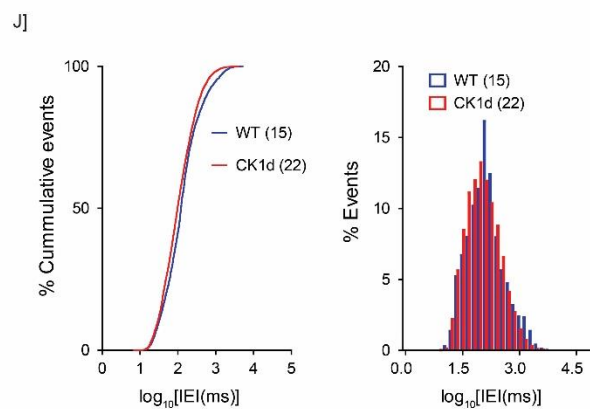
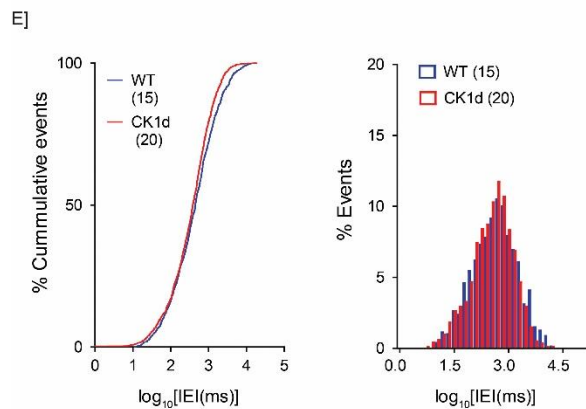
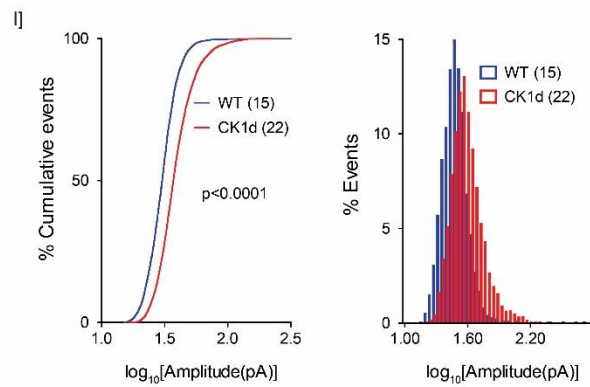
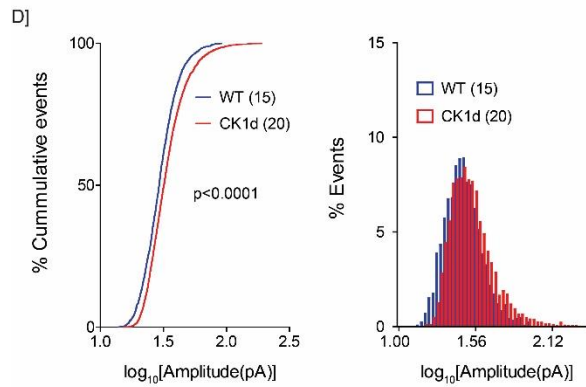
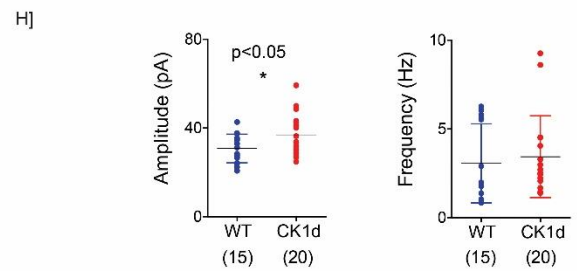
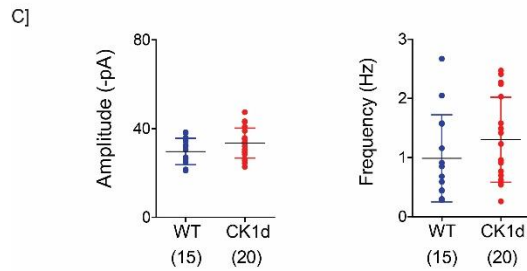
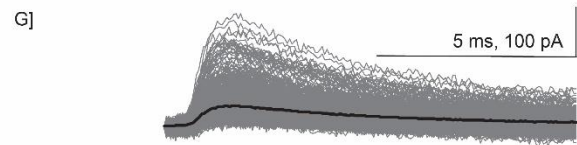
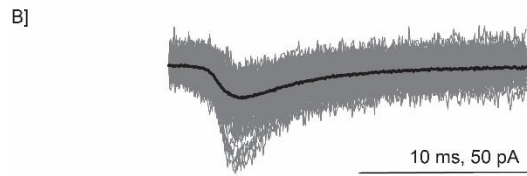
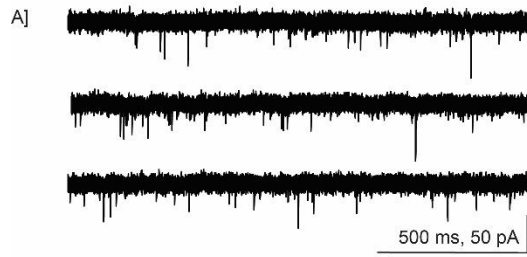
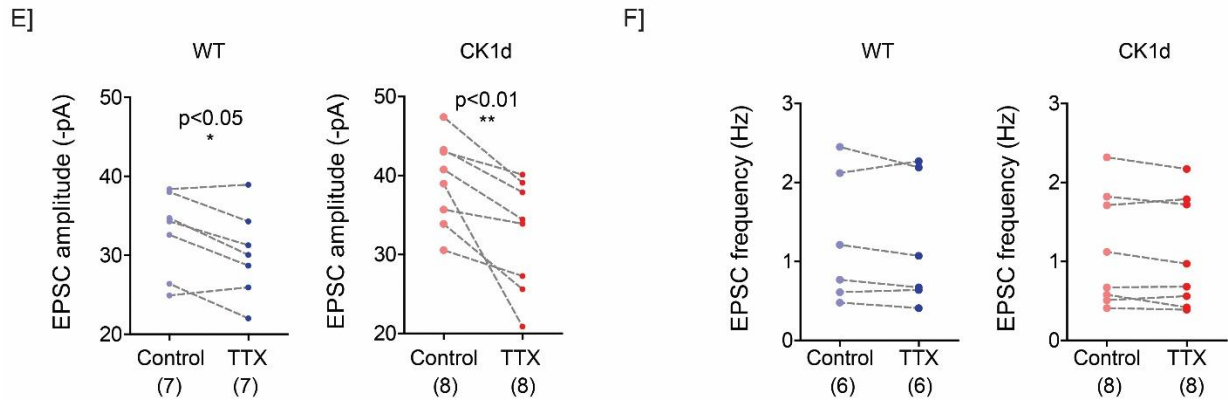
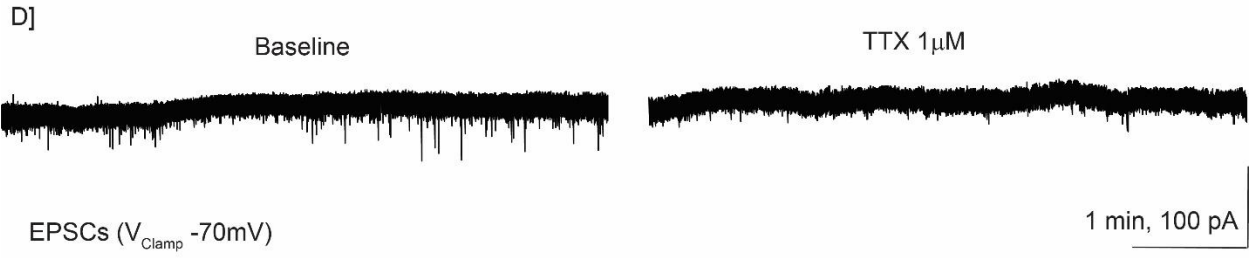
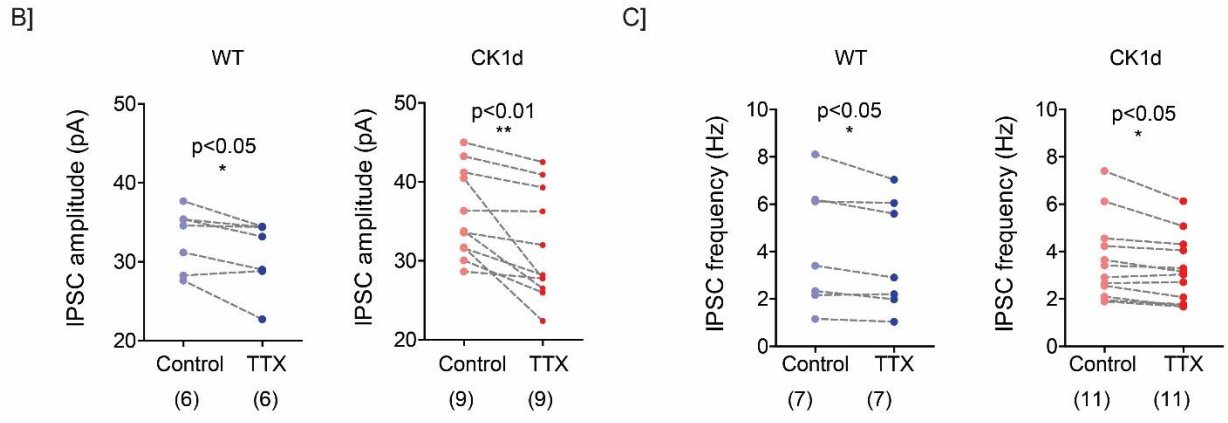
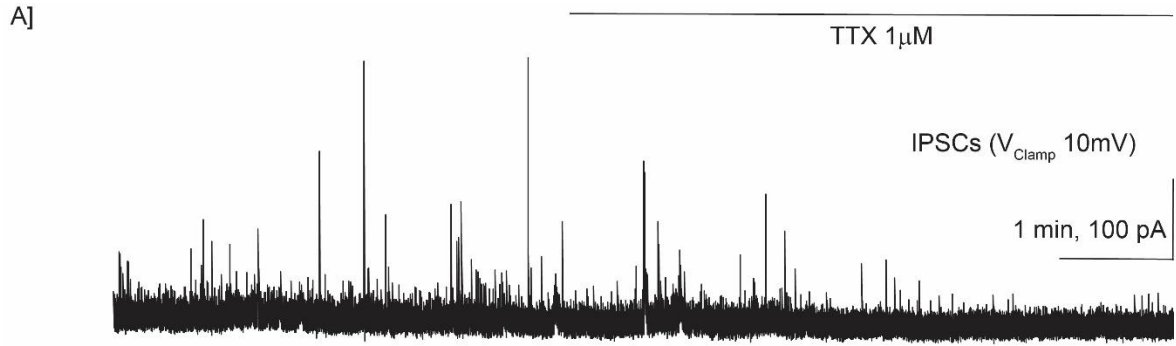


Supplementary figures:



Supplementary figure1: Increased amplitude of spontaneous EPSCs and IPSCs in CK1d_{T44A} neurons

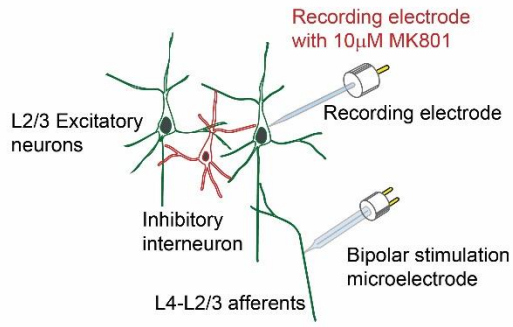
A] Representative traces of spontaneous excitatory post synaptic currents (EPSC) recorded by clamping neurons at -70mV. B] Traces of individual EPSC events (gray) and average value for all events (black) for a single neuron. C] A trend towards increase in EPSC amplitude (left, $p=0.09$, t test, WT $n=15$, CK1d_{T44A} $n=20$), with no significant difference EPSC frequency (right, $p=0.97$, t test, WT $n=15$, CK1d_{T44A} $n=20$) between WT and CK1d_{T44A} neurons. D] Cumulative frequency distribution (left) as well as frequency distribution histogram (right) of EPSC amplitudes showing significantly more high amplitude events in CK1d_{T44A} neurons ($p<0.0001$, 2-sample KS test, WT $n=15$, CK1d_{T44A} $n=20$). E] Cumulative frequency distribution (left) as well as frequency distribution histogram (right) of EPSC inter event intervals showing no significant difference between WT and CK1d_{T44A} neurons ($p>0.05$, 2-sample KS test, WT $n=15$, CK1d_{T44A} $n=20$). F] Representative traces of spontaneous inhibitory post synaptic currents (IPSC) recorded by clamping neurons at 10mV. G] Traces of individual IPSC events (gray) and average value for all events (black) for a single neuron. H] Significant increase in IPSC amplitude (left, $p<0.05$, t test, WT $n=15$, CK1d_{T44A} $n=22$), with no significant difference EPSC frequency (right, $p=0.97$, t test, WT $n=15$, CK1d_{T44A} $n=22$) between WT and CK1d_{T44A} neurons. I] Cumulative frequency distribution (left) as well as frequency distribution histogram (right) of IPSC amplitudes showing significantly more high amplitude events in CK1d_{T44A} neurons ($p<0.0001$, 2-sample KS test, WT $n=15$, CK1d_{T44A} $n=22$). J] Cumulative frequency distribution (left) as well as frequency distribution histogram (right) of IPSC inter event intervals showing no significant difference between WT and CK1d_{T44A} neurons ($p>0.05$, 2-sample KS test, WT $n=15$, CK1d_{T44A} $n=22$).



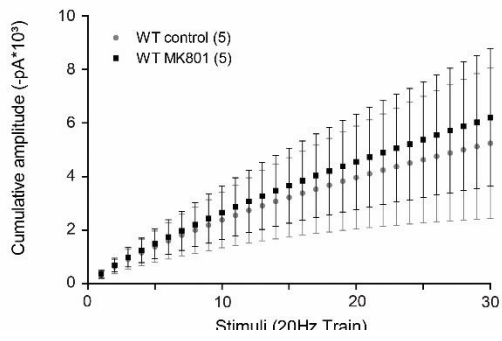
Supplementary figure 2: 1 μ m TTX treatment induced decrease in IPSC and EPSC amplitude more prominent in CK1d_{T44A} neurons

A] Representative trace showing reduction in spontaneous IPSC amplitude and frequency, with 1 μ m TTX treatment for approximately 5 minutes. B] Decrease in IPSC amplitude after 1 μ m TTX treatment, in WT ($p < 0.05$, paired t test, $n = 6$) as well as CK1d_{T44A} neurons ($p < 0.01$, paired t test, $n = 9$). The p values indicate that decrease was more prominent in CK1d_{T44A} neurons compared to WT. C] Decrease in IPSC frequency after 1 μ m TTX treatment in WT ($p < 0.05$, paired t test, $n = 7$) as well as CK1d_{T44A} neurons ($p < 0.05$, paired t test, $n = 11$). D] Representative trace showing reduction in spontaneous EPSCs after 1 μ m TTX. E] Decrease in EPSC amplitude after 1 μ m TTX treatment, in WT ($p < 0.05$, paired t test, $n = 7$) as well as CK1d_{T44A} neurons ($p < 0.01$, paired t test, $n = 8$). The p values indicate that decrease was more prominent in CK1d_{T44A} neurons compared to WT. F] No significant change in EPSC frequency after 1 μ m TTX treatment in WT ($p > 0.05$, paired t test, $n = 6$) as well as CK1d_{T44A} neurons ($p > 0.05$, paired t test, $n = 8$).

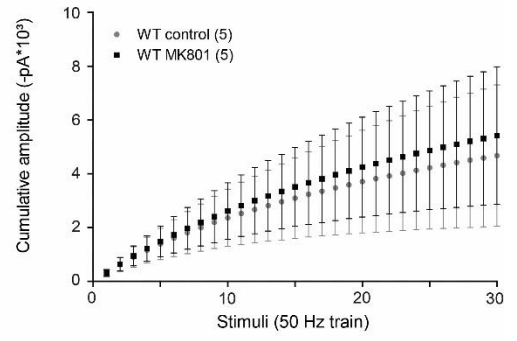
A]



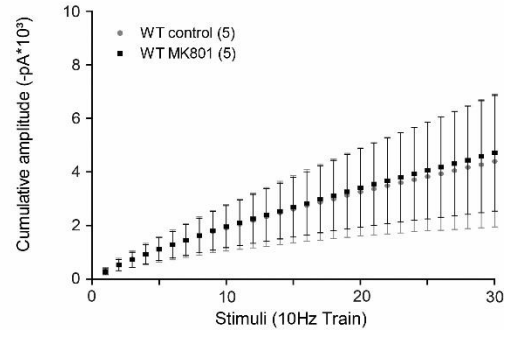
B]



C]



D]



Supplementary figure 3: Effect of selective post-synaptic NMDAR blockade on presynaptic adaption

A] Schematic showing strategy for selective blockade of post synaptic NMDARs with 10 μ M MK801 in patch pipette. Selectively blocking post-synaptic NMDARs had no significant effect on pre-synaptic adaptation to either 50 Hz (B: $p > 0.05$, two-way ANOVA, WT control vs WT MK801, $n=5$), 20Hz (C: $p > 0.05$, two-way ANOVA, WT control vs WT MK801, $n=5$) or 10Hz train of 30 stimuli (D: $p > 0.05$, two-way ANOVA, WT control vs WT MK801, $n=5$)