



**GREAT MINDS THINK DIFFERENTLY**

# Diversity of the Scientific Workforce – Its Impact on Clinical Discovery

U Kansas CTSI

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*

# Presentation Outline

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- Impact of Diversity on Science
  - The Case of Aducanumab
- NIH efforts
  - COSWD
  - DEIA Strategic Plan
  - UNITE



# DOES DIVERSITY MATTER IN SCIENCE?

# 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.

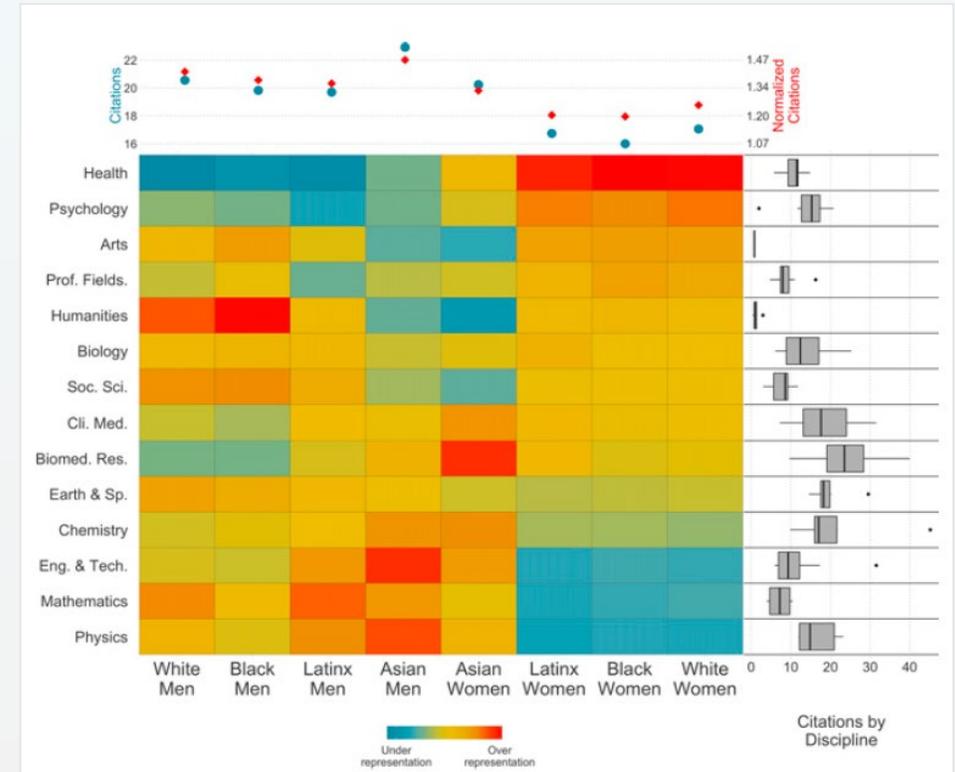
# LACK OF DIVERSITY CONSTRAINS SCIENTIFIC ADVANCEMENT

*“[...] 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

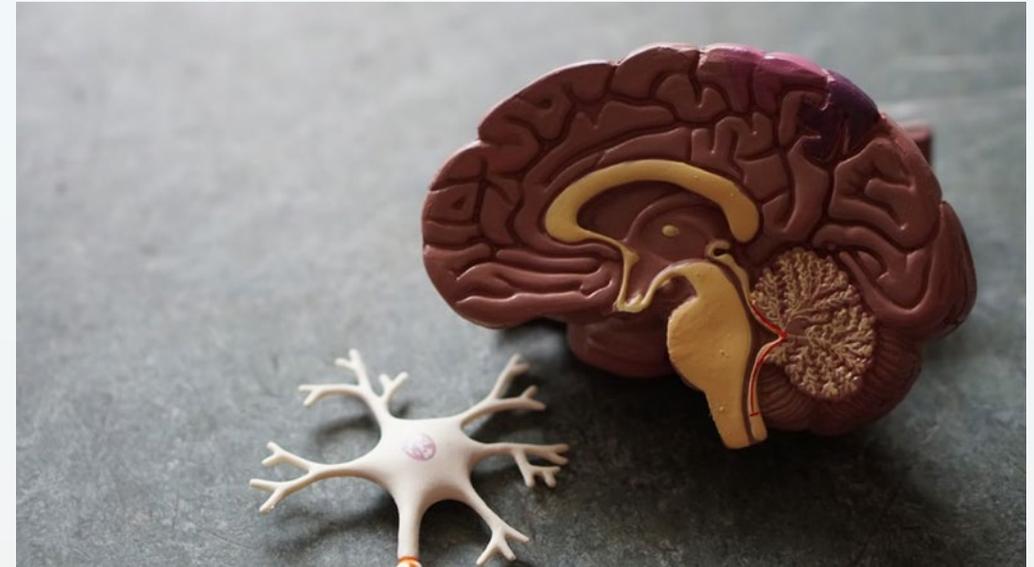
## Scholarly impact and distribution of race and gender of authors by field



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

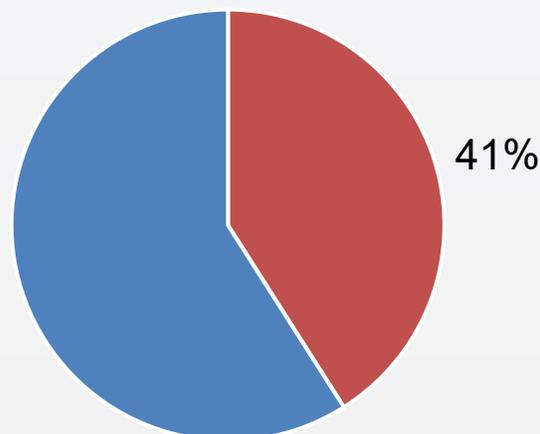


# The Case of Aducanumab

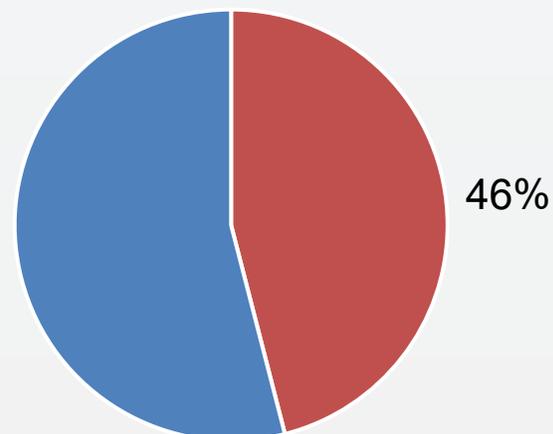
- URGs more often experience missed or delayed diagnosis of dementia than Whites.

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

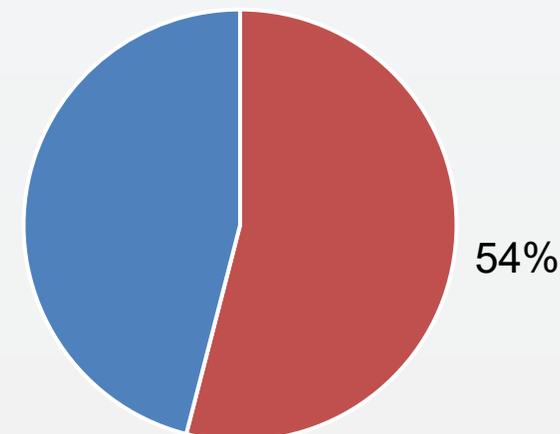
Non-Hispanic White



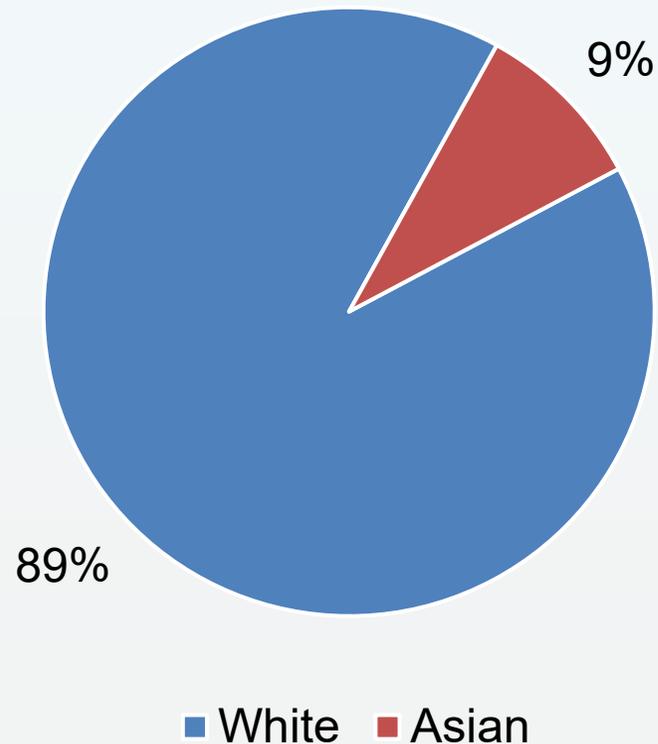
Non-Hispanic Black



Hispanic



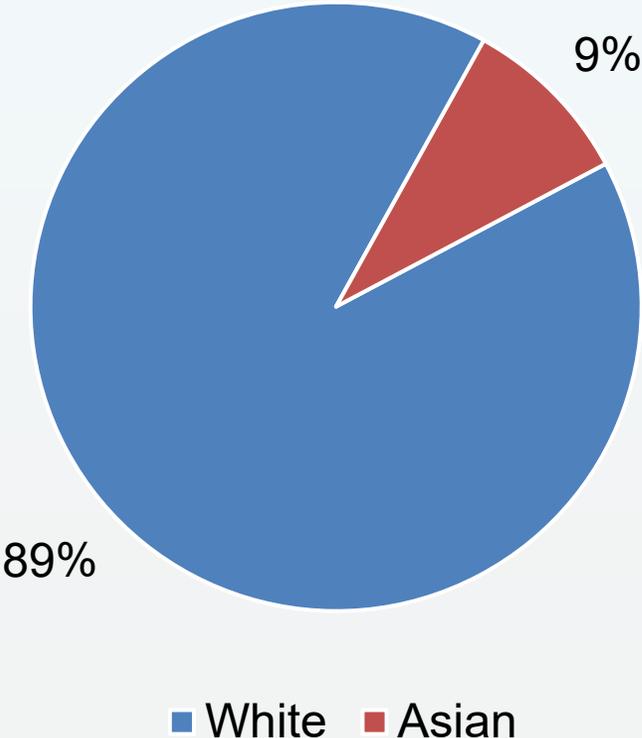
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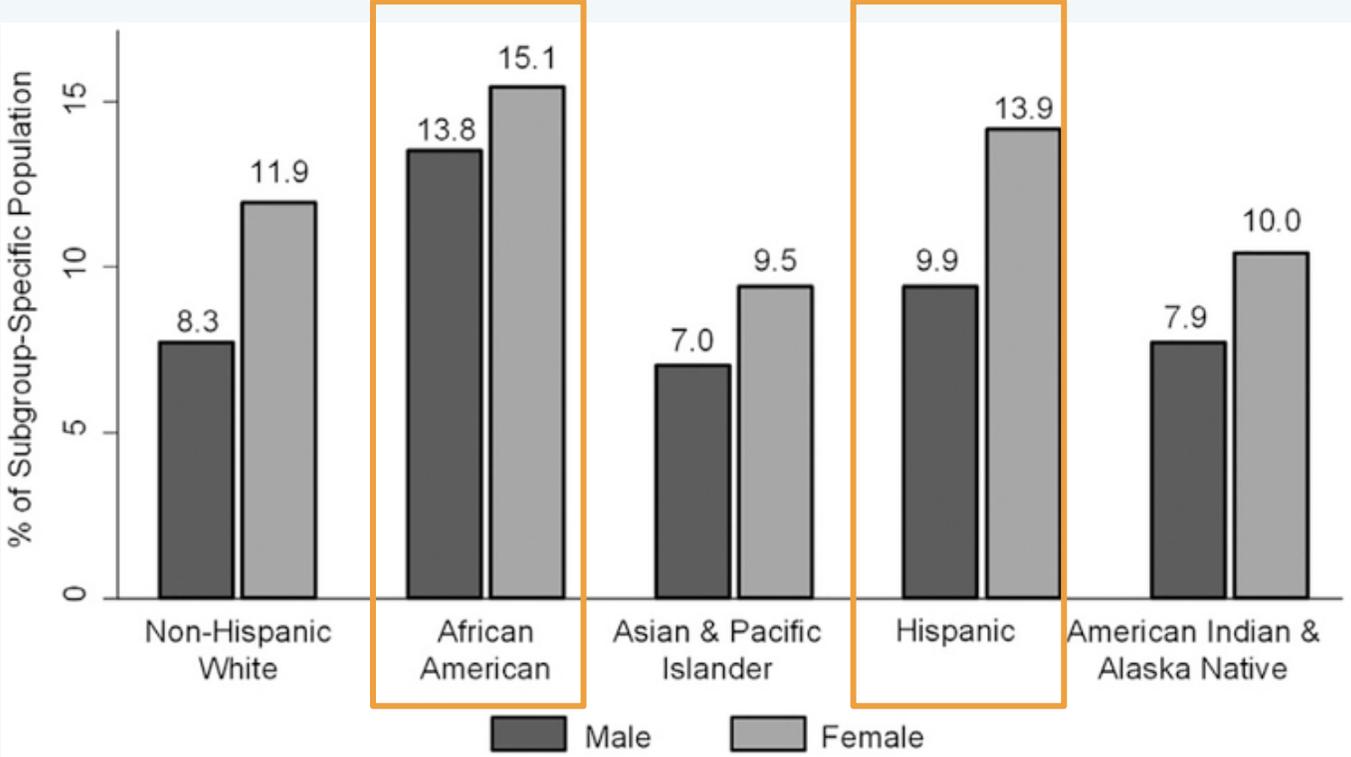
In Biogen's phase 3 trials, **89% of participants were White** and 9% were Asian.

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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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.

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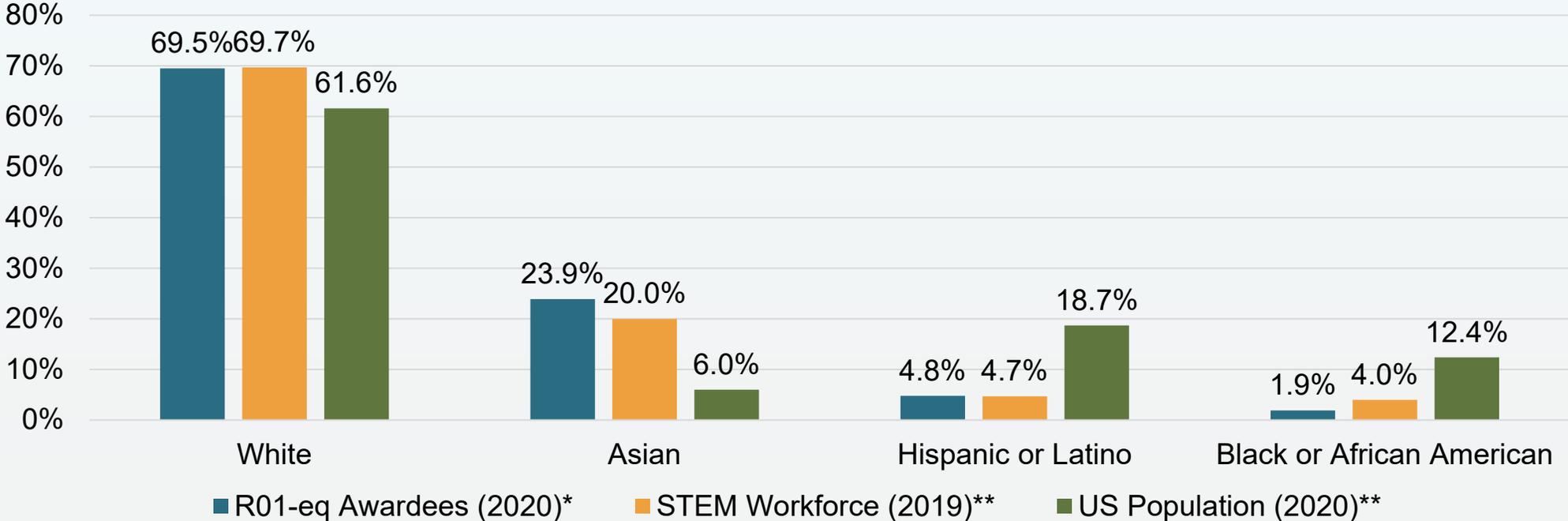
Racial and ethnic minority patients who have a choice are more likely to select health care professionals of their own racial or ethnic background (2).

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.

# LACK OF UTILIZATION OF THE FULL TALENT POOL

Racial/Ethnic Representation Among NIH R01-eq Grantees, STEM Doctoral Workforce, and US Population (2019 and 2020)



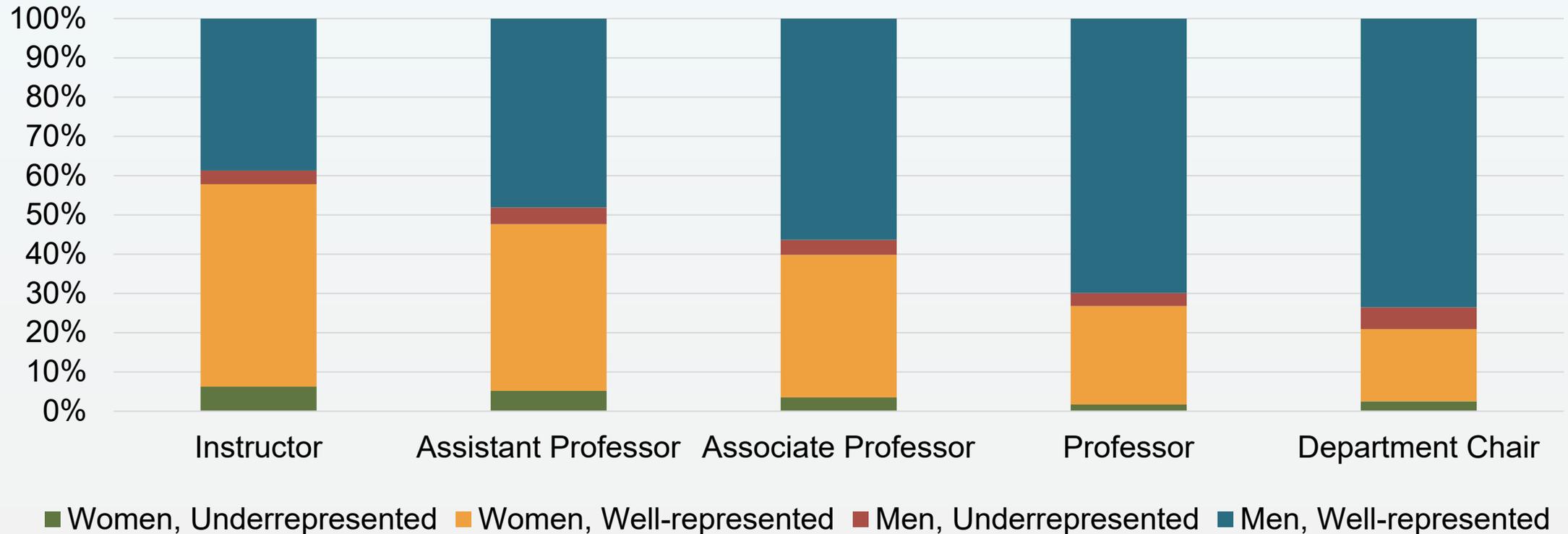
\*NIH R01-eq Awardees data includes White, Asian, and Black/African American investigators of any ethnicity

\*\*STEM Workforce and US population data includes non-Hispanic White, Asian, and Black or African American individuals

Source: <https://www.census.gov/library/visualizations/interactive/race-and-ethnicity-in-the-united-state-2010-and-2020-census.html>

# DIMINISHED USE OF FULL TALENT POOL ACROSS THE CAREER SPECTRUM

Proportion of **women** and **underrepresented men** diminishes in more advanced positions along the career path.



Source: <https://www.aamc.org/data-reports/faculty-institutions/interactive-data/2020-us-medical-school-faculty>



# WHAT IS THE NIH DOING?



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



**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

Not depicted, Jamelle Banks, Program Analyst, NIA, NIH

# 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



# Background

## 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:

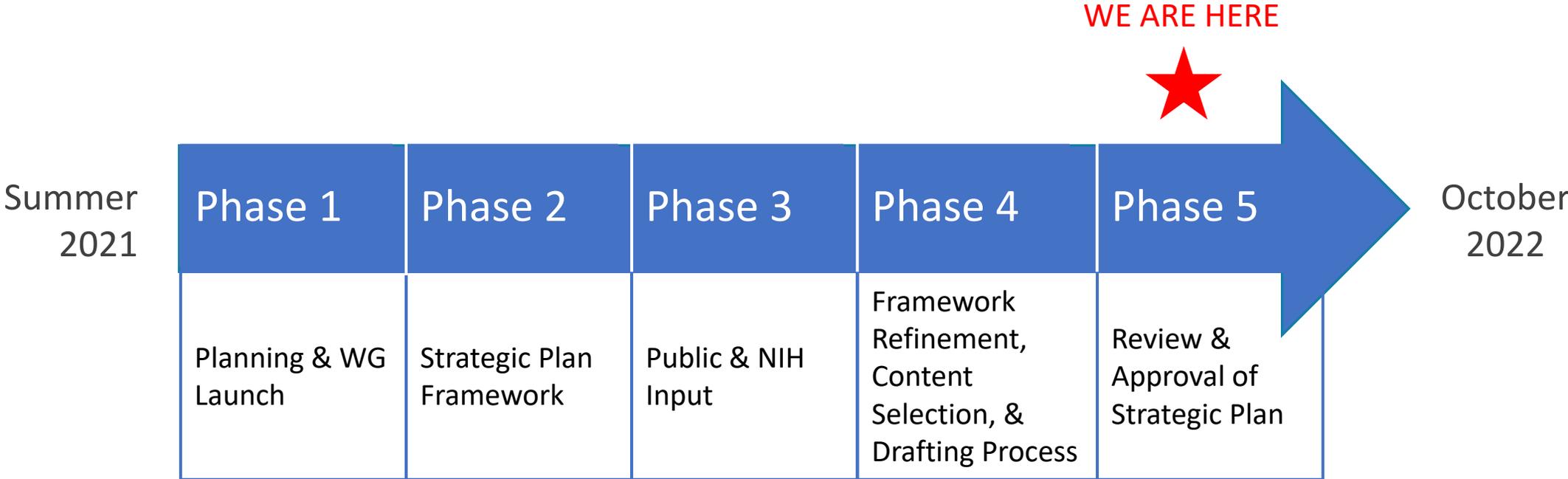
- Include short- and long-term goals to address racial, ethnic, and gender disparities at NIH
- Identify and address barriers in access to NIH funding by investigators researching health disparities

## Executive Orders

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

# Process & Timeline

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# 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

# Related NIH-Wide Strategic Plans

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# NIH DEIA Activities

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## Native American Research Centers for Health (NARCH)

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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

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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.



## DEIA Performance Standards

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The NIH Annual Performance Management Appraisal Program (PMAP) added language in 2022 specifically outlining DEIA and anti-harassment language in all staff's performance goals.



## Review of NIH Director's Awards

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In the past, the NIH Director's Awards have been focused on higher-graded employees. Changes were made in 2022 to expand the Mission Support Category and a Task Force has been established to review all aspects of the program before the 2023 awards are made.

# 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

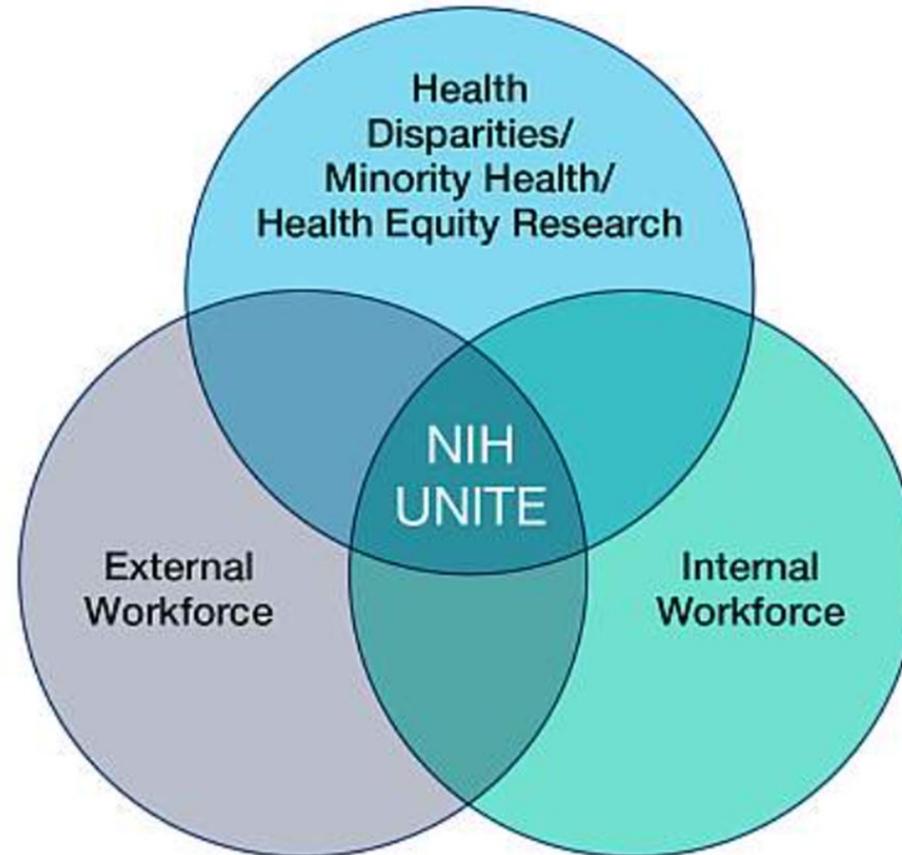


# The NIH UNITE Initiative

- 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.

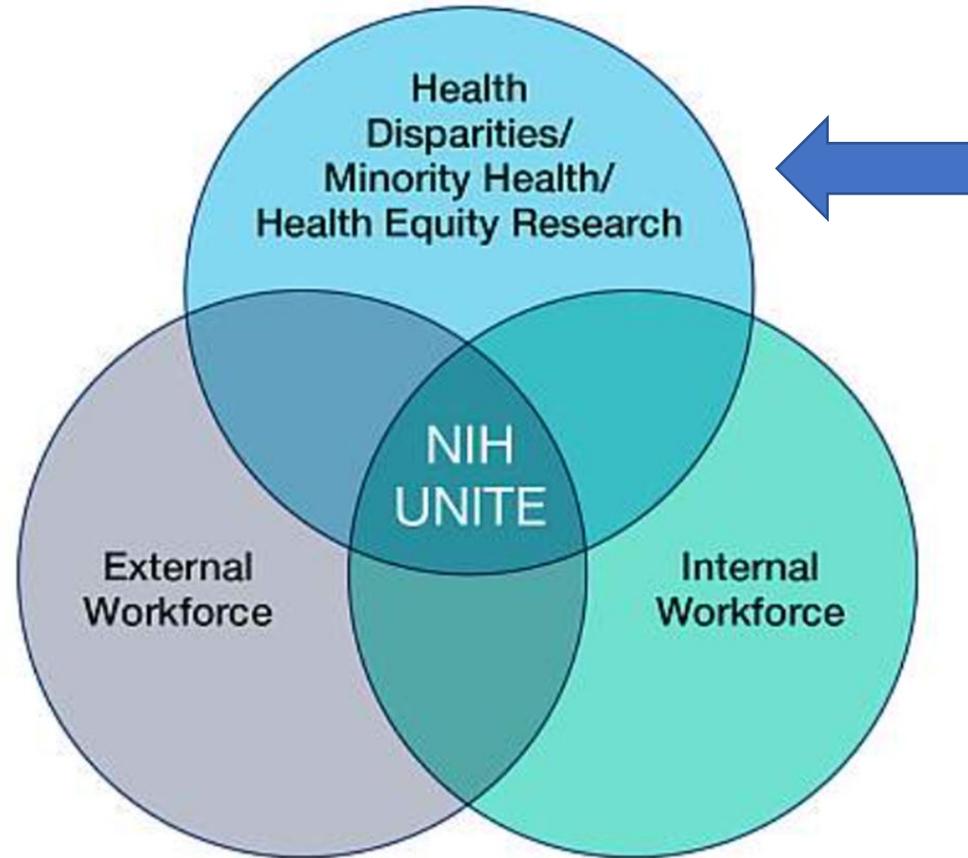


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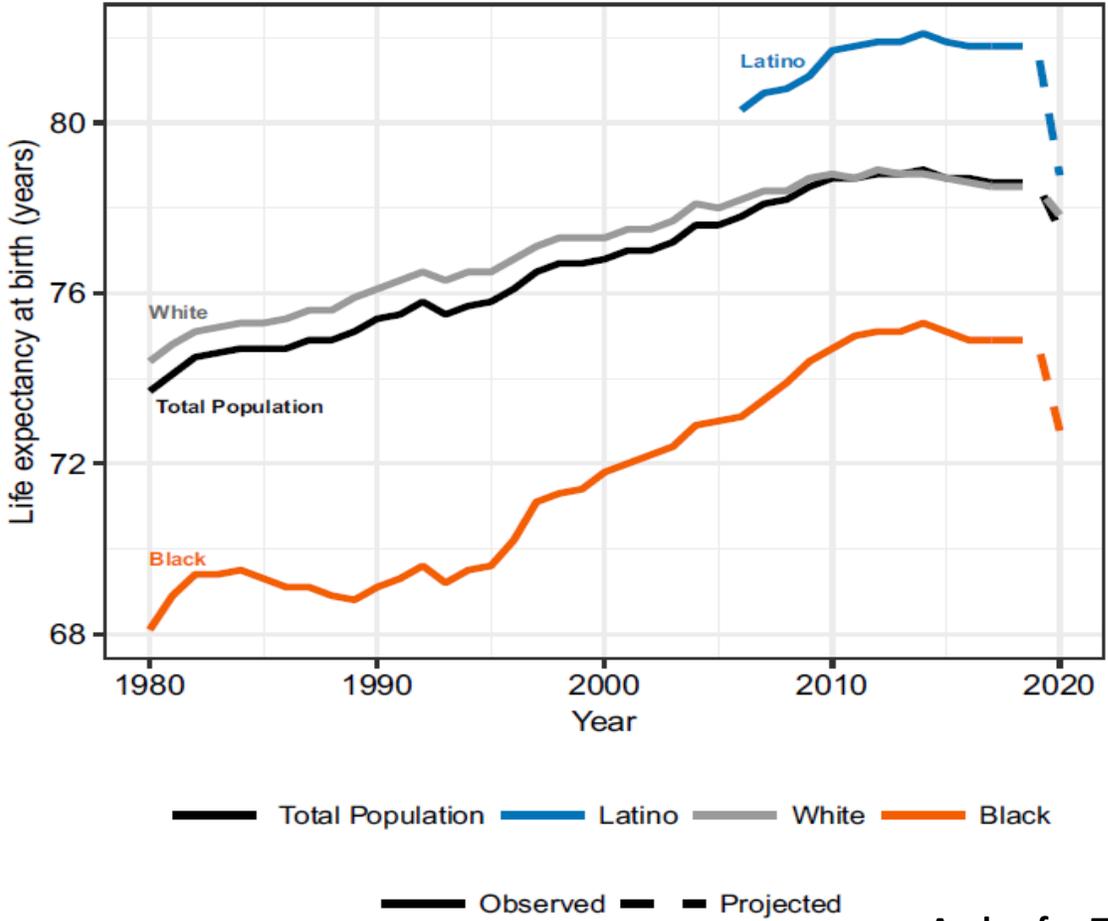


Bernard, MA Johnson AC, Hopkins-Laboy T, Tabak LA. Nature Medicine. [DOI: 10.1038/s41591-021-01532-1](https://doi.org/10.1038/s41591-021-01532-1) (2021)

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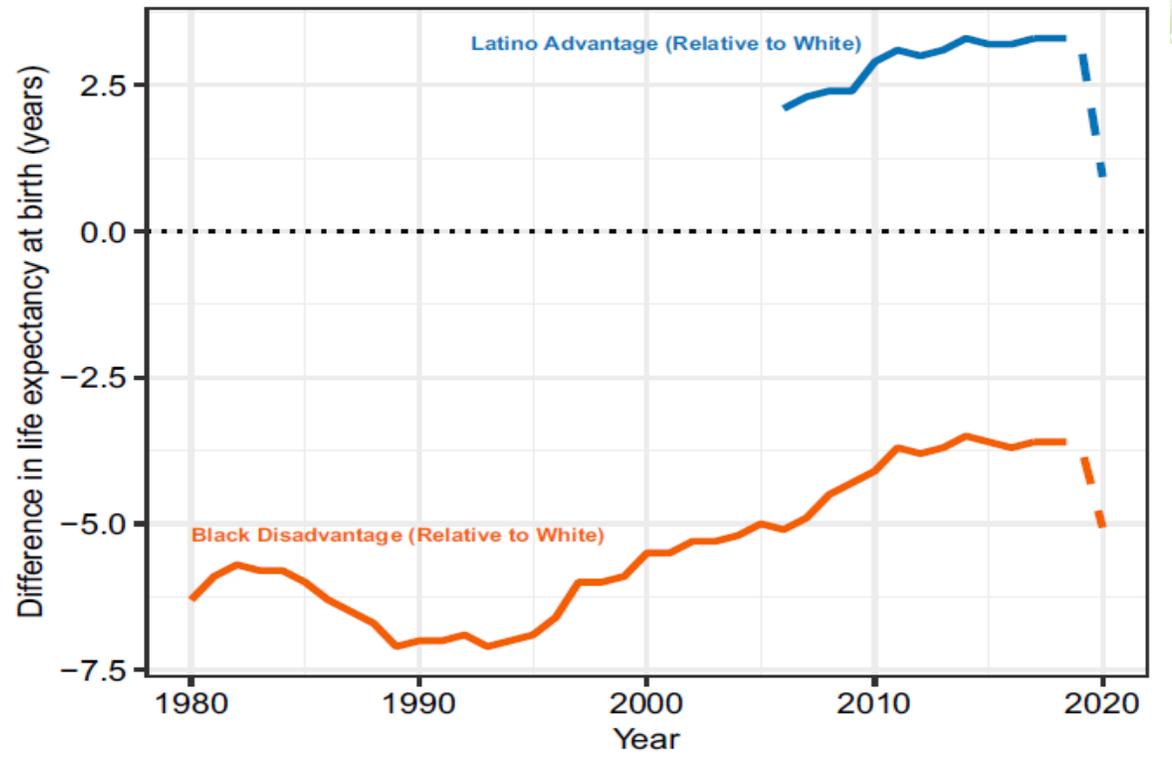
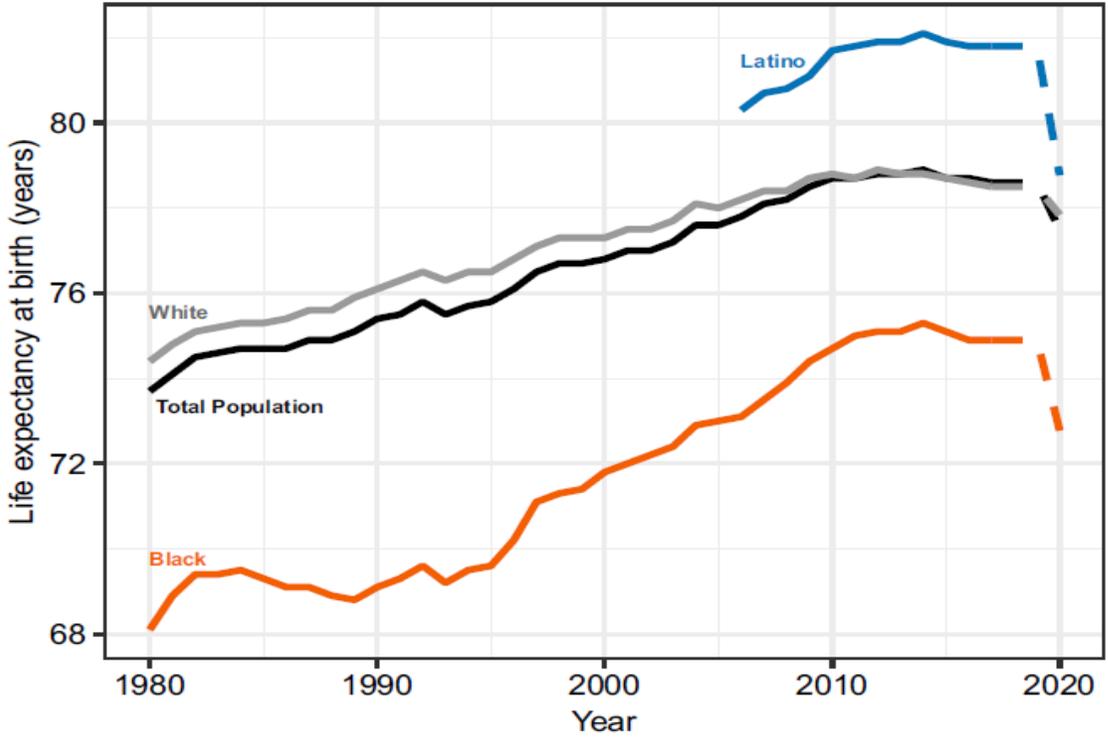


# Reductions in U.S. Expectancy due to COVID-19



Andrasfay T & Goldman N PNAS 2021

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



█ Total Population 
 █ Latino 
 █ White 
 █ Black

— Observed 
 - - Projected

Andrasfay T & Goldman N PNAS 2021

█ Latino-White 
 █ Black-White

— Observed 
 - - Projected

# 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

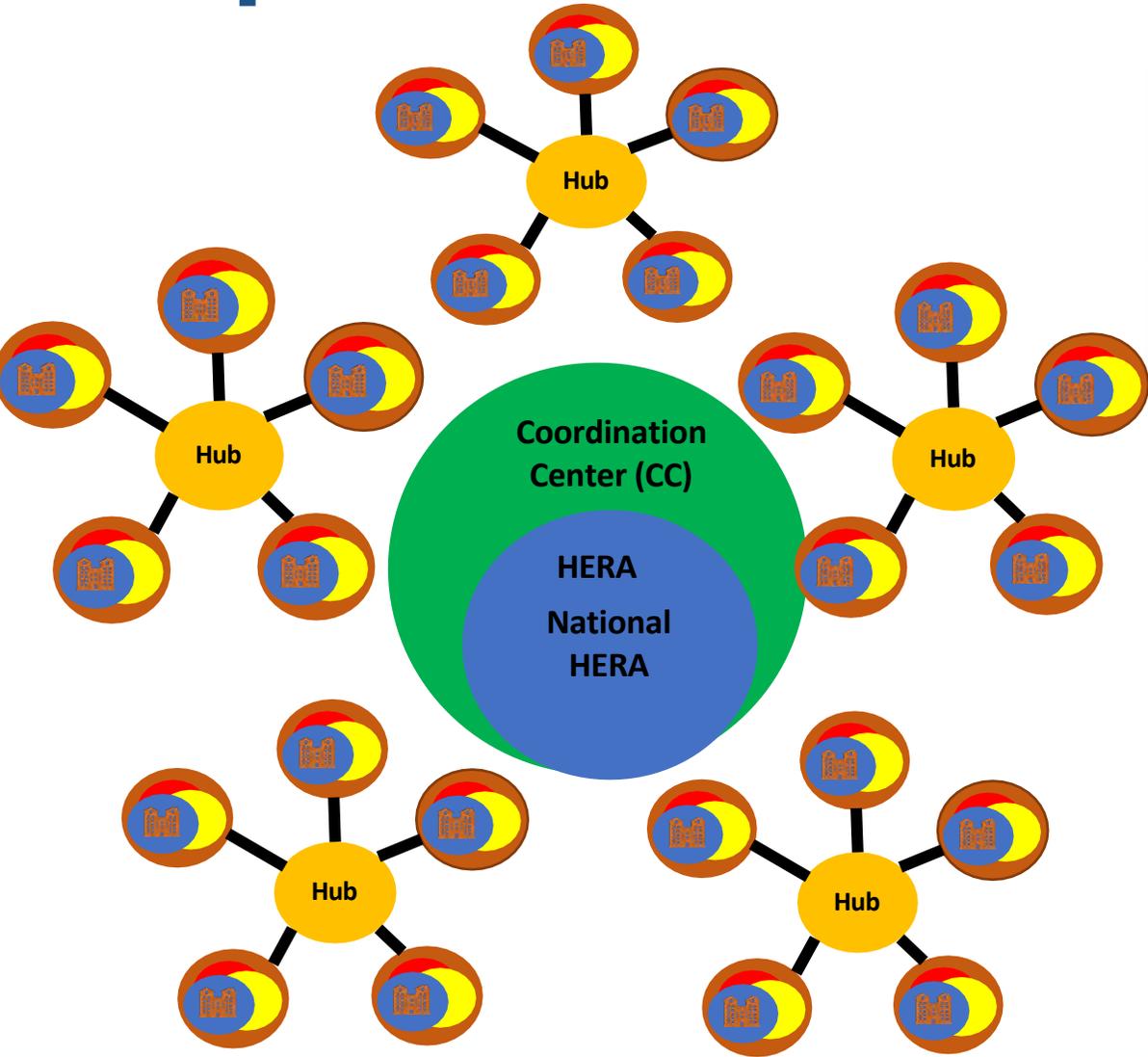
Working Group: CSR, NCI, NEI, NHGRI, NHLBI, NIA, NIAMS, NICHD, NIDA, NIDDK, NIEHS,  
NIMH, NIMHD, NINDS, NINR, NLM, OBSSR, ODP, ORWH, SGRMO, THRO



National Institutes of Health

Office of Strategic Coordination–The Common Fund

# Proposed ComPASS Initiatives



Community-Driven, Health Equity Structural Interventions

Local Health Equity Research Assembly (Local HERA)

Coordination Center with

National Health Equity Research Assembly (National HERA)

Health Equity Research Hubs for Scientific Support and Partnership

# Action



- **Community Partnerships to Advance Science for Society (ComPASS)**

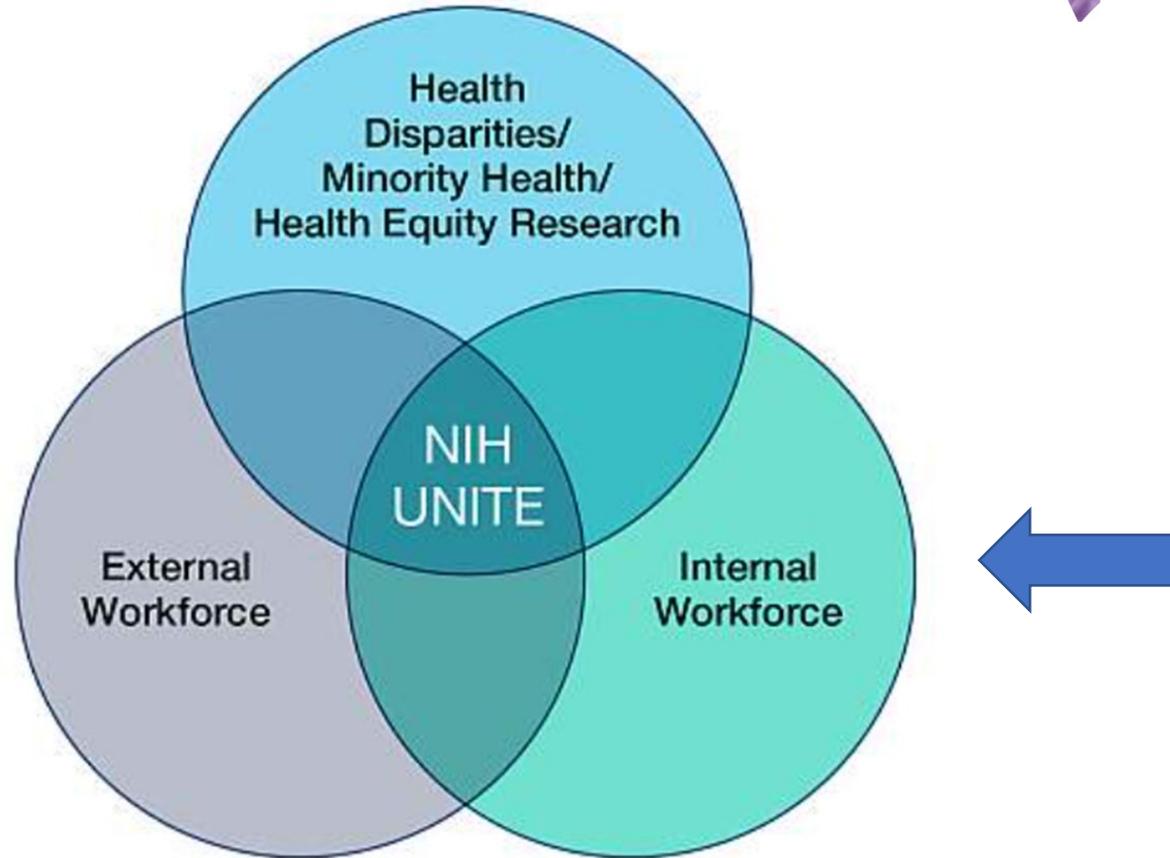
- Committing up to \$23 – 52M/yr X 10 yrs

- [Community Partnerships to Advance Science for Society \(ComPASS\) Program](#)

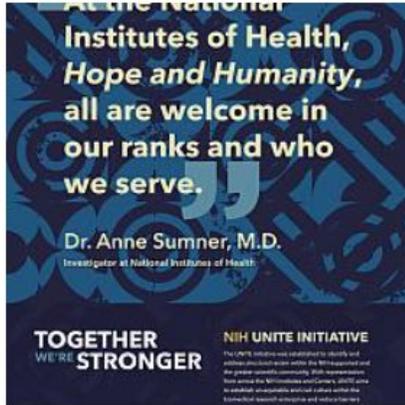
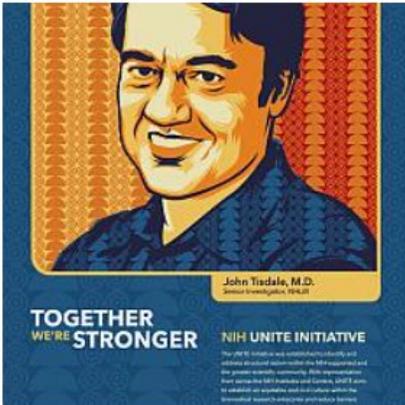
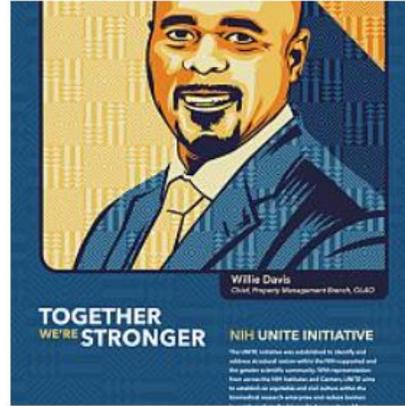
- [Research Opportunity Announcement \(ROA\) OTA-22-007](#)

Community Partnerships to Advance Science for Society (ComPASS) Program:  
Community-Led, Health Equity Structural Intervention Initiative (OT2)

# The NIH UNITE Initiative



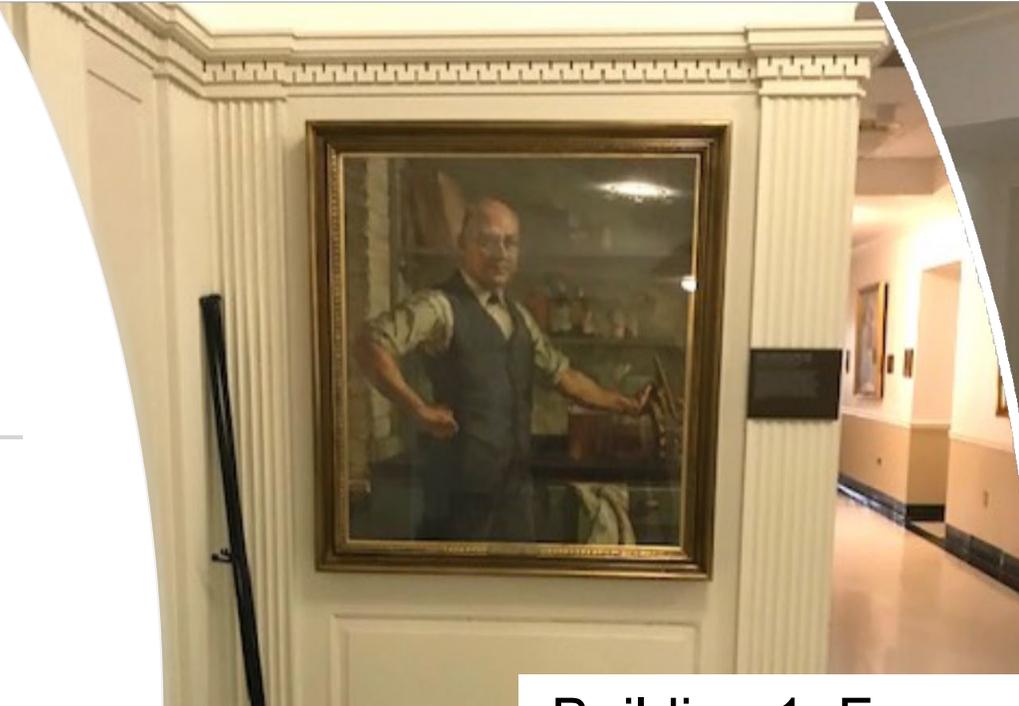
# Power of an Inclusive Workforce Recognition Project



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

The Power of an  
Inclusive Workplace  
Recognition Project:

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Building 1: Former NIH Directors



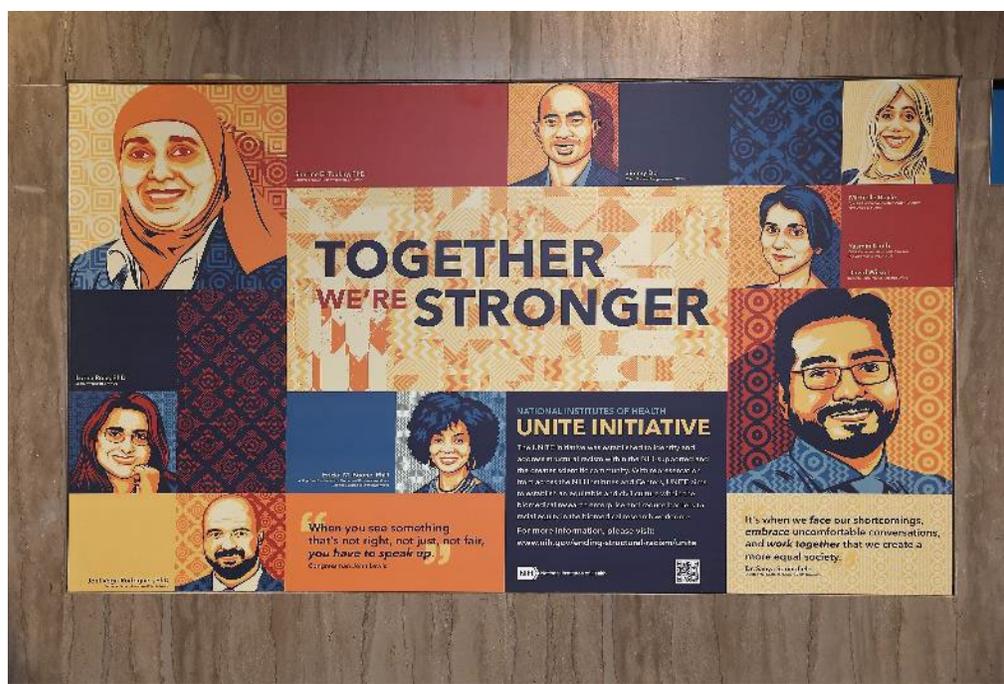
# The Power of an Inclusive Workplace Recognition Project:

Building 10 – Few Diverse Exhibits





Before



After



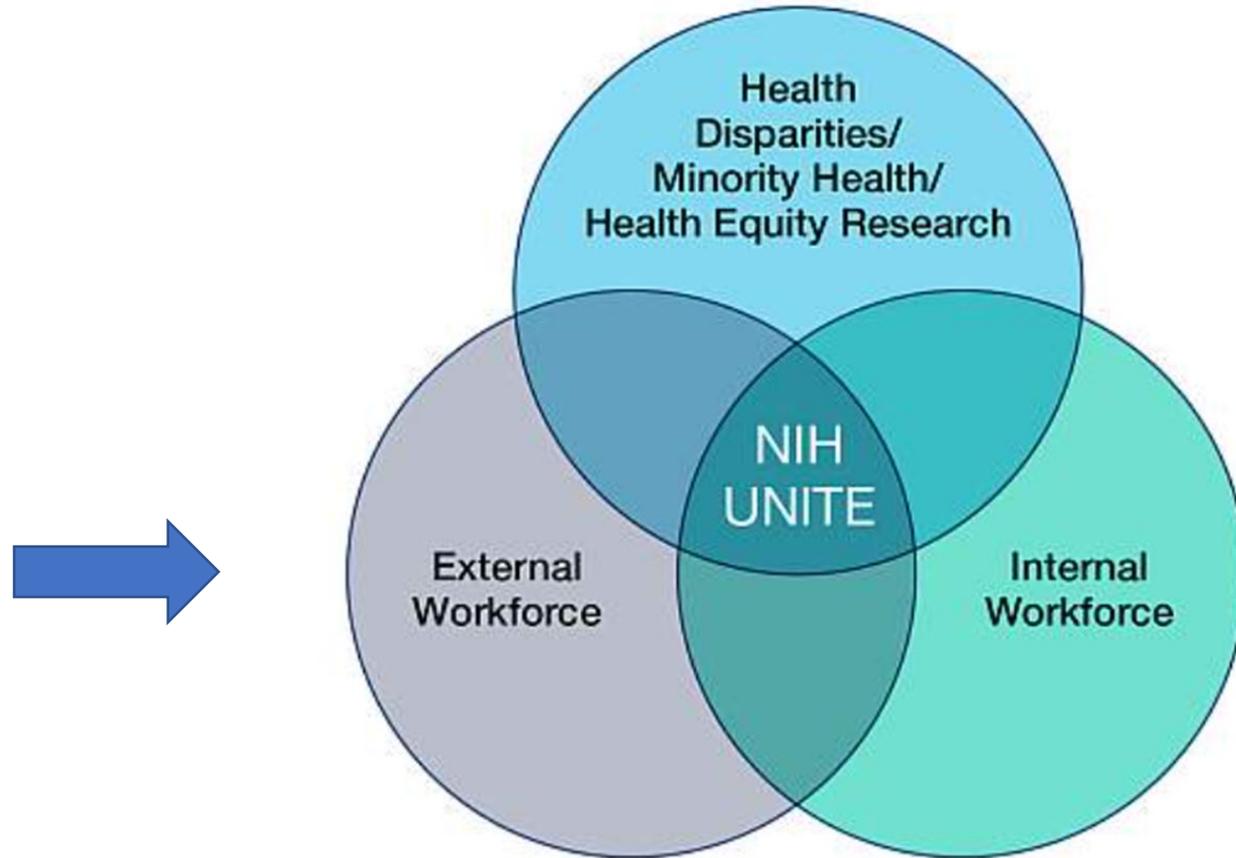
After with Recognition



The Power of an Inclusive Workplace Recognition Project:  
Buildings 31 and 1



# 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

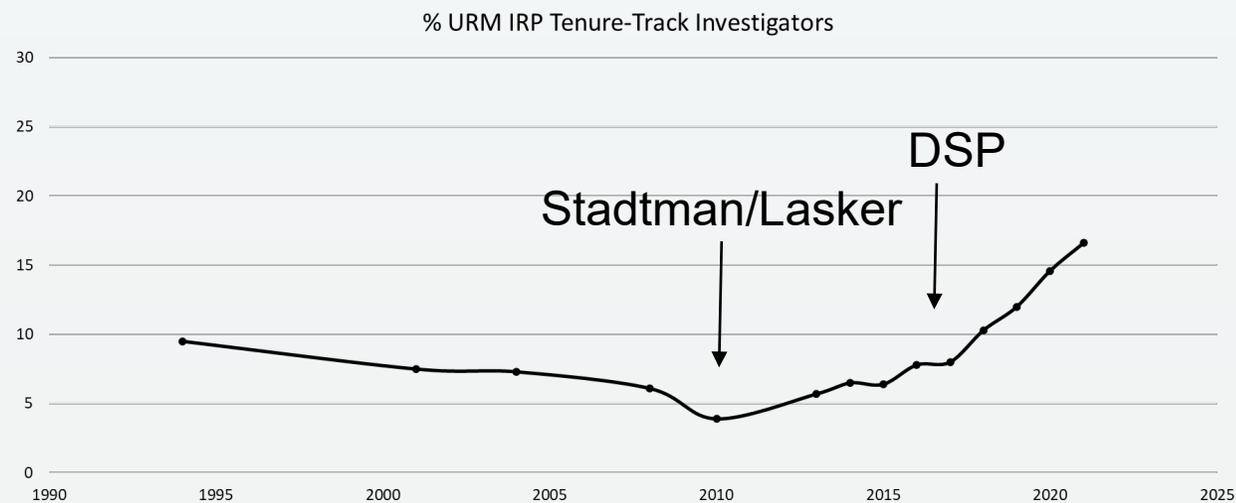


URM=Underrepresented minority (Black, Hispanic [any race], American Indian, Alaska/Hawaii natives);

Source: [OIR](#)

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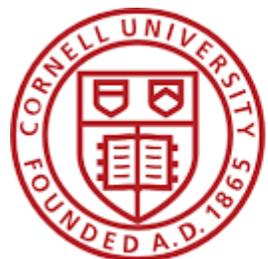
Source: [OIR](#)

# 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**

# 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

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- Northwestern University at Chicago
- University of California, San Diego
- University of Maryland Baltimore in partnership with University of Maryland
- University of New Mexico
- University of South Carolina at Columbia

Announced 9/20/22

# INSTITUTIONAL CULTURE CHANGE: FIRST COORDINATION AND EVALUATION CENTER

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# 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 November 2022



# NIH UNITE

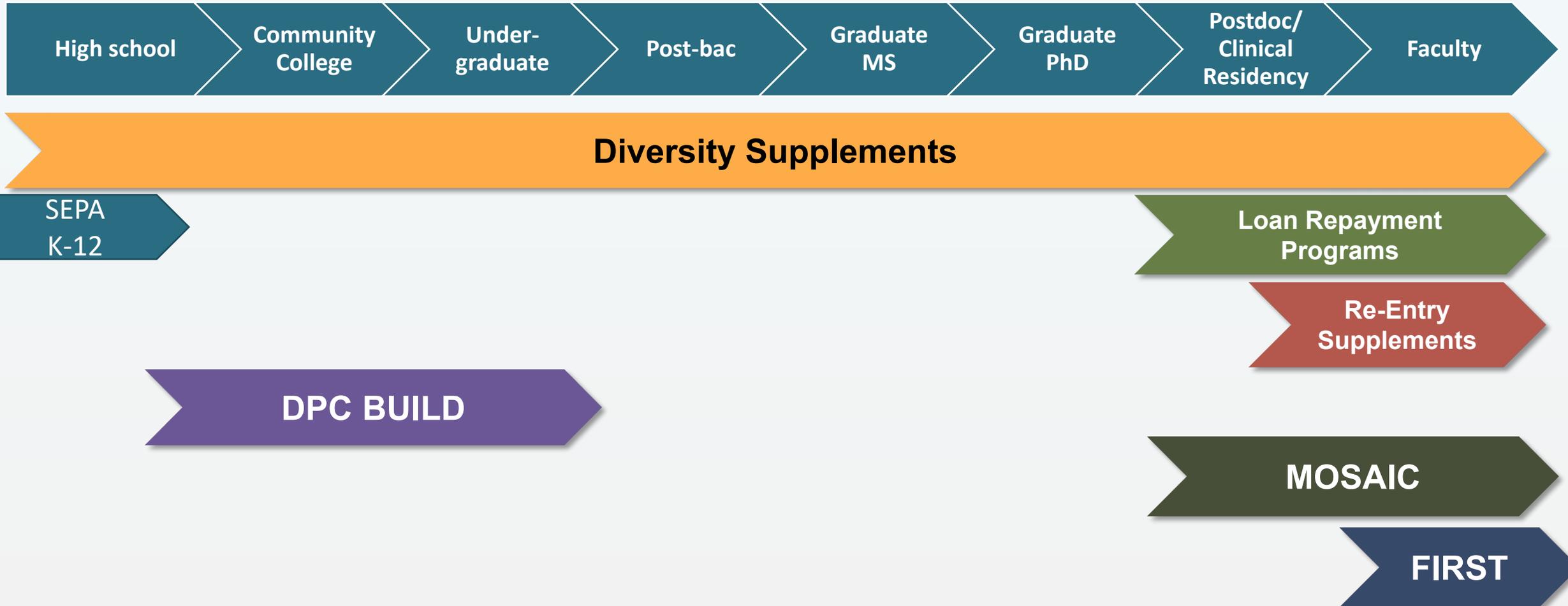


For more detail, see Advisory Committee to the Director Meeting, 6/10/22 - <https://videocast.nih.gov/watch=45595>.

For fuller information regarding progress, milestones, and future directions see

[UNITE - Milestones & Progress | National Institutes of Health \(NIH\)](#)

# Timeline of DEIA programs to Enhance Diversity, Equity, and Inclusion



# 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



## Points Covered

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- Impact of Diversity on Science
  - The Case of Aducanumab
- NIH efforts
  - COSWD
  - DEIA Strategic Plan
  - UNITE



**GREAT MINDS THINK DIFFERENTLY**

## CONTACT US

-  Check out our website [diversity.nih.gov](https://diversity.nih.gov)
-  Sign up for our [quarterly newsletter](#) and visit our [COSWD blog](#) for twice monthly updates
-  Follow us on [Twitter @NIH\\_COSWD](#)
-  Follow us on [LinkedIn @NIH Chief Officer for Scientific Workforce Diversity](#)
-  Email us at [SWD\\_Talks@nih.gov](mailto:SWD_Talks@nih.gov)



**National Institutes of Health**

*Office of the Director*

*Chief Officer for Scientific Workforce Diversity*