AIM–AHEAD
Bridge2AI AI–READI
Training Program

Cohort I

Informational Webinar

November 5, 2024, 4:00pm Central

AIM-AHEAD Consortium

Introduction

The Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Research Diversity (AIM-AHEAD) program was established by the National Institutes of Health (NIH).

Purpose

The purpose of AIM-AHEAD is to enhance diversity in the field of artificial intelligence and machine learning (AI/ML), with emphasis on reducing health disparities and promoting health equity.

This will be achieved by engaging in a fair, equitable, and transparent process of building a consortium of AI/ML partners to promote health equity and an inclusive and diverse workforce.

The AIM-AHEAD Coordinating Center

Introduction

The A-CC consists of four cores, focused on various initiatives to achieve AIM-AHEAD's mission.

Leadership Core

Lead, recruit, and coordinate the AIM-AHEAD Consortium

Data Science Training Core

Assess, develop, and implement data science training curriculum

Data and Research Core

Address research priorities and needs to form an inclusive basis for AI/ML

Infrastructure Core

Assess data, computing, and software infrastructure to facilitate AI/ML and health disparities research
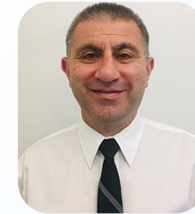
NIH Leadership Team

Samson Gebreab, Ph.D. MSc.
Program Lead, AIM-AHEAD
Office of Data Science
Strategy,
NIH

Shurjo K. Sen, Ph.D.
Program Director,
Bridge2AI
Office of Genomic Data
Science,
NIH

Haluk Resat Ph.D.
Program Lead,
Bridge2AI
Office of Strategic
Coordination
NIH

Dr. Emir Khatipov
Program Director,
AIM-AHEAD
Office of Data Science
Strategy,
NIH

Eva Lancaster, Ph.D.
Program Director,
AIM-AHEAD
Office of Data Science
Strategy,
NIH

Christian Evans, PMP
Program Specialist,
AIM-AHEAD
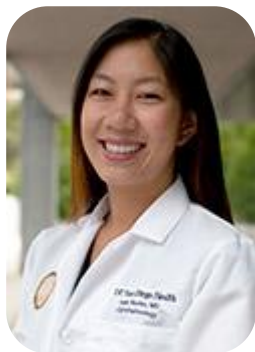*Office of Data Science*
Strategy,
NIH

Program Leads

Jamboor Vishwanatha, PhD
UNT Health Science Center
AIM-AHEAD PI

Toufeeq A. Syed, PhD
University of Texas Health
Science Center,
Houston, TX
AIM-AHEAD MPI

Gordon Gao, PhD
Johns Hopkins University
AIM-AHEAD DSTC MPI

Sally Baxter, MD, MSc
UC San Diego
AI-READI MPI

Linda Zangwill, PhD
UC San Diego
AI-READI MPI

Damaris Javier, PhD
UNT Health Science Center
Program Co-Director

Program Purpose

Purpose

The overall goal of the AIM-AHEAD Bridge2AI AI-READI Training Program is to expand AI-READI data access through engagement and training, including use of AI/ML in analysis and a train-the-trainer model, and allowing AIM-AHEAD trainees to conduct novel research at the intersection of AI/ML and health disparities with a multi-modal array of data elements from a diverse cohort.

Program Partnership

Partnership

Strategic Partnership: AIM-AHEAD and Bridge2AI are collaborating to provide specialized AI/ML training for clinical care, leveraging shared resources and expertise.

Combined Expertise: AIM-AHEAD's strength in diverse trainee recruitment and Bridge2AI's AI data and curriculum drive a comprehensive training experience.

Focus on Underrepresented Communities: Jointly committed to expanding AI/ML proficiency in communities historically underrepresented in biomedical research.

Goal: Develop a skilled, diverse workforce prepared to advance health equity through AI/ML applications.

About Bridge2AI

Bridge Center

Disseminate
- Consensus guidelines for the broader biomedical AI community
- Access to collected datasets
- Public outreach and stance on difficult issues

Integrate
- Across data types*, metadata, ethical best practices, PEDP
- Generate *best practices* for people, ethics, and data for future AI/ML models
- Knowledge base of *lessons learned* from Bridge2AI team science

Evaluate
- Assessment and establishment of validity for best practices
- AI/ML readiness of datasets
- Extent of outside adoption of Bridge2AI products
- Stakeholder engagement

Best practices for AI/ML in biomedical and behavioral research

M. Munoz-Torres

University of Colorado Anschutz Medical Campus

NIH/NHGRI Awards
National Human Genome Research Institute

About Bridge2AI

Data Generation Projects

BRIDGE2AI

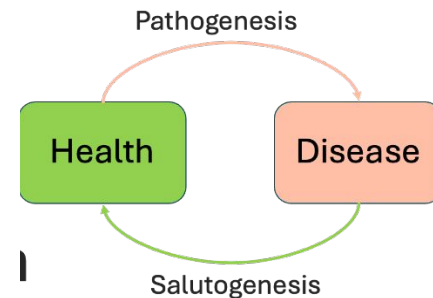| Data Generation Project	Data Types
Functional Genomics (CM4AI) Mapping cell architecture, interpreting cell function/structure in health & disease	Cell maps, immunofluorescence, spectrometry (AP-MS), evidence (metadata)
Voice As a biomarker of health: development, respiratory & sleep disorders, mental health, etc.	WGS, tomography (CT), magnetic resonance, X-Rays, voice, consent, surveys, demographics, vital signs
Salutogenesis (AI-READi) Restoring health after disease	WGS, tomography (OCT), ophthalmic imaging, clinic & labs, surveys (SDoH, diet, MoCA), glucose, activity, HR, SpO2, EKG, AirQI
Critical Care (CHoRUS) ICU diagnosis & risk prediction	Labs, treatments, telemetry, EEG, SDoH, practice metadata

M. Munoz-Torres.

NIH/CF Awards

CU University of Colorado
Anschutz Medical Campus

NIH National Institutes of Health
Office of Strategic Coordination–The Common Fund

The goal of the **Salutogenesis Data Generation Project** (DGP) is to create a multidimensional, ethically-sourced dataset in diverse people for studying **salutogenesis** in Type 2 Diabetes

The DGP is also referred to as the AI Ready and Equitable Atlas for Diabetes Insights (**AI-READI**) project
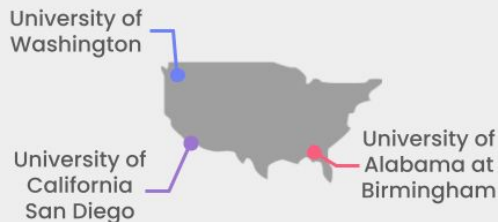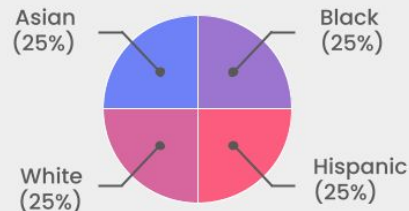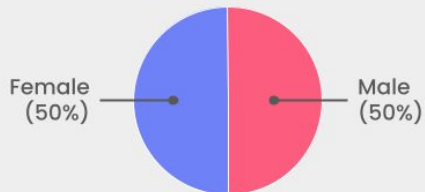
About AI-READI

AI-READI Study Design

4,000 participants anticipated

Even recruitment at 3 study sites

- University of Washington
- University of California San Diego
- University of Alabama at Birmingham

Equal distribution across 4 races/ethnicities

- Asian (25%)
- Black (25%)
- White (25%)
- Hispanic (25%)

Equal distribution across 2 biological sexes

- Female (50%)
- Male (50%)

Equal distribution across 4 health states

- Non diabetic (25%)
- Diet controlled diabetic (25%)
- Insulin controlled diabetic (25%)
- Medication controlled diabetic (25%)
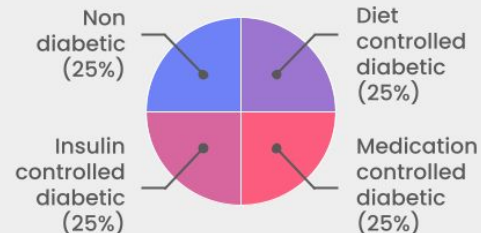
Note: the study may additionally include a cohort of participants from Native American communities but is contingent on finding a suitable agreement between representatives of Native American communities and the NIH

About AI-READI

Data collection

Pre-visit (~1hr, at home)

On-site visit (~3 to 4 hrs)

Post-visit (10 days, at home)

Self-reporting surveys
- Initial Screening
- Demographic
- Center for Epidemiological Studies Depression Scale (CES-D) - 10
- Problem Areas In Diabetes Questionnaire (PAID-5)
- Diabetes score
- Diet
- Smoking History
- Alcohol Use, Vaping, and Marijuana Use
- General Health,
- Social Determinants of Health (SDoH)
- Visual Impairment and Eye Care Access

Current medical list

Driving record (accident report)

Monofilament test

Vision testing (lensometer, autorefraction, best corrected visual acuity (BCVA), letter contrast sensitivity)

Blood test (NT-proBNP, C-Peptide, Troponin-T, HgA1c, insulin, CBC, lipid panel, CRP, CMP12)

Biospecimen (blood and urine)

Urine test (albumin, creatinine)

ECG

MoCA

Retinal imaging (undilated/dilated fundus photography, pupillary dilation, FLIO, OCT, OCTA)

Physical Assessment (height, weight, waist and hip circumferences, blood pressure, heart rate)

Continuous glucose monitoring

Physical Activity Monitoring (heart rate, steps, sleep phases)

Environmental sensor measurements (temperature, humidity, spectrogram, PM1.0, PM4.0, PM10.0, Nitric Oxides, volatile organic compounds)

FLIO = Fluorescence Lifetime Imaging, OCT = Optical Coherence Tomography, OCTA = Optical Coherence Tomography Angiography, ECG = Electrocardiogram, MoCA = Montreal Cognitive Assessment, PM1.0, 4.0, and 10.0 = Particulate matter less than 1, 4, and 10 microns, respectively

Training Overview

Trainees will receive hands-on training on the Bridge2AI AI-READI data and leverage the data and tools to write a research proposal, putting their new skills to work in real-life situations and novel research. Training will include:

Foundational AI/ML Training	**Analyzing Bridge2AI AI-READI data**	**Ongoing mentorship and support using Collaborative Cloud platforms**
Basic Biomedical Research Concepts	**R. Python, Jupyter notebooks, and model development**	**Virtual workshop series**
Foundations of ethical research and ethical considerations in AI-READI	**Virtual live courses**	**Abstract development using AI-READI data**

Program Trainee Objectives

Objective 1

The trainee will exhibit advanced expertise in AI/ML principles.

Objective 2

The trainee will develop and present feasible and detailed research proposals to enter into Fairhub, utilizing the expertise and insights gained from the program.

Objective 3

The trainee will prepare a compelling poster presentation for the AIM-AHEAD Annual Meeting, submit an abstract for a health informatics or other scientific conference, or develop a manuscript for a peer-reviewed journal.

Outcome

After completing the program, trainees will have gained exposure to foundational principles in AI/ML, learned specifically how to work with the NIH Bridge2AI AI-READI dataset, and completed a research project using this data to advance their overall training and career development.

Curriculum Overview

Training on the AI-READI Dataset

- Learn how to use the FAIRhub platform and gain access to the AI-READI dataset
- Gain exposure to a multi-modal array of data domains involved in the AI-READI dataset, including **unique data types such as retinal imaging data, EKG/waveform data, environmental sensor data**, and others

- Workshops will be provided on how to access and analyze the AI-READI data

- Trainees will have mentors from AIM-AHEAD and technical support from AI-READI to assist them in completing research proposals and projects using these data

- Curriculum will include lectures, workshops, office hours, hands-on guidance, and mentorship support

Curriculum Overview

AFT (AI Foundational Training)

Module 01

What is AI/ML, and how this applies to health equity

Module 02

Classical Machine Learning

Module 03

Deep Learning

Module 04

Generative AI

Module 05

Human-AI fusion

Module 06

Responsible AI

+

4 Webinars

Trainee Expectations

In order to successfully complete the program, selected trainees must:

Time Commitment: Be able to commit to 8 hours per week (on average) of coursework and synchronous class sessions

Attendance: Attend one virtual, synchronous class session per week (day of the week and time TBD)

Assignments: Complete all assigned milestones and goals

Presentation of Work: Attend both the AIM-AHEAD Annual Meeting (July 2025) and the Bridge2AI Annual Meeting (May 2025) and present a works-in-progress poster.

*These are both in-person events and a travel a $2,000 travel allowance will be given to each trainee for travel expenses.

Program Benefits

Stipend

An $8,000 stipend upon successful completion of trainee milestones

A $2,000 allowance to attend the AIM-AHEAD Annual Meeting and the Bridge2AI Annual Meeting in 2025

Support

Support and guidance from an experienced AIM-AHEAD mentor

Support from the AIM-AHEAD Data Science Training Core

Direct 1:1 guidance, virtual office hours, helpdesk support and concierge services supporting projects using AI-READI data

Training

Training on:

- Basic biomedical research concepts and human subjects research protection
- Foundations of ethical research and ethical considerations in AI-READI
- Diversity in Research
- Stigma and Stigmatizing Research
- Biology and Society
- Group Harms and Cultural Competence
- Social Responsibility in Research
- Overview of the domains in AI-READI
- R, Python, Jupyter notebooks, and model development.
- Analyzing Bridge2AI AI-READI data

AIM-AHEAD Mentorship Process

Each trainee will be matched with a mentor who will provide ongoing support throughout the training program. Mentors are matched with mentees using the Connect Platform. Mentorship matches are made using:

AIM-AHEAD CONNECT
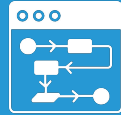
- **AI Algorithm**
- **Administrative Matching**
- **Mentor Pool Search**

Applicant Eligibility

Citizenship

☑ Must be a U.S. Citizen, Permanent Resident, or Non-Citizen U.S. National

Education

☑ Post-baccalaureate and graduate students, early-career investigators, or employees with a Bachelor's degree in a related field

Skills & Experience

To ensure success in the training program, applicants must already possess certain skills, knowledge and experience. These include:

☑ Practical experience in coding/programming with R or Python

☑ Basic understanding of statistics

Institutional Eligibility

Non-Academic Organizations

☑ Nonprofits with or without 501(c)(3) status, Tribally derived institutions, or For-Profit Businesses

☑ Must be a domestic organization located in the United States and its territories

Higher Education Institutions

☑ Public, Private, HSIs, HBCUs, TCUs, AANAPISI, or NAH Serving Institutions

☑ Must be a domestic institution located in the United States and its territories

Email Requirement

In order to gain access to the AI-READI dataset, you will need to have a ".edu" email address.*

*This requirement is not a barrier to acceptance into the program. Program administrators will assist with this access if needed.

Application Requirements

✓ **Profile Information**: Name, organization, department, position, research area, and contact.

✓ **Letters of Support:** A supervisor's letter confirming training time and contact info is required, along with one faculty recommendation attesting to the applicant's skills and readiness for advanced data analytics.

✓ **Transcripts:** Official or photocopy of undergraduate and graduate (if applicable).

✓ **NIH Biosketch:** Max 5 pages.

✓ **Statement of Rationale**: Max 900 words—goals, research question, coding plan, relevant experience, and long-term objectives.

*This is just an overview. Please see the CFA for the full list of application requirements

Application Process

Applications must be submitted between October 18, 2024 and November 18, 2024 at 11:59 PM EST

Note: Please use Chrome, Firefox, or Edge browser

1
Familiarize yourself with the program requirements outlined in the call for applications

2
Gather all of the required application materials

3
Create an account on AIM-AHEAD Connect and register as a "mentee/learner"

4
Submit application for review using the InfoReady platform

Up to 25 trainees will be selected

Program Timeline

🔄	**Funding Cycle** 2024–2025	🕐	**Program Length** 8 months

📅 **CFA Release Date**	October 18, 2024
📅 **Application Deadline**	November 18, 2024 by 11:59 PM EST
🎗 **Notice of Award**	January 6, 2025
📅 **Program Start Date**	January 15, 2025
📊 **Bridge2AI Annual Meeting 2025**	May 2025
📊 **AIM-AHEAD Annual Meeting 2025**	July 2025

AIM

AHEAD

Questions?

Please see the PDF linked in the chat for more helpful links and resources.

Scan the QR code above to access the AIM-AHEAD Bridge2AI AI-READI CFA.