

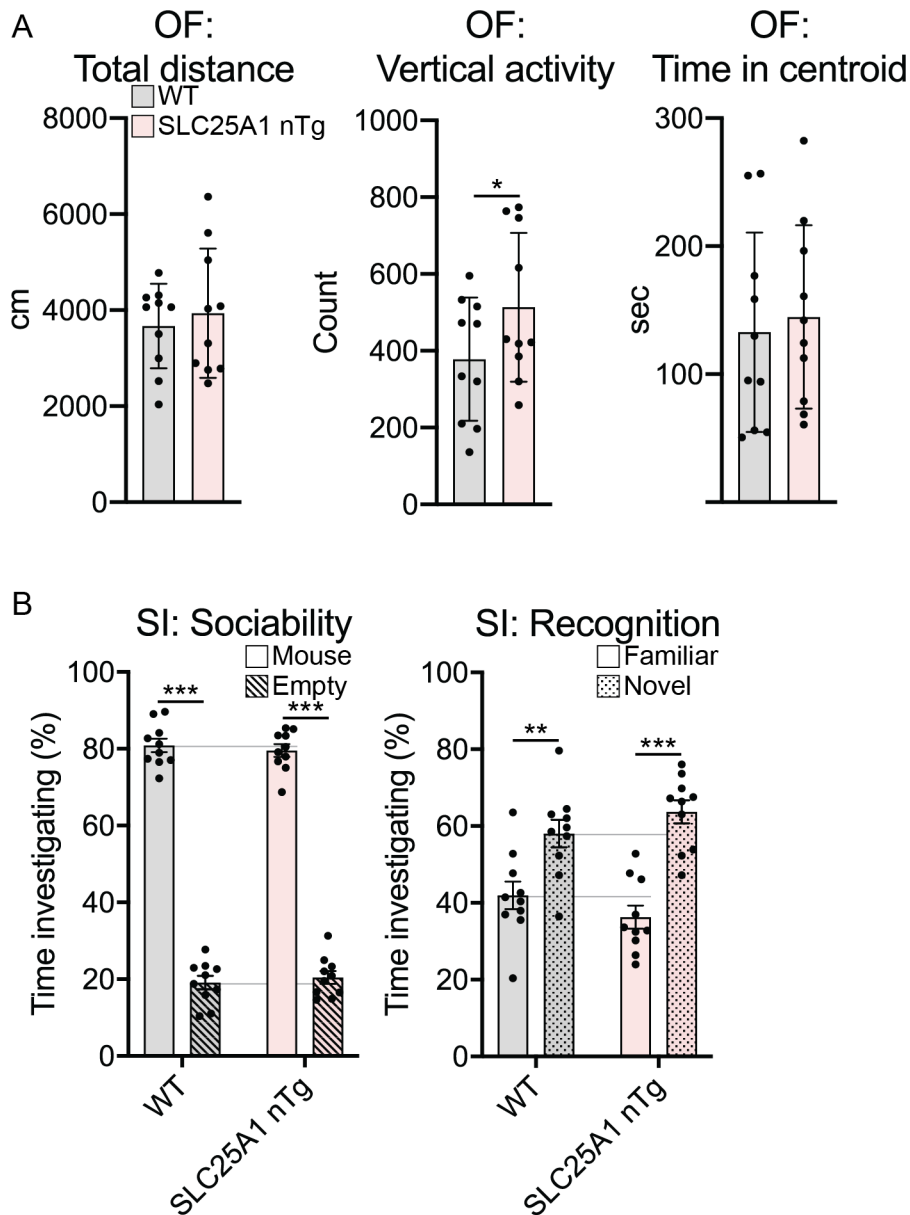
## SUPPLEMENTARY MATERIAL

### **Increased expression of SLC25A1/CIC causes an autistic-like phenotype with altered neuron morphology**

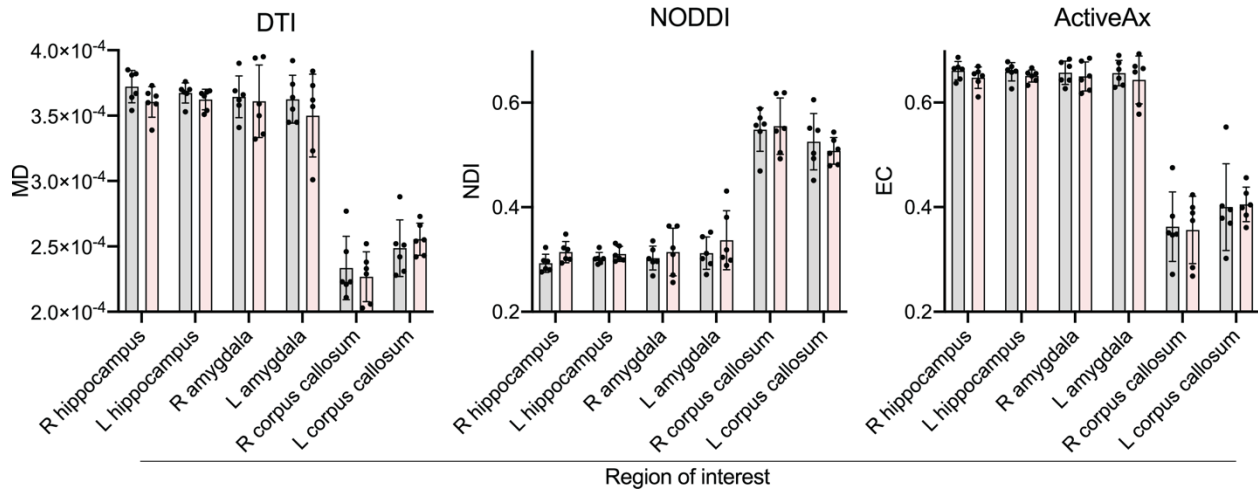
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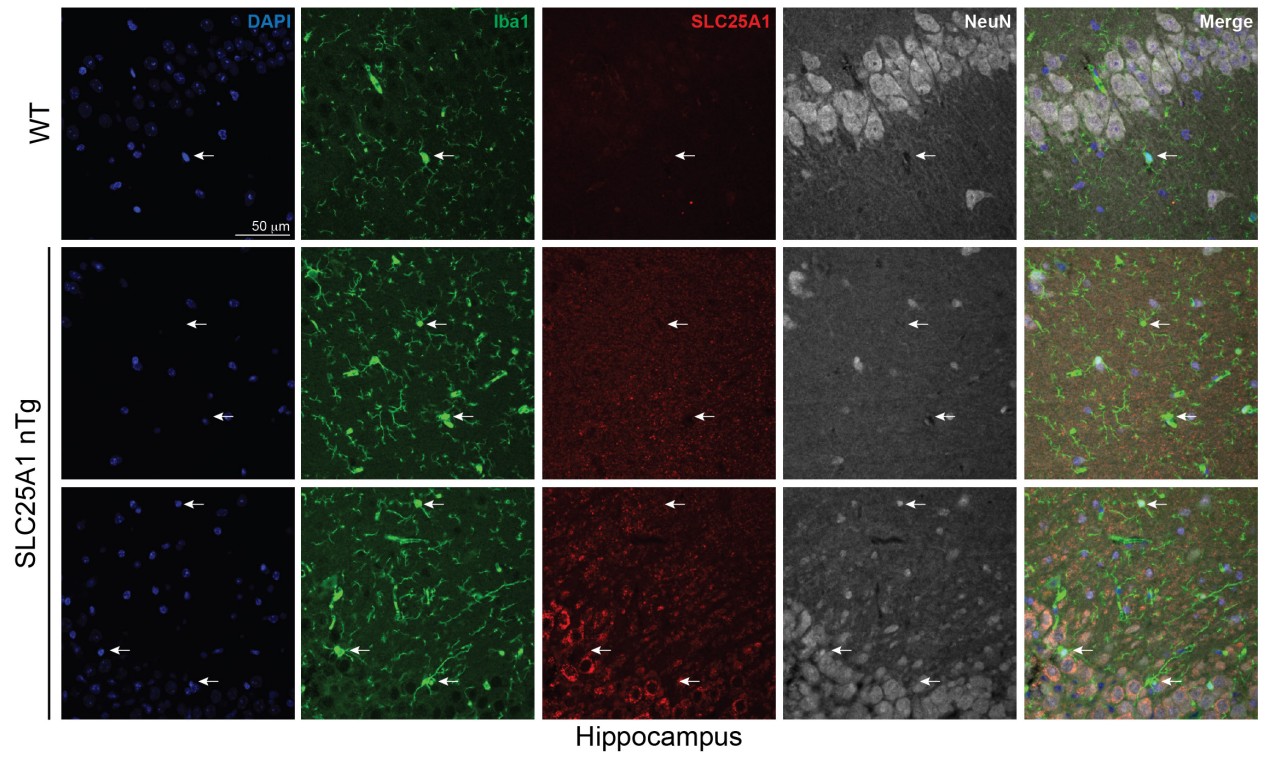
- Supplementary Figures
- Supplementary Figure Legends
- Supplementary Movie Legend



**Supplementary Figure 1. SLC25A1 nTg mice exhibit normal open field activity and social interaction.** (A) Open field (OF) assay. WT,  $n = 10$ ; Tg,  $n = 10$ ; equal males/females.  $*p < 0.05$  via 2-way ANOVA (genotype  $\times$  sex). (B) Social interaction (SI) assay. WT,  $n = 10$ ; Tg,  $n = 10$ ; equal males/females.  $**p < 0.005$ ,  $***p < 0.0005$  via 2-way ANOVA (condition  $\times$  sex). All data are displayed as mean  $\pm$  SD.

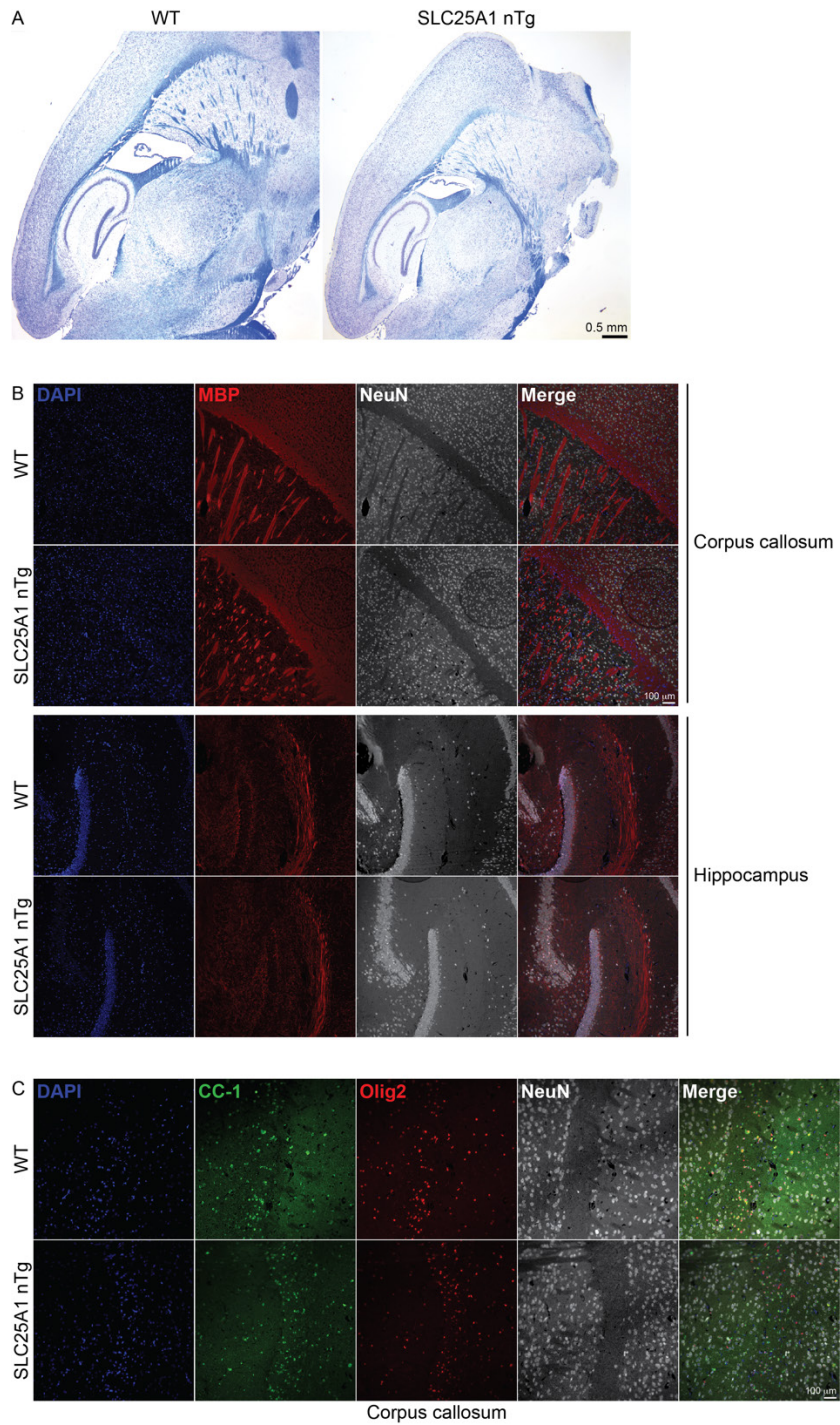


**Supplementary Figure 2. Diffusion weighted imaging on SLC25A1 nTg mice reveal no changes in DTI MD, NODDI NDI, and ActiveAx EC parameters in a ROI analysis.** *Ex vivo* diffusion weighted imaging of male WT and SLC25A1 nTg mice at 4 months old,  $n = 6$  mice per genotype. Data are mean  $\pm$  SD.

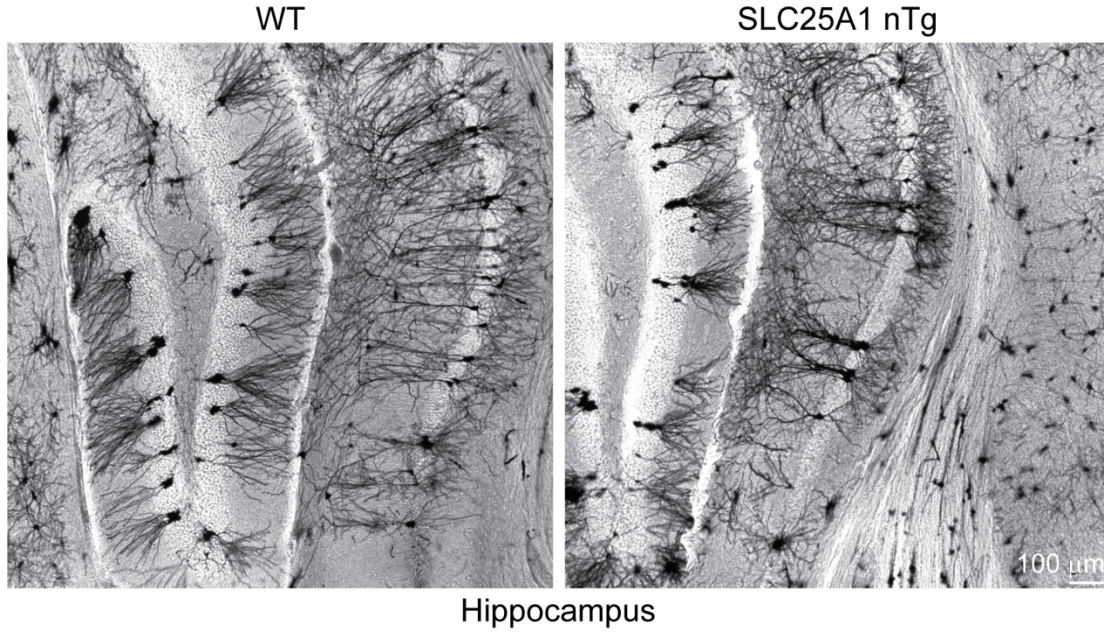


**Supplementary Figure 3. Microglia do not overexpress SLC25A1 in SLC25A1 nTg mice.**

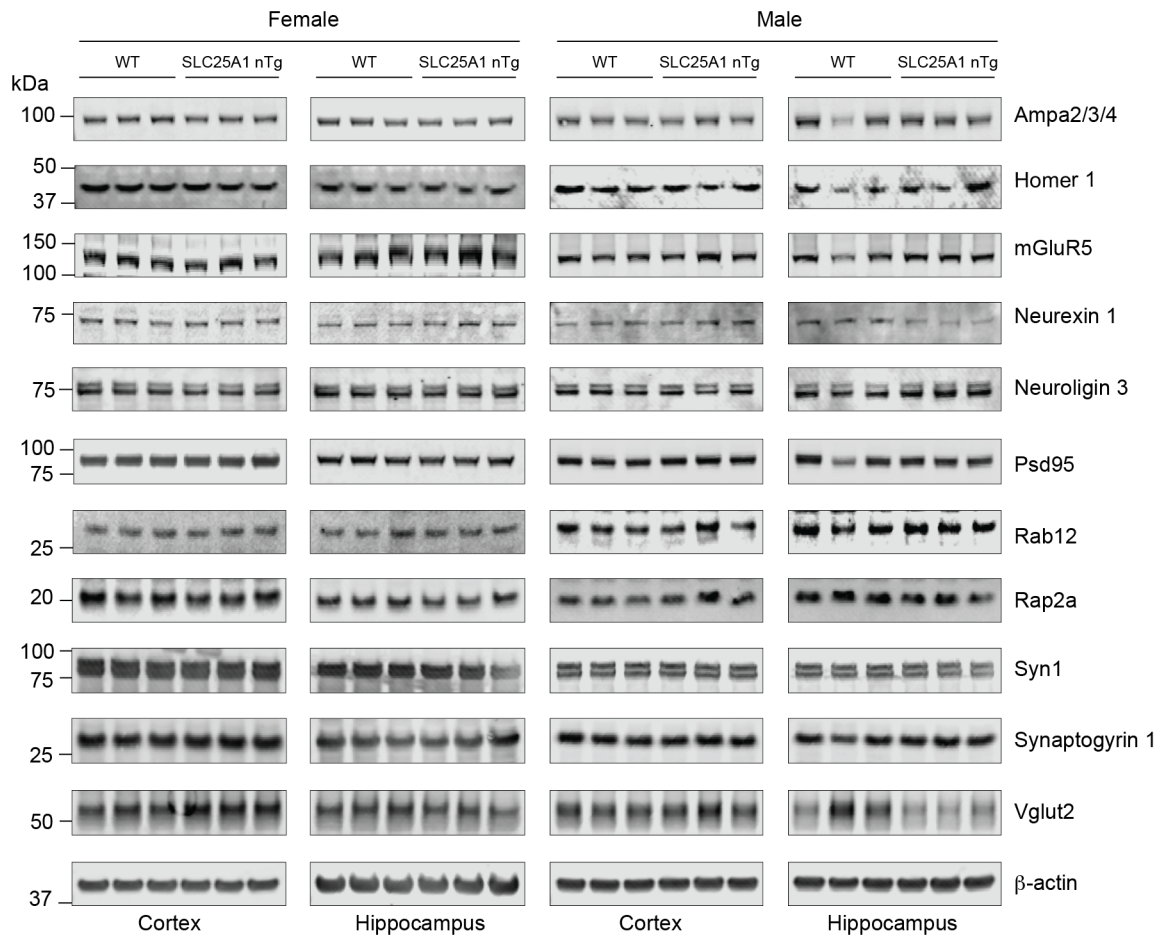
Paraffin-embedded brain immunostaining. Arrows point to microglial cell bodies. Mice are male at 10-12 months of age.



**Supplementary Figure 4. SLC25A1 nTg mice do not have histologic evidence of altered white matter integrity or oligodendrocyte abundance.** (A) Klüver-Barerra staining of paraffin-embedded brain. (B-C) Paraffin-embedded brain immunostaining. All mice are 3-month-old males.

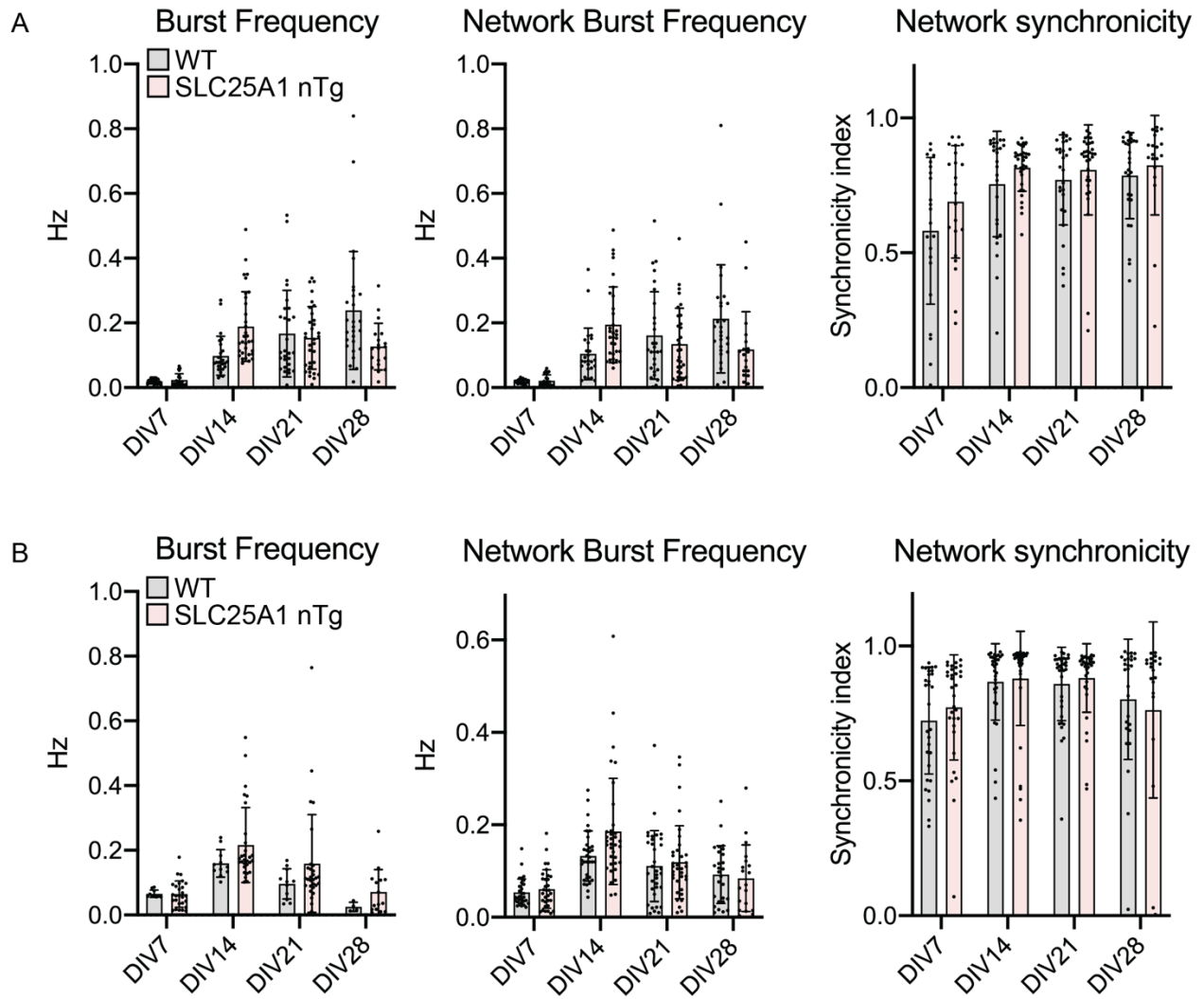


**Supplementary Figure 5. SLC25A1 nTg mice do not have histologic evidence of altered dendritic branching *in vivo*. Mice are male at 3 months of age.**



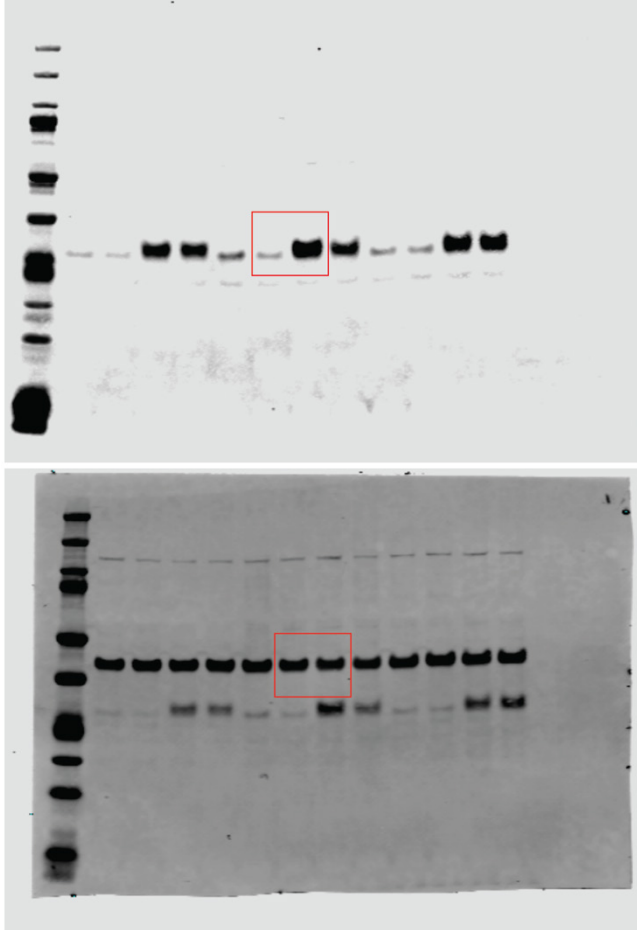
**Supplementary Figure 6. SLC25A1 nTg crude synaptosomes do not show widespread changes in expression of proteins involved in neuronal outgrowth and synaptic plasticity.**

Mice are 9-10 months of age.



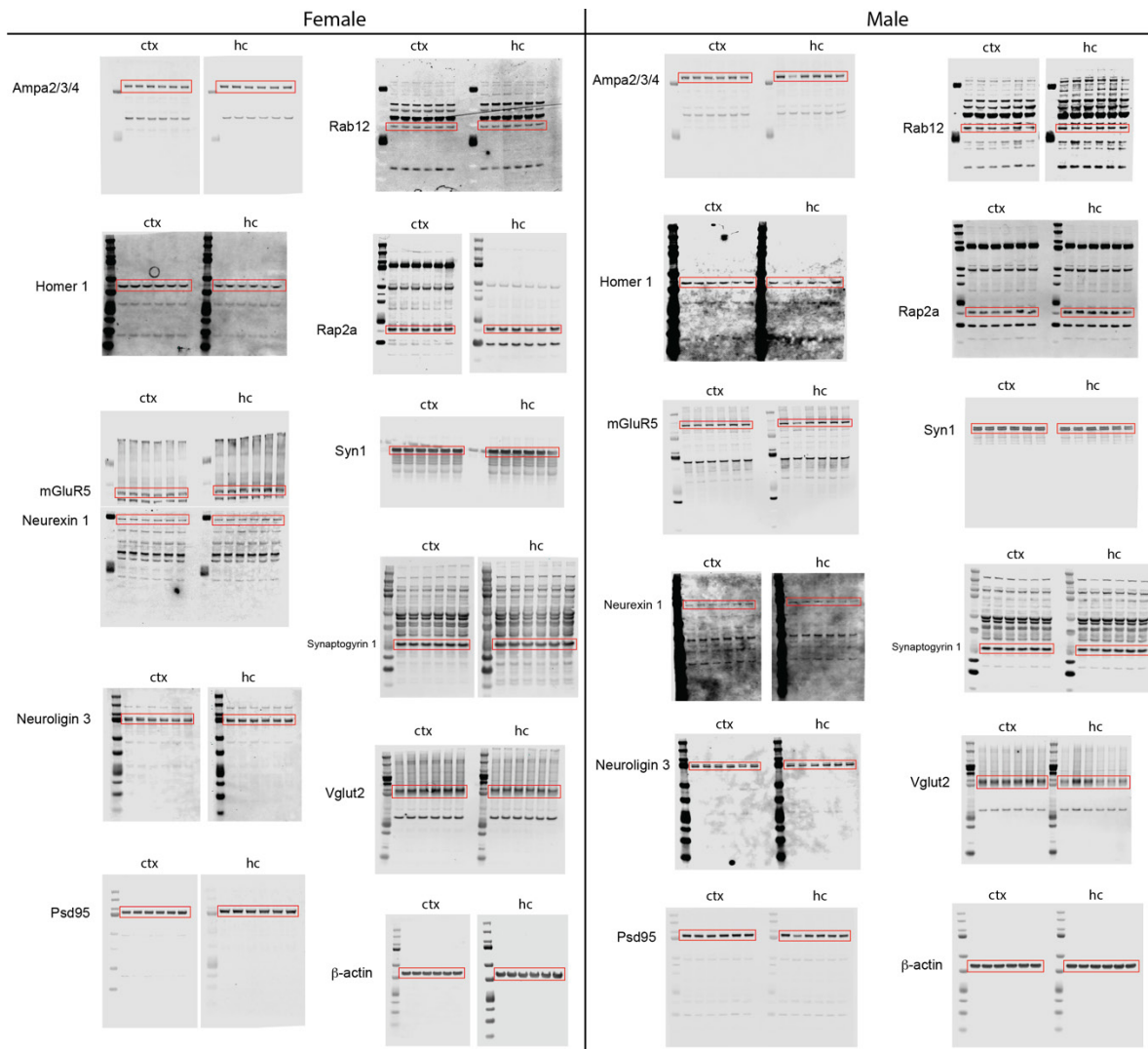
**Supplementary Figure 7. SLC25A1 nTg primary neurons do not exhibit changes in network synchrony.** Multi-electrode array spontaneous activity. Each data point is an independent network of cultured neurons with at least 8 of 16 active electrodes. Data are from 6 embryos per genotype. (A) Cortical primary neurons. (B) Hippocampal primary neurons.





**Supplementary Figure 8. Uncropped Western blots from Figure 1A. Top: anti-Slc25a1.**

Bottom: anti- $\beta$ -actin.



**Supplementary Figure 9. Uncropped Western blots from Supplementary Figure 6.**

**Supplementary Movie 1. SLC25A1 nTg exhibit repetitive jumping.** The movie shows the aberrant repetitive jumping behavior of one SLS25A1 nTg mouse. WT littermates display no such behavior. The video is available from figshare: [doi.org/10.6084/m9.figshare.15130062](https://doi.org/10.6084/m9.figshare.15130062)