

Supporting the Future of the Biomedical Research Workforce

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NIH Division of Biomedical Research Workforce

Office of extramural Research

Disclaimer

The opinions expressed in this talk are the author's own and do not reflect the view of the National Institutes of Health, the Department of Health and Human Services, or the United States government.

Diversification of the biomedical research workforce – in all of its forms – continues to be a major priority of the National Institutes of Health


Agenda

DBRW: How It All Began

NIH-Supported Workforce Trends &
Ecosystem Pressures

Existing NIH Initiatives

NIH UNITE Initiative



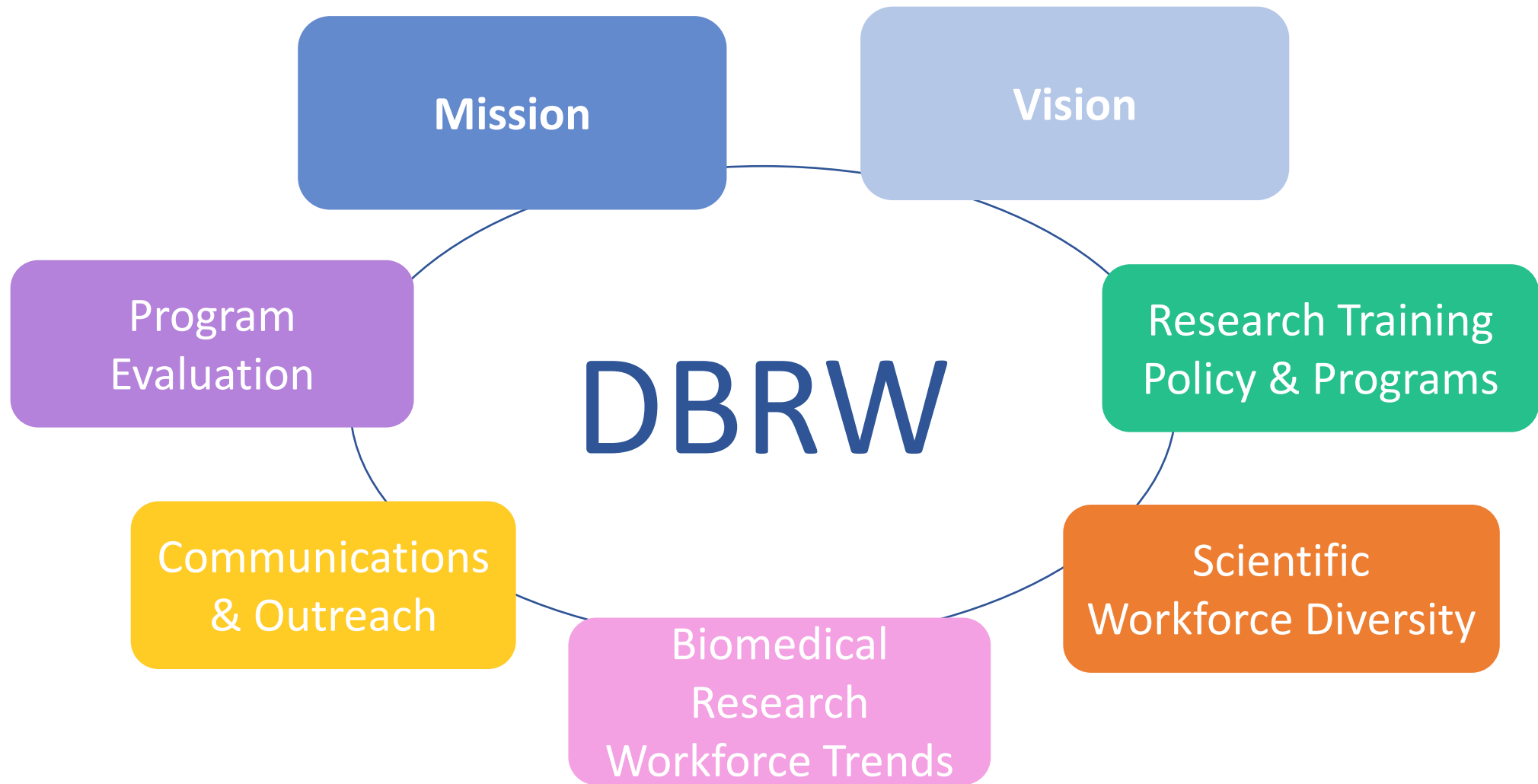
NIH should create a permanent unit in the Office of the Director that works with the extramural research community, the National Science Foundation (NSF) and the NIH ICs to coordinate data collection activities and provide ongoing analysis of the workforce and evaluation of NIH policies so that they better align with the workforce needs

BIOMEDICAL RESEARCH WORKFORCE WORKING GROUP

REPORT

A Working Group of the Advisory Committee to the Director

National Institutes of Health



Supporting the positive growth and development of the biomedical research ecosystem

Agenda

DBRW: How It All Began

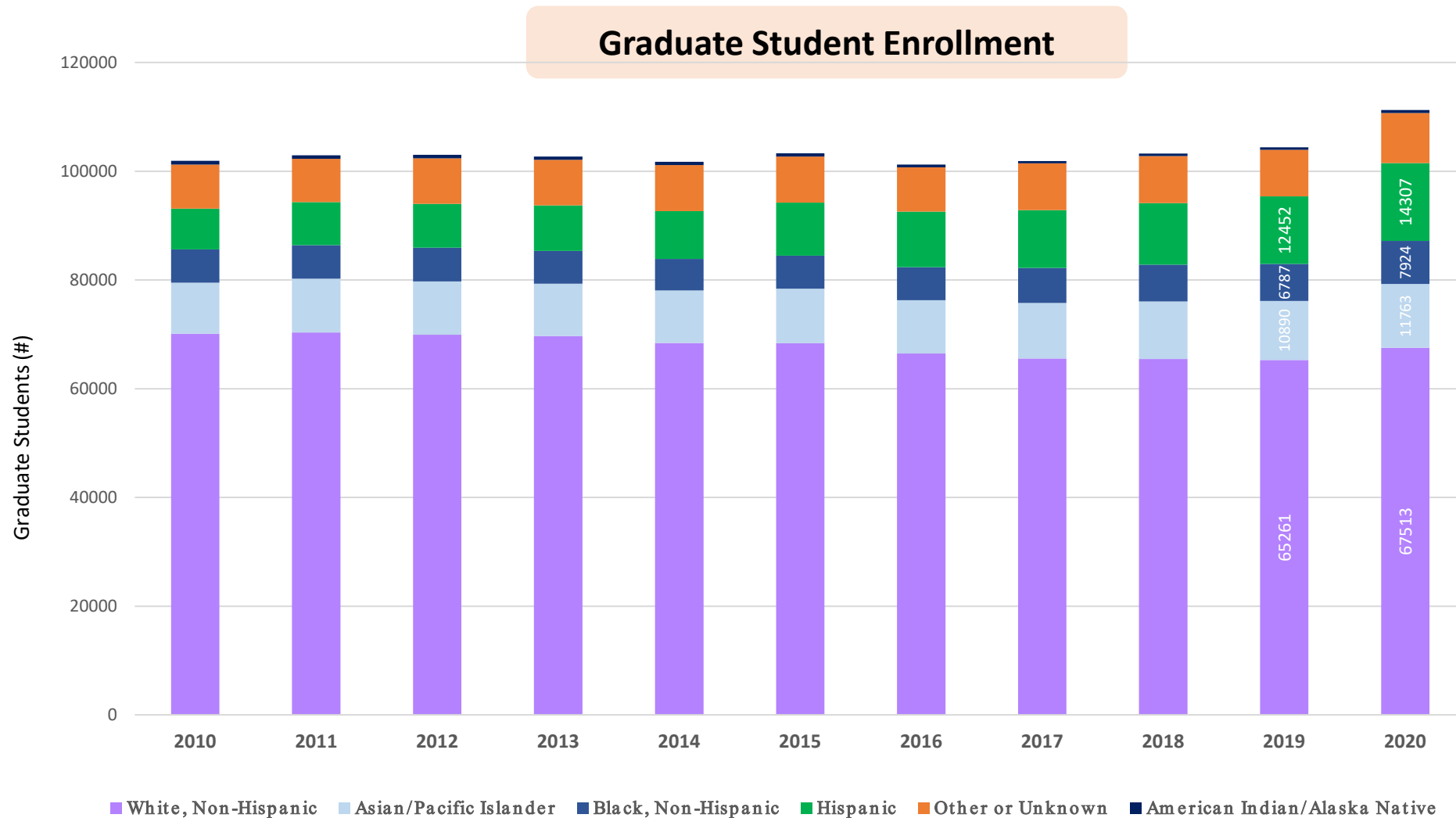
NIH-Supported Workforce Trends &
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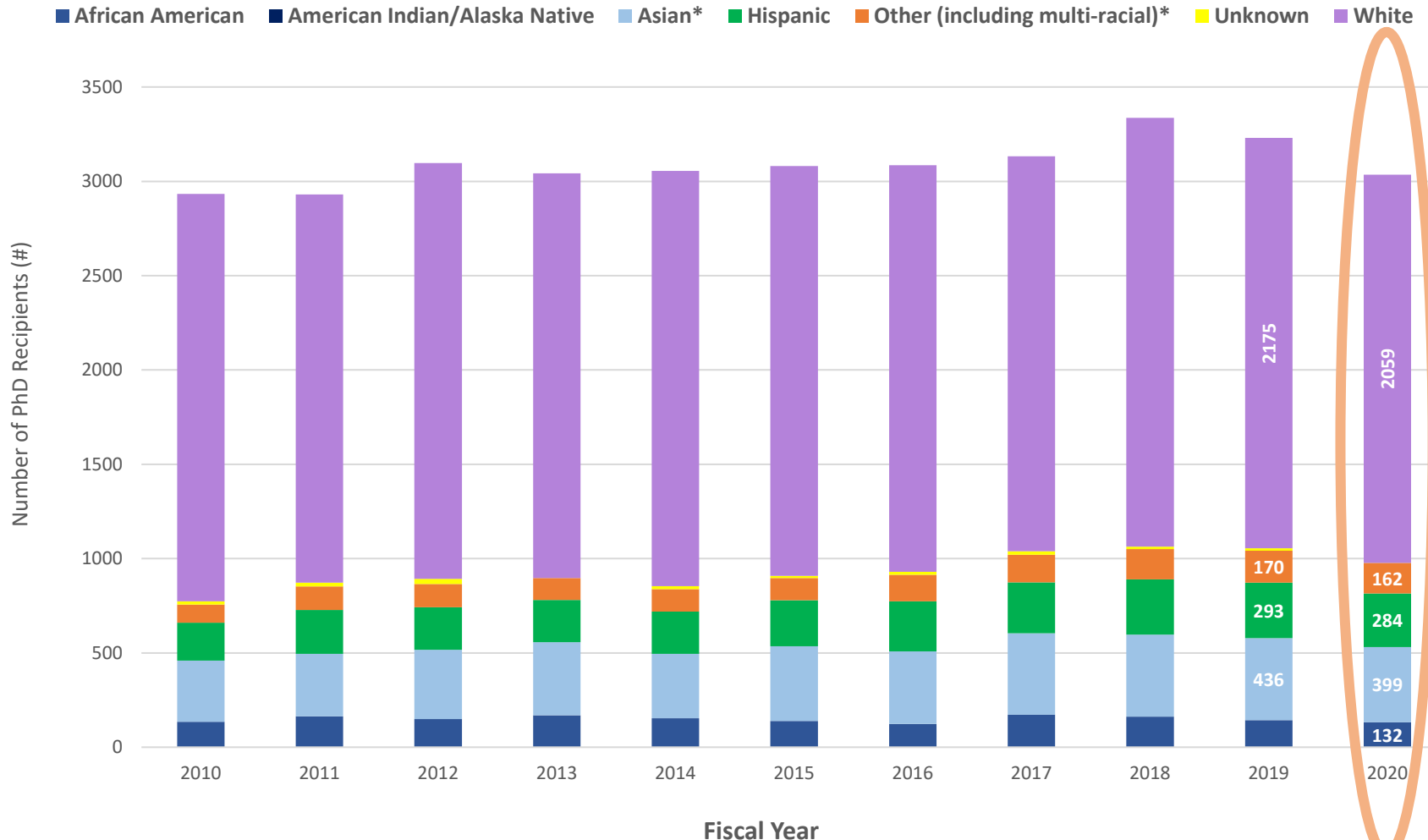
National Trends: Graduate Student Enrollment



- Graduate student enrollment increasing over time
- Female enrollment consistently outpaces males (not shown)
- **URM** representation low, but slightly increasing

Trends Among NIH-Supported Ph.D. Recipients (2020)

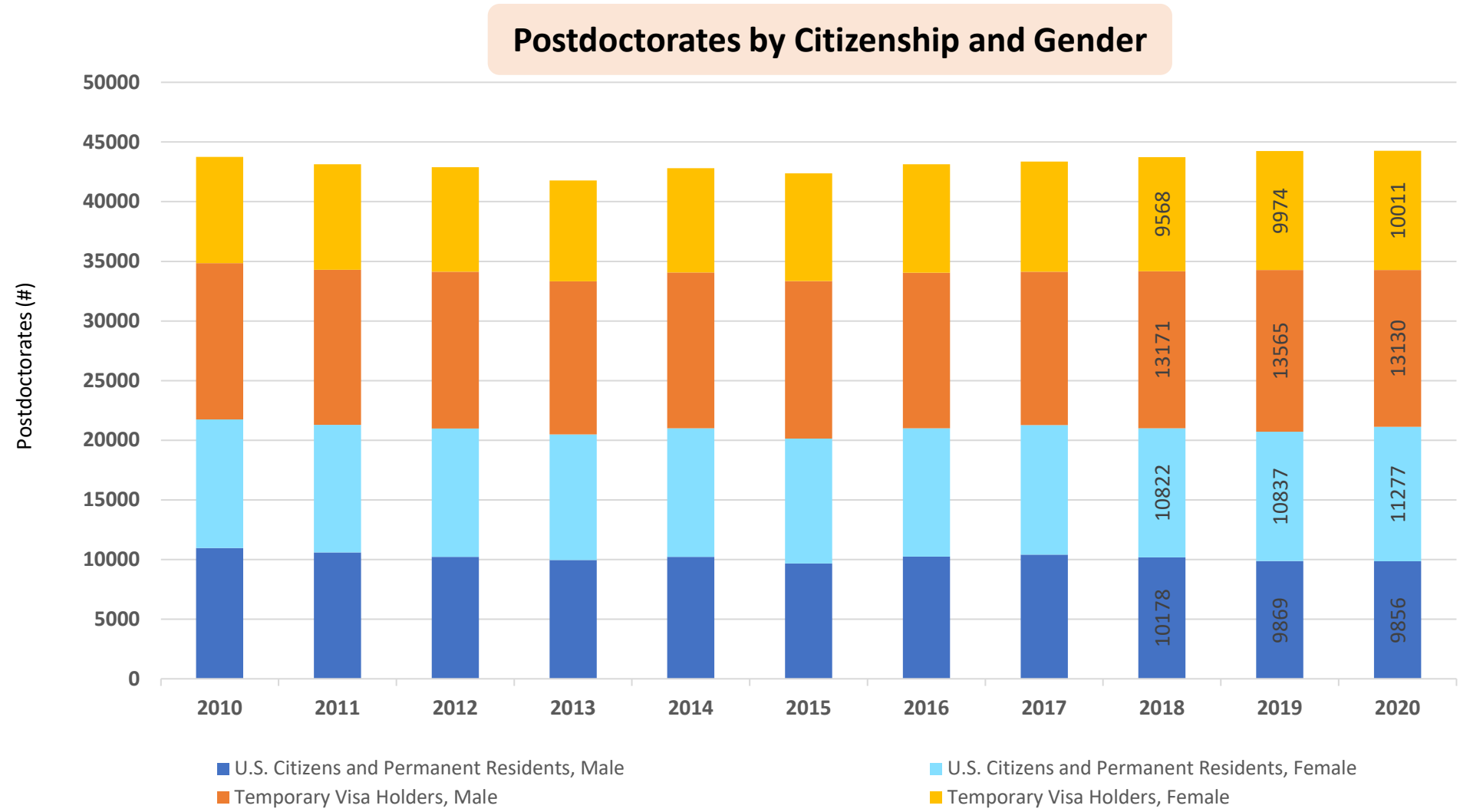
Trends by Race/Ethnicity



Demographics:

- 6 years to complete degree
- ~53% female
- 30 years old
- 12% are parents
- 44% plans to pursue postdoctoral research (22% unsure)
- Top fields of study include neuroscience, immunology, microbiology
- **URM representation remains low**

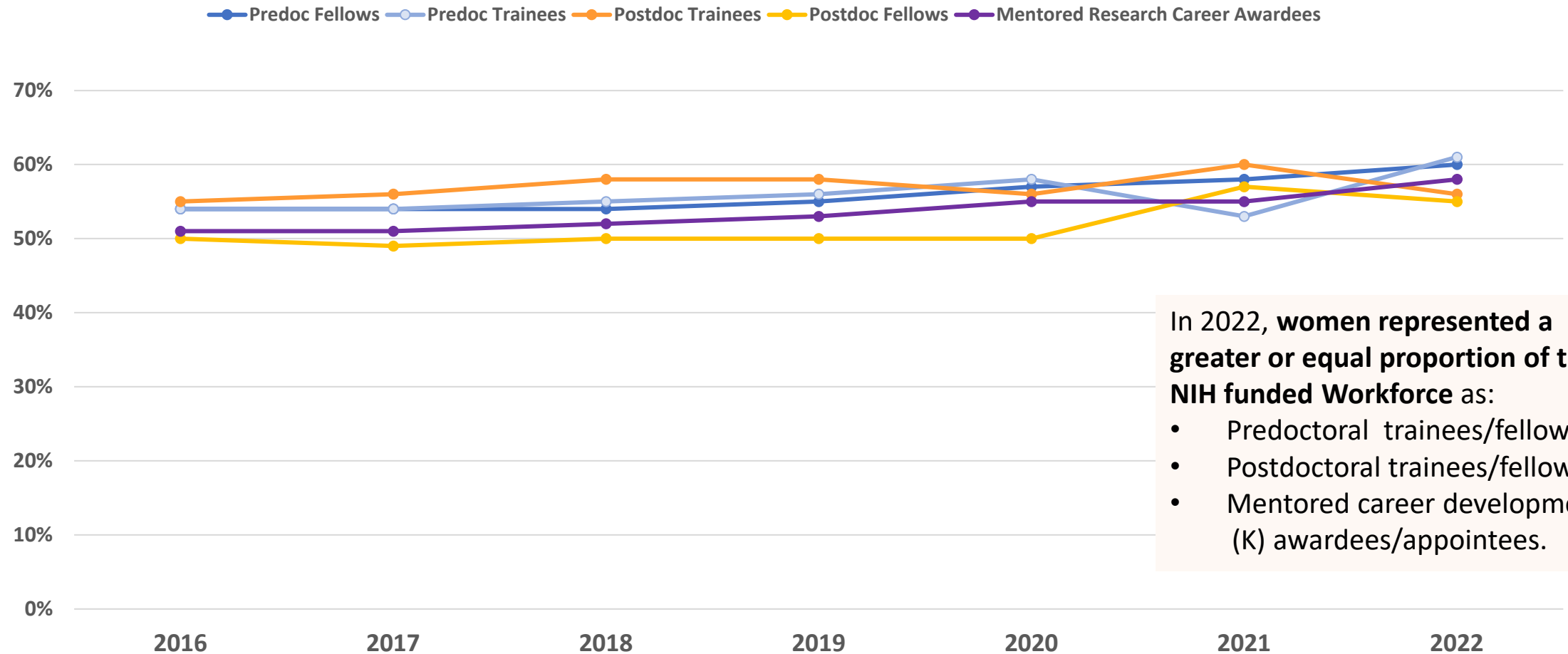
National Statistics: Postdoctorates



- **Males holding temporary visas and U.S. born females comprise highest presence within the postdoc workforce**
- Vast majority hold PhDs

*Source: [National Institutes of Health, NSF-NIH Survey of Graduate Students and Postdoctorates in Science and Engineering.](#)

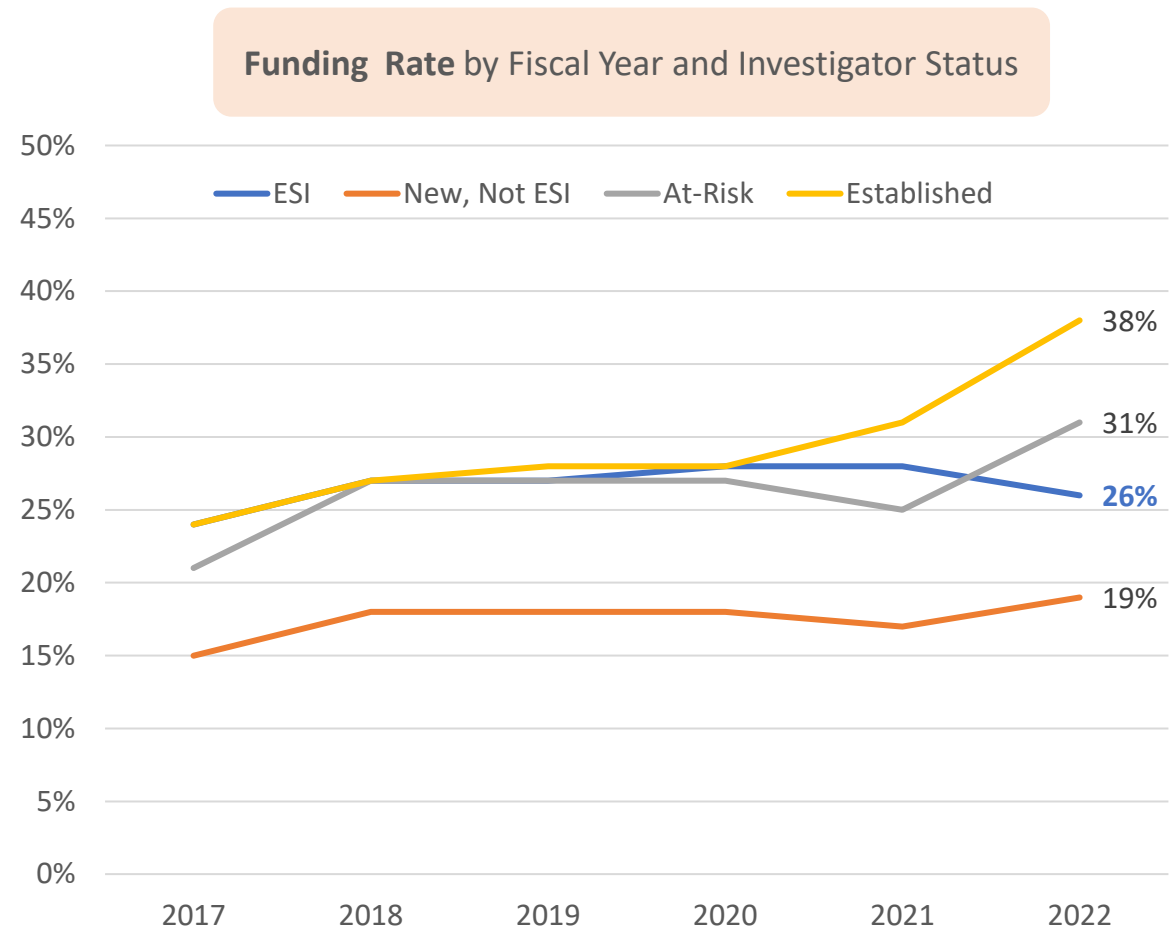
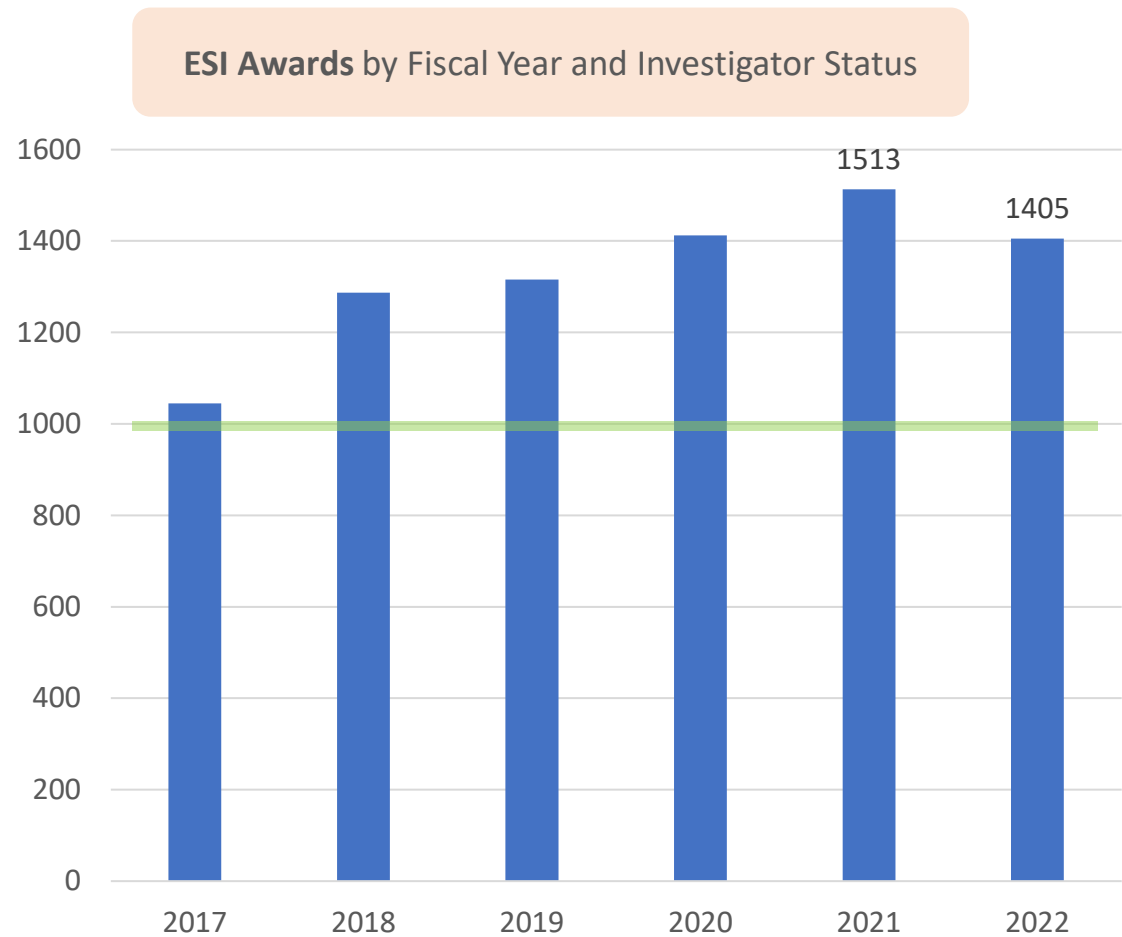
Women Represent ~50% of Individuals on NRSA T32s, F31s, F32s and Ks



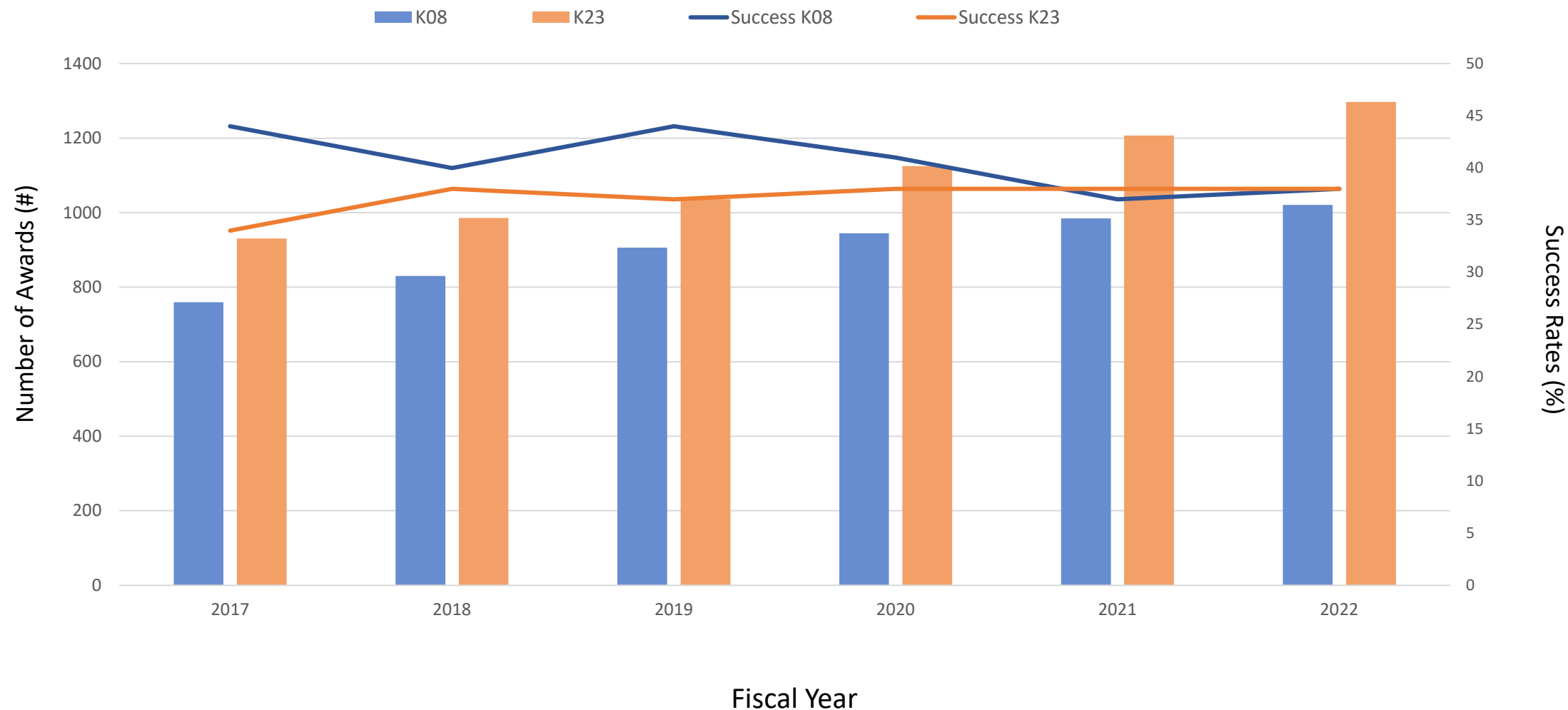
In 2022, women represented a greater or equal proportion of the NIH funded Workforce as:

- Predoctoral trainees/fellows
- Postdoctoral trainees/fellows
- Mentored career development (K) awardees/appointees.

ESI R01-eq Funding Rate Increasing Over Time



Support of Clinician-Targeted Awards Increasing, Success Rates Down



*Source: <https://report.nih.gov/nihdatabook/category/17>

What Is the Ecosystem Experiencing?

Low representation at faculty levels persists

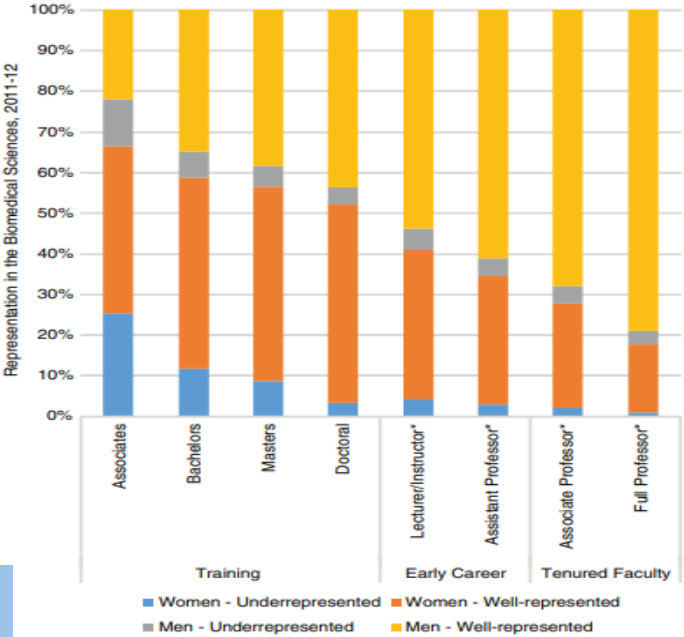
Financial burden and student debt – differs across racial/ethnic groups

Average Cumulative Amount Borrowed for Undergraduate Study



The emotional toll of graduate school on mental health

Mental health disorders and depression are far more likely for grad students than they are for the average American
By Prabesh Puri on January 31, 2019

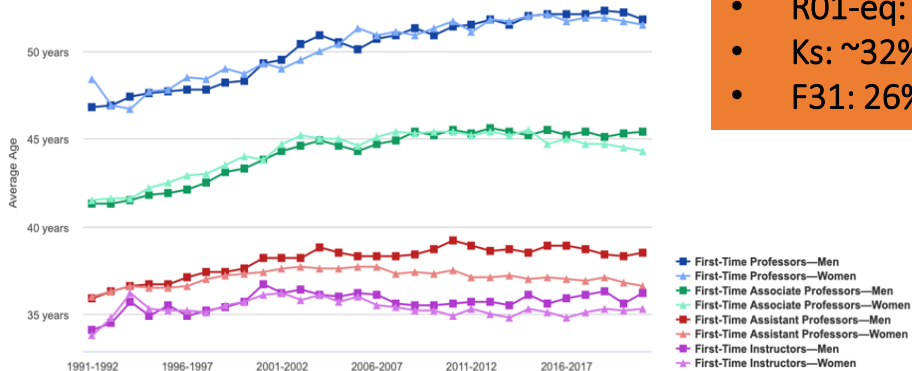


Uncivil Environments: Microassaults, Microinsults, Microinvalidations, Minority Tax, Isolation, Harassment

Education & Training Path – Getting Longer, Low Pay

Age of First-Time Faculty Increasing

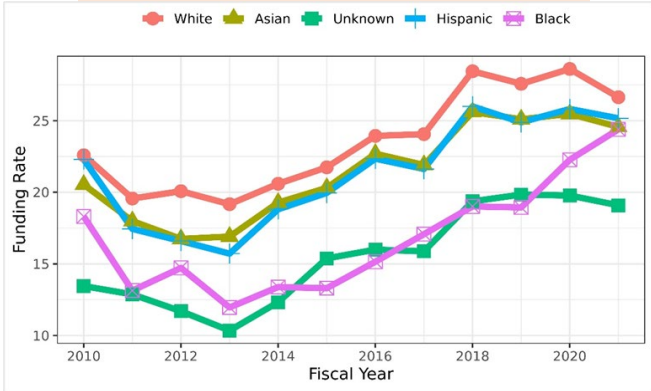
AAMC Age of First-Time Faculty by Gender and Rank



NIH Success Rates:

- R01-eq: ~20%
- Ks: ~32%
- F31: 26%; F32: 28%

NIH R01 application from AA/Black less likely to be funded



Insufficient role models



nature

Lab leaders wrestle with paucity of postdocs

Chris Woolston

PMID: 36042305 DOI: 10.1038/d41586-022-02781-x

[Chris Woolston](#)

No abstract available

Keywords: Careers; Lab life; Scientific community.

Similar articles

'Keep your options open': postdocs offer advice on academic-research careers.

Woolston C.

Nature. 2021 May 25. doi: 10.1038/d41586-021-01437-6. Online ahead of print.

PMID: 34035512 No abstract available.

Why a new lab can be a valuable destination for postdocs and graduate students.

Woolston C.

Nature. 2018 Jun;558(7709):333-335. doi: 10.1038/d41586-018-05381-w.

PMID: 29892026 No abstract available.

Postdocs under pressure: 'Can I even do this

Woolston C.

Nature. 2020 Nov;587(7835):689-692. doi: 10.1038/d41586-020-01437-6.

PMID: 33230311 No abstract available.



How to banish impostor syndrome

1 JUL 2020 • BY ALAINA G. LEVINE

Science

SHARE:



Harvard Business Review Special Issue

How to Overcome Impostor Syndrome

The Best of HBR
Summer 2023
HBR.org



Boost your confidence,
build your credibility, and lead more
authentically.



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MBoc | PERSPECTIVE

The argument for diversifying the NIH grant portfolio

Mark Peifer*

Department of Biology, Curriculum in Genetics and Molecular Biology, and Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599

"...recently the NIH investment has become less diversified, with a larger fraction of grant dollars in the hands of a smaller fraction of researchers. This threatens the future of our field, as many productive early and midcareer scientists are facing having to close their labs"

PERSPECTIVE



PERSPECTIVE

Rescuing US biomedical research from its systemic flaws

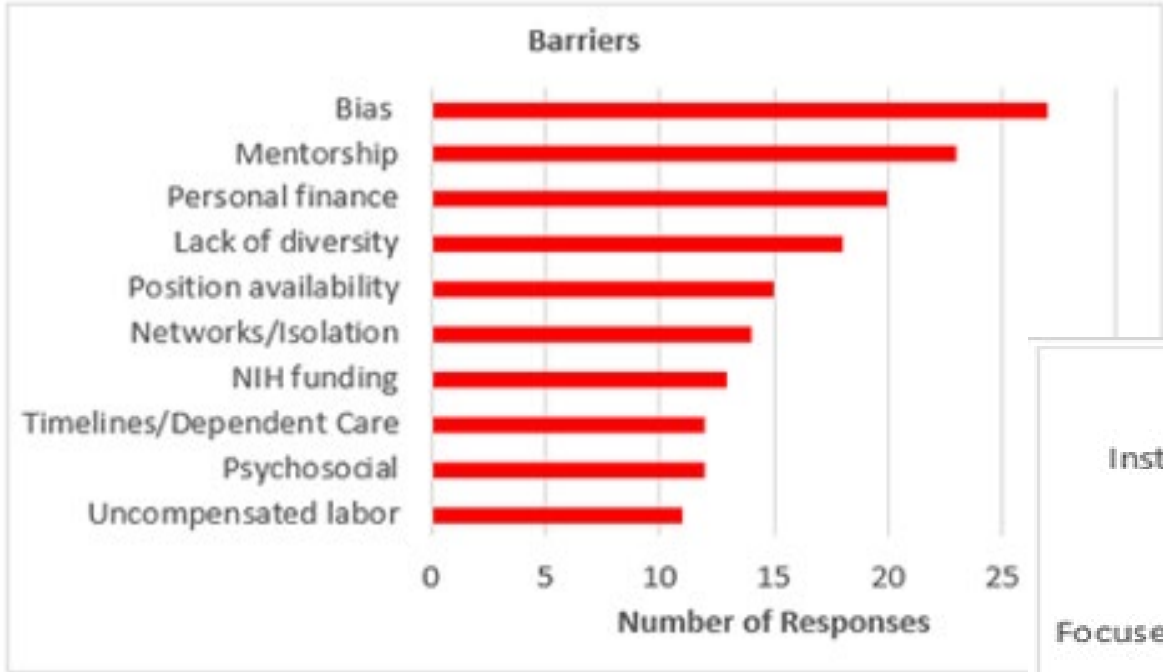
Bruce Alberts^a, Marc W. Kirschner^b, Shirley Tilghman^{c,1}, and Harold Varmus^d

^aDepartment of Biophysics and Biochemistry, University of California, San Francisco, CA 94158; ^bDepartment of Systems Biology, Harvard Medical School, Boston, MA 02115; ^cDepartment of Molecular Biology, Princeton University, Princeton, NJ 08540; and ^dNational Cancer Institute, Bethesda, MD 20892

Edited by Inder M. Verma, The Salk Institute for Biological Studies, La Jolla, CA, and approved March 18, 2014 (received for review March 7, 2014)

The long-held but erroneous assumption of never-ending rapid growth in biomedical science has created an unsustainable hypercompetitive system that is discouraging even the most outstanding prospective students from entering our profession—and making it difficult for seasoned investigators to produce their best work. This is a recipe for long-term decline, and the problems cannot be solved with simplistic approaches. Instead, it is time to confront the dangers at hand and rethink some fundamental features of the US biomedical research ecosystem.

NIGMS RFI - Major Barriers to Faculty Diversity and Potential Solutions in RFI Responses



<https://loop.nigms.nih.gov/2018/11/your-perspectives-strategies-for-enhancing-postdoctoral-career-transitions-to-promote-faculty-diversity/>

*Note: 89 unique responses were received

Agenda

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NIH UNITE

Enhancing Pathways for Physician Scientists

Assess present and future needs and career opportunities available to support physician-scientist trainees in diverse biomedical research sectors

R38/K38 Stimulating Access to Research in Residency

[RFA-HL-23-006](#)

[RFA-HL-23-007](#)

Enhanced K08, K23 salary contributions and research resources for clinician scientists

K99/R00 for Physician Scientists

[PAR-20-210](#)

MSTP Programs

NIH continuing to address challenges confronting early career clinician scientists

Next Generation of Researchers Initiative

Addressing longstanding challenges faced by researchers trying to embark upon and sustain independent research careers

Centralized Tracking of ESI
Applications & Awards

Funding Prioritization

Peer Review Considerations

- Less focus on pubs, grants, preliminary data; focus on potential

Targeted Early Career Policies
& Programs

- ESI extensions
- Childcare support
- ESI R01s (e.g., Katz)

Ruth L. Kirschstein NRSA

FY23, \$950M+ supporting 18,000+

Goal to ensure diverse pool of highly trained scientists in appropriate scientific disciplines, to address the Nation's biomedical, behavioral, & clinical research needs by **providing mentored research training opportunities to prepare predoctoral to postdoctoral fellows and trainees to conduct research and to prepare for future research careers**

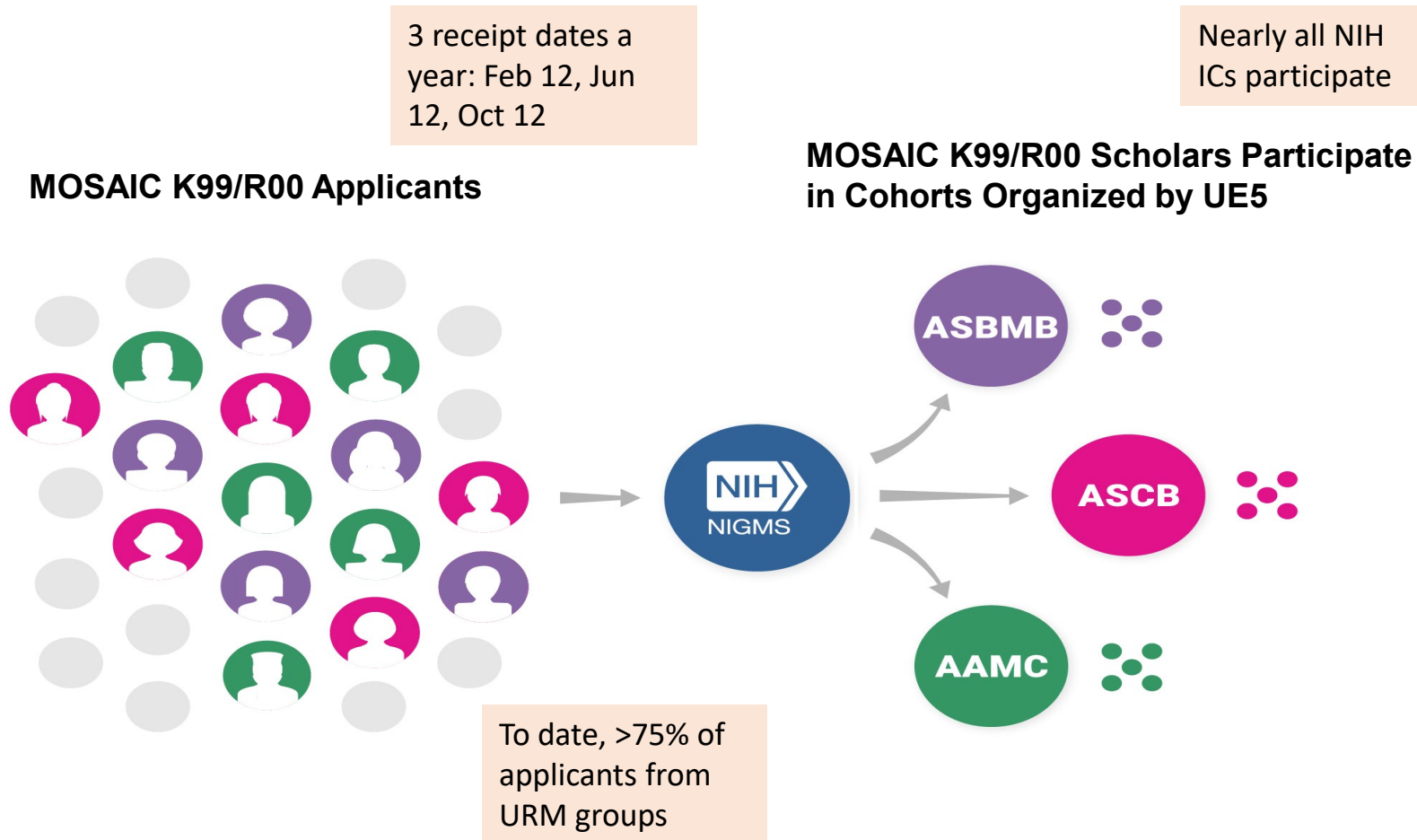
Institutional Training Programs (T32-Series):

- Awards to an institution supporting research training activities for graduate student and/or postdoc *trainees*

Individual Fellowships (F-Series)-require primary sponsor:

- Awards supporting predoc fellows pursuing combined clinical and research doctoral degree training **(F30)**
- Awards for graduate students working towards research doctoral degree **(F31 & F31 Diversity)**
- Awards for postdoctoral fellows working towards research independence **(F32)**

NIH Transition Awards: The MOSAIC K99/R00 to Promote Faculty Diversity



- **Enhance faculty diversity at research-intensive institutions**
- Funding transition from postdoc to independent research position
- Pair peer cohort network support + mentoring hubs, professional development
- 23 NIH ICOs support MOSAIC
- **Please also see more on K01 and F99/K00 predoc to postdoc transition award**

New Funding Opportunities:

Focus on Workforce
Diversity, ESI, New and At-
Risk Investigators

New Investigators to Promote
Workforce Diversity in Genomics,
Bioinformatics or Bioengineering
Imaging Research (R01)

*NHGRI, NIBIB

[RFA-HG-21-041](#)

Research Opportunities for New
and 'At-Risk' Investigators to
Promote Workforce Diversity (R01)

*NCCIH, NEI, NIAAA, NIDA, NIMH, NINR, NINDS

[PAR-22-181](#)

Key Administrative Supplements to Existing, Active Grants

[PA-23-189](#)

Diversity Supplements

- Diversify the biomedical research workforce via support of investigators from diverse & underrepresented groups **across career stages from undergraduate to faculty**
- **Could be a bridge to an F or K award**
- Funding based on career level (\$5K-100K)
- NIH supports ~1500/year (over \$100M)
- **Individuals from diverse backgrounds, including underrepresented racial and ethnic groups, individuals with disabilities, and women are always encouraged to apply**

Research Continuity Supplements

Supplements intended to promote research progress or productivity for researchers confronting critical life events

- Supplements to Promote Research Continuity and Retention of NIH **Mentored Career Development (K) Award Recipients and Scholars**
- Supplement for Continuity of Biomedical and Behavioral Research Among **First-Time Recipients of NIH Research Project Grant Awards**
- 1-year awards that provide up to \$70K/year

[NOT-OD-23-031](#)

[NOT-OD-23-032](#)

[NOT-OD-21-134](#)

Re-entry and Re-integration Supplements

Mentored research training opportunities to update or extend research skills/knowledge to re-establish research careers

- The **Re-entry Supplements** – funding investigators who've had at least 6 months (and no more than 8 years) of career interruption
- The **Re-integration Supplements** funding **for pre/postdoc students experiencing unsafe or discriminatory environments to transition to safer, more supportive research environments** and continue their graduate careers
- Part-time or full-time commitment
- Preparation to apply for F, K, R, etc

NIH Loan Repayment Program

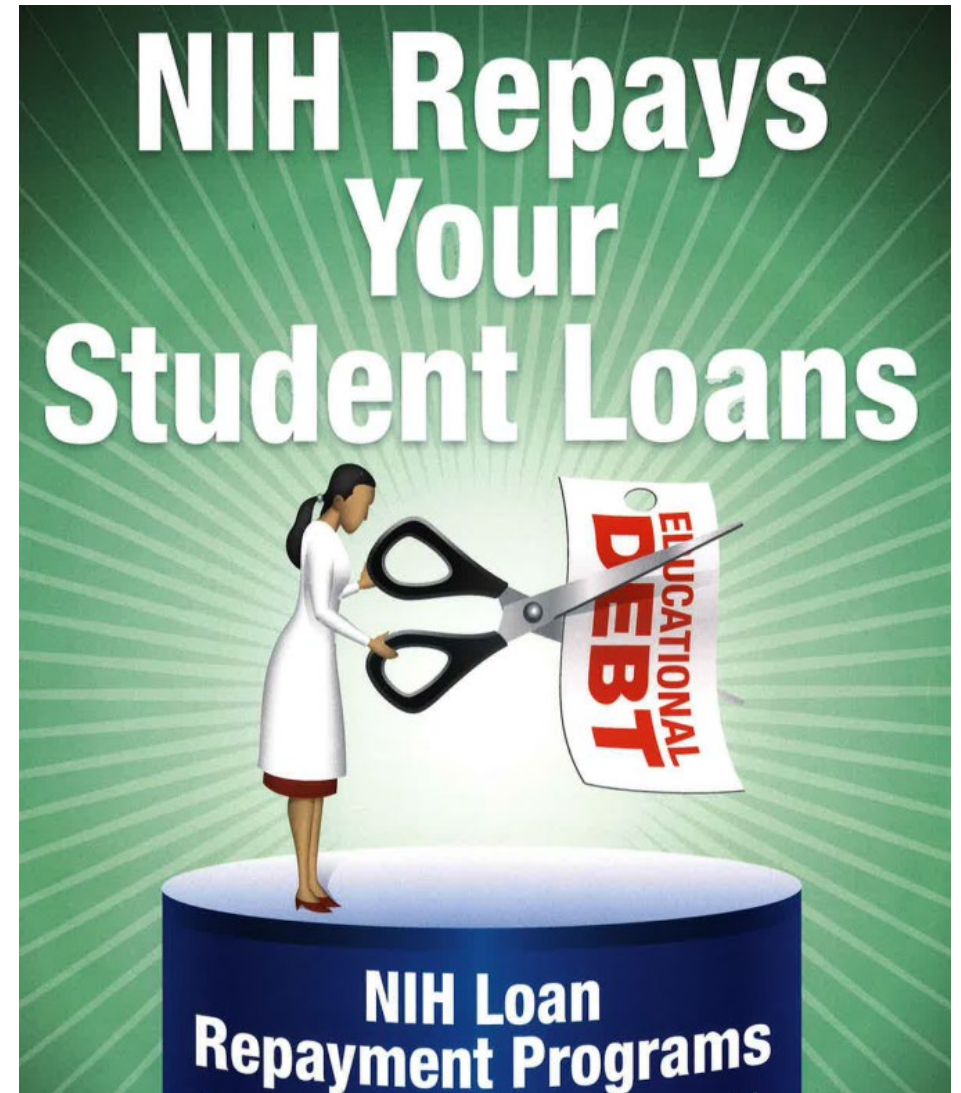
**6 LRP Subcategories
2-year Research Commitment**

**Up to \$50,000/year – renewals
eligible**

50% Success Rate

LRP Resources – www.lrp.nih.gov

**Extramural LRP
Application Deadline
November 15, 2023**



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NIH UNITE

The NIH UNITE Initiative



Established to address issues regarding DEIA inequities within the NIH and greater NIH-supported scientific community

U COMMITTEE	N COMMITTEE	I COMMITTEE	T COMMITTEE	E COMMITTEE
Understand stakeholder experiences through listening and learning	Facilitate and develop new research on HD/MH, external workforce, internal workforce	Improve the NIH culture and structure for equity, inclusion, and excellence	Foster transparency, communication, and accountability with internal and external stakeholders	Change policy, culture, and structure to promote diversity in the extramural research ecosystem

Extramural Research Ecosystem: Framework

Charge: identify & change NIH policies, culture and structures to promote extramural workforce diversity & inclusion and funding equity



UNITE E – 12 Current Implementation Teams

Funding Opportunities and Prizes

1. Institutional Climate Assessment and Action Plan Development Structured Institutional Needs Assessment and Action Plan Development
2. S10 Instrumentation Grant for RLLs
3. Expansion of SPAD Services and Activities for MSIs
4. Institutional Excellence in DEI Prize Implementation
5. Excellence in DEI Investigator Award Implementation

Policies

1. Incorporate Diversity and Mentoring Language into Parent T and F FOAs
2. Development of Guidance Language for ICs to use Diversity Principles in Funding Decisions
3. Institutional Promotion and Tenure and Recognition of DEI Policies
4. Developing “Do’s and Don’ts” for Writing Inclusive FOAs”
5. Harassment Portal (completed)

Other (Training and Outreach)

1. SBIR/STTR Diversity Supplement Matchmaking and Outreach Implementation
2. PO/SRO Training for Inclusive and Equitable Communications Implementation

Currently Available UNITE Funding Opportunities

- Science Education Partnership Awards (SEPA) ([PAR-23-137](#)) [Next Receipt Date Oct 5th](#)
 - Supporting innovation in preK-12 STEM education and increased STEM interest at earlier ages
 - 75% increase in NIH IC funding support
- Research With Activities Related to Diversity (ReWARD) ([PAR-23-122](#)) [Submit by Sept 23rd!](#)
 - 5-year combined research and mentoring **R01 grants** for currently unfunded PIs who have demonstrated excellence in research and promoting DEIA in biomedical research community
- Institutional Excellence in DEIA Prize Competition
 - \$1M in total prize funding for up to 10 prizes recognizing innovation and impact of programs resulting in inclusive excellence at academic institutions
- Instrumentation Grant (S10) Program for Resource-Limited Institutions ([PAR-23-138](#)) [Next Receipt Date June 2024](#)
 - Up to \$250K for purchase state-of-the-art equipment to enhance education and research capacity
 - Major users are not required to have existing NIH grant
- Strengthening Research Opportunities for NIH Grants (STRONG) ([PAR-23-144](#)) [Submit by Sept 18th!](#)
 - Institutional Needs Assessment and Action Plan Grant for RLIs to enhance research, institutional capacity
 - Up to 3 years (\$250K/yr)

Planned New Initiatives – Promoting Equity Across Extramural Institutions: Environment & Culture

Institutional Climate Assessment and Action Plan Development Grants

- Support for development of **climate surveys, critical self-studies & action plans addressing critical** institutional culture change needs

Institutional Promotion and Tenure and Recognition of DEI Policies

- Encouraging institutions to revise promotion, tenure and recognition policies to support DEIA activities



Planned New Initiatives – Promoting Equity Across Extramural Institutions: Policies & Procedures

New NIH PO/SRO Training Opportunities

- Anti-bias, implicit bias and other trainings for inclusive and equitable community interactions

New Reporting Mechanisms

- Update of harassment portal, new mandate to remove key personnel from NIH-funded grants
- New mechanisms to report bias in review (NIH-internal)

Development of Additional Guidelines

- Development of guidelines for writing inclusive FOAs and strategies to enhance portfolio diversity



Additional NIH Efforts Supporting Future of Biomedical Workforce

ACD WG on Re-envisioning NIH-Supported Postdoctoral Training

- **Assess and consider the factors influencing the scope and persistence of the issues impacting postdoc workforce**
- Review and compare the mechanisms, effects, & relevance of other approaches to postdoctoral training
- **Consider ways to increase support and retention of postdoctoral trainees** on key issues related to quality-of-life and work-life balance
- Engage key parties, both internal and external to the NIH, to understand and strengthen the U.S. postdoctoral training system

CSR Diversifying and Simplifying Fellowship Application Review

- Advise CSR on changes in language of the fellowship review criteria that would **ensure the most fair, objective and rigorous assessment of the candidate potential** to become a well-trained, strong scientist to address our nation's biomedical, behavioral, and clinical research needs.
- **Ensure a fair, objective, and rigorous assessment of fellowship candidates**

Wrapping Up!

CSR Early Reviewer (ECR) Program

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

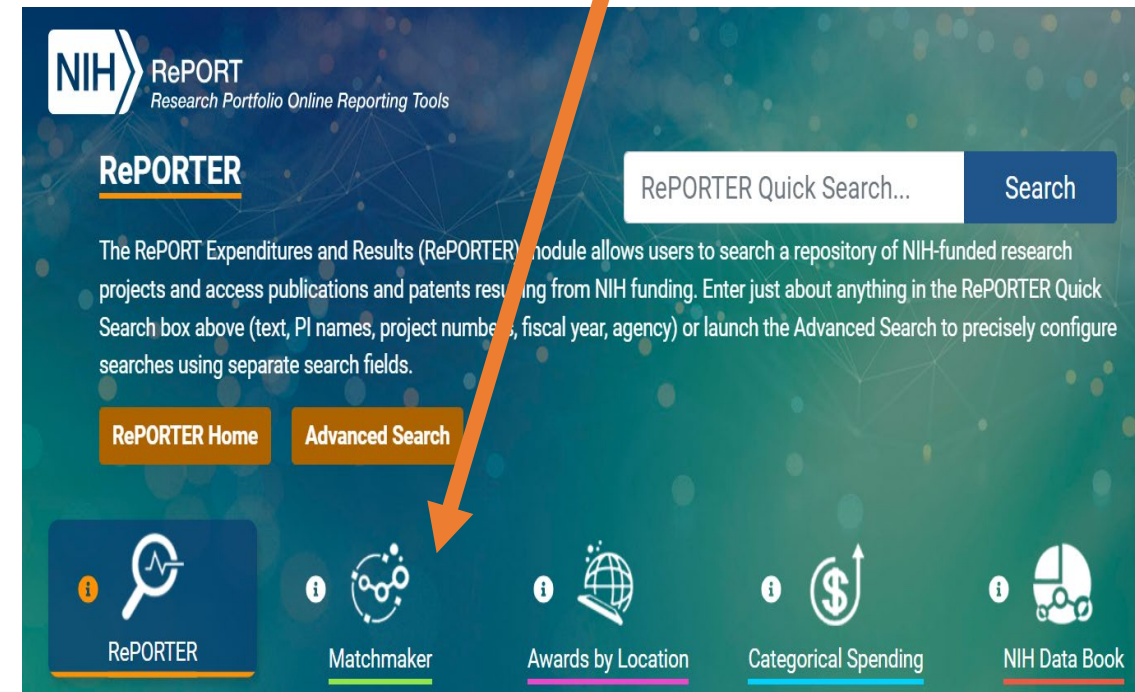
Benefits of ECR

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

Grants and Funding – Grants.nih.gov



- Info about navigating grants process, policy compliance
- Resources for researchers, small business, etc.



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Extramural Diversity

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OPEN MIKE

Helping connect you with the NIH perspective, and helping connect us with yours.

More Data on Applications Submitted During the Pandemic

By Mike Lauer

October 20, 2021

Twice since the onset of the public health emergency we have taken a look at the number of research applications submitted together with some demographic information on the affiliated scientists. We are continuing to follow this analysis again here, focusing on NIH R01-equivalent and RPG application patterns during April 9 and August 8 over the past five years.



Dr. Michael Lauer is NIH's Deputy Director for Extramural Research, serving as the principal

Virtual NIH Grants Conference & PreCon Events: Demystifying the NIH Grants Process!

- Calling all Research Administrators, Researchers, Grant Writers, PostDocs, Trainees, and others in the research community!!
- Bringing the extramural research community together with NIH experts to **share knowledge, perspectives, guidance, and resources on the NIH grants process and policies**

Now Fully Virtual!

- 25 Sessions with live Q&A - [Session resources](#) now available!
- 45 NIH Institute and Office Exhibitors
- NIH Program, Grants Management, Review, & Policy Officials
- 1:1 Meet the Experts chats
- Peer-to-Peer Networking opportunities
- Downloadable resources

<https://grants.nih.gov/learning-center/conference>

Thank You!

Division of Biomedical Research Workforce Office of Extramural Research

- Research Training/Career Development Questions: [nihtrain@mail.nih.gov](mailto:.nihtrain@mail.nih.gov)
- Questions about ESI extension requests: esi_extensions@od.nih.gov
- ESI Policies, FAQs Podcasts: <https://grants.nih.gov/policy/early-stage/index.htm>
- DBRW website: <https://researchtraining.nih.gov/>
- Extramural Diversity Website: <https://extramural-diversity.nih.gov/>

