

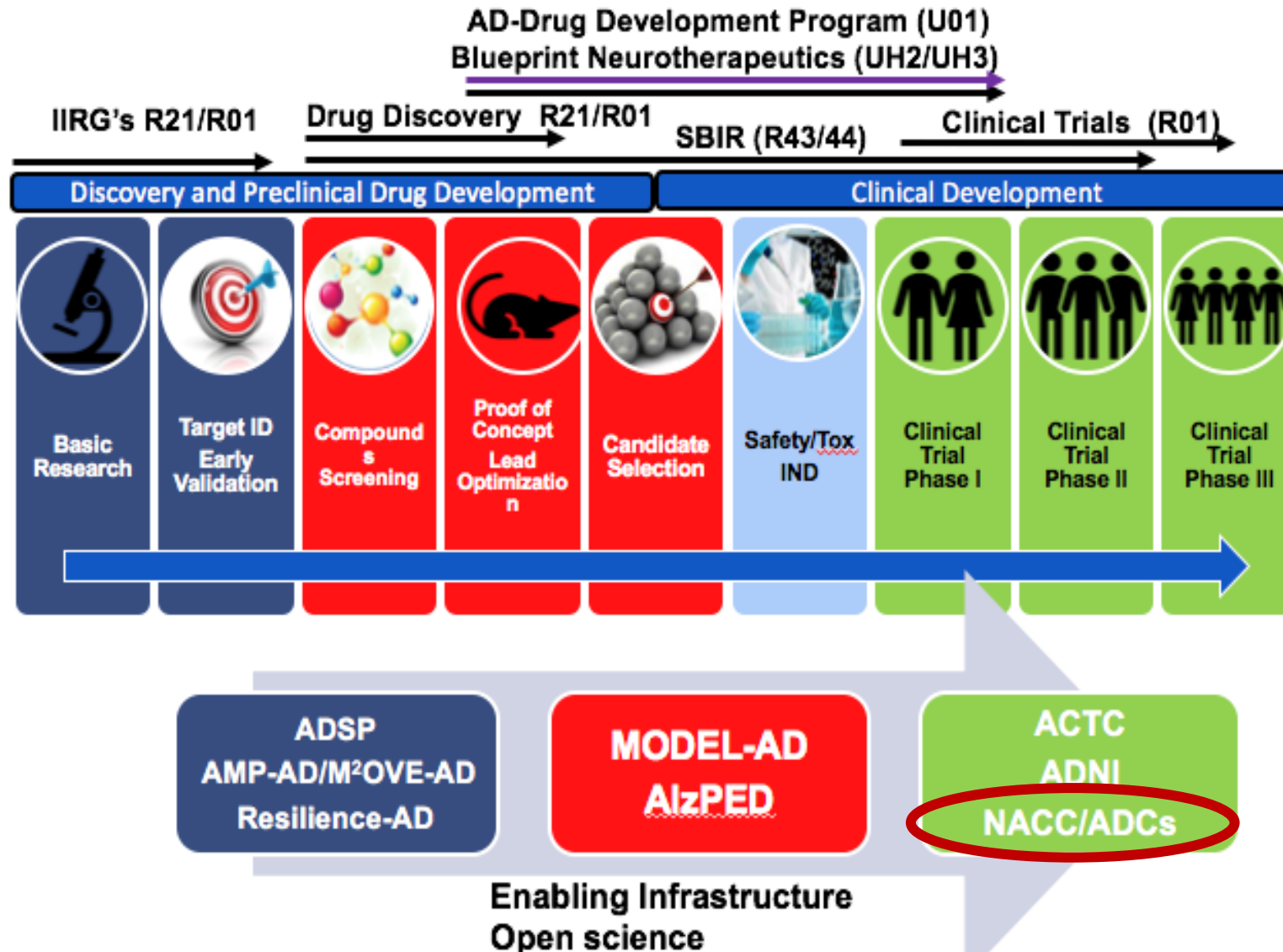
# DN Update

## 2023 Spring ADRC Meeting

Jennie Larkin  
Deputy Director  
DN/NIA

Monday May 1, 2023

# NIA-AD from “bench to bedside” toward Precision Medicine

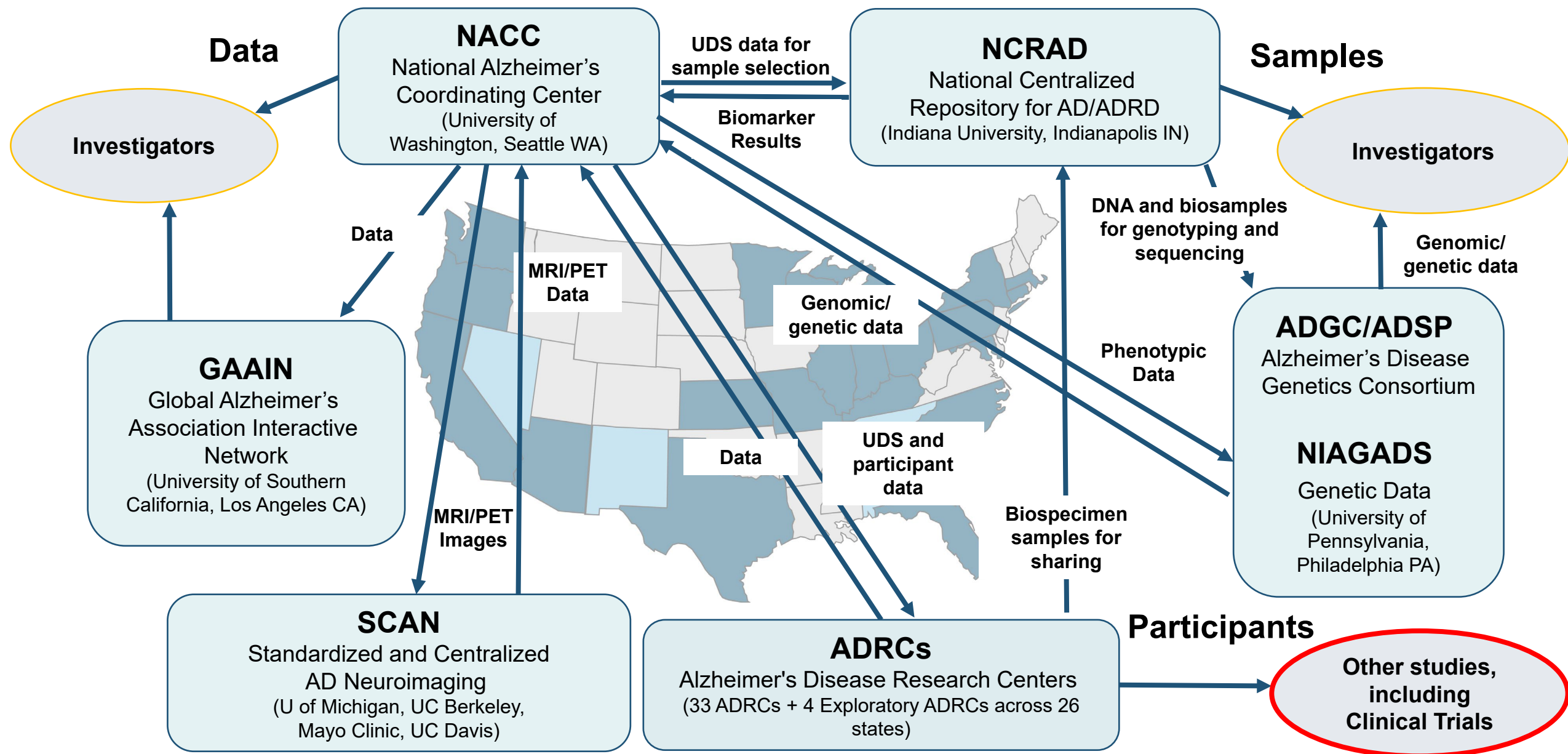


NIA Science Officer: Laurie Ryan  
PIs: Paul Aisen, Reisa Sperling, Ron Peterson

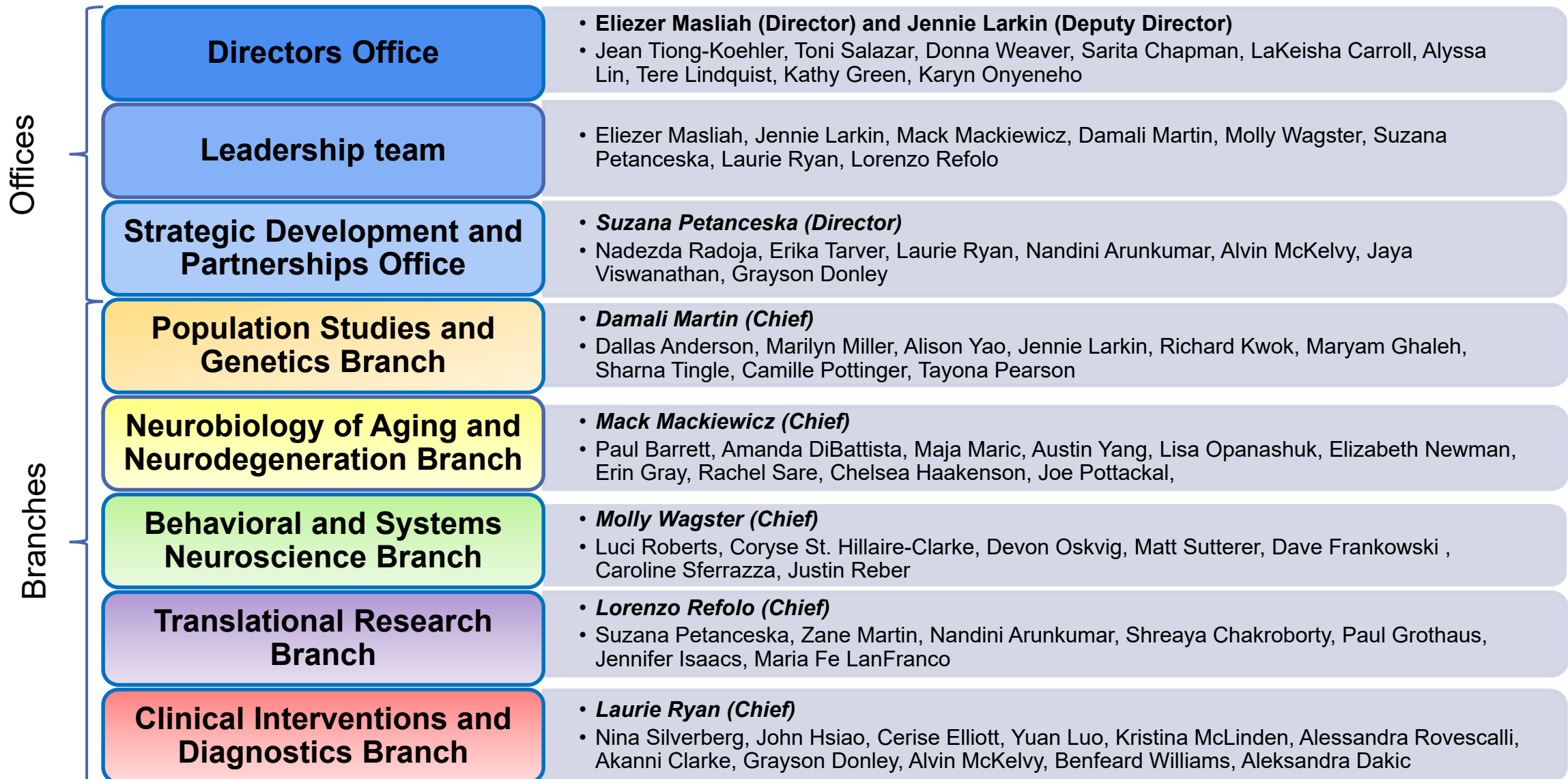
ACTC conducts clinical trials (Phase I-III) of promising pharmacological and non-pharmacological interventions for cognitive and neuropsychiatric symptoms.

ADRCs provide data, samples, and participants to other studies.

# ADRC infrastructure supports NIA research

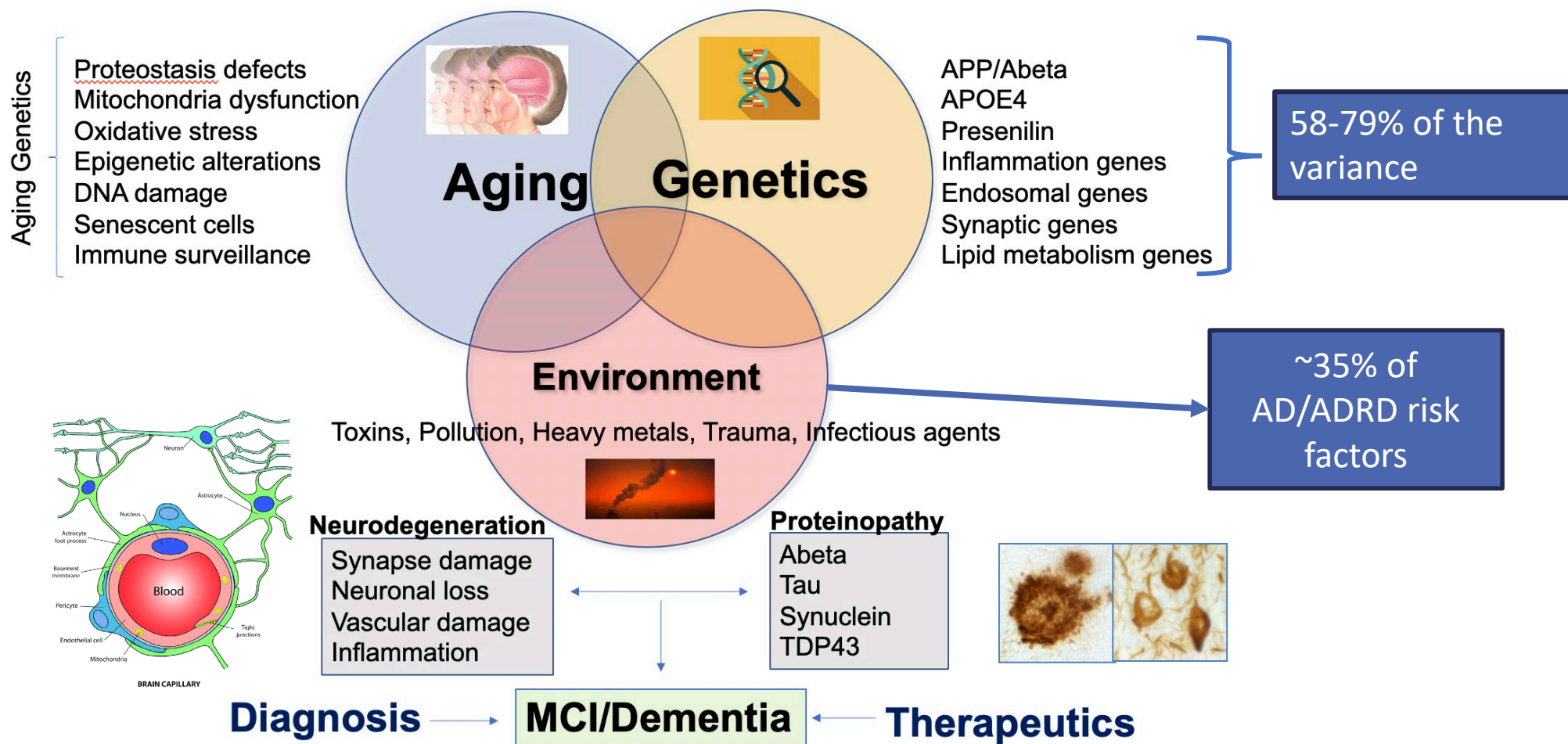


# NIA Division of Neuroscience Organization



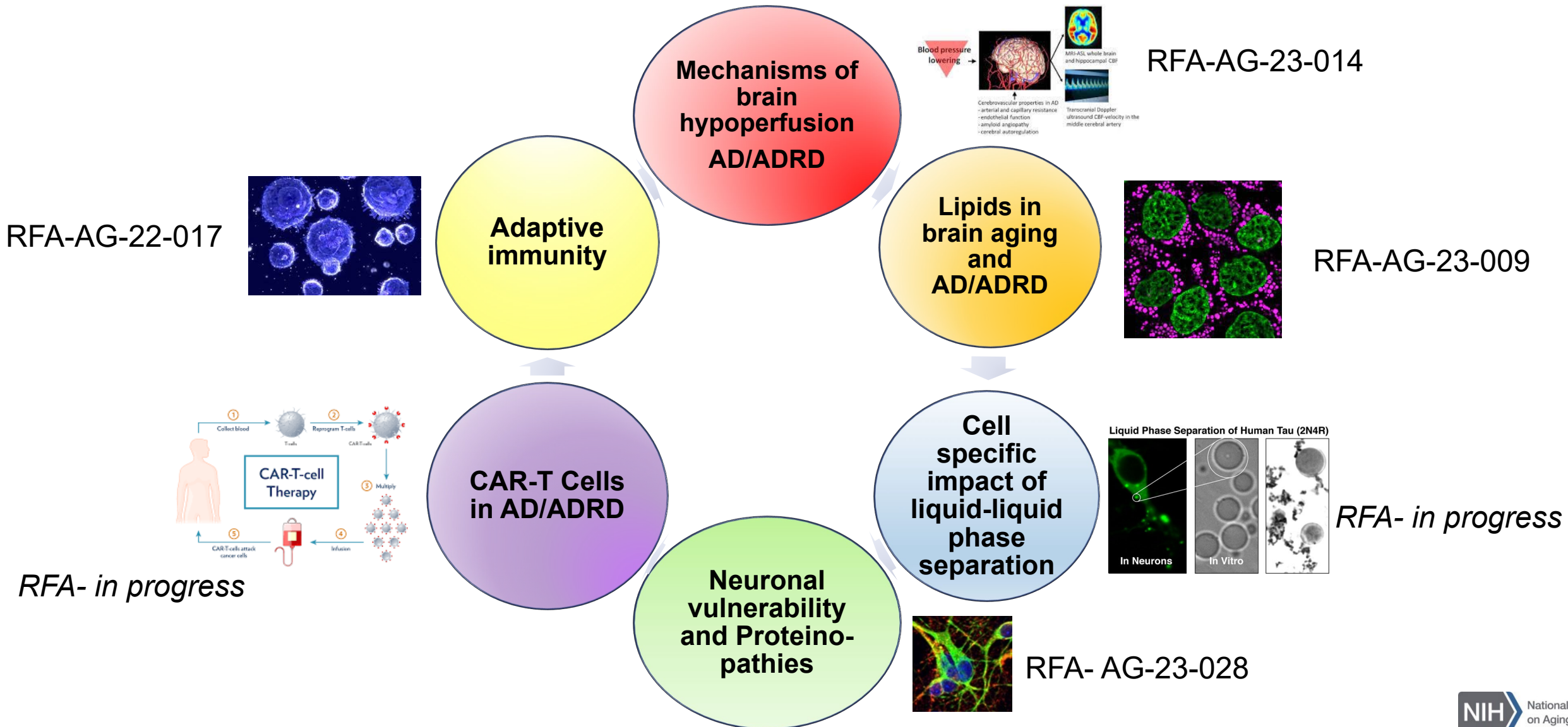
# Pathogenesis of AD: aging, genetics and environment

## multiple pathways lead to AD/ADRD



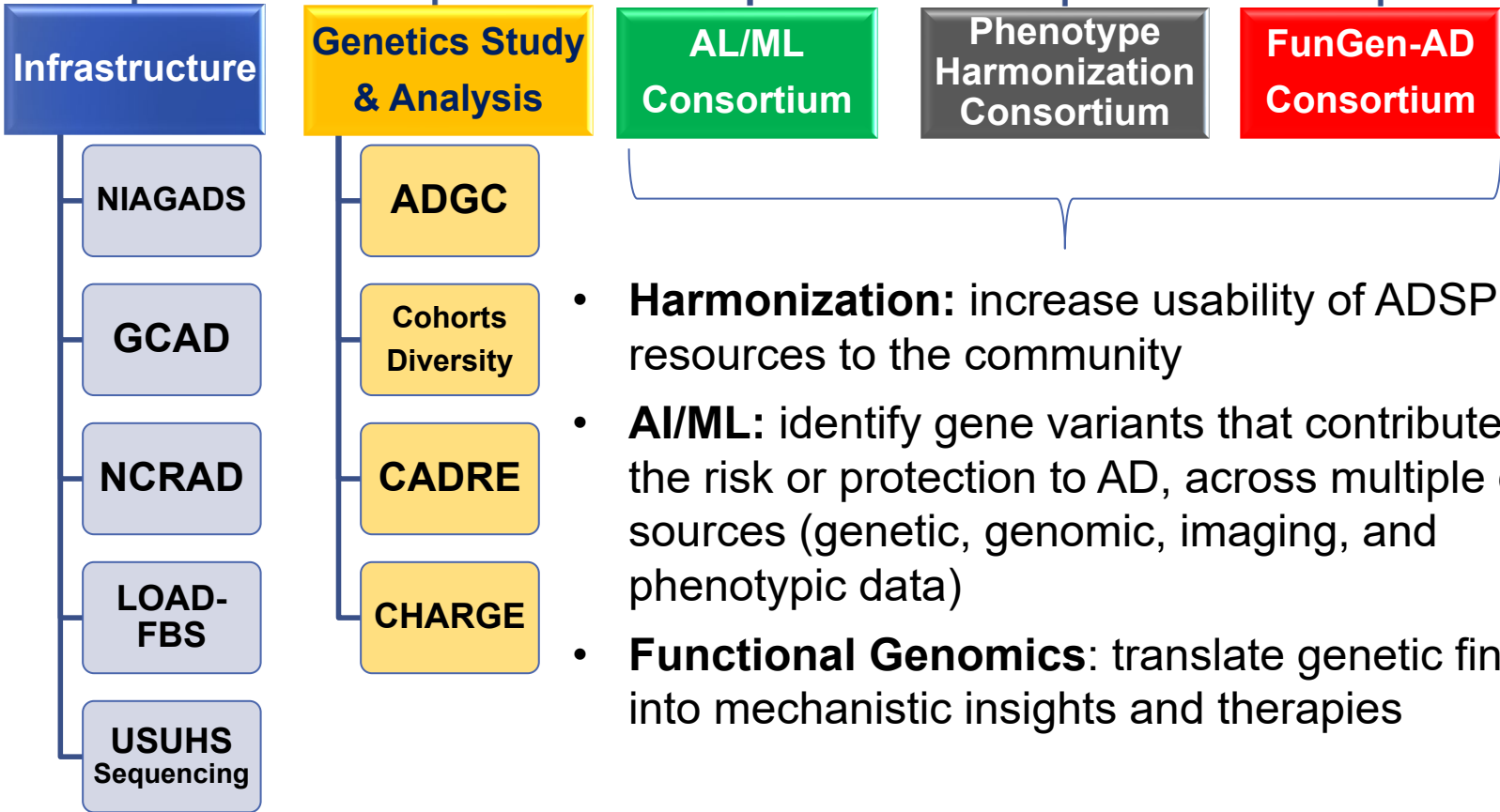


# Contribution of aging mechanisms to AD/ADRD pathogenesis



# Alzheimer's Disease Sequencing Program

100,000 WGS by 2025 includes diverse population



## Over 75 risk loci and 20 genes for AD identified

- Examples: BIN1, TREM2, CR1, PCALM, ADAM10, ABCD4, PLGC2, ANAX5, MEF2
- Involved in immune, neuronal & synaptic, endocytosis, lysosome and lipid metabolism
- Common polygenic variation increases risk prediction (APOE+others)

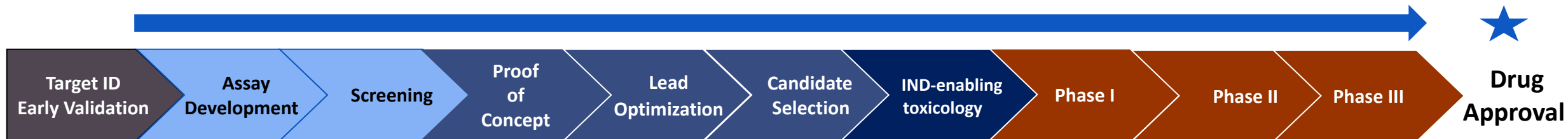
- **Harmonization:** increase usability of ADSP data resources to the community
- **AI/ML:** identify gene variants that contribute to the risk or protection to AD, across multiple data sources (genetic, genomic, imaging, and phenotypic data)
- **Functional Genomics:** translate genetic findings into mechanistic insights and therapies

Work Groups across consortia

Scientific collaboration and resource sharing

## Diversifying the Therapeutic Pipeline and Enabling a Precision Medicine Approach

A Pipeline of Translational Research Funding Opportunities (R21/R01, U01, SBIR/STTR)



ADSP  
AMP-AD  
and Affiliated  
Consortia

TREAT-AD Centers

MODEL-AD Centers

ADNI  
AMP-AD Biomarkers  
ABC-DS  
ACTC

Enabling Discovery Programs and Infrastructure for  
Data Driven and Predictive Drug Development



# Active NIA AD/ADRD Clinical Trials



Pharmacological

66  
TRIALS



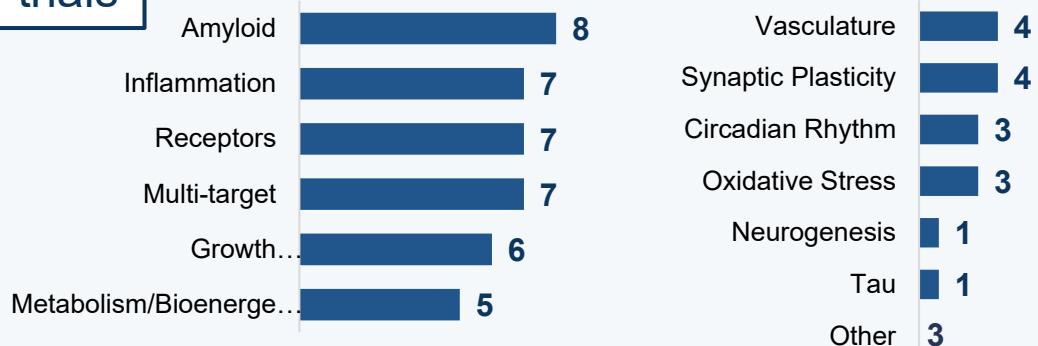
Non-Pharmacological

152  
TRIALS

59  
trials

## Phase I & Phase II

### Targeted Disease Process



7  
trials

## Phase II/III & Phase III

### Targeted Disease Process



## Modality



For more information please visit  
[www.nia.nih.gov/research/ongoing-AD-trials](http://www.nia.nih.gov/research/ongoing-AD-trials)

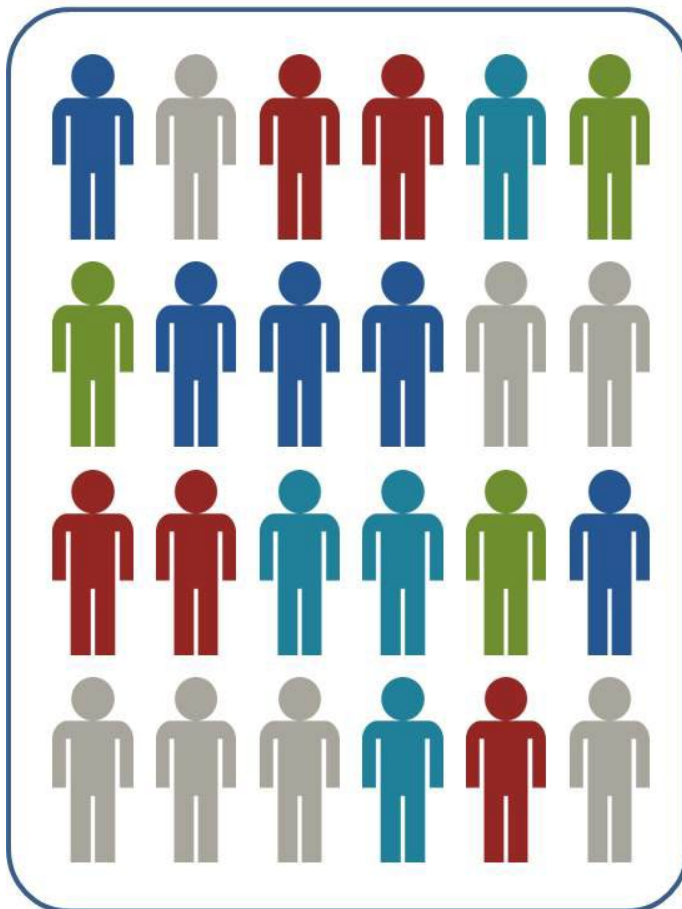
# PRECISION MEDICINE APPROACH TO TREATMENT AND PREVENTION

## DISEASE COMPLEXITY

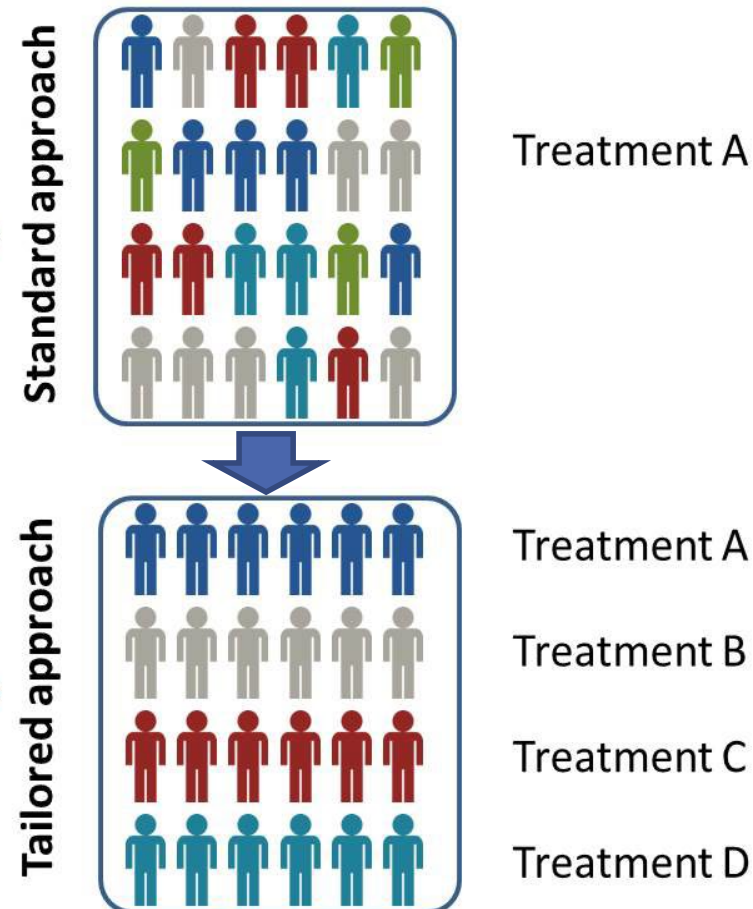
*Multiple Etiologies*  
*Multiple Prodromal Phenotypes*  
*Multiple Progression Trajectories*

- RIGHT TARGET
- RIGHT PATIENT
- RIGHT DRUG/INTERVENTION
- RIGHT DOSE
- RIGHT STAGE OF DISEASE

Patient population



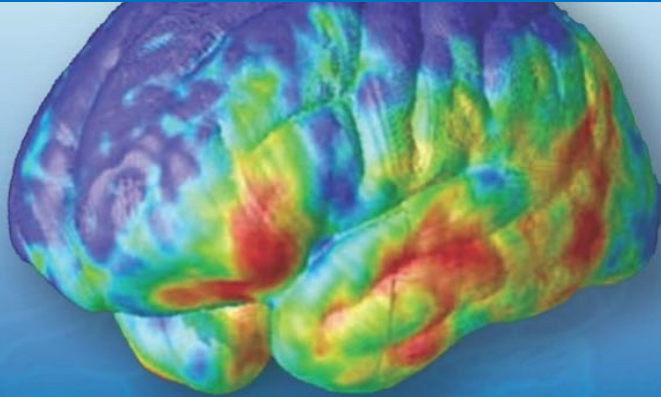
Treatment



## NIA WORKSHOP (December 2020):

Understanding the Role of the Exposome in Brain Aging, Alzheimer's Disease (AD) and AD-Related Dementias

### NIH AD Research Summits: Path to Treatment and Prevention



2015 NIH AD Research Summit  
SESSION THREE: New Strategies for Prevention

2018 NIH AD Research Summit  
SESSION FIVE: Understanding the Impact of the Environment to Advance Disease Prevention

2021 NIH AD Research Summit  
SESSION SEVEN: Understanding the Impact of the Exposome on Brain Health to Advance Disease Prevention

### Recent approved NIA exposome concepts

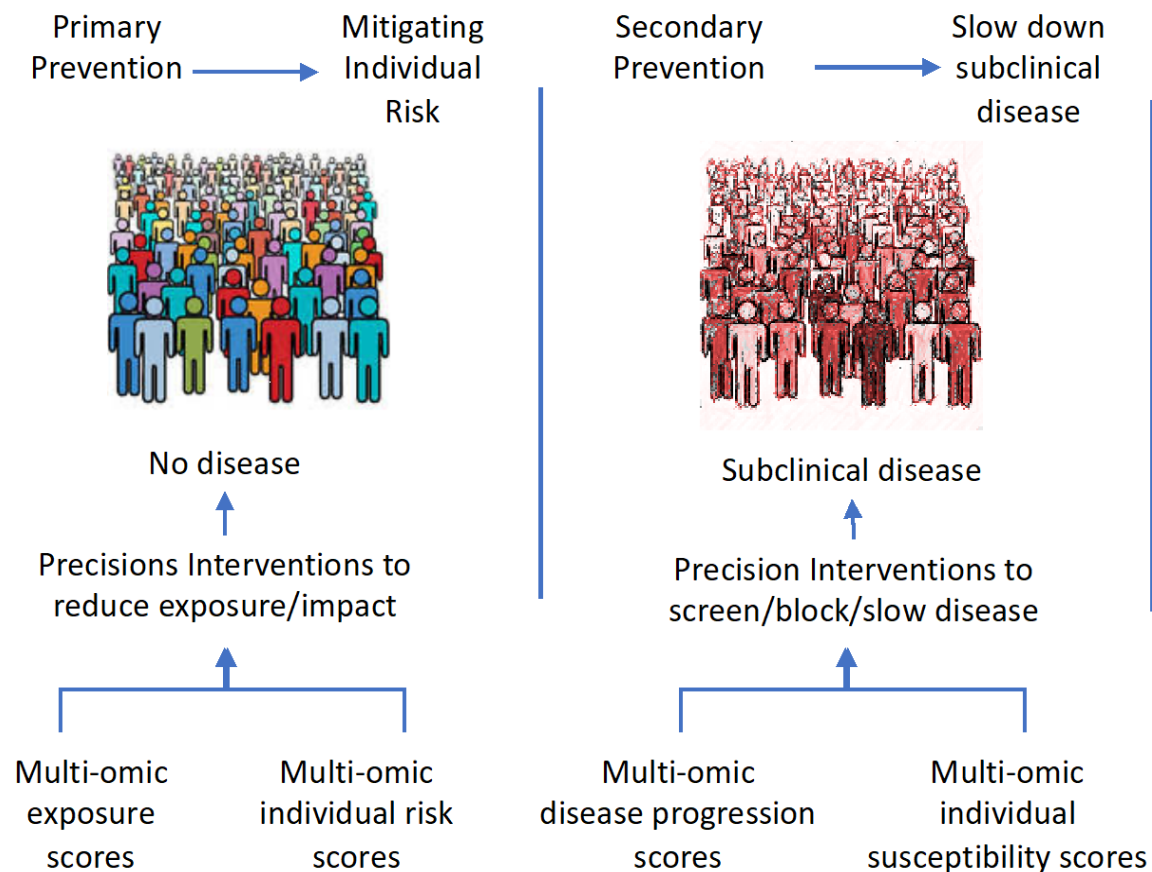
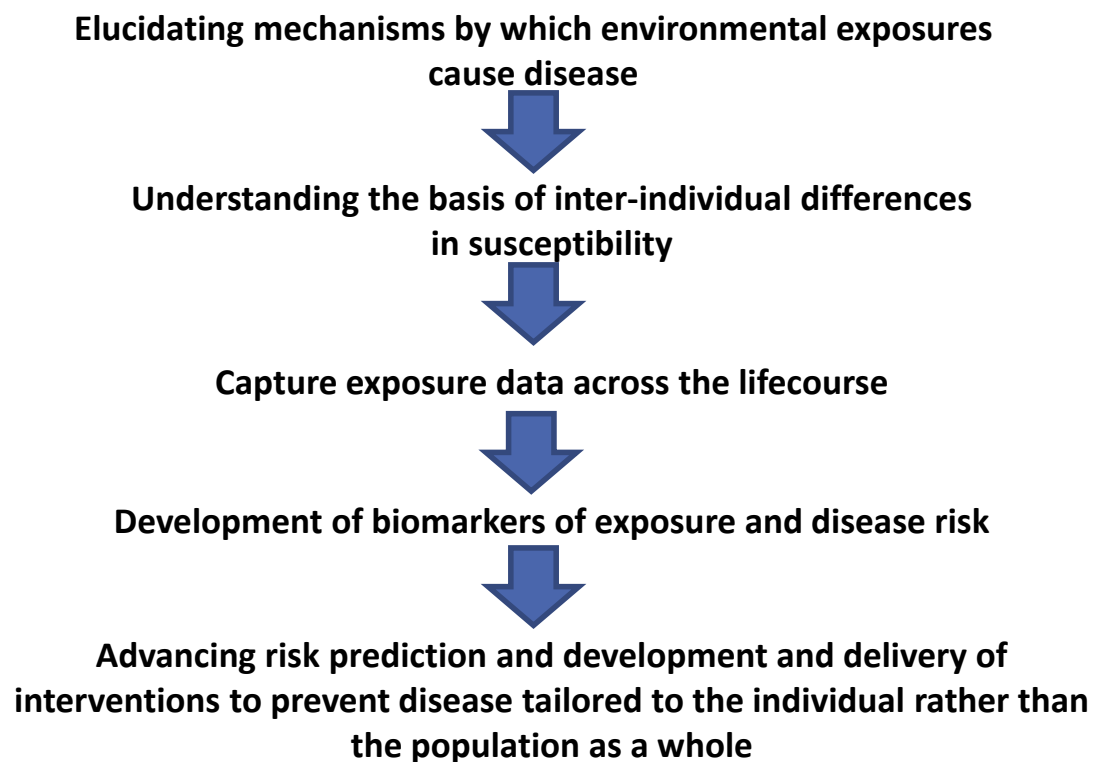
- Quantifying the impact of environmental toxicants on AD/ADRD in cohort studies
- Understanding gene-environment interactions in brain aging and AD/ADRD
- Preclinical studies to characterize the impact of toxicants on brain aging and AD/ADRD

Notice of Special Interest (NOSI): Climate Change and Health Administrative Supplements <https://grants.nih.gov/grants/guide/notice-files/not-hd-23-006.html>

# PRECISION ENVIRONMENTAL HEALTH



Precision Environmental Health describes the next-generation of Environmental Health research occurring at the intersection of G (epigenome/genome) perturbations x E (environmental exposures) x D (data-omics i.e. genome, epigenome, metagenome, proteome, metabolome).



# Implementing the NIH Data Management and Sharing (DMS) Policy

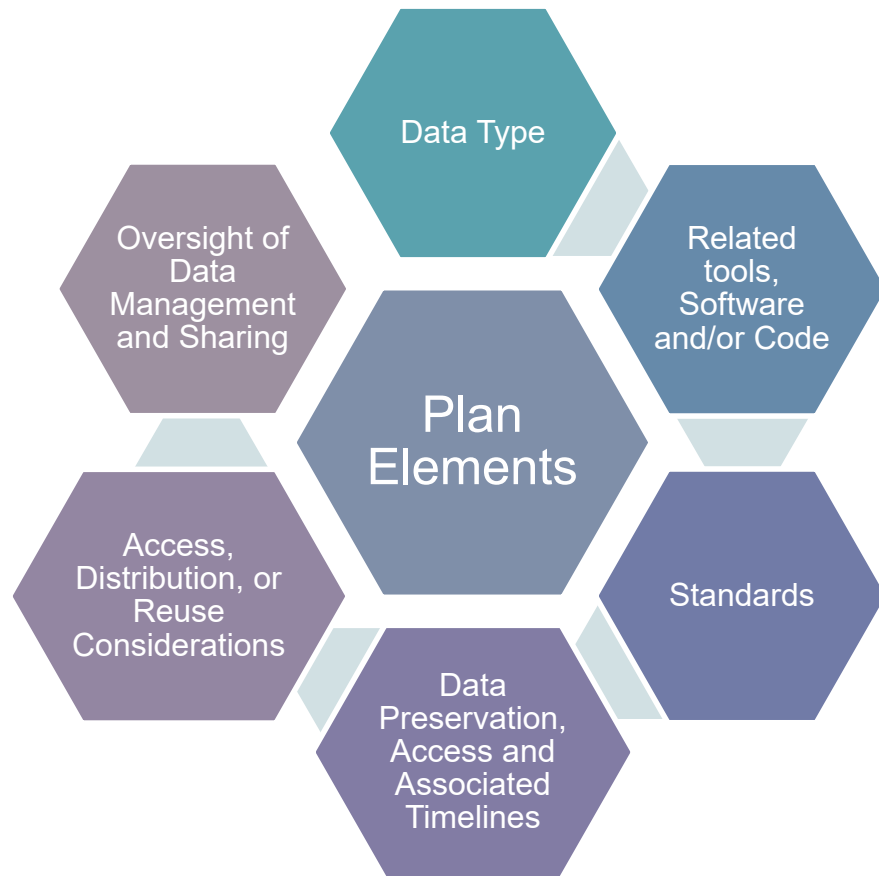


# Policy Requirements

**Submission** of Data Management & Sharing Plan with all applications for funding beginning January 25, 2023

**Compliance** with the Data Management and Sharing Plan approved by the funding NIH Institute, Center, or Office

# Elements of a DMS Plan



- **Data type**
  - Identifying data to be preserved and shared
- **Related tools, software, code**
  - Tools and software needed to access and manipulate data
- **Standards**
  - Standards to be applied to scientific data and metadata
- **Data preservation, access, timelines**
  - Repository to be used, persistent unique identifier, and when/ how long data will be available
- **Access, distribution, reuse considerations**
  - Description of factors for data access, distribution, or reuse
- **Oversight of data management and sharing**
  - Plan compliance will be monitored/ managed and by whom

See [Writing a Data Management & Sharing Plan](#) for details

# Format of a DMS Plan

- ✓ DMS Plan recommended not to exceed 2 pages in length
- ✓ Optional format page is available
- ✓ Check with your program officer

## DATA MANAGEMENT AND SHARING PLAN

If any of the proposed research in the application involves the generation of scientific data, this application is subject to the NIH Policy for Data Management and Sharing and requires submission of a Data Management and Sharing Plan. If the proposed research in the application will generate large-scale genomic data, the Genomic Data Sharing Policy also applies and should be addressed in this Plan. Refer to the detailed instructions in the application guide for developing this plan as well as to additional guidance on [sharing.nih.gov](https://www.nih.gov/genomics/gds). The Plan is recommended not to exceed two pages. Text in italics should be deleted.

### Element 1: Data Type

**A. Types and amount of scientific data expected to be generated in the project:**

*Summarize the types and estimated amount of scientific data expected to be generated in the project.*

**B. Scientific data that will be preserved and shared, and the rationale for doing so:**

*Describe which scientific data from the project will be preserved and shared and provide the rationale for this decision.*

**C. Metadata, other relevant data, and associated documentation:**

*Briefly list the metadata, other relevant data, and any associated documentation (e.g., study protocols and data collection instruments) that will be made accessible to facilitate interpretation of the scientific data.*

### Element 2: Related Tools, Software and/or Code:

*State whether specialized tools, software, and/or code are needed to access or manipulate shared scientific data, and if so, provide the name(s) of the needed tool(s) and software and specify how they*

[DMS Plan Format Page](#)

# Sample DMS Plans on sharing.nih.gov

<a href="#">Sample Plan G</a>	Human clinical and genomics data	NICHD
<a href="#">Sample Plan H</a>	Gene expression analysis data from non-human model organism (zebrafish)	NICHD
<a href="#">Sample Plan I</a>	Human survey data	NICHD
<a href="#">Sample Plan J</a>	Clinical Data from Human Research Participants	NIDDK

[Sample Plans](#)

# DMS Plan Submission

- A new “**Other Plan(s)**” field added to the PHS 398 form to collect a single PDF attachment
- Data Sharing Plans and Genomic Data Sharing Plans will no longer be submitted to the “Resource Sharing Plan(s)” field

Research Plan Section			
5. Vertebrate Animals	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
6. Select Agent Research	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
7. Multiple PD/PI Leadership Plan	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
8. Consortium/Contractual Arrangements	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
9. Letters of Support	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
10. Resource Sharing Plan(s)	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
<b>11. Other Plan(s)</b>	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>
12. Authentication of Key Biological and/or Chemical Resources	<input type="text"/>	<input type="button" value="Add Attachment"/>	<input type="button" value="Delete Attachment"/> <input type="button" value="View Attachment"/>



# BMIC listing of Data Repositories

DOMAIN-SPECIFIC REPOSITORIES

GENERALIST REPOSITORIES

## Domain-Specific Repositories

Displaying 1 - 1 of 1 results

CLEAR

NAME/DESCRIPTION	ICO	SUBJECT AREA	MODEL SYSTEM	ACCESS TYPE	PROPERTIES
search name & description	All	All	All	All	All
<b>National Alzheimer's Coordinating Center (NACC)</b> The Uniform Data Set (UDS) is a longitudinal data set representing the entire enrollment of the NIA Alzheimer's Disease Centers since 2005. It <a href="#">..More</a>	NIA	Neuroscience	human	registered	<a href="#">Open data submission</a> <a href="#">Open timeframe for data deposit</a> <a href="#">NIH funding support</a> <a href="#">Sustained support</a>

Displaying 1 - 1 of 1 results

PR

# Finding and Selecting a Repository

Recommend using a data-type or discipline-specific repository if available

- Look on BMIC Data Repository Listing

Supplemental Information to the NIH Policy for Data Management and Sharing:  
Selecting a Repository for Data Resulting from NIH-Supported Research

Notice Number:

NOT-OD-21-016

Key Dates

Release Date:

October 29, 2020

- Generalist repositories

See [Selecting a Data Repository](#) for details

# NIA

## The Leader in Aging Research

