

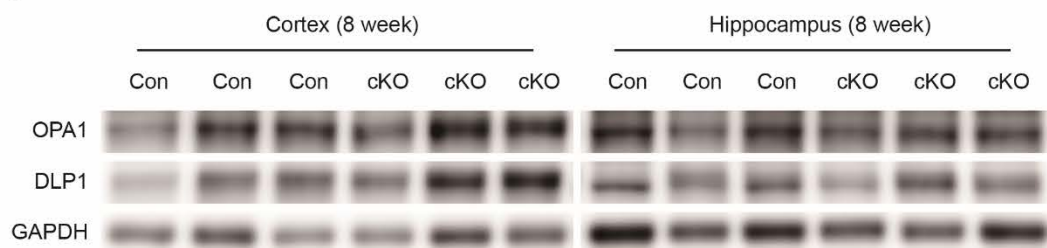
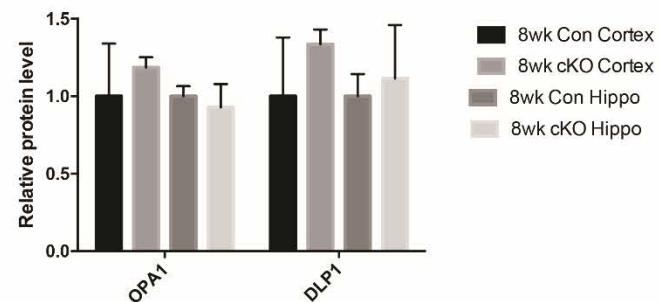
**A****B**

Figure S1. Representative western blot and quantification analysis of brain homogenates found the DLP1 and OPA1 protein levels were unchanged in Mfn2 cKO mice (8 weeks of age) compared to control mice in both the hippocampus and the cortex. GAPDH was used as an internal loading control (N=3/group, data represent mean  $\pm$  SEM, Student's t-test, \*P < 0.05).

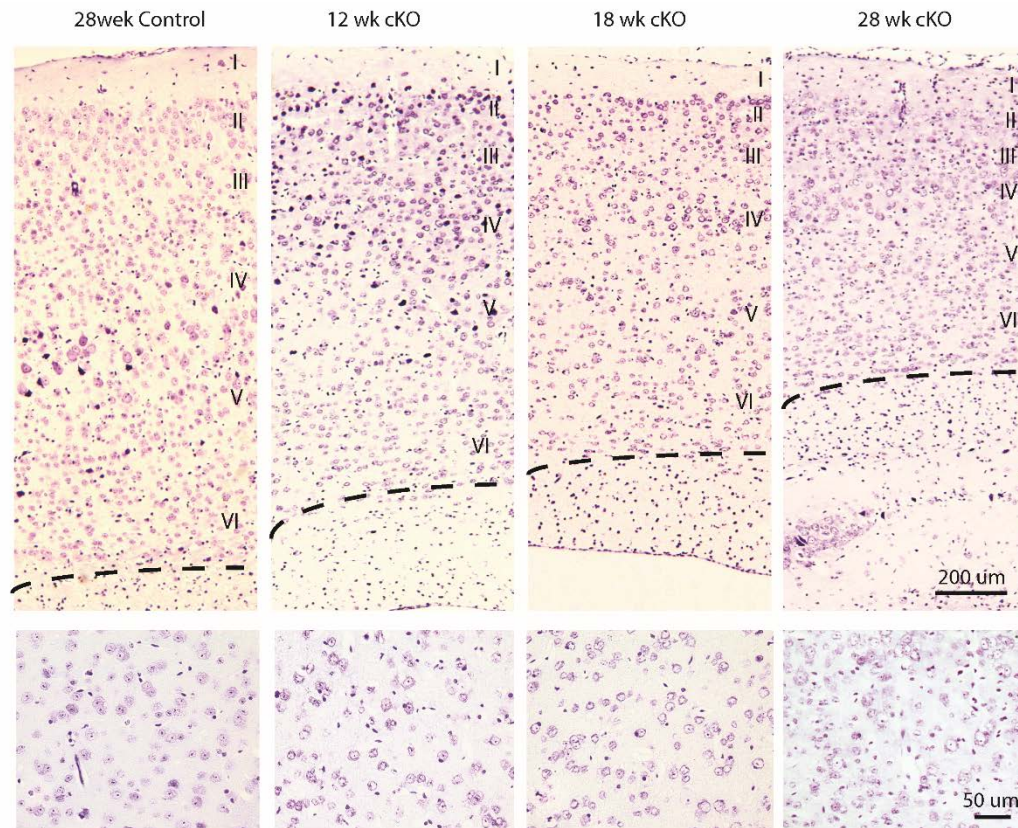


Figure S2. Nissl staining of the entire cortex showing neuronal layers I-VI (upper panels) and higher magnification of area encompassing layers III/IV (lower panels). Dashed line represents lower boundary of cortical neurons. Cortical shrinkage is apparent, neuronal layers become less distinct, and nuclei become disfigured and less uniform with age in the cKO mice.

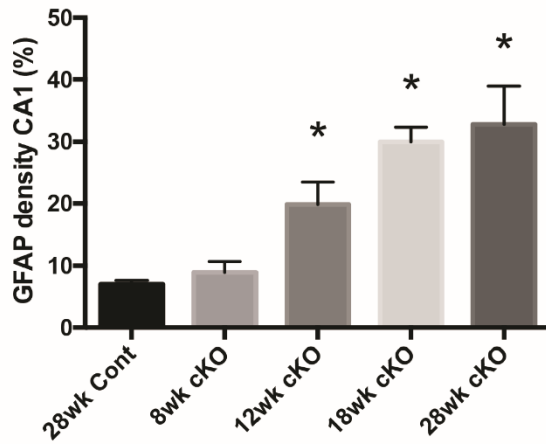
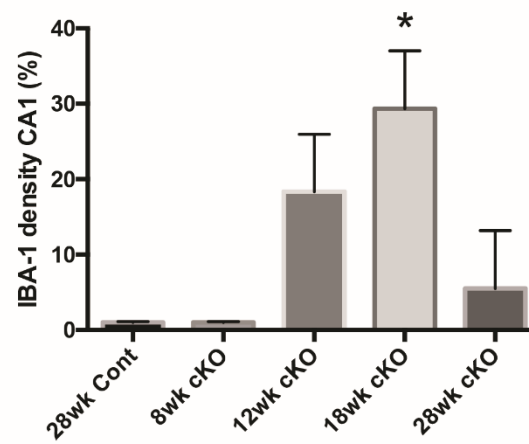
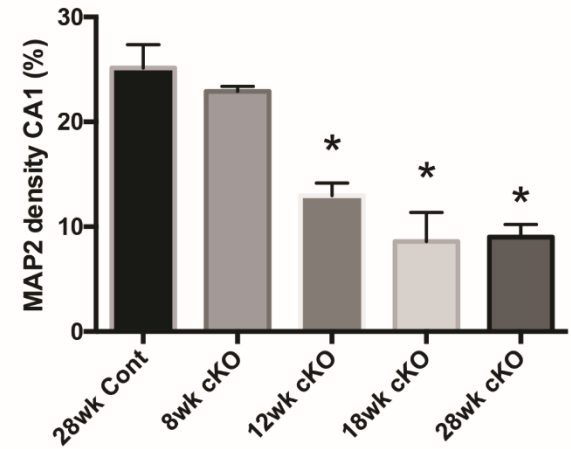
**A****B****C**

Figure S3. Quantification of the immunostaining of (A) GFAP, (B) IBA-1 and (C) MAP2 in the CA1 regions of the Mfn2 cKO mice at different ages (8-28 weeks) compared to control mice at 28 weeks of age (Data represent mean  $\pm$  SEM, Student's t-test, \*P < 0.05).