Supporting Information

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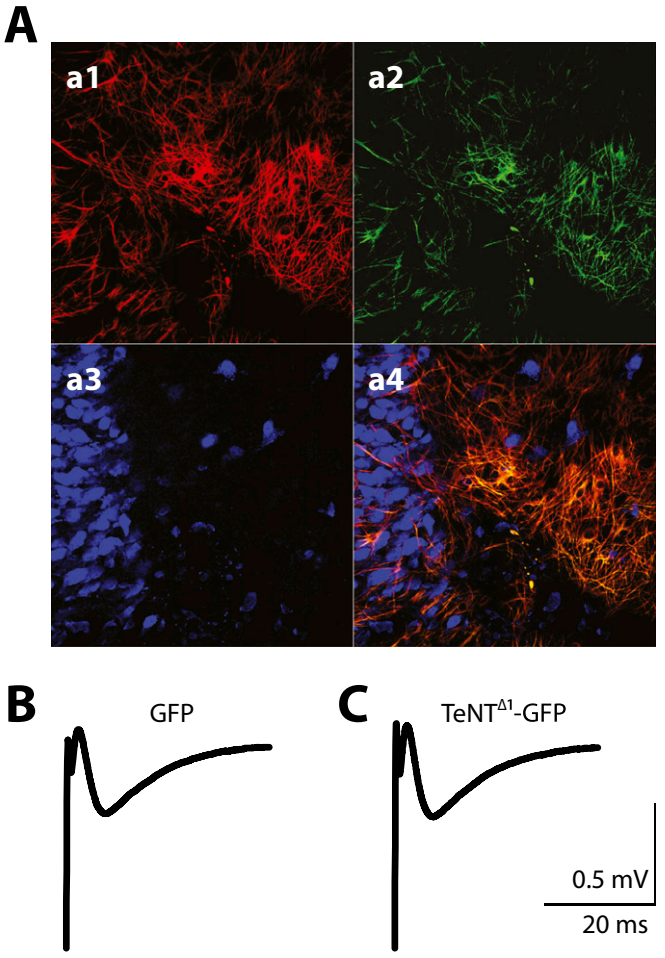


Fig. S1. (*A*) The identity of the infected cells expressing tetanus neurotoxin (TeNT)$^{\Delta 1}$-GFP was established by immunofluorescence detection of the astrocytic marker GFAP (a1) or the neuronal marker NeuN (a3). (a2) green fluorescence emitted by TeNT$^{\Delta 1}$-GFP. In a4, the merged images are shown. (*B*) Example of field potential recorded in the CA3 area of a cultured slice infected with lenti-GFP. (*C*) Example traces of field-excitatory postsynaptic potentials recorded in the CA3 area of a cultured slice infected with lenti-TeNT$^{\Delta 1}$-GFP. Stimulation was performed with a bipolar electrode placed in the stratum radiatum of the CA3 area.

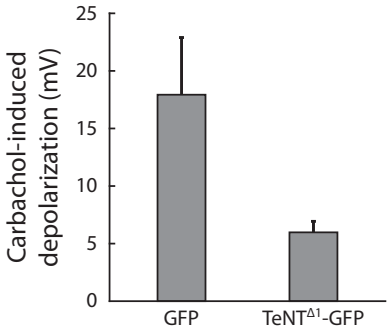
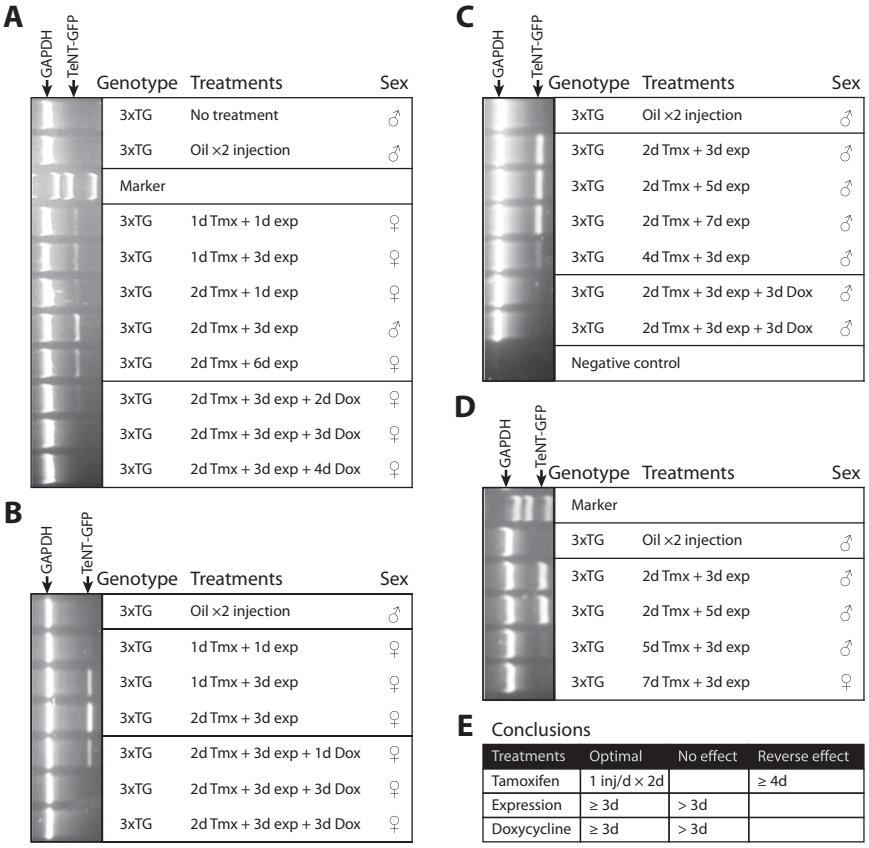


Fig. S2. Blockade of gliotransmitters release attenuated the depolarization of pyramidal cells during carbachol application. Figure shows the mean carbachol-induced depolarization (6 ± 1 mV, $n = 7$) recorded in neurons from slices infected with lenti-TeNT$^{\Delta1}$-GFP, compared with slices infected with lenti-GFP only (18 ± 5 mV, $n = 6$; $P = 0.02$, Student t test). Error bars represent SEM.



Treatments	Optimal	No effect	Reverse effect
Tamoxifen	1 inj/d × 2d		≥ 4d
Expression	≥ 3d	> 3d	
Doxycycline	≥ 3d	> 3d	

Fig. S3. The expression pattern according to tamoxifen injection and doxycycline feeding was extensively examined by RT-PCR. For testing the consistency of the expression pattern, we used RT-PCR under various conditions on the RNA from whole-brain extracts and found the optimal condition for the maximal TeNT expression. (*A*) Initial experiment of the RT-PCR showed the general expression pattern of the TeNT-GFP and it is further examined repeatedly in *B*–*D*. The optimal expression condition was daily i.p. injection of 100 μL of tamoxifen (10 mg/mL) for 2 consecutive days. More than three injections showed contrary effects (*D*). The maximum expression of TeNT could be obtained in 2 d later. The amount of TeNT RNA did not seem to be changed even after 7 d without further injection (*C*). To prevent any possible complication from the long-term expression of TeNT, all of the experiments were done within 2–3 wk after the TeNT expression. For the suppression of the TeNT expression, the mouse brain with 3 d of doxycycline feeding did not show any TeNT RNA (*B*). The expression pattern of the TeNT-GFP under tamoxifen and doxycycline is summarized (*E*). The spatial expression of the TeNT was presumed to be controlled by the hGFAP-tTA and hGFAP-CreERt2 mice lines. These lines were examined previously.