

eTable 1. Characteristics of participants included in the study.

Cohort	N	Technique	Years	Age, years mean (SD)	Women, n (%)	MMSE, mean (SD)	Clinical classification, n (%)		
							CN	MCI	Dementia
<i>ADNI study</i>									
ADNI	497	Elecsys	2006-2019	72.5 (7.2)	278 (55.9)	27.2 (2.2)	181 (36.4)	250 (50.3)	66 (13.3)
<i>Memory centres</i>									
Paris - 1	1330	Innotest	2016-2018	70.8 (10.6)	642 (48.3)	21.7 (5.9)	423 (31.8)	394 (29.6)	513 (38.6)
Paris - 2	1690	Elecsys	2018-2020	71.8 (9.8)	857 (50.7)	21.5 (5.9)	498 (29.5)	545 (32.2)	647 (38.3)
Montpellier - 1	629	Euroimmun	2017-2019	68.3 (12.5)	316 (50.2)	22.4 (5.8)	222 (35.3)	203 (32.3)	204 (32.4)
Montpellier - 2	185	Lumipulse	2019-2020	67.7 (10.8)	90 (48.7)	21.5 (3.8)	50 (27.0)	34 (18.4)	101 (54.6)
Lille - 1	364	Innotest	2017-2018	69.7 (9.5)	199 (54.5)	20.0 (5.7)	42 (11.5)	134 (36.9)	188 (51.6)
Lille - 2	247	Lumipulse	2019-2020	70.0 (8.6)	138 (55.9)	20.9 (5.7)	65 (26.3)	80 (32.4)	102 (41.3)
Göteborg	1214	Innotest	2017-2020	70.9 (9.3)	616 (50.7)	–	–	–	–
Amsterdam	286	Elecsys	2018-2020	62.8 (7.1)	128 (44.8)	24.3 (4.3)	127 (44.4)	106 (37.1)	53 (18.5)
Barcelona	333	Lumipulse	2019-2020	72.7 (8.0)	187 (56.2)	24.0 (4.5)	144 (43.1)	119 (35.6)	70 (21.3)
Brussels	147	Lumipulse	2018-2020	67.8 (14.4)	78 (53.4)	23.6 (4.9)	62 (42.2)	42 (28.6)	43 (29.2)
<i>Overall</i>	6922			70.6 (8.5)	3529 (51.0)	22.4 (5.7)	1814 (31.8)	1907 (33.4)	1987 (34.8)

CN: cognitively normal ; MCI: mild cognitive impairment.

eTable 2. Confusion matrix of classification of ADNI participants using cut-offs determined by amyloid and tau PET and using the algorithm.

ADNI CSF biomarkers	N	TN n (%)	TP n (%)	FP n (%)	FN n (%)	Overall percent agreement
Elecsys						
CSF A β 42	240	140 (0.58)	91 (0.38)	0 (0)	9 (0.04)	0.96
CSF A β 42/40 ratio	240	138 (0.57)	100 (0.42)	0 (0)	2 (0.01)	0.99
CSF p-Tau 181	373	217 (0.58)	131 (0.35)	25 (0.07)	0 (0)	0.93
CSF tau	373	200 (0.54)	147 (0.39)	26 (0.07)	0	0.93

eTable 3. Ability of CSF A β 42 and CSF A β 42/40 ratio to discriminate between "high CSF pTau-181" and "low CSF pTau-181": ROC curve analysis. "High CSF pTau-181" defined as 80th to 10th percentile of distribution in each center, and "low CSF pTau-181" defined as 10th to 30th percentiles of distribution.

Centers	Technique	AUC (SE)		P-value
		CSF A β 42	CSF A β 42/40 ratio	
Paris-1	Innotest	0.74 (0.02)	0.96 (0.01)	<0.001
Paris-2	Elecsys	0.55 (0.02)	0.88 (0.01)	<0.001
Montpellier-1	Euroimmun	0.81 (0.03)	0.99 (0.01)	<0.001
Montpellier-2	Lumipulse	0.67 (0.06)	0.97 (0.03)	<0.001
Lille-1	Innotest	0.82 (0.04)	0.94 (0.03)	<0.001
Lille-2	Lumipulse	0.72 (0.05)	0.97 (0.02)	<0.001
Göteborg	Innotest	0.75 (0.02)	0.95 (0.01)	<0.001
Amsterdam	Elecsys	0.73 (0.05)	0.96 (0.02)	<0.001
Barcelona	Lumipulse	0.82 (0.04)	0.98 (0.01)	<0.001
Brussels	Lumipulse	0.82 (0.05)	—	—

eTable 4. Ability of CSF tau and CSF p-tau 181 to discriminate between "high CSF A β 42/40 ratio" and "low A β 42/40 ratio ": ROC curve analysis. "High CSF A β 42/40 ratio" defined as higher than 110% of the previously calculated cut-off; "low CSF A β 42/40 ratio" as lower than 90% of the cut-off.

Centers	Technique	AUC (SE)	
		CSF Tau	CSF p-tau 181
Paris - 1	Innotest	0.88 (0.01)	0.91 (0.01)
Paris - 2	Elecsys	0.79 (0.01)	0.84 (0.01)
Montpellier - 1	Euroimmun	0.84 (0.02)	0.97 (0.01)
Montpellier - 2	Lumipulse	0.87 (0.03)	0.94 (0.02)
Lille - 1	Innotest	0.84 (0.03)	0.85 (0.03)
Lille - 2	Lumipulse	0.89 (0.02)	0.95 (0.02)
Göteborg	Innotest	0.89 (0.01)	0.90 (0.01)
Amsterdam	Elecsys	0.89 (0.02)	0.92 (0.02)
Barcelona	Lumipulse	0.90 (0.02)	0.96 (0.01)
Brussels	Lumipulse	–	–

eTable 5. Exploring in ADNI population different values of percentiles of pTau in the algorithm.

ADNI participants	Optimum cut-offs			
	PET-Based	Algo-1	Algo-2	Algo-3
Elecsys				
CSF A β 42	981	963	917	942
CSF A β 42/40 ratio	0.0528	0.0525	0.0548	0.0548
CSF p-Tau 181	24.3	22.0	21.9	22.0
CSF tau	254	241	241	241

Algo-1 : 10-30% p-Tau vs 80-100% p-Tau.

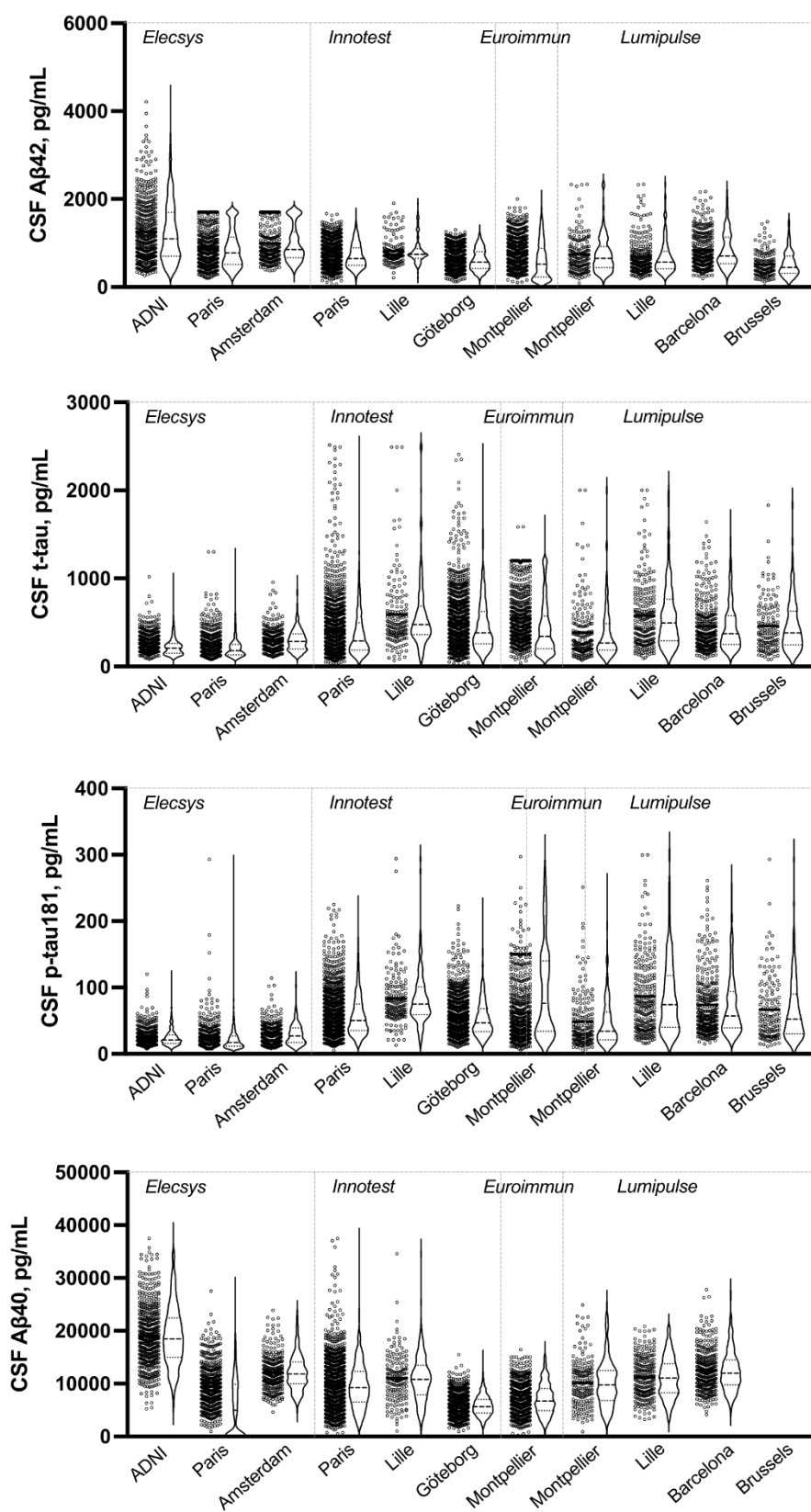
Algo-2 : 0-20% vs 80-100% p-Tau.

Algo-3 : 0-30% vs 70-100% p-Tau.

eTable 6. Exploring in ADNI population different values of percentiles of beta-amyloid markers in the algorithm.

ADNI participants	PET-Based	Optimum cut-offs		
		Algo-1	Algo-2	Algo-3
Elecsys				
CSF A β 42	981	963	963	963
CSF A β 42/40 ratio	0.0528	0.0525	0.0525	0.0525
CSF p-Tau 181	24.3	22.0	22.5	22.4
CSF tau	254	241	241.4	241.4
Algo-1 : $\leq 90\%$ and $\geq 110\%$ of A β cut-offs for CSF Tau and pTau cut-offs determination.				
Algo-2 : $\leq 80\%$ and $\geq 120\%$ of A β cut-offs for CSF Tau and pTau cut-offs determination.				
Algo-3 : $\leq 75\%$ and $\geq 125\%$ of A β cut-offs for CSF Tau and pTau cut-offs determination.				

eFigure 1. Distributions of CSF values in the various cohorts.



eFigure 2. Distribution of biomarkers profiles in 10 patient-cohorts.

