ADSP Phenotype Harmonization Consortium: From Fundamentals to AI in Diffusion MRI for Alzheimer's Disease

Friday, July 25, 2025 | 8 a.m. – noon
Westin Harbour Castle- Harbour A— Toronto, Canada
All times are in Eastern Standard Time
In-person attendance only

Overview

In 2022, the Alzheimer's Disease Sequencing Project Phenotype Harmonization Consortium (ADSP-PHC) released its first data freeze. Since then, the consortium has issued annual updates, incorporating new cohorts and updated data from previously harmonized studies. The ADSP-PHC focuses on longitudinal harmonization of neuroimaging, cognitive, biomarker, and neuropathology data across multiple aging cohorts within the ADSP, with the goal of enabling joint genomic analyses.

The most recent data release includes diffusion MRI (dMRI) from thousands of participants, comprising both cross-sectional and longitudinal scans across 4,588 harmonized variables. This workshop will provide a comprehensive overview of dMRI image processing and the statistical harmonization strategies employed by our expert neuroimaging teams to derive white matter microstructure metrics across cohorts with varying acquisition hardware and protocols. We will also highlight applications of dMRI to AD research and demonstrate how artificial intelligence can be leveraged to assess brain microstructure. In addition, we will present an overview of the ADSP-PHC infrastructure and offer guidance on how to access these data.

Attendees will participate in two breakout sessions of their choosing, which may include:

- A deep dive into the current ADSP-PHC dMRI data release
- A live demonstration on tractography with dMRI
- Hands-on instruction for applying AI algorithms to large-scale dMRI datasets
- Guidance on accessing and working with ADSP-PHC data infrastructure

While the workshop will be especially valuable for researchers with neuroimaging experience, it is designed to be accessible to those who are new to dMRI.

Organizing Committee

- Timothy J. Hohman, PhD
- Derek B. Archer, PhD
- Bennett A. Landman, PhD
- Kurt G. Schilling, PhD

Target Audience

This ISTAART immersive workshop is designed for researchers at the beginner, intermediate, and advanced levels.

Learning Objectives

1. Explain the fundamental principles of diffusion MRI, including its physics, harmonization techniques, and relevance to AD research.
2. Analyze the application of artificial intelligence in diffusion MRI to explore novel insights into AD.
3. Apply hands-on techniques to analyze diffusion MRI datasets in the context of aging and AD.

Registration

Educational workshops are offered for in-person attendance only. Workshops require a separate registration fee in addition to AAIC full conference registration, or they may be purchased as stand-alone events. Visit alz.org/AAIC.

Agenda: July 25, 2025 | 8:00 am - 12:00 PM

Time	Session Details	Speakers and Moderator
7:00-8:00 am	Light Breakfast (Westin Metropolitan Ballroom)	
8:00– 9:30 a.m.	**Didactics:** Introduction to Diffusion MRI and Harmonization • Diffusion MRI in a Nutshell • White Matter in Alzheimer's Disease • Diffusion MRI in an AI Nutshell • ADSP-PHC Infrastructure	**Speakers:** Kurt G. Schilling, PhD Derek B. Archer, PhD Bennett A. Landman, PhD Timothy J. Hohman, PhD **Moderator:** Derek B. Archer, PhD
9:30 – 9:45 a.m.	**Break**	
9:45– 11:15 a.m.	**Breakout Sessions:** Two 45-Minute	Derek B. Archer, PhD

	Rotations • Deep Dive into ADSP DTI Data Release • Tractography Pipeline Overview • Replicating the ADSP DTI Pipeline with Containerizd Tools • ADSP Data Access	Kurt G. Schilling, PhD Bennett A. Landman, PhD Timothy J. Hohman, PhD
11:15 – 11:25 a.m.	**Break**	
11:25 am – 12:00 pm	**Panel Discussion**	**Moderator:** Derek B. Archer, PhD **Panelists:** Kurt G. Schilling, PhD Bennett A. Landman, PhD Timothy J. Hohman, PhD