

Aducanumab: Considerations for Scientific Workforce Diversity

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

NAPA FACA | July 19, 2021



National Institutes of Health
Office of the Director
Scientific Workforce Diversity

diversity.nih.gov

Today's Agenda

- Background: FDA Approval of Aducanumab
- Barriers to Equitable Access and Use
- NIA and NIH-Wide Initiatives
- Looking Forward

diversity.nih.gov

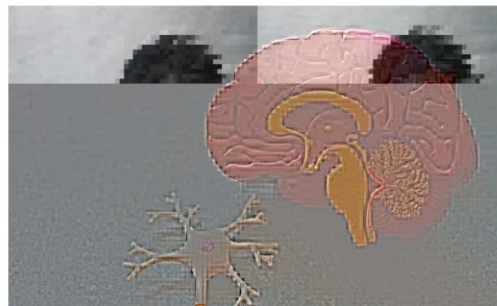
1

Today's Agenda

- Background: FDA Approval of Aducanumab
- Barriers to Equitable Access and Use
- NIA and NIH-Wide Initiatives
- Looking Forward

Background: FDA Approval 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.
- Recently revised labeling is now consistent with the trial criteria.



Today's Agenda

- Background: FDA Approval of Aducanumab
- Barriers to Equitable Access and Use
- NIA and NIH-Wide Initiatives
- Looking Forward

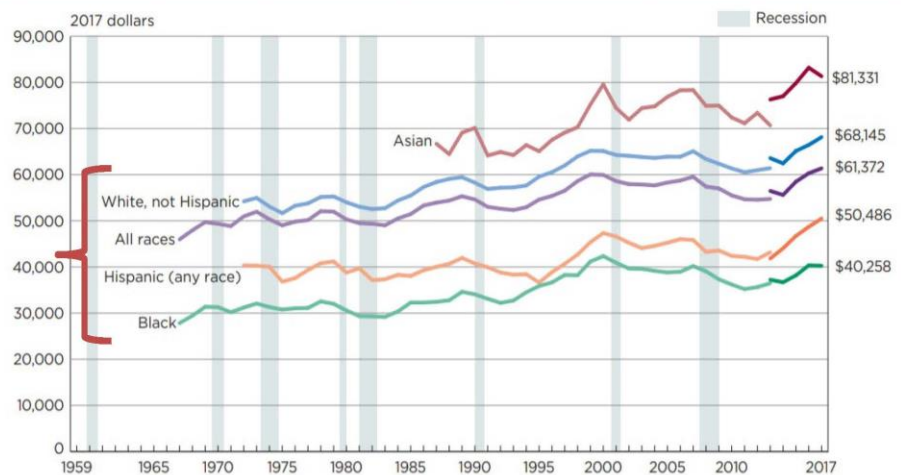
Barriers to Equitable Access and Use: Cost

- Biogen listed aducanumab at \$56,000 per year.
- Additional costs:
 - Administration of aducanumab done via infusion at specialized centers
 - PET scans or CSF tests to detect amyloid
 - MRIs at baseline and periodically to monitor for side effects

How accessible will aducanumab be given the criteria, cost, and need for monthly infusions?

Barriers to Equitable Access and Use: Cost

Real median household income among US adults differs by race & ethnicity



Note: The data for 2013 and beyond reflect the implementation of the redesigned income questions. The data points are placed at the midpoints of the respective years. Median household income data are not available prior to 1967. For information on recessions, see Appendix A. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www2.census.gov/programs-surveys/cps/techdocs/cpsmar18.pdf.

Source: U.S. Census Bureau, Current Population Survey, 1968 to 2018 Annual Social and Economic Supplements.

diversity.nih.gov

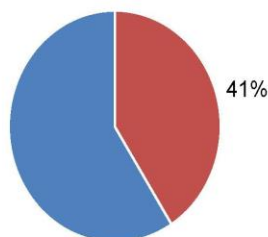
6

Barriers to Equitable Access and Use: Disease Stage

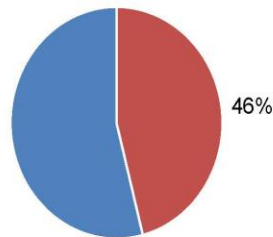
- URGs more often experience missed or delayed diagnosis of dementia than Whites.

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

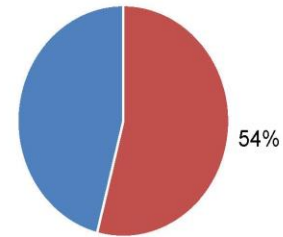
Non-Hispanic White



Non-Hispanic Black



Hispanic



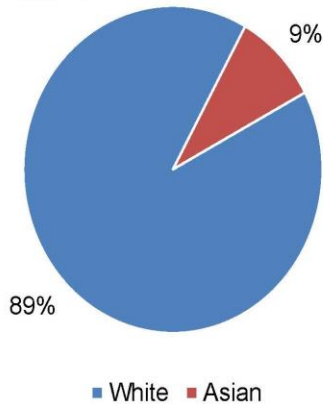
SOURCE: Lin, P.-J., Daly, A., Olchanski, N., Cohen, J.T., Neumann, P.J., Faul, J.D., Fillit, H.M. and Freund, K.M. (2020), Dementia diagnosis disparities by race and ethnicity. *Alzheimer's Dement.*, 16: e043183. <https://doi.org/10.1002/alz.043183>

diversity.nih.gov

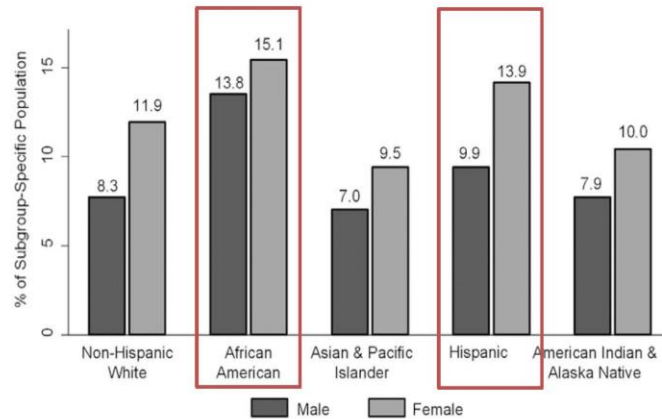
7

Barriers to Equitable Access and Use: Lack of Diversity

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



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., Meck, 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>

diversity.nih.gov

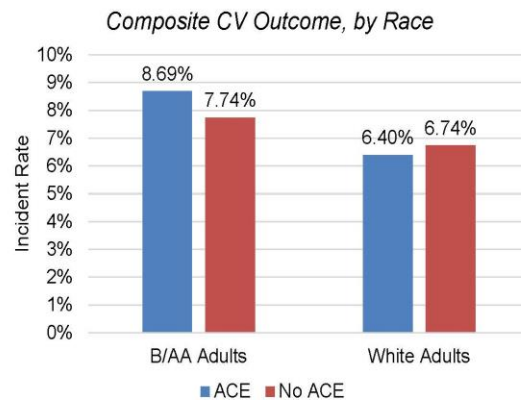
8

Barriers to Equitable Access and Use: Lack of Diversity

It is critical that clinical trials have appropriate representation to facilitate understanding of **differential drugs effects in different populations**.

EXAMPLE: ACE inhibitor-based therapy associated with **poorer cardiovascular outcomes** in hypertensive Blacks but not in Whites.

- Black-ACE group had higher rates of acute myocardial infarction, stroke, and chronic heart failure than the Black-No-ACE group.

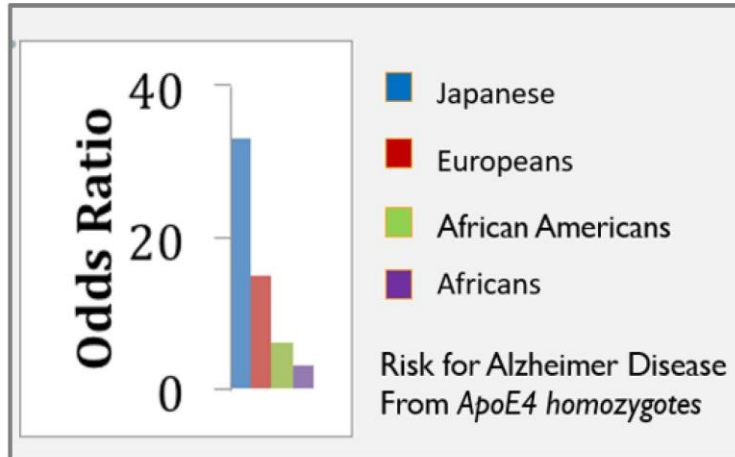


SOURCE: Ogedegbe, G., Shah, N. R., Phillips, C., Goldfeld, K., Roy, J., Guo, Y., Gyamfi, J., Torgersen, C., Capponi, L., & Bangalore, S. (2015). Comparative Effectiveness of Angiotensin-Converting Enzyme Inhibitor-Based Treatment on Cardiovascular Outcomes in Hypertensive Blacks Versus Whites. *Journal of the American College of Cardiology*, 66(11), 1224-1233. <https://doi.org/10.1016/j.jacc.2015.07.021>

diversity.nih.gov

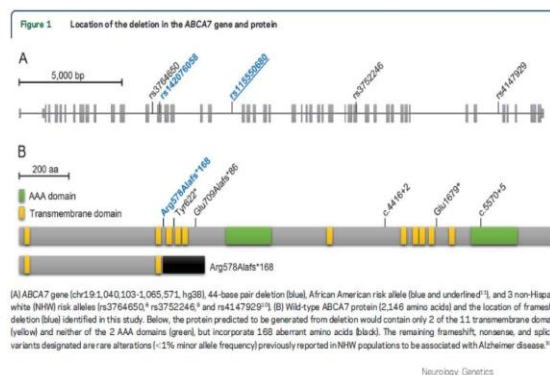
9

Barriers to Equitable Access and Use: Lack of Diversity



Barriers to Equitable Access and Use: Lack of Diversity

ABCA7 frameshift deletion associated with Alzheimer disease in African Americans



Barriers to Equitable Access and Use: Lack of Diversity

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



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.

Today's Agenda

- Background: FDA Approval of Aducanumab
- Barriers to Equitable Access and Use
- NIA and NIH-Wide Initiatives
- Looking Forward

NIA and NIH-Wide Initiatives

- National Strategy for AD Recruitment
- Community Engagement Alliance (CEAL)
- Faculty Institutional Recruitment for Sustainable Transformation (FIRST)
- BRAIN Funding Opportunity Announcement
- UNITE

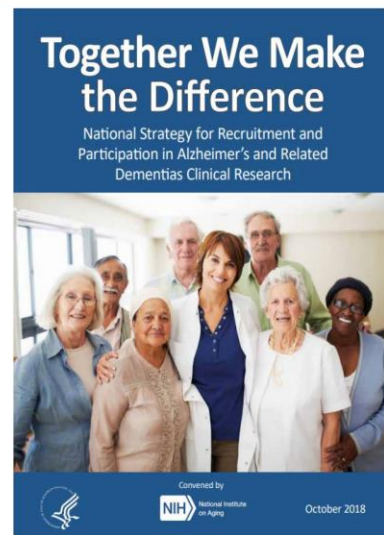
NIA Strategies to Enhance Clinical Trial Diversity

- NIA released a **national strategy** for clinical study sites to engage a wider, more diverse pool of volunteers.
- NIA working on multiple activities:
 - Funding grants to test and identify new approaches to recruit underrepresented groups.
 - Developing and testing recruitment messages and materials for diverse audiences.



NIA repository of resources to support recruitment & retention of participants into clinical trials and studies on Alzheimer's disease and related dementias.

<https://www.nia.nih.gov/research/alzheimers-dementia-outreach-recruitment-engagement-resources>



SOURCE: <https://www.nia.nih.gov/sites/default/files/2018-10/alzheimers-disease-recruitment-strategy-final.pdf>

NIH-Wide Strategies to Enhance Clinical Trial Diversity (Community Engagement Alliance)

MISSION

Provide trustworthy information through **active community engagement and outreach** to the people hardest-hit by the COVID-19 pandemic with the goal of building **long-lasting partnerships** as well as improving diversity and inclusion in our research response to COVID-19

Why Joining a Clinical Trial Matters

Treatments and vaccines for COVID-19 need to be as safe and effective as possible for everyone who will use them.

Mistrust and other barriers to participation have kept many people, including those in the communities hardest hit by the pandemic, from volunteering for research studies. Although the mistrust has been earned – through historical injustices and exclusions from research in the past – including people from every community is very important. It gives us better information about how drugs or vaccines work for different people.

Here are three reasons why it is more important than ever for clinical trial volunteers to be of all ages, races, ethnicities, genders, and physical abilities and to have different underlying health conditions.

1. Data from research studies play a critical role in developing new drugs and vaccines.

How am I protected if I join a clinical trial?

If you choose to volunteer, your rights and well-being are protected. Your consent has been made so how critical?

Cómo desarrollar y mantener la confianza de la comunidad en los recursos sobre COVID-19

Como desarrollar y mantener la confianza de la comunidad en los recursos sobre COVID-19

- Invertir en relaciones a largo plazo con los socios comunitarios.
 - Hacer la prueba de COVID-19 accesible a las comunidades puede desarrollar mejores relaciones y brindar oportunidades de proporcionar información sobre COVID-19.
- Fortalecer las relaciones existentes.
 - Tener agendas flexibles e incluidas por la comunidad.
 - Crear espacios seguros para que los miembros de la comunidad platican.
- Escuchar las inquietudes y las perspectivas de la comunidad.
 - Ofrecer información (dirección de correo electrónico y/o número de teléfono) donde las personas puedan enviar sus preguntas, ideas y comentarios.
- Planificar eventos y pláticas para obtener desde un principio los puntos de vista de la comunidad.
 - Colocar cuadros de monitorización en sus proyectos en las redes sociales.
- Asistir a eventos comunitarios planeados fuera de su organización.
 - Destacar a los miembros de la comunidad local como presentadores en las asambleas públicas virtuales.
- Reconocer los desafíos y errores de la investigación.
 - Explicar claramente los errores éticos cometidos en el pasado por científicos académicos, del gobierno, y de otras organizaciones de investigación, tales como los abusos realizados como parte de experimentos médicos en la historia.

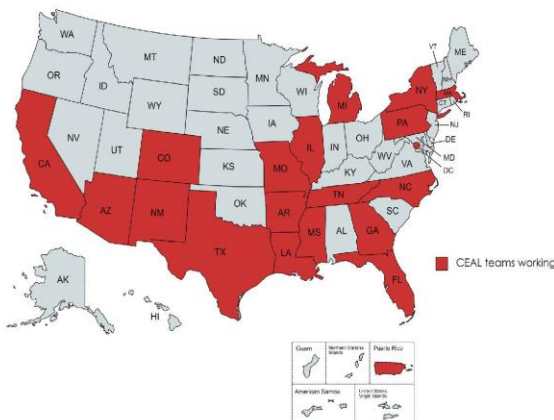
diversity.nih.gov

16

NIH-Wide Strategies to Enhance Clinical Trial Diversity (Community Engagement Alliance)

Addressing COVID-19 Vaccine Hesitancy

21 CEAL state teams partnering with national & local organizations



Academic Partners



Community-Based Organizations



Healthcare Centers & Providers



Faith-Based Organizations



State & Local Government Agencies



Pharmacy Networks

diversity.nih.gov

17

Faculty Institutional Recruitment for Sustainable Transformation (FIRST)

Overarching Goal

- Create cultures of inclusive excellence

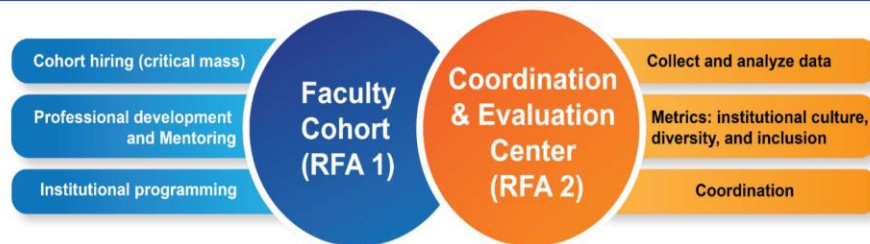
Program Objectives:

- 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 M over 9 years

FIRST – Program Structure



Cohort Features

- Institutional cohort - ≥ 10
 - ≥ 120 new hires over 3 years (nationally)
- Mentoring, sponsorship
- Community building to limit isolation
- Enhanced networking for career advancement

Example Faculty Metrics

- Time to tenure, tenure rate
- Research productivity, bibliometrics
- Time to independent funding
- Interdisciplinary collaborations

Culture/Climate Metrics

- Culture: e.g., C-Change metrics

Three Levels of Analysis

- Cohort
- Departmental
- Institution-wide

Action – BRAIN FOA



Department of Health and Human Services

Part 1. Overview Information

Participating Organization(s)	National Institutes of Health (NIH)
Components of Participating Organizations	National Institute of Mental Health (NIMH) National Eye Institute (NEI) National Institute on Aging (NIA) National Institute on Alcohol Abuse and Alcoholism (NIAAA) National Institute of Biomedical Imaging and Bioengineering (NIBIB) Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) National Institute on Deafness and Other Communication Disorders (NIDCD) National Institute on Drug Abuse (NIDA) National Institute of Neurological Disorders and Stroke (NINDS) National Center for Complementary and Integrative Health (NCCIH)
Funding Opportunity Title	BRAIN Initiative: Reagent Resources for Brain Cell Type-Specific Access and Manipulation to Broaden Distribution of Enabling Technologies for Neuroscience (U24 Clinical Trial Not Allowed)

First NIH FOA using Plan to Enhance Diverse Perspectives as a consideration for scoring

nih.gov/ending-structural-racism

The NIH UNITE Initiative to Strengthen Diversity, Equity, and Inclusion: Together, We're Stronger



NIH UNITE Initiative



nih.gov/ending-structural-racism



The NIH UNITE Initiative



- **Events of 2020 brought into sharp relief the ongoing reality of racial injustice in our country, and the responsibility of all of us to address this issue**
- **A series of intense Institute and Center Director meeting discussions were held to identify initial issues**
- **Two self-assembled affinity groups at NIH (8CRE, AA/B Scientists) and the Anti-Harassment SC met with NIH leadership for candid discussions that informed next steps**
- **We have arrived at a shared commitment to address structural racism: we must not allow this pivotal moment to pass**

The NIH UNITE Initiative



- U** Understanding stakeholder experiences through listening and learning
- N** New research on health disparities/minority health/health equity
- I** Improving the NIH Culture and Structure for Equity, Inclusion, and Excellence
- T** Transparency, communication, and accountability with our internal and external stakeholders
- E** Extramural Research Ecosystem: Changing Policy, Culture, and Structure to Promote Workforce Diversity

Action – Selected for NAPA



NIH Common Fund Transformative Research to Address Health Disparities and Advance Health Equity – Committed up to \$24M

Two FOAs released 3/26/21:

- 1) RFA-RM-21-021 Transformative Research to Address Health Disparities and Advance Health Equity (U01 Clinical Trial Allowed) - <https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-21-021.html>
- 2) RFA-RM-21-022 Transformative Research to Address Health Disparities and Advance Health Equity at Minority Serving Institutions (U01 Clinical Trial Allowed) - <https://grants.nih.gov/grants/guide/rfa-files/RFA-RM-21-022.html>

nih.gov/ending-structural-racism

The NIH UNITE Initiative to Strengthen Diversity, Equity, and Inclusion: Together, We're Stronger



Action – Selected for NAPA



Funding Opportunity Title	Understanding and Addressing the Impact of Structural Racism and Discrimination on Minority Health and Health Disparities (R01 Clinical Trial Optional)
Activity Code	R01 Research Project Grant
Announcement Type	New
Related Notices	None
Funding Opportunity Announcement (FOA) Number	RFA-MD-21-004
Companion Funding Opportunity	None
Number of Applications	See Section III. 3. Additional Information on Eligibility.

With the commitment of up to \$30.8 M by 25 ICOs:
- Letters of intent due **7/20/21**
- Applications due **8/24/21**

<https://grants.nih.gov/grants/guide/rfa-files/RFA-MD-21-004.html>

nih.gov/ending-structural-racism

The NIH UNITE Initiative to Strengthen Diversity, Equity, and Inclusion: Together, We're Stronger



Action – NIH Data by Race/Ethnicity, Disability Status – Selected for NAPA



REPORTS

Home > Report Catalog > Report Catalog Results

Search Results for Reports and Statistics

NEW SEARCH

Topic: Funding Mechanism: Fiscal Year:

Activity: Variable:

Admin Institute/Center: Portfolio:

2 records found.

Report Title	Topic	Variable	Start Year	End Year	Format
Research Grant Investigators by Mechanism, Gender, Race, Ethnicity, and Disability Status, FY2016-FY2020	Investigators, Funded Investigators, Funding Rates	Disability Status	2016	2020	VIEW REPORT
	Investigators, Gender	FY			
	Investigators, Race/Ethnicity	Gender			
		IC			
		Mechanism			
		Race/Ethnicity			

[https://report.nih.gov/sites/report/files/docs/NIH Principal Investigators by Gender Race Ethnicity and Disability 2016-2020 02 23 2021 PDF.pdf](https://report.nih.gov/sites/report/files/docs/NIH_Principal_Investigators_by_Gender_Race_Ethnicity_and_Disability_2016-2020_02_23_2021_PDF.pdf)

UNITE Actions/Priorities Going Forward – Next 6 Months – of special interest to NAPA



- Develop programs to spur institutional culture change in support of inclusivity and equity
- Examine NIH staff (e.g., PO, SRO) interactions with applicants (e.g., URG applicants) to address bias or inequities that may impact funding opportunities
- Develop programs to expand NIH interactions with and support of HBCUs, TCUs and other MSIs

The NIH UNITE Initiative



Cell

Leading Edge

CellPress



Commentary

Affirming NIH's commitment to addressing structural racism in the biomedical research enterprise

Francis S. Collins,^{1,*} Amy Bany Adams,² Courtney Aklın,³ Trevor K. Archer,⁴ Marie A. Bernard,^{5,6} Ericka Boone,⁷ John Burklow,⁸ Michele K. Evans,⁹ Sadhana Jackson,^{2,9} Alfred C. Johnson,¹⁰ Jon Lorsch,¹¹ Mia Rochelle Lowden,¹² Anna María Nápoles,¹³ Anna E. Ordóñez,¹⁴ Robert Rivers,¹⁵ Victoria Rucker,^{5,16} Tara Schwetz,³ Julia A. Segre,¹⁷ Lawrence A. Tabak,³ Monica Webb Hooper,¹³ Carrie Wolinetz,³ and NIH UNITE

DOI: [10.1016/j.cell.2021.05.014](https://doi.org/10.1016/j.cell.2021.05.014) (2021).

nih.gov/ending-structural-racism

The NIH UNITE Initiative to Strengthen Diversity, Equity, and Inclusion: Together, We're Stronger

NIH National Institutes of Health
Turning Discovery Into Health

The NIH UNITE Initiative



UNITE Co-Chairs

- Marie A. Bernard, NIH Office of the Director/Office of Scientific Workforce Diversity
- Alfred Johnson, NIH Office of the Director/Office of Management
- Lawrence Tabak, NIH Office of the Director

UNITE Program Manager

- Victoria Rucker, Center for Information Technology/NIH Office of the Director

UNITE Program Support

- Jordan Gladman, NIH Office of the Director
- Marzjah Esther, NIH Office of the Director

U

Courtney Aklın (IMOD/OD)
Mia Rochelle Lowden (ORIP/OD)
Monica Webb Hooper (NIMHD)
Shelli Avenevoli (NIMH)
Dexter Collins (FIC)
Laura Cooper (NIAMS)
Kevin Davis (CIT)
Leslie Littlejohn (NIAMS)
Troy Muhammad (NCI)
Ian Myles (NIAID)
Roland Owens (OIR/OD)
Kelly Ten Hagen (NIDCR)
Brian Trent (NEI)
Della White (NCCIH)
+Cara Finley (IMOD/OD)
+Stephanie Land (NCI)
+Vanessa Marshall (NIMHD)
+Kamilah Rashid (IMOD/OD)

N

Michele K. Evans (NIA)
Anna María Nápoles (NIMHD)
Robert Rivers (NIDDK)
Gwen Bishop (NIDCD)
Vence Bonham (NHGRI)
Juanita Chinn (NICHD)
Janine Clayton (ORWH/OD)
Kathy Etz (NIDA)
Justin Hentges (AoU/OD)
Daryl Holder (CC)
Samantha Jonson (NCATS)
Joan Romaine (NIAAA)
Asha Storm (NIBIB)
Shannon Zenk (NINR)
+Marzjah Esther (OD)

I

Trevor Archer (NIEHS)
Marie A. Bernard (COSWD/OD)
Treava Hopkins-Laboy (OD)
Alfred Johnson (OM/OD)
Talin Barnes (NIEHS)
Gwyn Collins (NCI)
Charles Egwuagu (NEI)
Courtney Fitzhugh (NHLBI)
Kenneth Gibbs (NIGMS)
Bernard Harper (CC)
Kendall Hill (CSR)
Camille Hoover (NIDDK)
Shawn Lewis (NINR)
Marguerite Matthews (NINDS)
Shaun Sims (NIBIB)
+Melissa Espinoza (NIA)

T

Amy Bany Adams (NINDS)
John Burklow (IMOD/OD)
Sadhana Jackson (NINDS, NCI)
Mohammed Aiyegbo (NIAID)
Albert Avila (NIDA)
Samantha Calabrese (NICHD)
Nelvis Castro (NCI)
Angie Cruz-Albertorio (NCATS)
Carla Garnett (OCPL/OD)
Carl Hashimoto (OIR/OD)
Nakia Makonnen (NIDCD)
Eric Refsland (NIAID)
Eric Sid (NCATS)
Wayne Wang (NHLBI)
Cassie Williams (NIAAA)
+Jesse Isaacman-Beck (IMOD/OD)

E

Ericka Boone (OER/OD)
Jon Lorsch (NIGMS)
Anna E. Ordóñez (NIMH)
Eddie Billingslea (ORWH/OD)
Tiffany Calvert (NIBIB)
Rena D'Souza (NIDCR)
Zeynep Erim (NIBIB)
Leonardo Garzon-Velez (FIC)
Bettie Graham (NHGRI)
Leah Hubbard (NCI)
Patricia Jones (NIA)
Vonda Smith (CSR)
James Washington (NINDS)
Maryam Zaringhalam (NLM)
+Mark Stevens (OM/OD)

Committee Co-Chairs
+Staff Leads

nih.gov/ending-structural-racism

NIH National Institutes of Health
Turning Discovery Into Health

The NIH UNITE Initiative



- ACD videocast - <https://videocast.nih.gov/watch=42270>.
- ACD presentation PDF - <https://acd.od.nih.gov/documents/presentations/06112021UNITE.pdf>.

Today's Agenda

- Background: FDA Approval of Aducanumab
- Barriers to Equitable Access and Use
- NIA and NIH-Wide Initiatives
- Looking Forward

Looking Ahead: Alzheimer's Treatment Pipeline

- The pipeline of potential treatments for Alzheimer's has never been more robust or diverse.

Active NIA AD/ABRD and Related Treatment and Prevention Trials (~270)

Pharmacological Interventions

56 trials

Early Stage Clinical Trials (Phase I & Phase II)

45 trials

Targeted Disease Process
 Amyloid (11)
 Synaptic Plasticity (6)
 Oxidative stress (3)
 Inflammation (3)
 Growth factors/Hormones (2)
 Metabolism/
 Bioenergetics (2)
 Neurogenesis (2)
 Receptors (2)
 Vasculature (2)
 Multi-target (2)
 Circadian Rhythm (1)
 Other (9)

Late Stage Clinical Trials (Phase II/III & Phase III)

11 trials

Amyloid (6)
 Synaptic Plasticity (2)
 Metabolism/
 Bioenergetics (1)
 Tau (1)
 Vasculature (1)

Non-pharmacological Interventions

115 trials

Intervention Modality

Exercise (27)
 Cognitive Training (18)
 Neurostimulation (14)
 Assistive Tech/Device (13)
 Combination Therapy (11)
 Decision-Supportive (5)
 Diet/Supplements (7)
 Sleep-related (7)
 Other (13)

Other
 15 trials

- Treating Neuropsychiatric Symptoms of AD/ABRD (7)
 - Pharmacological (5)
 - Non-pharmacological (2)
- Evaluating Diagnostic Tools (8)

Caregiving Interventions

84 trials

Intervention Type

Improving Care for PWD (43)
 Improving Family or Informal Caregivers (41)

Looking Ahead

- The development of aducanumab **reinforces the need for and NIH's commitment to additional research.**
- Alzheimer's is a complex disease and amyloid represents only one target of Alzheimer's therapeutics.
- Many options are needed for the treatment of Alzheimer's and related dementias.

Enhancing diversity in clinical trial participation and in the scientific workforce has the potential to result in **stronger science that benefits us all.**



National Institutes of Health

Office of the Director

Scientific Workforce Diversity



Great minds think differently.

 Check out our website: diversity.nih.gov

 Sign up for our [quarterly newsletter](#) and visit our [SWD blog](#) for twice monthly updates

 Follow us on Twitter [@NIH_COSWD](#)

 Email us at SWD_Talks@nih.gov