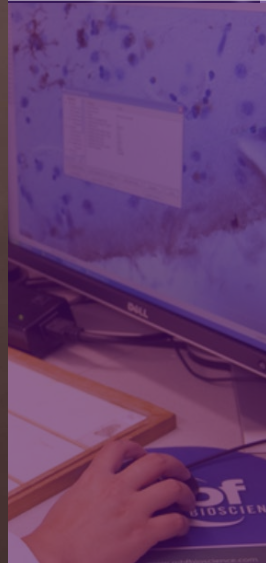




Advancing the Science: The Latest in Alzheimer's and Dementia Research



Breana Tucker
Senior Program Director
Alzheimer's Association





Our Work is About People and Science



The Alzheimer's Association is a worldwide voluntary health organization dedicated to Alzheimer's care, support and research.

Our mission is to lead the way to end Alzheimer's and all other dementia — by accelerating global research, driving risk reduction and early detection, and maximizing quality care and support.

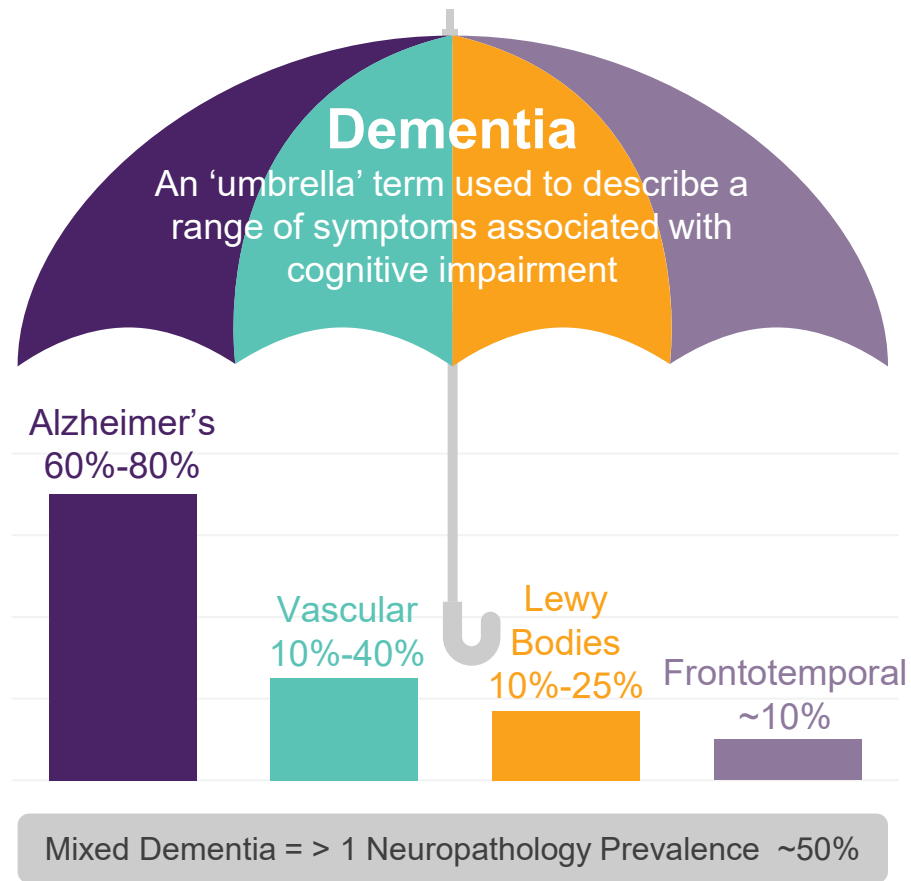


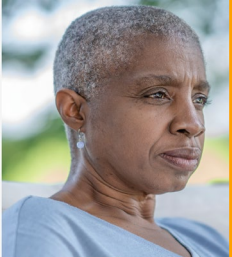
Our Time Today

- Landscape of Alzheimer's and Dementia Science
- Highlights in Early Detection and Diagnosis
- Latest Advances in Clinical Trials, Treatments and Lifestyle Interventions
- How You Can Get Involved

Dementia is a Syndrome

- Dementia is a collection of symptoms related to cognitive decline
- Can include cognitive, behavioral and psychological symptoms
- Due to biological changes in the brain
- Alzheimer's is most common cause
- Mixed dementia is very prevalent
- Some causes of cognitive decline are reversible and not truly dementia





2023 ALZHEIMER'S DISEASE FACTS AND FIGURES



While only 4 in 10 Americans talk to their doctor right away when experiencing early memory or cognitive loss,



7 in 10 would want to know early if they have Alzheimer's disease if it could allow for earlier treatment.

Between 2000 and 2019, deaths from heart disease has



decreased
7.3%

while deaths from Alzheimer's disease have increased
145%



More than
6 million Americans
are living with Alzheimer's

.....a number expected to
double by 2050

In 2023, Alzheimer's and other dementias will cost the nation

\$345 billion

By 2050, these costs could rise to nearly
\$1 trillion

Over 11 million Americans provide unpaid care for people with Alzheimer's or other dementias

These caregivers provided more than 18 billion hours valued at nearly

\$340 billion



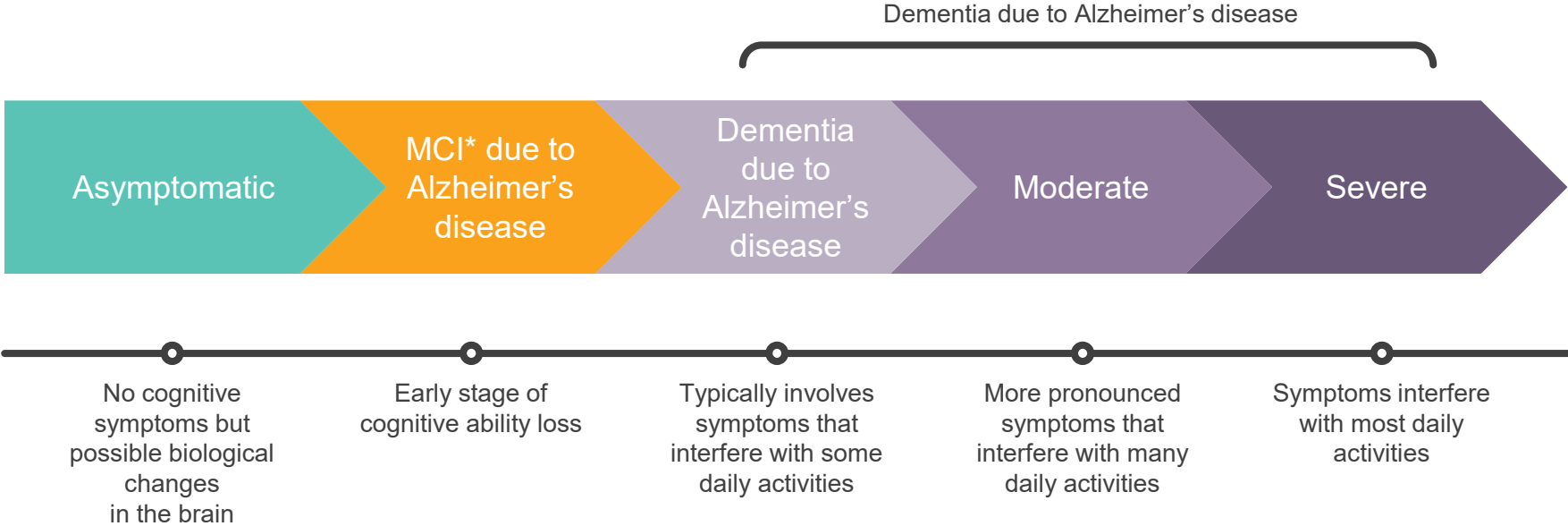
1 in 3 seniors dies with Alzheimer's or another dementia

It kills more than
breast cancer
+
prostate cancer
combined

The lifetime risk for Alzheimer's at age 45 is

1 in 5 for women
+
1 in 10 for men

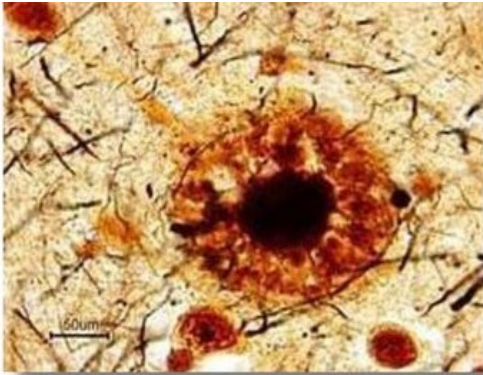
Alzheimer's Disease is a Continuum



*Mild cognitive impairment

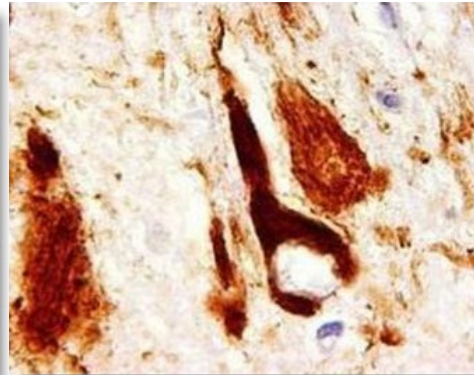
Hallmarks of Alzheimer's Disease

Neuritic Plaques



Extracellular deposits of **beta-amyloid**

Neurofibrillary Tangles

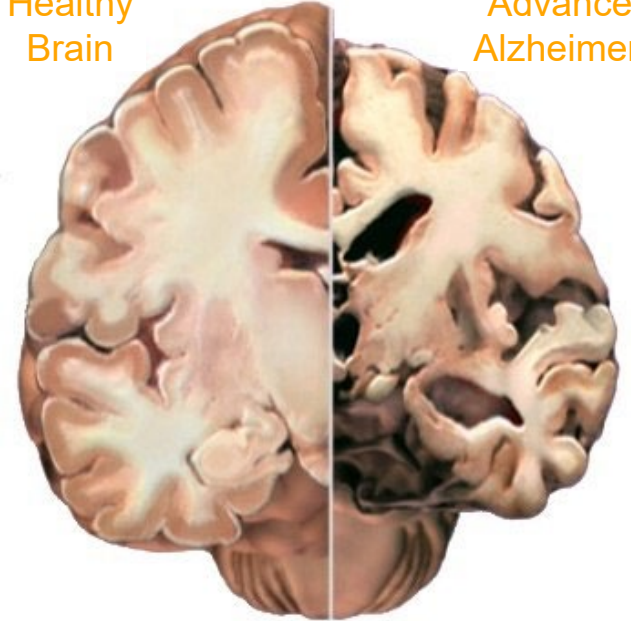


Intracellular deposits of hyperphosphorylated **tau**

Neurodegeneration Cortical Atrophy

Healthy
Brain

Advanced
Alzheimer's



What May Impact Risk of Cognitive Decline or Dementia



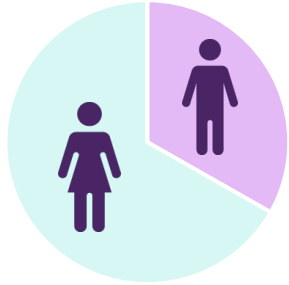
Constellation of reasons may be fundamental and unique to each individual

Social determinants of health may impact some or all of these factors

Strength of our understanding is different across risk factors

Need to Study Risk from ALL Angles

Gender, Racial and Ethnic Disparities in Alzheimer's Prevalence and Clinical Trials



Almost **two-thirds** of Americans with Alzheimer's are **women**.



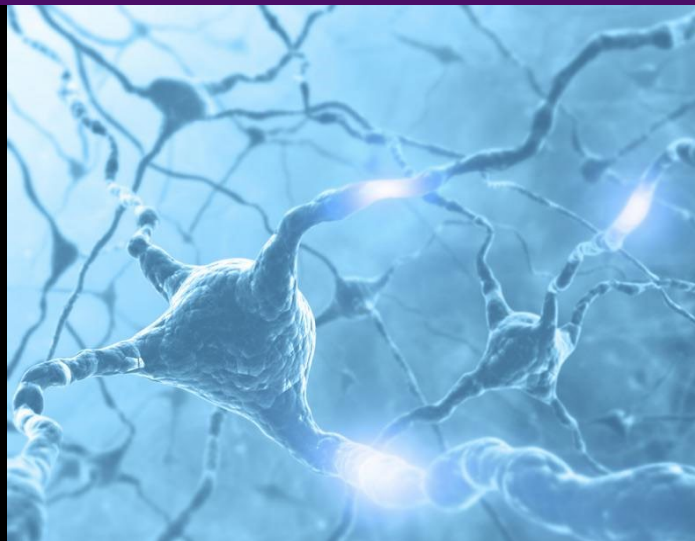
Older **Black** and **Hispanic** Americans are disproportionately more likely than older **Whites** to have Alzheimer's or other dementias.



Ethnoracial groups have been historically **underrepresented** in clinical studies, underscoring the need for more **diversity** in dementia research.



Exciting Time in Research



The Largest Nonprofit Funder of Alzheimer's & All Dementia Research in the World



\$320M

currently
active



1000+ projects



54 countries



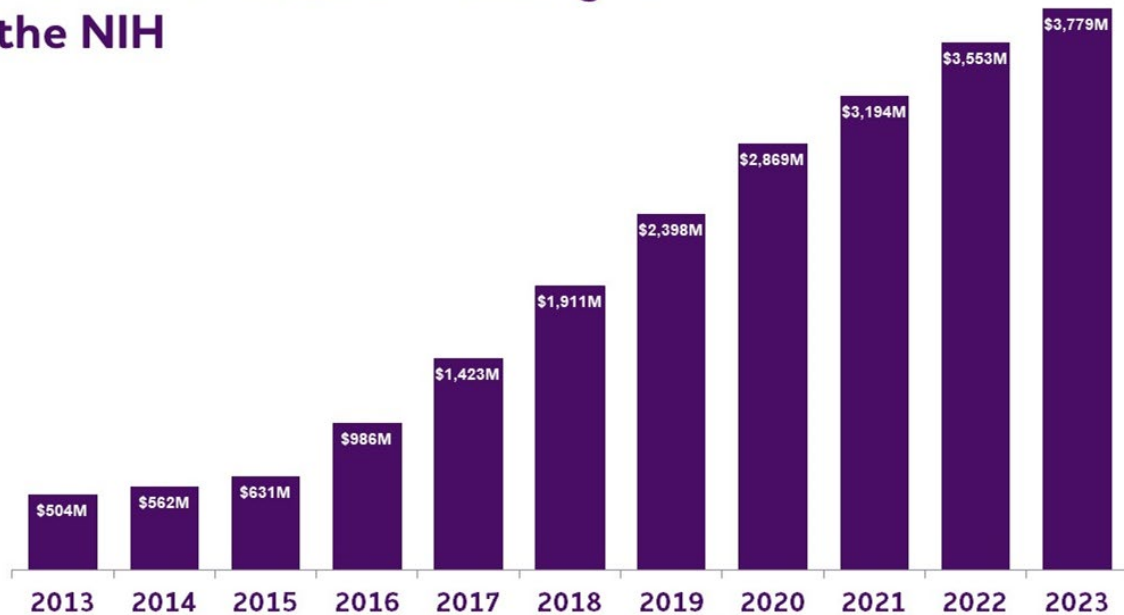
Find GRANT info at
alz.org/grants

We Advocate



Today, Alzheimer's and dementia research funding is more than \$3.7 billion annually. Since the passage of the Alzheimer's Accountability Act, Congress has increased Alzheimer's and dementia research funding more than seven-fold.

Alzheimer's and Related Dementia Research Funding at the NIH



Source: NIH (<https://report.nih.gov/funding/categorical-spending>) with the 2023 figure reflecting NIH's estimated 2022 funding plus the additional increase of \$226M appropriated through the FY2023 omnibus.



Early Detection and Diagnosis





An early diagnosis can have emotional, social and medical benefits

- Understand symptoms
- Explore treatment options
- Improve health outcomes
- Prevent complications
- Make legal and financial decisions
- Access care services
- Participate in clinical trials
- Effectively manage the cost of care

Modernizing the Diagnosis

Cognitively Unimpaired

Alzheimer's Dementia

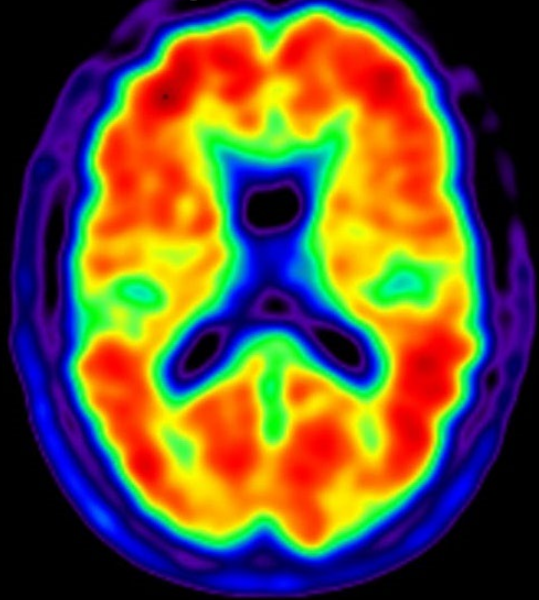
Biomarkers

History & Cognition

20

years or more before symptoms appear,
the brain changes of Alzheimer's may begin.

BIOMARKERS ARE CHANGING THE GAME



ACCELERATING THE SPEED OF RESEARCH

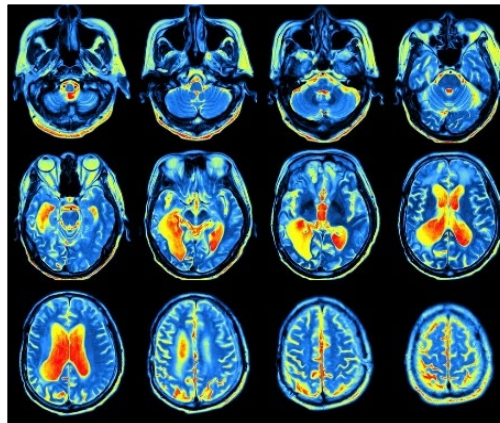
Brain Imaging

Biofluid Analysis

Emerging Markers

What is a Brain PET Scan?

- **Positron emission tomography (PET)** scan results aid doctors in diagnosing and treating memory conditions
- PET scan agents used to measure amyloid and tau, two hallmarks of Alzheimer's, are FDA-approved
- Scan information can help exclude Alzheimer's disease, aid in diagnosis, and may help guide patient management.



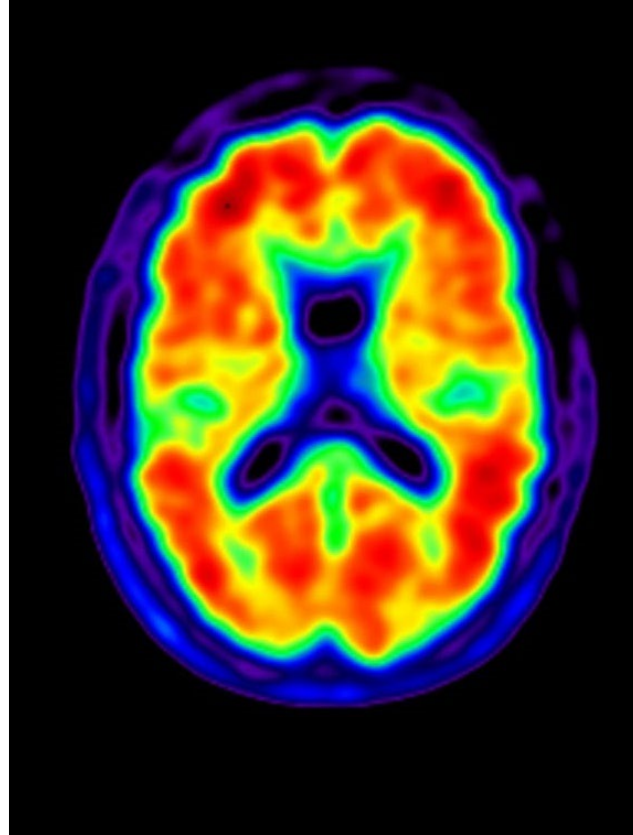
New Era of Diagnostics: Cerebrospinal Fluid (CSF) & Blood Tests



- Global race to uncover and develop fluid based biomarkers for Alzheimer's and other dementia
- More than beta amyloid and tau; emerging markers of cell death, inflammation and vascular related changes are being developed
- Fluid tests are valuable tools to help streamline clinical trial enrollment
- Current available fluid tests predict the presence of Alzheimer's amyloid brain plaques
 - 1 FDA approved amyloid CSF test on market for Alzheimer's
 - 3 emerging amyloid blood tests on market for Alzheimer's
 - Must be prescribed by healthcare providers to individuals with a cognitive concern.
- However, additional data are needed before blood tests can be used as a stand-alone test for diagnosis, and before considering broad use in primary care settings.

Advances in Biomarkers

- Biofluids are likely to be the future
- Urgent need for tools that streamline the process for patients
- But they WILL NOT replace the need for PET in trials in the near future



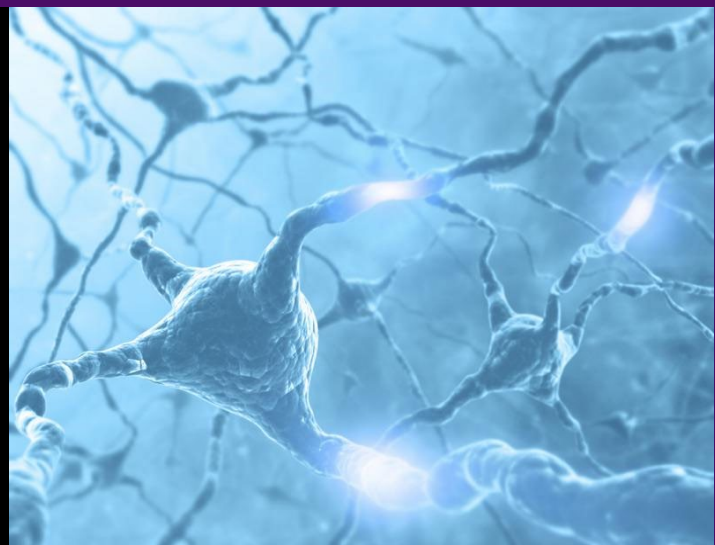
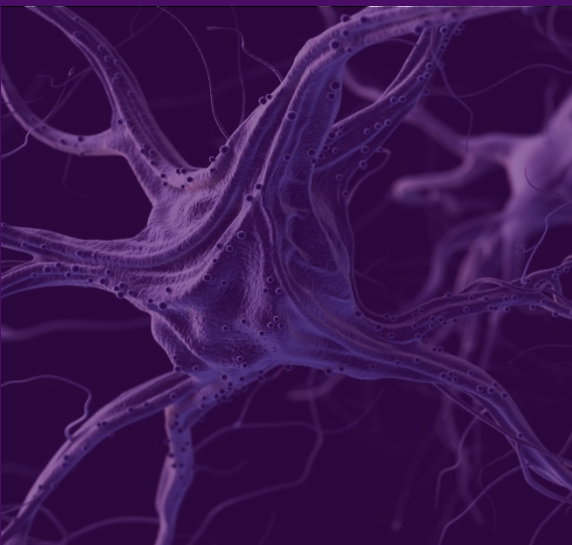
Brain Imaging



Biofluid Analysis



Progress Towards Risk Reduction and More Effective Treatments



Focus on Risk Reduction

Up to **40%** of dementia cases could be prevented or delayed by targeting modifiable risk factors

Research suggests combining multiple healthy factors may be the most impactful



**Physical
Activity**



**Cognitive &
Social Stimulation**



**Healthy
Diet**

U.S. Study to Protect Brain Health through Lifestyle Intervention to Reduce Risk



Two Year | Multi-Center (Five U.S. Sites) | Randomized Clinical Trial
2,000 Participants | 60-79 Years Old | At Risk for Cognitive Decline



Self-Guided and **Structured** Intervention Groups
Physical Activity | Nutrition | Intellectual Engagement | Health Coaching
Differ in Format, Expectations, and Accountability



Commitment to **Community-Based**
Outreach, Recruitment and Representation

- ✓ **Completed Recruitment in March 2023**
- ✓ ~ 30% from *Underrepresented Populations*

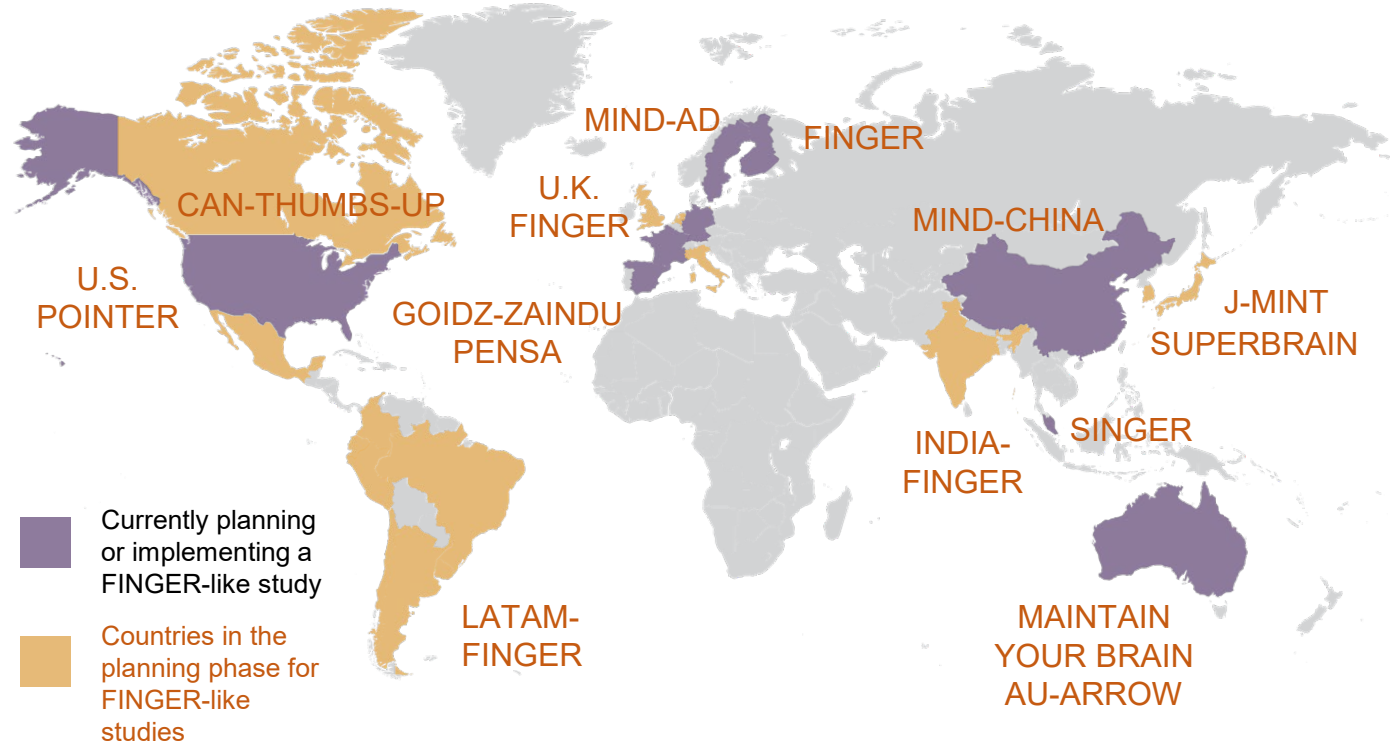
NIA Supported **Ancillary Studies:**

- ✓ POINTER-Neuroimaging
- ✓ POINTER-zzz
- ✓ POINTER-Neurovascular
- ✓ POINTER-Microbiome

If the interventions prove effective, this study will lead the way in the development of an accessible and sustainable community-based program for prevention.

U.S. POINTER Is Not Alone

World-Wide FINGERS is a large, international network sharing experiences and data, and is collaborating to prevent cognitive impairment & dementia worldwide.



Feeding the Treatment Discovery Pipeline

← ALZHEIMER'S  ASSOCIATION® →

Preclinical (years to decades)



- laboratory experiments
- tests cellular and animal models

Phase I (months)



- tests human volunteers
- risks and side effects

Phase II (months to years)



- tests more volunteers
- more information about safety and dosage

Phase III (years to decades)



- often two trials with similar study design
- tests even more volunteers
- provides chief evidence

ALZHEIMER'S  ASSOCIATION®

FDA-Approved Therapies for Alzheimer's



Treat
symptoms

Targets
amyloid

Targets
amyloid

1906

1996

2000

2001

2003

2014

2021

2023

First
description
of disease

Donepezil
(Aricept®)

Rivastigmine
(Exelon®)

Galantamine
(Razadyne®)

Memantine
(Namenda®)

Memantine
+ Donepezil
(Namzaric®)

Aducanumab
(Aduhelm™)

Lecanemab
(Leqembi™)

Most of the currently available therapies do not modify or slow disease, only treat symptoms

A New Phase of Treatment

Targets amyloid Targets amyloid Targets amyloid



2021

Aducanumab
(Aduhelm™)

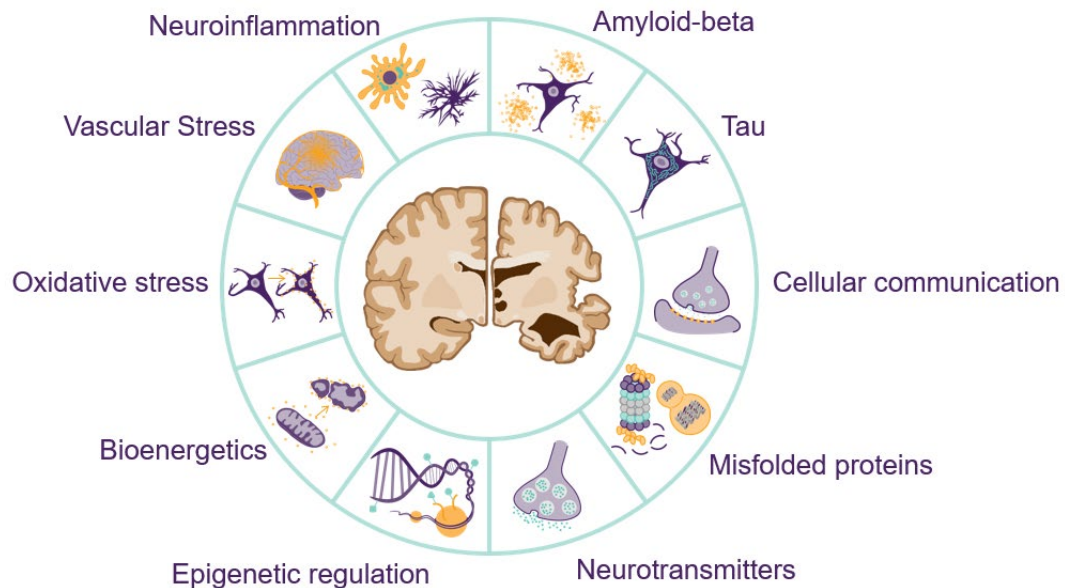
2023

Lecanemab
(Leqembi™)

Donanemab

Under FDA
Review

Today, Over 140 Unique Therapies Being Tested in Clinical Trials that Target Multiple Aspects of Alzheimer's Biology



Every study helps scientists learn more about the disease they are trying to address.

There is an urgent need for inclusion of individuals of under-represented backgrounds in clinical trials so that new discoveries can benefit all.



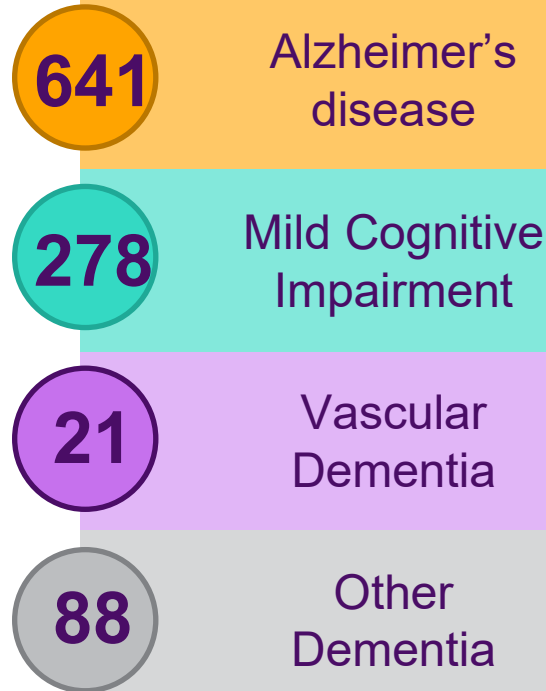
How to Get Involved in Research

Over 370,000 Users

750+ Clinical Studies at
Locations around the world

alz.org/trialmatch

TrialMatch is a free **clinical studies matching service** designed to provide a **customized list** of potential study matches to each user.



A New Phase



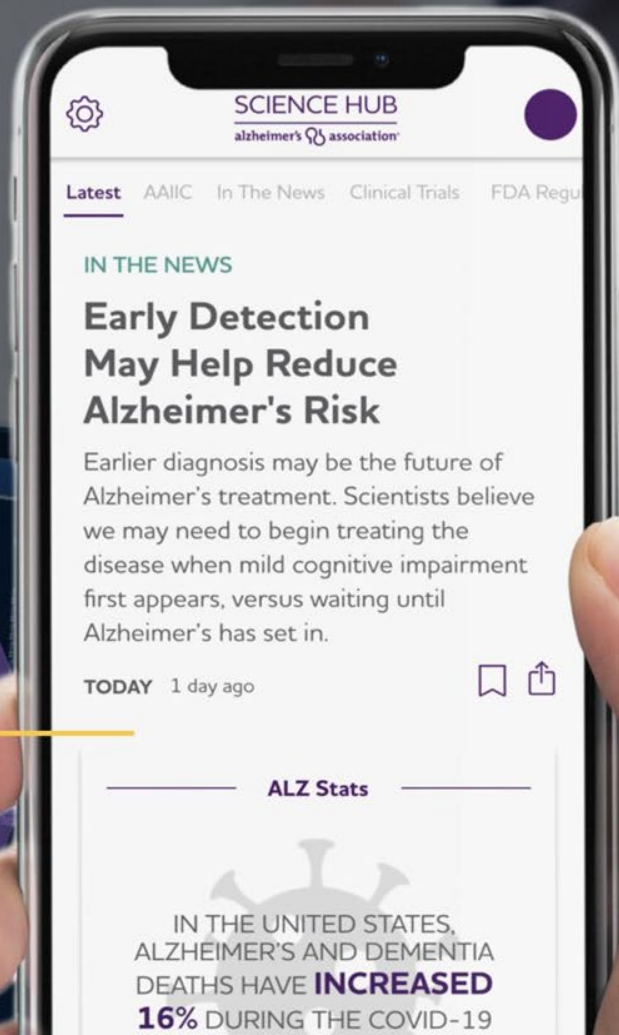
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SCIENCE HUB

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Alzheimer's Association Research Resources



Association's Website | [alz.org](https://www.alz.org)



Research at the Association | [alz.org/research](https://www.alz.org/research)



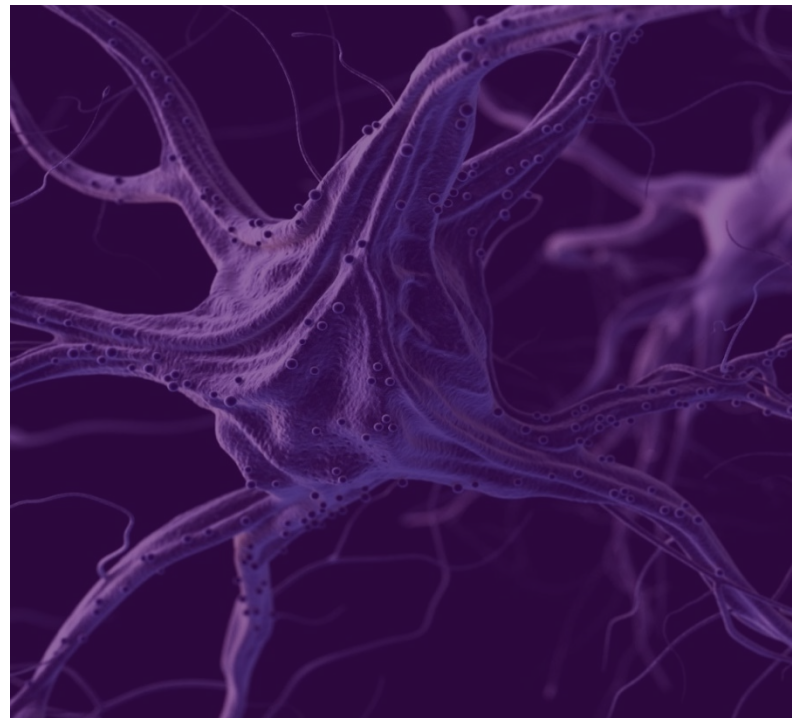
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Contact the 24/7 helpline | 800-272-3900





In Summary...

- **Alzheimer's Association is the global leader for Alzheimer's and dementia science**
- **Exciting time in research**
 - New tools for detection and diagnosis
 - Growing diversity of therapies under investigation
 - New resources and strategies to promote diverse participation
- **There is HOPE in research**



Vision: A world without
Alzheimer's disease
and all other dementia.™

1-800-272-3900



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