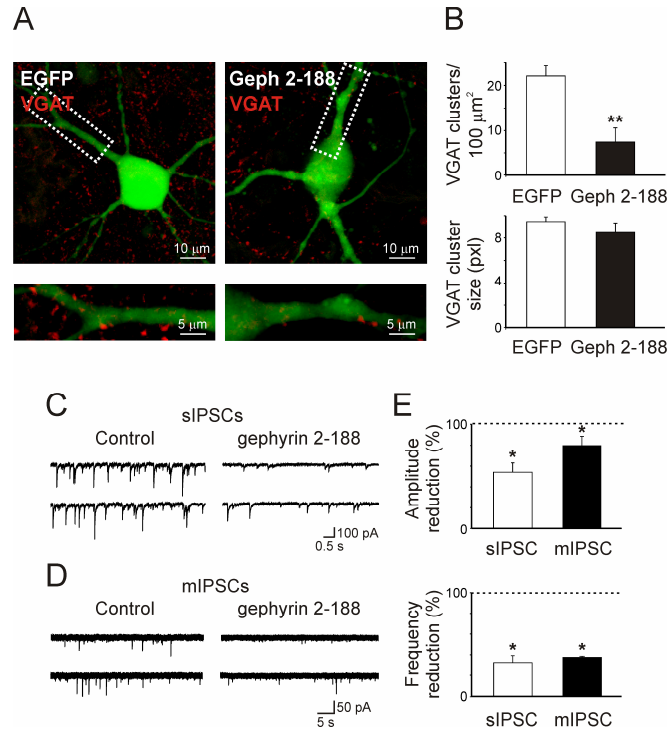
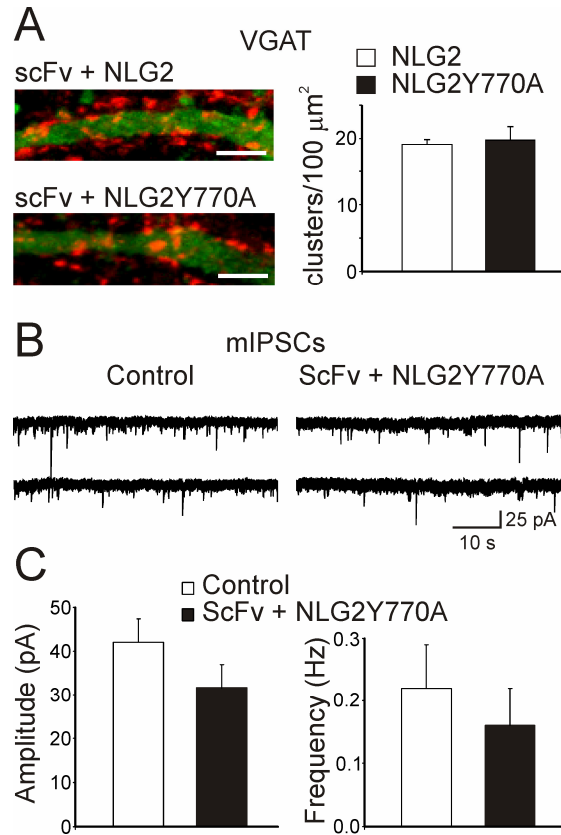


## Supplementary Figure 1



**Gephyrin 2-188 reduces GABAergic innervation.** *A*. Neurons were transfected with EGFP (left, n=8) or with a dominant-negative construct fused to EGFP (Geph 2-188; n=7; right) and immunostained for VGAT (red). Bottom panels are magnifications of the white boxes marked on top. *B*. Quantification of VGAT cluster density (left) and cluster size (right). Note the significant reduction in the density of VGAT clusters. \*\*p<0.01 (for comparison with scFv-gephyrin see Figure 2 in Marchionni *et al*, 2009). *C*. Samples of spontaneous IPSCs recorded from controls and gephyrin 2-188 transfected neurons at a holding potential of -70 mV in the presence of D-AP5 (50  $\mu$ M) and DNQX (20  $\mu$ M). *D*. Samples of miniature IPSCs recorded from controls and gephyrin 2-188 transfected neurons in the presence of tetrodotoxin (1  $\mu$ M). *E*. Each column represents the reduction in amplitude (up) and in frequency (down) of sIPSC (white; n=9) and mIPSCs (black; n=7) obtained from gephyrin 2-188 transfected neurons and expressed as percentage of controls (dashed lines). \* p<0.05.

## Supplementary Figure 2



**Rescue of GABAergic innervation by NLG2 over expression in gephyrin-deprived neurons is only partially dependent on gephyrin.** **A.** On the left, representative images of neurons co-transfected with scFv-gephyrin/NLG2 (top) or scFv-gephyrin/NLG2Y770A (bottom). Neurons were immunostained for VGAT (red). Scale bar 5 $\mu\text{m}$ . On the right, quantification of VGAT cluster densities/100  $\mu\text{m}^2$  in cells co-transfected with scFv-gephyrin/NLG2 (white) or scFv-gephyrin/NLG2Y770A (black) **B.** Samples of spontaneous mIPSCs recorded from cells co-transfected with scFv-gephyrin/NLG2Y770A or neighboring non transfected cells (Control) at a holding potential of -70 mV in the presence of TTX (1  $\mu\text{M}$ ), DNQX (20  $\mu\text{M}$ ) and D-AP5 (50  $\mu\text{M}$ ). **C.** Each column represents the mean amplitude (left) and frequency (right) of mIPSC from control (white; n=7) and from scFv-gephyrin/NLG2Y770A transfected cells (black; n=6).