HIGHLY ACCURATE MODEL USED TO PREDICT ALZHEIMER'S DISEASE STATUS

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Technology Description

Researchers at Washington University in St. Louis have developed models that can very accurately predict brain amyloidosis—Alzheimer's disease status. Alzheimer's disease (AD) is characterized by the accumulation of Amyloid-β (Aβ42) and hyperphosphorylated Tau 181 (p-tau181) proteins in the brain. However, most of the drugs and clinical trials use compounds against Aβ and tau, therefore there is a need to develop highly accurate and specific biomarkers and prediction model for Alzheimer's disease that are independent of Aβ and tau.

This prediction model is specific to AD, and is independent of Frontotemporal Degeneration (FTD), Dementia with Lewy Bodies (DLB), and Parkinson's Disease, thus allowing it to not only accurately detect AD status, but to also identify cognitive normal individuals that will develop AD, and those individuals with AD who will present a larger rate of memory decline.
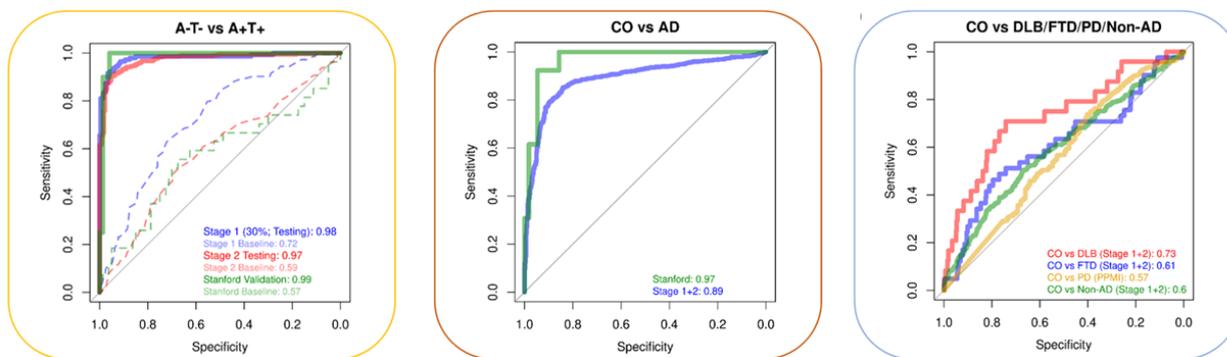
Above figure: Performance and association of outcomes of an 11-protein panel assay in AD patients, and correlation with tau (T) and Aβ.

Stage of Research

Conducted the largest CSF proteomic study in terms of samples and proteins and identified a subset of proteins that accurately predict AD.

Publications

- Cruchaga C, Hassenstab JJ, et al. A flexible modeling approach for biomarker-based computation of absolute risk of Alzheimer's disease dementia. Alzheimers Dement. 2023 Apr;19(4):1452-1465.
- Cruchaga C, Holtzman DM, Morris JC., et al. Preclinical Alzheimer's disease biomarkers accurately predict cognitive and neuropathological outcomes. Brain. 2022 Dec 19;145(12):4506-4518.

Applications

- Prediction of brain amyloidosis specific to Alzheimer's disease

Key Advantages

- **Accurately and specifically predicts Alzheimer's disease status**
- **Independent of tau and AB, the major drug targets currently being used as prediction models**

Patents

Application filed

Related Web Links – Carlos Cruchaga Profile**;** Cruchaga Lab