The NMDA receptor GluN2C subunit controls cortical excitatory-inhibitory balance, neuronal oscillations and cognitive function

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Running title: GluN2C subunit regulates cortical E/I balance

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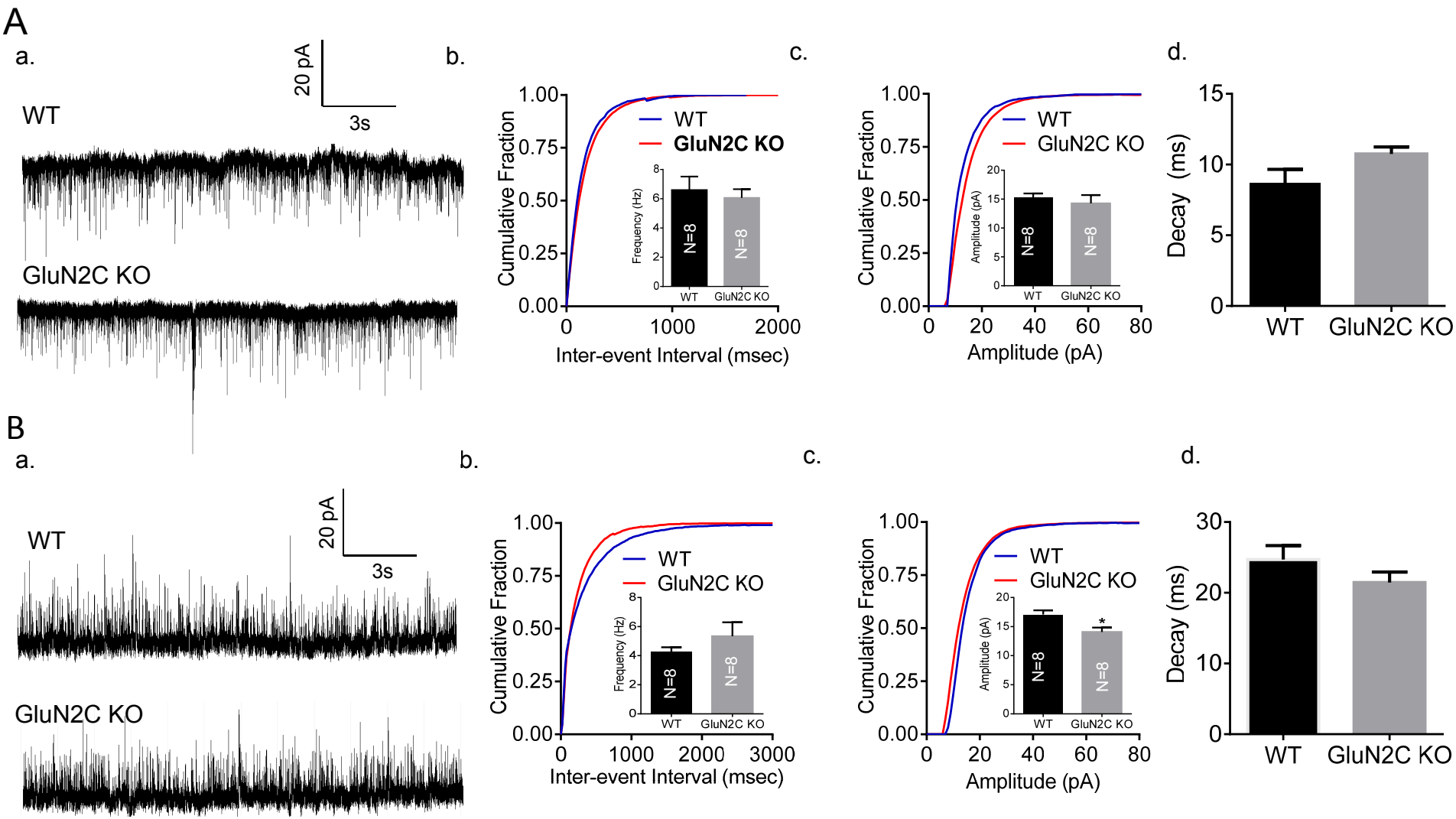
Supplementary figure 1. (A) No significant differences in the frequency, amplitude or decay of sEPSCs of layer V pyramidal neurons in the mPFC were observed between WT and GluN2C KO mice (n=8 cells from 3-4 mice/genotype). Representative traces **(a)**, cumulative probability plots for inter-event interval and amplitude and histograms for frequency and amplitude in inset **(b, c)** and histograms for decay **(d)**. **(B)** No significant differences in the frequency or decay and a modest reduction in amplitude of sIPSCs of layer V pyramidal neurons in the mPFC in GluN2C KO mice (n=8 cells from 3-4 mice/genotype). Representative traces **(a)**, Cumulative fraction plots for inter-event intervals and amplitude and histograms for frequency and amplitude in the inset **(b, c)** and decay kinetics **(c, f)**. Only amplitude was modestly but significantly lower in GluN2C KO sIPSC (unpaired t-test with Welch's correction, *P = 0.0110).

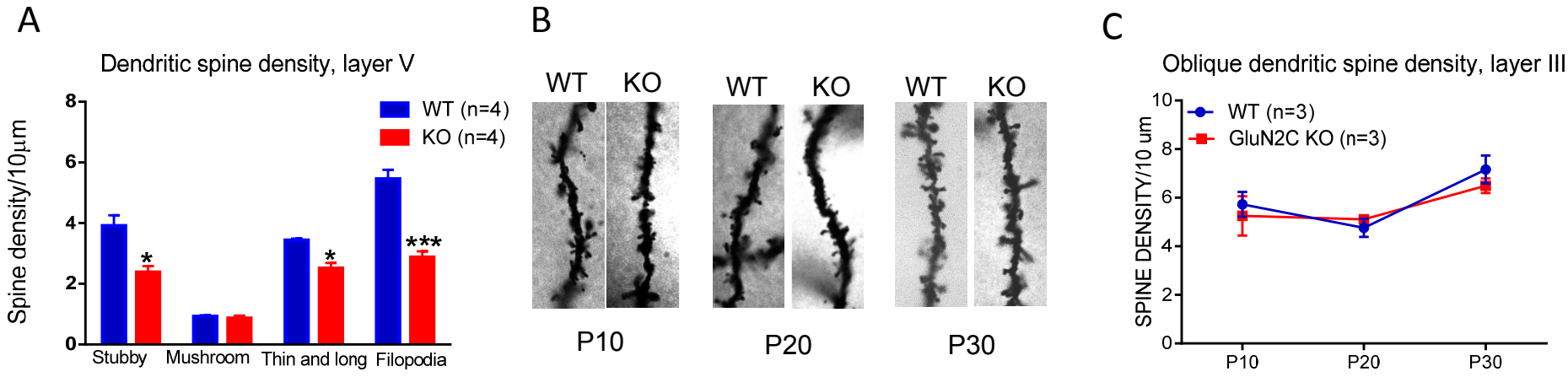
Supplementary figure 2: Changes in dendritic spine density in different layers, and for different spine types in the mPFC of GluN2C KO mice. (A) Dendritic spine density was significantly reduced in layer V of the mPFC in GluN2C KO mice; this reduction was observed for all spine types (*P = 0.01295, stubby and P = 0.0101 thin and long spines and ***P = 0.0007 for filopodia-like spines, unpaired t-test with Welch's correction, n = 4/genotype), except for mushroom spines. **(B, C)** No significant difference in the oblique apical dendritic spine density was observed between WT and GluN2C KO mice at P10, P20 or P30. **(B)** Representative images of Golgi-stained sections and **(C)** quantitative results.

Supplementary figure 3: No change in somatostatin labeling in GluN2C KO. The number of somatostatin-positive cells in the mPFC of GluN2C KO was not different from wildtype.

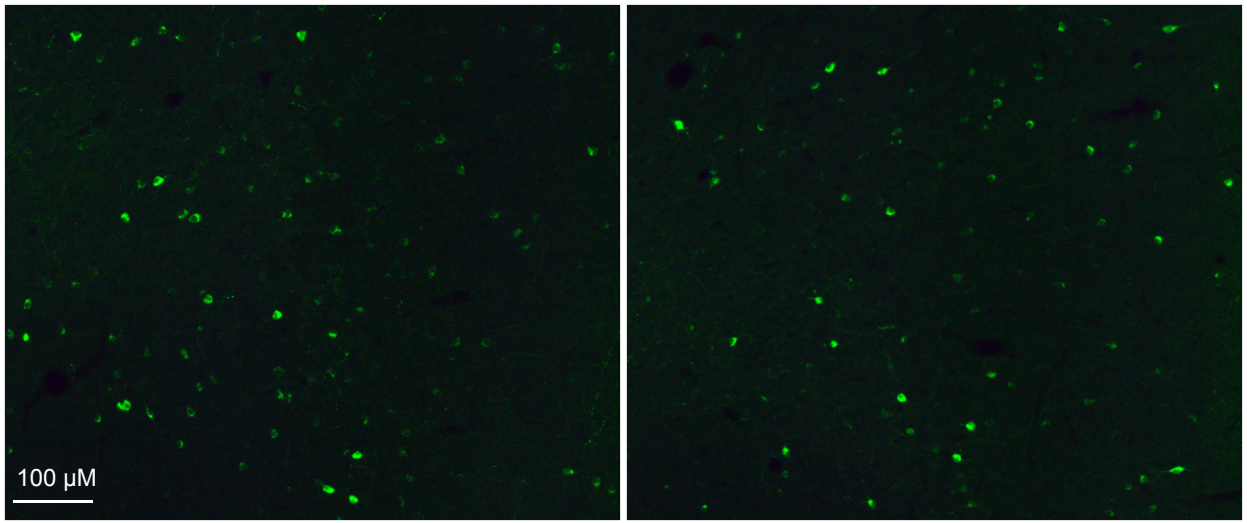
Supplementary figure 1



Supplementary figure 2



Supplementary figure 3



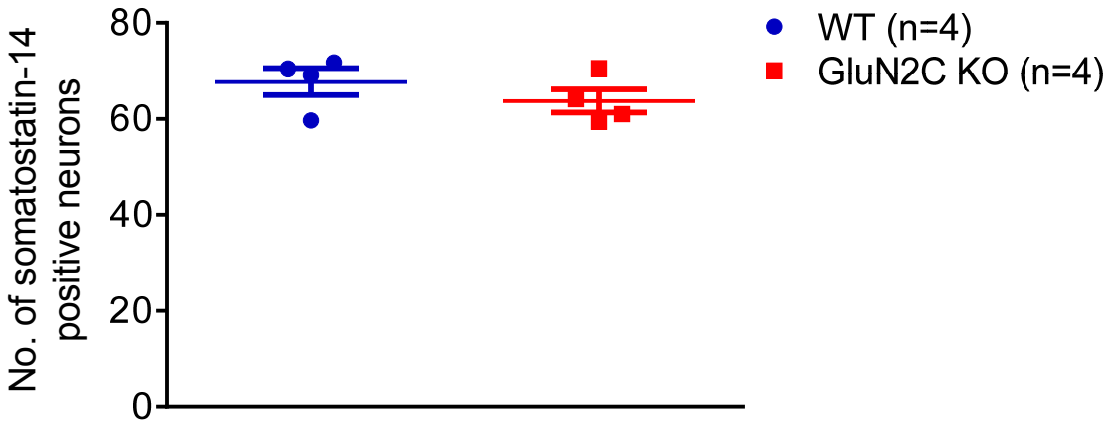


Figure 2A

Dendritic spine data in mPFC of wild type mice

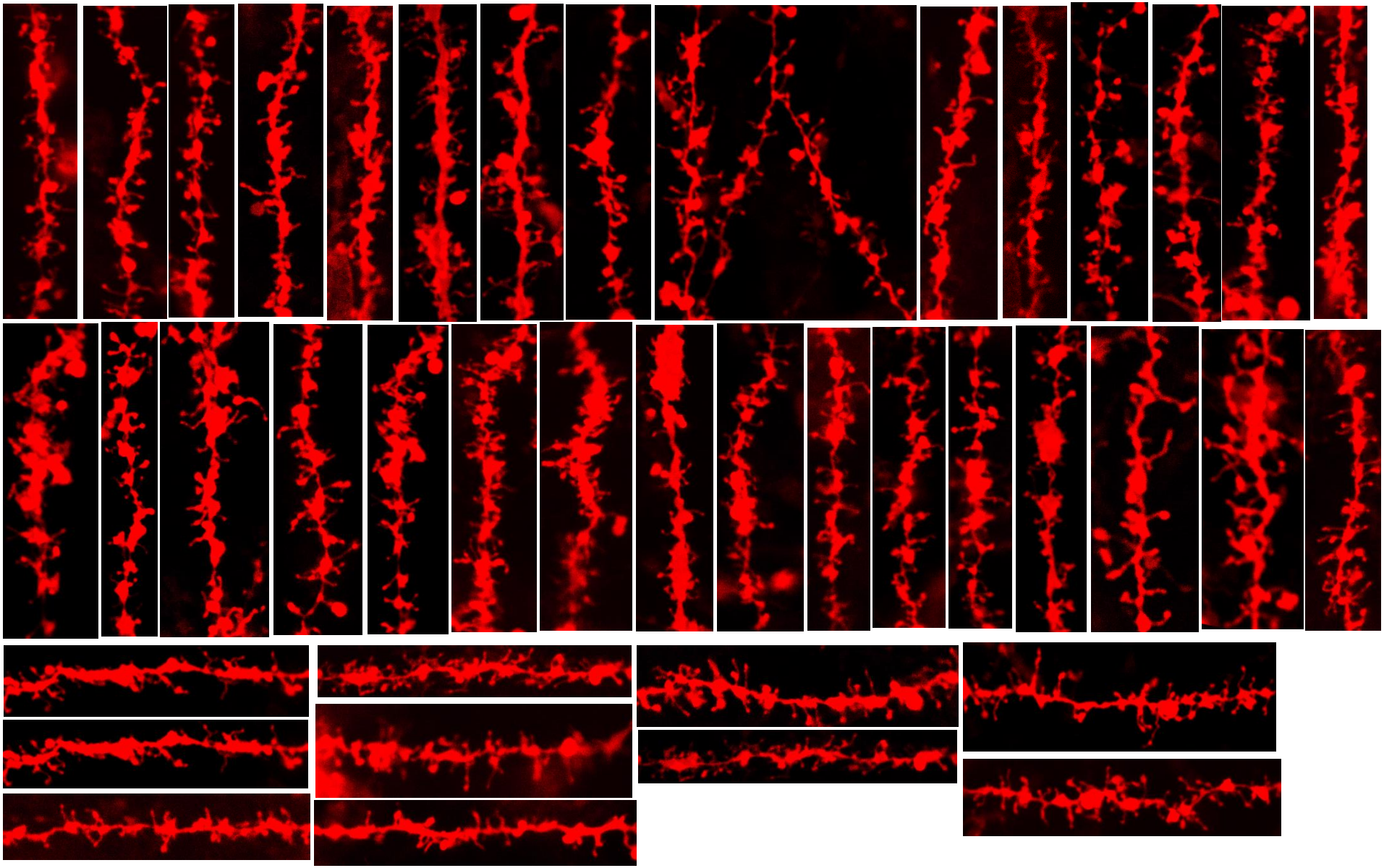


Figure 2A

Dendritic spine in GluN2C KO mice

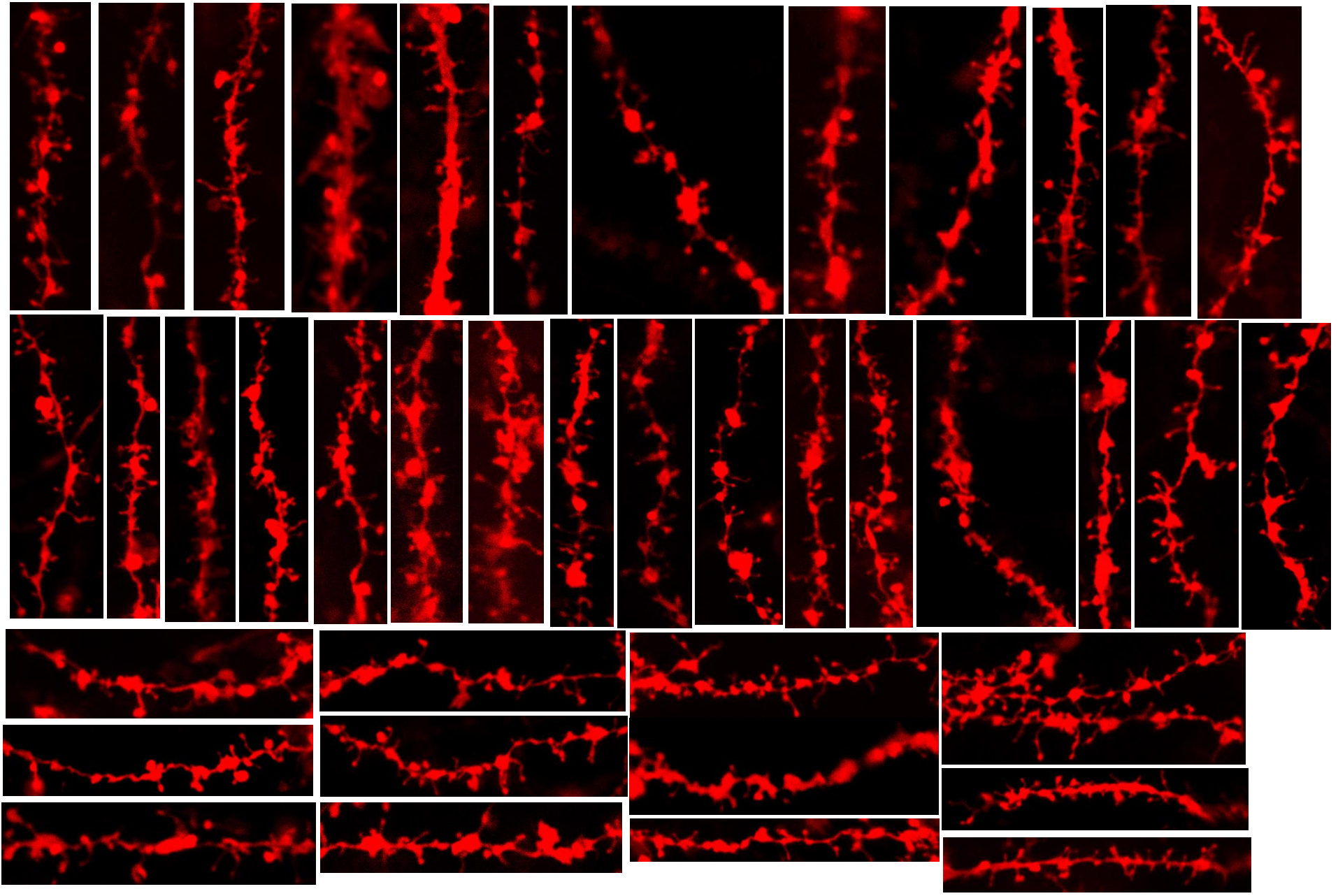


Figure 3A

WT (vGluT1-VGAT)

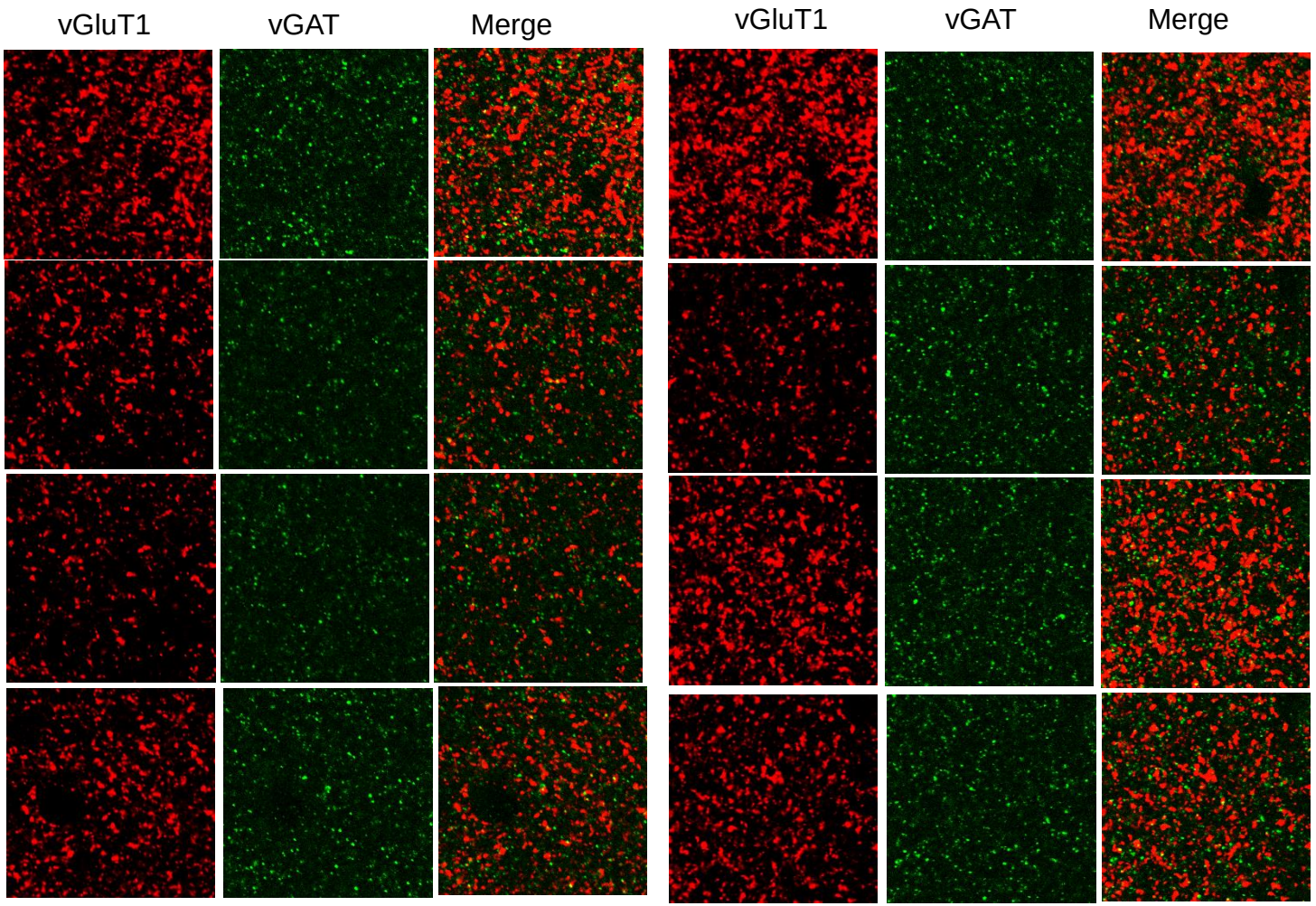


Figure 3A

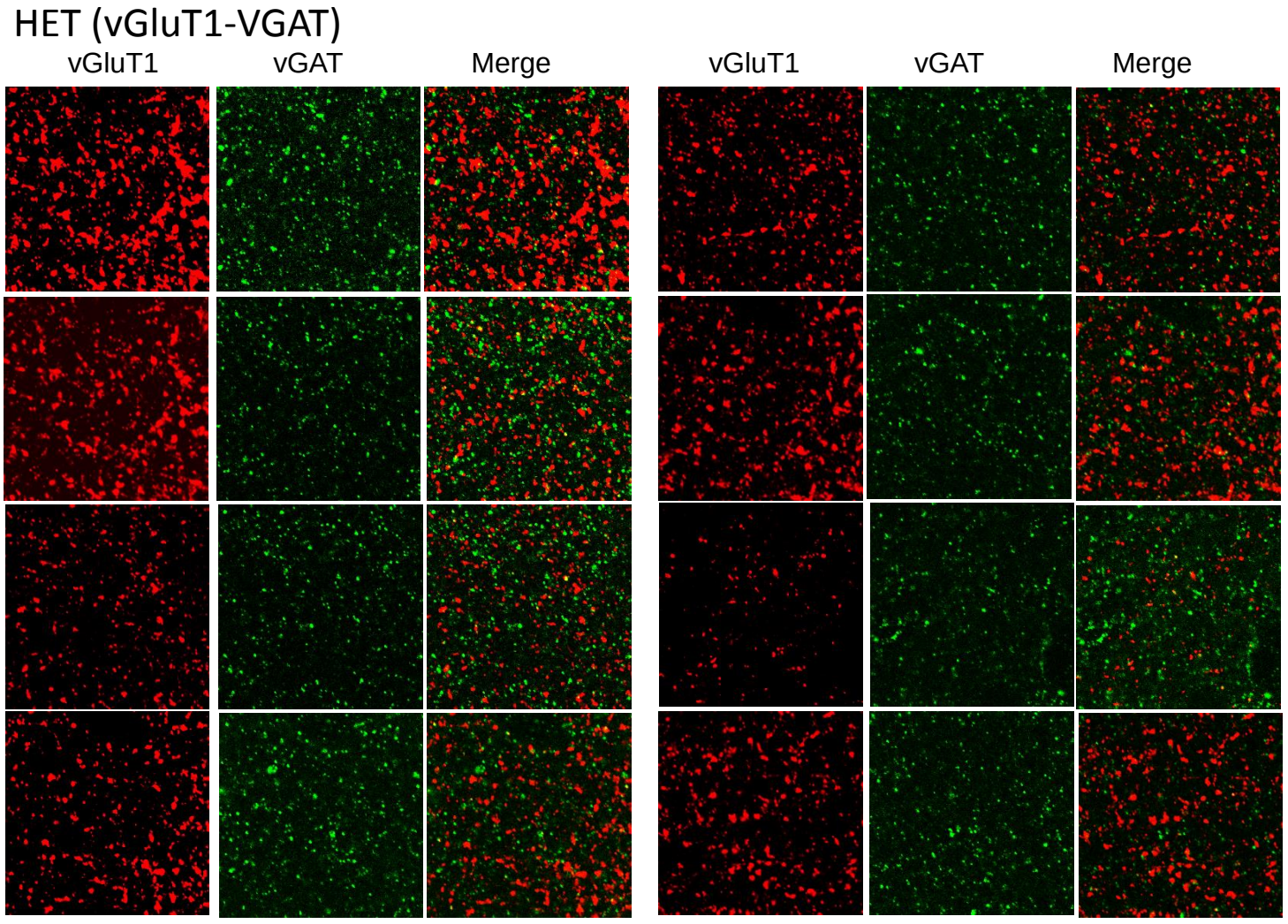


Figure 3A

GluN2C KO (vGluT1-VGAT)

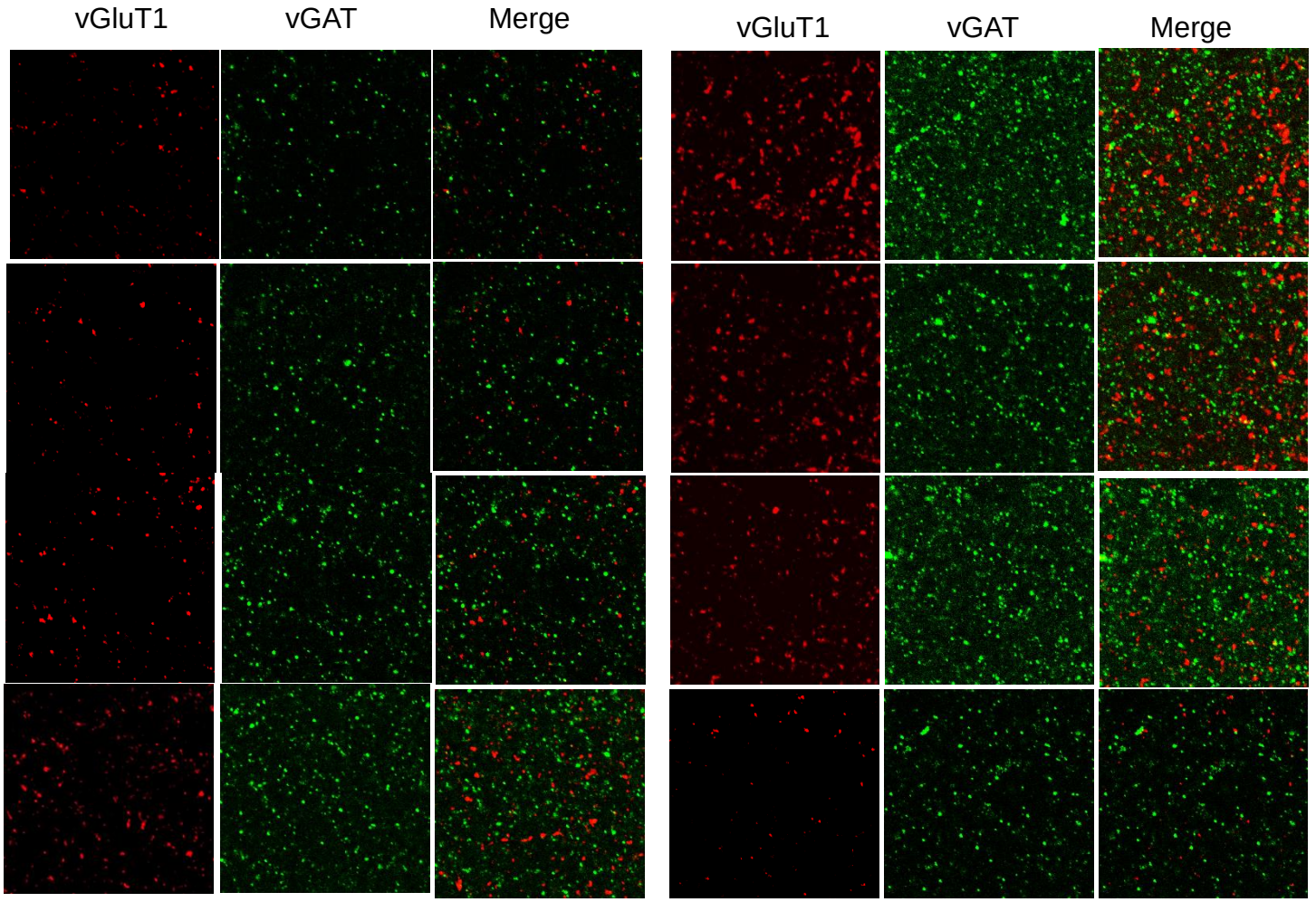


Figure 3C

PV-WT

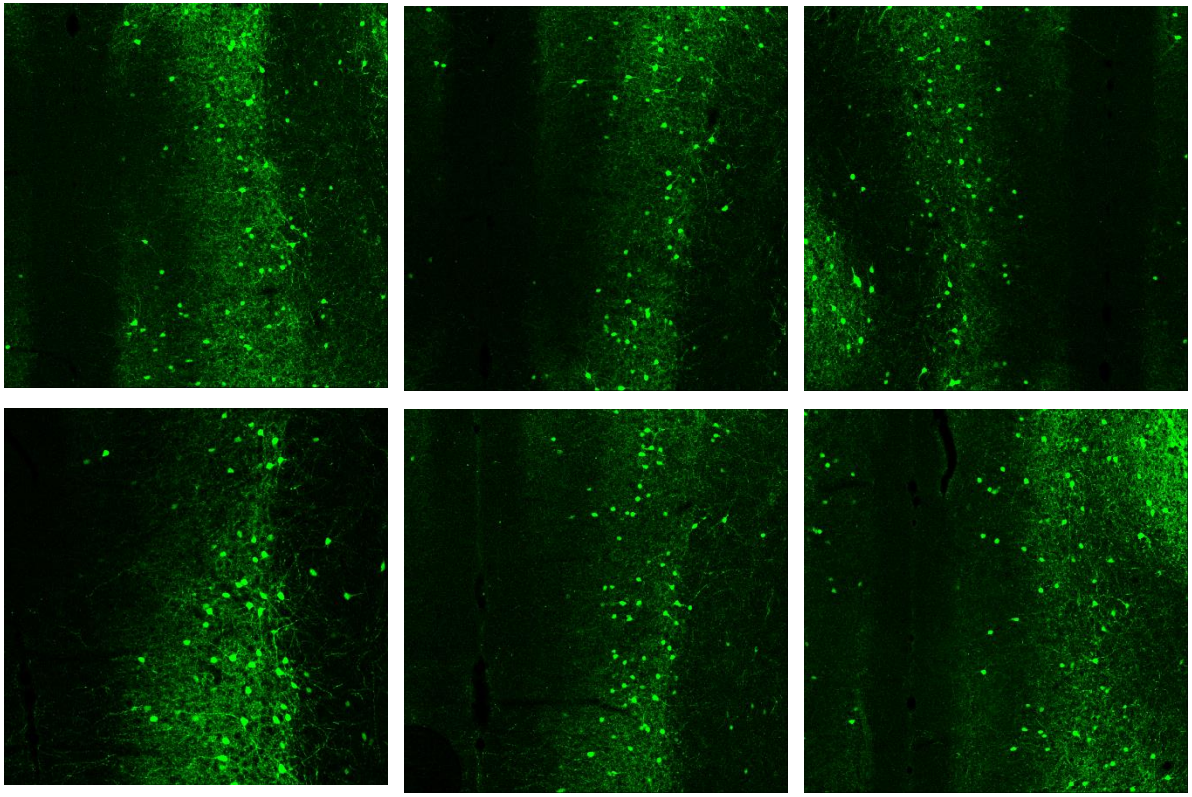


Figure 3C

PV-HET

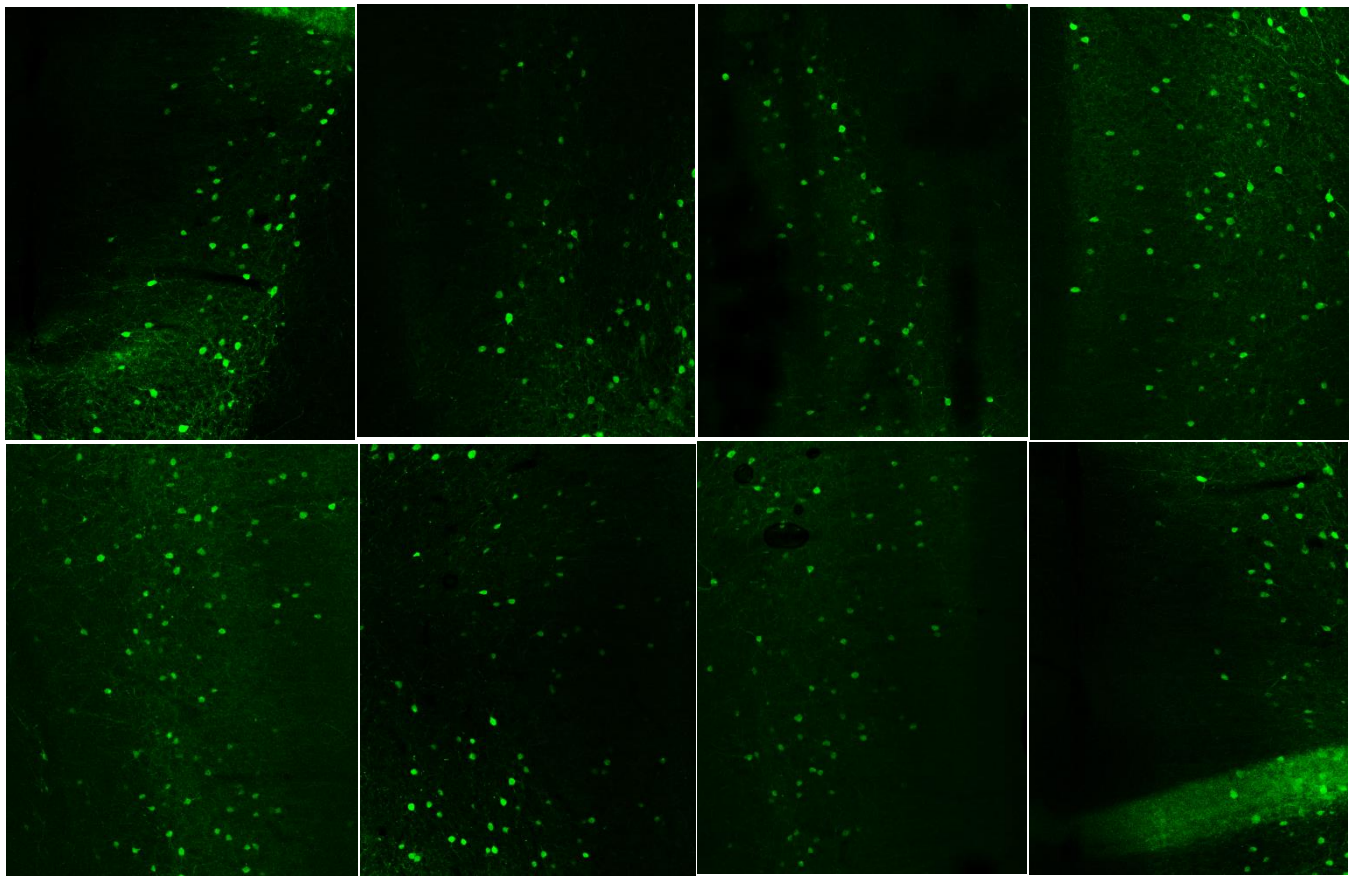


Figure 3C

PV-GluN2C KO

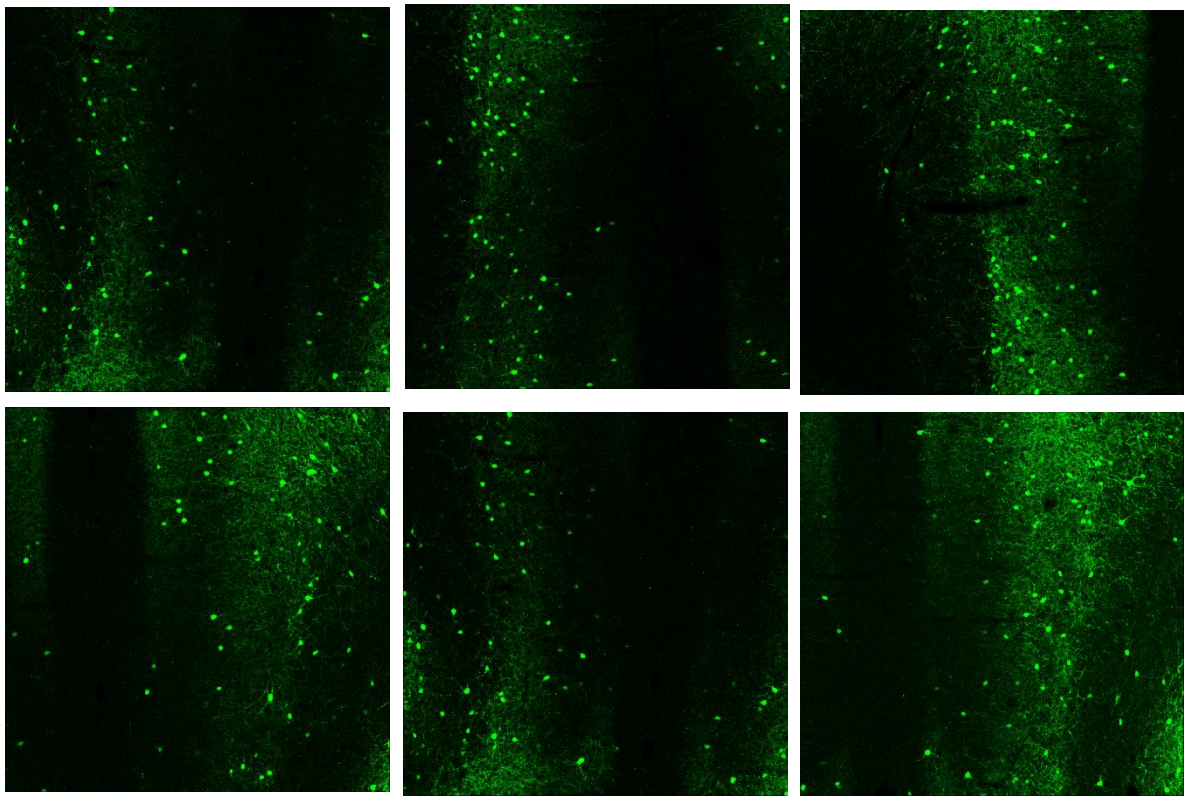


Figure 3E

WT-NeuN and GA67 staining

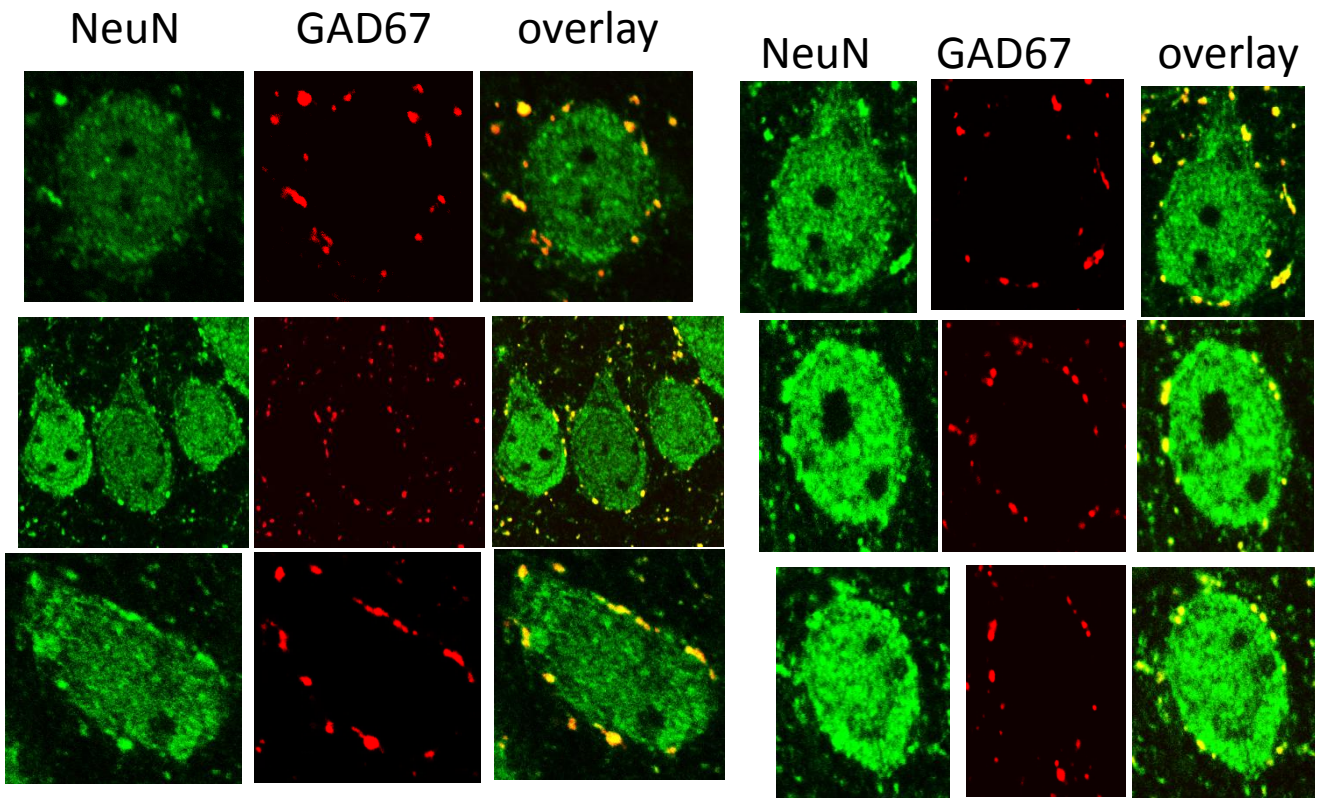


Figure 3E

GluN2C HET-NeuN and GA67 staining

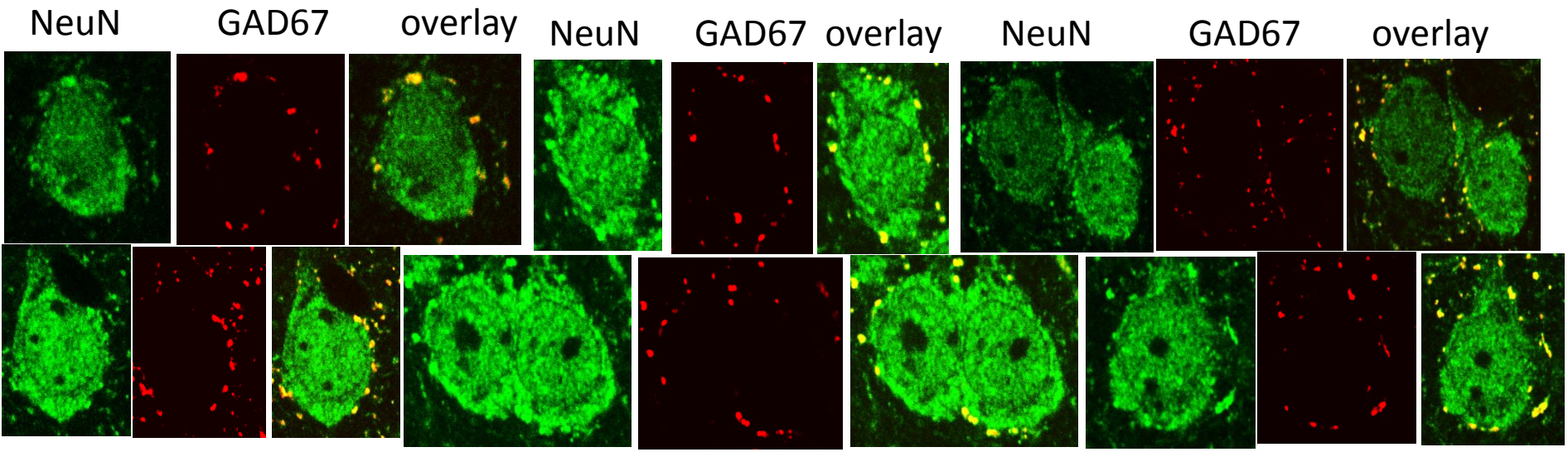


Figure 3E

GluN2C KO- NeuN and GA67 staining