



**GREAT MINDS THINK DIFFERENTLY**

# How Does Diversity Impact Biomedical Science?

EVMS Internal Medicine Grand Rounds

Marie A. Bernard, M.D., NIH Chief Officer for Scientific Workforce Diversity (COSWD)



**National Institutes of Health**

*Office of the Director*

*Chief Officer for Scientific Workforce Diversity*



- Diversity's Impact on Science
- DEIA Strategic Plan
- COSWD
- UNITE
- Real-time applications



- **Diversity's Impact on Science**
- DEIA Strategic Plan
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- UNITE
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# THE NEED FOR DIVERSE PERSPECTIVES IN SCIENCE



Bernard MA, Johnson AC, Hopkins-Laboy T, Tabak LA. Nature Medicine DOI: 10.1038/s41591-021-01532-1. (2021)

# DIVERSITY RESULTS IN MORE PRODUCTIVE COLLABORATIONS

**Homophily (researchers publishing with co-authors of the same ethnicity) associated with publication in lower-impact journals, with fewer citations**

Variables	Two-authored	Three-authored	Four-authored	Ten-authored
Same ethnicity (All Authors)	0.43 (0.49)	0.15 (0.36)	0.08 (0.26)	NS*
Homophily Index	0.70 (0.25)	0.54 (0.22)	0.46 (0.20)	0.27 (0.14)
Impact Factor	2.32 (2.90)	2.59 (3.00)	2.90 (3.23)	4.57 (4.68)

\*NS – Not Stated

Source: Freeman & Huang (2015). Collaborating with people like me: ethnic co-authorship within the US. *Journal of Labor Economics* 33(3): S289-S318.

# DIVERSITY IMPROVES SCIENCE

A study of 2.5 million scientific papers shows various types of diversity leads to higher impact factor publications & greater number of citations

Variables	Dependent Variables	
	Impact Factor	Citation Percentile
<b>Lack of Ethnic Diversity</b> Homophily Factor	-0.153*** (0.042)	-0.833** (0.422)
<b>Geographic Diversity</b> Number of Addresses on Paper	0.044*** (0.006)	0.346*** (0.061)
<b>Information Diversity</b> Number of References on Paper	0.015*** (0.001)	0.400*** (0.012)

**Note:** Sample presented from PubMed for 4-authored papers. Most findings are similarly significant across 2-authored and 3-authored papers for PubMed and Web of Science. Source: Freeman & Huang (2015). Collaborating with people like me: ethnic co-authorship within the US. Journal of Labor Economics 33(3): S289-S318.

# DIVERSITY LEADS TO NEW DISCOVERIES

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- Bird song was initially a male dominated scientific area
- It was thought that bird song followed particular patterns, based on studies of male birds
- Female scientists found gender-based differences in bird song



Source: Haynes et al. The role of diversity in science: a case study of women advancing female birdsong research. *Animal Behaviour* Volume 168, October 2020, Pages 19-24.



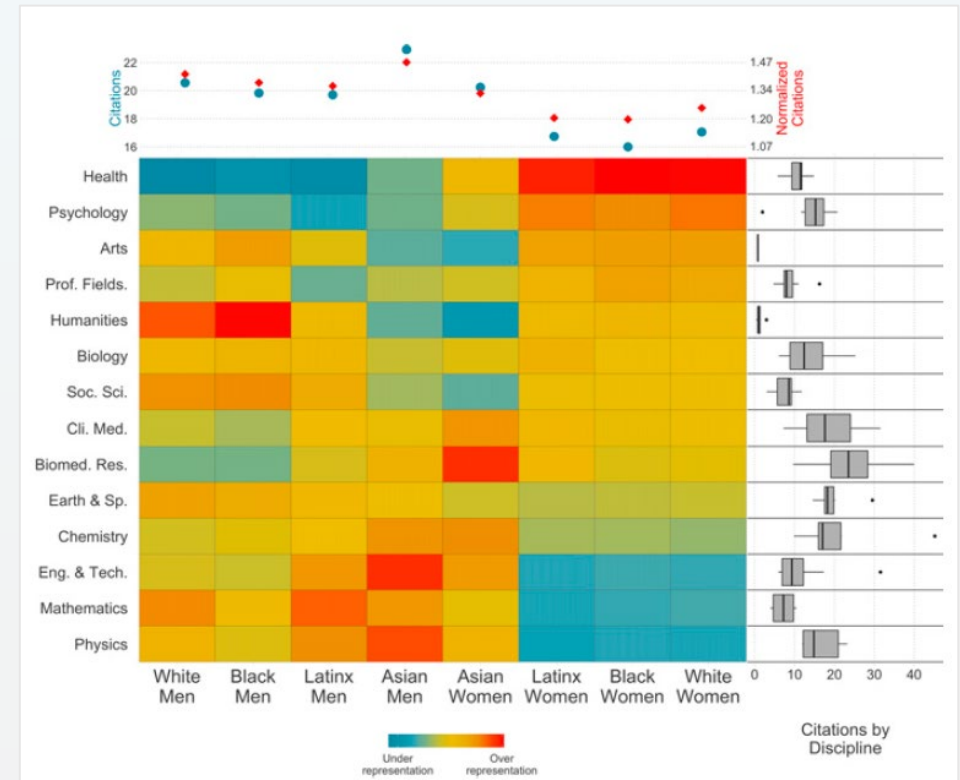
# LACK OF DIVERSITY CONSTRAINS SCIENTIFIC ADVANCEMENT

*“[...] a different body of knowledge would be produced in the absence of inequities and [...] this body would more closely reflect the spectrum of topics relevant across society.”*

## Suggests combined strategy

- Resources for historically underfunded research areas
- Connection of scientists from URGs to high-prestige networks and topics

## Scholarly impact and distribution of race and gender of authors by field

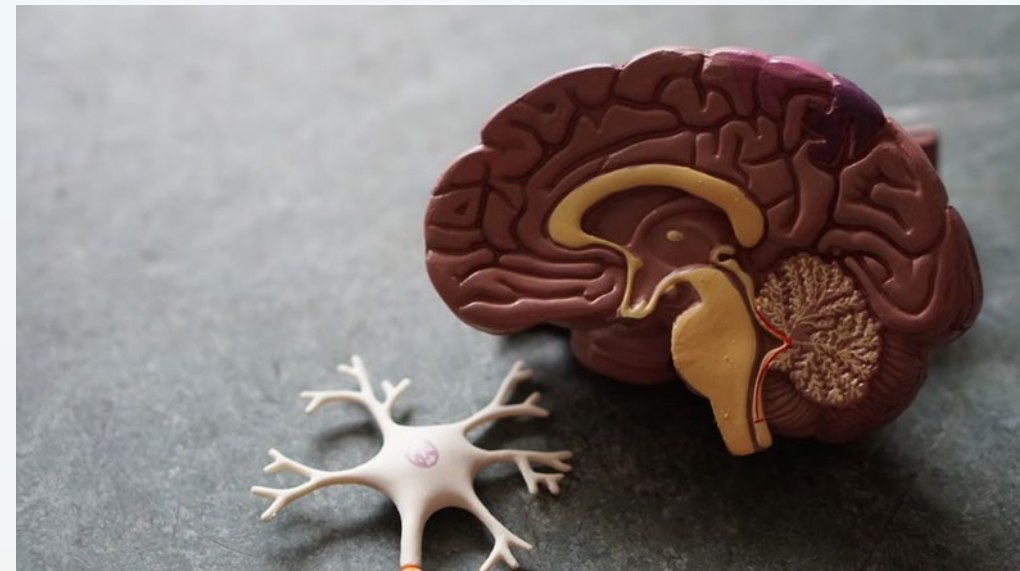


Source: Kozlowski et al. (2022). Intersectional inequities in science. *PNAS* 119(2): e21132067119.



# The Case of Aducanumab

- Aducanumab approved by FDA through accelerated approval pathway.
- FDA approved based on effectiveness of aducanumab in reducing amyloid plaques.
- Clinical trials limited to people diagnosed with mild cognitive impairment or early-stage Alzheimer's.
- After initial broad indications, revised labeling to be consistent with testing
- Subsequently approved for Medicare coverage *when* utilized in a clinical trial

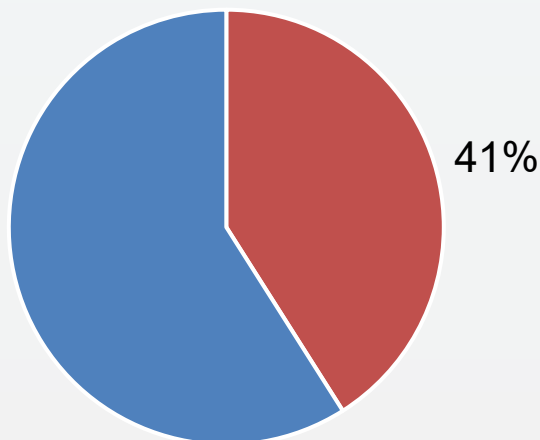


# The Case of Aducanumab

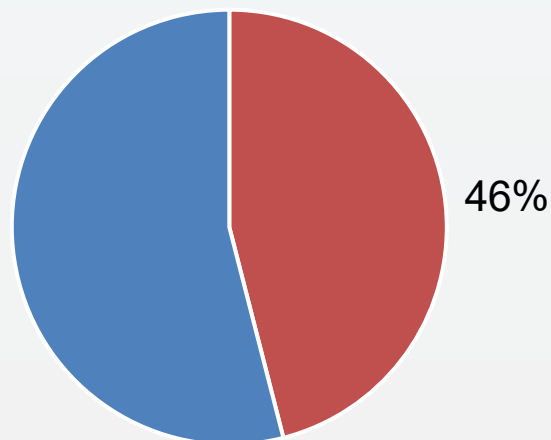
- URGs more often experience missed or delayed diagnosis of dementia than Whites.

***Proportion of missed or delayed diagnoses of dementia in claims data by race/ethnicity (red = missed/delayed)***

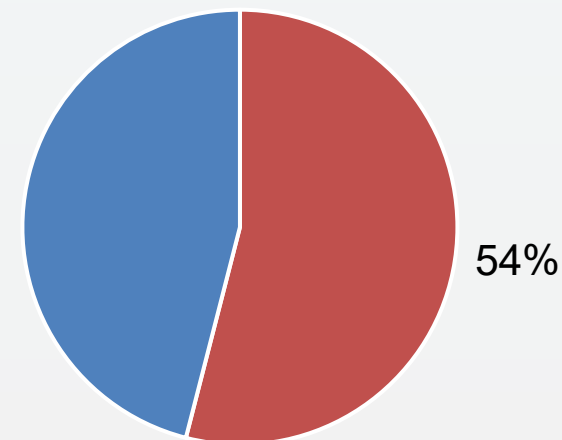
Non-Hispanic White



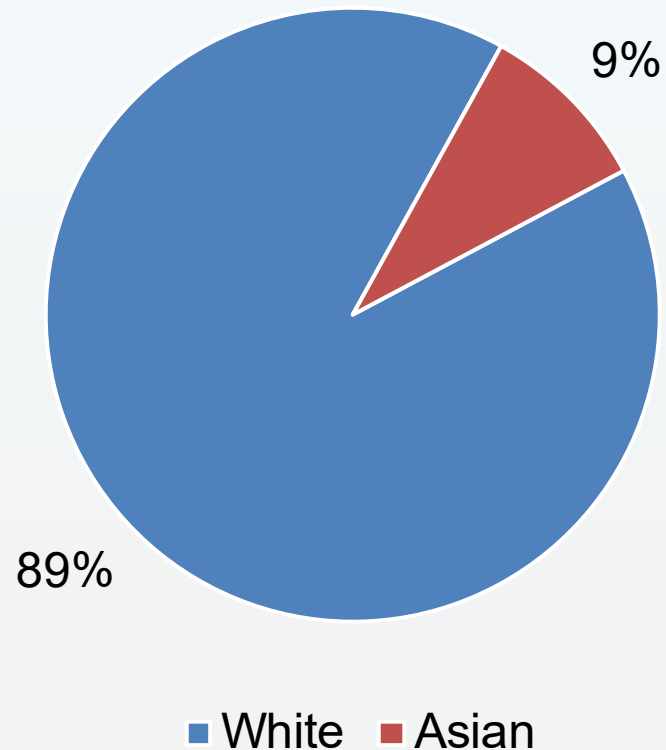
Non-Hispanic Black



Hispanic



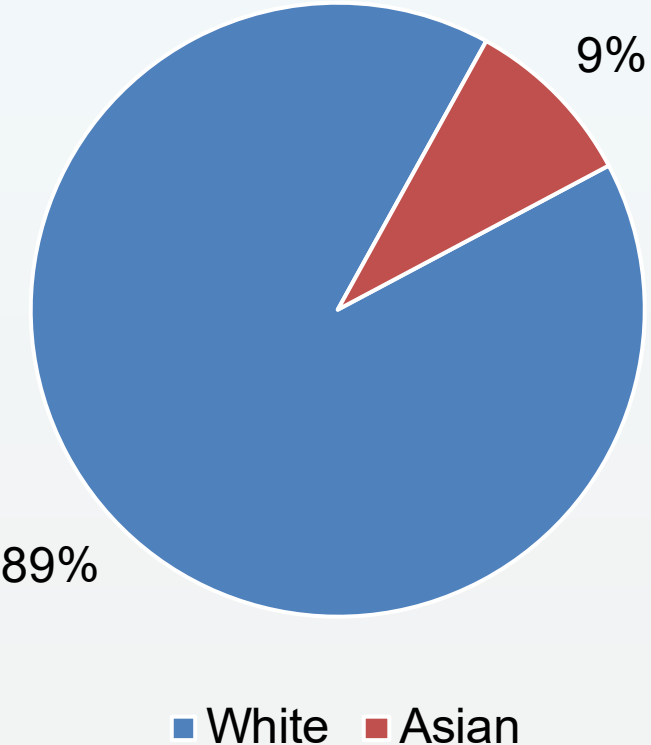
# The Case of Aducanumab



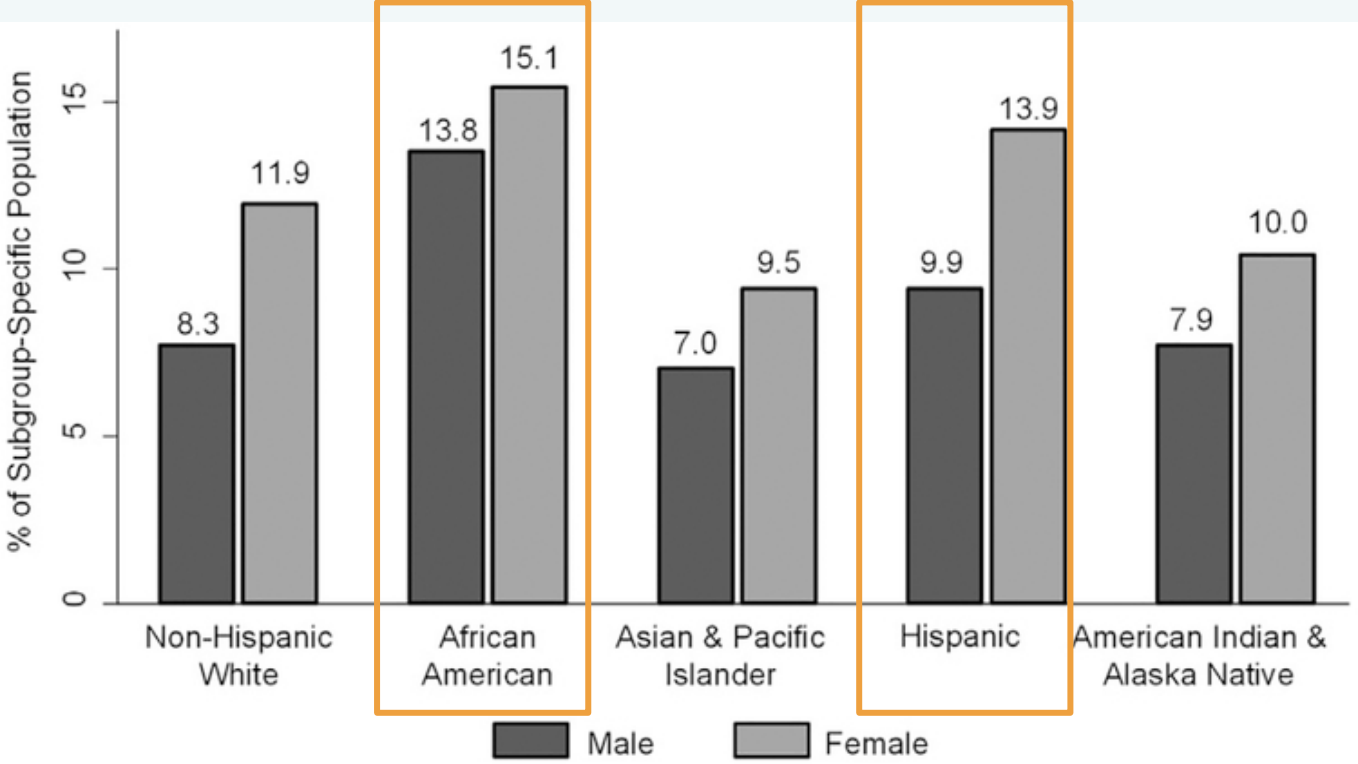
In Biogen's phase 3 trials, **89% of participants were White** and 9% were Asian.

Source: [November 6, 2020: Meeting of the Peripheral and Central Nervous System Drugs Advisory Committee Meeting Announcement - 11/06/2020 - 11/06/2020 | FDA](#)

# The Case of Aducanumab



However, in the US population, Alzheimer’s prevalence **differs by race and ethnicity**.



Source: November 6, 2020: Meeting of the Peripheral and Central Nervous System Drugs Advisory Committee Meeting Announcement - 11/06/2020 - 11/06/2020 | FDA

Source: Matthews, K. A., Xu, W., Gaglioti, A. H., Holt, J. B., Croft, J. B., Mack, D., & McGuire, L. C. (2019). Racial and ethnic estimates of Alzheimer’s disease and related dementias in the United States (2015-2060) in adults aged ≥65 years. *Alzheimer’s & dementia : the journal of the Alzheimer’s Association*, 15(1), 17–24. <https://doi.org/10.1016/j.jalz.2018.06.3063>

# The Case of Aducanumab

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- **Increasing diversity in the scientific workforce** is essential in the drug development process to address the needs of underrepresented groups.

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B/AA, Hispanic, and Native-American physicians more likely than white physicians to practice in underserved communities (1).

1 - Kington R, Tisnado D, Carlisle DM. Increasing racial and ethnic diversity among physicians: an intervention to address health disparities? In Smedley BD, Stith AY, Colburn L, Evans CH, (eds.). *The Right Thing to Do, The Smart Thing to Do: Enhancing Diversity in the Health Professions*. Washington, DC: National Academy Press, 2001.

# The Case of Aducanumab

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B/AA, Hispanic, and Native-American physicians more likely than white physicians to practice in underserved communities (1).



Racial and ethnic minority patients who have a choice are more likely to select health care professionals of their own racial or ethnic background (2).

1 - Kington R, Tisnado D, Carlisle DM. Increasing racial and ethnic diversity among physicians: an intervention to address health disparities? In Smedley BD, Stith AY, Colburn L, Evans CH, (eds.). *The Right Thing to Do, The Smart Thing to Do: Enhancing Diversity in the Health Professions*. Washington, DC: National Academy Press, 2001.

2 - Saha S, Taggart SH, Komaromy M, Bindman AB. Do patients choose physicians of their own race? *Health Affairs*. 2000; 19: 76-83.





- Diversity's Impact on Science
- **DEIA Strategic Plan**
- COSWD
- UNITE
- Real-time applications

## Report Language

Report 116-450 on H.R. 7614: *Diversity at NIH Working Group and Strategic Plan* requires NIH to develop a strategic plan to:

- Include short- and long-term goals to address racial, ethnic, and gender disparities at NIH
- Identify and address barriers in access to NIH funding by investigators researching health disparities

## Executive Orders

e.g., EO 14035: *Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce*

Background

## Mission & Vision Statements

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- **Mission:** NIH will embrace, integrate, and strengthen diversity, equity, inclusion, and accessibility (DEIA) across all NIH activities in service of the NIH mission.
- **Vision:** NIH will be a people-centered organization, representative of our Nation's diversity, where all people feel a sense of belonging as they advance the NIH mission.



**Objective 1: Grow and Sustain DEIA through Structural and Cultural Change**



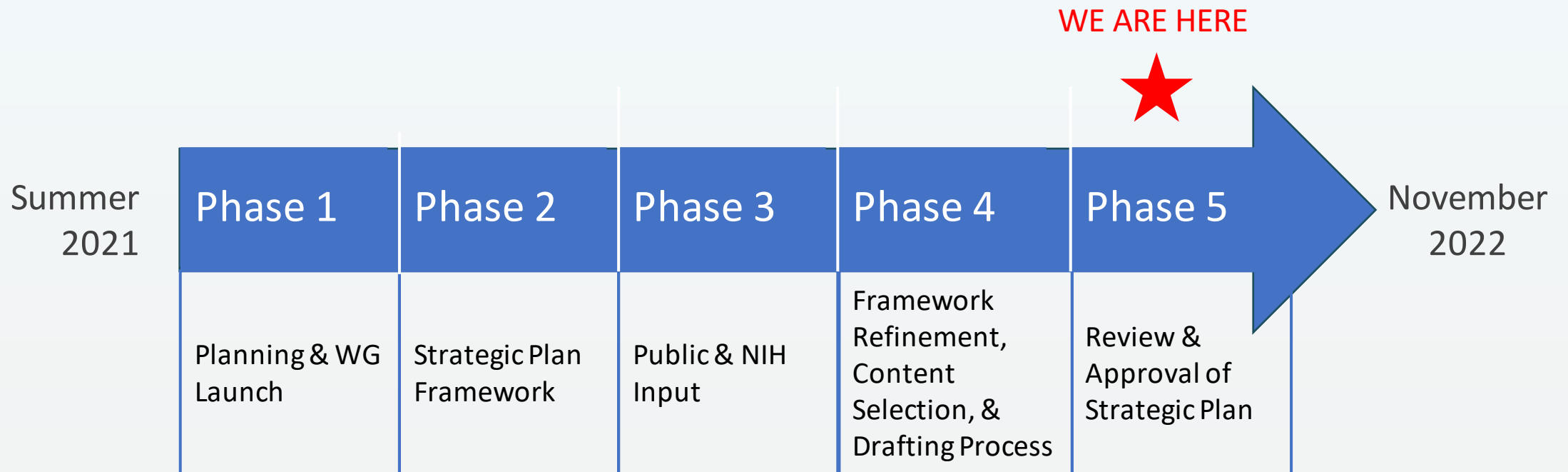
**Objective 2: Implement Organizational Practices to Center and Prioritize DEIA in the Workforce**



**Objective 3: Advance DEIA through Research**

# DEIA Strategic Plan Framework

# Process & Timeline



# Related NIH-Wide Strategic Plans



# NIH DEIA Activities

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# Native American Research Centers for Health (NARCH)

- The program supports opportunities for conducting research and career enrichment to meet health needs prioritized by American Indian/Alaska Native (AI/AN) tribes or tribally based organizations.





# Community Engagement Alliance (CEAL) Against COVID-19 Disparities



- CEAL is an NIH-wide effort to advance outreach and engagement efforts in ethnic and racial minority communities disproportionately affected by the COVID-19 pandemic.
- The CEAL research teams will leverage established relationships between NIH-funded researchers and local community-engaged leaders to help reach underserved communities that might not be located near COVID-19 clinical research recruitment sites.



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GREAT MINDS THINK DIFFERENTLY

# NIH Chief Officer for Scientific Workforce Diversity (COSWD) Strategic Plan



National Institutes of Health  
Office of the Director  
Chief Officer for Scientific Workforce Diversity

FISCAL YEARS

# 2022-2026

# CHIEF OFFICER FOR SCIENTIFIC WORKFORCE DIVERSITY (COSWD)

## VISION

To enable NIH and NIH-funded institutions to benefit from the nation's full range of talent and foster creativity and innovation in science.

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To be the NIH thought leader in the science of scientific workforce diversity, using evidence-based approaches to catalyze cultures of inclusive excellence.

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**BUILD** the evidence – using NIH as a test bed



**DISSEMINATE** the evidence – across the biomedical research workforce ecosystem



**ACT** on the evidence – by advancing integrated, institution-wide systems



# 21<sup>st</sup> Century Scholars Program

- Modeled after successful Distinguished Scholars Program, applied to extramural workforce
- Designed to build self-reinforcing culture of mentoring and support at NIH
- Focus on the science of scientific workforce diversity
- Inaugural cohort graduated September 21, 2022



# HOW DO DIVERSITY SUPPLEMENTS IMPACT CAREER SUCCESS?

Thursday, November 17, 2022

1:30 –3:00 p.m. ET



**Albert Avila,**  
**PhD.,**

Director, Office of  
Diversity and Health  
Disparities and  
Deputy Director,  
Office of Research  
Training, NIDA, NIH



**Jamelle Banks,**  
**MPH,**

Senior Health  
Science Policy  
Analyst, Office of  
Planning, Analysis,  
and Evaluation, NIA,  
NIH



**Dowin Boatright,**  
**MD, MBA, MHS.,**

Assistant Professor  
Adjunct; Officer for  
Diversity and  
Inclusion,  
Emergency  
Medicine, Yale  
University School of  
Medicine



**Ericka Boone,**  
**PhD**

Director, Division  
of Biomedical  
Research  
Workforce, Office  
of Extramural  
Research, NIH



**Michelle Jones-**  
**London, PhD.,**

Chief, Office of  
Programs to  
Enhance  
Neuroscience  
Workforce  
Diversity, NINDS,  
NIH



**Jose Alejandro**  
**Luchsinger, MD**

Stuart Professor of  
Medicine and  
Epidemiology  
Vice Chair for Clinical  
and Epidemiological  
Research  
Columbia University  
Irving Medical Center

# CATALYZING RECOGNITION OF DEIA MENTORING

- **Notice of Special Interest (NOSI):  
Administrative Supplements to Recognize  
Excellence in Diversity, Equity, Inclusion, and  
Accessibility (DEIA)**
  - Notice Number: NOT-OD-22-057
- Supplements to already funded research
- Prioritizing mentors who will enhance outreach to scientists in keeping with the NIH NOSI in diversity





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# The NIH UNITE Initiative

Driven by events of 2020

- Disparate morbidity and mortality of the COVID-19 pandemic
- The murder of George Floyd
- Shortly after public unveiling, the killings of Asian women in Atlanta

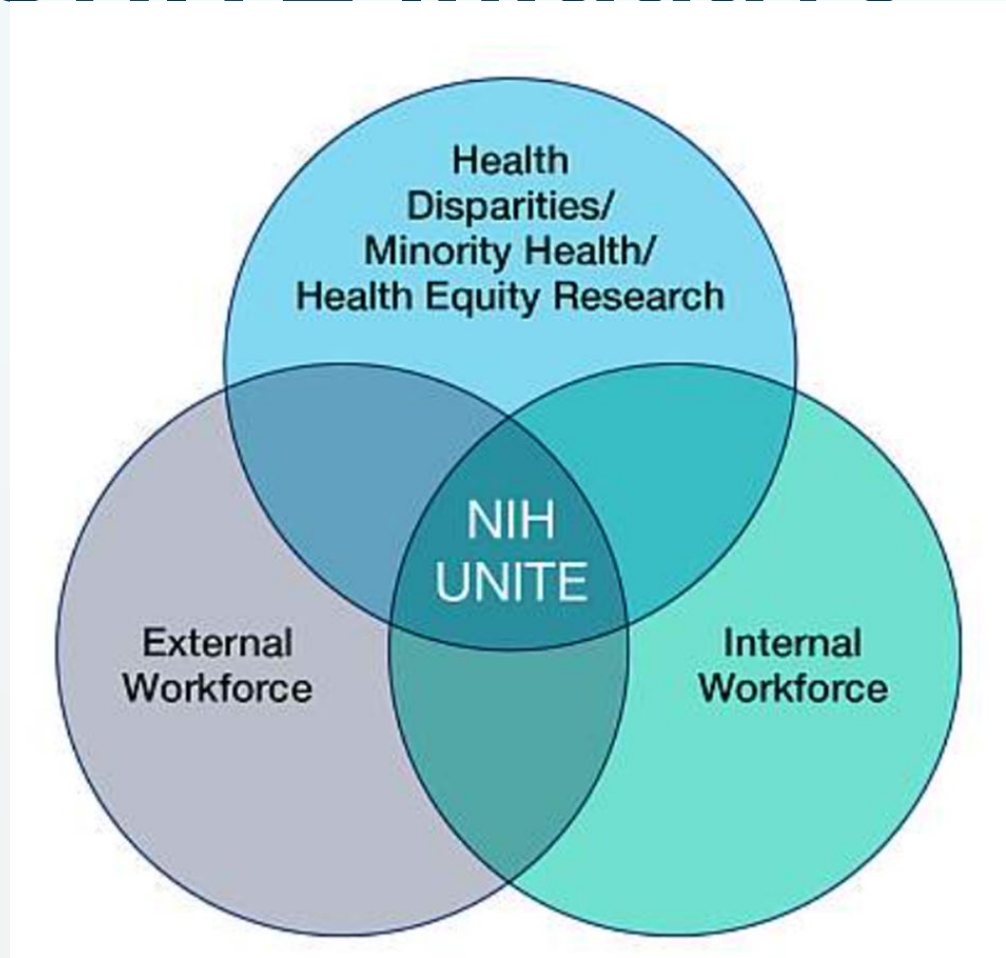


# The NIH UNITE Initiative

- This brought into sharp relief the ongoing reality of **racial and ethnic injustice** in our country
- **We could not be silent.**
- We developed a **shared commitment to address structural racism** in the biomedical research enterprise.



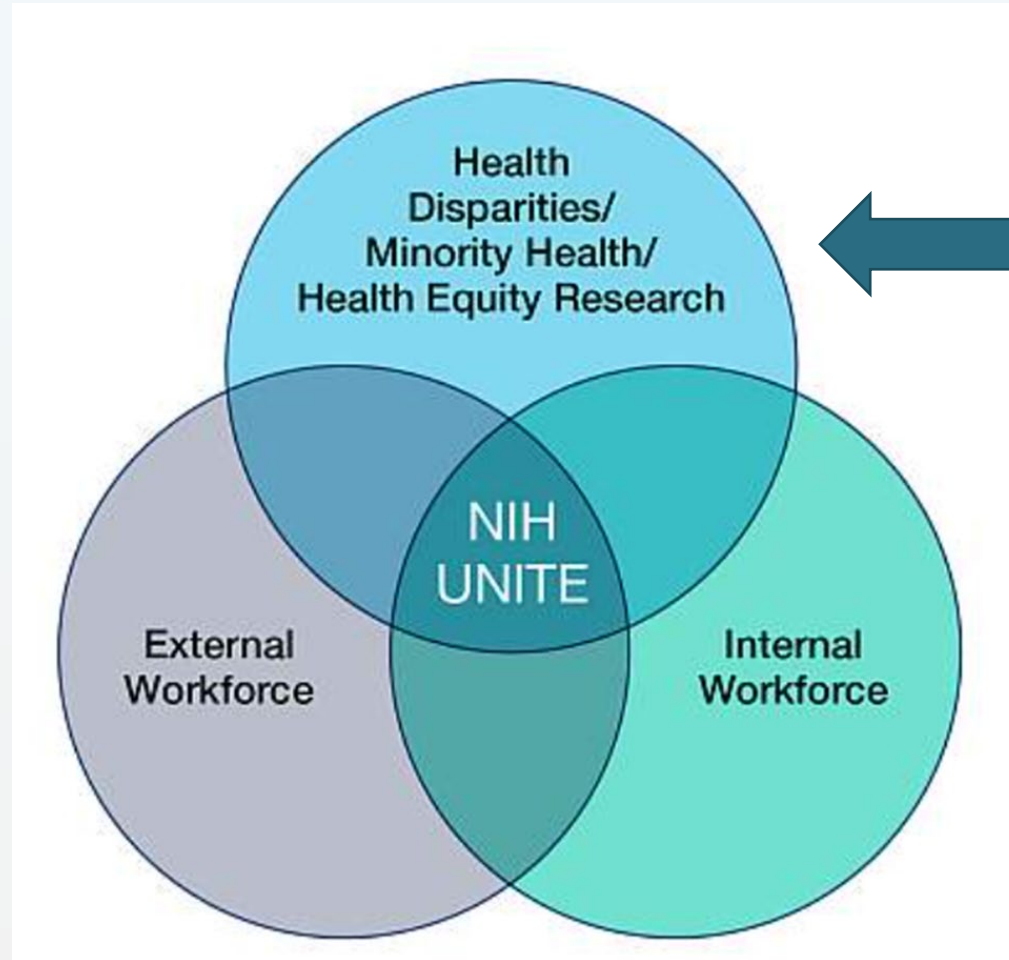
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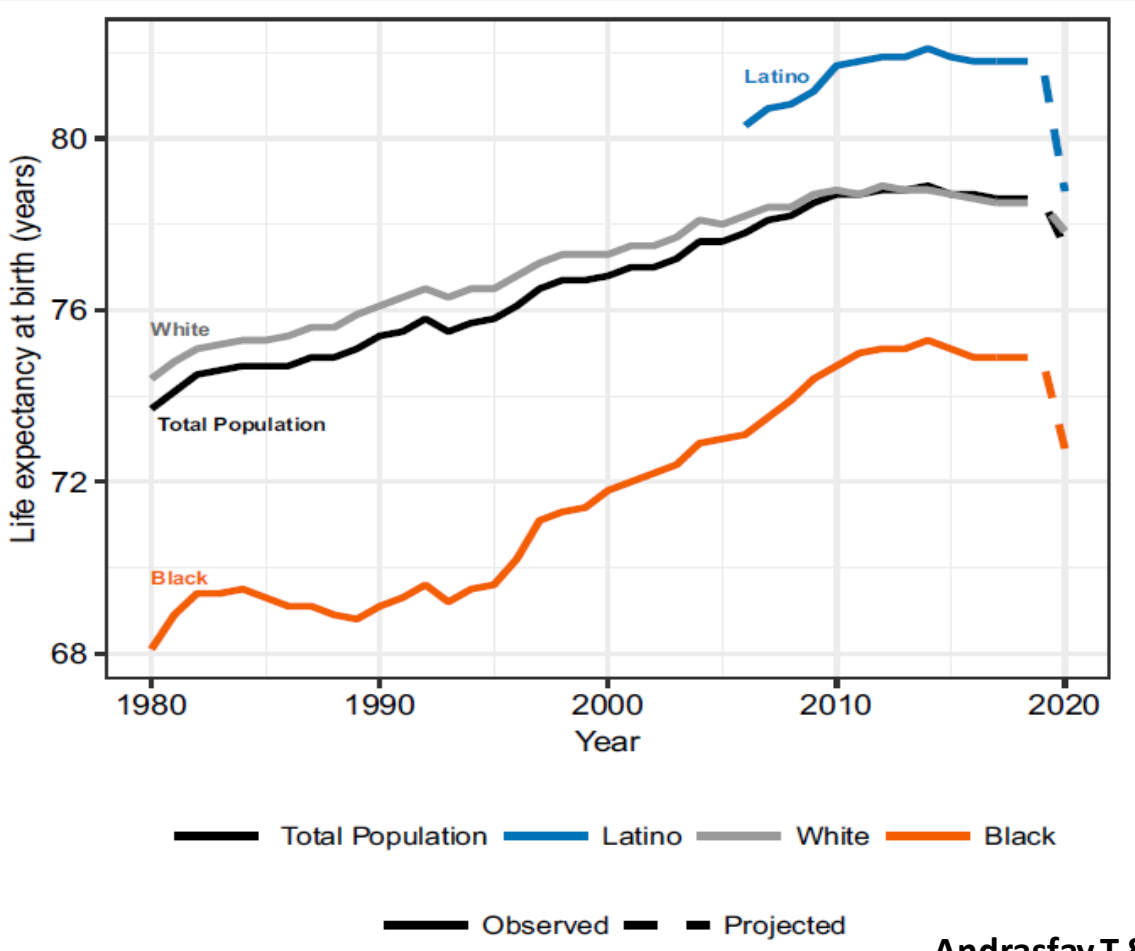
Bernard, MA Johnson AC, Hopkins-Laboy T, Tabak LA. Nature Medicine. [DOI: 10.1038/s41591-021-01532-1](https://doi.org/10.1038/s41591-021-01532-1) (2021)



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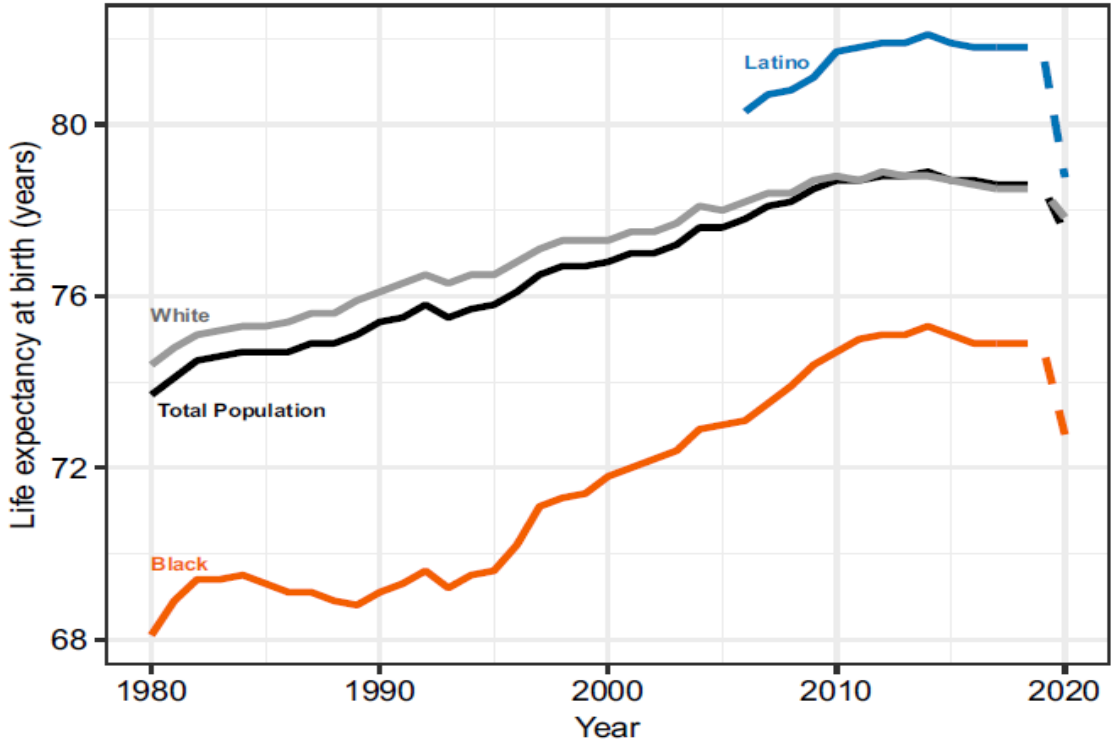


# Reductions in U.S. Life Expectancy due to COVID-19



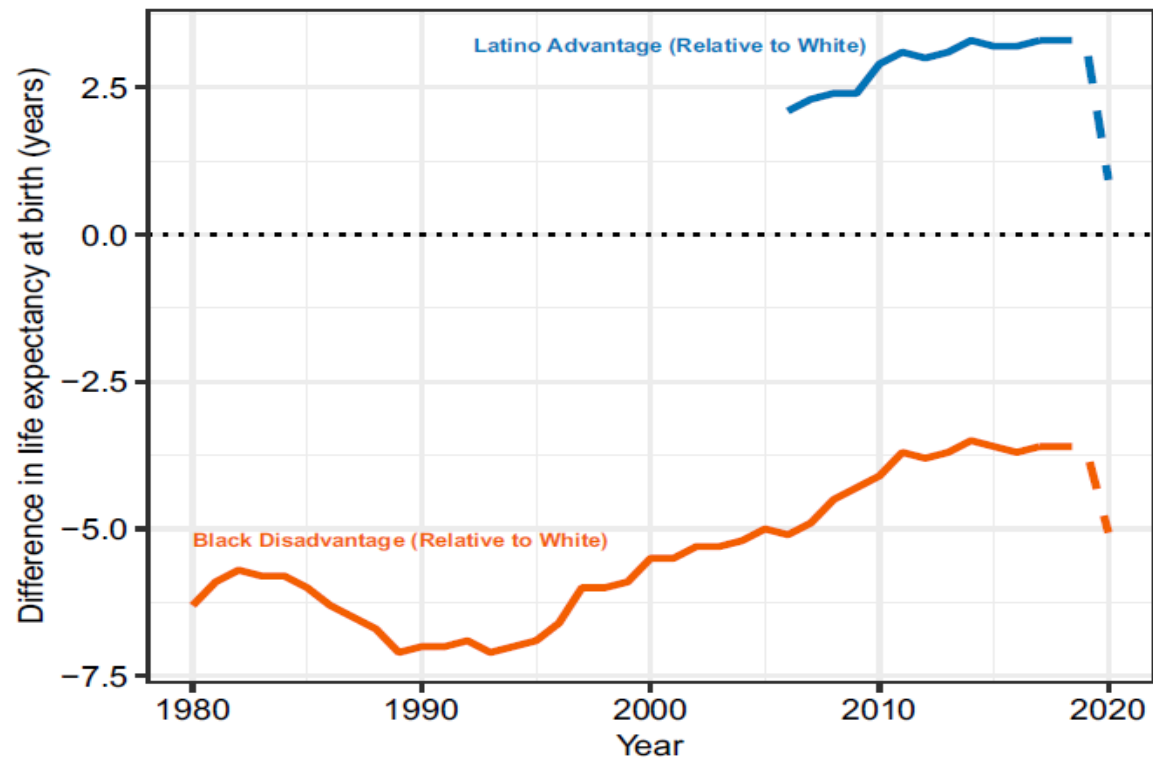
Andrasfay T & Goldman N PNAS 2021

# Reductions in U.S. Life Expectancy due to COVID-19



— Total Population — Latino — White — Black

— Observed — Projected



— Latino-White — Black-White

— Observed — Projected

Andrasfay T & Goldman N PNAS 2021

# Action



## NIH Common Fund Transformative Research to Address Health Disparities and Advance Health Equity – Committed up to \$58M

Two FOAs released 3/26/21: **11 awards announced 10/13/21**

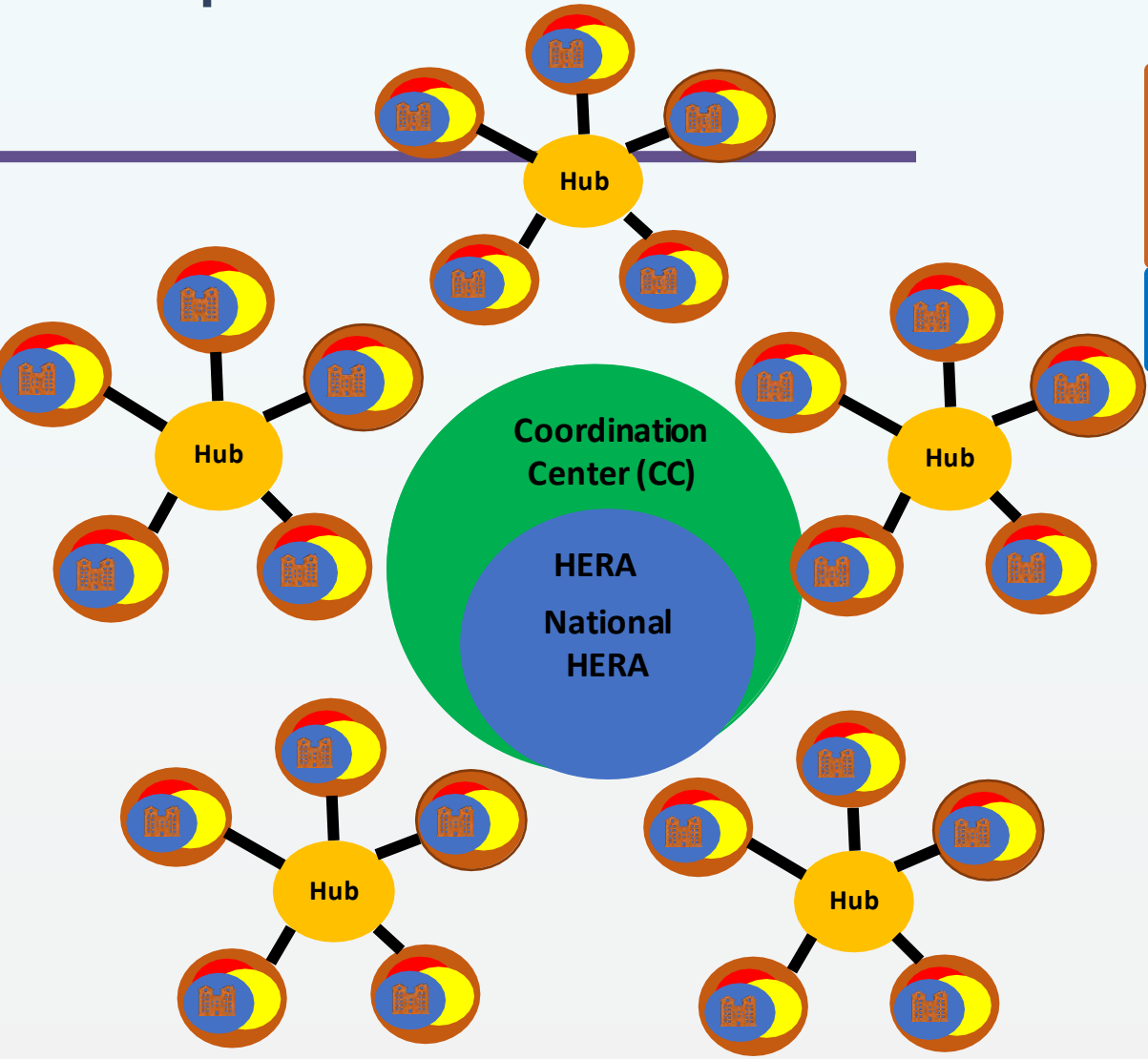
- 1) RFA-RM-21-021 Transformative Research to Address Health Disparities and Advance Health Equity (U01 Clinical Trial Allowed) – **6 awards**
- 2) RFA-RM-21-022 Transformative Research to Address Health Disparities and Advance Health Equity at Minority Serving Institutions (U01 Clinical Trial Allowed) - **5 awards; additional competition FY 22**

# Community Partnerships to Advance Science for Society (ComPASS)

Lead ICOs: NIMH, NIMHD, NINR, ORWH, THRO

Working Group: CSR, NCI, NEI, NHGRI, NHLBI, NIA, NIAMS, NICHD, NIDA, NIDDK, NIEHS,  
NIMH, NIMHD, NINDS, NINR, NLM, OBSSR, ODP, ORWH, SGRMO, THRO

# Proposed ComPASS Initiatives



Community-Driven, Health Equity Structural Interventions

Local Health Equity Research Assembly (LocalHERA)

Coordination Center with

National Health Equity Research Assembly (NationalHERA)

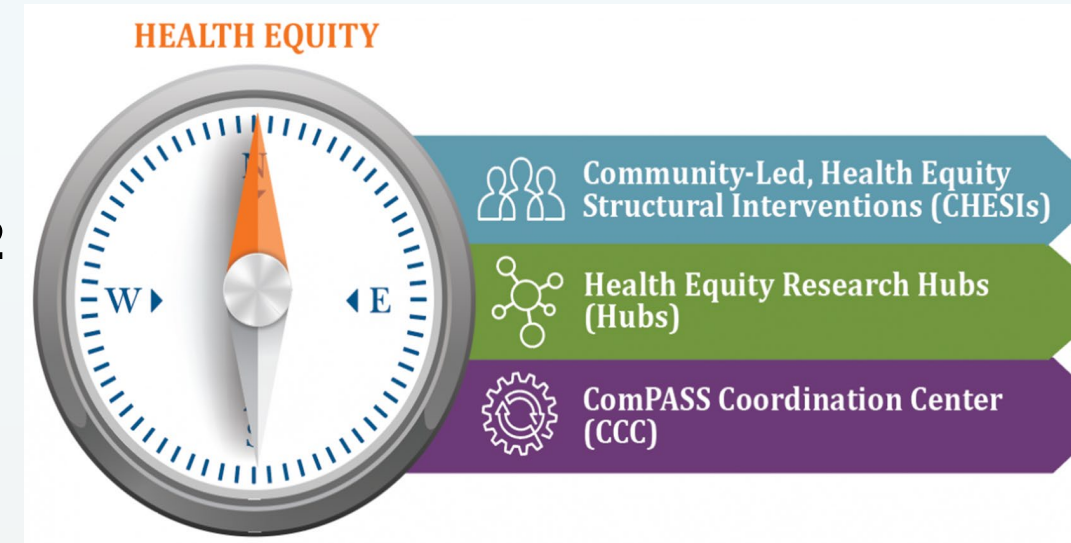
Health Equity Research Hubs for Scientific Support and Partnership



# Community Partnerships to Advance Science for Society (ComPASS)

## FUNDING OPPORTUNITIES

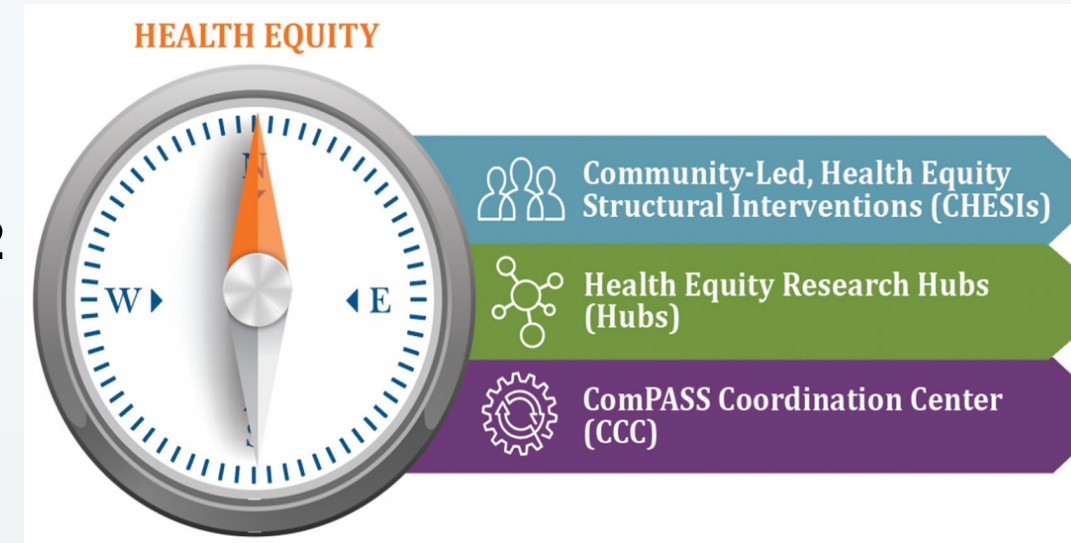
- [OTA-22-007](#): ComPASS Program: Community -Led, Health Equity Structural Interventions Initiative
  - **Required Letter of Intent Due: November 18, 2022**



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## FUNDING OPPORTUNITIES

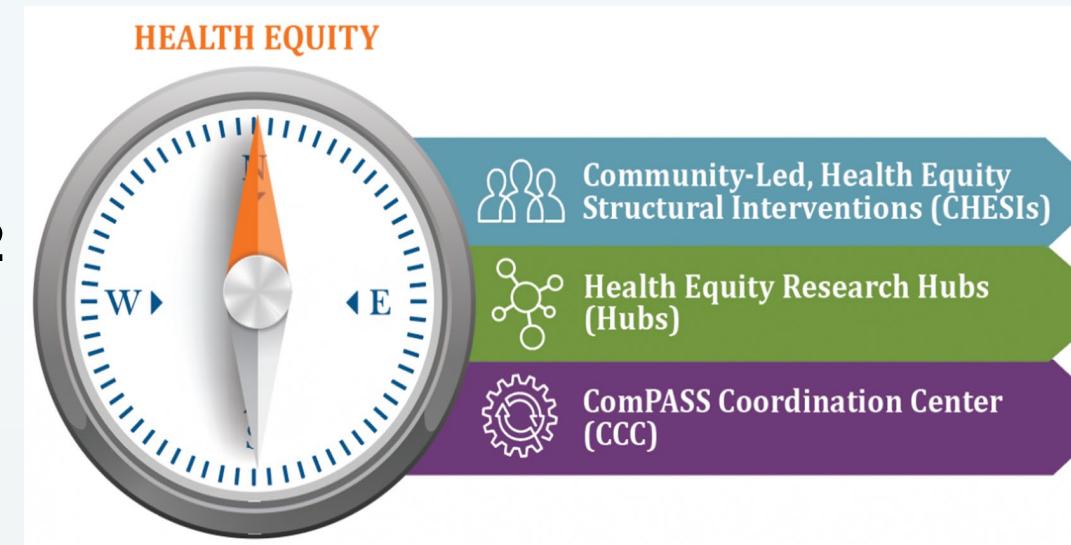
- [OTA-22-007](#): ComPASS Program: Community -Led, Health Equity Structural Interventions Initiative
  - **Required Letter of Intent Due: November 18, 2022**
- [RFA-RM-23-001](#): Community Partnerships to Advance Science for Society (ComPASS): Coordination Center (U24 - Clinical Trial Optional)
  - **Application Due: January 27, 2023**



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## FUNDING OPPORTUNITIES

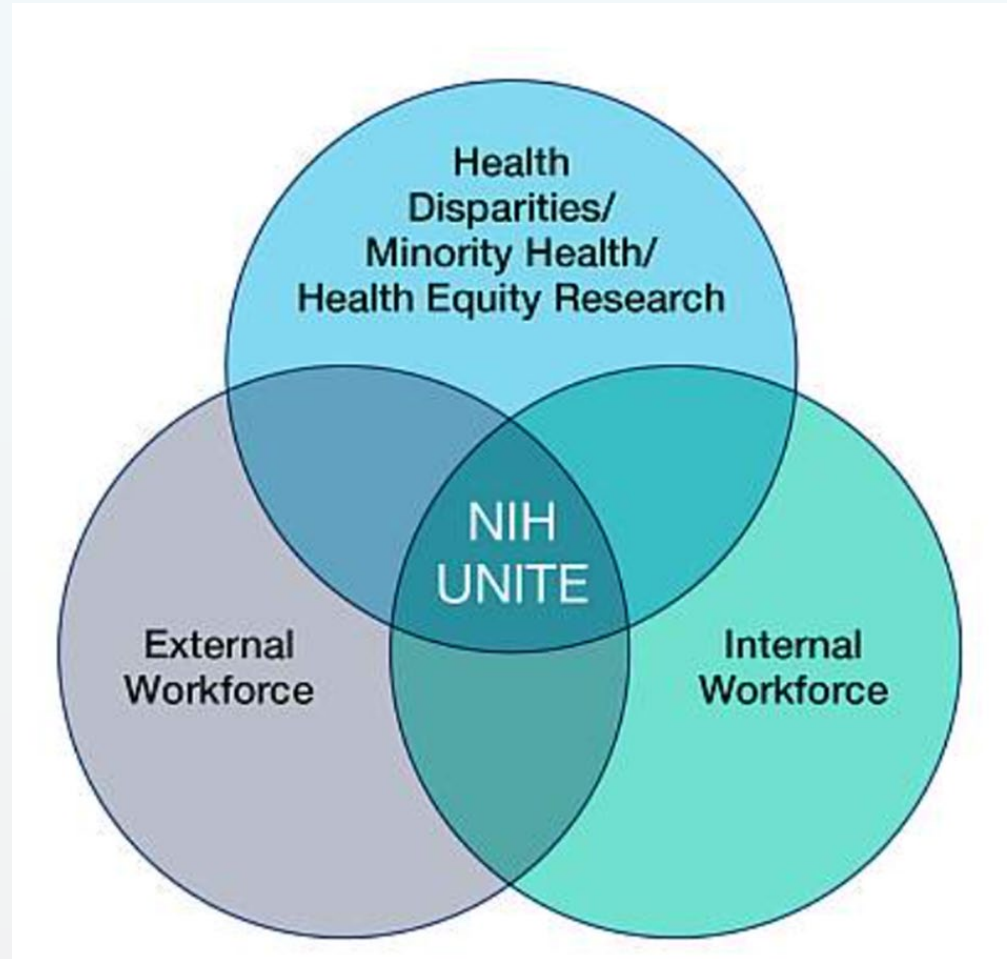
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## ComPASS RESOURCES

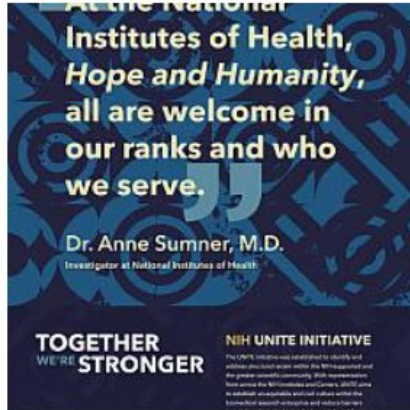
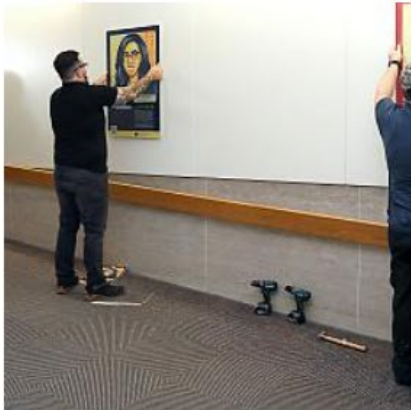
- 
- ComPASS Website: <https://commonfund.nih.gov/compass>
  - Registration for Pre-Application ComPASS Coordination Center [Webinar](#)
  - Registration for Community-Led Health Equity Structural Intervention Initiatives Office Hours: <https://commonfund.nih.gov/compass/meetings>
  - ComPASS Frequently Asked Questions: <https://commonfund.nih.gov/compass/faqs>

# The NIH UNITE Initiative



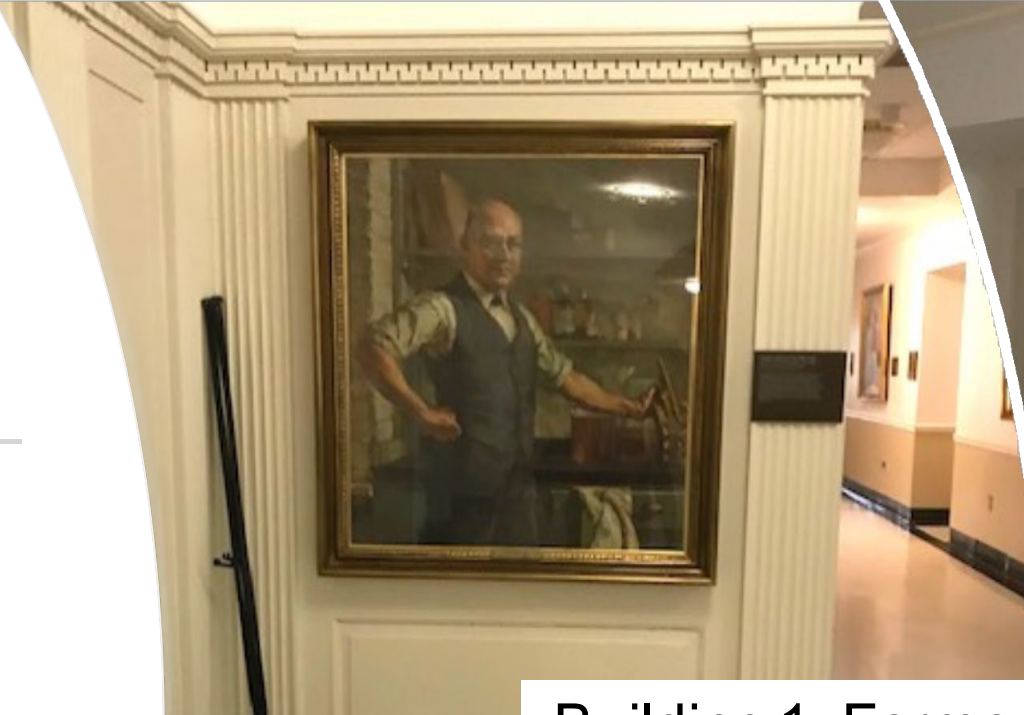


# Power of an Inclusive Workforce Recognition Project

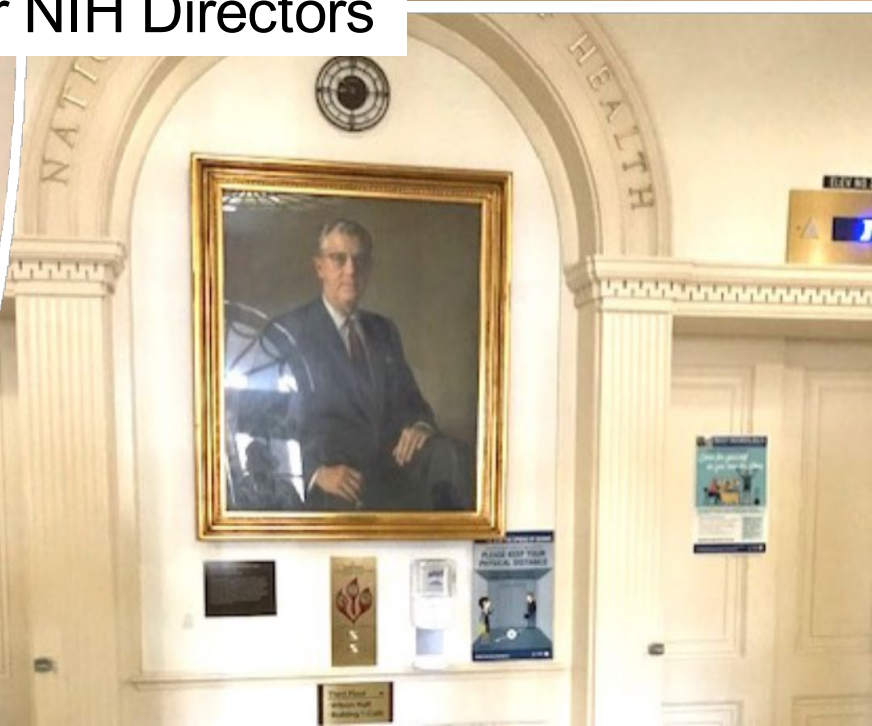


<https://www.statnews.com/2022/04/11/the-power-of-inclusion-overturning-the-white-wall-standard/>

# The Power of an Inclusive Workplace Recognition Project:



Building 1: Former NIH Directors





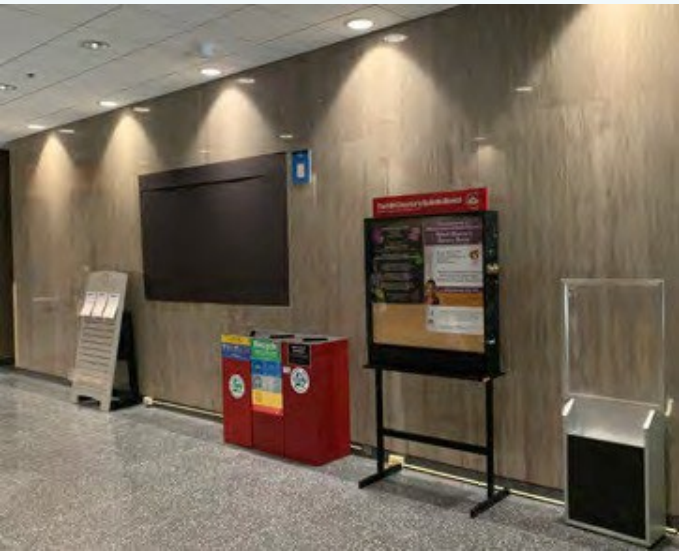
# The Power of an Inclusive Workplace Recognition Project:



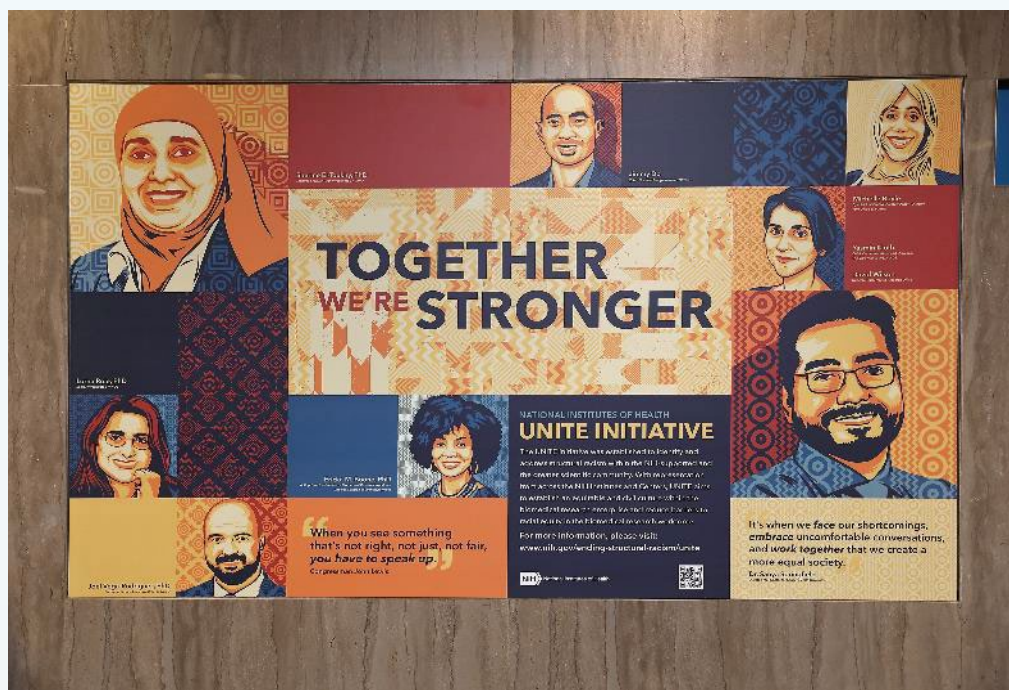
Building 10 – Few Diverse Exhibits







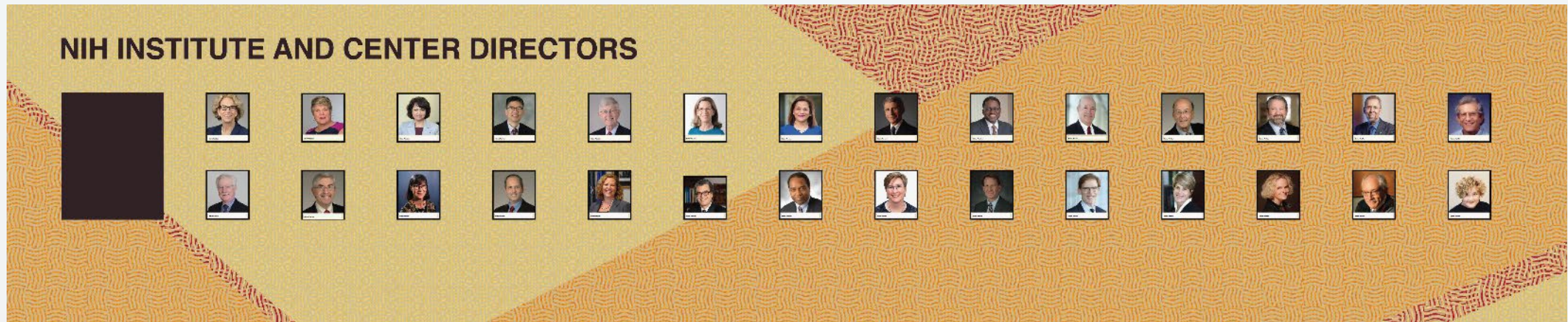
Before



After



After with Recognition



The Power of an Inclusive Workplace Recognition Project:

Buildings 31 and 1

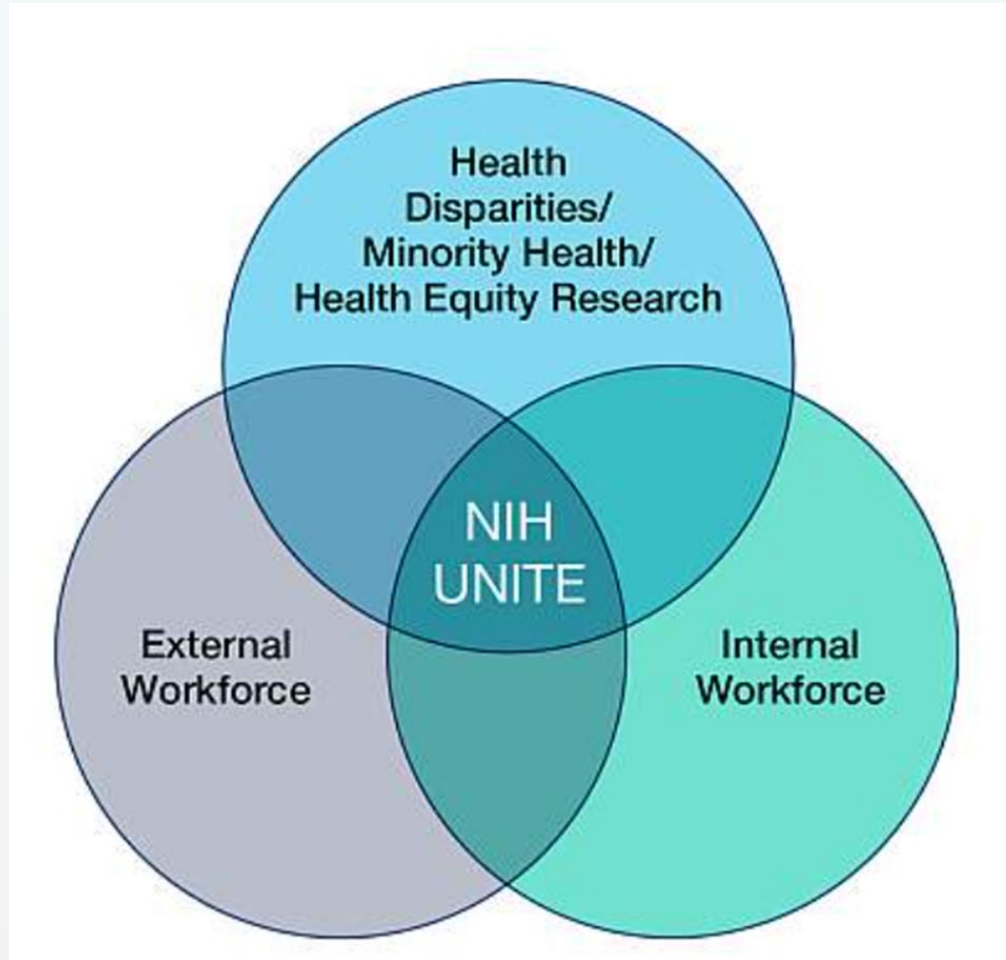


# Power of an Inclusive Workforce Recognition Project



The Power of an Inclusive Workplace Recognition Project:  
Buildings 31

# The NIH UNITE Initiative



# INCLUSIVE EXCELLENCE BEST PRACTICES: DISTINGUISHED SCHOLARS PROGRAM (DSP)

- Built upon the Stadtman and Lasker investigator programs
- Self-reinforcing community of PIs devoted to diversity and inclusion

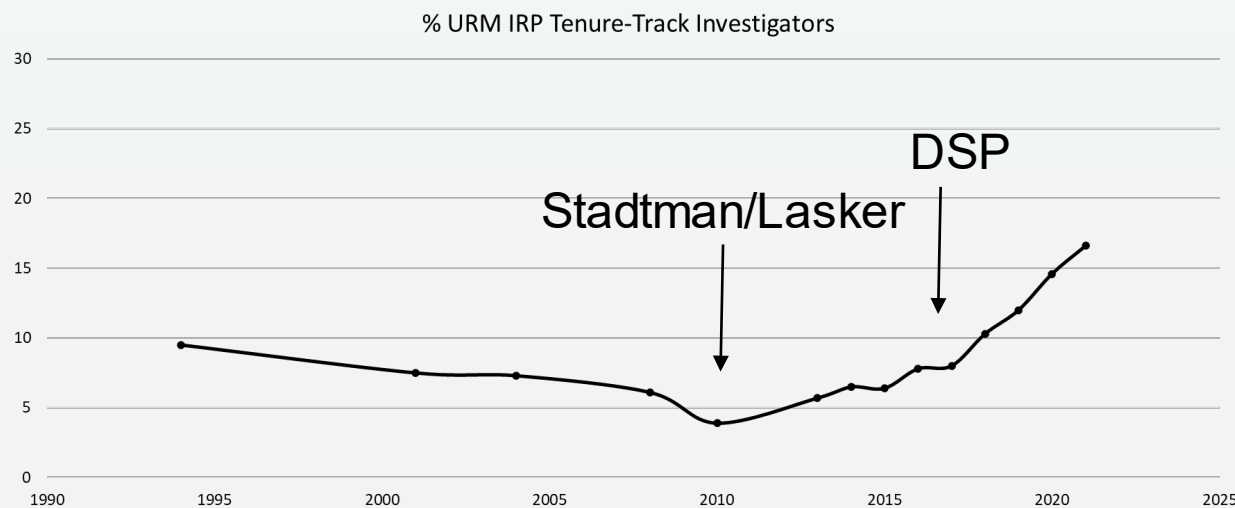


URM=Underrepresented minority (Black, Hispanic [any race], American Indian, Alaska/Hawaii natives);

Source: [OIR](#)

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Source: [OIR](#)



# FACULTY INSTITUTIONAL RECRUITMENT FOR SUSTAINABLE TRANSFORMATION (FIRST)

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- **Overarching Goal**
  - Create cultures of inclusive excellence
- **Program Objectives**
  - Faculty cohort model for hiring, multi-level mentoring, professional development
  - Integrated, institution-wide systems to address bias, faculty equity, mentoring, and work/life issues
  - Coordination and Evaluation Center (CEC): Independent program evaluation - faculty and institutional level
- **Estimated Funds Available: \$241 million over nine years from NIH Common Fund**

# INSTITUTIONAL CULTURE CHANGE: INITIAL FIRST COHORTS – 6 COHORTS INVOLVING 7 UNIVERSITIES



Cornell University.



SAN DIEGO STATE  
UNIVERSITY



TUSKEGEE  
UNIVERSITY



Icahn  
School of  
Medicine at  
Mount  
Sinai



THE UNIVERSITY OF  
ALABAMA AT BIRMINGHAM



# INSTITUTIONAL CULTURE CHANGE – FY 22 Cohorts



Northwestern  
University



UNIVERSITY OF  
MARYLAND  
UNIVERSITY of MARYLAND  
BALTIMORE



THE UNIVERSITY OF  
NEW MEXICO



UNIVERSITY OF  
South Carolina

UC San Diego

# INSTITUTIONAL CULTURE CHANGE: FIRST COORDINATION AND EVALUATION CENTER

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# Supporting a Safe and Respectful Workplace at Institutions that Receive NIH Funding



<https://grants.nih.gov/grants/policy/harassment.htm>.

# Priorities for the External Workforce

- Science Education Partnership Awards (SEPA) – 17 ICOs signed on

## ***Concepts approved by NIGMS Council:***

- Institutional Climate Assessment and DEI Action Plan Development Grants
- Excellence in DEIA Investigator's Grants
- Instrumentation Grant Program for Minority-Serving Institutions

## ***Concept approved by NIMHD Council:***

- Institutional Research Capacity Building Needs Assessment and Action Plan Development Grants

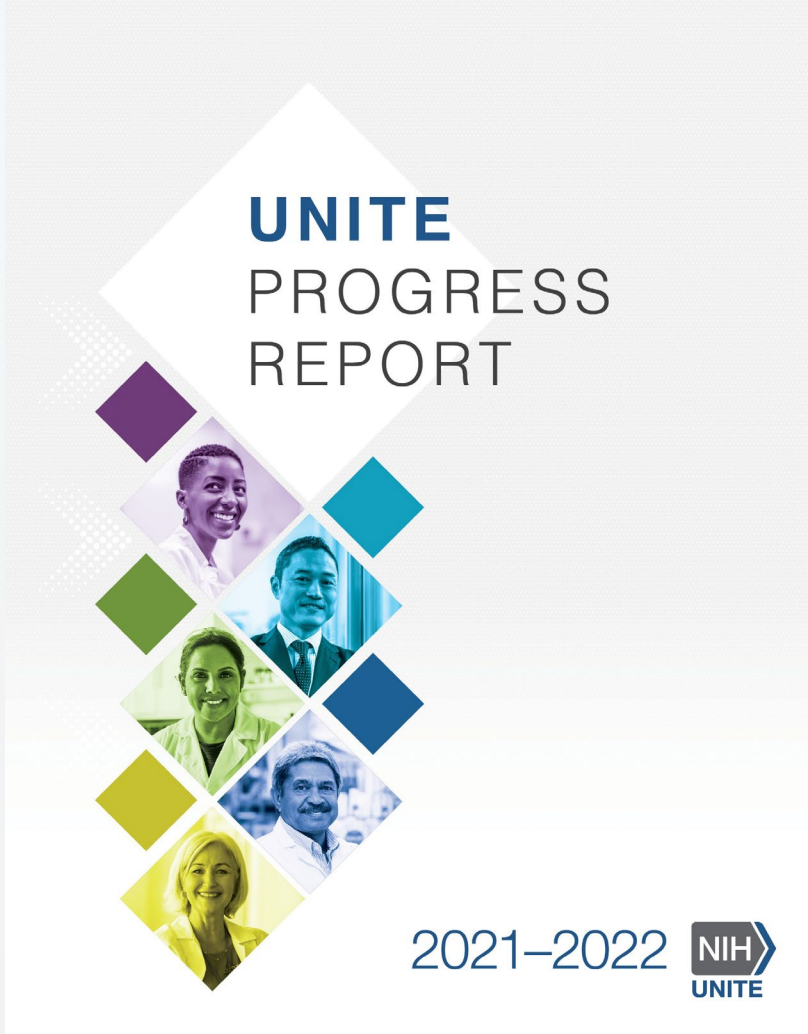


# NIH Development of a Prize Competition for Institutional Excellence in Diversity, Equity, Inclusion, and Accessibility (DEIA)

- To acknowledge transformative cultures, systems, projects, and processes that institutions of higher education have developed to achieve inclusive excellence.
- To highlight practices that have resulted in measurable change and created a more inclusive environment for students and faculty.
- Anticipate announcement of the competition late fall/winter 22/23



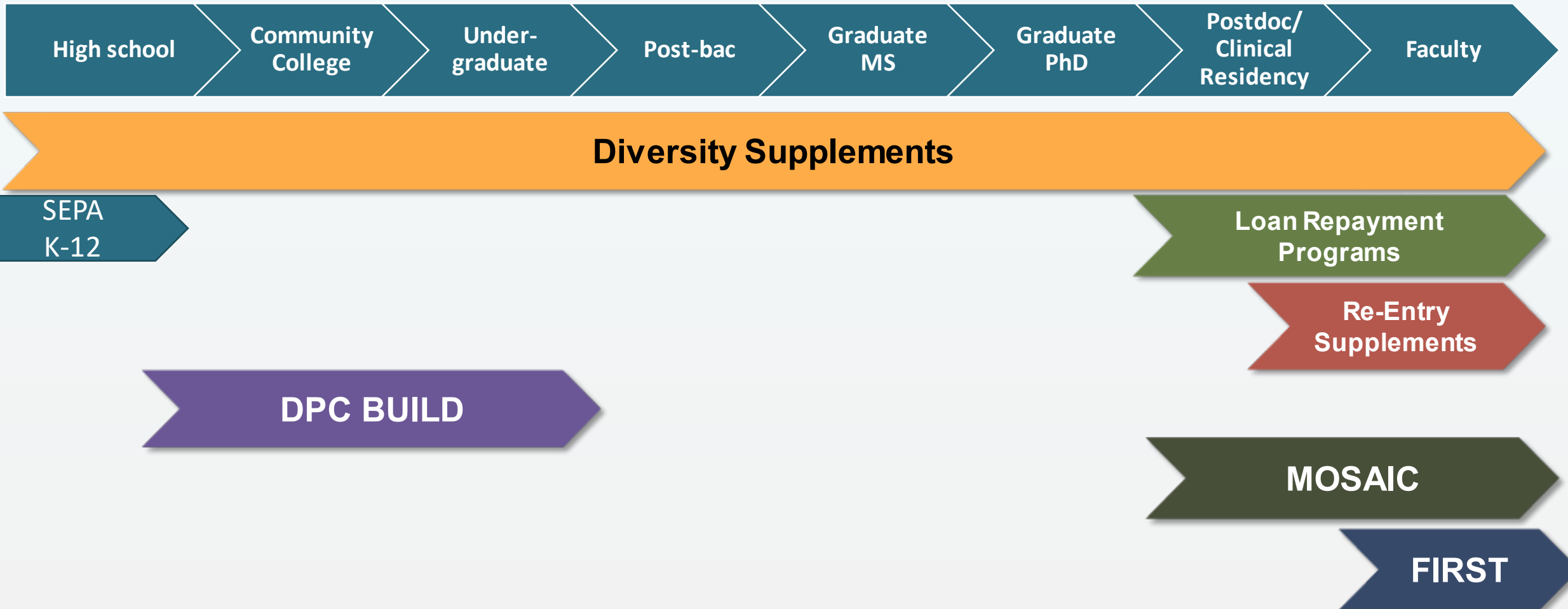
# UNITE Progress Report





- Diversity's Impact on Science
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# Timeline of DEIA programs to Enhance Diversity, Equity, and Inclusion



# Diversity-related FOAs

Home > Guide Data Table

## Diversity Related Funding Opportunity Announcements

Filter by  
 Participating Organization:  Activity Code:

Title	FOA Number	Issuing Organization	Activity Code
AD/ADRD, Adverse Childhood Experiences, and Social Determinants of Health Ancillary Studies of Existing Longitudinal Cohorts (R01 - Clinical Trial Not Allowed)	PAR-22-221	NINDS	R01
NIDA REI: Addressing Racial Equity in Substance Use and Addiction Outcomes Through Community-Engaged Research at Minority Serving Institutions (R01 Clinical Trial Optional)	RFA-DA-23-032	NIDA	R01
NIDA REI: Racial Equity Visionary Award Program for Research at Minority Serving Institutions on	RFA-DA-23-031	NIDA	DP1

<https://extramural-diversity.nih.gov/guidedata/data>



106  
diversity  
FOAs



20  
ICOs



30  
activity  
codes

Source as of 29 Aug 22. <https://extramural-diversity.nih.gov/guidedata/data>

# Case Example



Cristal M Hill, PhD.  
Postdoctoral Researcher  
Neurosignaling  
Adipocyte Biology  
Pennington Biomedical Research Center  
Louisiana State University

- MOSAIC K99/R00 – 2021
- Future Research Leaders Conference (FRLC) - 2019
- NIDDK Network of Minority Health Research Investigators (NMRI) 2017- present
- NRSA (F32-NIDDK) - 2017
- R01 diversity supplement – 2016
- BW Scholars – 2015
- NIA Technical Assistance Workshop - 2010



# Case Example










- Diversity's Impact on Science
- DEIA Strategic Plan
- COSWD
- UNITE
- Real-time applications



**GREAT MINDS THINK DIFFERENTLY**

## CONTACT US

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-  Follow us on [LinkedIn @NIH Chief Officer for Scientific Workforce Diversity](#)
-  Email us at [SWD\\_Talks@nih.gov](mailto:SWD_Talks@nih.gov)



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