eTable 1. Primary and contributory pathological diagnosis by clinical diagnosis

				Primary neuropathological diagnosis					Contributory neuropathological diagnosis								
		N	MMSE	AD	FTLD-tau (CBD)	FTLD-tau (PSP)	FTLD -TDP	Other	AD	FTLD-tau (CBD)	FTLD-tau (PSP)	FTLD-TDP	LBD	Vascular injury	Hippocampal sclerosis	Other	None
N		101		16	17	26	27	15	12	2	0	3	8	9	7	0	0
Clinical diagnosis	**MCI**	2	28 (28-28)	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	AD	15	25 (23-25)	12	0	1	0	2	2	1	0	1	2	5	2	0	4
	PD/DLB/PDD	4	22 (21-24)	1	0	0	2	1	0	0	0	0	1	0	0	1	0
	CBS/CBD	21	24 (20-26)	0	10	8	1	2	2	0	0	0	3	1	0	0	15
	PSP-RS	14	28 (25-29)	0	1	13	0	0	2	0	0	0	0	2	0	0	10
	nfvPPA	5	23 (21-27)	0	2	1	1	1	0	0	0	1	1	0	1	0	3
	bvFTD	26	24 (20-26)	2	4	1	11	8	4	1	0	1	0	1	4	1	15
	svPPA	2	24 (24-24)	0	0	0	2	0	0	0	0	0	0	0	0	1	1
	ALS	7	27 (23-28)	0	0	0	7	0	2	0	0	0	1	0	0	0	5
	Other	5	21 (15-21)	1	0	2	1	1	0	0	0	0	0	0	0	0	5

The table shows number of individuals with different primary and contributory pathological diagnosis, grouped by clinical diagnosis. For example, 16 individuals had a primary neuropathological diagnosis of AD, and 12 of these had a clinical AD diagnosis. Fifteen individuals had a clinical diagnosis of AD and two of these (who had non-AD primary pathologies) had AD as a contributory diagnosis. The table also includes MMSE as a measure of general cognitive impairment, with data as median (inter-quartile range). AD, Alzheimer's disease; ALS, amyotrophic lateral sclerosis; bvFTD, behavorial variant frontotemporal dementia; CBS, corticobasal syndrome; CBD, corticobasal degeneration; DLB, Dementia with Lewy body; FTLD, frontotemporal lobar degeneration; LBD, Lewy Body disease; MCI, mild cognitive impairment; MMSE, mini-mental state examination; nvPPA, non-fluent variant primary progressive aphasia; PD, Parkinson's disease; PDD, Parkinson's disease dementia; PSP, Progressive Supranuclear Palsy; PSP-RS, PSP-Richardson's syndrome; svPPA, semantic variant primary progaressive aphasia; TDP, TAR DNA binding protein 43.

eTable 2. Primary and contributory pathological diagnoses by ADNC none-low versus intermediate-high

	ADNC none-low		ADNC intermediate-high	
	Primary	**Contributory**	**Primary**	**Contributory**
AD	0	3	16	8
FTLD-tau (CBD)	16	0	1	2
FTLD-tau (PSP)	17	0	8	0
FTLD-tau (other)	8	1	1	2
FTLD-TDP	23	1	4	3
Other	6	16	0	0

Data are number of patients with different primary and contributory neuropathological diagnoses, ordered by their ADNC class. For example, for patients with FTDL-tau (PSP) as primary neuropathological diagnosis, 17 had ADNC none-low, and 8 had ADNC intermediate-high. For the 3 patients with AD as contributory neuropathological diagnosis and ADNC none-low, the specific ADNC grade was "low". AD, Alzheimer's disease; ADNC, Alzheimer's disease Neuropathological Change; CBD, corticobasal degeneration; FTLD, frontotemporal lobar degeneration; PSP, Progressive Supranuclear Palsy; TDP, TAR DNA binding protein 43.

eTable 3. Internal 10-fold cross validation of AUC

Biomarker	cvAUC	95 % CI
Aβ42	0.898	0.833-0.962
Aβ40	0.540	0.425-0.656
P-tau	0.771	0.661-0.88
T-tau	0.681	0.562-0.8
NFL	0.669	0.571-0.767
P-tau181/Aβ42	0.942	0.891-0.992
Aβ42/Aβ40	0.957	0.913-1.000
P-tau181/T-tau	0.889	0.808-0.971

AUC for ADNC none-low versus intermediate-high when calculated with 10-fold internal cross-validation using influence curves.

eTable 4. Sensitivity analyses for associations between biomarkers and neuropathology

CSF biomarker	Feature	P (adj. for AD primary pathology)	P (short lag LP to death)	P (adj. for MMSE, education)
Aβ40	Thal phase	0.0698	0.345	0.315
Aβ40	Braak stage	0.665	0.429	0.417
Aβ40	CERAD	0.722	0.825	0.536
Aβ40	ADNC	0.0666	0.808	0.209
Aβ42	Thal phase	**0.00198**	**0.011**	**0.000301**
Aβ42	Braak stage	0.102	**0.0295**	**0.00761**
Aβ42	CERAD	0.0844	0.064	**0.00246**
Aβ42	ADNC	**0.000506**	**0.048**	**0.000144**
Aβ42/Aβ40	Thal phase	**1.57E-12**	**7.98E-13**	**3.24E-22**
Aβ42/Aβ40	Braak stage	**0.00013**	**2.29E-06**	**7.17E-14**
Aβ42/Aβ40	CERAD	**6.51E-13**	**6.02E-20**	**3.30E-23**
Aβ42/Aβ40	ADNC	**7.20E-13**	**7.05E-09**	**6.80E-28**
P-tau	Thal phase	**0.0246**	**3.69E-06**	**0.000266**
P-tau	Braak stage	0.15	**0.00138**	**5.54E-06**
P-tau	CERAD	0.131	**0.0428**	**1.84E-05**
P-tau	ADNC	**0.00757**	**0.000196**	**6.62E-08**
P-tau181/Aβ42	Thal phase	**2.09E-05**	**8.82E-15**	**4.07E-10**
P-tau181/Aβ42	Braak stage	**0.00113**	**1.16E-05**	**4.72E-12**
P-tau181/Aβ42	CERAD	**0.0067**	**0.000398**	**1.66E-09**
P-tau181/Aβ42	ADNC	**7.10E-07**	**1.10E-08**	**2.42E-16**
T-tau	Thal phase	0.194	**0.000554**	**0.0176**
T-tau	Braak stage	0.219	**0.0132**	**0.000454**
T-tau	CERAD	0.203	0.0981	**0.000988**
T-tau	ADNC	0.0596	**0.00340**	**6.41E-05**
P-tau/T-tau	Thal phase	**0.0486**	**0.000195**	**1.31E-05**
P-tau/T-tau	Braak stage	0.0759	**0.010161**	**6.13E-10**
P-tau/T-tau	CERAD	0.0945	**0.00192**	**5.13E-07**
P-tau/T-tau	ADNC	**0.0093**	**0.000147**	**9.22E-12**
NFL	Thal phase	0.278	0.349	0.321
NFL	Braak stage	0.413	0.647	0.489
NFL	CERAD	0.795	0.325	0.968
NFL	ADNC	0.822	0.731	0.657

Sensitivity analyses with additional co-variates or in subsets (for short lag LP-death, removing those with more than the median lag time). Data are p-values for associations between biomarkers and pathology. All models also included age, sex and time from LP to death as co-variates. The results can be compared to the main results in the main text and figures.

eTable 5. Models combining neuropathology for associations with biomarkers

Biomarker	model	AIC	R^2	ΔAIC
Aβ40	**Basic (only co-variates)**	**569.59**	**0.04**	**0.0**
Aβ40	Thal	569.77	0.09	0.2
Aβ40	Braak	576.70	0.02	7.1
Aβ40	CERAD	574.21	0.02	4.6
Aβ40	Thal + Braak	575.38	0.08	5.8
Aβ40	Thal + CERAD	568.09	0.13	-1.5
Aβ40	Braak + CERAD	577.08	0.05	7.5
Aβ40	Thal + Braak + CERAD	571.07	0.14	1.5
Aβ42	Basic (only co-variates)	1441.18	0.00	0.0
Aβ42	**Thal**	**1423.00**	**0.21**	**-18.2**
Aβ42	Braak	1430.52	0.16	-10.7
Aβ42	CERAD	1432.78	0.11	-8.4
Aβ42	Thal + Braak	1428.87	0.21	-12.3
Aβ42	Thal + CERAD	1428.67	0.19	-12.5
Aβ42	Braak + CERAD	1435.11	0.14	-6.1
Aβ42	Thal + Braak + CERAD	1433.70	0.19	-7.5
Aβ42/Aβ40	Basic (only co-variates)	-454.98	0.08	0.0
Aβ42/Aβ40	Thal	-533.42	0.63	-78.4
Aβ42/Aβ40	Braak	-509.21	0.52	-54.2
Aβ42/Aβ40	CERAD	-533.68	0.62	-78.7
Aβ42/Aβ40	Thal + Braak	-531.61	0.64	-76.6
Aβ42/Aβ40	**Thal + CERAD**	**-546.37**	**0.68**	**-91.4**
Aβ42/Aβ40	Braak + CERAD	-532.20	0.63	-77.2
Aβ42/Aβ40	Thal + Braak + CERAD	-537.09	0.67	-82.1
P-tau	Basic (only co-variates)	711.13	0.01	0.0
P-tau	Thal	690.61	0.25	-20.5
P-tau	Braak	690.93	0.26	-20.2
P-tau	CERAD	690.27	0.24	-20.9
P-tau	Thal + Braak	686.99	0.32	-24.1
P-tau	**Thal + CERAD**	**683.14**	**0.33**	**-28.0**
P-tau	Braak + CERAD	692.67	0.27	-18.5
P-tau	Thal + Braak + CERAD	686.53	0.34	-24.6
P-tau/Aβ42	Basic (only co-variates)	-388.88	-0.01	0.0
P-tau/Aβ42	Thal	-435.20	0.43	-46.3
P-tau/Aβ42	Braak	-431.63	0.41	-42.8
P-tau/Aβ42	CERAD	-422.71	0.33	-33.8
P-tau/Aβ42	Thal + Braak	-439.69	0.49	-50.8
P-tau/Aβ42	**Thal + CERAD**	**-440.33**	**0.48**	**-51.5**
P-tau/Aβ42	Braak + CERAD	-429.02	0.41	-40.1
P-tau/Aβ42	Thal + Braak + CERAD	-436.95	0.48	-48.1

T-tau	Basic (only co-variates)	1157.04	0.02	0.0
T-tau	Thal	1148.25	0.16	-8.8
T-tau	Braak	1146.44	0.18	-10.6
T-tau	CERAD	1142.61	0.19	-14.4
T-tau	Thal + Braak	1147.07	0.21	-10.0
T-tau	**Thal + CERAD**	**1140.65**	**0.24**	**-16.4**
T-tau	Braak + CERAD	1147.72	0.19	-9.3
T-tau	Thal + Braak + CERAD	1145.46	0.24	-11.6
P-tau/T-tau	Basic (only co-variates)	-515.34	0.08	0.0
P-tau/T-tau	Thal	-539.12	0.33	-23.8
P-tau/T-tau	**Braak**	**-549.56**	**0.41**	**-34.2**
P-tau/T-tau	CERAD	-541.43	0.34	-26.1
P-tau/T-tau	Thal + Braak	-549.03	0.44	-33.7
P-tau/T-tau	Thal + CERAD	-545.93	0.40	-30.6
P-tau/T-tau	Braak + CERAD	-548.20	0.42	-32.9
P-tau/T-tau	Thal + Braak + CERAD	-549.10	0.45	-33.8
NFL	**Basic (only co-variates)**	**1651.31**	**0.20**	**0.0**
NFL	Thal	1653.94	0.22	2.6
NFL	Braak	1656.73	0.20	5.4
NFL	CERAD	1656.49	0.18	5.2
NFL	Thal + Braak	1660.95	0.20	9.6
NFL	Thal + CERAD	1659.22	0.20	7.9
NFL	Braak + CERAD	1662.15	0.18	10.8
NFL	Thal + Braak + CERAD	1666.08	0.18	14.8

Comparisons of different models with CSF biomarkers as dependent variables and different sets of neuropathology features as independent variables. All models included the co-variates age, sex and time from LP to death. For each biomarker, models are compared in terms of adjusted R^2 and Akaike Information Criterion (AIC). ΔAIC compares AIC for each biomarker model with the basic model. The model with the lowest AIC is highlighted in bold.

eTable 6. Comparing CSF biomarkers between primary pathological diagnoses.

		All subjects		Excluding non-AD subjects with AD-copathology	
CSF biomarker	**Comparison**	**P-value**	**Significant after correction**	**P-value**	**Significant after correction**
Aβ40	AD vs FTLD-tau (CBD)	0.5055	FALSE	0.4314	FALSE
	AD vs FTLD-tau (PSP)	0.376	FALSE	0.4502	FALSE
	AD vs FTLD-TDP	0.942	FALSE	0.7199	FALSE
	AD vs Other	0.5466	FALSE	0.334	FALSE
	FTLD-tau (CBD) vs FTLD- tau (PSP)	0.1119	FALSE	0.124	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.4001	FALSE	0.6049	FALSE
	FTLD-tau (CBD) vs Other	0.9648	FALSE	0.8347	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	0.3738	FALSE	0.2497	FALSE
	FTLD-tau (PSP) vs Other	0.1528	FALSE	0.1056	FALSE
	FTLD-TDP vs Other	0.4522	FALSE	0.4677	FALSE
Aβ42	AD vs FTLD-tau (CBD)	**0.0014**	**TRUE**	**9.00E-04**	**TRUE**
	AD vs FTLD-tau (PSP)	0.0779	FALSE	0.0144	FALSE
	AD vs FTLD-TDP	**0.0044**	**TRUE**	**0.001**	**TRUE**
	AD vs Other	**0.0037**	**TRUE**	**0.0011**	**TRUE**
	FTLD-tau (CBD) vs FTLD-tau (PSP)	0.075	FALSE	0.2953	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.4587	FALSE	0.6996	FALSE
	FTLD-tau (CBD) vs Other	0.8295	FALSE	0.9726	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	0.2274	FALSE	0.4545	FALSE
	FTLD-tau (PSP) vs Other	0.151	FALSE	0.3181	FALSE
	FTLD-TDP vs Other	0.6407	FALSE	0.684	FALSE
T-tau	AD vs FTLD-tau (CBD)	**0.0021**	**TRUE**	**9.00E-04**	**TRUE**
	AD vs FTLD-tau (PSP)	**1.00E-04**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-TDP	**5.00E-04**	**TRUE**	**<0.0001**	**TRUE**
	AD vs Other	0.0307	FALSE	**<0.0001**	FALSE
	FTLD-tau (CBD) vs FTLD-tau (PSP)	0.5304	FALSE	**<0.0001**	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.8699	FALSE	0.9628	FALSE
	FTLD-tau (CBD) vs Other	0.3787	FALSE	0.2324	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	0.601	FALSE	0.1608	FALSE
	FTLD-tau (PSP) vs Other	0.1418	FALSE	0.0212	FALSE
	FTLD-TDP vs Other	0.2586	FALSE	0.1992	FALSE
P-tau	AD vs FTLD-tau (CBD)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-tau (PSP)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-TDP	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs Other	**6.00E-04**	**TRUE**	**3.00E-04**	**TRUE**
	FTLD-tau (CBD) vs FTLD-tau (PSP)	0.9994	FALSE	0.4516	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.5556	FALSE	0.5935	FALSE
	FTLD-tau (CBD) vs Other	0.5365	FALSE	0.3936	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	0.5462	FALSE	0.7757	FALSE
	FTLD-tau (PSP) vs Other	0.5405	FALSE	0.1371	FALSE
	FTLD-TDP vs Other	0.2198	FALSE	0.1521	FALSE
Aβ42/Aβ40	AD vs FTLD-tau (CBD)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**

	AD vs FTLD-tau (PSP)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-TDP	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs Other	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	FTLD-tau (CBD) vs FTLD-tau (PSP)	0.0732	FALSE	0.8624	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.5122	FALSE	0.7582	FALSE
	FTLD-tau (CBD) vs Other	0.5413	FALSE	0.5992	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	0.191	FALSE	0.9102	FALSE
	FTLD-tau (PSP) vs Other	0.2941	FALSE	0.7256	FALSE
	FTLD-TDP vs Other	0.9571	FALSE	0.7711	FALSE
P-tau/Aβ42	AD vs FTLD-tau (CBD)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-tau (PSP)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-TDP	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs Other	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	FTLD-tau (CBD) vs FTLD-tau (PSP)	0.1477	FALSE	0.8043	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.9253	FALSE	0.9411	FALSE
	FTLD-tau (CBD) vs Other	0.4888	FALSE	0.4352	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	0.14	FALSE	0.7422	FALSE
	FTLD-tau (PSP) vs Other	0.5111	FALSE	0.6114	FALSE
	FTLD-TDP vs Other	0.5083	FALSE	0.358	FALSE
P-tau/T-tau	AD vs FTLD-tau (CBD)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-tau (PSP)	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs FTLD-TDP	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	AD vs Other	**<0.0001**	**TRUE**	**<0.0001**	**TRUE**
	FTLD-tau (CBD) vs FTLD-tau (PSP)	0.3086	FALSE	0.862	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.01	FALSE	0.0069	FALSE
	FTLD-tau (CBD) vs Other	0.9762	FALSE	0.9315	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	**3.00E-04**	**TRUE**	0.0065	FALSE
	FTLD-tau (PSP) vs Other	0.332	FALSE	0.9373	FALSE
	FTLD-TDP vs Other	0.0153	FALSE	0.0075	FALSE
NFL	AD vs FTLD-tau (CBD)	0.1621	FALSE	0.1813	FALSE
	AD vs FTLD-tau (PSP)	0.6181	FALSE	0.8867	FALSE
	AD vs FTLD-TDP	**1.00E-04**	**TRUE**	**1.00E-04**	**TRUE**
	AD vs Other	0.9408	FALSE	0.8097	FALSE
	FTLD-tau (CBD) vs FTLD-tau (PSP)	0.2958	FALSE	0.1266	FALSE
	FTLD-tau (CBD) vs FTLD-TDP	0.0113	FALSE	**0.0048**	**TRUE**
	FTLD-tau (CBD) vs Other	0.183	FALSE	0.2821	FALSE
	FTLD-tau (PSP) vs FTLD-TDP	**2.00E-04**	**TRUE**	**<0.0001**	**TRUE**
	FTLD-tau (PSP) vs Other	0.6984	FALSE	0.711	FALSE
	FTLD-TDP vs Other	**2.00E-04**	**TRUE**	**2.00E-04**	**TRUE**

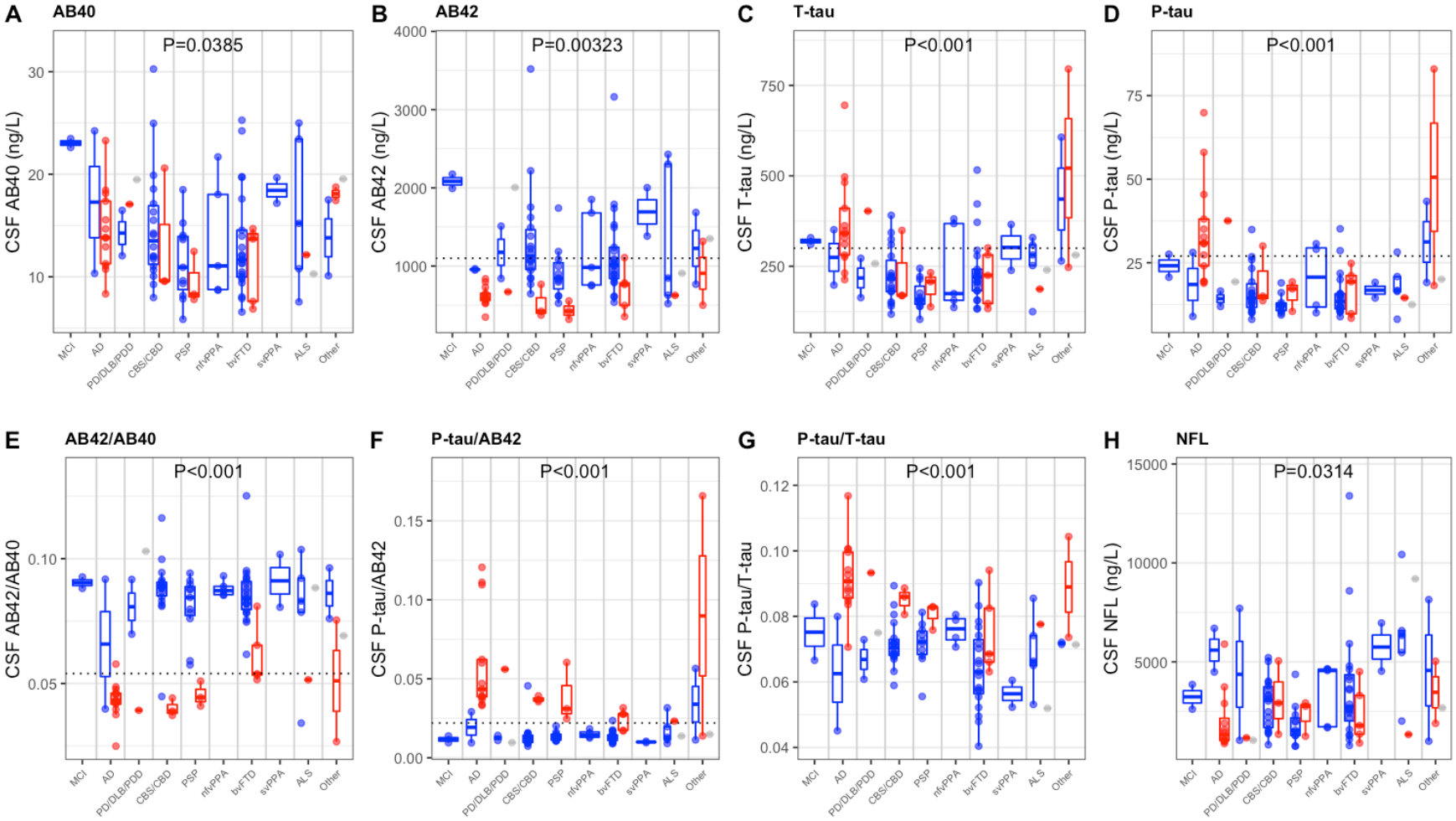
Results are from linear regression models, adjusted for age, sex and time between LP and death. P-values are adjusted for multiple comparison was determined using Bonferroni correction for 10 comparisons. For example, CSF Aβ42/Aβ40 was significantly altered different between AD and FTLD-tau (CBD), FTLD-tau (PSP), FTLD-TDP, and Other (see Figure 5 for direction of change). AD, Alzheimer's disease; CBD, corticobasal degeneration; FTLD, frontotemporal lobar degeneration; PSP, Progressive Supranuclear Palsy; TDP, TAR DNA binding protein 43.

eTable 7. Concordance between biomarker status and ADNC class in patients with non-AD primary neuropathology

	Biomarker negative		Biomarker positive		P
	ADNC none-low	ADNC intermediate-high	ADNC none-low	ADNC intermediate-high	
Aβ42 (<1100 ng/L)	28	2	42	10	0.20
T-tau (>300 ng/L)	54	10	16	2	1.0
P-tau (>27 ng/L)	57	10	9	2	0.68
Aβ42/Aβ40 (<0.054)	67	3	3	9	<0.001
P-tau/Aβ42 (>0.022)	61	3	5	9	<0.001

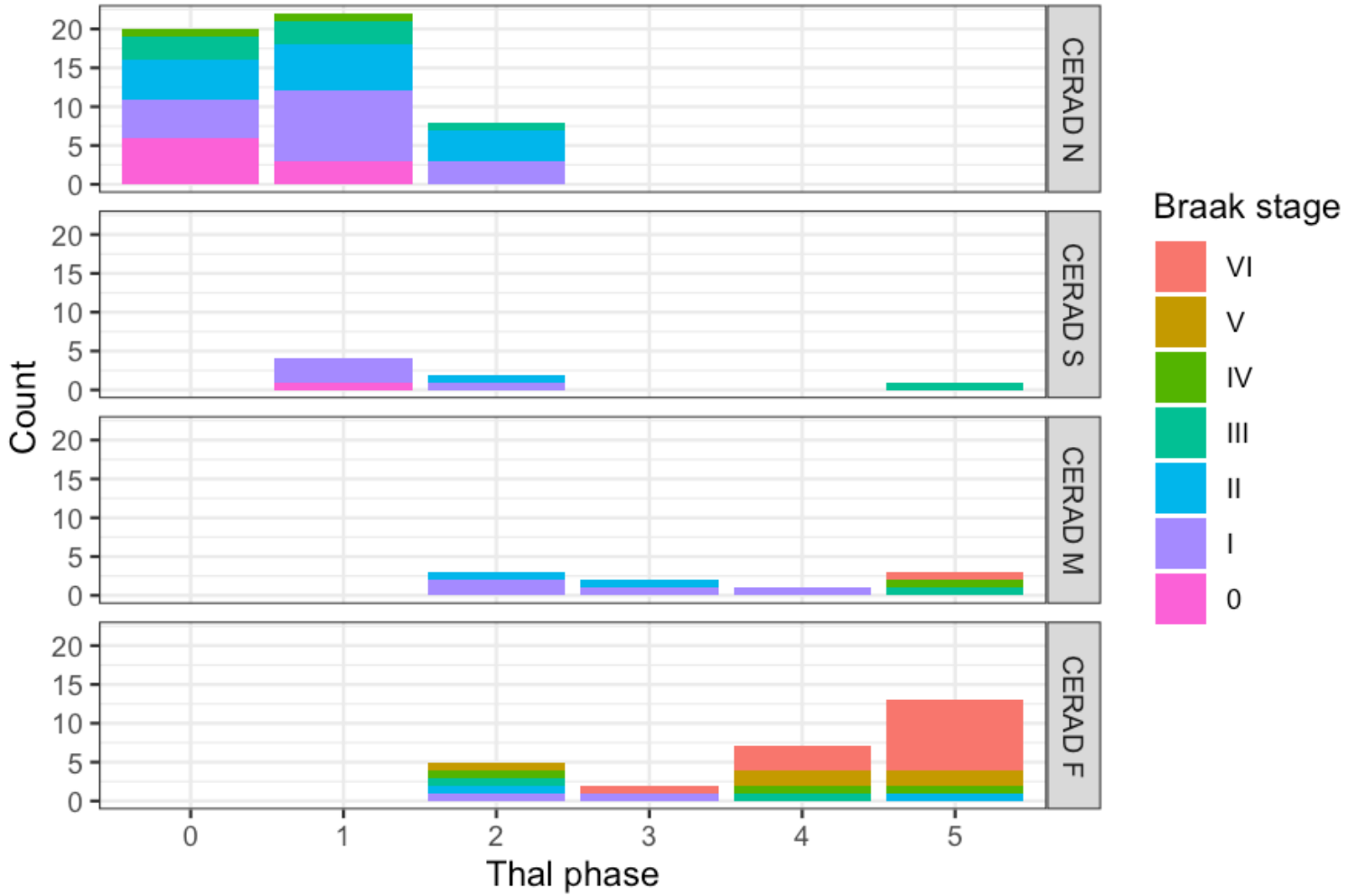
The table includes patients who were defined as having other primary pathologies than AD, by neuropathological examination ("non-AD"). The biomarker thresholds were defined a priori, as described in (Blennow *et al.*, 2019). The p-values are for tests of difference in ADNC-class (none-low versus intermediate-high) by biomarker status, using Fisher's exact test. This analysis showed that, among patients with non-AD primary neuropathologies, Aβ42/Aβ40 and P-tau/Aβ42 positivity were more likely to be seen in ADNC intermediate-high than in ADNC non-low patients. ADNC data were missing in 3 non-AD patients. ADNC, Alzheimer's disease Neuropathological Change.

eFigure 1. CSF biomarkers by clinical diagnosis



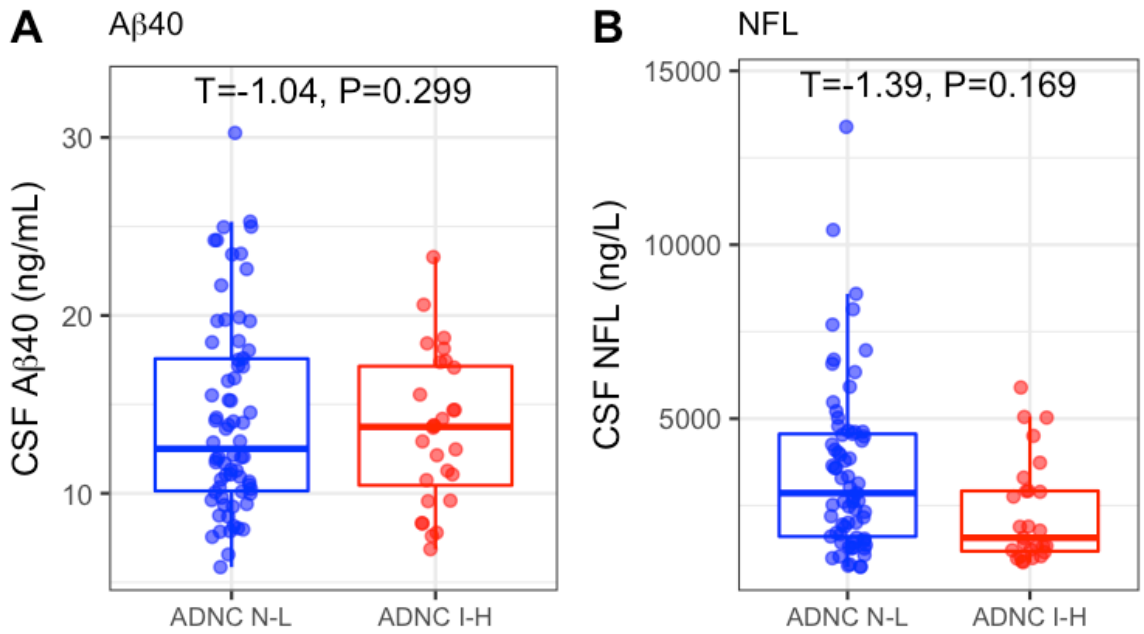
Biomarkers are shown as unadjusted raw data, by primary clinical diagnosis. P-values are shown for overall significance of clinical diagnosis, adjusted for age and sex. Reference lines are shown for a priori cut-points for Aβ42, T-tau, P-tau, Aβ42/Aβ40 and P-tau/Aβ42, as defined in(Blennow *et al.*, 2019). Color coding refers to ADNC class (blue = ADNC none-low, red = ADNC intermediate-high, grey = missing ADNC data). AD, Alzheimer's disease; ALS, amyotrophic lateral sclerosis; bvFTD, behavorial variant frontotemporal dementia; CBS, corticobasal syndrome; CBD, corticobasal degeneration; MCI, mild cognitive impairment; nvPPA, non-fluent variant primary progressive aphasia; PSP, Progressive Supranuclear Palsy; svPPA, semantic variant primary progressive aphasia.

eFigure 2. Counts of AD neuropathological scores



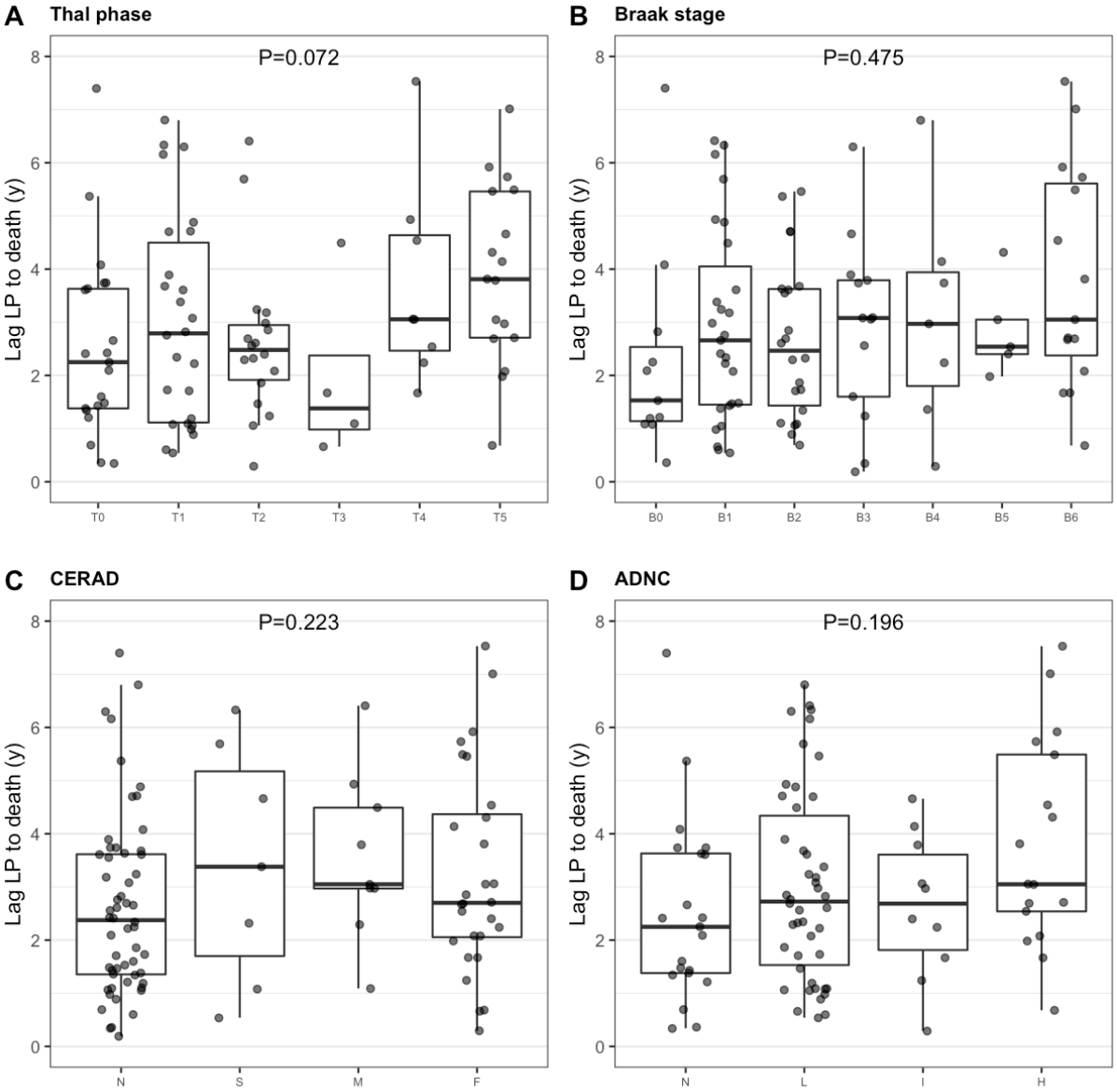
All subjects are grouped by combinations of Thal phases (T0-T5) and Braak stages (B0-BVI), within different CERAD categories (N=none, S=sparse, M=moderate, F=frequent).

eFigure 3. CSF Aβ40 and NFL by ADNC none-low (N-L) versus intermediate-high (I-H).



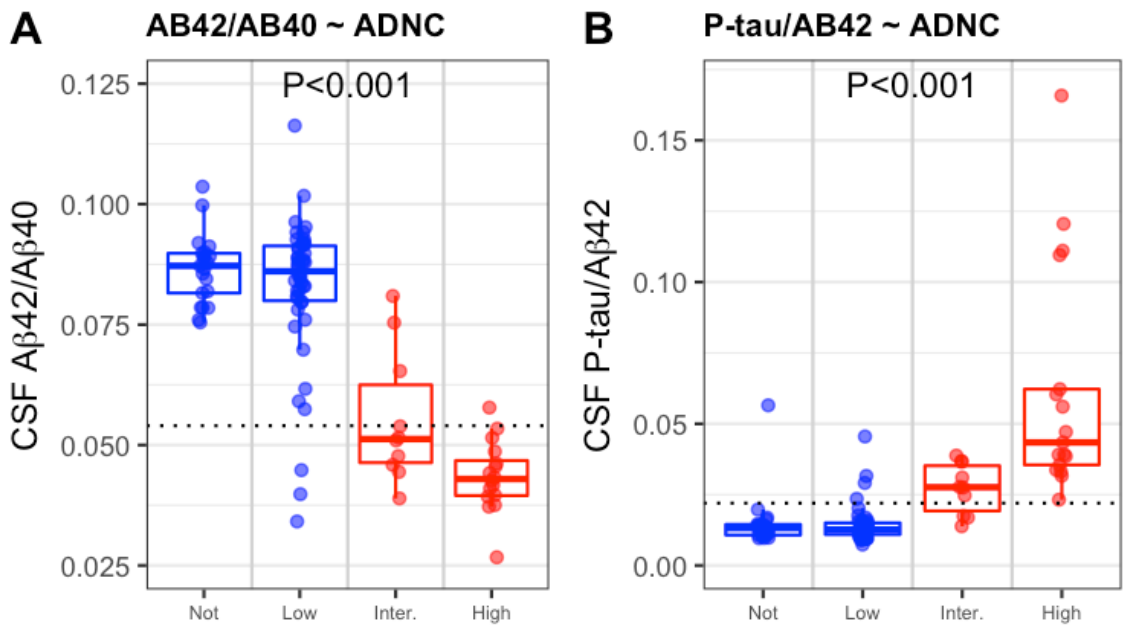
Biomarkers are shown as unadjusted raw data in the groups of Alzheimer's disease Neuropathological Change (ADNC) none-low (blue) and intermediate-high (red). T-values and P-values are shown for group differences, adjusted for age, sex, and lag between lumbar puncture and death.

eFigure 4. Time from LP to death for different levels of neuropathological features



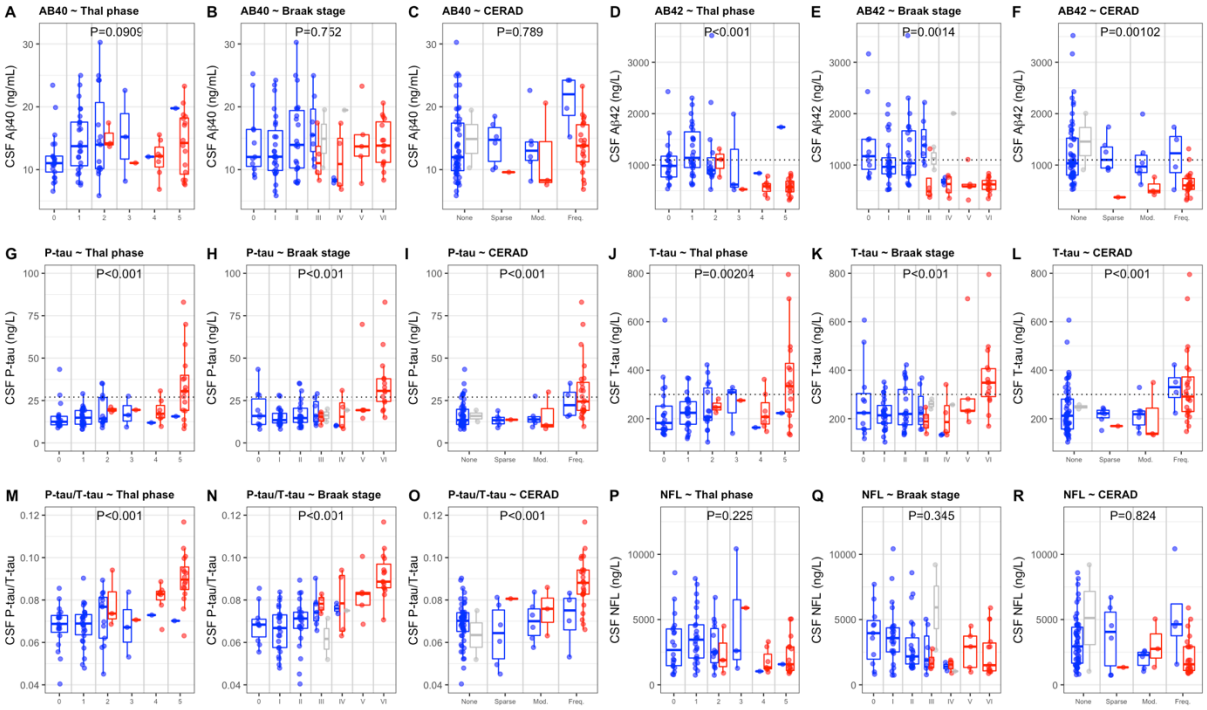
Subject-level lag times are shown for each level of each neuropathological feature. P-values are from Kruskal-Wallis test, for overall differences over all levels of the scores.

eFigure 5. CSF Aβ42/Aβ40 and P-tau/Aβ42 by ADNC



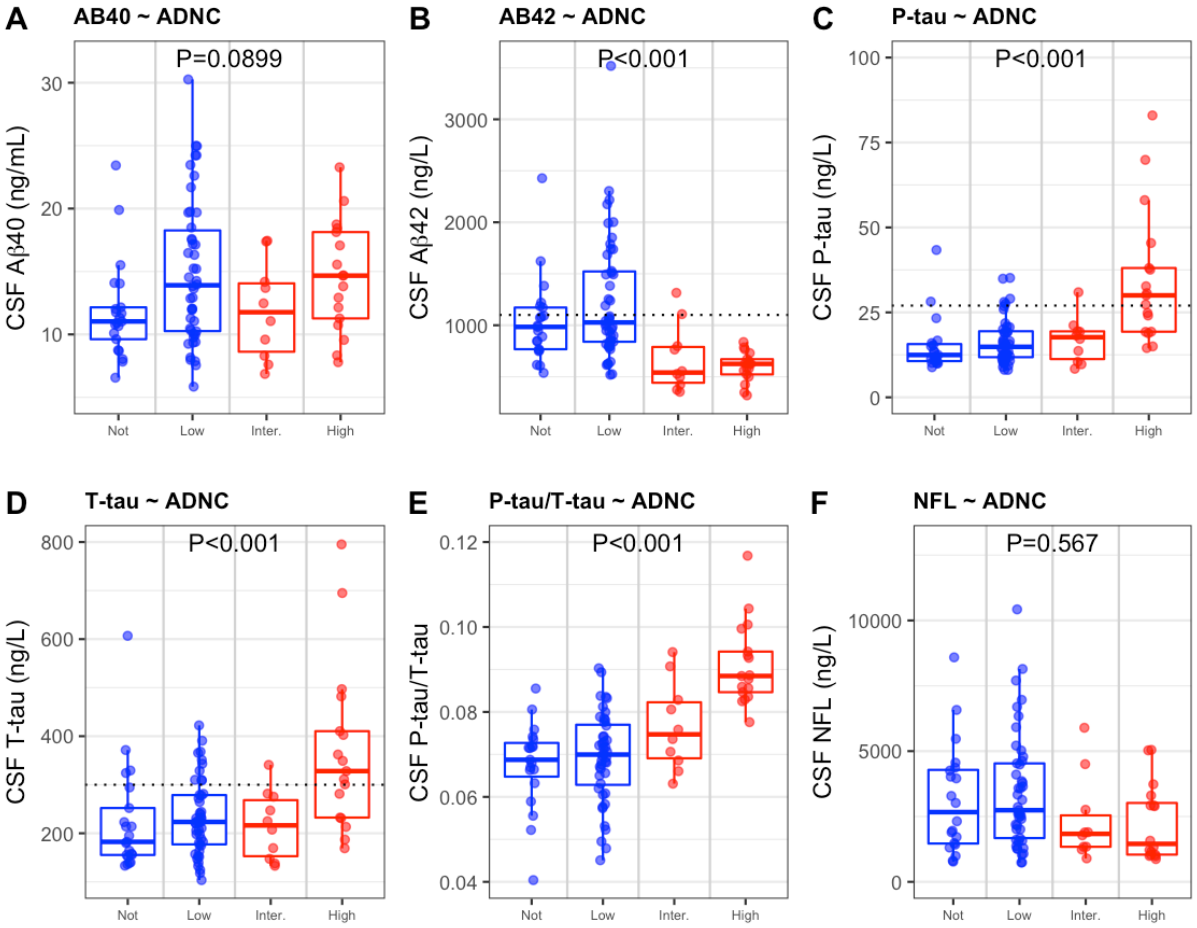
Biomarkers (raw data for ratios) by neuropathological scores for Alzheimer's disease Neuropathological Change (ADNC). P-value for the overall association between the neuropathological score and CSF biomarker levels, adjusted for age, sex, and lag between lumbar puncture and death. Color coding refers to ADNC class (blue = ADNC none-low, red = ADNC intermediate-high). Inter., intermediate.

eFigure 6. Additional CSF biomarkers by AD neuropathological scores



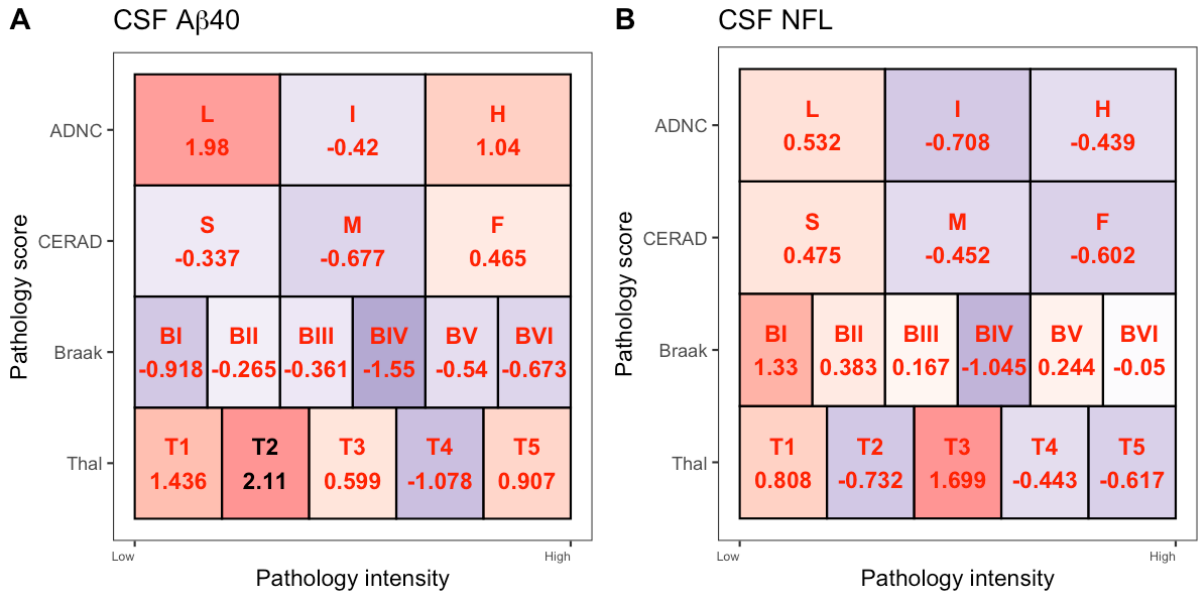
Biomarkers (raw data) by neuropathological scores for spread of Aβ pathology (Thal phase), tau pathology (Braak stage), and presence/frequency of neuritic plaques (CERAD score). P-value for the overall association between the neuropathological score and CSF biomarker levels, adjusted for age, sex, and lag between lumbar puncture and death. An a priori reference line is shown for T-tau. Color coding refers to ADNC class (blue = ADNC none-low, red = ADNC intermediate-high, grey = missing ADNC data).

eFigure 7. Additional CSF biomarkers by ADNC



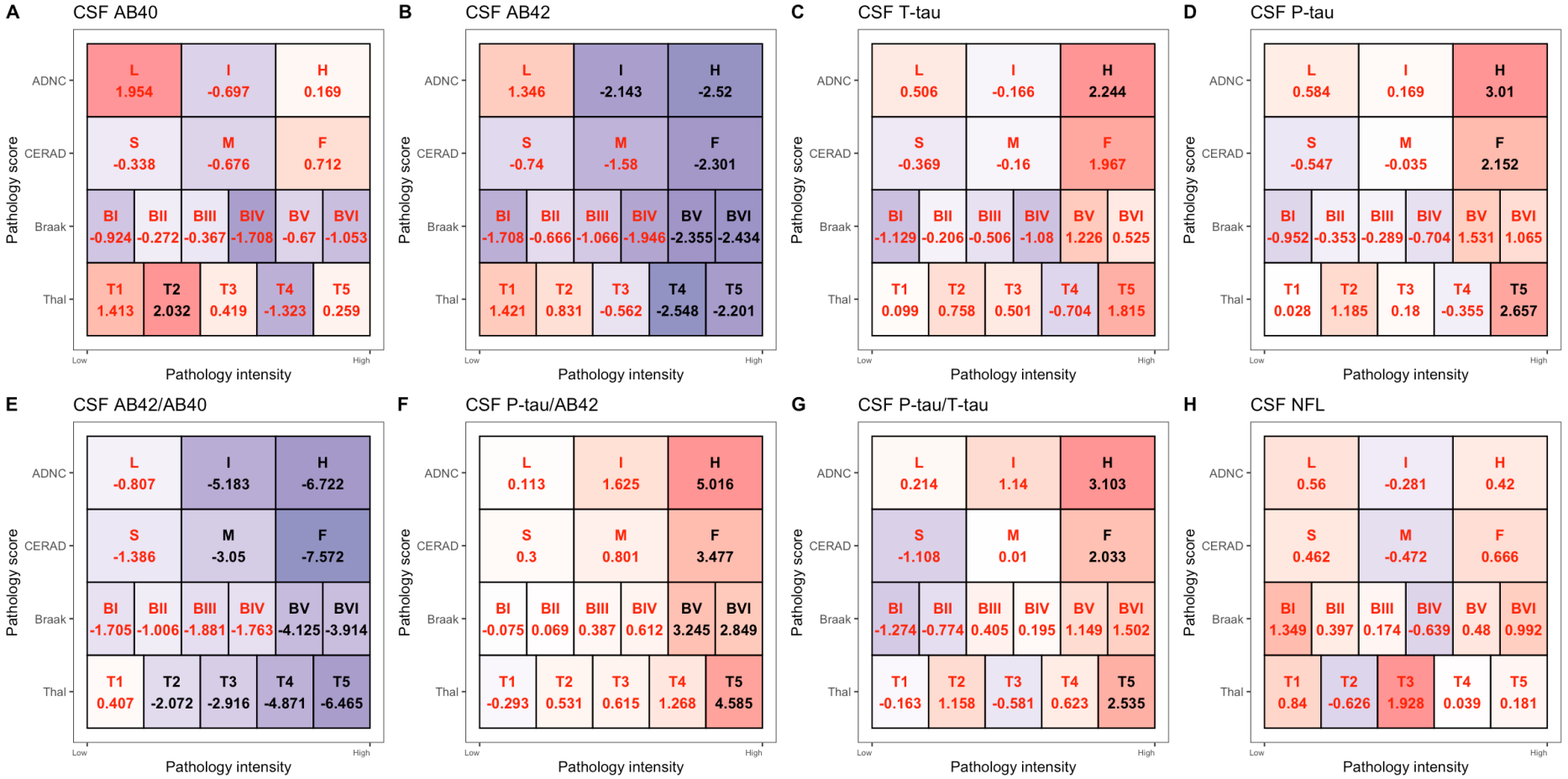
Biomarkers (raw data) by neuropathological scores for Alzheimer's disease Neuropathological Change (ADNC). P-value for the overall association between the neuropathological score and CSF biomarker levels, adjusted for age, sex, and lag between lumbar puncture and death. An a priori reference line is shown for T-tau. Color coding refers to ADNC class (blue = ADNC none-low, red = ADNC intermediate-high).

eFigure 8. CSF Aβ40 and NFL at different levels of pathology



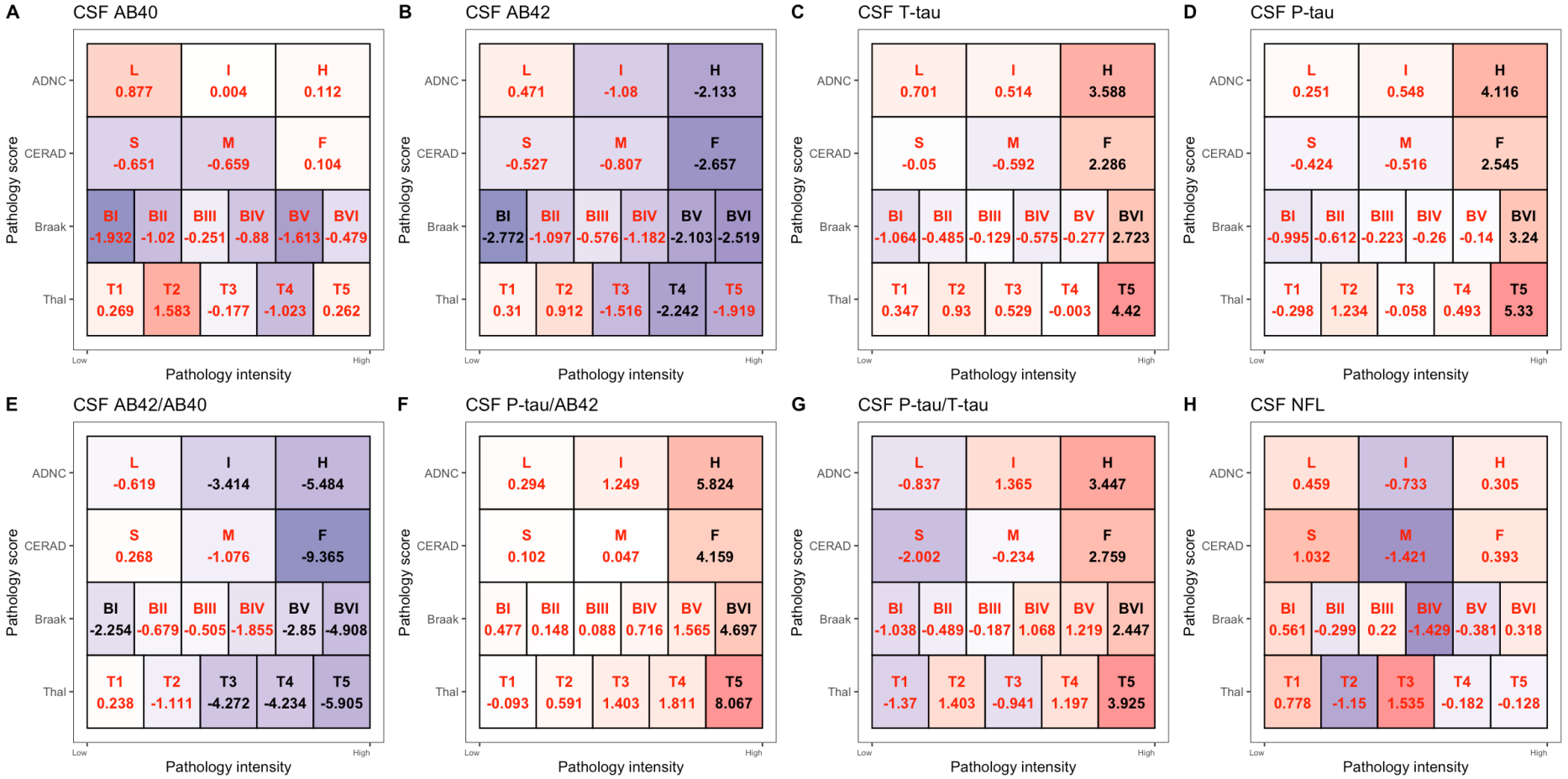
This figure shows CSF Aβ40 and NFL at different levels of pathology, compared to the lowest levels of respective pathology. Presented data are T-statistics (black font when significant at P<0.05, red font when non-significant). The box colors are related to the magnitude of the T-statistics (red colors are positive and violet colors are negative). Data are presented for each biomarker and the pathological scores Thal phase (categories range from Thal phase 1 to 5), Braak stage (categories range from stage I to IV), CERAD (categories range from S, sparse; M, medium; F, frequent), and ADNC (categories range from L, low; I, intermediate; H, high). For each score, biomarkers were compared between each category and the reference category (Thal phase 0, Braak stage 0, CERAD none, and ADNC no, respectively). The T-statistics are from linear regression models, adjusted for adjusted for age, sex, and time between lumbar puncture and death. ADNC, Alzheimer's disease Neuropathological Change.

eFigure 9. Sensitivity analysis for CSF biomarker changes at different levels of pathology when adjusting for AD as primary pathology



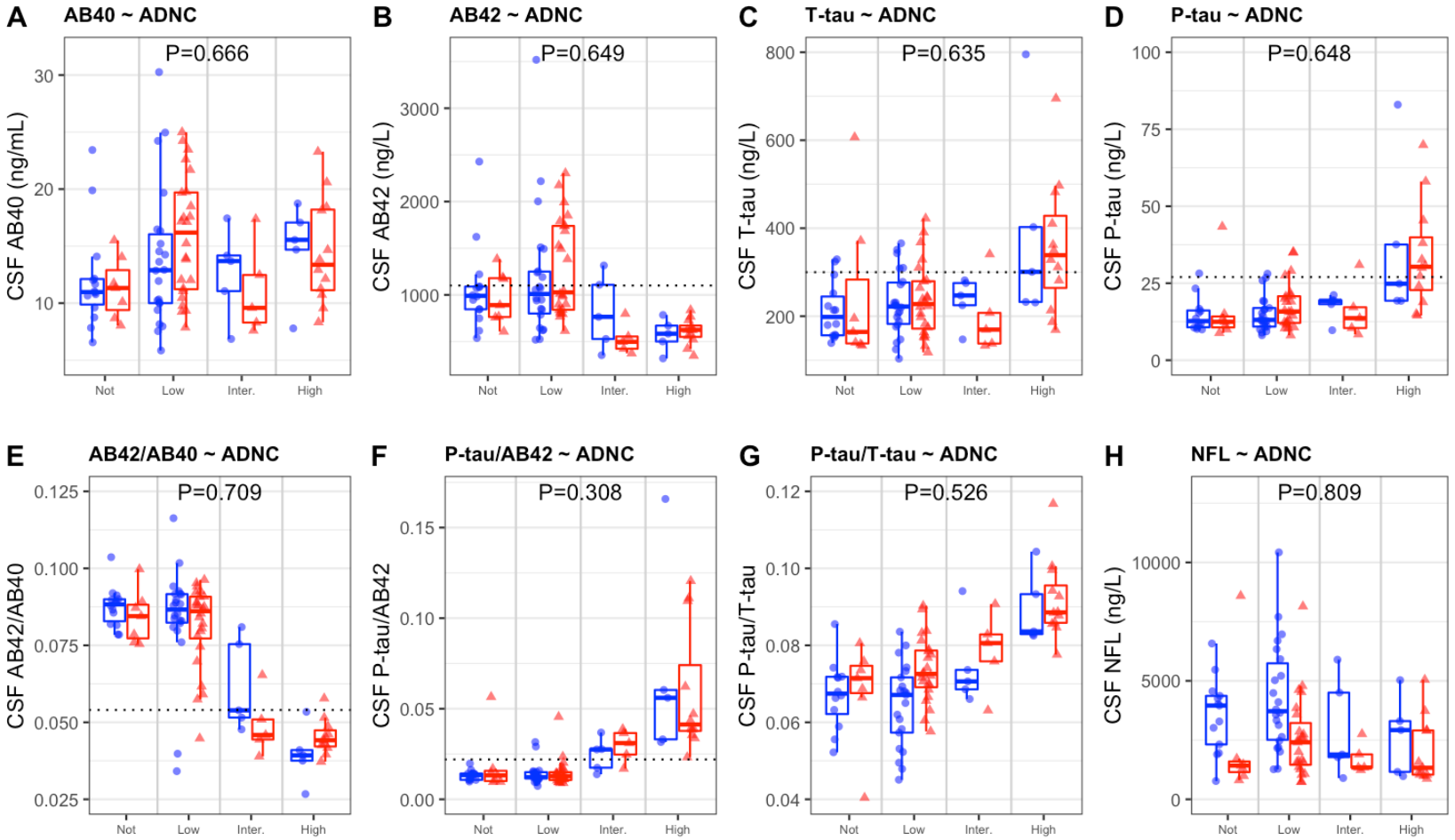
This figure shows a similar analysis as Figure 4 in the main paper, but with additional adjustment for AD as primary pathology. It shows how different biomarkers are altered at different levels of pathology, compared to the lowest levels of respective pathology. Presented data are T-statistics (black font when significant at P<0.05, red font when non-significant). The box colors are related to the magnitude of the T-statistics (red colors are positive and violet colors are negative). Data are presented for each biomarker and the pathological scores Thal phase (categories range from Thal phase 1 to 5), Braak stage (categories range from stage I to IV), CERAD (categories range from S, sparse; M, medium; F, frequent), and ADNC (categories range from L, low; I, intermediate; H, high). For each score, biomarkers were compared between each category and the reference category (Thal phase 0, Braak stage 0, CERAD none, and ADNC no, respectively). The T-statistics are from linear regression models, adjusted for adjusted for age, sex, time between lumbar puncture and death, and AD as primary pathology.

eFigure 10. Sensitivity analysis for CSF biomarker changes at different levels of pathology in the subset with short (<median) time from lumbar puncture to death



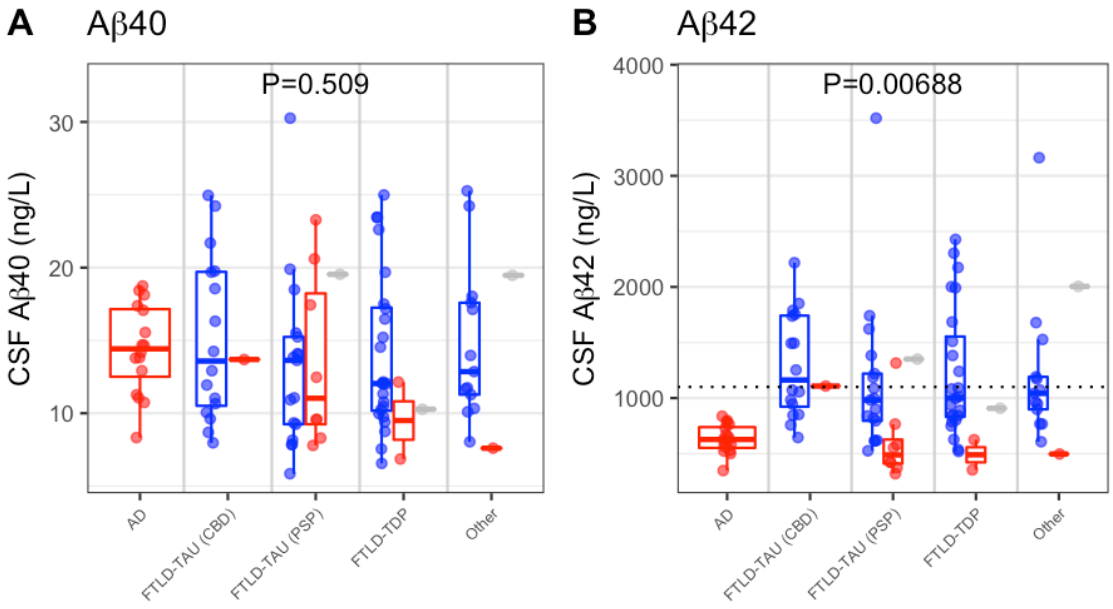
This figure shows a similar analysis as Figure 4 in the main paper, but in the subset of individuals with less than the median time (2.67 years) from lumbar puncture to death. It shows how different biomarkers are altered at different levels of pathology, compared to the lowest levels of respective pathology. Presented data are T-statistics (black font when significant at P<0.05, red font when non-significant). The box colors are related to the magnitude of the T-statistics (red colors are positive and violet colors are negative). Data are presented for each biomarker and the pathological scores Thal phase (categories range from Thal phase 1 to 5), Braak stage (categories range from stage I to IV), CERAD (categories range from S, sparse; M, medium; F, frequent), and ADNC (categories range from L, low; I, intermediate; H, high). For each score, biomarkers were compared between each category and the reference category (Thal phase 0, Braak stage 0, CERAD none, and ADNC no, respectively). The T-statistics are from linear regression models, adjusted for adjusted for age, sex, and time between lumbar puncture and death.

eFigure 11. Testing for interactions between time from LP to death with AD pathology to predict biomarker levels



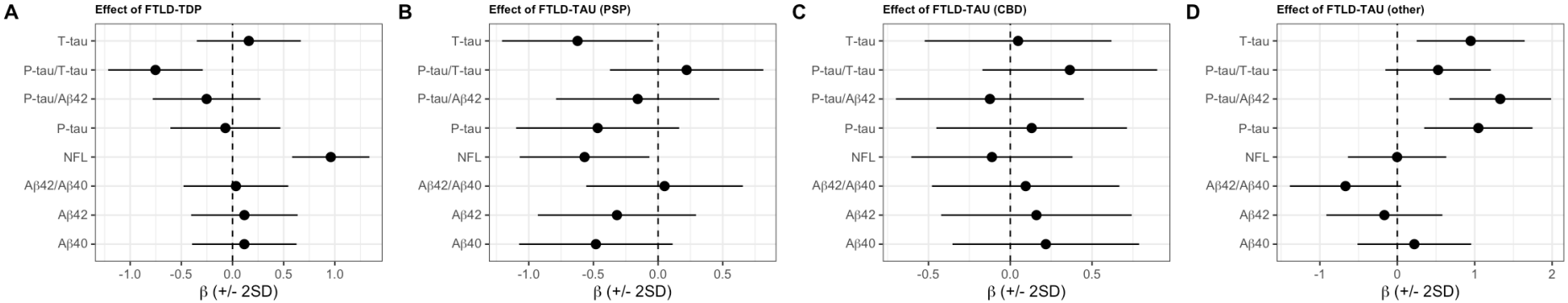
Unadjusted raw biomarker data, by neuropathological scores for different levels of Alzheimer's disease Neuropathological Change (ADNC). The P-value is for the interaction term between the neuropathological score and the lag time between LP and death, adjusted for age, and sex. Color coding and shapes refer to lag time between LP and death (blue circles = less than or equal to the median lag time, red triangles = above the median lag time). We also tested the interaction term across all biomarkers and pathological features (not shown). The only significant (after Bonferroni correction) interaction was for Thal phase and lag time to predict CSF Aβ42/Aβ40, where individuals with Thal phase 2 and long time from LP to death appeared to have slightly *lower* Aβ42/Aβ40 than those with short time from LP death, while individuals with Thal phase 5 and long time from LP to death appeared to have slightly *higher* Aβ42/Aβ40 than those with short time from LP death (we consider this result likely to be spurious).

eFigure 12. CSF Aβ40 and Aβ42 by primary pathological diagnosis



Biomarkers are shown as unadjusted raw data, by primary neuropathological diagnosis. P-values are shown for overall significance of neuropathological diagnosis, adjusted for age, sex, and time between lumbar puncture and death. See eTable 2 for pairwise comparisons between different diagnoses. A reference line is shown for an a priori cut-point for Aβ42. Color coding refers to ADNC class (blue = ADNC none-low, red = ADNC intermediate-high, grey = missing ADNC data). AD, Alzheimer's disease; ADNC, Alzheimer's disease Neuropathological Change; CBD, corticobasal degeneration; FTLD, frontotemporal lobar degeneration; PSP, Progressive Supranuclear Palsy; TDP, TAR DNA binding protein 43.

eFigure 13. CSF biomarkers versus primary and contributory neuropathology diagnoses when removing ADNC intermediate-high patients



Effects are plotted for each neuropathological class, adjusted for age, sex, and time between lumbar puncture and death. The coefficients represent the average difference in biomarkers between patients who were positive for a neuropathology (e.g. FTLD-TDP in panel A) compared to the remaining patients.