

SUPPLEMENTARY TABLES

Supplementary Table 1. Dataset access, annotation and composition.

	Training	Testing	Validation
Accession	GSE74193	syn5850422	syn23633757
<i>n</i>	399	700	333
Array	450k	450k	EPIC
Brain Region	DLPFC	DLPFC	Matched PFC, ST, CBM
Ages	20–97	66–108	66–108
Has AD?	No	Yes	Yes
White	0.48	1	0.97
Female	0.34	0.64	0.65
APOE ε4	N/A	0.26	0.71

Supplementary Table 2. Biweight midcorrelation of core PCs and AD characteristics.

	Age	<i>p</i>	Cerad	<i>p</i>	Braak	<i>p</i>	NIA-Reagan	<i>p</i>	Cogdx	<i>P</i>	APOE ε4	<i>p</i>
PC1	-0.10	*	-0.07		-0.05		-0.04		-0.07		-0.01	
PC5	-0.14	***	-0.13	**	-0.13	**	-0.16	***	-0.15	**	-0.07	
PC6	-0.01		-0.05		-0.04		-0.09		-0.07		-0.08	
PC8	0.04		-0.14	**	-0.07		-0.06		-0.08		-0.03	
PC9	-0.03		-0.05		-0.04		-0.02		-0.01		-0.07	
PC10	-0.11	*	0.05		-0.03		0.00		-0.06		0.06	
PC12	0.11	*	-0.07		-0.01		0.01		-0.02		-0.09	
PC15	0.05		0.00		-0.01		0.00		0.11	*	-0.03	
PC19	0.28	***	0.06		0.10	*	0.10	*	0.09		-0.06	
PC26	0.01		0.08		0.01		0.00		0.02		0.00	
PC29	0.00		0.07		0.04		0.02		0.02		0.09	
PC32	-0.18	***	-0.02		-0.12	*	-0.08		-0.14	**	0.03	
PC33	-0.23	***	-0.20	***	-0.17	***	-0.17	***	-0.15	**	0.00	
PC41	0.09	*	-0.08		0.01		-0.03		0.02		-0.07	
PC391	0.03		-0.03		0.05		0.02		0.04		0.03	
Overall	0.59	***	0.15	***	0.28	***	0.27	***	0.32	***	0.03	
Acceleration	-0.03		0.15	***	0.13	**	0.17	***	0.16	***	0.12	*

BH Corrected *P*-values > 0.05 (n.s.) * *p* < 0.05, ** *p* < 0.005, *** *p* < 0.0005.

Supplementary Table 3. Linear models for PCBrainAge.C acceleration.

Predictor	Testing		PFC		ST		CBM	
	Estimates	<i>p</i>	Estimates	<i>p</i>	Estimates	<i>p</i>	Estimates	<i>p</i>
(Intercept)	33.33	<0.001	54.76	<0.001	48.05	<0.001	47.20	<0.001
Age	0.46	<0.001	0.39	<0.001	0.46	<0.001	0.17	<0.001
Prop N	3.88	0.138	-18.58	<0.001	-16.80	<0.001	-18.94	0.031

Observations	700	333	333	333
R ² /R ² adjusted	0.389/0.388	0.254/0.250	0.310/0.306	0.085/0.080

Supplementary Table 4. Linear mixed effect models in multi-region brain data improves upon OLS regression.

Predictors	OLS Regression		LME Model	
	Estimates	<i>p</i>	Estimates	<i>p</i>
(Intercept)	63.79	<0.001	49.03	<0.001
Age	0.35	<0.001	0.34	<0.001
Prop N	-35.68	0.138	-15.96	<0.001
Random Effects				
σ ²			18.48	
τ ₀₀			169.63 _{region}	
ICC			0.90	
N			3 _{region}	
Observations	997		997	
R²/R² adjusted	0.325/0.324		0.030/0.905	