

Supplementary Table 1 Supplementary information on subjects included in study

Code	Dx	Gender	Age of death (years)	Age at onset (years)	Disease duration (years)	PMI (hours)	Brain weight (g)	Cerebellum CO1 (relative unit)
1	Ctrl	M	76	-	-	11.0	-	3764
2	ET	F	80	65	15	13.0	1140	3565
3	Ctrl	F	82	-	-	24.0	-	3245
4	PD	F	81	58	23	19.0	-	4838
5	Ctrl	F	82	-	-	24.0	-	3901
6	PD	F	82	50	32	17.5	-	4536
7	ET	F	78	8	70	15.0	1380	3623
8	Ctrl	F	78	-	-	19.8	-	1432
9	PD	F	64	45	19	17.0	-	2641
10	Ctrl	F	74	-	-	16.3	1140	2728
11	ET	F	63	34	30	24.0	1520	4318
12	Ctrl	F	66	-	-	24.0	1370	3607
13	PD	M	74	59	15	19.5	-	4405
14	ET	F	95	50	45	3.0	1060	5071
15	Ctrl	M	76	-	-	14.5	1250	5815
16	ET	M	74	64	10	6.0	1020	4970
17	Ctrl	F	86	-	-	23.3	-	4195
18	Ctrl	F	75	-	-	10.8	-	3674
19	PD	F	89	80	9	12.0	-	4536
20	Ctrl	M	84	-	-	5.0	1320	3242
21	PD	F	90	83	7	24.0	-	4769
22	ET	F	92	57	35	16.5	1040	3731
23	PD	F	79	59	20	19.5	-	3687
24	Ctrl	M	81	-	-	25.0	1380	4001
25	ET	F	79	58	21	24.0	1170	5479
26	Ctrl	F	72	-	-	13.5	-	3391
28	Ctrl	M	82	-	-	17.5	1440	5395
29	PD	M	89	73	16	4.0	-	4864
30	Ctrl	M	71	-	-	24.0	1470	5491
31	PD	F	87	61	26	24.0	-	3654
32	ET	F	93	71	22	8.5	1230	3500
33	PD	F	84	60	24	24.0	-	4878
34	Ctrl	F	70	-	-	23.0	1110	4958
35	ET	F	88	52	36	21.0	1040	5313
36	Ctrl	F	68	-	-	22.8	-	1268
38	PD	M	86	71	15	23.0	1440	3268
39	Ctrl	M	88	-	-	23.0	1300	2099
40	ET	F	80	63	23	7.0	1300	3646
41	ET	M	88	75	13	18.0	1150	1196
42	PD	F	78	64	14	5.0	1140	4922
44	PD	F	77	59	18	22.0	1280	3394
45	ET	F	85	48	37	47.0	1240	3696
46	ET	F	78	56	22	8.0	1450	2441
47	Ctrl	M	83	-	-	13.0	1160	3983
48	PD	F	80	56	24	12.0	1080	4710
49	PD	F	82	68	14	23.0	1050	1070
51	ET	F	79	41	38	23.0	1290	2413
52	Ctrl	M	66	-	-	28.0	1390	3403
53	ET	F	83	49	34	31.0	1480	3565
54	PD	M	82	64	18	19.0	1260	5155

Abbreviations: CO1, cytochrome oxidase 1; Ctrl, control; Dx, diagnosis; ET, Essential tremor; F, female; M, male; PD, Parkinson's Disease; PMI, *postmortem* interval.

Supplementary Table 2 Primary and secondary antibodies used in the study

Antibody	Clone	Specificity	Host	Source
Primary antibodies				
5-lipoxygenase	Clone G-590-2	Synthetic peptide from an internal region of human 5-LOX (ILE-168)	Rabbit	Cayman Chemical, Ann Arbor, Michigan, USA
Actin	Clone BA3R	N-Terminal peptide of β -Actin	Mouse	Applied Biological Materials Inc., Richmond, BC, CAN
Cyclooxygenase-2	Polyclonal	C-terminal region of human COX-2	Rabbit	Cayman Chemical, Ann Arbor, Michigan, USA
Cytosolic phospholipase A2	Clone 4-4B-3C	Amino acid 1-216 of cPLA2 of human origin	Mouse	Santa Cruz Biotechnology, Dallas, Texas, USA
α -synuclein	Clone 42	amino acid 15-123 of rat synuclein 1	Mouse	BD Biosciences, Mississauga, On, CAN
Secondary antibodies				
Goat anti-mouse		Peroxidase-conjugated AffiniPure goat anti-mouse IgG	Goat	Jackson ImmunoResearch (West Grove, Pennsylvania, USA)
Goat anti-rabbit		Peroxidase-conjugated AffiniPure goat anti-rabbit IgG	Goat	Jackson ImmunoResearch (West Grove, Pennsylvania, USA)

Supplementary Table 3 Fatty acid composition in PC fraction extracted from the cerebellum cortex from Controls (n=17), PD patients (n=15) and ET patients (n=15) expressed in percentage of total fatty acids

Fatty acid	Controls FA (% FA)			PD patients FA (% FA)			ET patients FA (% FA)		
14 :0 (Myristic)	0.74	±	0.03	0.71	±	0.03	0.73	±	0.04
14 :1 ω-5	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
16 :0 (Palmitic)	44.27	±	0.68	42.92	±	0.98	43.19	±	0.87
16 :1 ω-7	0.94	±	0.05	0.86	±	0.03	0.93	±	0.04
18 :0 (Stearic)	10.16	±	0.18	10.40	±	0.31	10.48	±	0.32
18 :1 ω-9 (Oleic)	25.25	±	0.53	26.68	±	0.51	25.89	±	0.46
18 :1 ω-7	7.19	±	0.14	7.44	±	0.15	7.41	±	0.16
18 :2 ω-6 (LA)	0.85	±	0.07	0.76	±	0.04	0.84	±	0.06
18 :3 ω-6	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
18 :3 ω-3 (ALA)	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
18 :4 ω-3	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
20 :0 (Arachidic)	0.08	±	0.02	0.08	±	0.02	0.04	±	0.01
20 :1 ω-12	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
20 :1 ω-9 (Erucic)	0.97	±	0.04	1.08	±	0.07	0.98	±	0.04
20 :2 ω-6	0.15	±	0.02	0.16	±	0.02	0.12	±	0.02
20 :3 ω-6	0.56	±	0.03	0.51	±	0.03	0.68	±	0.04*,††
20 :4 ω-6 (ARA)	4.68	±	0.30	4.27	±	0.41	4.74	±	0.25
20 :4 ω-3 (ETA)	0.03	±	0.03	n.d.	±	n.d.	n.d.	±	n.d.
20 :5 ω-3 (EPA)	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :0 (Behenic)	0.03	±	0.02	0.02	±	0.02	n.d.	±	n.d.
22 :1 ω-9	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :2 ω-6	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :4 ω-6 (DTA)	0.46	±	0.02	0.50	±	0.03	0.47	±	0.03
22 :3 ω-3	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :5 ω-6	0.20	±	0.03	0.15	±	0.03	0.13	±	0.03
24 :0 (Tetracosanoic)	0.13	±	0.02	0.16	±	0.03	0.10	±	0.02
22 :5 ω-3 (DPA)	0.06	±	0.01	0.06	±	0.01	0.06	±	0.02
22 :6 ω-3 (DHA)	2.24	±	0.21	2.13	±	0.21	2.22	±	0.14
24 :1 ω-9 (Tetrasenoic)	n.d.	±	0.00	0.00	±	0.00	0.00	±	0.00
SFA (total)	55.41	±	0.61	54.30	±	0.72	54.55	±	0.67
MUFA (total)	34.60	±	0.65	36.40	±	0.56	35.42	±	0.47
PUFA (total)	9.29	±	0.50	8.56	±	0.65	9.26	±	0.43
ω-3 PUFA	2.33	±	0.22	2.19	±	0.22	2.27	±	0.15
ω-6 PUFA	6.94	±	0.32	6.37	±	0.44	6.99	±	0.31
ω-9 PUFA	26.22	±	0.66	27.76	±	0.56	26.88	±	0.48
ω-3 : ω-6 PUFA	0.33	±	0.02	0.33	±	0.02	0.32	±	0.02
Cis MUFA	34.40	±	0.64	36.17	±	0.55	35.23	±	0.45
Trans MUFA	0.19	±	0.03	0.23	±	0.05	0.18	±	0.05
Cis PUFA	9.27	±	0.51	8.54	±	0.65	9.24	±	0.43
Trans PUFA	0.02	±	0.01	0.02	±	0.01	0.02	±	0.01
Total cis	43.67	±	0.55	44.71	±	0.72	44.47	±	0.62
Total trans	0.22	±	0.03	0.25	±	0.05	0.20	±	0.0
SFA/MUFA	1.61	±	0.04	1.50	±	0.04	1.55	±	0.04
PUFA/MUFA	0.27	±	0.02	0.24	±	0.02	0.26	±	0.01
ω-6/MUFA	0.20	±	0.01	0.18	±	0.01	0.20	±	0.01
ω-3/MUFA	0.07	±	0.01	0.06	±	0.01	0.06	±	0.00

Data presented are means ± SEM. Statistical analysis: one-way analysis of variance followed by Tukey's post-hoc test. Values in the same row bearing different symbols are significantly different (* $p<0.05$; ** $p<0.01$ comparing PD or ET patients to Controls; † $p<0.05$; †† $p<0.01$ comparing ET patients to PD ones). Abbreviations: ALA, linolenic acid; ARA, arachidonic acid; DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; DTA, docosatetraenoic acid; EPA, eicosapentaenoic acid; ET, essential tremor; ETA, eicosatetraenoic acid; FA, fatty acid; LA, linoleic acid; MUFA, monounsaturated fatty acids; n.d., not detected; PC, phosphatidylcholine; PD, Parkinson's disease; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids.

Supplementary Table 4 Fatty acid composition in PE fraction extracted from cerebellum cortex from Controls (n=17), PD patients (n=15) and ET patients (n=15) expressed in percentage of total fatty acids

Fatty acid	Controls FA (% FA)		PD patients FA (% FA)		ET patients FA (% FA)	
14 :0 (Myristic)	0.07	± 0.01	0.04	± 0.01	0.03	± 0.01*
14 :1 ω-5	n.d.	± n.d.	n.d.	± n.d.	n.d.	± n.d.
16 :0 (Palmitic)	3.59	± 0.10	3.48	± 0.08	3.66	± 0.08
16 :1 ω-7	0.31	± 0.02	0.30	± 0.01	0.33	± 0.01
18 :0 (Stearic)	15.16	± 0.54	12.64	± 0.45**	13.28	± 0.38*
18 :1 ω-9 (Oleic)	11.82	± 0.42	13.19	± 0.46	12.56	± 0.32
18 :1 ω-7	2.57	± 0.08	2.89	± 0.10*	2.77	± 0.07*
18 :2 ω-6 (LA)	0.25	± 0.02	0.21	± 0.02	0.24	± 0.02
18 :3 ω-6	n.d.	± n.d.	n.d.	± n.d.	n.d.	± n.d.
18 :3 ω-3 (ALA)	n.d.	± n.d.	n.d.	± n.d.	n.d.	± n.d.
18 :4 ω-3	n.d.	± n.d.	n.d.	± n.d.	n.d.	± n.d.
20 :0 (Arachidic)	0.17	± 0.02	0.15	± 0.02	0.12	± 0.02
20 :1 ω-12	n.d.	± n.d.	n.d.	± n.d.	n.d.	± n.d.
20 :1 ω-9 (Erucic)	1.92	± 0.17	2.56	± 0.26	2.18	± 0.15
20 :2 ω-6	0.09	± 0.02	0.12	± 0.02	0.07	± 0.02
20 :3 ω-6	0.69	± 0.05	0.72	± 0.04	0.79	± 0.05
20 :4 ω-6 (ARA)	9.32	± 0.32	8.62	± 0.35	9.31	± 0.25
20 :4 ω-3 (ETA)	0.02	± 0.02	n.d.	± n.d.	n.d.	± n.d.
20 :5 ω-3 (EPA)	n.d.	± n.d.	n.d.	± n.d.	n.d.	± n.d.
22 :0 (Behenic)	0.08	± 0.02	0.08	± 0.03	0.04	± 0.02
22 :1 ω-9 (Erucic)	0.00	± 0.00	0.00	± 0.00	0.00	± 0.00
22 :2 ω-6	0.03	± 0.01	0.04	± 0.01	0.02	± 0.01
22 :4 ω-6 (DTA)	6.60	± 0.24	7.21	± 0.20	6.76	± 0.18
22 :3 ω-3	n.d.	± n.d.	n.d.	± n.d.	n.d.	± n.d.
22 :5 ω-6	1.53	± 0.11	1.37	± 0.12	1.34	± 0.08
24 :0 (Tetracosanoic)	0.64	± 0.11	0.70	± 0.14	0.52	± 0.09
22 :5 ω-3 (DPA)	0.64	± 0.03	0.60	± 0.04	0.68	± 0.04
22 :6 ω-3 (DHA)	18.30	± 0.83	16.11	± 0.84	17.36	± 0.59
24 :1 ω-9 (Tetrasenoic)	1.97	± 0.36	2.07	± 0.51	1.49	± 0.33
SFA (total)	19.71	± 0.55	17.10	± 0.56**	17.66	± 0.46*
MUFA (total)	24.06	± 1.20	28.16	± 1.18*	25.99	± 0.86
PUFA (total)	37.48	± 0.94	34.97	± 1.10	36.57	± 0.77
ω-3 PUFA	18.95	± 0.84	16.71	± 0.85	18.05	± 0.60
ω-6 PUFA	18.53	± 0.38	18.29	± 0.38	18.55	± 0.27
ω-9 PUFA	15.70	± 0.86	17.82	± 0.89	16.24	± 0.54
ω-3 : ω-6 PUFA	1.03	± 0.05	0.91	± 0.04	0.97	± 0.03
Cis MUFA	23.76	± 1.18	27.76	± 1.17*	25.67	± 0.85
Trans MUFA	0.30	± 0.04	0.40	± 0.06	0.32	± 0.07
Cis PUFA	37.47	± 0.95	34.96	± 1.10	36.57	± 0.77
Trans PUFA	0.01	± 0.01	0.01	± 0.01	0.00	± 0.00
Total cis	61.24	± 0.38	62.76	± 0.25**	62.27	± 0.22*
Total trans	0.31	± 0.04	0.40	± 0.06	0.32	± 0.07
SFA/MUFA	0.86	± 0.06	0.63	± 0.04**	0.69	± 0.04*
PUFA/MUFA	1.65	± 0.12	1.29	± 0.09	1.44	± 0.05
ω-6/MUFA	0.80	± 0.05	0.67	± 0.04	0.73	± 0.03
ω-3/MUFA	0.84	± 0.07	0.62	± 0.05*	0.72	± 0.05

Data presented are means ± SEM. Statistical analysis: one-way analysis of variance followed by Tukey's post-hoc test. Values in the same row bearing different symbols are significantly different (* $p<0.05$; ** $p<0.01$ comparing PD or ET patients to Controls; † $p<0.05$; †† $p<0.01$ comparing ET patients to PD ones). Abbreviations: ALA, linolenic acid; ARA, arachidonic acid; DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; DTA, docosatetraenoic acid; EPA, eicosapentaenoic acid; ET, essential tremor; ETA, eicosatetraenoic acid; FA, fatty acid; LA, linoleic acid; MUFA, monounsaturated fatty acids; n.d., not detected; PD, Parkinson's disease; PE, phosphatidylethanolamine; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids.

Supplementary Table 5 Fatty acid composition in PS and PI fractions extracted from cerebellum cortex from Controls (n=17), PD patients (n=15) and ET patients (n=15) expressed in percentage of total fatty acids

Fatty acid	Controls FA (% FA)			PD patients FA (% FA)			ET patients FA (% FA)		
14 :0 (Myristic)	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
14 :1 ω-5	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
16 :0 (Palmitic)	4.05	±	0.42	2.72	±	0.27*	2.99	±	0.26
16 :1 ω-7	0.10	±	0.03	0.03	±	0.02	0.05	±	0.02
18 :0 (Stearic)	37.31	±	0.71	38.55	±	0.53	39.04	±	0.46
18 :1 ω-9 (Oleic)	22.53	±	0.66	24.34	±	0.60	23.32	±	0.53
18 :1 ω-7	3.76	±	0.12	4.00	±	0.11	3.85	±	0.12
18 :2 ω-6 (LA)	0.19	±	0.04	0.05	±	0.02**	0.06	±	0.03**
18 :3 ω-6	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
18 :3 ω-3 (ALA)	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
18 :4 ω-3	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
20 :0 (Arachidic)	0.38	±	0.05	0.35	±	0.03	0.26	±	0.04
20 :1 ω-12	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
20 :1 ω-9 (Erucic)	2.62	±	0.18	3.25	±	0.25	2.92	±	0.15
20 :2 ω-6	0.03	±	0.01	0.01	±	0.01	0.02	±	0.01
20 :3 ω-6	1.19	±	0.06	1.03	±	0.04	1.25	±	0.08
20 :4 ω-6 (ARA)	7.76	±	0.64	5.67	±	0.53*	5.48	±	0.66*
20 :4 ω-3 (ETA)	0.06	±	0.04	0.03	±	0.03	n.d.	±	n.d.
20 :5 ω-3 (EPA)	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :0 (Behenic)	0.06	±	0.02	0.14	±	0.04	0.17	±	0.13
22 :1 ω-9 (Erucic)	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :2 ω-6	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :4 ω-6 (DTA)	2.88	±	0.11	2.88	±	0.13	2.98	±	0.13
22 :3 ω-3	n.d.	±	n.d.	n.d.	±	n.d.	n.d.	±	n.d.
22 :5 ω-6	1.38	±	0.12	1.25	±	0.13	1.29	±	0.07
24 :0 (Tetracosanoic)	0.49	±	0.10	0.85	±	0.14	0.74	±	0.14
22 :5 ω-3 (DPA)	0.28	±	0.04	0.25	±	0.05	0.34	±	0.05
22 :6 ω-3 (DHA)	12.03	±	0.78	10.75	±	0.75	11.96	±	0.61
24 :1 ω-9 (Tetrasenoic)	1.46	±	0.28	2.40	±	0.41	2.18	±	0.37
SFA (total)	42.30	±	0.55	42.61	±	0.43	43.20	±	0.41
MUFA (total)	30.73	±	1.12	34.33	±	0.99	32.61	±	0.82
PUFA (total)	25.88	±	1.10	21.97	±	1.10**	23.37	±	0.84*
ω-3 PUFA	12.36	±	0.82	11.02	±	0.78	12.30	±	0.64
ω-6 PUFA	13.46	±	0.64	10.92	±	0.53**	11.08	±	0.61*
ω-9 PUFA	26.62	±	1.02	29.98	±	0.94	28.42	±	0.78
ω-3 : ω-6 PUFA	0.95	±	0.08	1.03	±	0.08	1.17	±	0.10
Cis MUFA	30.49	±	1.10	33.84	±	1.00	32.27	±	0.80
Trans MUFA	0.24	±	0.05	0.49	±	0.06**	0.34	±	0.07
Cis PUFA	25.86	±	1.10	21.95	±	1.09*	23.36	±	0.84
Trans PUFA	0.02	±	0.02	0.03	±	0.02	0.01	±	0.01
Total cis	56.34	±	0.41	55.78	±	0.30	55.64	±	0.32
Total trans	0.26	±	0.05	0.52	±	0.06**	0.35	±	0.08
SFA/MUFA	1.41	±	0.06	1.26	±	0.04	1.34	±	0.04
PUFA/MUFA	0.88	±	0.07	0.66	±	0.05*	0.73	±	0.04
ω-6/MUFA	0.45	±	0.03	0.33	±	0.02*	0.35	±	0.02*
ω-3/MUFA	0.43	±	0.04	0.33	±	0.03	0.38	±	0.03

Data presented are means ± SEM. Statistical analysis: one-way analysis of variance followed by Tukey's post-hoc test. Values in the same row bearing different symbols are significantly different (* $p < 0.05$; ** $p < 0.01$ comparing PD or ET patients to Controls; † $p < 0.05$; †† $p < 0.01$ comparing ET patients to PD ones). Abbreviations: ALA, linolenic acid; ARA, arachidonic acid; DHA, docosahexaenoic acid; DPA, docosapentaenoic acid; DTA, docosatetraenoic acid; EPA, eicosapentaenoic acid; ET, essential tremor; ETA, eicosatetraenoic acid; FA, fatty acid; LA, linoleic acid; MUFA, monounsaturated fatty acids; n.d., not detected; PD, Parkinson's disease; PI, phosphatidylinositol; PS, phosphatidylserine; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids.

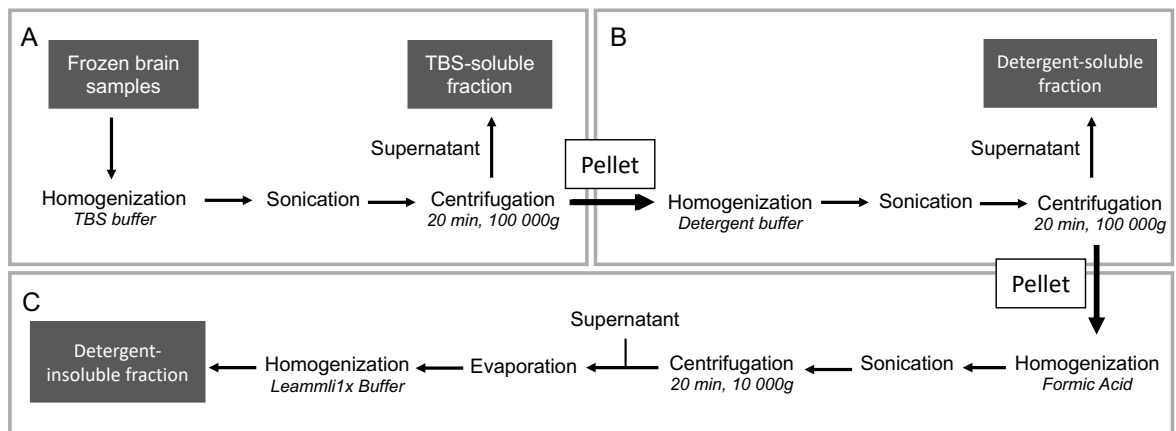
*Because the separation between PS and PI could not be performed completely, they were analyzed together

Supplementary Table 6 Linear regression comparing disease duration and ET severity to the most important classes of fatty acids expressed in absolute mass extracted from cerebellum cortex

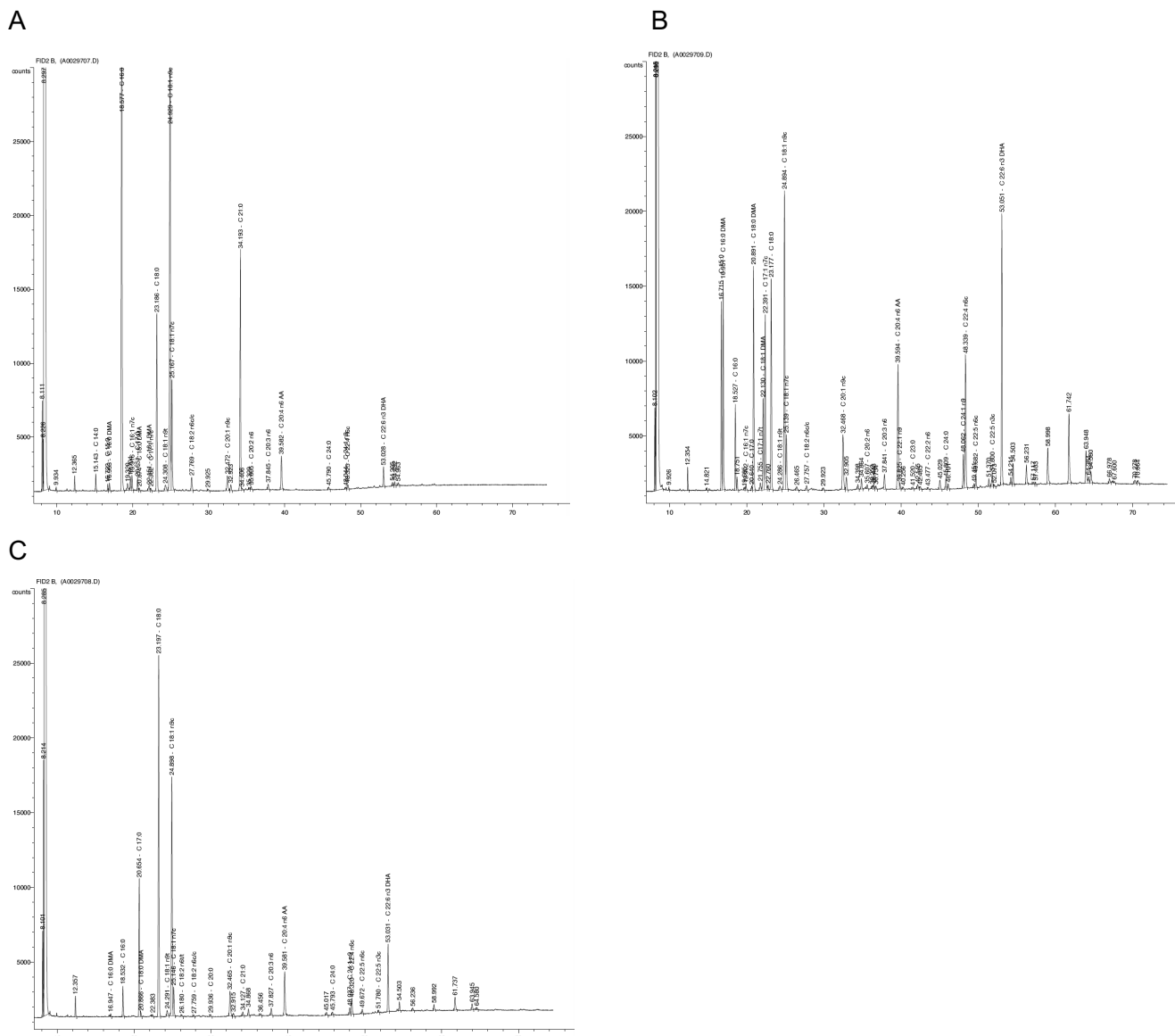
Fatty acid	PC (mg FA/g)		PE (mg FA/g)		PS+PI (mg FA/g)		PC+PE+PS+PI (mg FA/g)	
Age of death (years)								
	r ²	p	r ²	p	r ²	p	r ²	p
SFA (total)	-0.0245	0.2932	-0.0320	0.2287	-0.0020	0.7661	-0.0286	0.2558
MUFA (total)	-0.0493	0.1334	-0.0667	0.0797	-0.0110	0.4823	-0.0210	0.3306
PUFA (total)	+0.0004	0.8997	-0.0291	0.2518	+0.0054	0.6236	+0.0002	0.9251
ω-3 PUFA	+0.0064	0.5937	-0.0044	0.6568	+0.0801	0.0539	<0.0001	0.9856
ω-6 PUFA	-0.0001	0.9374	-0.0632	0.0882	-0.0245	0.2938	-0.050	0.1291
Total F.A.	-0.0285	0.2563	-0.0057	0.6149	-0.0028	0.7246	-0.0132	0.4415
Disease duration (ET)								
	r ²	p	r ²	p	r ²	p	r ²	p
SFA (total)	+0.0994	0.6426	+0.0940	0.8306	-0.0689	0.7984	+0.0511	0.7829
MUFA (total)	+0.0413	0.7681	+0.0020	0.9880	-0.1033	0.6724	-0.0198	0.8530
PUFA (total)	-0.0931	0.3163	+0.0182	0.9147	-0.0205	0.6674	-0.0372	0.7200
ω-3 PUFA	-0.1564	0.1826	+0.0312	0.7821	-0.1078	0.4177	+0.0127	0.9680
ω-6 PUFA	-0.0700	0.4065	+0.0301	0.9348	-0.0426	0.9770	-0.0276	0.9552
Total F.A.	+0.0584	0.7933	-0.0352	0.8309	-0.0691	0.6976	-0.0139	0.9041
Disease duration (PD)								
	r ²	p	r ²	p	r ²	p	r ²	p
SFA (total)	+0.0133	0.7683	-0.0237	0.7917	+0.0485	0.8620	+0.0035	0.9298
MUFA (total)	+0.0425	0.7322	+0.1385	0.8540	+0.0904	0.7663	+0.0113	0.7806
PUFA (total)	+0.1181	0.4128	+0.0158	0.7960	-0.0854	0.9422	+0.0368	0.7354
ω-3 PUFA	+0.1534	0.3089	+0.0595	0.8743	-0.3202	0.9087	+0.1185	0.8196
ω-6 PUFA	+0.1020	0.4712	+0.0234	0.7372	-0.0317	0.9890	+0.0162	0.6815
Total F.A.	+0.0240	0.6968	+0.0311	0.9075	+0.0212	0.8462	+0.0190	0.8038
Severity of ET								
	r ²	p	r ²	p	r ²	p	r ²	p
SFA (total)	-0.2245	0.1261	-0.2558	0.0870	+0.0386	0.6060	-0.1614	0.1791
MUFA (total)	-0.2156	0.1273	-0.1331	0.2736	+0.0160	0.8474	-0.0770	0.4391
PUFA (total)	-0.1868	0.3556	-0.1642	0.3106	-0.1815	0.7520	-0.0666	0.5971
ω-3 PUFA	-0.2475	0.3062	-0.1673	0.2515	+0.2642	0.1733	-0.1737	0.3383
ω-6 PUFA	-0.1577	0.3913	-0.1782	0.2038	-0.1850	0.1773	-0.1915	0.1943
Total F.A.	-0.2085	0.1322	-0.0827	0.4362	+0.0324	0.8002	-0.0920	0.3350

Linear regressions were performed to obtain coefficients of determination (r^2). Abbreviations: ET, essential tremor; MUFA, monounsaturated fatty acids; PC, phosphatidylcholine; PD, Parkinson's disease; PE, phosphatidylethanolamine; PI, phosphatidylinositol; PS, phosphatidylserine; PUFA, polyunsaturated fatty acids SFA, saturated fatty acids.

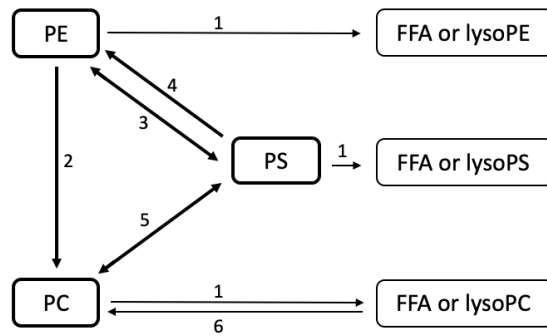
*Because the separation between PS and PI could not be performed completely, they were analyzed together.



Supplementary Figure 1 Schematic overview of protein fraction preparation for Western immunoblotting.

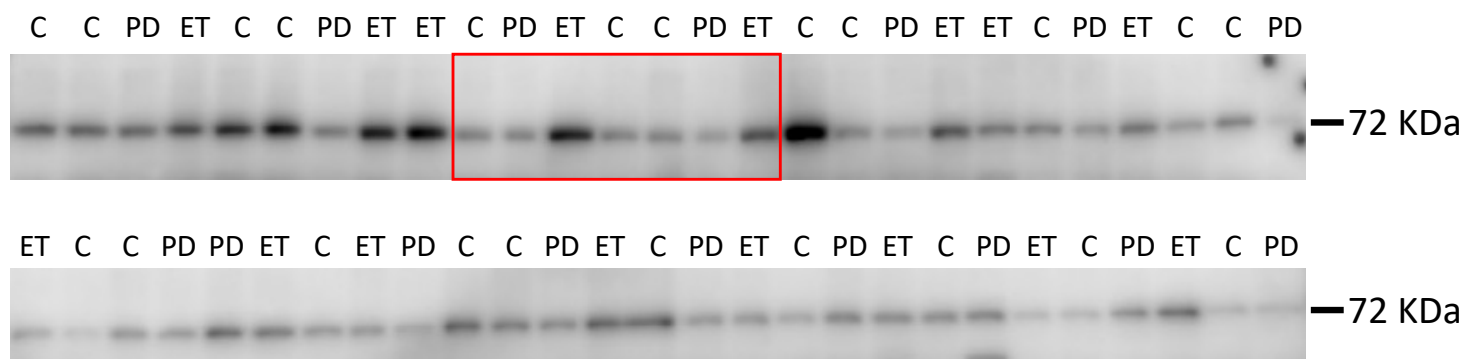


Supplementary Figure 2 Representative gas chromatographs of (A) the phosphatidylcholine fraction, (B) phosphatidylethanolamine fraction and (C) phosphatidylinositol + phosphatidylserine fractions of *postmortem* human cerebellar cortex from patients. Fatty acids C15:0, C17:0 and C21:0 are internal standards. Chromatograms are screen captures directly taken as presented in the GC software, thus showing default factory settings.

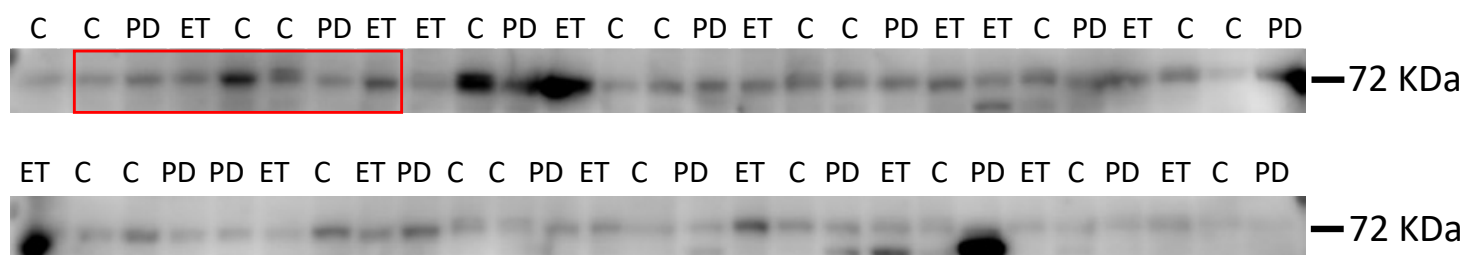


Supplementary Figure 3 Pathways of phospholipids metabolism in somatic cells. Figure adapted from Vasquez et al., 1997. Not all pathways are shown. Enzymes involved are: (1) phospholipase A₂; (2) PE N-methyltransferase; (3) PE:serine O-phosphatidyltransferase; (4) PS decarboxylase; (5) PC: serine O-phosphatidyltransferase; (6) lysophosphatide acyltransferase. Abbreviations: FFA, free fatty acid; PC, phosphatidylcholine; PE, phosphatidylethanolamine; PS, phosphatidylserine.

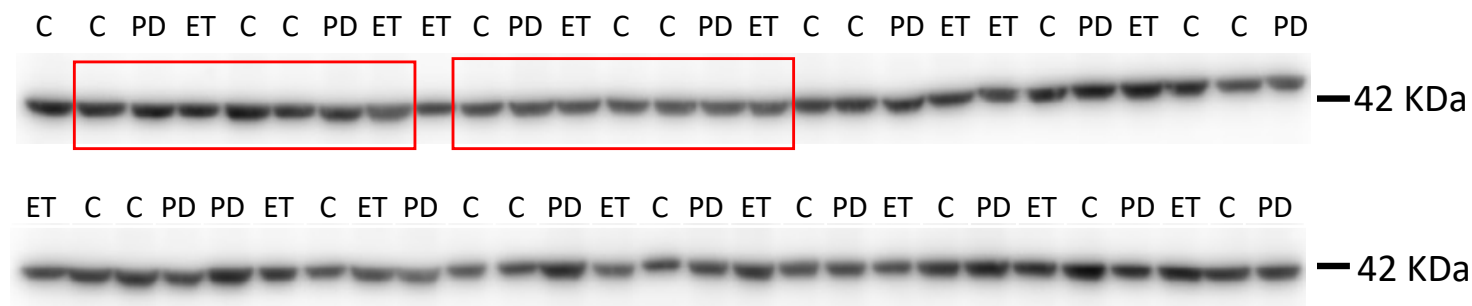
Detergent-soluble 5-LOX



Detergent-soluble COX2

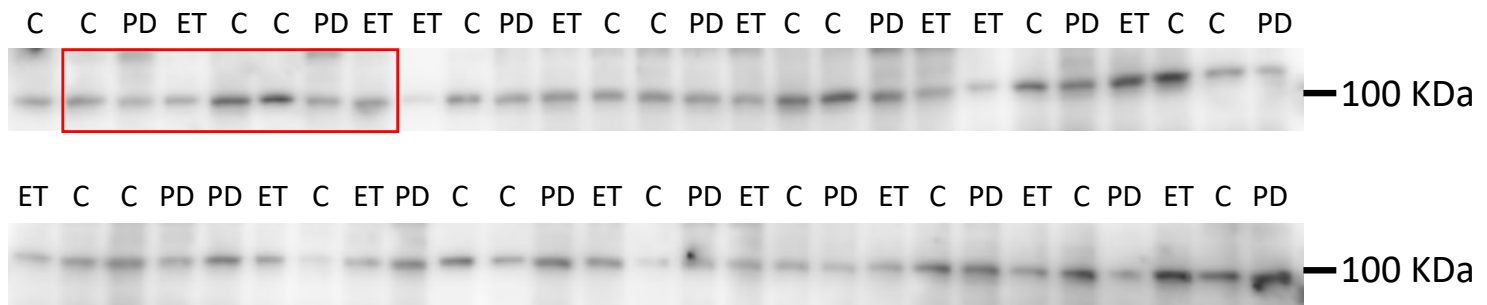


Detergent-soluble Actin

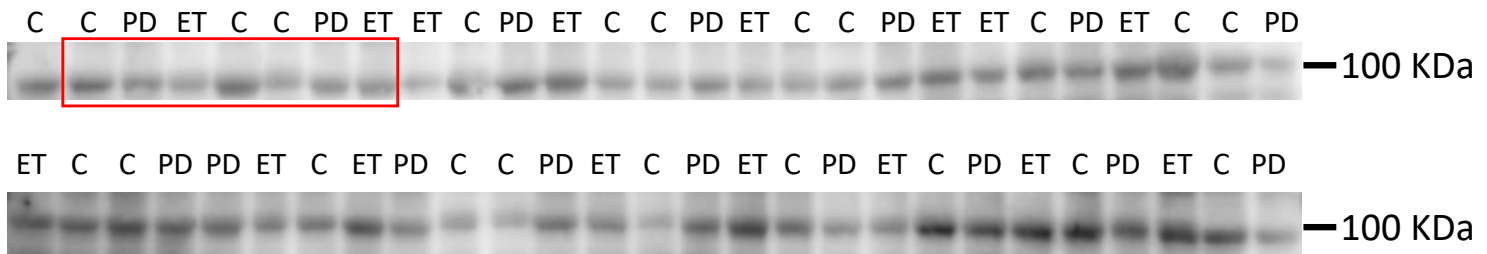


Supplementary Figure 4. Uncropped gels of immunoblotting experiments in human cerebellar cortex. The clinical and neuropathological diagnosis are given above each sample. An equal amount of proteins was loaded from each sample. Red rectangles indicate the bands that were taken as representative photo examples in Figures 5 and 6. Abbreviations: C, control; COX-2, cyclooxygenase-2; ET, Essential Tremor; PD, Parkinson's Disease; 5-LOX, 5-lipoxygenase.

TBS-soluble cPLA2



TBS-soluble COX2

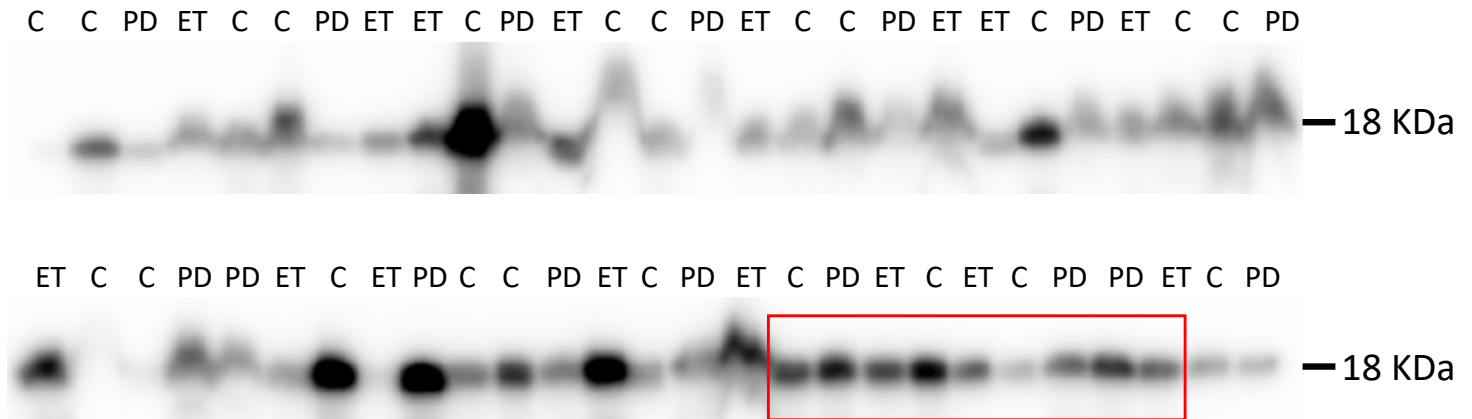


TBS-soluble Actin



Supplementary Figure 5. Uncropped gels of immunoblotting experiments in human cerebellar cortex. The clinical and neuropathological diagnosis are given above each sample. An equal amount of proteins was loaded from each sample. Red rectangles indicate the bands that were taken as representative photo examples in Figures 5 and 6. Abbreviations: C, control; COX-2, cyclooxygenase-2; cPLA2, cytosolic phospholipase A2; ET, Essential Tremor; PD, Parkinson's Disease.

Detergent-insoluble total α -synuclein



Supplementary Figure 6. Uncropped gels of immunoblotting experiments in human cerebellar cortex. The clinical and neuropathological diagnosis are given above each sample. An equal amount of proteins was loaded from each sample. Red rectangles indicate the bands that were taken as representative photo examples in Figures 5 and 6. Abbreviations: C, control; ET, Essential Tremor; PD, Parkinson's Disease.