

SUPPLEMENTAL FIGURES FOR:

***Scn2a* loss-of-function mutation decreases excitatory synaptic input and causes autism-associated behaviors**

Running title: *Scn2a* mouse model shows autism-associated behaviors

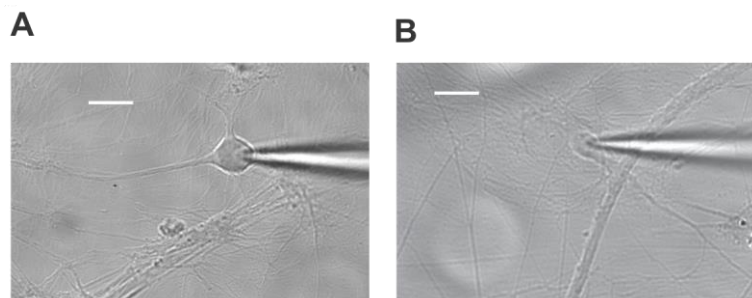
Hong-Gang Wang¹, Charlotte C. Bavley^{2,3}, Anfei Li², Rebecca M. Jones^{4,5,6}, Jonathan Hackett³, Yared Bayleyen¹, Francis S. Lee^{2,5,6}, Anjali M. Rajadhyaksha^{2,3,5}, Geoffrey S. Pitt^{1,5}

nt 5671 AAGGTCTCTTATGAGCCCATTA**CCACCACTCT**GAAAGCGCAAACAAGAGGAGGTGTCTGCT
aa 1891 K V S Y E P I **T T T L K R K Q E E V S A**
N.....E A Q T R G G V C

nt 5731 ATTGTCATCCAGCGAGCTTACAGACGCTATCTTCTGAAACAGAAAGTTAAG...
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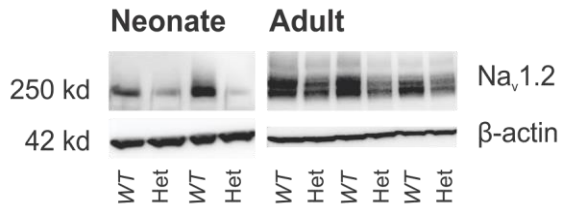
2

Supplementary Figure 2



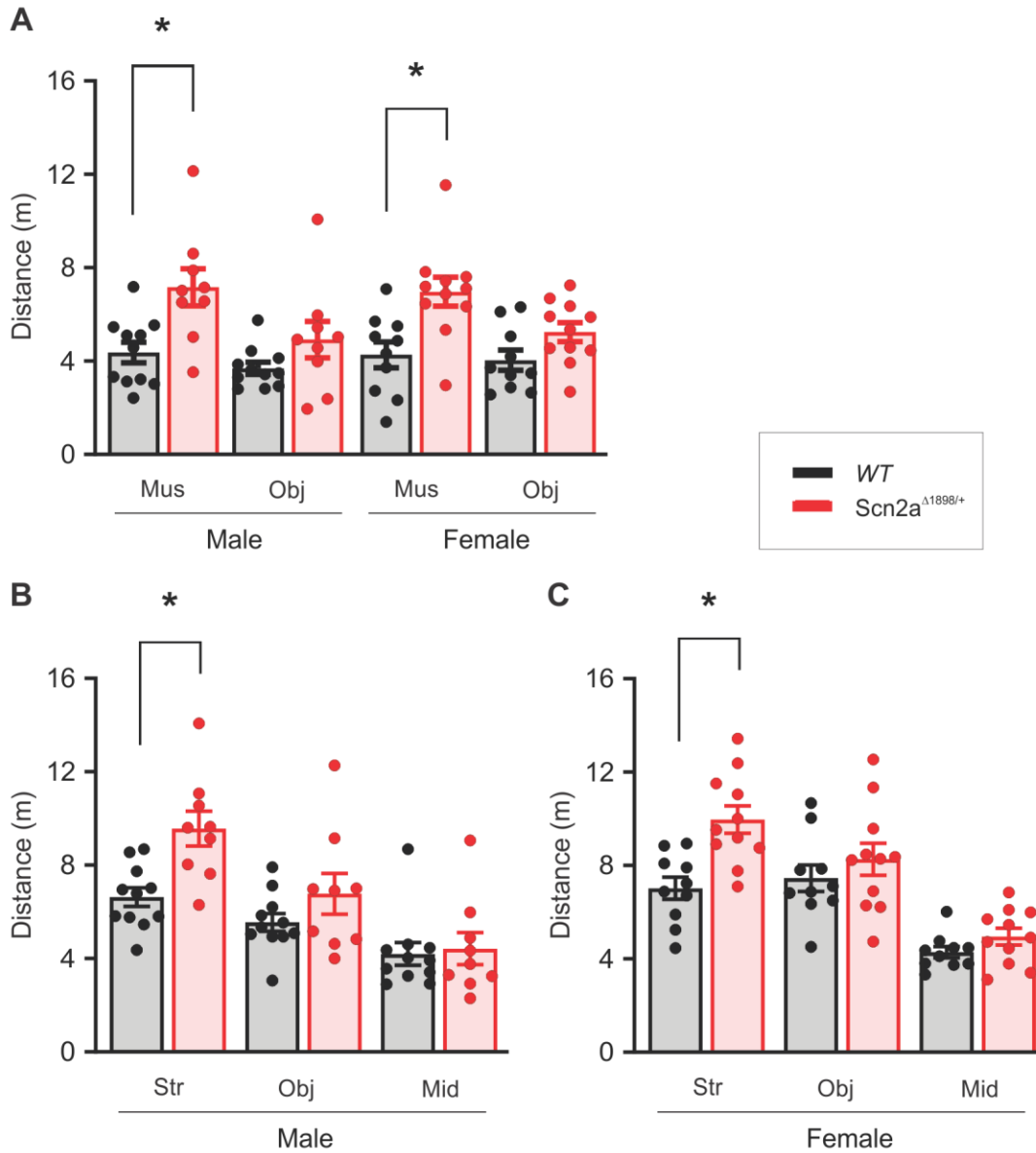
Supp. Figure 2. Pyramidal (A) and non-pyramidal (B) shape neurons in neuronal culture. Scale bar, 20 μm .

Supplementary Figure 3



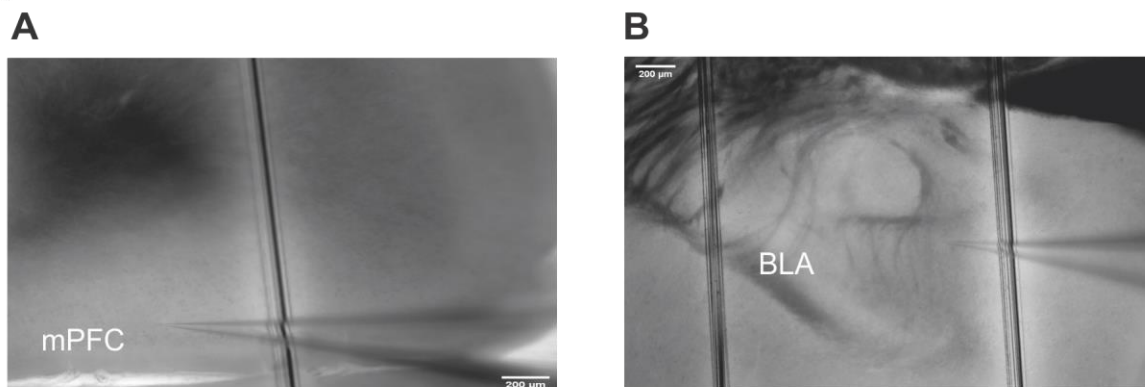
Supp. Figure 3. Cortices from *Scn2a*^{Δ1898/+} mice have less Nav_v1.2 voltage-gated Na⁺ channels. Immunoblot for Nav1.2 Na⁺ channel (anti-Nav1.2, recognizes an epitope in the I-II intracellular loop) in brain cortex lysates from P6 or adult (~5 month) *WT* or *Scn2a*^{Δ1898/+} (Het) mice. Molecular weights are shown on the left. For both blots, β-actin serves as a loading control.

Supplementary Figure 4



Supp. Figure 4. $Scn2a^{\Delta1898/+}$ mice traveled more in the zone around novel mouse and chamber with novel mouse. **A**, Distance traveled in the zone around novel mouse (Mus) or object (Obj) (male: WT, n=11 and $Scn2a^{\Delta1898/+}$, n=9; female: WT, n=10 and $Scn2a^{\Delta1898/+}$, n=11). *, unpaired *t* test, *t* (18)=3.214, *p*=0.0048 for male; *t* (19)= 3.248, *p*=0.0042 for female. **B**, **C**, Distance traveled in the stranger (Str, with novel mouse), object (Obj, with object) and middle (Mid, between stranger and object) chambers. *, unpaired *t* test, *t* (18)=3.618, *p*=0.002 for male; *t* (19)= 3.861, *p*=0.001 for female.

Supplementary Figure 5



Supp. Figure 5. Micrographs showing brain slices with inclusion of mPFC (A) or BLA (B) from which sEPSCs and sIPSCs were recorded in pyramidal neurons. Scale bar, 200 μm .

Fig. 1E

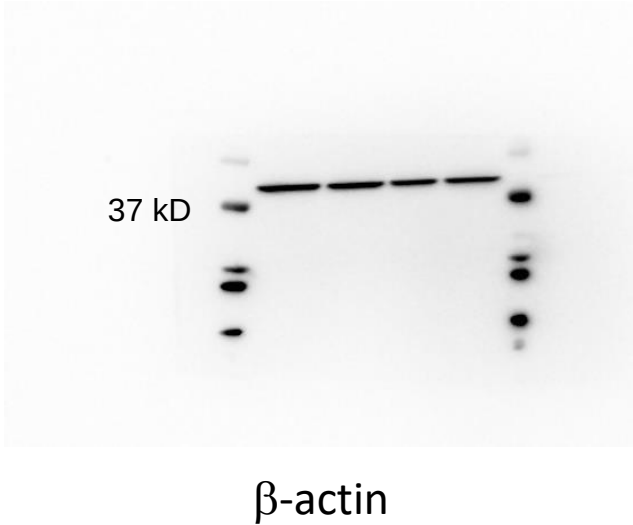
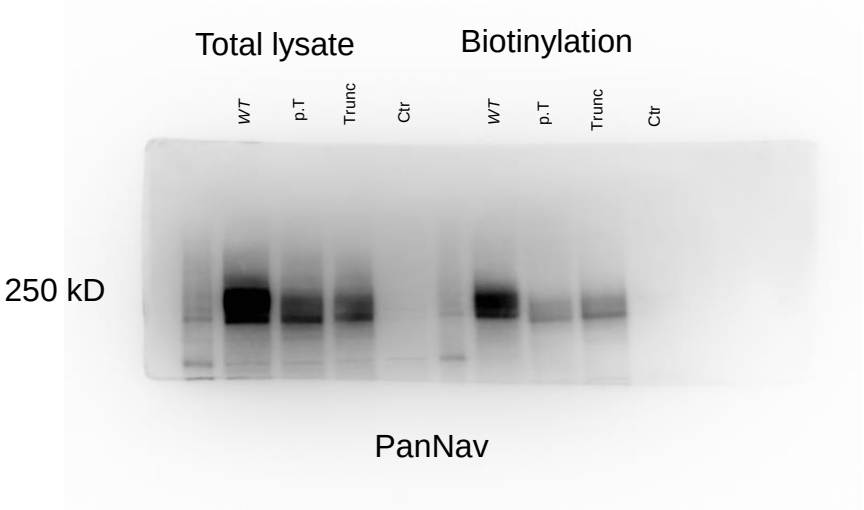
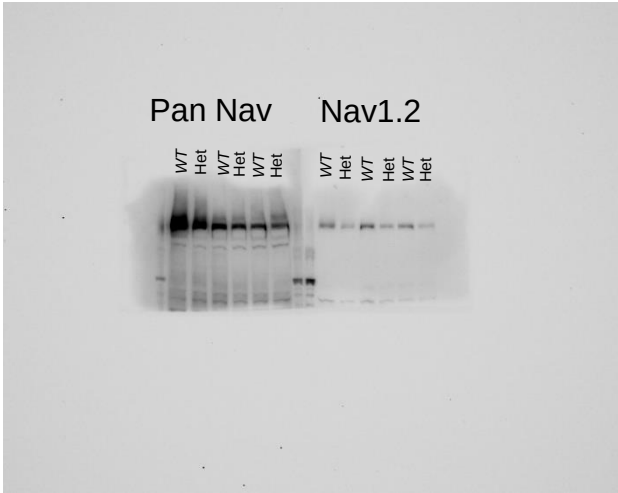


Fig. 2A

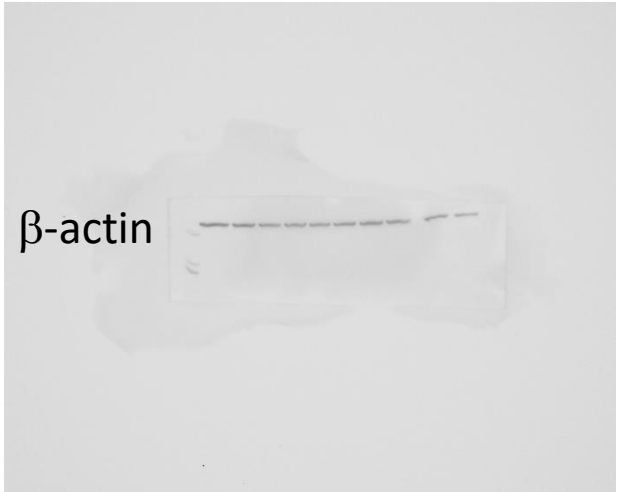
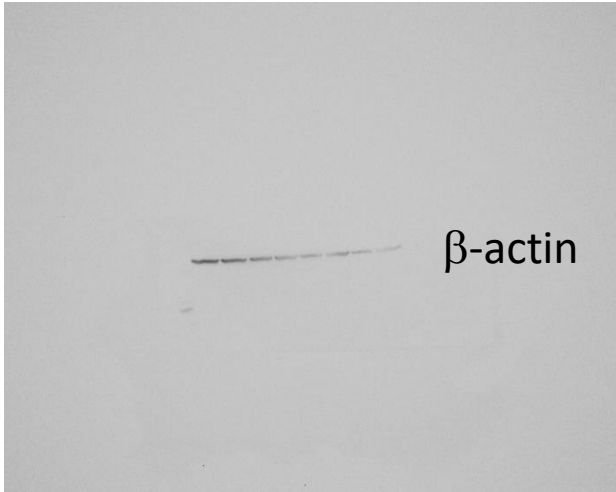
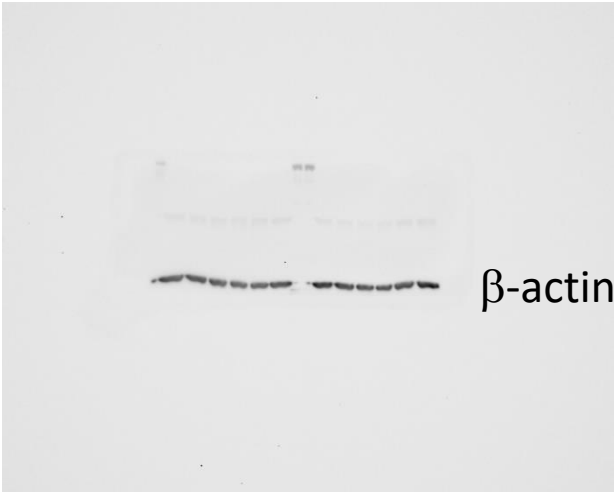
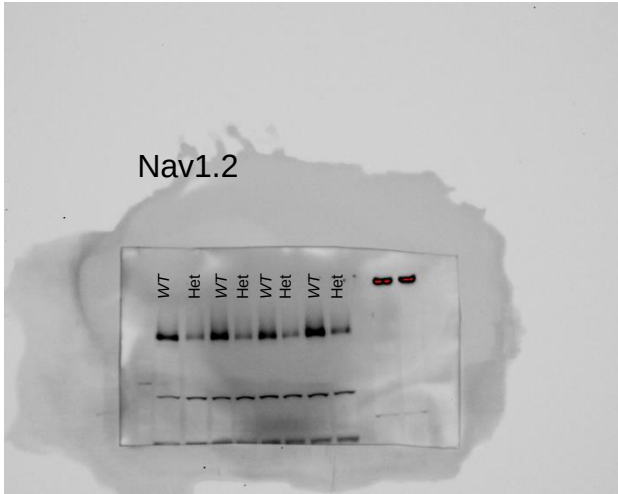
P6



Adult



Adult



Supplemental Fig. 3

