a2 Pilot Awards
Fourth Annual Competition (2024)
Addendum to Request for Applications

Special Call for Pilot Applications Focusing on Biological Underpinnings of Physical and Cognitive Decline in Aging and AD/ADRD

Round 1 Application Period: March 1–April 30, 2024 (5 p.m. ET)

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Introduction

In an era when artificial intelligence (AI) and technological innovations are revolutionizing the way we understand the world, the AI & Technology Collaboratories (AITC) for Aging Research program, or a2 Collective, is seeking pilot applications focused on harnessing these advancements to explore the complexities of aging and Alzheimer's disease and related dementias (AD/ADRD). With a surge in computational capabilities and the aggregation of vast datasets, there exists an unprecedented opportunity to accelerate our understanding of these phenomena from an AI-first perspective.

Objective

The a2 Collective aims to fund projects that utilize cutting-edge AI and machine learning technologies to build computational models that can simulate the multifaceted dynamics of aging and AD/ADRD. By applying AI to bridge gaps across various biological scales and temporal dimensions, these projects will pave the way for breakthroughs in predicting, understanding, and possibly intervening in aging processes and neurodegenerative diseases.

Focus Areas

We are particularly interested in proposals that:

- Employ advanced AI, machine learning, and computational modeling techniques to study aging and AD/ADRD.
- Integrate multi-scale data analysis, from genomic to phenotypic levels, to uncover novel insights into the aging process and AD/ADRD disease progression.
- Propose innovative methods for analyzing datasets that contain molecular and longitudinal phenotypical data to identify patterns of age-related vulnerability and resilience.
- Aim to validate computational models through rigorous hypothesis testing and real-world data correlation.

Suggested Research Themes
Projects may explore, but are not limited to, the following areas:

- Development of AI-driven biological "clocks" to predict physical and cognitive decline in aging and disease markers.
- Investigation of aging hallmarks through machine learning analyses.
- AI models to predict the impact of metabolic and energetic changes on aging.
- Patient subtyping from molecular data.
- Temporal AI/ML models of phenotype and molecular changes during aging to compare patients to baseline and identify premature aging or outlier behavior.
- Computational studies of synaptic function and its effects on aging cognition and mobility.
- Utilization of AI in analyzing interventions aimed at promoting healthy aging practices.

Eligibility and Requirements
To foster innovation and ensure impactful outcomes, all submitted projects must:

- Clearly articulate the use of AI and machine learning technologies as core components of the research strategy.
- Confirm existing data access or outline a clear plan for accessing available data sources such as UK Biobank, GTEx, or other large resources in time for the project period.
- Demonstrate a direct relevance to aging or AD/ADRD research fields.
- Propose a clear, testable hypothesis, a predictive model, or clear use of computational method.

Nonresponsive Proposals
Applications lacking a strong AI and technology focus, or those not addressing aging or AD/ADRD relevance, will be considered non-responsive and thus ineligible for funding.

a2 Pilot Awards Competition Information
This special call represents an additional area of interest for the fourth annual a2 Pilot Awards competition; it does not replace the existing interest areas described in the 2024 a2 Pilot Awards Request for Applications (RFA). Please review the RFA for full competition parameters and visit a2PilotAwards.ai for more information about how to apply and answers to frequently asked questions. Additional inquiries may be directed to support@a2collective.ai.

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