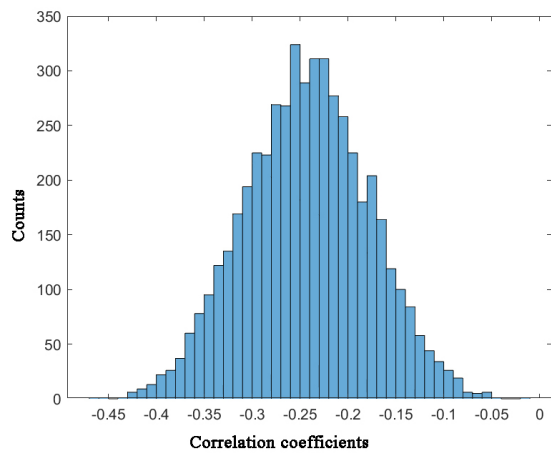


Supplementary

**Table S1** The original and FDR-adjusted P values of correlation between the ALPS index and demographics, BMI statuses, and CSF biomarkers in all PD participants

	ALPS	Age (years)	Edu	Duration	BMI (kg/m <sup>2</sup> )	MoCA	NP3T	asyn	tTau	p-tau	Aβ42	abasyn	ptauab	ptausyn	ptautau	tauab	tauasyn
ALPS		<0.01**	<0.01**	0.12	<0.01**	0.7	0.15	0.69	1	0.88	0.16	0.44	0.01*	0.18	0.32	0.02*	0.39
Age (years)	<0.01**		0.88	0.19	0.61	0.08	0.4	0.29	0.1	0.08*	0.52	<0.01**	<0.01**	0.44	0.44	0.01*	0.59
Edu	<0.01**	0.82		0.56	0.81	0.15	0.81	0.88	0.63	0.59	0.76	0.7	0.88	0.56	0.04*	0.76	0.97
Duration	0.04*	0.07	0.35		0.76	0.67	0.3	0.7	0.8	0.81	1	0.64	0.81	0.47	0.57	0.97	0.25
BMI (kg/m <sup>2</sup> )	<0.01**	0.44	0.7	0.62		0.24	0.56	0.57	0.49	0.57	0.19	0.56	0.2	0.69	0.57	0.22	0.97
MoCA	0.55	0.03*	0.05	0.51	0.1		0.59	0.56	0.98	0.87	0.54	0.83	0.73	0.44	0.87	0.6	0.47
NP3T	0.05	0.19	0.71	0.14	0.34	0.41		0.57	0.62	0.6	0.66	0.12	0.25	0.63	0.97	0.18	0.56
asyn	0.54	0.13	0.83	0.56	0.38	0.36	0.37		<0.01**	<0.01**	<0.01**	<0.01**	0.54	<0.01**	0.2	0.19	<0.01**
tTau	1	0.03*	0.46	0.67	0.27	0.96	0.45	<0.01**		<0.01**	<0.01**	0.04*	0.81	0.39	0.56	0.97	0.19
p-tau	0.82	0.02*	0.41	0.71	0.38	0.79	0.43	<0.01**	<0.01**		<0.01**	0.01*	0.56	0.54	0.01*	0.97	0.06
Aβ42	0.06	0.29	0.63	0.99	0.07	0.31	0.5	<0.01**	<0.01**	<0.01**		<0.01**	<0.01**	<0.01**	0.8	<0.01**	<0.01**
abasyn	0.23	<0.01**	0.56	0.48	0.33	0.74	0.04*	<0.01**	0.01*	<0.01**	<0.01**		<0.01**	<0.01**	0.06	<0.01**	<0.01**
ptauab	<0.01**	<0.01**	0.83	0.72	0.08	0.59	0.11	0.31	0.71	0.33	<0.01**	<0.01**		<0.01**	<0.01**	<0.01**	<0.01**
ptausyn	0.06	0.22	0.36	0.24	0.54	0.22	0.47	<0.01**	0.18	0.31	<0.01**	<0.01**	<0.01**		0.02	<0.01**	<0.01**
ptautau	0.15	0.22	0.01*	0.38	0.38	0.78	0.92	0.08	0.35	<0.01**	0.67	0.02*	<0.01**	<0.01**		0.47	0.47
tauab	0.01*	<0.001**	0.62	0.92	0.09	0.43	0.07	0.07	0.95	0.92	<0.01**	<0.01**	<0.01**	<0.01**	0.25		<0.01**
tauasyn	0.18	0.41	0.93	0.11	0.95	0.25	0.36	<0.01**	0.07	0.02*	<0.01**	<0.01**	<0.01**	<0.01**	0.26	<0.01**	

Significant differences are defined as \*, P<0.05; \*\*, P<0.01. FDR, false discovery rate; ALPS, analysis along the perivascular space; Edu, education; BMI, body mass index; CSF, cerebrospinal fluid; PD, Parkinson's disease; MoCA, Montreal Cognitive Assessment; NP3T, total Movement Disorders Society Unified Parkinson's Disease Rating Scale III score; asyn, α-synuclein; tTau, CSF total tau; abasyn, Aβ42/α-synuclein; ptauab, CSF p-tau/Aβ42; ptausyn, CSF p-tau/α-synuclein; ptautau, CSF p-tau/total tau; tauab, CSF total tau/Aβ42; tauasyn, CSF total tau/α-synuclein.



**Figure S1** The distribution of correlation coefficients across all Parkinson's disease (PD) groups based on a large number of bootstrap iterations ( $n=5,000$ ).