

# BIOREPOSITORY FOR BIOMARKER HARMONIZATION

Bharat Thyagarajan

Professor

Program Director, Advanced Research and Diagnostics Laboratory

Director, Division of Molecular Pathology and Genomics

University of Minnesota

# RATIONALE

- There is widespread interest in measuring biomarkers of neuropathology in population studies
- However, there is considerable heterogeneity among studies
  - Biospecimen processing
  - Biomarker measurement
- These differences make it difficult to compare results across studies

# PROPOSAL

- **Aim 1:** Establish a sample set of ~100 individuals where blood is processed under ideal conditions (processed and frozen immediately after collection) that can be used to compare results from multiple assay platforms
  - Quanterix
  - Mesoscale Discovery
  - Immunoprecipitation-Mass spectrometry (Abeta 40/42 only)
  - Roche Diagnostics (ptau181, ApoE)
- **Aim 2:** Establish a long-term biorepository of samples processed at different timepoints to simulate field conditions in different studies
  - Will be useful for harmonization of biomarkers across a variety of biological processes.

# PRINCIPLES FOR ESTABLISHING A BIOREPOSITORY

- Collect samples that reflect a wide range of biomarker values for the commonly measured biomarkers of neuropathology
  - Abeta 40, 42, NfL, GFAP and ptau181
- Collect samples and process them immediately (within 4 hours of collection) AND after a delay of 24, 48 and 72 hours after sample collection
  - Will store both plasma and serum vials
  - Will also include a condition that incorporates sample shipment to a central laboratory
- Will also supplement this sample set with samples from patients with dementia (n~20)
- Anticipate collecting ~150 ml of blood from each volunteer
  - Will have a reasonable racial distribution
  - Will store at least 20-30 aliquots/condition (250 ul/aliquot)

# POTENTIAL USES FOR THE BIOREPOSITORY

- Evaluate assay performance to biospecimen collection procedures used in a particular study
  - Plasma vs. serum, effect of delayed processing/shipment etc.
  - Can use subsets of the biorepository.
  - Individual studies will need to pay for sample pulls and shipment
- Evaluate assay performance compared to other assays evaluated using the same sample set
  - Will require that all assay results be shared with the Biomarker Network to facilitate assay comparisons.