Plasma biomarkers for Alzheimer's disease: a field-test in a memory clinic

Daniele Altomare*, PhD; Sara Stampacchia*, PhD; Federica Ribaldi, PhD; Szymon Tomczyk, PhD; Claire Chevalier, PhD; Géraldine Poulain, MS; Saina Asadi, MS; Bianca Bancila, MS; Moira Marizzoni, PhD; Marta Martins, MS; Aurelien Lathuiliere, MD, PhD; Max Scheffler, MD; Nicholas J. Ashton, PhD; Henrik Zetterberg, MD, PhD; Kaj Blennow, MD; Ilse Kern, MD, PhD; Miguel Frias, PhD; Valentina Garibotto, MD; Giovanni B. Frisoni, MD

*These authors contributed equally to this work (shared first author).

CONTENT

Table S1. Demographic and clinical features of each subsample of participants with biomarkers assessed through plasma and at least one traditional exam (i.e. PET, CSF, MRI, or FDG-PET).

Figure S1. Correlations between plasma and traditional amyloid biomarkers (i.e. amyloid-PET and CSF $A\beta_{42}$).

Figure S2. Correlations between plasma and traditional tau biomarkers (i.e. tau-PET and CSF p-tau_{181}).

Figure S3. Correlations between plasma and traditional neurodegeneration biomarkers (i.e. hippocampal volume, and FDG-PET).

Figure S4. Diagnostic accuracy of plasma biomarkers over homologous traditional biomarkers.

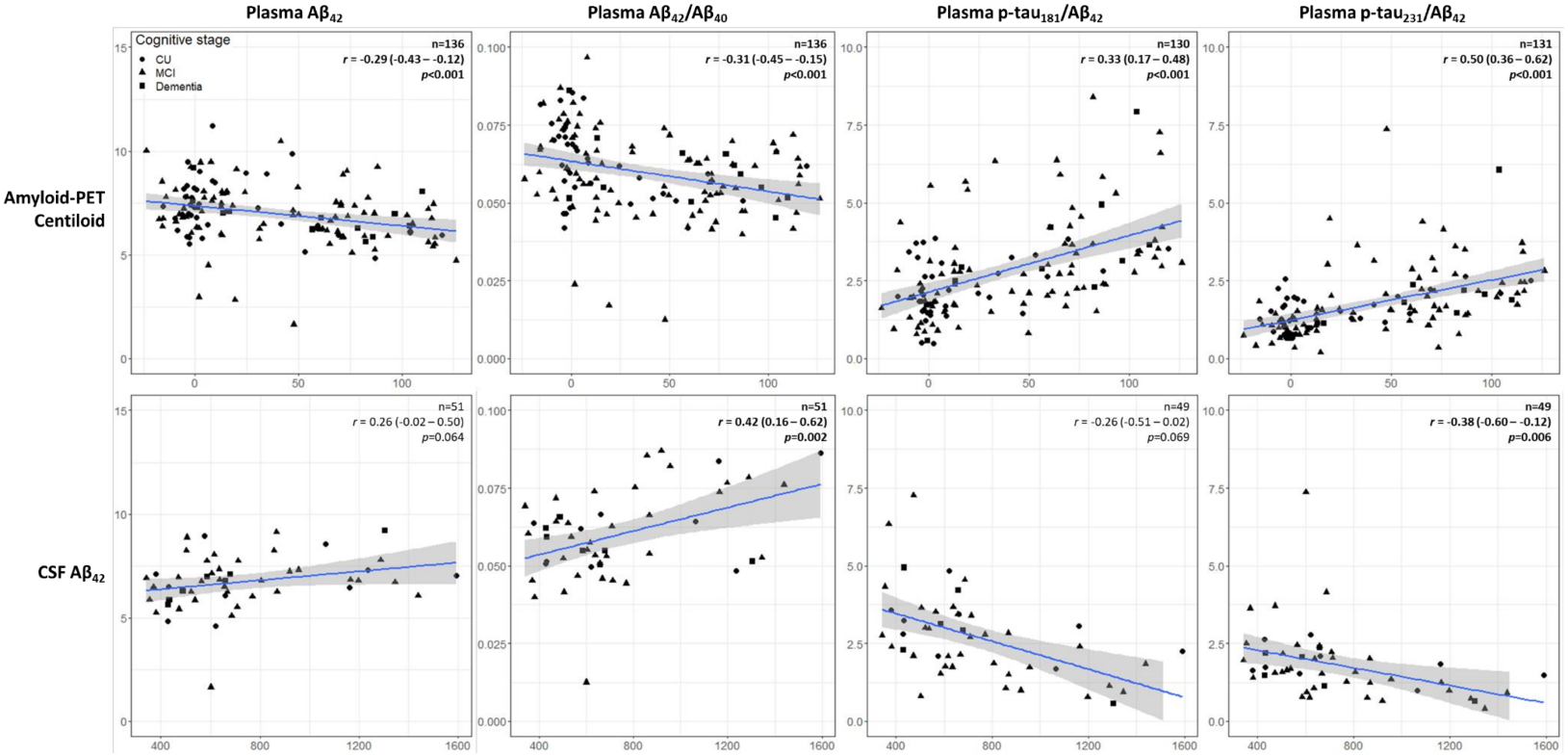
Figure S5. Test-retest variability of plasma p-tau_{181} and plasma NfL.

Table S1. Demographic and clinical features of each subsample of participants with biomarkers assessed through plasma and at least one traditional exam (i.e. PET, CSF, MRI, or FDG-PET).

Demographic and clinical features		Traditional exams				
		Amyloid-PET n=142	Tau-PET n=105	MRI n=168	FDG-PET n=64	CSF n=51
Age, years		72 (9)	73 (9)	71 (12)	72 (9)	70 (10)
Gender, males		51% (72)	47% (49)	50% (84)	48% (31)	47% (24)
Education, years		14 (5)	14 (5)	15 (6)	14 (6)	15 (6)
MMSE		27 (4) [7]	27 (4) [8]	27 (4) [16]	25 (3) [3]	27 (4) [5]
CDR		0.5 (0.5) [19]	0.5 (0.1) [9]	0.5 (0.5) [39]	0.5 (0.0) [7]	0.5 (0.1) [11]
Cognitive stage						
	CU	27% (39)	26% (27)	42% (71)	9% (6)	20% (10)
	MCI	62% (88)	63% (66)	50% (84)	73% (47)	67% (34)
	Dementia	11% (15)	11% (12)	8% (13)	17% (11)	14% (7)

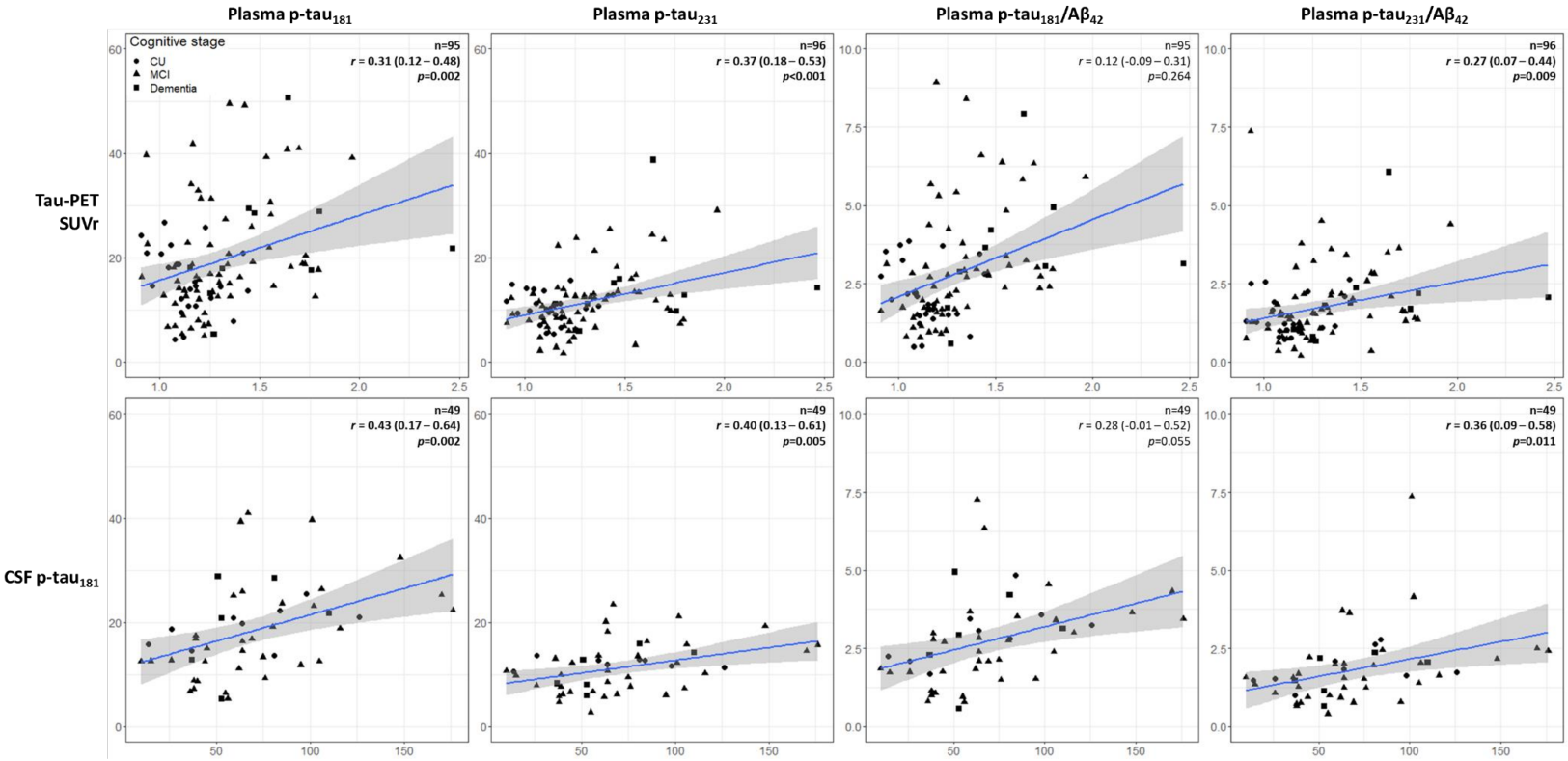
PET: Positron Emission Tomography. CSF: cerebrospinal fluid. MRI: magnetic resonance imaging. FDG: 18F-fluorodeoxyglucose. MMSE: Mini-Mental Stata Examination. CDR: Clinical Dementia Rating. CU: cognitively unimpaired. MCI: mild cognitive impairment.

Figure S1. Correlations between plasma and traditional amyloid biomarkers (i.e. amyloid-PET and CSF $A\beta_{42}$).



One plasma p-tau_{181}/$A\beta_{42}$ value (24.0) was not displayed to improve data visualization (but was included in the analyses). Pearson's *r* and its confidence intervals are reported for each correlation.

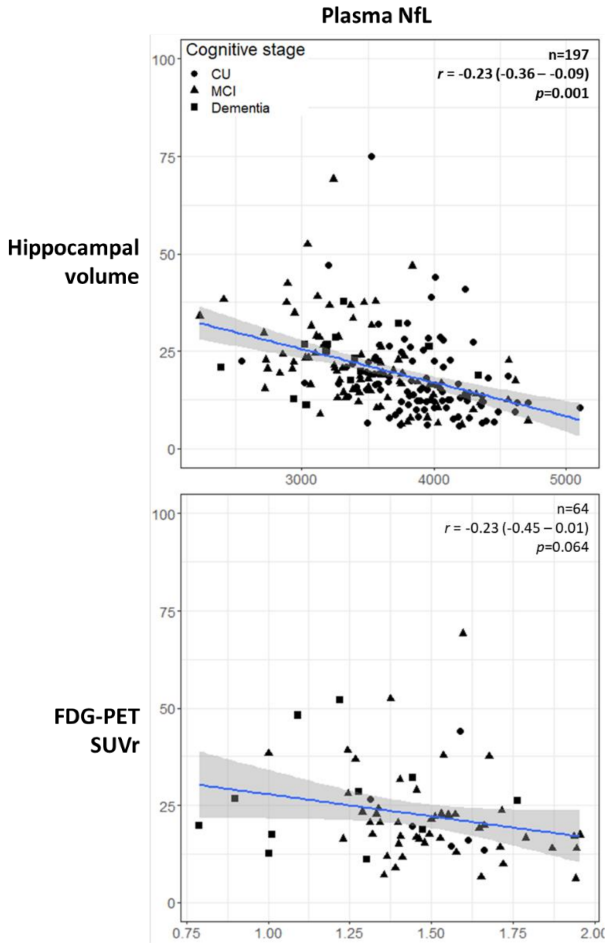
Figure S2. Correlations between plasma and traditional tau biomarkers (i.e. tau-PET and CSF p-tau$_{181}$).



SUVr: standardized uptake value ratio.

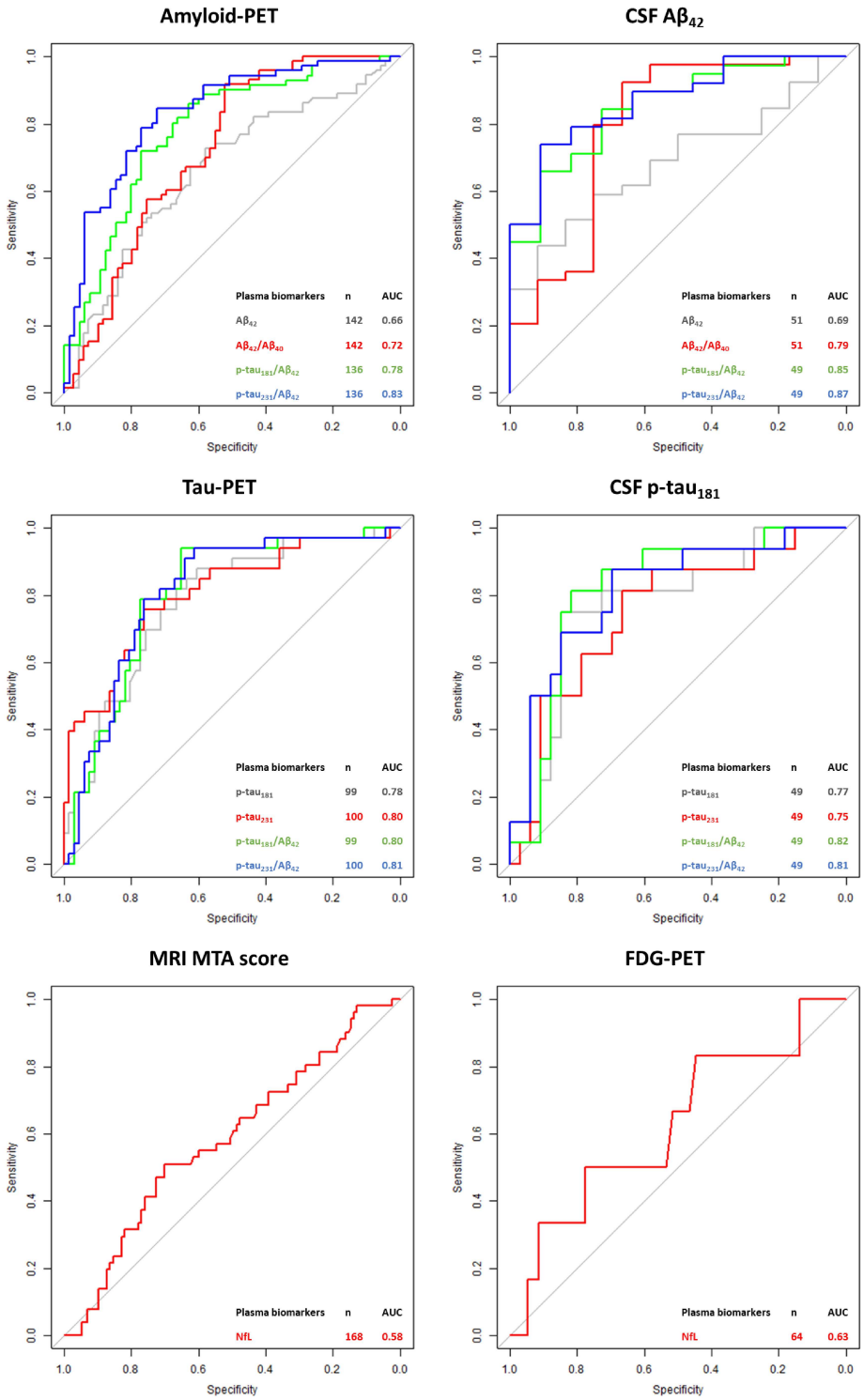
One plasma p-tau$_{181}$/Aβ$_{42}$ value (24.0) was not displayed to improve data visualization (but was included in the analyses). Pearson's *r* and its confidence intervals are reported for each correlation.

Figure S3. Correlations between plasma and traditional neurodegeneration biomarkers (i.e. hippocampal volume, and FDG-PET).



Two plasma NfL values (188.1 pg/ml and 260.1 pg/ml) were not displayed to improve data visualization (but were included in the analyses). Pearson's *r* and its confidence intervals are reported for each correlation.

Figure S4. Diagnostic accuracy of plasma biomarkers over homologous traditional biomarkers.

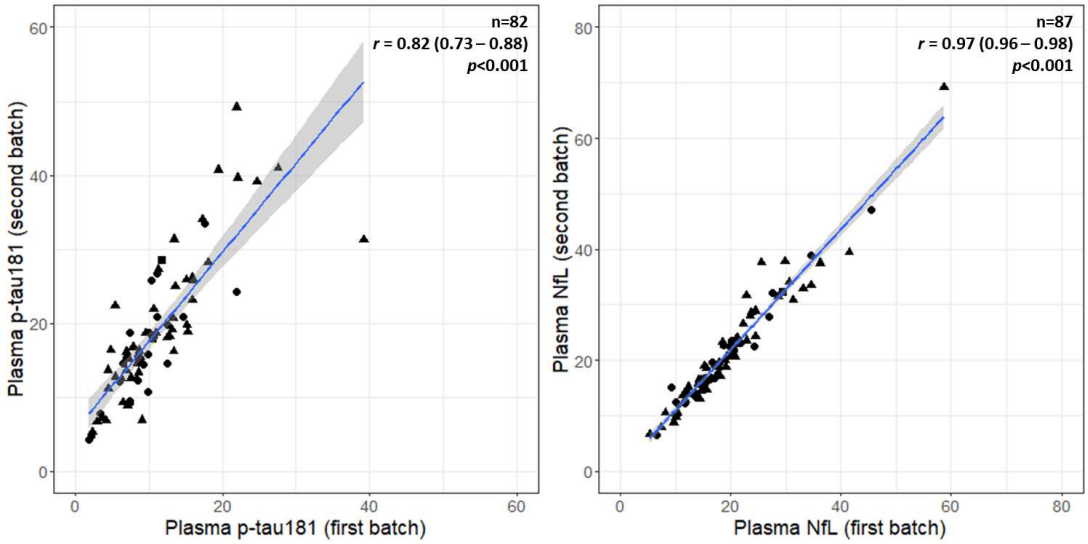


Amyloid-PET positivity: visual reading. CSF $A\beta_{42}$ positivity: < 880.5 pg/ml.

Tau-PET positivity: Braak stages IV-VI. CSF p-tau_{181} positivity: > 80.5 pg/ml.

MTA positivity: age-based cut-off. FDG-PET positivity: SUVr <1.21.

Figure S5. Test-retest variability of plasma p-tau$_{181}$ and plasma NfL.



Pearson's r and its confidence intervals are reported for each correlation.