

Computational Interspecies Translation Of Omics Signatures In Alzheimer's Disease

Friday, July 26, 2024 | 1-5 p.m.

Marriott (Grand Ballroom J) — Philadelphia, USA

All times are in Eastern Standard Time

In-person attendance only

Overview

This workshop will deliver hands-on training using the most recent computational techniques and omics data resources to improve awareness and utility of integrating multi-scale data from model systems and humans to uncover the mechanistic drivers of Alzheimer's Disease (AD). Despite considerable effort in drug development for AD, high rates of failure in clinical trials emphasize the need for more effective preclinical strategies, including targeted use of mouse models to study heterogenous disease phenotypes. In this era of omics-driven research, interspecies alignment of disease relevant molecular signatures relies heavily on bioinformatics tools and field-specific data infrastructures.

The goal of this workshop is to accelerate translational research in AD by training interested scientists on how to develop robust computational workflows for both hypothesis-driven and data-driven research strategies. The AD-specific, bespoke lessons will use resources from the AD Knowledge Portal (<https://adknowledgeportal.synapse.org>), a NIA designated FAIR data repository that shares data from human and non-human studies generated by multiple collaborative research programs focused on aging, dementia, and AD. The workshop features legal, ethical and technological aspects of omics-driven translational research with an emphasis on scientific integrity. Participants will be exposed to best practices used in reproducible omics research through instructor led hands-on data analysis sessions.

Organizing Committee

- Asli Uyar, The Jackson Laboratory
- Laura Heath, Sage Bionetworks

Presenters

- Laura Heath, Sage Bionetworks
- Gregory A. Cary, The Jackson Laboratory
- Asli Uyar, The Jackson Laboratory

Target Audience

This ISTAART Immersive workshop is targeted to attendees who are involved in research and is pitched at a beginner-intermediate level requiring basic R programming experience.

Learning Objectives

1. Locate data in the AD Knowledge Portal and annotate data with the associated metadata.
2. Perform interspecies analysis for mouse-to-human mapping of transcriptomics signatures.
3. Design studies with insights from existing data and by incorporating robust computational workflows.

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.

Agenda

Time	Session Details	Speakers and Moderator
Noon - 1:00 p.m.	Lunch	
1:00 p.m. - 3:00 p.m.	Session 1: FAIR principles and reproducibility in computational AD research / Hands-on training: Synapse and AD Knowledge Portal, RNA-Seq data analysis workflow	Laura Heath Asli Uyar
3:15 p.m. - 5:00 p.m.	Session 2: Animal models of AD and translational omics research / Hands-on training Mouse-to-human mapping of transcriptomic signatures / Group study: Participants will work in small groups to apply their learning	Gregory A. Cary Asli Uyar