

Supplementary Figures and Figure Legends

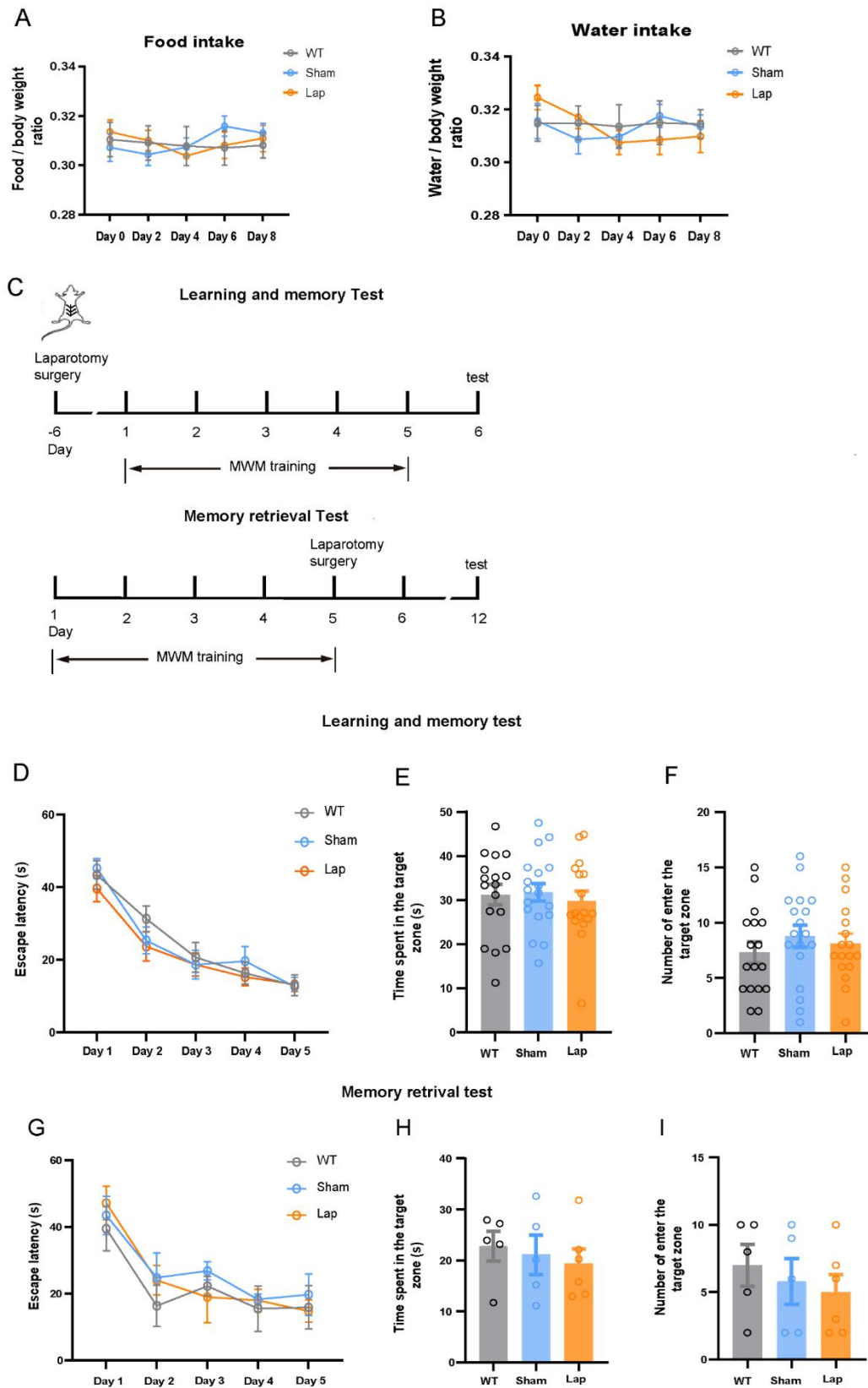


Fig. S1 Laparotomy did not affect the learning, storage, and retrieval of spatial memory. A, B Food and water intake normalized to the body weight. $n = 6-13$ mice. **C** Timeline of experiment design in MWM. **D** Learning curve of escape latency in the learning and memory test, $n = 17-18$. **E** Time spent in target zone on the testing day, $n = 17-18$. **F** Number of entries in the target zone on the testing day, $n = 17-18$. **G** Learning curve of the escape latency prior to laparotomy in the memory retrieval test, $n = 5-6$. **H** Time spent in target zone on retrieval day, $n = 5-6$. **I** Numbers of entries in the target zone in the memory retrieval test, $n = 5-6$. Data are presented as mean $\pm$ SEM. By one-way ANOVA with Tukey's multiple comparisons test for **E, F, H, and I**; two-way ANOVA with Bonferroni's multiple comparisons test in **A, B, D, and G**. *WT* wild type, *Lap* laparotomy, *MWM*, Morris water maze.

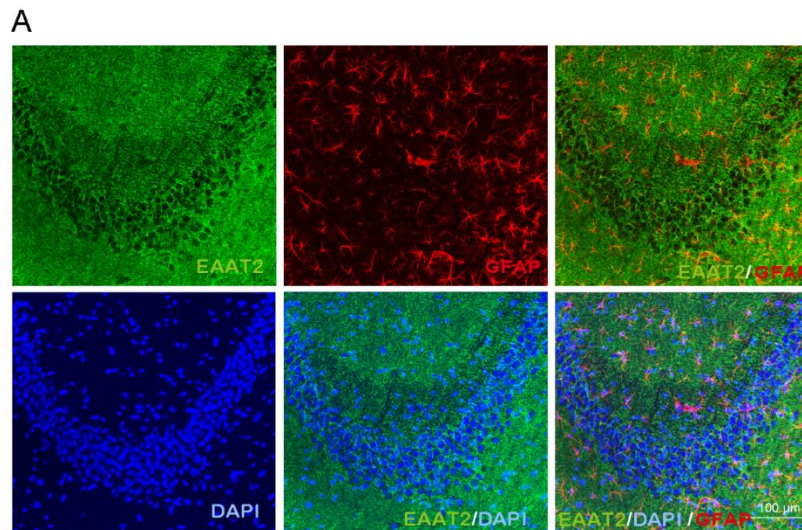


Fig. S2 Schematic diagram of co-staining of the EAAT2/GFAP and DAPI. Scale bar = 100 μ m.

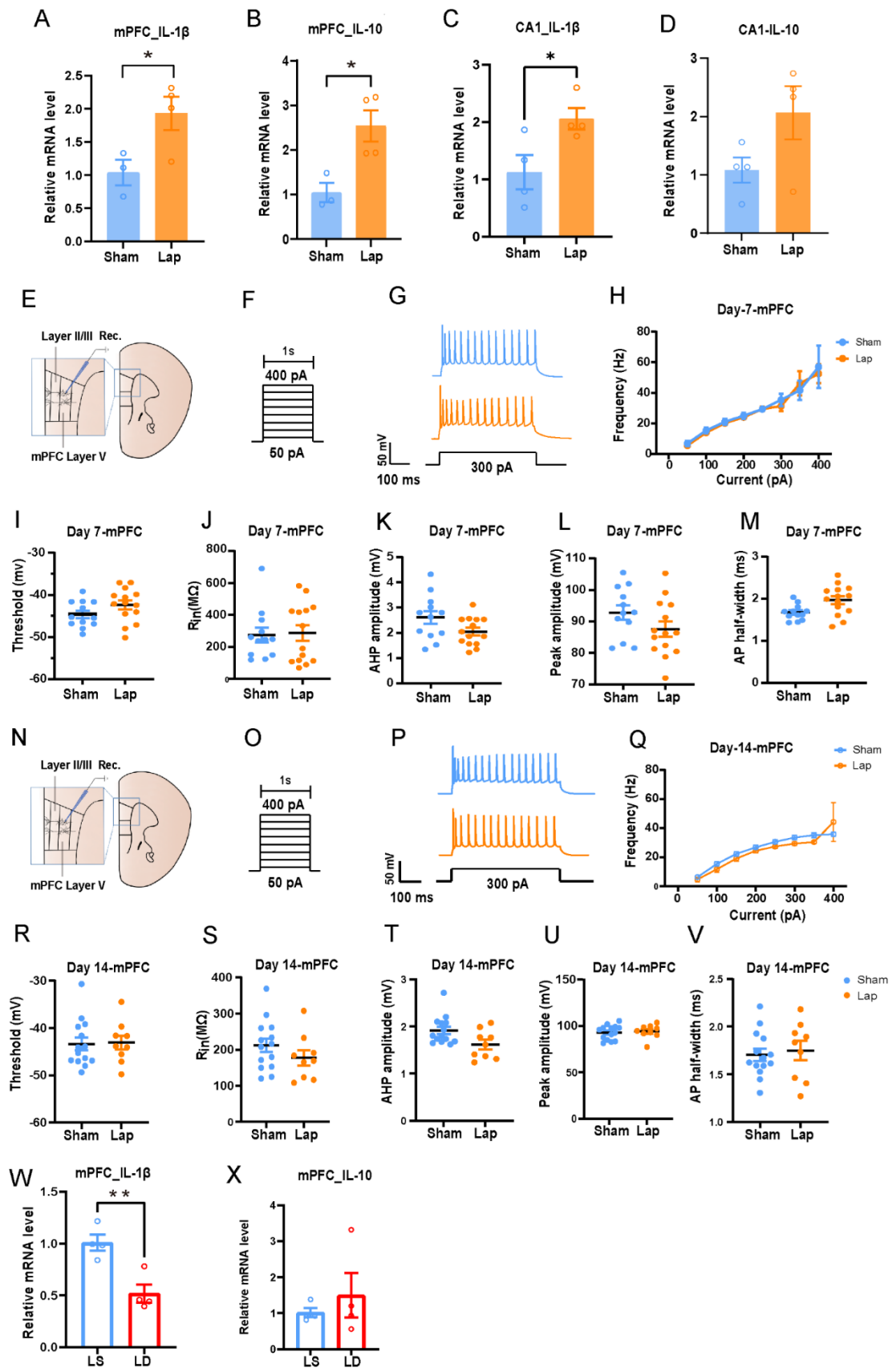


Fig. S3 Laparotomy increased the level of inflammatory cytokines but did not significantly influence intrinsic excitability or inhibitory neuronal transmissions. A-D Relative mRNA levels of IL-1 β and IL-10 in the mPFC and CA1. $n = 3-4$ mice. **E** Schematic diagram of recording position in L5 neurons of mPFC. **F** Schematic diagram of injected currents ranging from 50 pA to 400 pA, in steps of 50 pA. **G** AP spikes with the injected current of 300 pA. **H** Frequency of spikes of mPFC neurons 7 days after surgery, $n = 12-14$ neurons. **I-M** Depolarization threshold, input resistance, AHP amplitude, peak amplitude, and half-width of mPFC neurons 7 days after laparotomy. $n = 12-14$ neurons. **N** Schematic diagram of recording position in L5 neurons of mPFC. **O** Frequency with different current injection (from 50 pA to 400 pA, in 50 pA steps). **P** AP spikes with the injected current of 300 pA. **Q** Frequency of spikes of mPFC neurons 14 days after surgery, $n = 9-14$ neurons. **R-V** Depolarization threshold, input resistance, AHP amplitude, peak amplitude, and half-width of mPFC neurons 14 days after laparotomy, $n = 9-14$ neurons. **W-X** Relative mRNA levels of IL-1 β and IL-10 in the mPFC in the LS and LD group. $n = 4$ mice. Data are represented as mean $\pm$ SEM. $*P < 0.05$; $**P < 0.01$, by unpaired Student's t -test was used for **A-D**, **I-M**, **R-X**; two-way ANOVA with Tukey's multiple comparisons test was used for **H** and **Q**. *Lap* laparotomy, *LS* laparotomy + saline, *LD* laparotomy + dexmedetomidine.

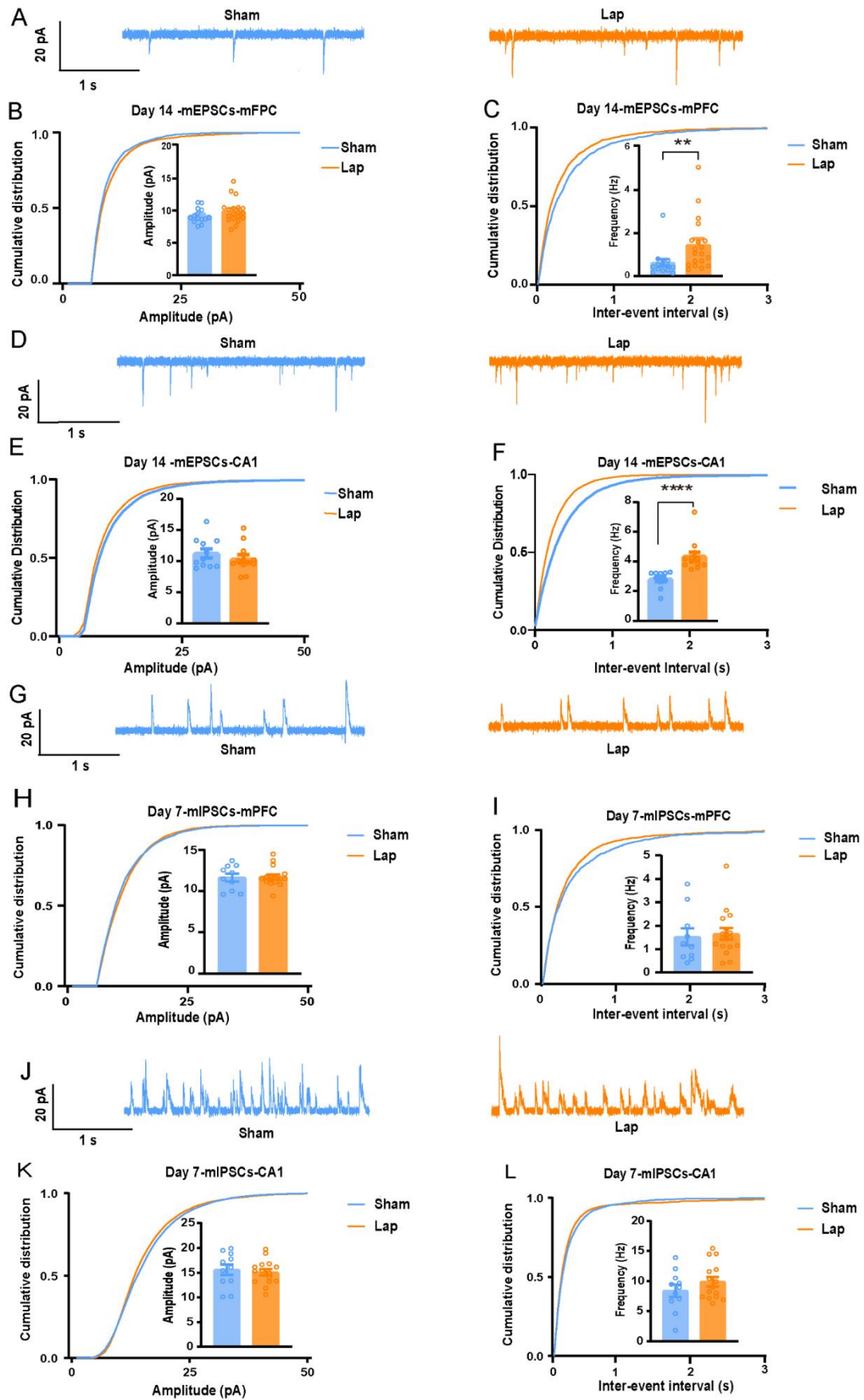


Fig. S4 Laparotomy increased pre-synaptic glutamate release 14 days post-surgery without altering inhibitory neurotransmission. **A** Schematic diagram of the mEPSCs traces in mPFC 14 days after laparotomy, $n = 14-19$ neurons. **B, C** Cumulative probability of the frequency and amplitude of mEPSCs 14 days after laparotomy, $n = 14-19$ neurons. **D** Schematic diagram of the mEPSCs traces in CA1 14 days after laparotomy, $n = 11-12$ neurons. **E, F** Cumulative probability of the frequency and amplitude of mEPSCs 14 days after laparotomy, $n = 11-12$ neurons. **G** Schematic diagram of the mIPSCs traces in the mPFC 7 days after laparotomy. **H, I** Cumulative probability of the frequency and amplitude of mIPSCs in mPFC 7 days after laparotomy, $n = 10-16$ neurons. **J** Schematic diagram of the mIPSCs traces in CA1 7 days after laparotomy. **K, L** Cumulative probability of the frequency and amplitude of mIPSCs in CA1 7 days after laparotomy, $n = 11-15$ neurons. Data are represented as mean $\pm$ SEM. $**P < 0.01$; $****P < 0.0001$, by unpaired Student's t-test was used for **B-C**, **E-F**, **H-I**, **K-L**. *Lap* laparotomy.