NACC & Gates Ventures Alzheimer's Disease and Related Dementias Digital Biomarker Pilot Program – Request for Applications

Gates Ventures

NACC

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National Alzheimer's Coordinating Center (NACC) and Gates Ventures Alzheimer's Disease and Related Dementias (AD/ADRD) Digital Biomarker Pilot (DBP) Program Request for Applications (RFA)

Table of contents

Open Call for Proposals

Overview

Alzheimer's Disease and Related Dementias (AD/ADRD) research is entering the digital age! There is a huge opportunity to leverage digital tools to advance AD/ADRD research and discovery and make this research more inclusive. A key focus of this award program, a partnership between [Gates Ventures](#) and [National Alzheimer's Coordinating Center](#) (NACC), is to accelerate the pace of digital innovation in AD/ADRD and to facilitate impactful collaborations between academia and industry. This award will create pathways for digital technology to be applied within the Alzheimer's Disease Research Centers (ADRC) network which serves as a model for the global AD/ADRD community. The data collected through these awards will be integrated with other standardized data modalities at NACC and made freely available to researchers everywhere. We are committed to working with awardees to scale successful projects across the full ADRC network and beyond. Together this data will open the door to better early detection, treatment, and prevention of AD/ADRD.

The selection committee will choose one to three pilot projects and award between $250,000 to $ 1,000,000 (direct costs, 15% indirect cap) for one to two-year digital pilot projects. Award amounts will be based on the stage and scope of the pilot projects proposed. Funding will be provided for pilot projects that leverage technology to enable richer and more objective data collection with less burden for participants and ADRCs and that advance the development and validation of digital biomarkers.

Application Requirements

Eligibility

Funding is open to researchers and clinicians worldwide at:

- Academic institutions or nonprofits
- For profit companies; existing companies and new spinouts are both eligible
- Industry partnerships are strongly encouraged

NOTE: Pilot Principal Investigators can come from any institution, but proposal submitters must have underline multiple (two or more) ADRC collaborators to be considered for funding.

Project Requirements

The proposed pilot project should:

- Add research value and increase accuracy and/or objectivity of measures
- Reduce burden: projects must demonstrate how they will reduce burden on patients and/or providers and medical center staff
- Expand and address diversity
- Involve multiple ADRCs
- Demonstrate scalability
- Be amenable to open science experiments that include broad data sharing (such as data challenges) down the line
- Funded projects, including for-profit companies, must agree to broad, raw, data sharing.

Please review the application submission details section below for more application submission requirements.

Data Sharing

All data generated or used in each pilot project must be made accessible to the research community through the National Alzheimer's Coordinating Center (NACC) Data Platform.

Please note: Pilot projects and their partnering companies are expected to share raw digital data files with NACC.

Modalities and tools

The selection committee is open to proposals that incorporate a wide range of modalities and tools (examples listed below). The proposed tool(s) should have the potential to be easily deployed at scale across the ADRC Program and beyond. Active and/or passive data collection approaches are welcome.

Example modalities or data sources include but are not limited to: *(Examples of clinical measures of interest in parenthesis)*

- **Sleep** *(e.g. biological measures such as heart rate, time sleeping, sleep interruptions, body temperature, etc.)*
- **Movement and/or Phone gyroscope measures** *(e.g. gait measures and disorders, motor and physical functioning)*
- **Fall detection** *(e.g. motor and physical functioning)*
- **Mood State**
- **Speech** *(e.g. cognition, mood state)*
- **Video** *(e.g. movement characteristics, cognition, mood state)*
- **Language** *(e.g. cognition, mood state)*
- **Eye tracking** *(e.g. eye movement characteristics)*
- **Digitized UDS ([Uniform Data Set](#)) and non-UDS**
- **Diet** *(e.g. biological measures, cognition, mood state)*
- **Driving** *(e.g. cognition, motor and physical functioning)*
- **Keystrokes** *(e.g. cognition, motor and physical functioning)*

Examples of digital tools include, but are not limited to:

- Wearable devices (e.g. smart watch)
- Single and/or Multi-sensors
- Mobile/tablet apps
- Smart home systems
- Virtual and augmented reality platforms
- Desktop/web apps

- Deep machine learning-AI-driven Algorithms
- Single Digital Modality Processing Software
- Multi-Digital Modality Processing Software
- Large Language Models

Proposal review criteria

All pilot project proposals will be evaluated by the selection committee on scientific and technical merit, level of innovation, and investigator and organizational capabilities.

Selection Committee: TBA

All the following criteria should be addressed:

- **Context of Use (CoU):** Describe how the proposed digital data collection will contribute critical data needed in the Alzheimer's Disease field and how it potentially leads to the development of a digital biomarker (biomarkers can include diagnostic, monitoring, predictive, prognostic, and susceptibility/risk factors) in research and clinical settings. The expected context of use must be appropriate for the stage of disease and be fully described in the application. Applicants should specify the participant population in which the technology will be used in addition to the targeted user (i.e., primary care physician in clinic, patient in clinical trial, etc.).
- **Correlations with Underlying Clinical Phenotype:** Demonstrate a rational biological connection of the measured data to the disease pathophysiology.
- **Supporting Information:** Includes technology functional characteristics such as feasibility and performance including accuracy, precision, consistency, and uniformity. Data on human interaction with the technology (i.e., has this been tested in human subjects or in the target population?) and any supporting literature should be included.
- **Demonstrated Need:** Demonstrate what problem this pilot proposal will address. Provide background information and/or research on the current market that details market landscape, gaps in addressing the target problem, and potential competition.
- **Experimental Design:** Includes the proposed clinical population, outcome measures, and analysis plan, as well as plans on how the technology will be implemented for the project period.
- **Data Collection Policies:** What raw data, derived data, and meta-data will be produced, and how will these data be handled? How will "data collectors" be trained to ensure data reliability/validity and how will you assess that data collection training effectiveness? Where will data QC be conducted and by

whom? What are the standards for "complete" or acceptable data quality? How will data generated from these technologies be made available to NACC once it is collected?

NOTE: The proposal must include plans for sharing raw data files with NACC and highlight data protection policies.

- **Cohort Characteristics:** Participants should be limited to ADRC participants. Cohorts should include individuals from high-risk groups for AD/ADRD, groups generally underrepresented in AD/ADRD research, and other populations that disproportionately experience health burdens and/or low access to health care.
- **Scalability Considerations:** All projects should discuss how the proposed technology could be translated into clinical use and in what contexts. Validation projects should include additional details on distribution, the regulatory pathway, clinical integration plans, expected cost (to patients, payers or healthcare providers) and qualitative descriptions of anticipated burden addition or reduction on the healthcare system (e.g., additional test in the system or replaces a test in the system).
- **Governance Considerations:** Sites involved in pilot projects are responsible for getting IRB approval for work that they will be involved in for the purposes of this project. It is recommended you review the following: [Request for Information: Developing Consent Language for Research Using Digital Health Technologies released from NIH](#).
- **Intellectual Property (IP) Considerations:** Includes any pre-competitive development efforts and current IP status.
- **Inclusion of Clinical Team Members:** Digital biomarker tests are expected to have clinical utility and therefore collaboration with a physician and/or a neuropsychologist with extensive experience with Alzheimer's disease or related dementias is required. A physician is required for all projects recruiting participants with cognitive or behavioral impairment and these studies must be approved by an institutional review board.

Discussion on how the proposed digital measure(s) would fit into the current AD/ADRD clinical and research landscape, and how it would benefit clinical trials, patient care, caregiver burden, should be included.

Timeline

Proposed Timeline for Pilot Launch:

- **October 19, 2023:** RFA Announced and Applications period opens
- **February 21, 2024:** Deadline for applications
- **Spring 2024:** Committee selects one to three winners
- **Spring 2024:** Funding awarded to winners via NACC
- **Spring 2024:** Pilot projects are launched (pilot length one to two years) *

* Pilot project groups are expected to meet with NACC and Gates Ventures throughout the pilot term and provide regular progress reports.

Support

Funding

The pilot project(s) selected will receive funding between $250,000- $1,000,000 (direct costs, 15% indirect cost cap) for pilots ranging between one to two years in length.

Funding will be dispersed by NACC and will support:

- Provisioning digital instruments
- Costs associated with the collection of data using digital instruments*
- The integration of this data into the NACC Data Platform and sharing it with the ADRD research community via NACC's Data Front Door

* Instruments can be from a variety of sources and offered in kind

Access to Consultants

In addition to funding one to three selected pilots, this initiative will also provide all applicants with support from consultants with industry and regulatory expertise. Consultants will help applicants refine study designs and help to identify follow-on funding opportunities that will advance biomarkers towards commercialization such as SBIR/STTR.

Potential Follow-on Support

- Promising digital pilot projects may be scaled to the full ADRC program and eligible for follow-on funding via NACC's U24 renewal.
- Funded Data Challenge using data collected from the pilots selected for funding
- SBIR/STTR: https://www.nia.nih.gov/research/sbir

NIA Small Business Programs (SBIR & STTR)

Non-dilutive Funding for Healthy Aging Innovations

Application Submission Details

Please be sure to review the following:

- [Before Getting Started](#)
- [Application Instructions](#)
- [Full Proposal Details](#)
- [Supplemental Materials](#)
- [Review Process](#)

Before Getting Started

1. **Carefully review the full RFA (this document)**

2. **Review the mission statement, application restrictions and review policies, and funding policies below:**

   - **Mission Statement**
     - The mission of the National Alzheimer's Coordinating Center (NACC) and Gates Ventures Alzheimer's Disease and Related Dementias (AD/ADRD) Digital Biomarker Pilot (DBP) Awards is to accelerate innovative digital data collection and sharing across the Alzheimer Disease Research Center (ADRC) Program to accelerate Alzheimer's Disease and Related Dementias (AD/ADRD) research and discovery.
     - The NACC and Gates Ventures AD/ADRD DBP Awards are seeking to fulfill this mission by providing funding for pilot projects that leverage technology to enable richer data collection with less burden for participants and ADRCs and that advance the development and validation of digital biomarkers. As a public charity, the DBP Awards funding must be used specifically for an approved scientific project that advances this stated mission.

   - **Application submission restrictions**
     - Any application not meeting the criteria described above will not be reviewed.

- o No person involved in the review of applications may be part of a team submitting an application.
- o **Page limits:**
    - 1-page project overview (section 1)
    - 6-page research strategy (sections 2a-2g)
    - References are not included in this page limit
- o **Format requirements:** 12-pt minimum font size, margins no smaller than 0.5-inch, PDF format.
- o **No appendices will be accepted.**

- **Application review process policies**
    - o All applications will be reviewed by the selection committee.
    - o All pilot project proposals will be evaluated by the selection committee on scientific and technical merit, level of innovation, and investigator, organizational capabilities and alignment with the goals of the RFA.

- **Funding mechanism**
    - o Pilot projects receiving funding will have a subcontract that is awarded through NACC to the partnering ADRCs on the project.

- **Allowable and unallowable costs**
    - o This funding may be provided for approved personnel costs, supplies (e.g., consumables, chemicals, animals), small non-durable equipment up to $2,500 per item, consultants, and participant costs related to the collection of data.
    - o This funding may not be used for cost of living, capital equipment, equipment service contracts, publication costs, or travel (unless pre-approved under special circumstances).
    - o Up to 15% of additional funding will be provided for indirect costs/overhead.

Application Instructions

1. [**Please navigate to the application form to submit your pilot proposal**](#)

   This application will allow you to submit the following:

   - Application information, which includes:
     - Project Title or Primary Institution
     - Principle Investigators
     - Key Personnel
     - ADRC Collaborators
     - IRB approval status
   - Full proposal (in PDF format)
   - Budget and Justification (in CSV format)
   - Supplemental materials (optional, in PDF format)

2. **Review the application instructions below**

   Formatting requirements:

   - All six proposal body sections should be compiled into a **single PDF** and uploaded where indicated in the application linked above.
   - Project Overview (section 1) should **not exceed** 1 page of written text.
   - Project Description (sub-sections 2a-2g) should **not exceed** 6 pages of written text.
   - Budget and Justification, Biographical Information, Study Population Worksheet, and Letters of Support (sections 3-60 **do not** have a page limit.
   - Embed figures in the text.
   - Use 12pt. font and 0.5" margins.

Full Proposal Details

The Proposal Body should include the following six sections:

1. **Project Overview - 1-page limit**

   Provide a brief overview of the pilot proposal. Describe what problem this proposed technology will solve. Describe how this proposal will meet the criteria of expanding the collection of richer data with less burden for participants and ADRC staff.

2. **Project Description - 6-page limit**

   The project description is the central part of the proposal and should contain the eight sub-sections listed below (indicate each sub-section by number in the proposal).

   a. **Background and Rationale:**
      - Provide the biological rationale that links the candidate digital measure(s) to disease pathophysiology.
      - Provide the biological rationale that links the candidate biomarker(s) to disease pathophysiology.
      - Discuss the novelty of the proposed approach and its leading context of use (CoU).
      - It is recommended to focus on one CoU, however, if multiple CoU are proposed, please describe additional biomarker categories here and ensure study design will support these additional categories.

   b. **Supporting data:**
      - Provide relevant supporting data.
      - Include data that demonstrates how the candidate biomarker(s) is connected to the disease process.
      - Provide data for the analytical method such as sensitivity, specificity, accuracy, parallelism, precision, sample stability, and other characteristics.

   c. **Project plan and objectives:**
      - **Objectives:** List specific aims and milestones with clearly defined go/no-go decision points for advancement of the project.

- **Timeline:** Use the Project Plan Template ([download here](#)) to provide a schedule for the completion of the proposed milestones/deliverables for each quarter of the year for each year of funding.
- **Data sharing documentation:** Applications must provide documentation detailing the following:
    - QC processing for data
    - Tooling/code that can be used by NACC Technology Team to ingest the data
    - How to utilize the data
- Discuss critical next steps and/or experiments needed to advance the program to attract additional funding/licensing.
- Outline strategies for commercial scale-up, manufacturing, possible cross-platform compatibility, and regulatory approval, including the timeline for FDA submissions and milestones.

d. **Experimental design and methods:**
- Describe sample collection methods, storage, stability, and extraction procedures.
- Provide details for each analytical method proposed and the measurement methodology.
- Include possible strategies if issues arise and any plans for the development of combined measures that may provide greater validity than an individual measure.
- Include the sourcing of all components of the analytical methods proposed.
- Provide a statistical analysis plan. Include a power analysis to justify the number of participants or samples per group.
- For validation studies, describe the strategies for maximizing reproducibility, including standard operating procedures for pre-analytical, analytical, and post-analytical stages.
- Please describe your regulatory and commercialization strategies.

e. **Description of investigative team and resources:**
- Describe the investigative team and explain how specific expertise of each member will contribute to completing the study objectives.

- Where internal expertise is not available, include a description of external partners (e.g. consultants, contract research organizations (CROs) that will help to execute the experimental work.
- Discuss the inclusion of any consultants with assay development expertise that were involved in the design of preclinical or clinical studies or the development of the commercialization plan.
- If applicable, discuss relationships with commercial diagnostics platform companies or plans to partner. Summarize the materials, technologies, and/or expertise provided by these collaborators.

f. **Intellectual property:**
- Provide information on existing IP and stage of prosecution.
- If no IP currently exists, describe the projected plan to generate IP; note if you expect the project to generate new IP.
- Indicate any freedom to operate issues.

g. **Other support:**
- List other financial support awarded and pending, and include grant title, principal investigator, percent effort of investigator, granting agency, amount, and projected funding period.
- Indicate any overlap between the aims or investigator effort from other funding with the proposed work.

h. **References**
- References <u>do not</u> count towards the 6-page limit.

3. **Budget and Justification - no page limit**

   Please complete and provide the following forms in the full proposal PDF:

   - **PHS398 Form:** Complete the template PDF ([download here](#)) or Word version ([download here](#)). [View instructions here](#).
   - **Budget and Justification:** Complete the template and provide a brief justification for each line item. [Download the template here.](#)
   - **NOTE:** You will also be asked to submit the Budget and Justification as a standalone CSV file in addition to being included in the full PDF document proposal.

Proposals must outline how they will spend $250K to $1M in direct costs. Additional funding will be provided for indirect costs (up to 15%).

- Proposals **do not** need to provide budget details for the scope of work required of NACC to collect, ingest, and share pilot project data.
- Please review permissible costs listed in the "Before Getting Started" section above.

4. **Biographical Information - no page limit**

Include a NIH biosketch for each of the key personnel listed on this project.

For instructions, please visit: https://grants.nih.gov/grants/forms/biosketch.htm

5. **Study Population Worksheet - no page limit**

Complete the Study Population Worksheet.

Download the template here.

If using specimens from an existing cohort, a letter of support from the PI of the study is required.

6. **Letters of Support - no page limit**

Letters of support from ADRC's **do not** count towards the total page limit but should be included as part of your proposal.

Supplemental Materials

All of the following materials are optional.

If submitting supplemental materials, compile all the materials into a single PDF and upload as "Supplemental Materials."

These materials can include:

- Quotes from vendors or contract research organizations (CROs)
- Figures that cannot be embedded into the body of the application but are directly relevant to the application and may be helpful to the review committee. ***Please embed figures into Proposal Body whenever possible.***
- IRB-ready clinical protocols

Review Process

Proposals will be reviewed by the selection committee after all applications have been received on the due date, February 21, 2024. Applicants can expect to hear back on their application status within 1-2 months after the due date

Partner Information

About the ADRC Program

The National Institute on Aging (NIA) funds 33 Alzheimer's Disease Research Centers (ADRCs) at major medical institutions across the United States. Researchers at these Centers are working to translate research advances into improved diagnosis and care for people with Alzheimer's disease, as well as working to find a treatment or way to prevent Alzheimer's and other types of dementia. In addition, NIA funds four Exploratory ADRCs that are designed to expand and diversify research and education opportunities to new areas of the country, new populations, and new areas of science and approaches to research.

Learn more about the ADRC Program here.

About NACC

The National Alzheimer's Coordinating Center (NACC) functions as the centralized data repository, and collaboration and communication hub for the National Institute of Aging's (NIA's) Alzheimer's Disease and Research Centers (ADRC) Program, which currently includes 33 centers and 4 exploratory centers across the United States.

The National Alzheimer's Coordinating Center was established in 1999 by the National Institute on Aging/NIH to facilitate collaborative research. Using data collected from NIA-funded Alzheimer's Disease Research Centers (ADRCs) across the United States, NACC has developed and maintains a large relational database of standardized clinical and neuropathological research data. In partnership with the Alzheimer's Disease Genetics Consortium (ADGC), the National Centralized Repository for Alzheimer's Disease and Related Disorders (NCRAD), and the NIA Genetics of Alzheimer's Disease Data Storage Site (NIAGADS),

NACC provides a valuable resource for both exploratory and explanatory Alzheimer's disease research. NACC data are freely available to all researchers.

[Learn more about NACC and NACC data here.](#)

About Gates Ventures

Gates Ventures is the private Executive office of Microsoft co-founder and philanthropist Bill Gates and was founded 2008 in Kirkland, Washington, United States. It comprises his personal staff, a think tank on problems of health and global development, and a technology investment portfolio. [Learn more about Gates Ventures here.](#)

Questions? Contact us.

Please send all questions to naccmail@uw.edu and the NACC team will respond to you within 1-3 business days.