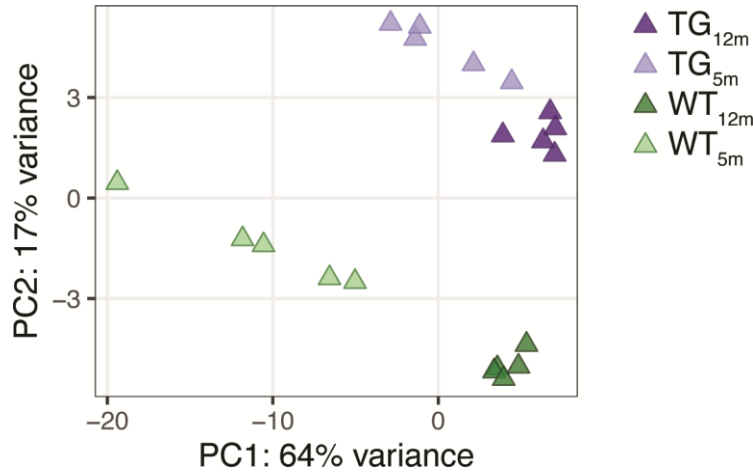
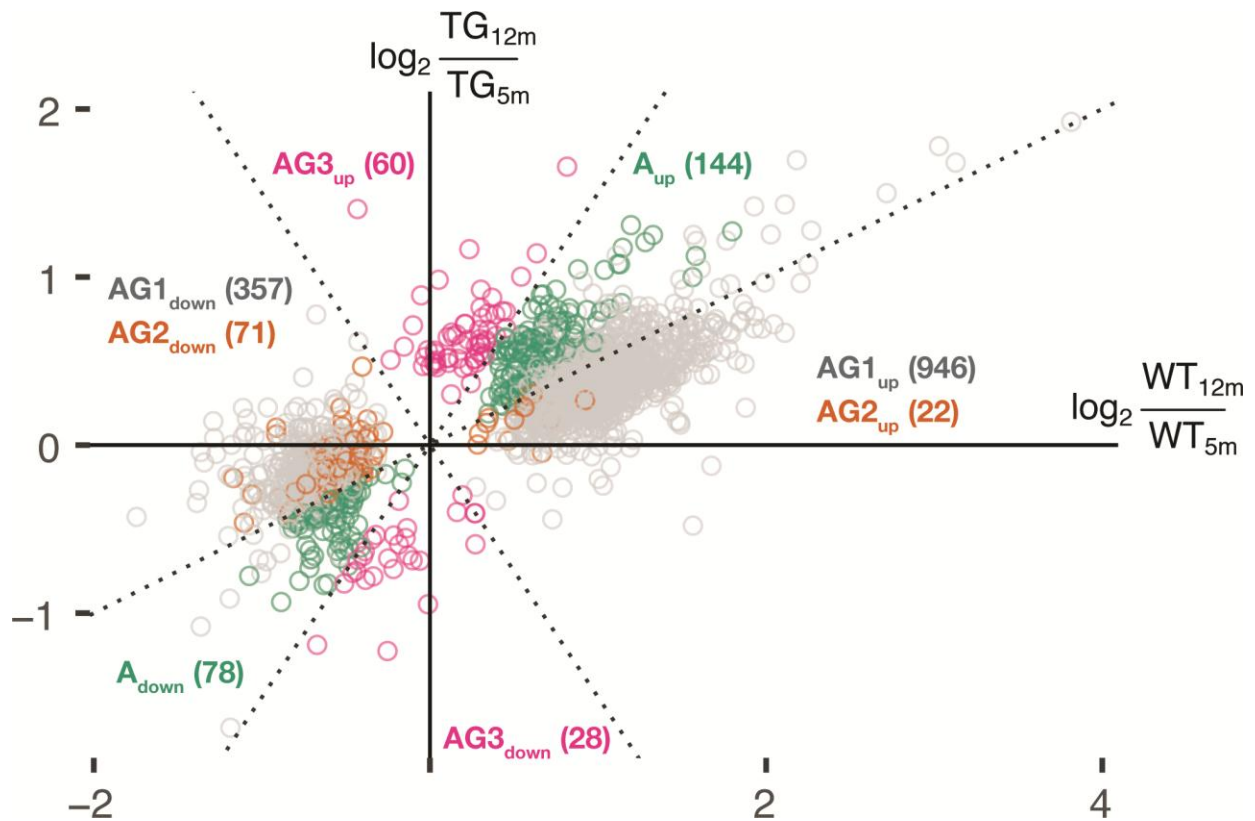


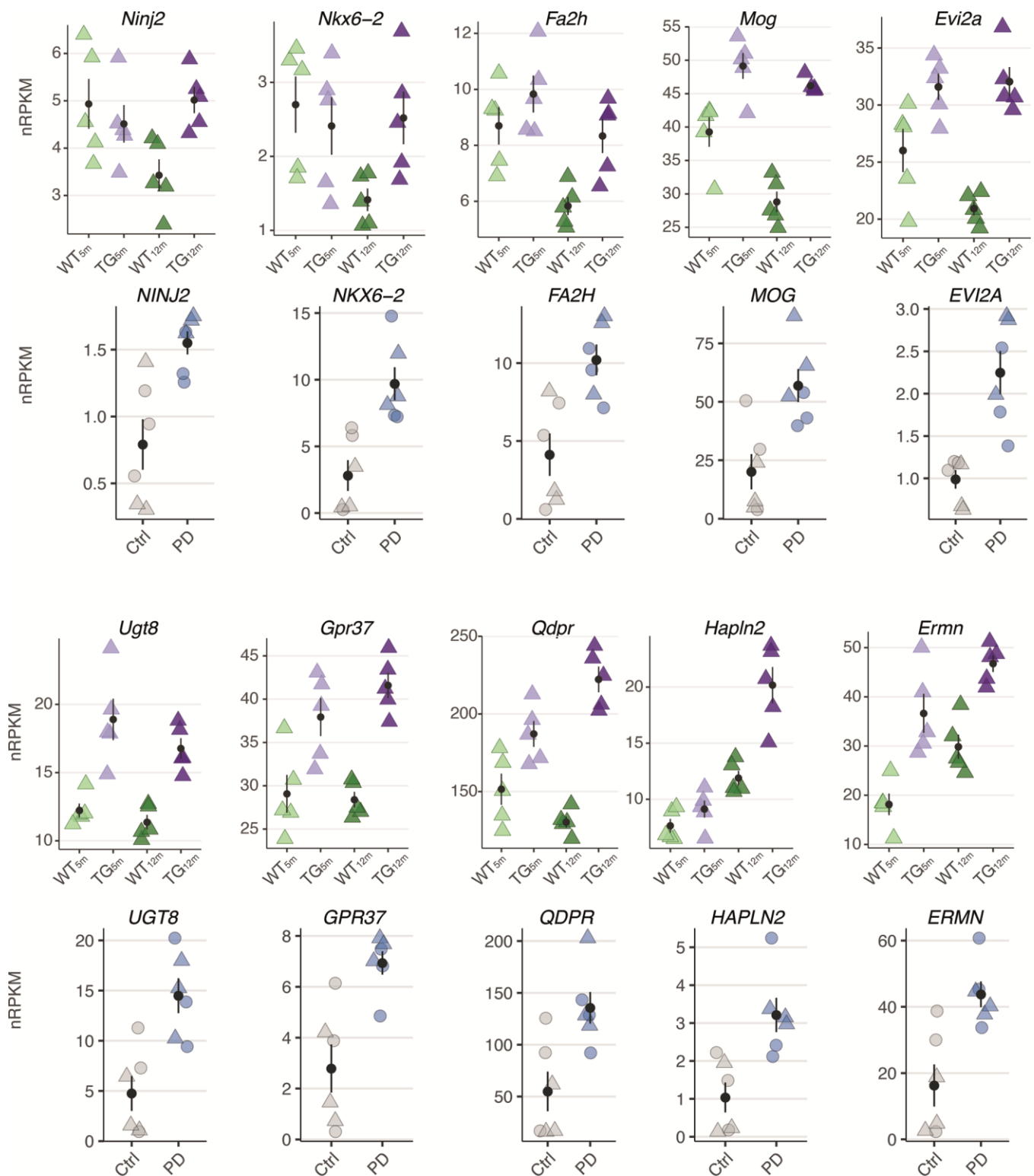
**SUPPLEMENTARY FIGURES**



**Supplementary Figure 1. Samples separate according to age and genotype.** Principal component analysis of frontocortical gene expression profiles for five rat samples per experimental group. Axis percentages indicate variance contribution of the first and second principle component.



**Supplementary Figure 2. Classification of DEGs based on expression patterns in 5- and 12-month-old wildtype and transgenic rats.** Scatter plot of gene expression changes between 5- and 12-month-old WT (x-axis) and TG (y-axis) rats. 1706 DEGs, summarized in Figure 3A, are shown. DEGs were partitioned into four main classes based on the expression ratios of TG<sub>12m</sub>/TG<sub>5m</sub> (y-axis) versus WT<sub>12m</sub>/WT<sub>5m</sub> (x-axis) as shown. Any DEG in class A or AG2 with  $\log_2FC > 0.25$  in TG<sub>5m</sub>/WT<sub>5m</sub> was assigned to class AG1.



**Supplementary Figure 3. Oligodendrocyte genes associated with myelination are up-regulated in frontal cortex of rats overexpressing *SNCA* and PD patients.** Expression changes across experimental groups of oligodendrocyte DEGs shared between rat and human plotted as individual data points with mean  $\pm$  SEM. For human data, circles represent females, rectangles males.