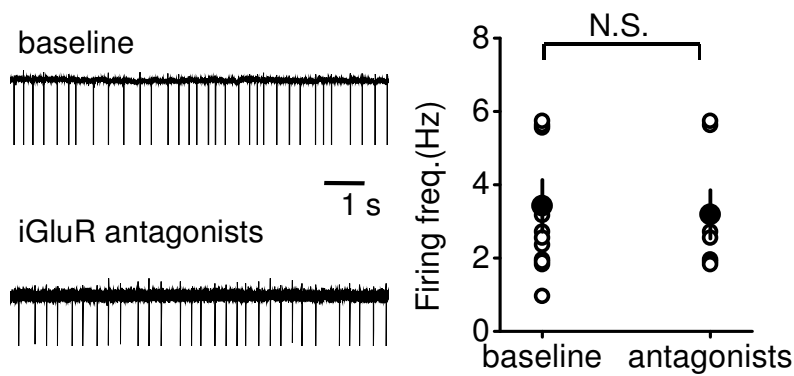


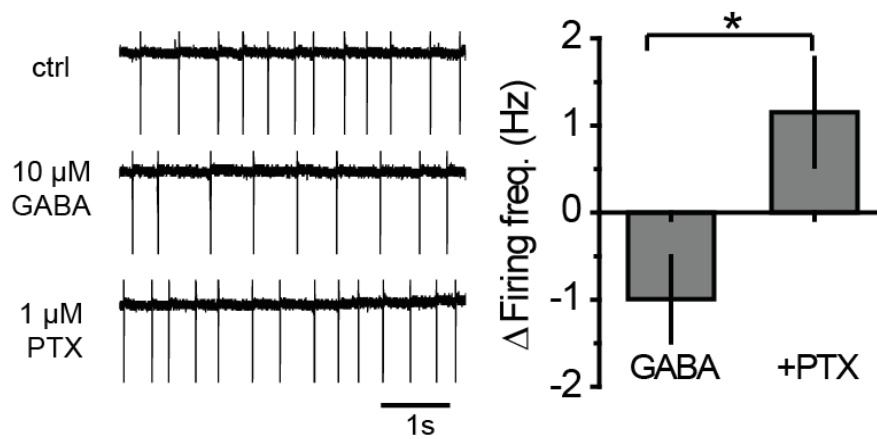
Supplementary information “Tonic excitation or inhibition is set by GABA_A conductance”

Inseon Song, Leonid Savtchenko, and Alexey Semyanov



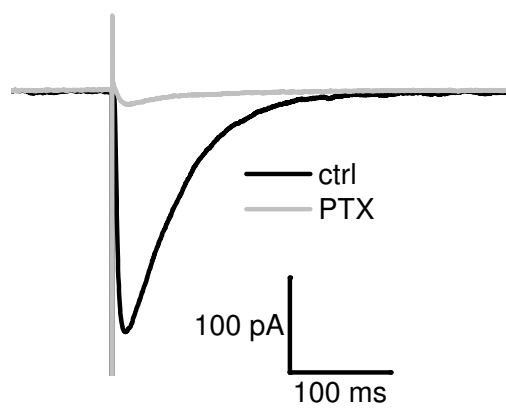
Supplementary Figure S1. Hippocampal CA1 *str. radiatum* interneurons fire action potentials in the absence of synaptic excitation.

Left panel: Interneuron firing rate at baseline conditions (without antagonists added) and in the presence of ionotropic glutamate receptor (iGluR) antagonists: 25 μ M APV and 25 μ M NBQX. *Right panel:* Summary data showing individual frequencies ($n=11$ for baseline, filled circles; $n=7$ for antagonists, empty circles) and mean frequencies (black circles). Error bars – SEM, N.S. $P>0.05$, unpaired t -test



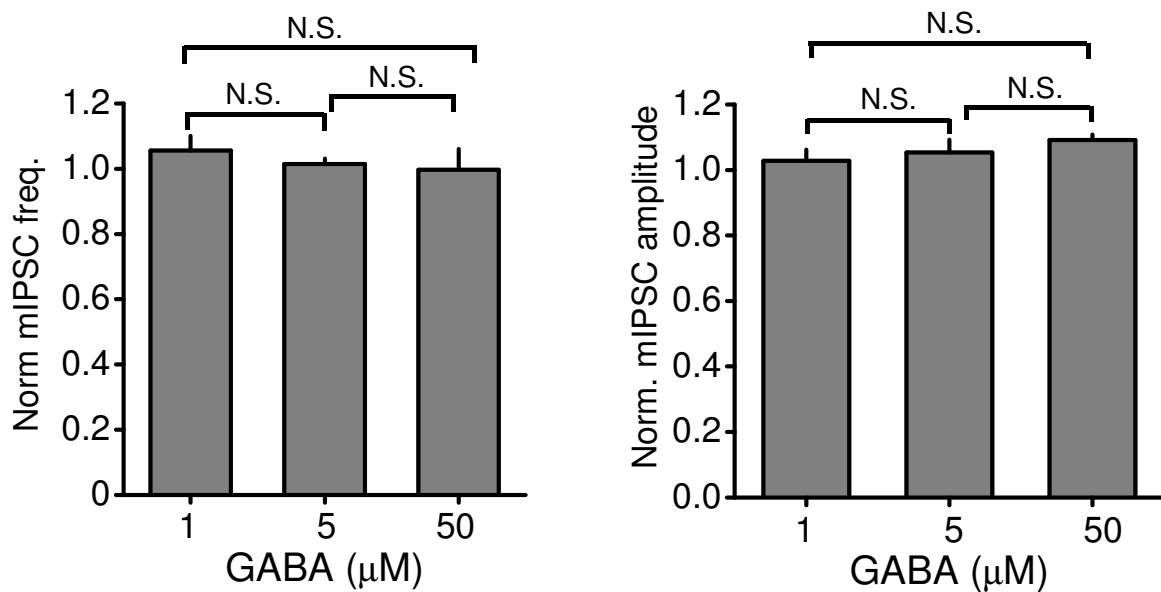
Supplementary Figure S2. Low dose picrotoxin (1 μM) increases firing rate of interneurons in the presence of 10 μM GABA.

Left panel: Representative interneuron firing recorded in cell-attached mode in control (ctrl) and in the presence of 10 μM GABA and then after sequential application of 1 μM picrotoxin. *Right panel:* Summary data of the change in the interneuron firing rate induced by GABA and picrotoxin relative to the control (n=6). Error bars – SEM, * $P=0.018$ paired t -test.



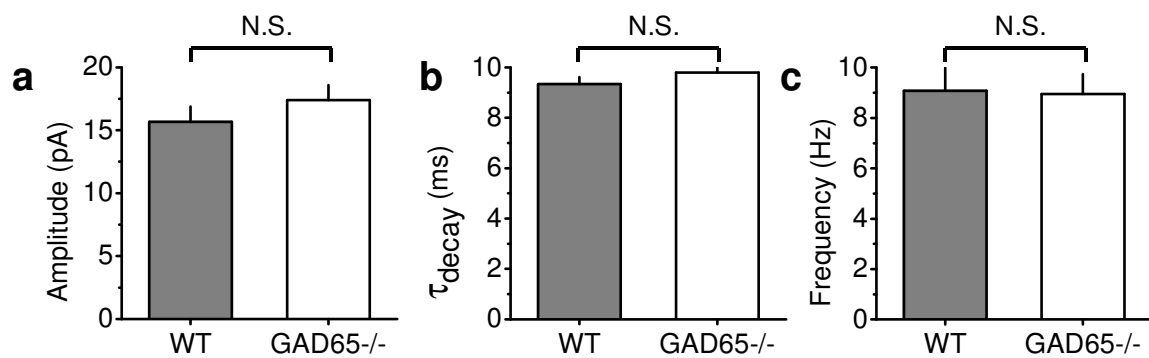
Supplementary Figure S3. Sample of GABA_A mediated synaptic current recorded in CA1 *str.radiatum* interneuron.

Representative sample of PSC recorded in the presence of glutamate ionotropic and GABA_B receptor antagonists (ctrl, black trace). The PSC was almost completely blocked by 100 μ M picrotoxin (PTX, grey trace).



Supplementary Figure S4. Exogenous GABA did not change the frequency and the amplitude of mIPSCs in pyramidal neurons.

(a) Summary of mIPSC frequency recorded in 1, 5, and 50 μM GABA and normalised to the mIPSC frequency before drug application (n=4). (b) Summary of mean mIPSC amplitudes recorded in 1, 5, and 50 μM GABA and normalised to the mIPSC amplitude before drug application (n=4). Error bars – SEM, N.S. $P > 0.05$ paired t -test.



Supplementary Figure S5. mIPSCs are not different in WT and GAD65^{-/-} interneurons.

Summary histograms of the amplitude (**a**), decay time constant (τ_{decay}) (**b**), and frequency (**c**) of mIPSCs recorded in WT and GAD65^{-/-} interneurons in the presence of 1 μ M tetrodotoxin. No significant difference was observed between the sIPSCs of WT (n=18) and GAD65^{-/-} (n=19). Error bars – SEM, N.S. $P > 0.05$ unpaired *t*-test.