

Dried Blood Spot Proteomics in a Mixed Memory Clinic Cohort

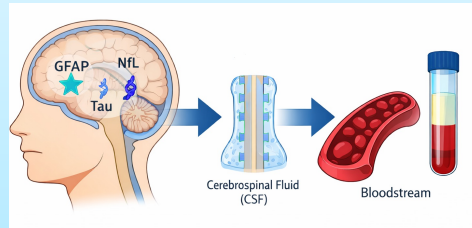
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Background

- Disease-modifying therapies for Alzheimer's Disease (AD) increase the need for scalable biomarkers.
- Plasma biomarkers perform well but require venipuncture and laboratory infrastructure.
- Dried blood spot (DBS) sampling, obtained by a finger-prick, is a minimally invasive, logistically simple alternative.



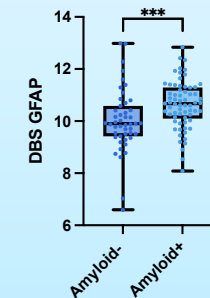
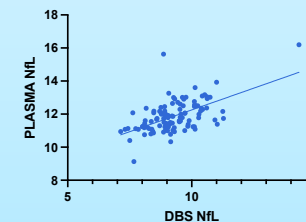
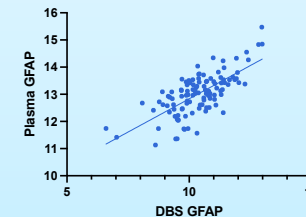
Methods

- A total of 113 paired DBS and plasma samples were obtained from consecutive patients undergoing diagnostic evaluation at the Copenhagen Memory Clinic.
- Cerebrospinal fluid Aβ42, tau, p-tau181, and NfL were analyzed as part of the clinical routine.
- DBS and plasma biomarkers were quantified using the NULISA CNS panel, a novel high-sensitivity platform.

	Aβ+ (n=66)	Aβ- (n=47)	p-value
Age, mean (SD)	71.7 (6.9)	73.1 (7.2)	0.30
Sex (M/F)	25/41	29/18	<0.05
MMSE score, mean (SD)	25.0 (3.6)	26.4 (3.1)	<0.05
CSF p-tau181/Aβ42, mean (SD)	0.060 (0.073)	0.013 (0.0039)	<0.0001

Results

- DBS GFAP and NfL strongly correlated with plasma levels ($p > 0.60$, $P < 0.0001$). DBS NfL correlated with CSF NfL ($p > 0.56$, $P < 0.001$).
- DBS GFAP discriminated CSF amyloid-positive from amyloid-negative individuals ($P < 0.001$).



- DBS p-tau species (p-tau217, p-tau181, and p-tau231) showed no association with plasma and did not discriminate between amyloid-positive and amyloid-negative individuals.

Conclusions

- DBS GFAP and NfL measured with NULISA strongly correlate with plasma and CSF biomarkers and capture clinically meaningful associations in a memory clinic setting.
- In contrast, amyloid biomarkers perform less well in DBS, likely due to whole-blood matrix effects rather than analytical sensitivity.
- DBS GFAP and NfL are promising minimally invasive biomarkers, but matrix-specific optimization is needed.



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