

Novel Approaches to Sharing Data and Specimens in Alzheimer's Disease Clinical Trials

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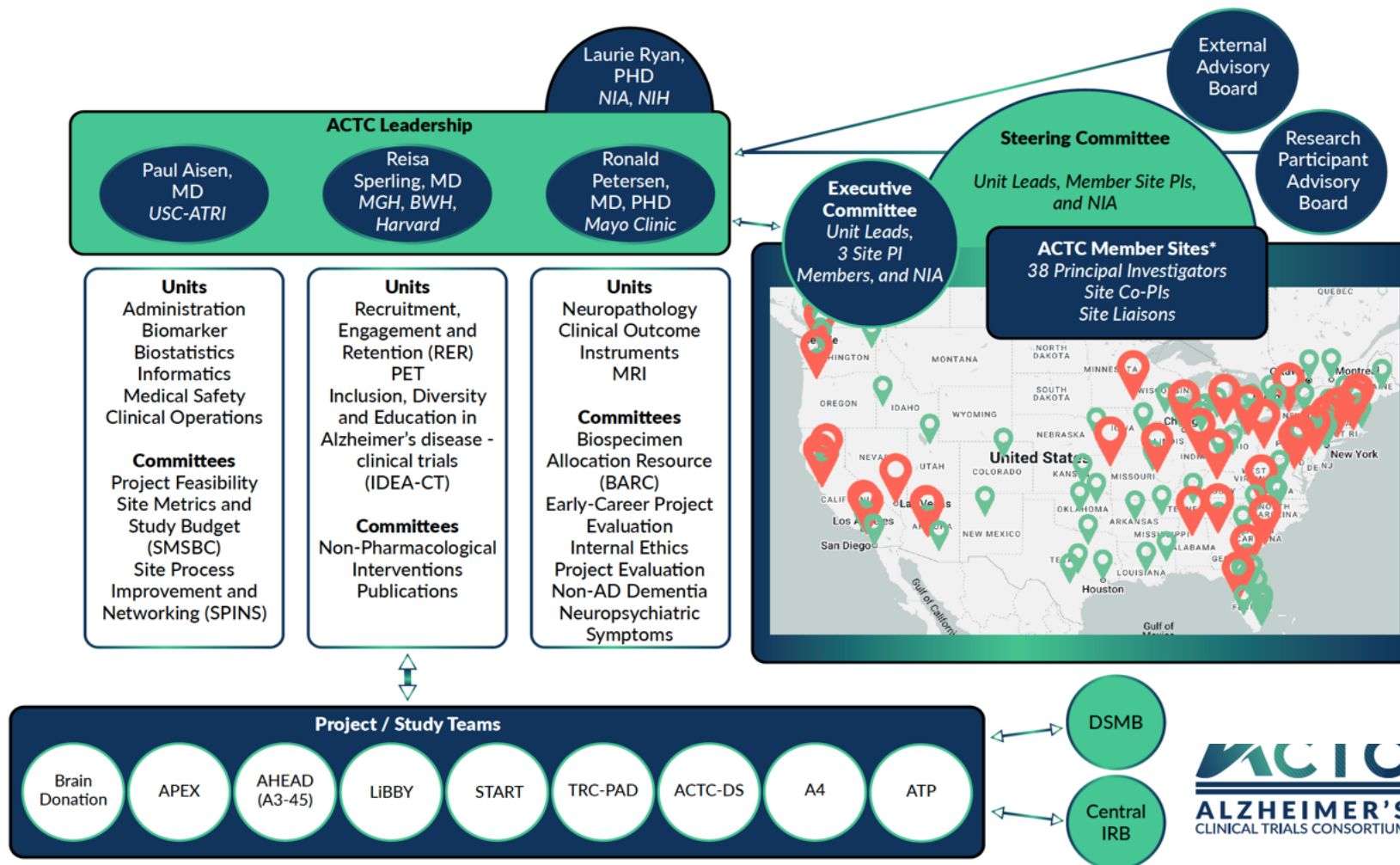
**Alzheimer's Therapeutic
Research Institute**



Disclosures

- Nothing to disclose

ACTC: Accelerating ADRD Clinical Trials



ACTC: Commitment to Open Science

- Broad and timely trial data and resource sharing that protects participant privacy and trial integrity
 - Aligned with NIA, FAIR, and CAP expectations and principles

Trial Phases



Trial Milestones



Data Sharing Milestones



ACTC shares:

- De-identified data
- Software
- Instruments
- Anonymized biospecimens
- Expertise on trial design
- Documentation

Case: Sharing A4 Trial Data

- Study cohort
 - 6,945 screens, 1,147 enrolled participants
 - Preclinical AD based on Amyloid PET measures
 - Experimental Groups: Solanezumab vs. Placebo
 - Ages 65-85
 - 4.5-year follow-up
 - LEARN observational sister study
 - For more details:
 - <https://clinicaltrials.gov/study/NCT02008357>
- Data was shared in two stages:
 1. Screening dataset (2018)
 2. Final study dataset – Placebo/Treatment Arms (2024)

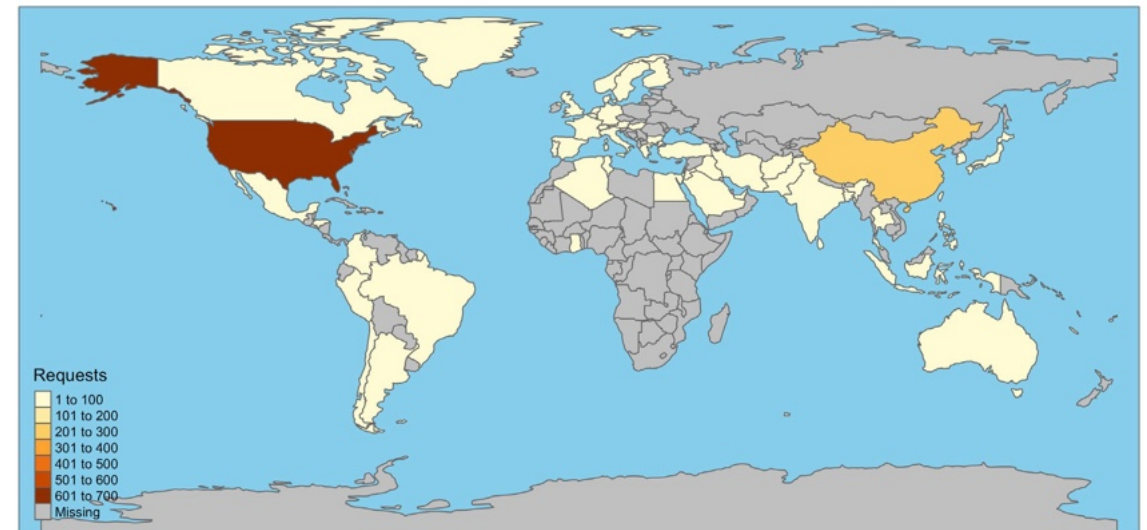
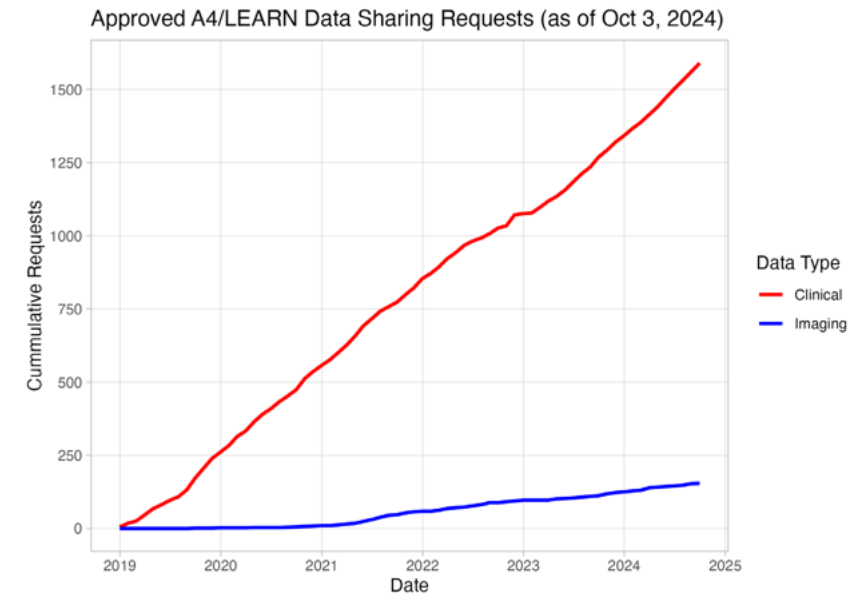


Data shared:

- Clinical
- Cognitive
- Labs
- Biomarker
- Neuroimaging
 - MRI, Amyloid PET, Tau PET
- GWAS

Stage1: A4 Screening Data (as of Oct 3, 2024)

- A4 data and biospecimen sharing has been successful
 - Data shared via [GAAIN/LONI IDA](#)
 - Data and biospecimen sharing committee established
 - **1,590 (91.6%)** approved requests for clinical and biomarker data
 - Investigators from **>60** countries
 - **154** approved requests included imaging data
 - **>974k** image series downloaded
 - **>2000** aliquots of SC plasma shared worldwide
 - **5** R01s funded using A4 SC plasma
 - **73** Peer-reviewed publications (Source: Google Scholar)
- Opportunities for improvement
 - Data preparation
 - Measuring impact and assessing needs
 - User support
 - Sample sharing
 - Biomarker data sharing



Stage2: A4 Final Study Data (as of Oct 3, 2024)

- **A4/LEARN Final Study Data Available for Download Now!**

- >84k longitudinal participant visits
- >15k longitudinal image studies (MRI, Amyloid PET, Tau PET)

- **>150** approved requests

- Investigators from **18** countries

- Lessons learned (JPAD A4 Special Issue):

- *Maximizing the Utility of Alzheimer's Disease Trial Data: Sharing of Baseline A4 and LEARN Data (Jimenez-Maggiore et al., 2024)*
[10.14283/jpad.2024.120](https://doi.org/10.14283/jpad.2024.120)

- Omni-platform approach:

- **GRIP:** www.a4studydata.org
- **Synapse:** www.synapse.org/a4_learn_datasharing
- **GAAIN/LONI IDA:** Coming soon!

The A4 Study NOW IS THE TIME | LEARN Log in to access data

Imaging and Genetics Data Now Available

Alzheimer's Clinical Trials Consortium

Anti-Amyloid Treatment in Asymptomatic Alzheimer's (A4) Study and Longitudinal Evaluation of Amyloid Risk and Neurodegeneration (LEARN) Study

Access the data in three easy steps.

- 01 Register with the site and set up an authenticator.
- 02 Fill out a profile with personal and project information.
- 03 Sign a data use agreement and request.

REGISTER TO DOWNLOAD DATA




Using R to Improve Data Usability

- R package to reproduce A4/LEARN primary results is included with the data set
- Vignettes allow investigators to learn how data is structured
- Documentation is integrated into R console for easy reference

A4LEARN 1.0.20240917 Reference Articles ▾ Search for

A4LEARN



Overview

A4LEARN is an R package containing data and code to reproduce results from the *Anti-Amyloid Treatment in Asymptomatic Alzheimer's (A4)* study (Sperling et al. 2023) and *Longitudinal Evaluation of Amyloid Risk and Neurodegeneration (LEARN)* study (Sperling et al. 2024). A4LEARN is a bundle of clinical data, analysis code examples, and html and pdf documentation. The html documentation is viewable at <https://atrichub.github.io/A4LEARN>.

All data, including the A4LEARN R package, is available from either:

- <https://www.a4studydata.org/> after registering and agreeing to the [terms of use](#).
- https://www.synapse.org/a4_learn_datasharing/ after registering an account, fulfilling all actions from the 'Access Actions Required' tab of the [download cart](#), and adding files to download.

Installation

To install A4LEARN :

- Register at <https://www.a4studydata.org/> or https://www.synapse.org/a4_learn_datasharing/
- Download `A4LEARN_1.0.20240917.tar.gz` from the preferred data sharing platform
- In R, run `install.packages("path/to/A4LEARN_1.0.20240917.tar.gz", repos = NULL, type = "source")`

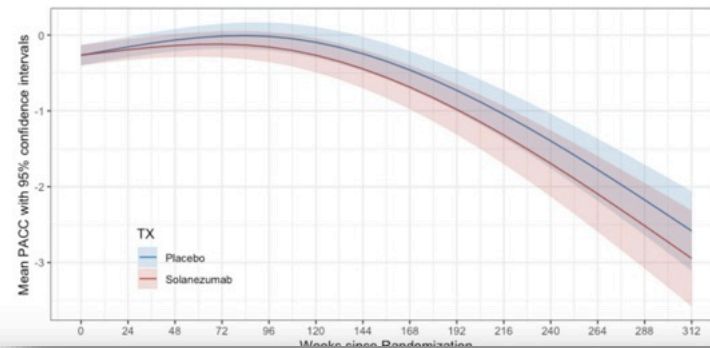
Links
[Browse source code](#)

License
<https://www.a4studydata.org/terms-of-use>

Citation
[Citing A4LEARN](#)

Developers
ATRI Biostatistics
Author, maintainer

```
ref_grid(pacc_fit,
  at = list(ADURW = seq(0, 312, by=12), TX = levels(ADQS_PACC$TX)),
  vcov = clubSandwich::vcovCR(pacc_fit, type = "CR2") %>% as.matrix(),
  data = ADQS_PACC,
  mode = "satterthwaite") %>%
  emmeans(specs = "TX", by = "ADURW") %>%
  as_tibble() %>%
  ggplot(aes(x=ADURW, y=emmean)) +
  geom_line(aes(color=TX)) +
  geom_ribbon(aes(ymin = lower.CL, ymax = upper.CL, fill = TX), alpha = 0.2) +
  scale_x_continuous(breaks = seq(0, 312, by=24)) +
  ylab("Mean PACC with 95% confidence intervals") +
  xlab("Weeks since Randomization") +
  theme(legend.position = 'inside', legend.position.inside = c(0.2, 0.2))
```



This work is being led by Michael Donohue, PhD and ATRI Biostatistics



This application is being developed in collaboration with Gates Ventures

Next Steps

- Extend ACTC tools and infrastructure to support open science and trial data and resource sharing
 - Enable **precise requests** for data, documentation, images, and biospecimens based on demographic, genetic, and other specifications
 - Develop **privacy-protecting methods** for an increasing set of data types
 - Provide open-source **data analysis, exploration, and visualization tools**
 - Improve **data usability** using AI-enabled data exploration via natural language prompts
- Ensure trial data findability, accessibility, and interoperability with the broader ADRD data ecosystem
- Promote secondary use of trial data and resources to drive precision medicine approaches to accelerate ADRD prevention and therapeutic development

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Thank you!

