SUPPLEMENTAL MATERIAL

Supplemental Figure Legends

Figure S1. Fiber volley does not change during LTP in mature WT or *Df1(16)1/+* mice. (a) Representative traces of fiber volleys and fEPSPs in 4-month-old mice before and after induction of LTP. (**b**) Mean normalized fiber volley peak amplitudes as a function of time in WT and *Df(16)1/+* mice before and after induction of LTP (arrow).

Figure S2. Spatial memory is deficient in mature but not younger *Df(16)1/+* mice. (a,b) Average relative path length spent in quadrants of a water maze by young (**a**) and mature (**b**) *Df(16)1/+* mice (red bars) and WT (black bars) littermates. The hidden platform was located in quadrant 2. * p=0.011 (Bonferroni post-hoc test). Training quadrant, TRA; adjacent left, Adj/L; adjacent right, Adj/R; opposite, Opp. Young (6-8 weeks) mice performed normally during the probe test ($F(3,48)=1.053$, $p=0.378$, n=9 per genotype), whereas mature (16-20 weeks) mice showed a deficit in spatial memory ($F(3, 45)=7.003$, $p=0.001$; Bonferroni post-hoc test, $p=0.011$, n=8-9). (**c**) Path length of mature *Df(16)1/+* and WT mice during learning of a spatial task. Mature *Df(16)1/+* and WT mice learned equally well to locate a hidden platform in a water maze ($F(9,135)=1.855$, $p=0.569$, n=8-9). (**d**) Normal performance of mature *Df(16)1/+* mice on nonspatial visible platform task. The visible escape platform was moved every training day to a different quadrant. Mature *Df(16)1/+* mice performed similar to their WT littermates ($F(4,60)=0.884$, $p=0.479$, n=8-9), indicating that *Df(16)1/+* mice are not impaired in their swimming or visual capabilities.

Figure S3. Ultrastructural characteristics of excitatory synapses in the CA1 area of mature *Df(16)1/+* hippocampus are normal. (**a**) Representative electron micrographs of synapses in WT and *Df(16)1/+* mice. (**b-d**) Quantification of synapse densities in a field of view (**b**), the number of synaptic vesicles within 150 nm of an active zone (**c**), and the number of synaptic vesicles per presynaptic terminal in synapses from the CA1 area of WT or *Df(16)1/+* mice (**d**). Data are from 3 WT and 3 *Df(16)1/+* mice. Numbers inside bars represent the number of micrographs in **(b)** and number of synapses in **(c)** and **(d)**.

Figure S4. Short-term plasticity in young *Df(16)1/+* mice is normal. (**a**) Mean fEPSPs plotted as a function of the interstimulus interval between the first and second stimuli at CA3-CA1 hippocampal synapses of young WT mice (black) and *Df(16)1/+* mice (red) (18-19 slices, 5-6 mice). (**b, c**) Mean peak amplitudes of EPSCs evoked by 50-Hz (**b**) or 100-Hz (**c**) synaptic stimulations in slices from young WT and *Df(16)1/+* mice (6-8 neurons).

Figure S5. Single glutamate uncaging produces similar calcium transients in dendritic spines of CA1 neurons of WT mice and *Df(16)1/+* mice. (a) Average traces of calcium transients in dendritic spines as a function of time in response to a single TGU stimulation (arrow). (**b-d**) Mean peak amplitude (**b**), rise time (**c**), and decay time (**d**) of calcium transients shown in (**a**).

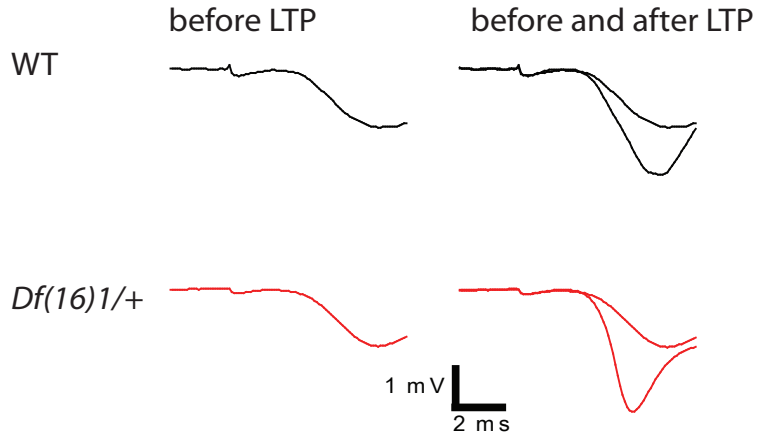
Figure S6. Glutamatergic receptors and the calcium indicator are not saturated during 40 TGU stimulations. (a) Representative calcium transients in dendritic spines of CA1 neurons in

response to 20, 40, 80, or 120 TGU stimulations (Glu) delivered at 200 Hz. (**b**) Mean peak amplitude of calcium transients as a function of the number of TGU stimulations in WT mice. The line represents the linear fit of experimental data. The mean peak amplitude of calcium transients generated by 40 TGU stimulations is shown in red.

Figure S7. Quantitative real-time PCR reveals no difference in *Serca2b* transcript levels. Relative mRNA expression levels in the hippocampi of WT and *Df(16)1/+* mice (n=6-10). *Tbx1*, a gene within the deletion region, was used as a positive control. The expression of *Tbx1* and *Serca2* were normalized to that of *Gapdh.*

16-20 weeks

a



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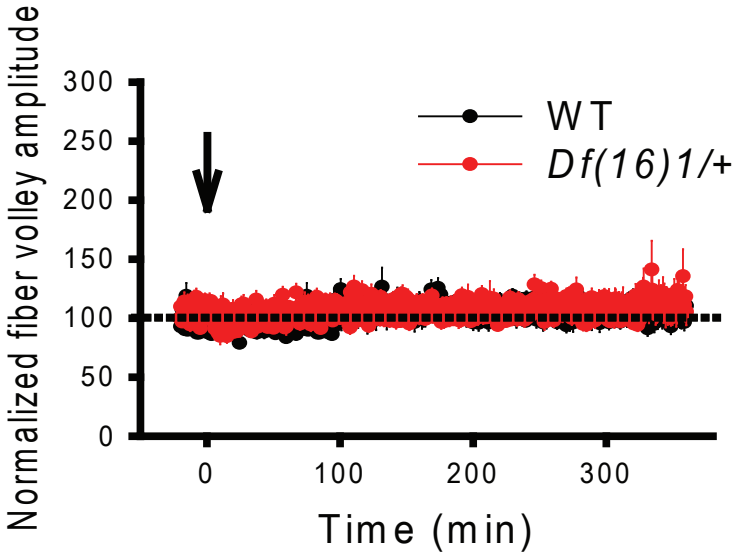
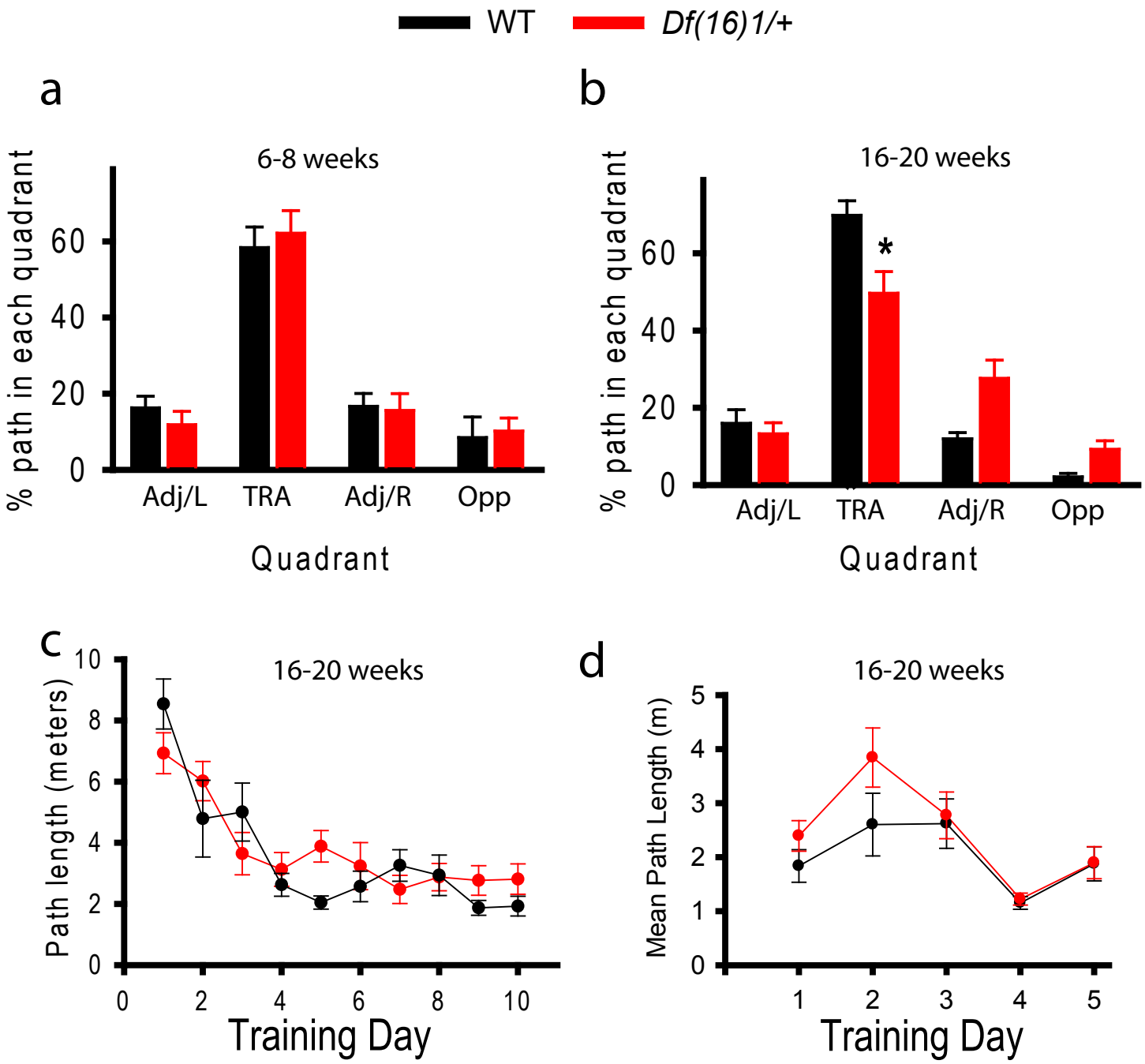


Earls et al. Fig S1.



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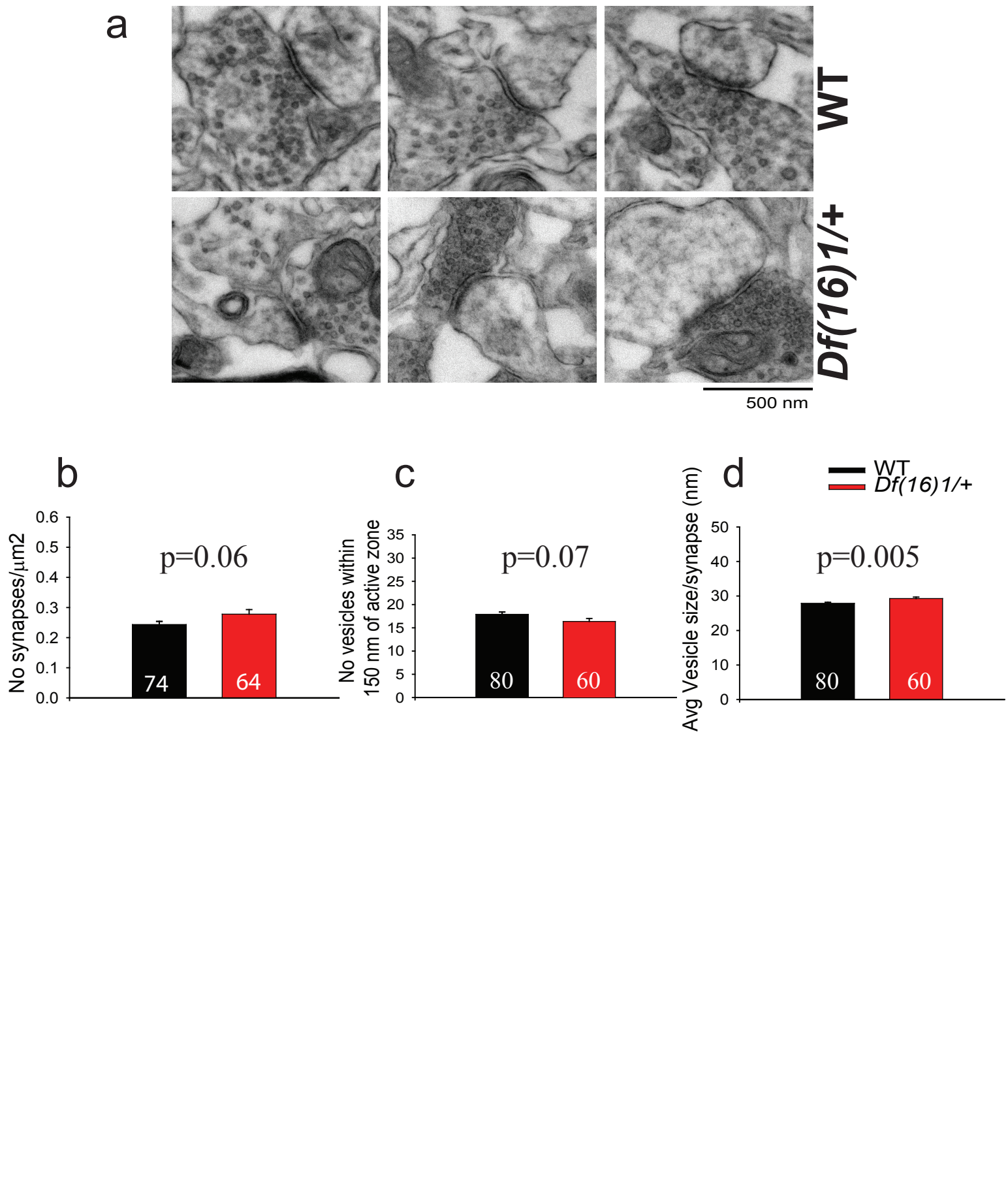
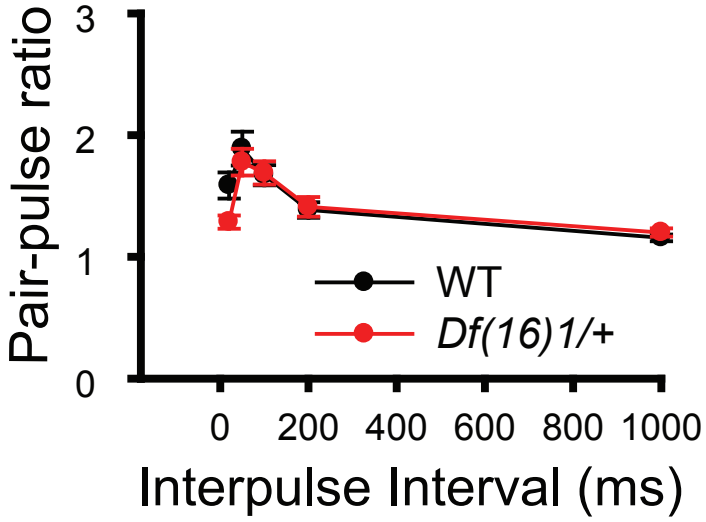


Earls et al. Fig. S3

a



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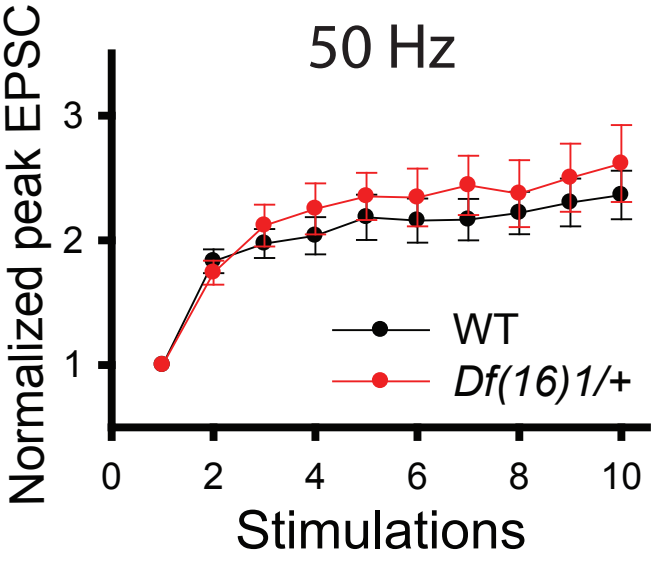
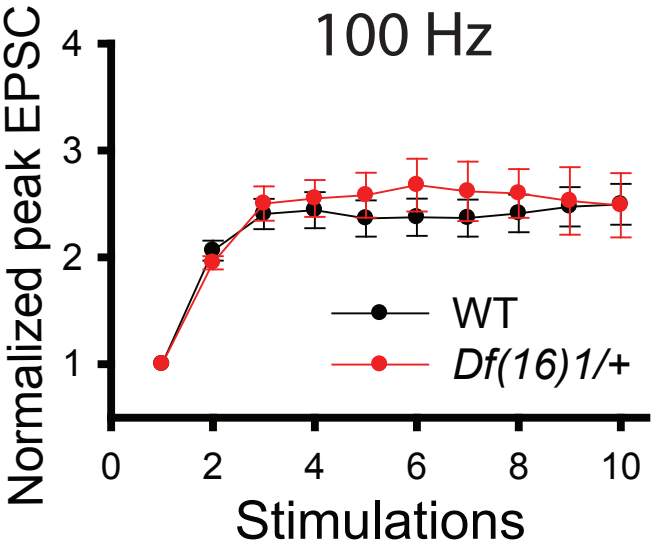


c



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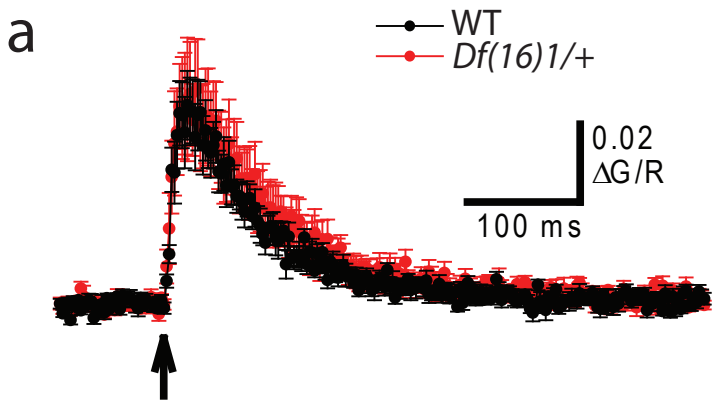

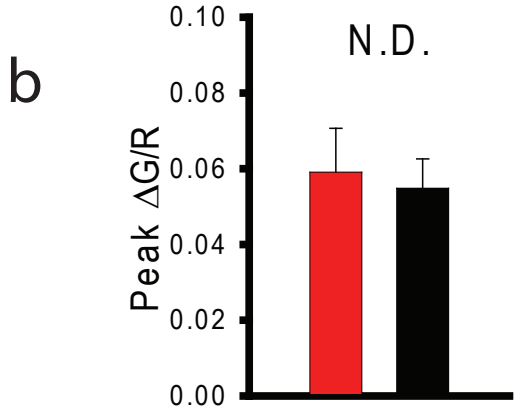

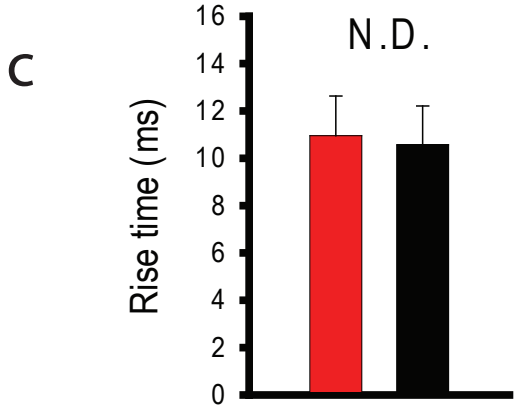

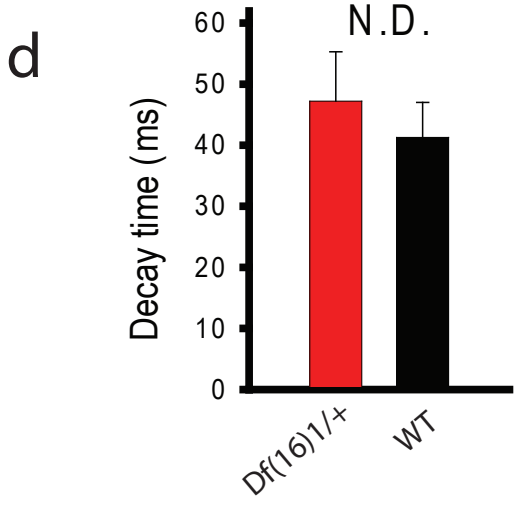

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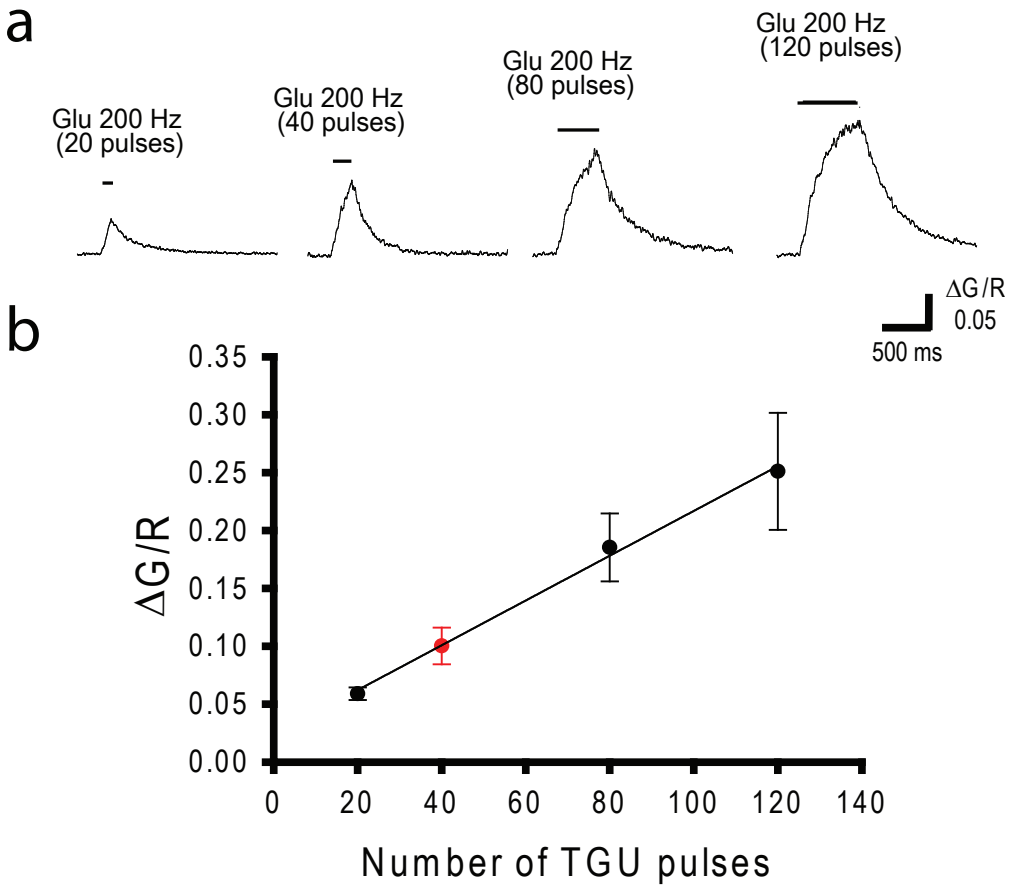

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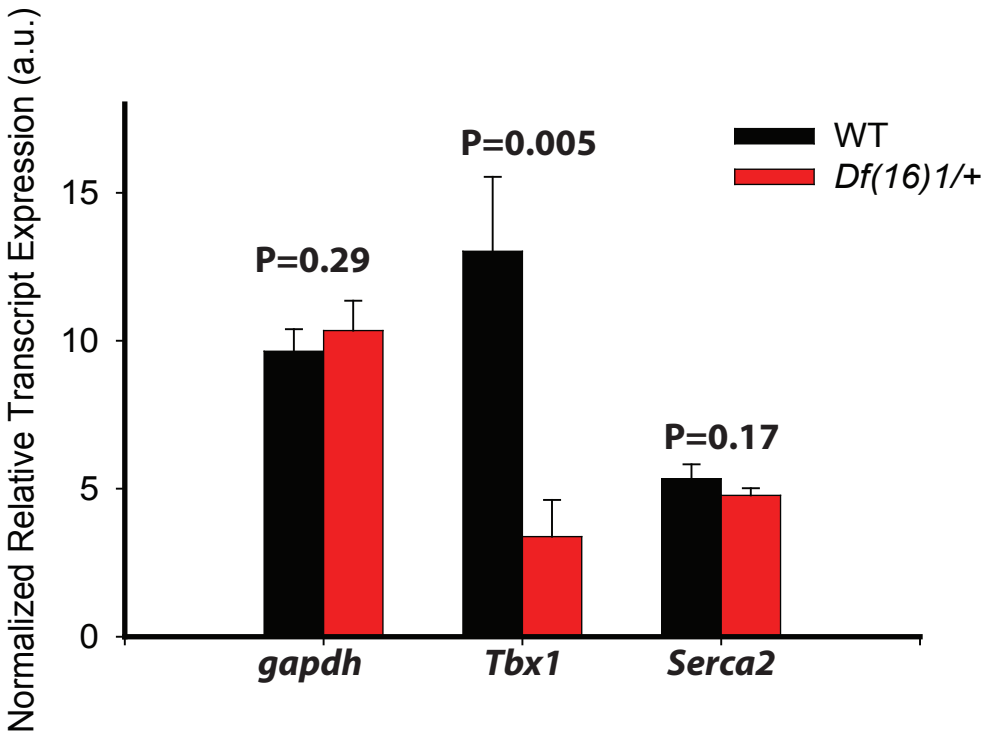

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