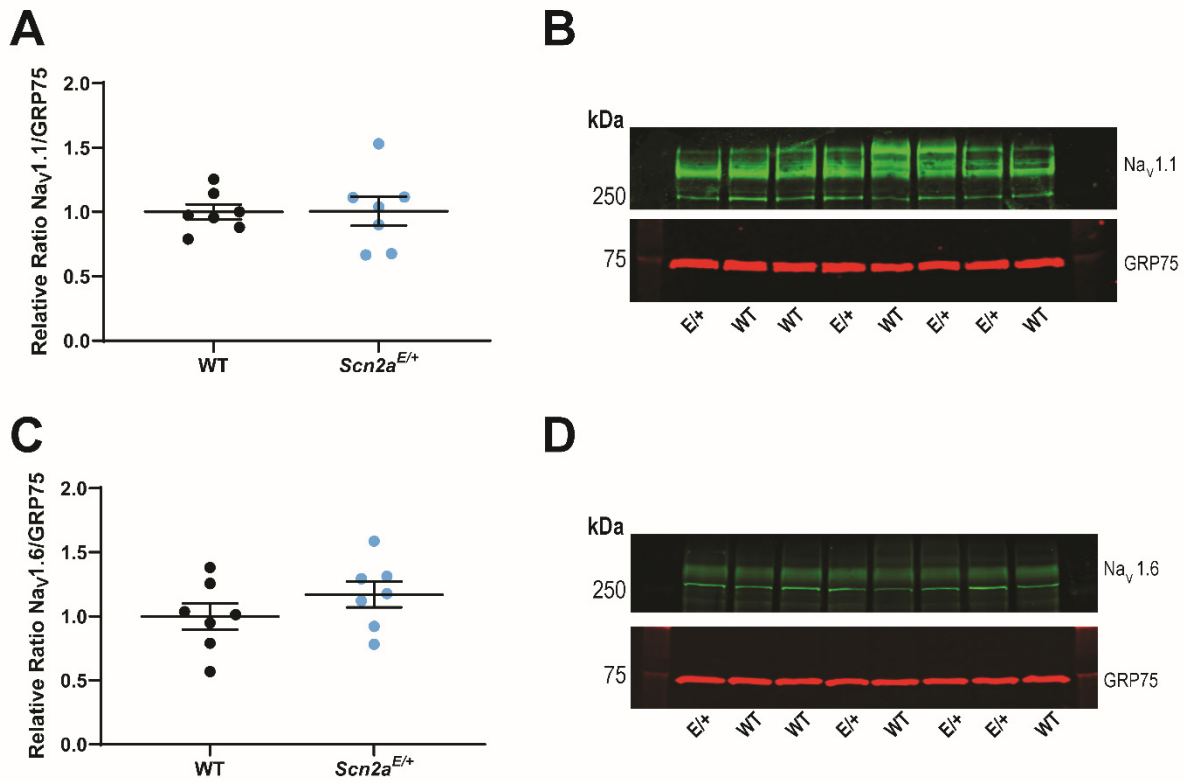


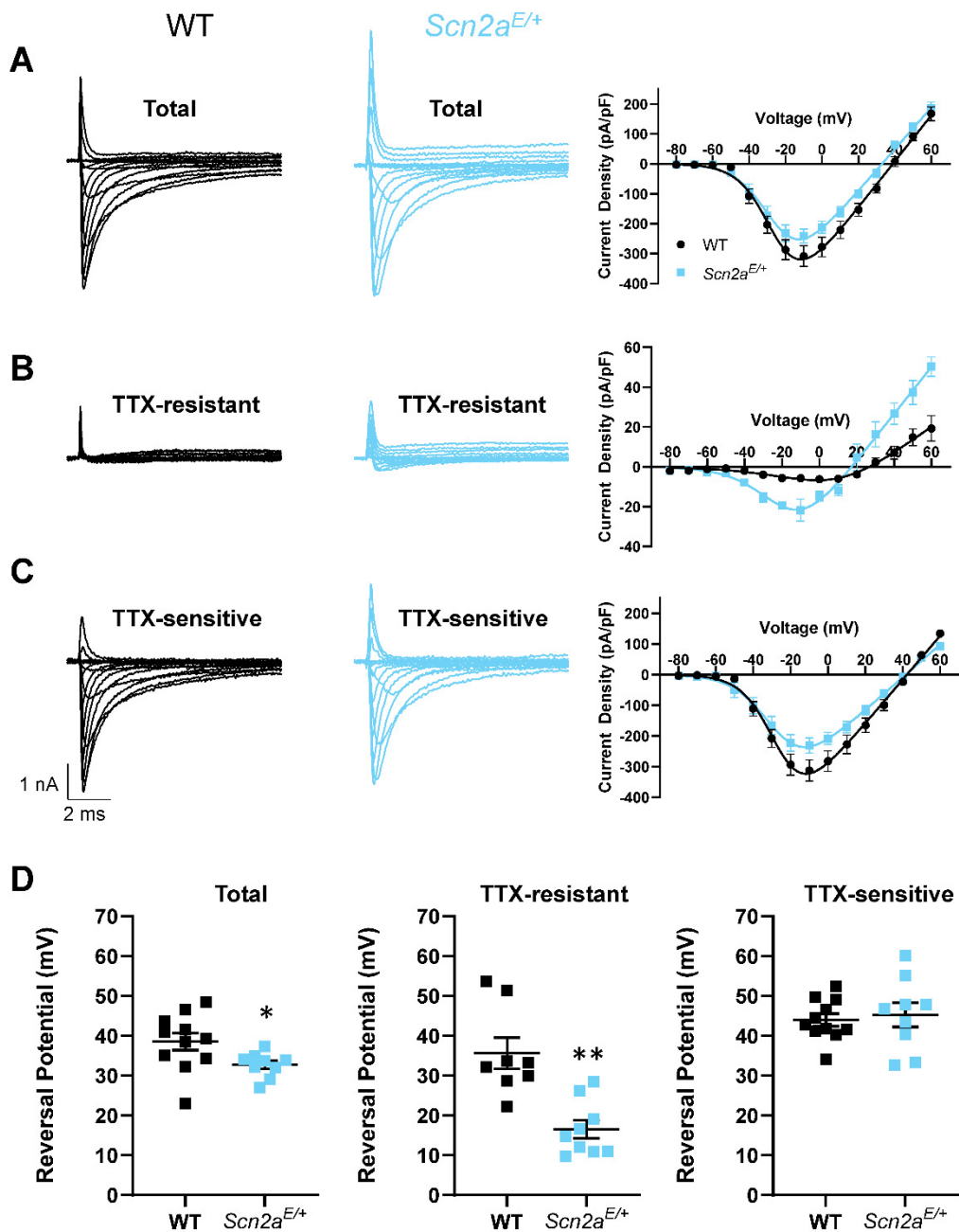
Supplemental Materials

**Cellular and behavioral effects of altered Nav1.2 sodium channel ion permeability in *Scn2a*<sup>K1422E</sup> mice**

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**Supplemental Figure S1.** Expression of voltage gated-sodium channel paralogs in *Scn2a<sup>K1422E</sup>* mice. **A)** Relative expression of whole brain Nav1.1 protein in WT and *Scn2a<sup>E/+</sup>* mice assayed by immunoblotting. Quantification is expressed as a ratio of Nav1.1 immunofluorescence relative to GRP75/Mortalin (normalized to WT average). There was no difference in protein expression between genotypes ( $p=0.9624$ , Student's t-test;  $n=7$  mice per genotype). **B)** Representative immunoblot. Bands corresponding to Nav1.1 (MW: 260 kDa) are visualized in green (Alexa Fluor 790) while bands corresponding to GRP75 (MW: 75 kDa) are visualized in red (Alexa Fluor 680). **C)** Relative expression of whole brain Nav1.6 protein in WT and *Scn2a<sup>E/+</sup>* mice assayed by immunoblotting. Quantification is expressed as a ratio of Nav1.6 immunofluorescence relative to GRP75/Mortalin (normalized to WT average). There was no difference in protein expression between genotypes ( $p=0.2565$ , Student's t-test;  $n=7$  mice per genotype). **D)** Representative immunoblot. Bands corresponding to Nav1.6 (MW: 260 kDa) are visualized in green (Alexa Fluor 790) while bands corresponding to GRP75 (MW: 75 kDa) are visualized in red (Alexa Fluor 680). For both **A** and **C**, circles represent samples from individual mice, horizontal lines represent mean, and error bars represent SEM.



**Supplemental Figure S2.** Whole-cell sodium currents of acutely isolated hippocampal pyramidal neurons. Representative whole-cell sodium currents and current voltage relationships of **A**) total sodium current, **B**) TTX-resistant currents, and **C**) TTX-sensitive currents from acutely dissociated hippocampal pyramidal neurons from WT and *Scn2a<sup>E/+</sup>* mice, **D**) Sodium reversal potential of total sodium current (left,  $p=0.0364$ ), TTX-resistant current (middle,  $p=0.0006$ ), and TTX-sensitive currents (right,  $p=0.6964$ ). All data are plotted as mean  $\pm$  SEM of  $n=8-11$  cells.