



S1. Neurons loss in the DMV in heterozygous female A53T and WT mice at various ages. A: Representative images of Nissl-positive cells that stained by Nissl of female heterozygous A53T mice at various ages. Encircled areas: DMV region. Scale bar: 100 μ m. **B:** Statistical analysis of Nissl-positive cells of female heterozygous A53T mice. Statistical analysis was a Two-way ANOVA (Df =1, F=2.642, P =0.13, for genotype; Df =2, F=48.24, P <0.0001, for age), followed by t-test between A53T and WT at each age. **C:** Representative images of ChAT-positive cells that stained by ChAT antibody of female heterozygous A53T mice at various ages. Encircled areas: DMV region. Scale bar: 100 μ m. **D:** Statistical analysis of ChAT-positive cells that stained by ChAT antibody of female heterozygous A53T. Statistical analysis was a Two-way ANOVA (Df =1, F=7.149, P =0.0223, for genotype; Df =2, F=28.47, P <0.0001, for age), followed by t-test between A53T and WT at each age. All data were presented as mean \pm SEM. (t-test, * P < 0.05, A53T vs. WT littermates at the same age), $n \geq 6$ for each group.