The William H. Gates Sr. Fellowship from the AD Data Initiative

Fellowship Rules & Guidelines

About Us

The AD Data Initiative is a coalition of leading academic, government, industry, and non-profit organizations that recognizes the need for dementia researchers to have easier ways to share unpublished data, analytical tools, and scientific findings. These partners are working together to accelerate progress towards new diagnostics, treatments, and cures in Alzheimer's disease and related dementias (ADRD).

The *William H. Gates Sr. Fellowship from the AD Data Initiative* has been established to encourage and support researchers from around the world to be bold, creative, and innovative in their approach to ADRD research. This may include generating new hypotheses, challenging existing ones, or applying an existing method in a novel way to dementia. A successful applicant's research proposal will include using innovative data analysis ideas or statistical approaches on human or human-derived de-identified data to make new discoveries in ADRD.

Named after William H. Gates Sr., this fellowship honors his legacy of advocacy and philanthropy. In 2020, Mr. Gates Sr. passed away from Alzheimer's disease and we hope he can be an inspiration to the research community. The ongoing fellows program is at the forefront of building a community and increasing collaborations for the AD Data Initiative.

The Fellowship

The AD Data Initiative is creating new possibilities for over 55 million people worldwide living with Alzheimer's or related dementia. To accelerate novel discoveries in ADRD, this program will support fellows to engage in research, share their findings, and grow the dementia data sharing community spearheaded by the AD Data Initiative.

Successful fellows will use human or human-derived de-identified data that is accessed, with permission, via the AD Workbench or from other sources as it relates to the proposed project. Preference will be given to applicants that could make additional datasets sharable via the AD Workbench. They will conduct their analyses on the AD Workbench and address a relevant question in the ADRD field utilizing Generative AI-based approaches. The question could, *but is not limited to,* address one or more of the following priority research questions that have been assembled by the AD Data Initiative coalition and other key stakeholders:

- Can we identify biological pathways that might be targets for intervention? Signatures of pathology which could facilitate clinical trials agnostic to existing clinical diagnostic categories?
- How can we rapidly, repeatedly, and consistently measure cognitive function?
- Can we combine existing and new data to track aging and disease progression? Can we identify novel ways to predict and delay the conversion of mild cognitive impairment to Alzheimer's disease? What are reliable blood-based biomarkers for determining ADRD progression?

- Can we assess the validity and reliability of proposed novel biomarkers and diagnostics? Can we extract meaning from less structured data (such as speech)? Can we create models of low-level personalized risk factor interactions to help with early diagnosis of ADRDs?
- Are there lifestyle or behavioral changes that will pause or delay Alzheimer's disease symptoms?
- Can subtypes of Alzheimer's disease be further defined based on biomarker data and clinical presentation?
- How are ADRD risk prediction models similar and different in low- and middle-income countries (LMICs) compared to high-income countries? Are models for LMICs applicable across LMICs or different between countries?
- What factors influence or underpin rates of progression? Can we gain a greater understanding of these factors and inform the development of novel treatment targets to slow disease progression?

Here are some example approaches of potential interest:

- Apply generative AI to EHR data to uncover markers of earlier detection or diagnosis.
- Harness generative AI to enable on-demand harmonization of at least 3 clinical datasets.
- Develop generative AI models that will support detection of heterogeneities in imaging or omics data that may have previously been undetected.
- Use AI models to generate disease risk scores across multiple data modalities, including unstructured data types and wearable data.
- Generate a model that combines commonly collected cognitive, biomarker, clinical, and risk-related data to better predict rates of disease progression.
- Implement AI methods to more accurately predict patient progression to disease in clinical trials.

This fellowship is *not* intended to address hypotheses outside the dementia field, collect new data, recruit new subjects as part of a new or existing clinical study, involve non-human derived data, or prepare data for broader sharing without specific analyses.

Below are some example approaches that are *not* responsive to this call for applications:
- Use of generative AI to answer a question that has no relationship to or impact on the ADRD field
- Approaches leveraging more traditional statistical or ML analyses only
- Proposals that do not include the use of human or human-derived data
- Proposals that require collection of new data (i.e., primary data collection)

Fellows will continue to work at their current or home organization. However, our fellows will not work alone. The program will consult with each fellow to identify mentors, provide opportunities to engage with other fellows and AD Data Initiative partners, support conference participation and publications, and more.

Fellows may also be asked to collaborate with the AD Data Initiative on data analysis activities and use and promote analytical tools available via the AD Workbench, the AD Data Initiative's secure, cloud-based data sharing and analytics environment.

Eligibility

Approximately three to four fellows will be selected for our two-year program. Applicants must be researchers currently employed by an academic, government, industry, or non-profit organization. If employed by an academic organization, applicants must not hold a tenured faculty position (tenure is defined as an indefinite academic appointment that can only be terminated for cause). Due to United States financial restrictions, applicants cannot reside or work for an organization located in Afghanistan, Belarus, Central African Republic, Cuba, Democratic Republic of Korea, Democratic Republic of the Congo, Ethiopia, Iran, Iraq, Lebanon, Libya, Mali, Myanmar, Nicaragua, Russian Federation, Somalia, South Sudan, Sudan, Syria, Ukraine, Venezuela, Yemen, or Zimbabwe.

It is preferred that applicants have a master's or doctoral degree relevant to this program and approximately five to ten years of relevant work experience after receiving their highest degree. Applicants should have expertise in computational, machine learning, statistical, or other data science methods, and a demonstrated interest in brain research, neuroscience, or other relevant fields. We are seeking candidates with a proven track record in generative AI methods and prefer those who have demonstrated applications to neuroscience, neurodegenerative diseases, or healthcare.

We are particularly interested in applicants who have experience with AI approaches that emphasize multi-modal learning (e.g., integrating imaging, genetic, and clinical data), explainable AI, and privacy-preserving data analysis techniques. Applicants should demonstrate a commitment to ensuring that the outputs of their AI models are interpretable and clinically relevant. If the candidate has not engaged with ADRD data previously, please include how the proposed methods could directly impact or be applied to AD.

We believe high-quality science needs to include different perspectives, so we are building a diverse and inclusive environment. We encourage people from all cultural, geographical, and technical backgrounds to apply, including those who are from underrepresented backgrounds in their field.

Applications will be assessed on the following:

- Topic Responsiveness: How well does the proposed research address a key need illustrated in the topic description?
- Innovative Approach: Does the idea offer an unconventional, creative approach to addressing the important problem outlined in the topic? Does it leverage Generative AI or other AI approaches in novel ways, such as integrating diverse data types (e.g., clinical, imaging, and genetic data), and providing interpretable outputs?
- Significance and Impact Potential: Does the proposed research have the potential to generate new hypotheses or challenge existing ones about the biology, detection, diagnosis or treatment of dementia? Does it align with the mission of the AD Data Initiative? Does the proposed research demonstrate a clear pathway to real-world applications, ensuring that the findings can be translated into clinical settings?
- Execution Plan: Is the work described feasible given the resources needed, time allocated, and efforts anticipated? Are the proposed methods for utilizing AI both practical and ethical, particularly in relation to data privacy and explainability?

In addition, fellows will be expected to adhere to best practices in ethical AI use, ensuring that their research complies with data privacy regulations and prioritizes transparency in model outputs.

Benefits

Each fellow will receive a financial award of up to $100,000 USD to be used to support their research. The award will be divided and distributed over the course of the two-year program. Fellows will also be offered opportunities to develop their professional networks within the ADRD field, including identifying mentors. The program will offer fellows financial assistance to attend and present findings at relevant scientific conferences and publish findings in peer-reviewed journals and other publications.

There will also be opportunities for the fellows to connect with their peers on AD Connect by leading discussions, answering questions, or offering expertise. Finally, Gates Sr. AD Fellows will have the experience of helping shape this program for future participants and networking with prior fellows.

Application Materials

A complete application will include:

- Profile details (as requested in the online application).

- Resume or curriculum vitae, including links to any relevant publications (maximum 2 pages).

- Personal statement describing any personal accomplishments that have impacted your work, challenges you may have faced in your research based on your race or gender identity and/or how receiving this fellowship could accelerate your research in ADRD (maximum 1 page).

- Research statement answering these questions (maximum 2 pages):
    - What question in the ADRD field will you address? How will AI methods help you answer your question?
    - What is your hypothesis?
    - What human or human-derived anonymized data will you use, including data that is discoverable on the AD Workbench or from other sources?
    - What data analysis tools will you use? Confirm that you will do your analyses on the AD Workbench. If not, please explain.
    - What is your schedule of activities and anticipated research milestones?

During the review period, applicants may be contacted if further clarification is needed.

Software Code

The AD Data Initiative requires fellows to share the software code they develop and make it available on GitHub (or a similar public service). All new code must be released under a permissive open-source license (MIT, BSD 2-Clause, BSD 3-Clause, or Apache v2.0). All pre-existing and derivative codes must be licensed under the most permissive license possible, given the licensing terms of the pre-existing code. All analysis packages must be released through the appropriate language-specific package manager (PyPi for Python, Bioconductor or CRAN for R, as examples) with documentation, example data, and

interactive demos (Jupyter notebooks as an example). Docker or similar container technologies must be used to ensure portability and reproducibility.

The AD Data Initiative requires software code developed with AD Data Initiative support to be archived and easy to reference, when applicable. Exceptions may be considered if counterproductive to the research.

Privacy and Confidentiality

All submitted applications will be kept confidential, except: (1) as noted below; (2) as necessary for our evaluation; (3) to comply with any applicable laws; and (4) if the application is made public or available to others through no fault of the AD Data Initiative. Unfunded applications will remain confidential. Successful applications may be shared publicly after reasonable notice to the applicant or with parties related to the fellowship program to enable the management of the program. Application materials will not be returned to applicants. For further details about the AD Data Initiative's privacy policies and use of any personal data that may be submitted with your application, please refer to the AD Data Initiative's privacy policy.

Publicity and Marketing

Fellows may be asked to collaborate with the AD Data Initiative on publicity and marketing related to their research, which may use information included in their application. Any information that will be publicly disseminated that specifically references the fellow or their work will be shared with the fellow prior to being shared with others.

No Third-Party Infringement

By applying, the applicant is representing to AD Data Initiative that they have the right to provide the information submitted and the materials do not infringe any third-party intellectual property rights. Applicants with questions concerning the contents of their application may contact AD Data Initiative at GatesSrADFellows@alzheimersdata.org.

How to Apply

Provide *all* application materials by 15:00 PST (23:00 GMT) Sunday, December 1, 2024 using the application portal. Final decisions are expected to be made in Spring 2025 with funding commencing within the first half of 2025.

Questions

Visit our Fellowship webpage to review FAQs or email questions to GatesSrADFellows@alzheimersdata.org.