

Supplementary Materials

Supplementary materials can be found at www.mdpi.com/xxx/s1.

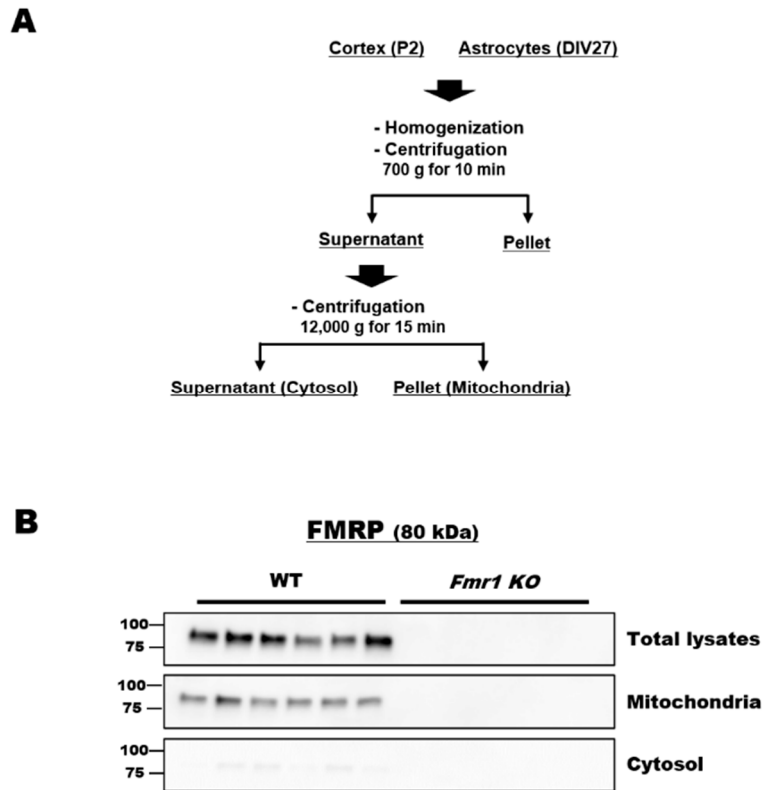


Figure S1: Mitochondrial fractionation. (A) Diagram of mitochondrial fractionation process. (B) Fragile X mental retardation protein (FMRP) is detected in the total brain lysates and mitochondrial fractions from wild-type (WT) but not *Fmr1* KO mice ($n = 6$).

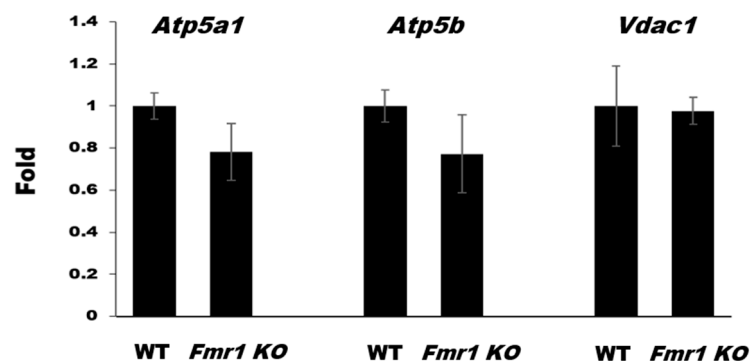


Figure S2: The relative expression levels of *Atp5a1*, *Atp5b*, and *Vdac1* in the cortex of WT and *Fmr1* KO mice. Each value represents the mean \pm SD ($n = 6$ per group).

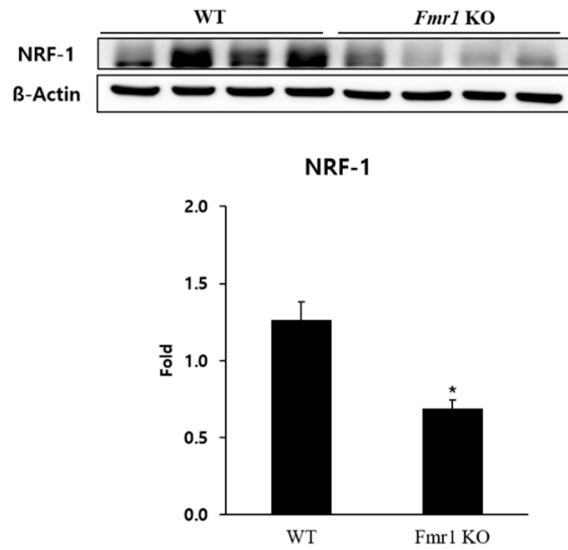


Figure S3: The relative expression levels of NRF-1 in the cortex of 10 weeks old WT and Fmr1 KO mice. Each value represents the mean \pm SD (n = 4 per group). *. $p < 0.05$ vs. WT mice.

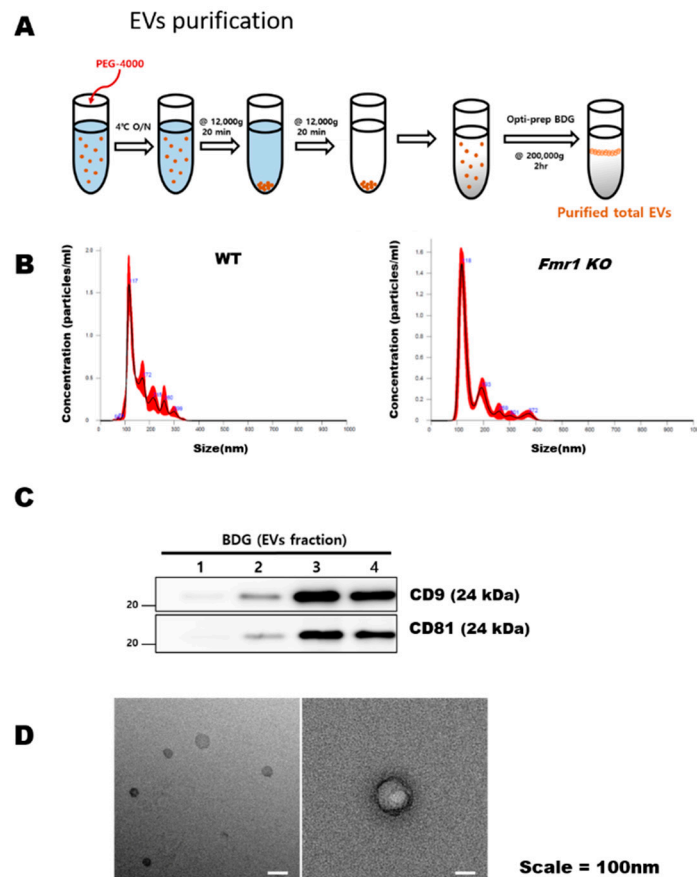


Figure S4: Isolation and purification of EVs. (A) Schematic illustration of buoyant density gradient ultracentrifugation for EVs isolation. (B) Western blot analysis of gradient fraction for the EVs markers CD81 and CD9. (C) Nanoparticle tracking analysis (NTA) of EVs fraction #3. (D) Transmission electron microscopy analysis shows the vesicles with lipid bilayer. Scale bars, 100nm.

Table S1: Sequences of primers for qRT-PCR.

Gene	Sequence (5' →3')	
	Forward	Reverse
Nfe2l1	GCCGCATGTGTTTGAGTCTA	CACTCGCGTCGTGTACTCAT
Nfe2l2	GAGATGAGCTTAGGGCAAAG	TGCTCCTTGGACATCATTTTC
Tfam	CCAGCATGGGTAGCTATCC	AGTTTTGCATCTGGGTGTTTAG
p0	GCACTTTCGCTTCTGGAGGGTGT	TGACTTGGTTGCTTTGGCGGGATT
16S	CGCAAGGGAAAGATGAAAGAC	TCGTTTGGTTTCGGGGTTTCG
mt-Co1	TCTACTATTCGGAGCCTGAG	CTACTGATGCTCCTGCATGG
Atp5a1	GTCTCTCCGAGAAGCTGCAAG	AGTCGAGTGTTAGAGGCATGG
Atp5b	AGATGAACGAACCACCTGGC	GCCTGGGTAAAGCGGAAGAT
Vdac1	TGGGGTGGTTTTCTTCTCCTCC	CTAGTGTTGTCAGGGTGTGACC
β-actin	TCTGGCACCACACCTTCTAC	TTTTCACGGTTGGCCTTAG

Table S2: Antibodies for mitochondrial biogenesis proteins

Company	Catalog no.	Name	MW (kDa)
Abcam	ab175932	Anti-NRF1 antibody	54
Abcam	ab14705	Anti-MT-CO1 antibody	40
Abcam	ab14748	Anti-ATP5A antibody	53
Abcam	ab14734	Anti-VDAC1 / Porin antibody	31
Abcam	ab14730	Anti-ATPB antibody	52
Abcam	ab138351	Anti-mtTFA antibody	29
Abcam	ab33697	Anti-TAPA1 (CD81) antibody *	24
BD Bioscience	553758	Anti-CD9 antibody *	24
Abcam	ab7260	Anti-GFAP antibody	55
Thermo Fisher	MA5-11883	Anti-Vimentin antibody (V9)	54
Cell Signaling Technology	4317S	Anti-FMRP antibody	80

* CD81 and CD9 require nonreducing electrophoresis for western blotting.