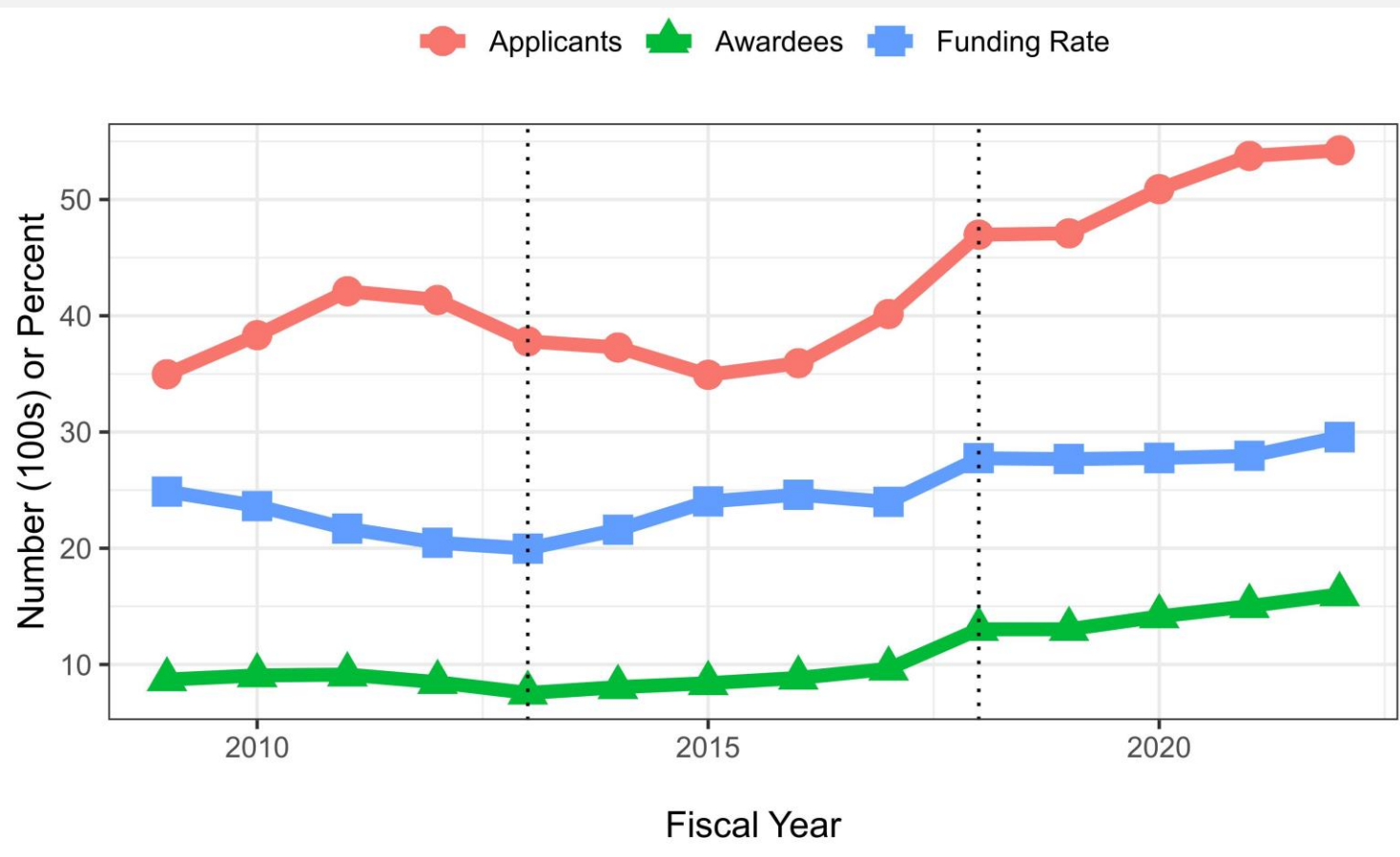
- **Prioritized** for R01-equivalent funding
- Reviewed for **potential over achievement**
- Summary statements **released first** where possible

Early Stage Investigators Funded on R01-Equivalents Over Time



Funding Rates of Early Stage Investigators

ESI Person-Based R01-Equivalent Funding Rates



FY22 Funding Rates: 29.6% ESI, 17.4% New Investigators

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

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

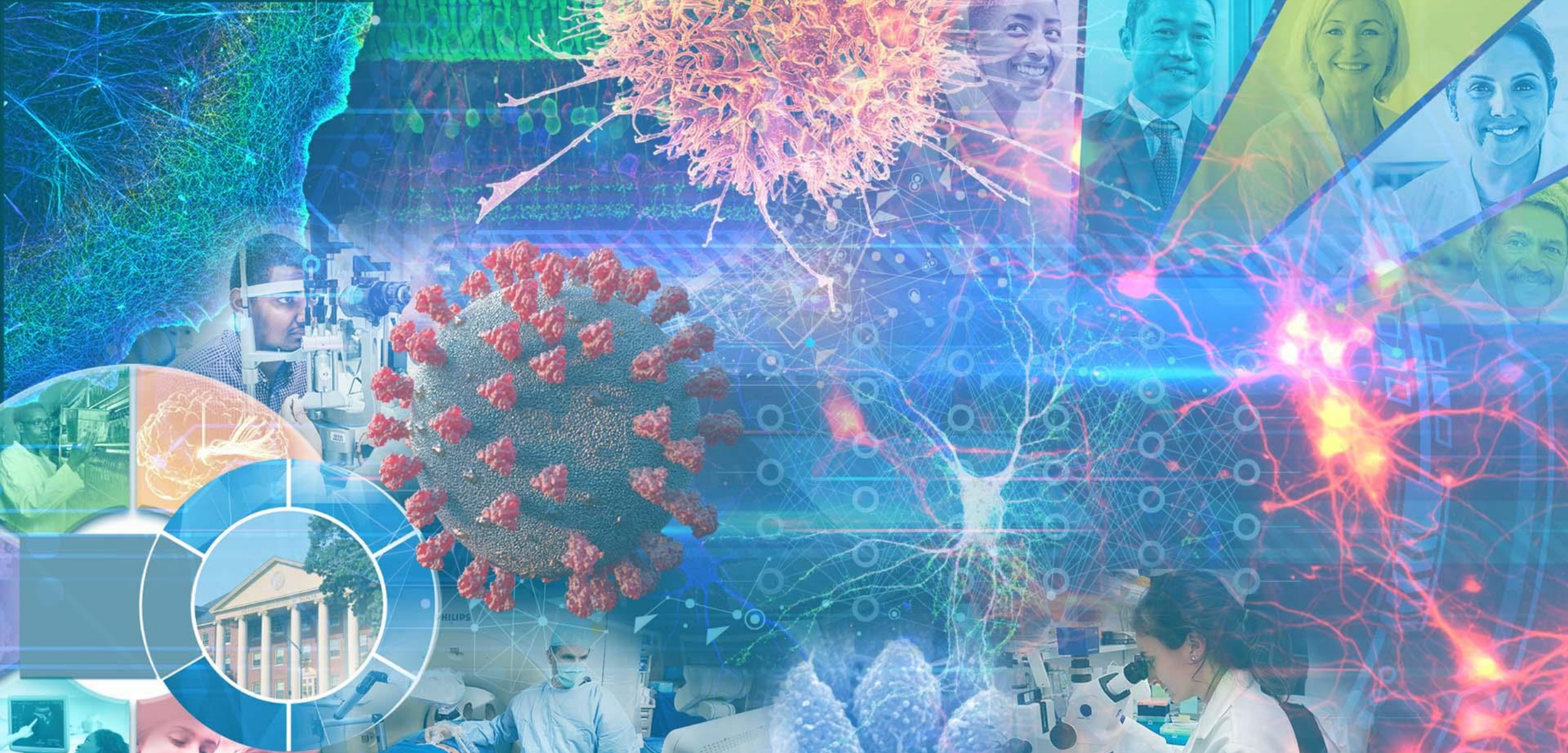
IMPACT

- **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
 - Virtual Grants Conferences on Funding, Policies, and Processes
<https://grants.nih.gov/2022-2023-virtual-conference/presentations.html>
 - YouTube Channel @NIHgrants

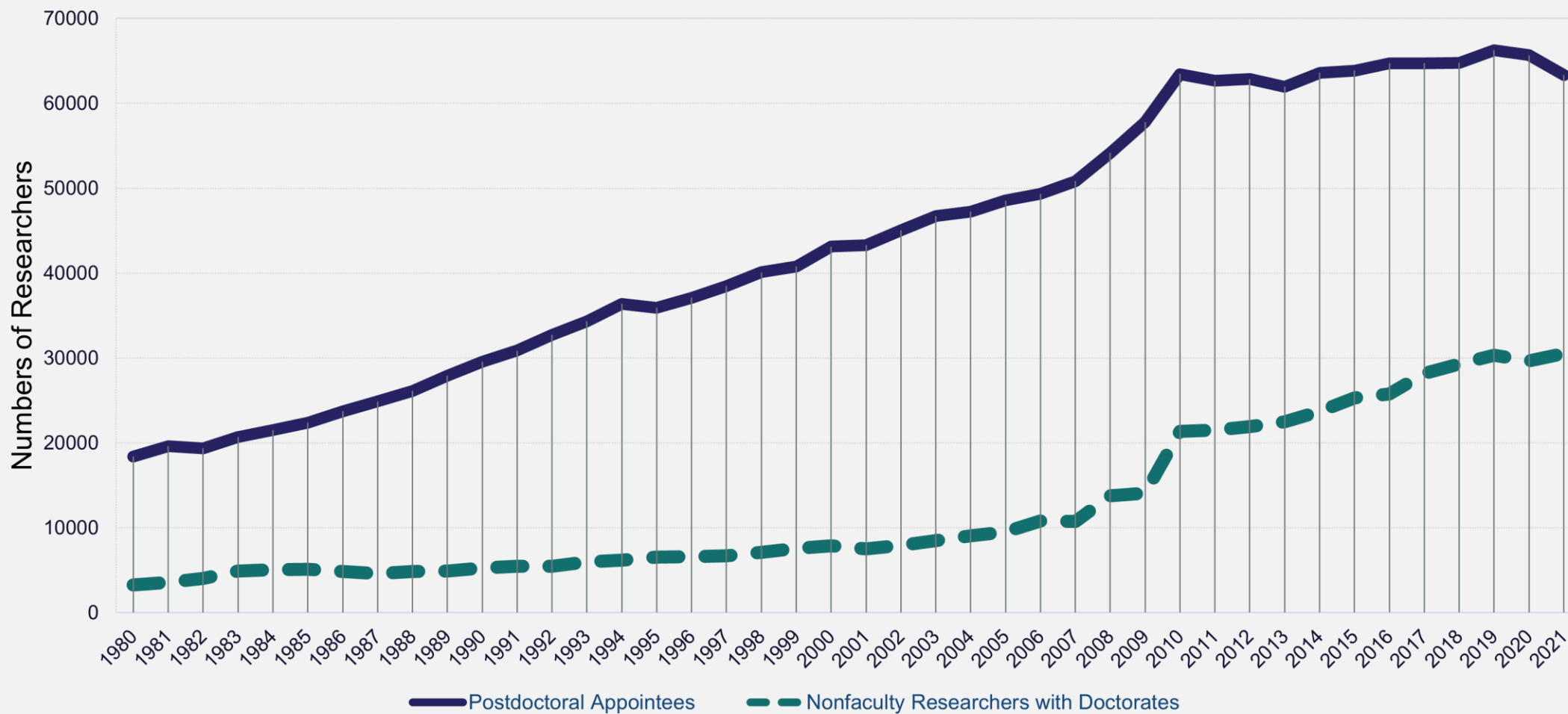
The image shows a screenshot of the NIH Grants YouTube channel page. At the top, there is a banner with the text "Guiding you through NIH grants and funding." and social media icons for Twitter and LinkedIn. Below the banner is the channel's profile information, including the NIH logo, the name "NIH Grants", the handle "@NIHgrants", 7K subscribers, and 364 videos. A "Subscribe" button is visible. The page features a navigation menu with options for HOME, VIDEOS, LIVE, PLAYLISTS, and COMMUNITY. The main content area displays a playlist titled "Scientific Data Sharing" with a "Play all" button. Three video thumbnails are shown, each with a title, duration, and view count. The first video is "Understanding the New NIH Data Management and Sharing (DMS) Policy" (1:27:38, 10K views, 6 months ago). The second is "Diving Deeper into the New NIH Data Management and Sharing (DMS) Policy" (1:21:05, 2.1K views, 5 months ago). The third is "The NIH Final Policy for Data Management and Sharing is in Effect: Planning for Success!" (38:20, 404 views, 1 month ago).



Postdocs

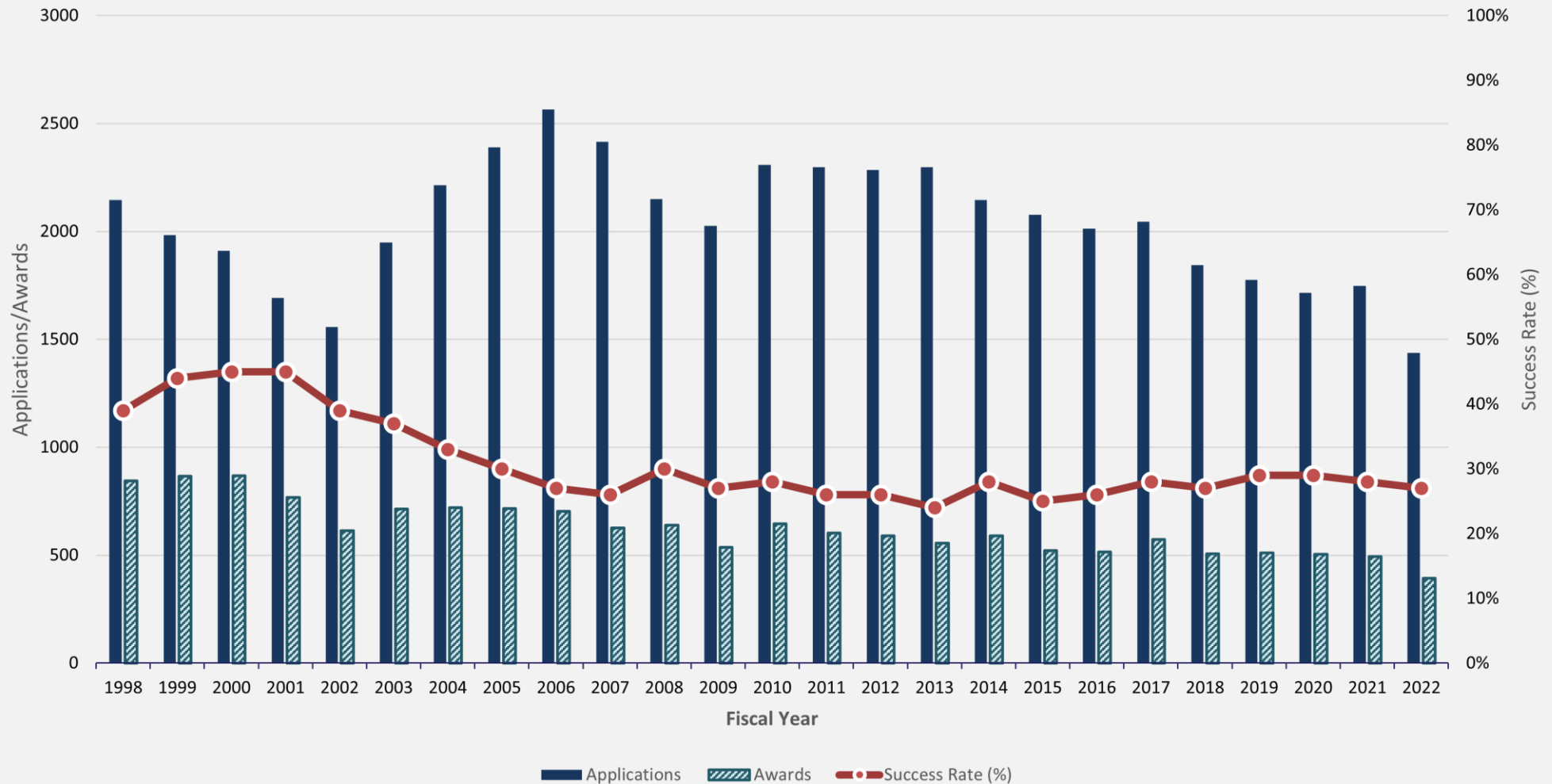
Postdoc numbers steadily increased after 1980, stayed relatively flat for the last decade, and declined since 2019

NSF Statistics: U.S. Researchers by Position Over Time



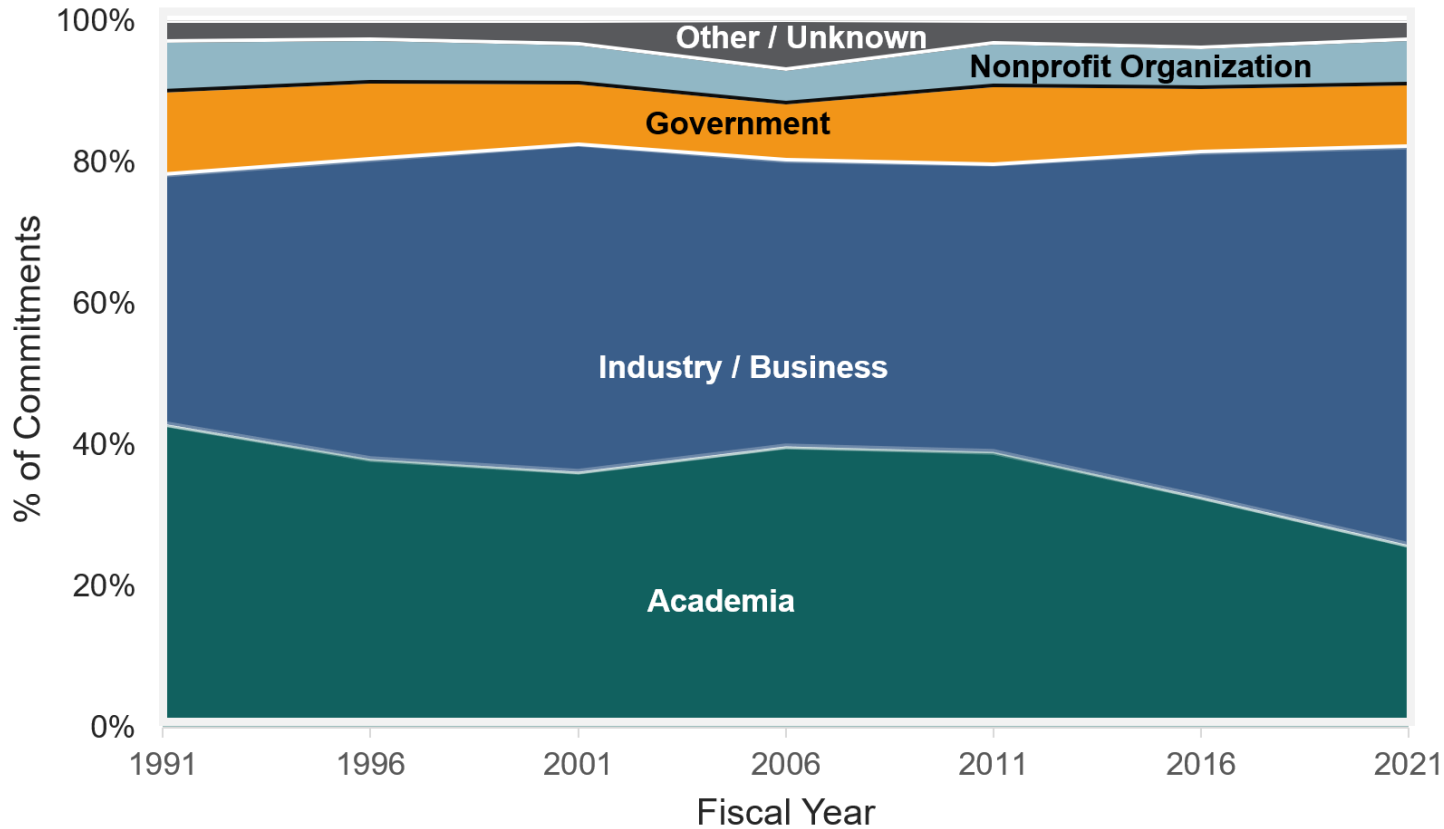
NIH postdoc fellowship applications and awards are decreasing

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

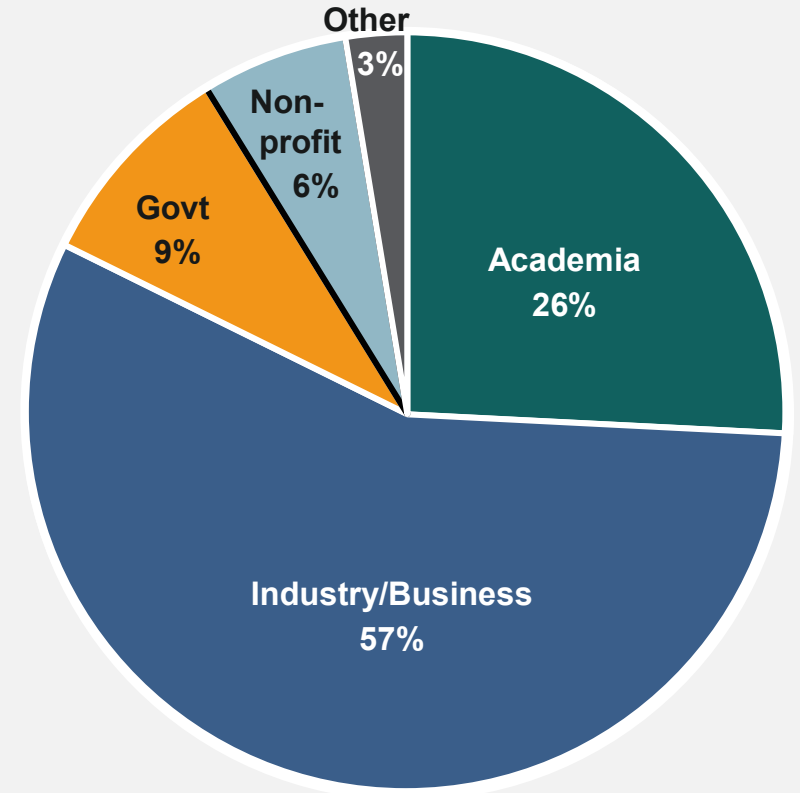


Decreasing percentage of earned doctorates commit immediately to academia

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

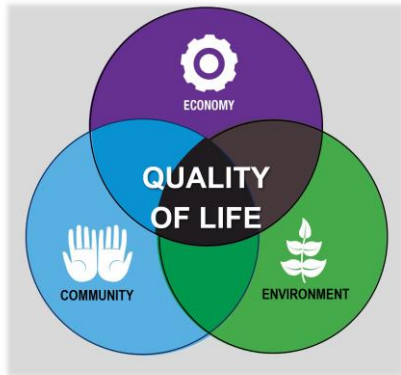
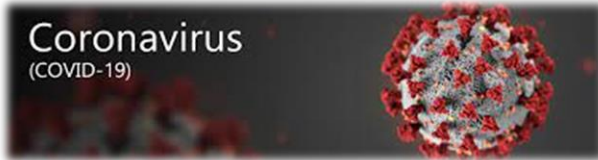


Employment Sector of Science & Engineering Doctorate Recipients in 2021



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



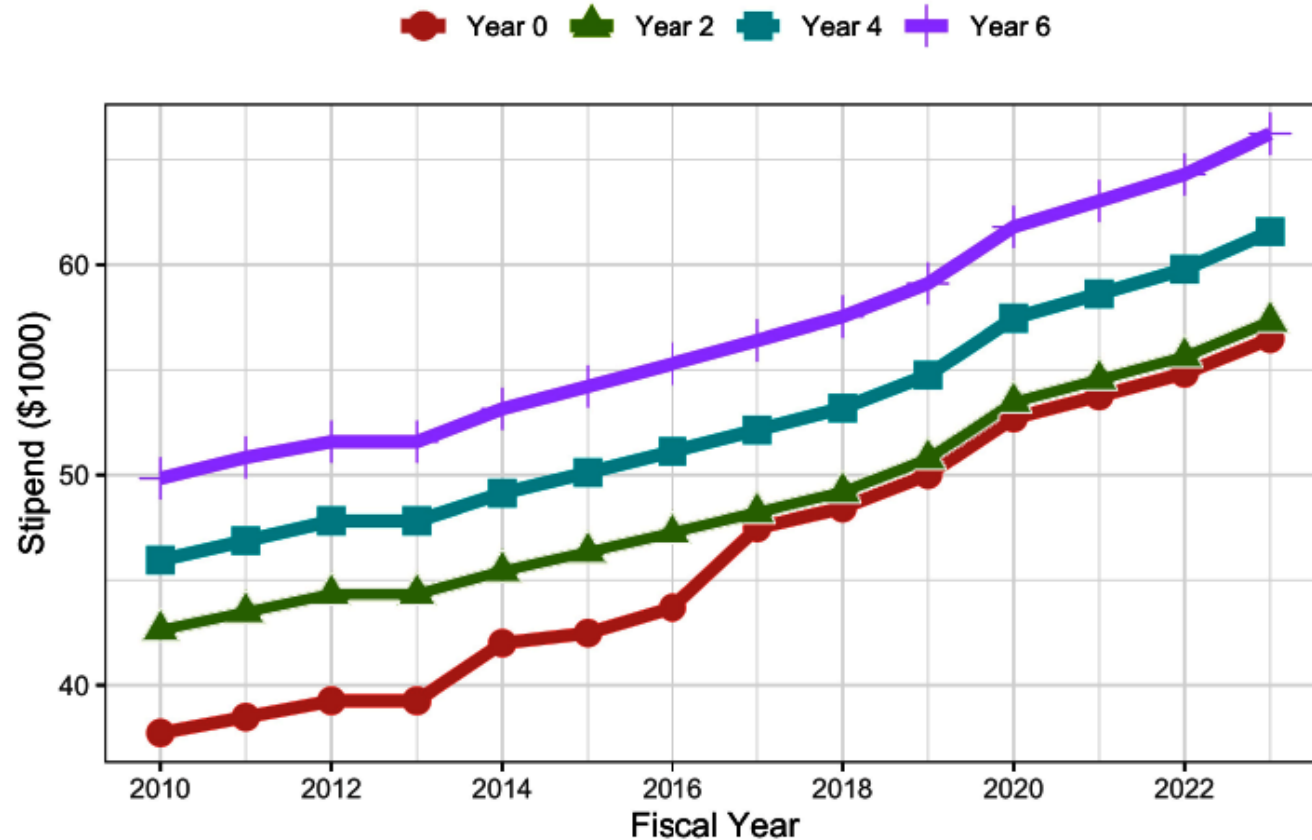
New opportunities in
pharma/biotech



Expanding research
expectations

Existing NIH Support for Postdocs

NIH NRSA Stipend Level, 2010-2023



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

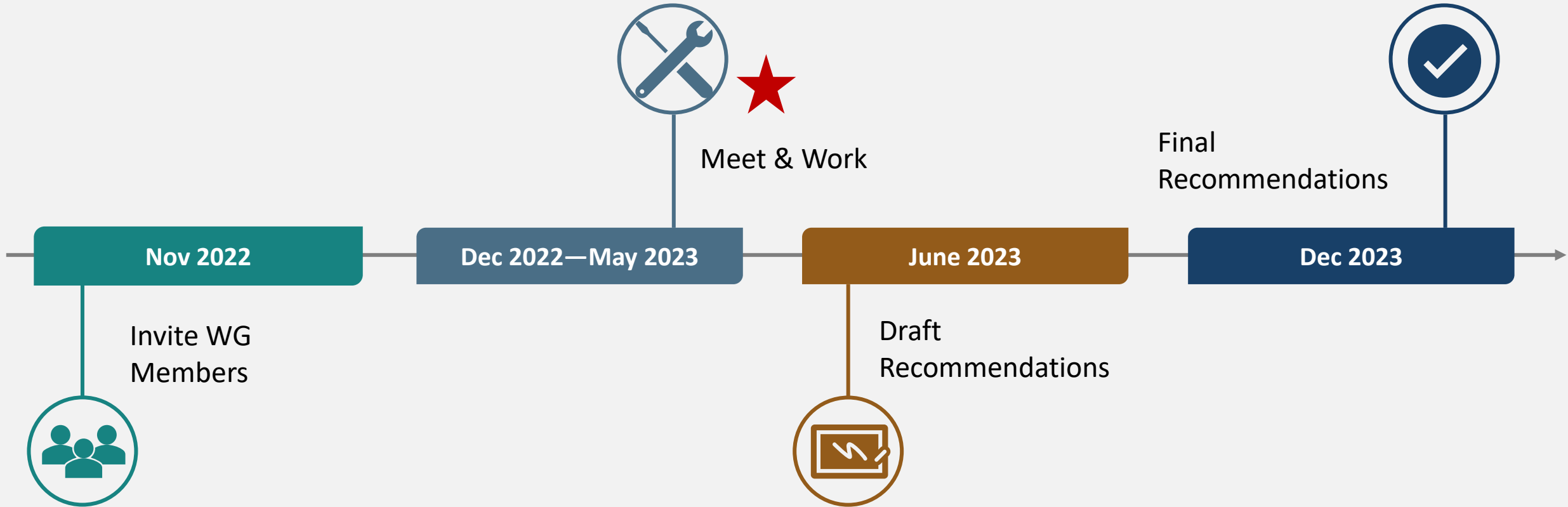
- Workforce Economists
- Heads of Graduate Student and Postdoc Offices
- Industry Scientists
- International Student Organizations

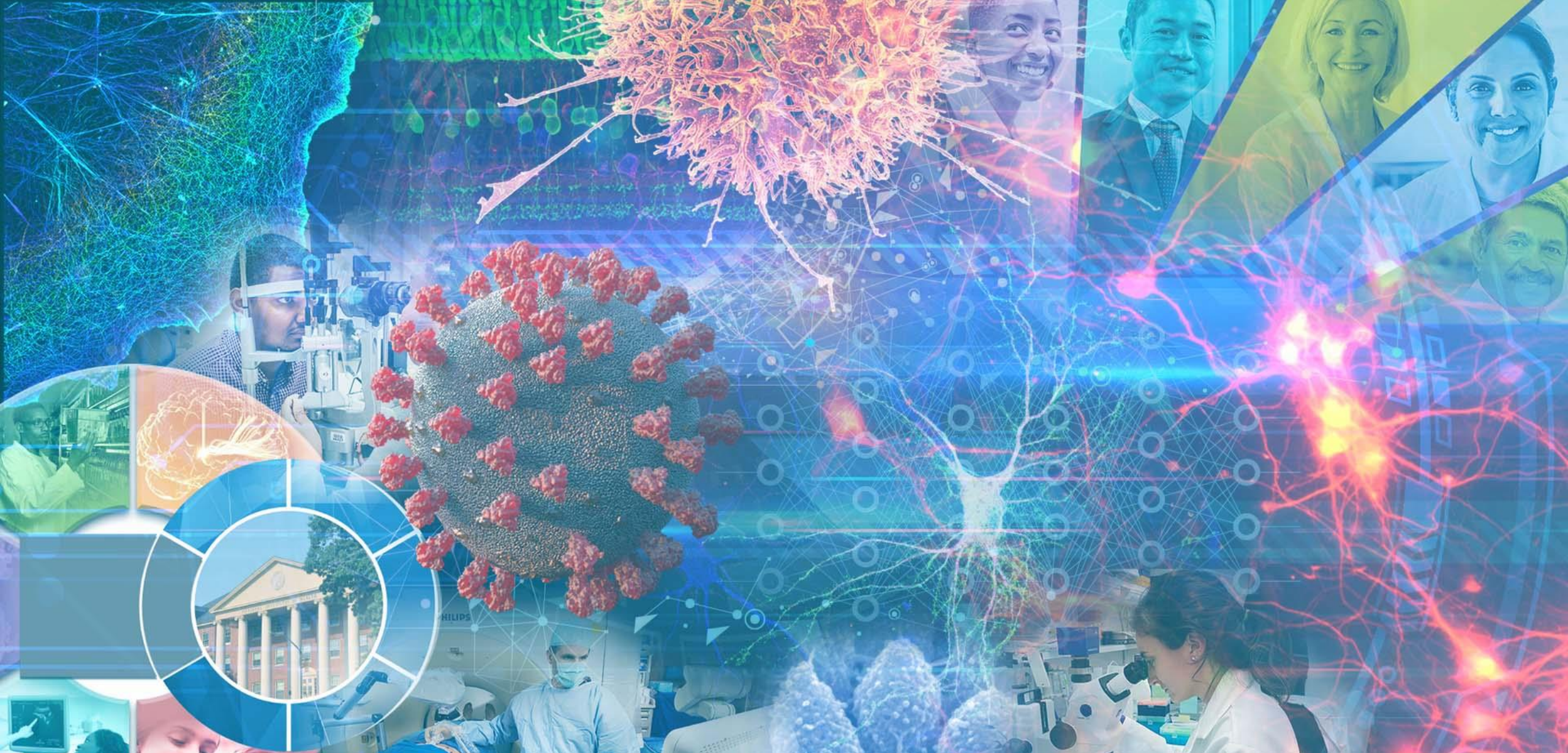
Review Available Data

- 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





Additional Efforts

Broadening Experiences in Scientific Training (BEST) Awards

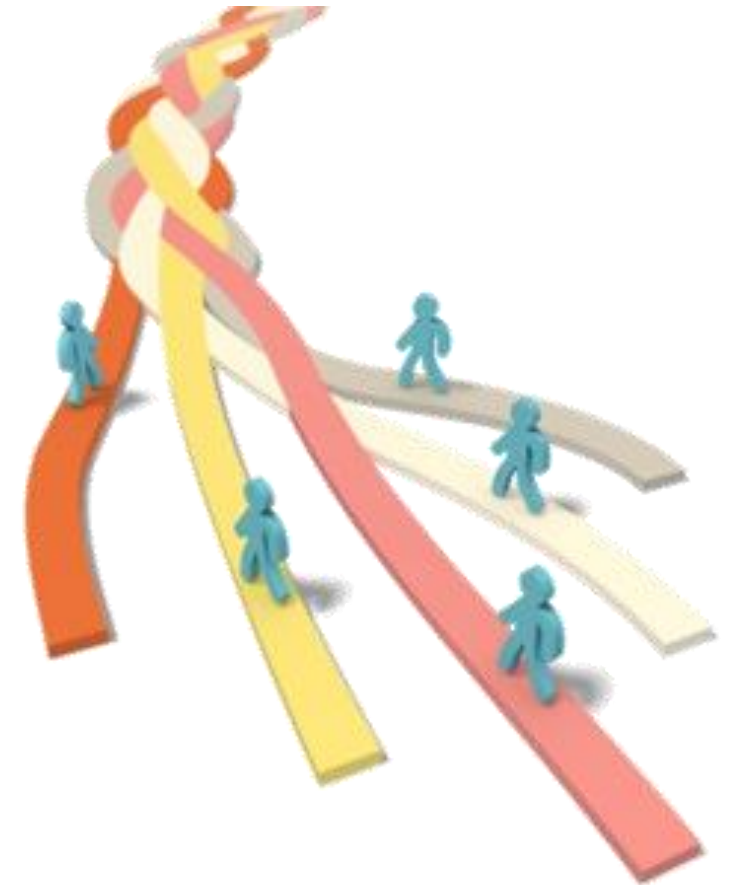
Common Fund program launched in 2013 to **broaden graduate/postdoctoral training**

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



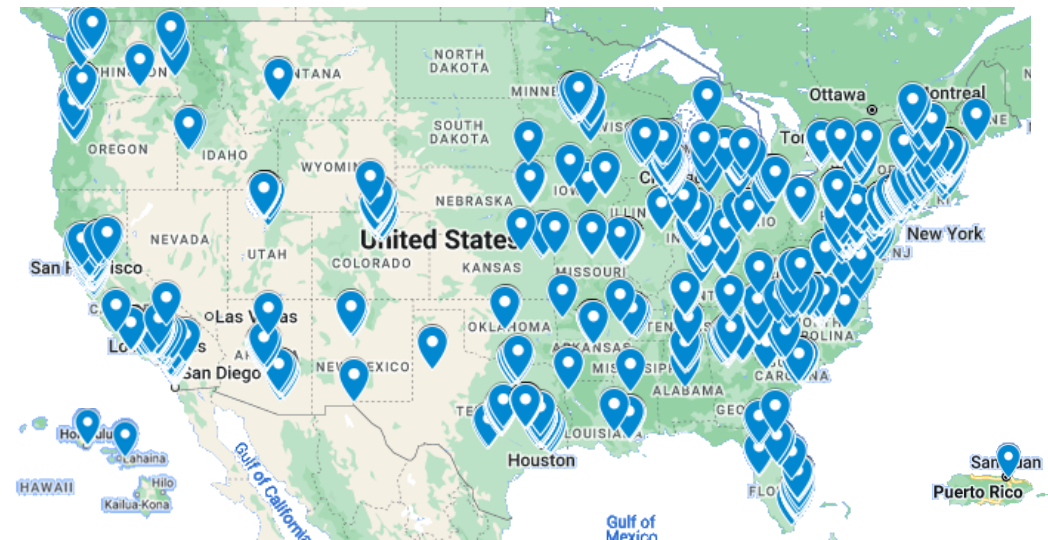
POWERED BY



National Institutes of Health
Turning Discovery Into Health

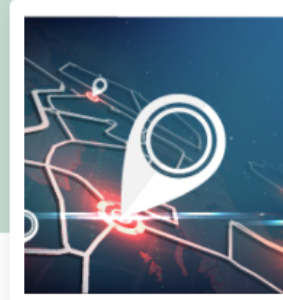
\$1.4 billion supporting
over 1,400 small businesses
each year

seed.nih.gov



SUCCESS STORIES

Academic innovators and small businesses supported by NIH to develop innovative technologies that improve health and save lives.



Latina-Owned Businesses
Create Effective Public
Health Campaigns



De las mías



DNA Sensors Bring Rapid
Toxic Water Analysis to the
Field



ANDalyze



RIVANNA

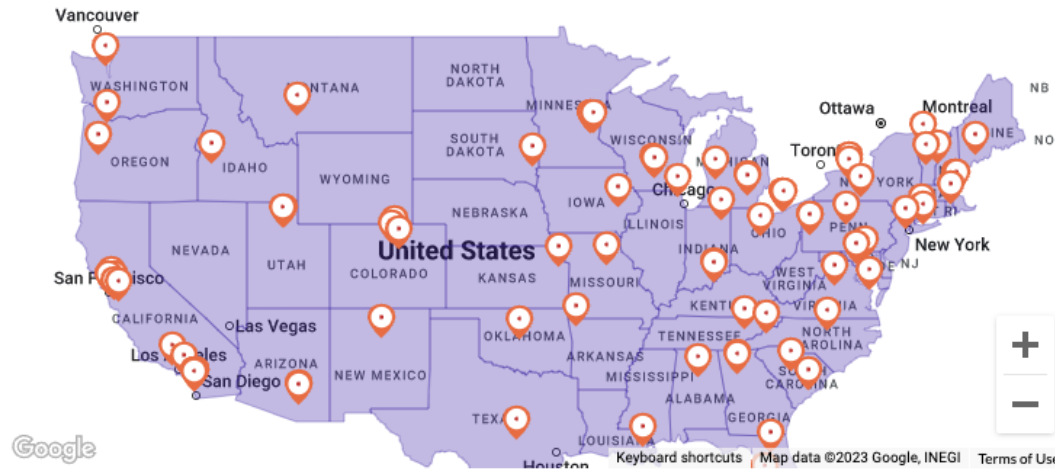
Handheld Ultrasound Device
Guides Epidural Placement

Technology

- Diagnostic
- Digital Health
- Drug
- Medical Device
- Research Tool

Development Stage

- Approved for Use
- Early Development
- Human Testing



Displaying results 1 to 10 of
total 87

Results per page

10

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

Why? Decreasing application numbers and lack of applicants from certain institutions despite substantial marketing efforts.

- Opportunity to improve support

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

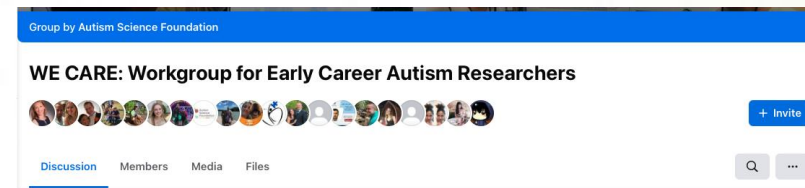
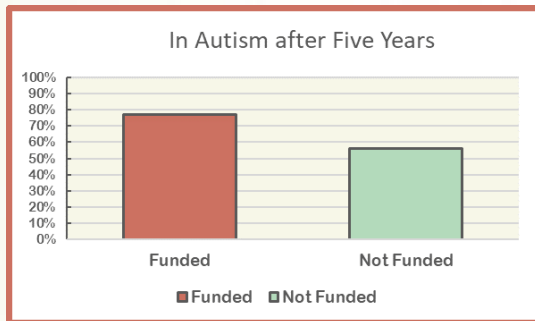
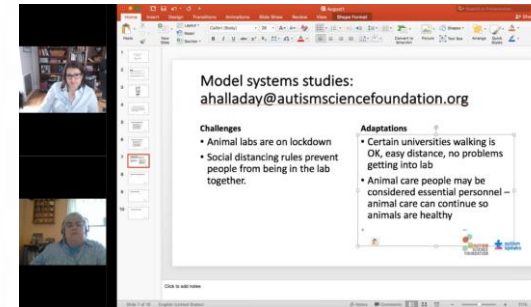
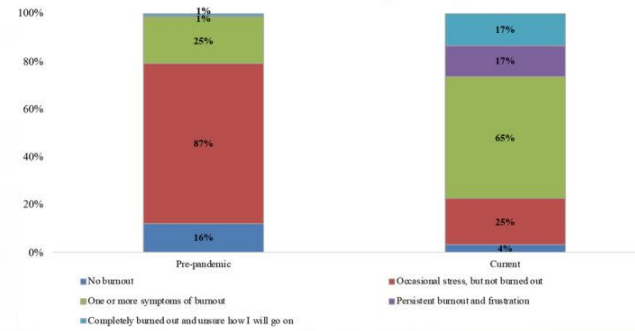


Health Resources in Action

Advancing Public Health and Medical Research



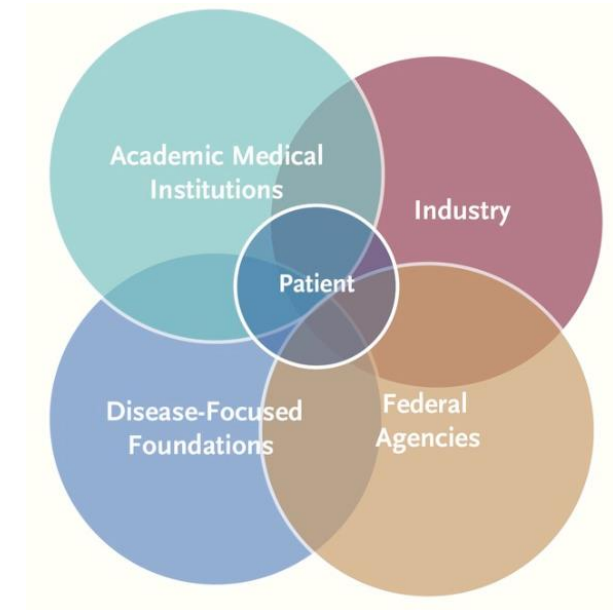
Pre and Pandemic Level of Burnout Experienced by ASD ECRs



AACR Academic-Industry Fellowships

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

- Two programs intended to facilitate collaborations between academia and industry
 - AACR **S**timulating **T**herapeutic **A**dvances through **R**esearch **T**raining (**START**) Grants
 - AACR **C**linical **O**ncology **RE**search (**CORE**) Fellowships
- Status/Outcomes
 - START: 10 of 10 grants awarded
 - CORE: 6 of 12 grants awarded
- Challenges



Academic, Foundation, and Industry
Collaboration in Finding New
Therapies. *N Engl J Med* 2017;
376:1762-1769



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

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