Neurotechnology for Aging Brain - Funding and Resources from the National Institute on Aging (NIA)

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Outline

1. NAPA and NIA Budget for AD/ADRD
2. AD/ADRD Research Milestones
3. NIA Funded Assistive Technologies for Aging
4. NIA Initiative - Enabling Technology for ADRD
5. Current Funding Opportunities and Resources
1. NAPA and NIA Budget for AD/ADRD

- The National Alzheimer’s Project Act (NAPA) signed into law 2011.
- The primary goal of the NAPA is to prevent and develop effective treatments for AD and related dementias (ADRD) by 2025.
2. AD Research Implementation Milestones

9. Biomarkers

- Plasma biomarkers (A, T, N, I)
- Other peripheral tissue and fluid biomarkers
- Digital phenotyping and markers to improve clinical trials and brain health

11. Enabling Technologies and Disease Monitoring
11.C: Embed wearable technologies as well as pervasive computing approaches in existing and new clinical research, longitudinal cohort studies as well as in clinical trials to enable continuous capture of various types of participant relevant data.
3. NIA Funded Assistive Technology (FY 2016-2020)
Some NIA Funded Research Projects

- **CART** - Collaborative Aging (in Place) Research using Technology
- Speech recognition for early detection of AD risk
- Driving patterns to monitor cognitive change
- In-home sleep-wake monitoring of MCI
- Home-based cognitive test in clinical research
- Brain Health Registry, an online recruitment, assessment and monitoring of brain health over time
- I-Connect Web-enabled social interaction to delay cognitive decline in seniors
- Brain safe a digital brain safe mobile APP
- [Accurate WiFi-Based Localization of Dementia Patients for Caregiver Support](#)
- Socially assistive robot for [Improving the Well-being of Elderly with Dementia](#)
- Tailored Lighting intervention (TLI). As non-pharmacological approach for AD
4. NIA Initiative - Enabling Technology for AD

- Cost-Effective Early Detection of Cognitive Decline (2017)

- Applying Digital Technology for Early Diagnosis and Monitoring of Alzheimer’s Disease and Related Dementias (2019)


- Use of Neurotechnology in Normal Brain Aging and AD/ADRD (2020)
Digital Technology for Aging Brain and ADRD

- >50% MCI/AD are undiagnosed
- Challenges of AD drug clinical trials
- An era of wireless digital devices
- Increasing users of smart phones (75% of >60 years old)
- Innovative data science

Koutis et al., Nature Digital Medicine June 2019
Some NIA funded SBIR Projects

Devices

- **Sonica, LLC** sensor that can capture respiratory, sleep, movement, swallowing.
- **Bone Health Technologies** stimulates the hips and spine to reduce bone loss

Diagnosis

- **C2N DiamiR** blood-based tests for early detection of MCI and AD
- **Vasoptic Medical, Inc.** retinal imaging methods to screen & diagnose glaucoma

Digital health and sensing technologies

- **Healthcare Technologies and Methods, LLC** an interactive platform for older adults with hearing impairment.
- **CareBand, Inc.** a wearable sensor that monitors activity and location and that can detect falls.
- **OneClick.chat (Potluck, LLC)** a social engagement tech for older adults
- **Blue iris labs** personalized circadian-effective light for aging and AD

https://report.nih.gov/
5. AD/ADRD & Technology-specific Funding Opportunities

1. PAR-19-070 (R01) and PAR-19-071 (R21) Research on Current Topics in Alzheimer’s Disease and Its Related Dementias

2. NOT-AG-20-017 Notice of Special Interest: Digital Technology for Early Detection of Alzheimer’s Disease and Related Dementias

3. PAR-18-519 Sensory and motor system changes as predictors of preclinical Alzheimer’s R01

4. PA-17-088 (R01) and PA-17-089 (R21) Secondary Analyses of Existing Cohorts, Data Sets and Stored Biospecimens to Address Clinical Aging Research Question

5. RFA-AG-20-050 (R61/R33) and RFA-AG-20-051 (R01) Low Cost Detection of Cognitive Decline in Clinical Settings

6. PAR-19-298 (R01) Non-Invasive Neurostimulation in AD/ADRD
NIA Other Funding Opportunities (continued)

- **PAS-19-391** Small Research Grant Program for the Next Generation of Researchers in AD/ADRD Research: Area of Focus Archiving and Leveraging Existing Data Sets for Analyses (R03)
- **PAS-19-392** Small Research Grant Program for the Next Generation of Researchers in AD/ADRD Research: Area of Focus Basic Science (R03)
- **PAS-19-393** Small Research Grant Program for the Next Generation of Researchers in AD/ADRD Research: Area of Focus Systems Biology (R03)
- **PAR-19-304** Early-Stage T1 Translational Aging Research (Bench to Bedside) for the Development of Novel Therapeutics (R33)
- **PAR-19-305** Early-Stage T1 Translational Aging Research (Bench to Bedside) for the Development of Novel Therapeutics (R21/R33)
- **PA-18-826** Exploratory Analyses of Adherence Strategies and Data Sets from CALERIE to Investigate Behavioral and Psychosocial Aspects of Sustained Caloric Restriction in Humans (R21)
- **PA-18-824** Exploratory Analyses of CALERIE Data and Biospecimens to Elucidate Mechanisms of Caloric Restriction (CR)-Induced Effects in Humans (R21)
NIA SBIR Funding Opportunities
https://www.nia.nih.gov/research/osbr/nia-small-business-funding-opportunities#omnibus

7. **PAS-19-316** (SBIR); **PAS-19-317** (STTR) Advancing Research on Alzheimer's Disease (AD) and Alzheimer’s-Disease-Related Dementias (ADRD) (R43/R44 Clinical Trial Optional)


9. **SBIR & STTR PA-20-128** CRP Technical Assistance

10. **SBIR & STTR PA-20-129** **SBIR & STTR PA-20-130** CRP Technical Assistance and Late Stage Development

11. **SBIR PA-18-705** SBIR Technology Transfer

12. **RFA-AG-21-018** (R24) **RFA-AG-21-009** (P30) Artificial Intelligence and Technology Collaboratories for Aging Research Coordinating Center (AITCC) (R24 Clinical Trial Not Allowed)
NIA funded Data Resources & Repository

- The National Centralized Repository for Alzheimer’s Disease and Related Dementias (NCRAD)
- Alzheimer’s Disease Neuroimaging Initiative (ADNI)
- National Alzheimer’s Coordinating Center (NACC)
- National Institute on Aging Genetics of Alzheimer’s Disease Data Storage (NIAGADS)
- Alzheimer’s Disease Sequencing Project (ADSP)
- Accelerating Medicines Partnership – Alzheimer’s Disease (AMP-AD)
- National Archive of Computerized Data on Aging (NACDA)
- The Gateway to Global Aging Data
- National Health and Aging Trends Study (NHATS)

https://www.nia.nih.gov/research/data-sharing-resources-researchers
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