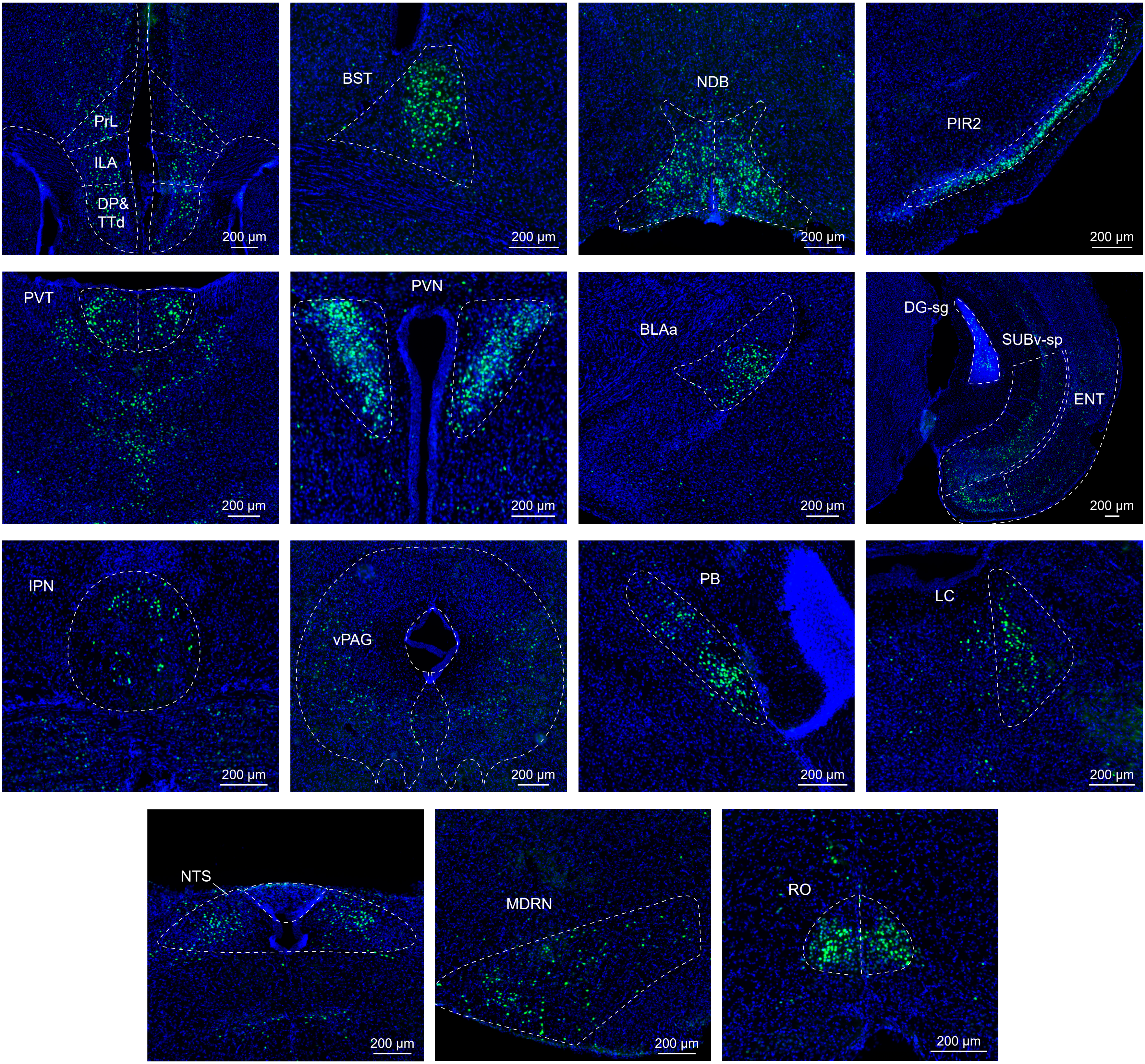

Figure S1. Coronal brain sections showing increased c-Fos expression in brain regions following TNS stimulation (Related to Figure.1). The broken white lines in the section images represent boundaries of brain regions. PrL, prelimbic cortex; ILA, infralimbic area; DP, dorsal peduncular cortex; TTd, taenia tecta, dorsal part; BST, bed nucleus of the stria terminalis; NDB, diagonal band nucleus; PIR2, piriform area, pyramidal layer; PVT, paraventricular thalamic nucleus; PVN, paraventricular hypothalamic nucleus; BLAa, basolateral amygdaloid nucleus, anterior part; DG-sg, dentate gyrus, granule cell layer; SUBv-sg, subiculum, ventral part, pyramidal layer; ENT, entorhinal area; IPN, interpeduncular nucleus; vPAG, periaqueductal gray, ventral part; PB, parabrachial nucleus; LC, locus coeruleus; NTS, nucleus of the solitary tract; MDRN, medullary reticular nucleus; RO, raphe obscurus nucleus.

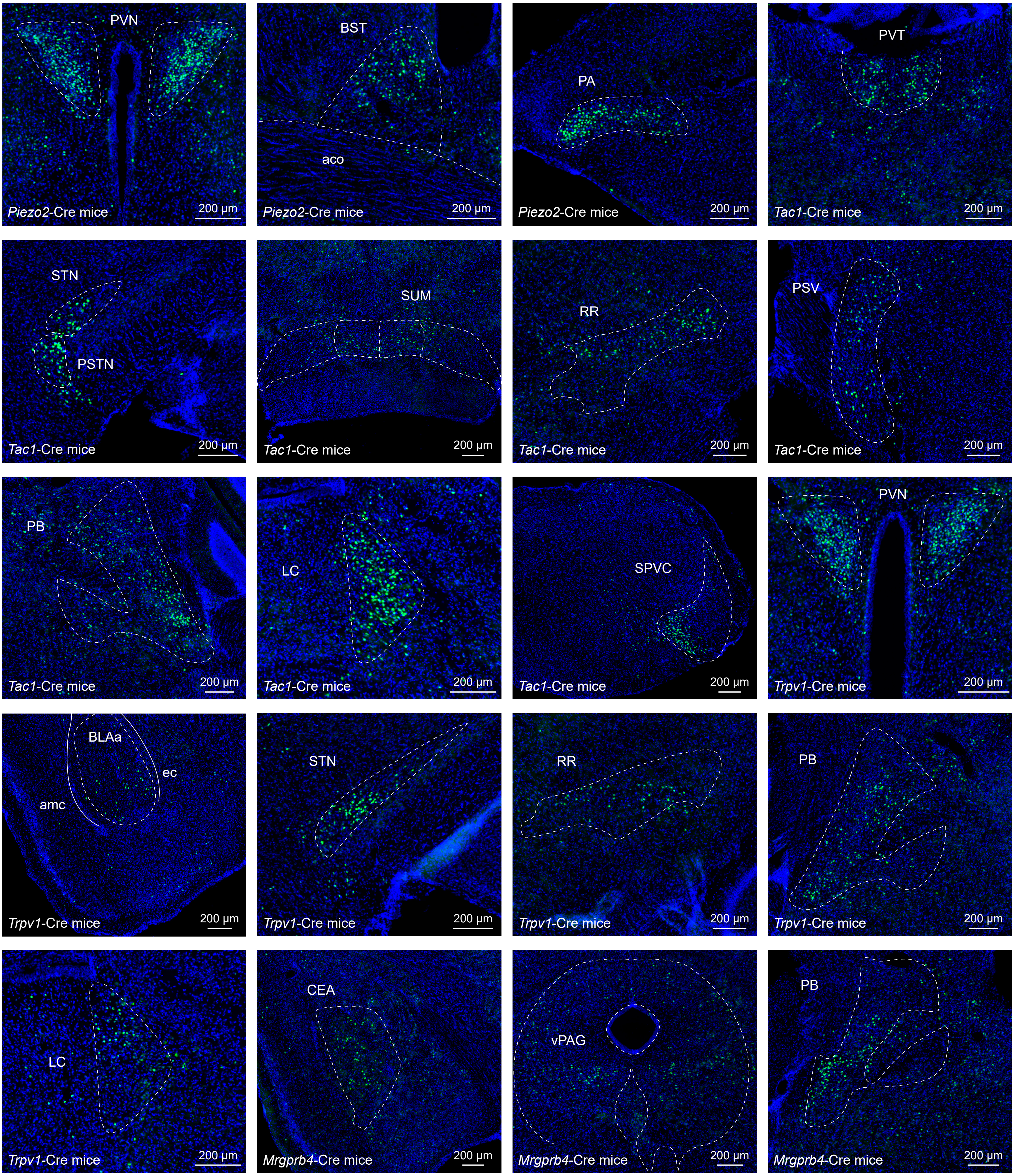

Figure S2. Coronal brain sections illustrating regions of increased c-Fos expression following chemogenetic activation of bilateral TG in *Piezo2*-Cre, *Tac1*-Cre, *Trpv1*-Cre, and *Mrgprb4*-Cre mice (Related to Figure 2). The broken white lines in the section images represent boundaries of brain regions. PVN, paraventricular hypothalamic nucleus; BST, bed nucleus of the stria terminalis; aco, anterior commissure, olfactory limb; PA, posterior amygdalar nucleus; PVT, paraventricular thalamic nucleus; STN, subthalamic nucleus; PSTN, parasubthalamic nucleus; SUM, supramammillary nucleus; RR, retrorubral nucleus; PSV, principal sensory nucleus of the trigeminal; PB, parabrachial nucleus; LC, locus coeruleus; SPVC, spinal trigeminal nucleus, caudal part; BLAa, basolateral amygdalar nucleus, anterior part; amc, amygdalar capsule; ec, external capsule; CEA, central amygdaloid nucleus; vPAG, periaqueductal gray, ventral part.

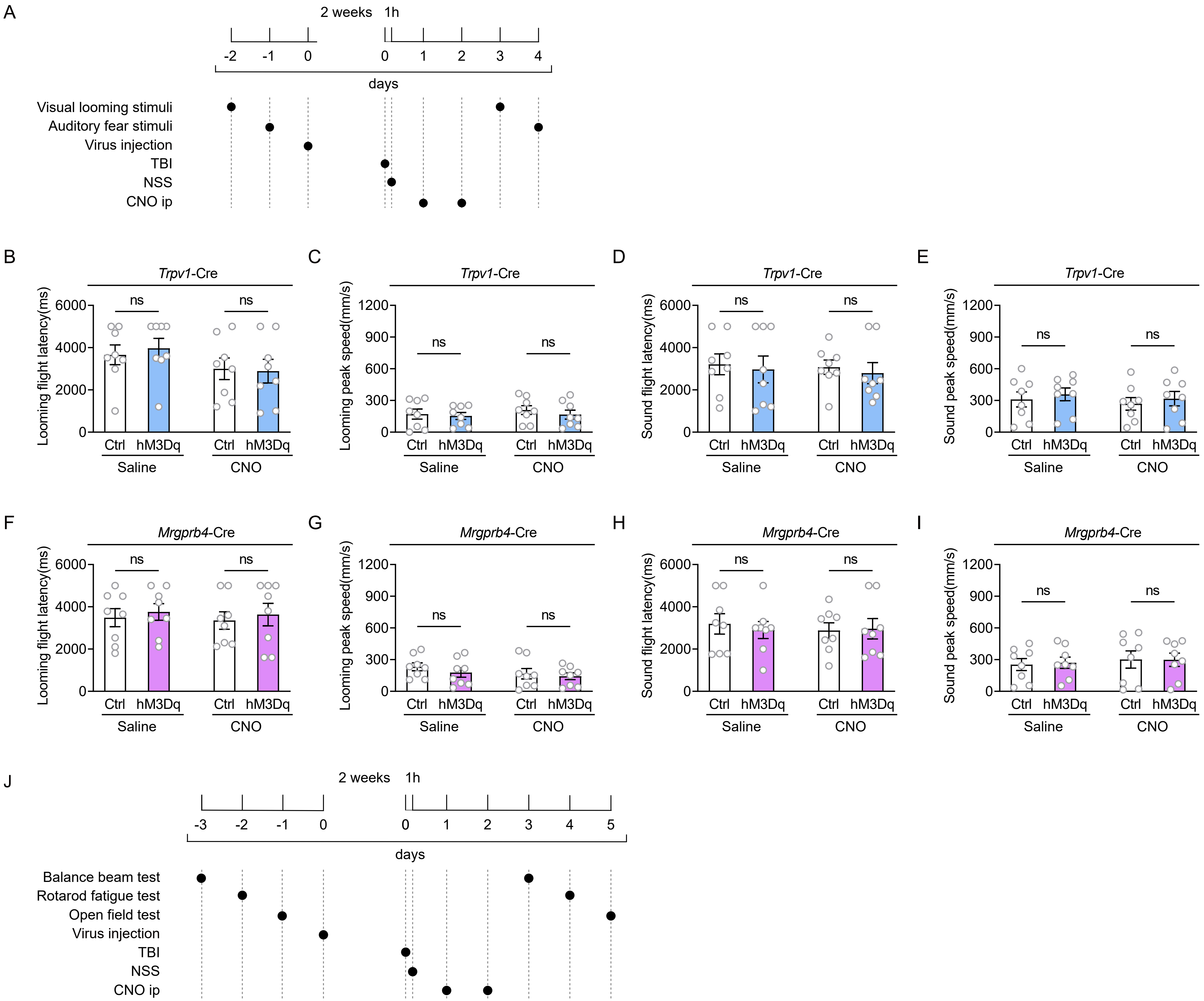

Figure S3. Chemogenetic activation of subgroups of TG neurons (Related to Figure 2). (**A**) Schematic diagram showing experimental design for defensive arousal response in chemogenetically evoked *Piezo2*-Cre, *Tac1*-Cre, *Trpv1*-Cre, and *Mrgprb4*-Cre mice after TBI. (**B** and **C**) Latency (**B**) and peak escape velocity (**C**) of the visual looming defensive response in TBI mice with and without chemogenetic activation of Trpv1+ TG neurons (*n* = 8 mice). (**D** and **E**) Latency (**D**) and peak escape velocity (**E**) of the auditory stimulus defensive response in TBI mice with and without chemogenetic activation of Trpv1+ TG neurons (*n* = 8 mice). (**F** and **G**) Latency (**F**) and peak escape velocity (**G**) of the visual looming defensive response in TBI mice with and without chemogenetic activation of Mrgprb4+ TG neurons (*n* = 8 mice). (**H** and **I**) Latency (**H**) and peak escape velocity (**I**) of the auditory stimulus defensive response in TBI mice with and without chemogenetic activation of Mrgprb4+ TG neurons (*n* = 8 mice). (**J**) Schematic diagram showing experimental design for motor ability in chemogenetically evoked *Piezo2*-Cre and *Tac1*-Cre mice after TBI. Data in (**B-I**) are expressed as means ± SEM. Statistical analyses were performed using Student *t*-tests (**B-I**) (ns, not significant, *P* > 0.05). For *P*-values, see Table S4.

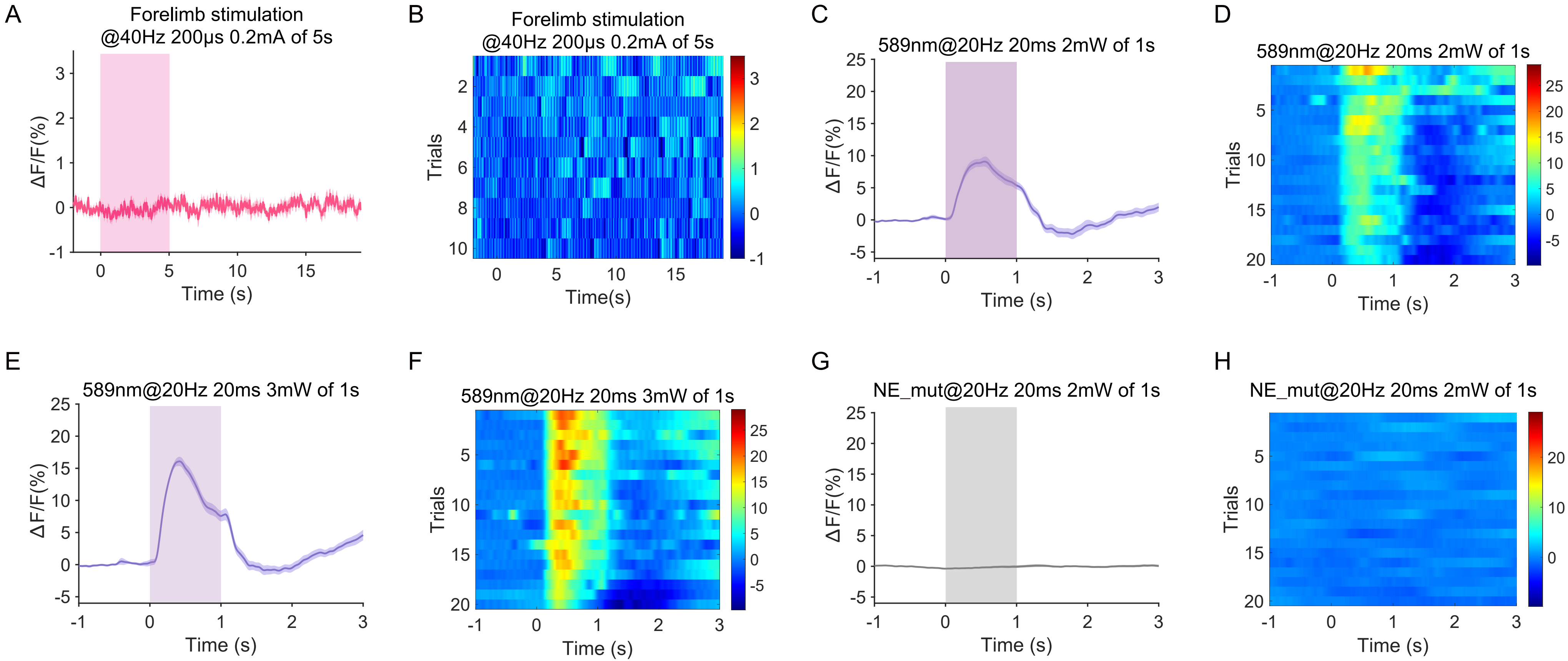

Figure S4. Variations in NE levels in the SC during electrical stimulation of the forelimbs and various intensities of LC-SC pathway activation (Related to Figure 5). (**A** and **B**) NE signals (ΔF/F) (**A**) and heat map (**B**) of 10 trials in the SC during electrical stimulation of mouse forelimbs (stimulation parameters identical to TNS: 200 μs, 0.2 mA, 40 Hz, 5 seconds) (*n* = 5 mice). (**C** and **D**) NE signals (ΔF/F) (**C**) and heat map (**D**) of 20 trials evoked by photostimulation of TH+ LC neurons with 2 mW laser power (589 nm, 20 ms, 20 Hz, 1 pulse of 1 second) (*n* = 5 mice). (**E** and **F**) NE signals (ΔF/F) (**E**) and heat map (**F**) of 20 trials evoked by photostimulation of TH+ LC neurons with 3 mW laser power (589 nm, 20 ms, 20 Hz, 1 pulse of 1 second) (*n* = 5 mice). (**G** and **H**) NE signals (ΔF/F) (**G**) and heat map (**H**) of 20 trials evoked by photostimulation of TH+ LC neurons in NE_mut control mice (*n* = 5 mice).

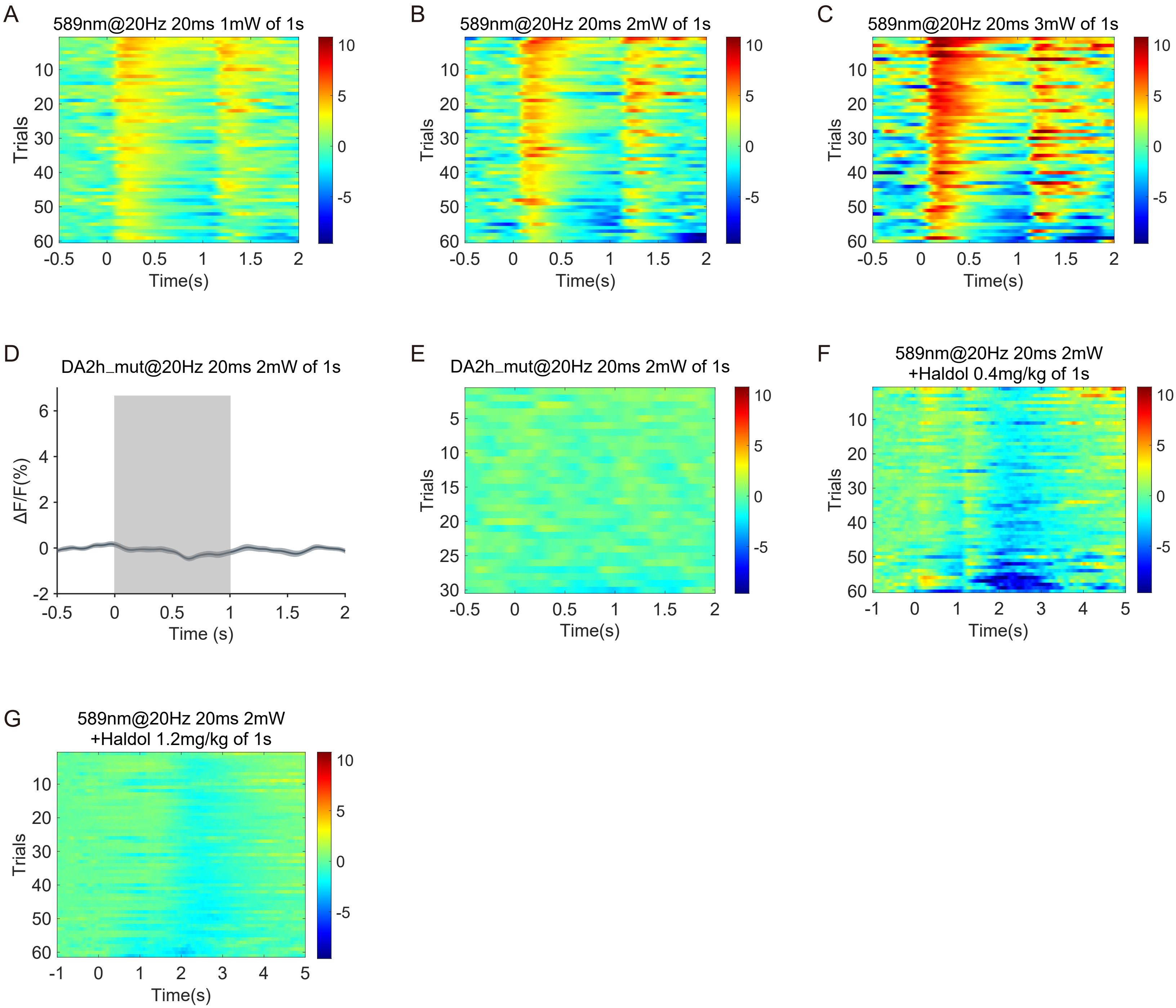

Figure S5. Variations in GRAB-DA2h signal with varying intensities of PVN-SNc pathway activation, compared to DA2h_mut control and following antagonist application (Related to Figure 7). (**A-C**) Heat maps (60 trials) of GRAB-DA2h signals in the DS during activation of the PVN-SNc pathway with different photostimulation intensities (1 mW (**A**), 2 mW (**B**), and 3 mW (**C**)) (*n* = 6 mice). (**D** and **E**) GRAB-DA2h signals (ΔF/F) (**D**) and heat maps (**E**) of 30 trials in the DS of DA2h_mut control mice when the PVN-SNc pathway is stimulated with 2mW laser power (*n* = 6 mice). (**F** and **G**) Heat maps (60 trials) of GRAB-DA2h signals evoked by photostimulation of the PVN-SNc pathway using 2 mW laser power, 15 minutes after intraperitoneal injection of the DA receptor antagonist haloperidol (Haldol) with 0.4 mg/kg (**F**) and 1.2 mg/kg (**G**) (*n* = 6 mice).

Table S1. Information of mouse lines and reagents

Mouse Lines		
Piezo2-ires-Cre	JAX Mice	Stock No: 027719
Tac1-ires-Cre	JAX Mice	Stock No: 021877
Trpv1-Cre	JAX Mice	Stock No: 017769
Mrgprb4-2A-Cre	JAX Mice	Stock No: 021077
TH-Cre	JAX Mice	Stock No: 008601
DAT-ires-*Cre*	JAX Mice	Stock No: 006660
C57BL/6J	Sun Yat-sen University Laboratory Animal Center	N/A
Antibodies		
Rabbit polyclonal anti-EGFP	Abcam	ab290
Chicken polyclonal anti-EGFP	Abcam	ab13970
Chicken polyclonal anti-mCherry	Abcam	ab205402
Rabbit monoclonal Anti-Fos	Cell Signaling Technology	2250
Rabbit polyclonal anti-NeuN	Abcam	ab177487
Rabbit recombinant Anti-Tyrosine Hydroxylase	Abcam	ab137869
Goat anti-Rabbit IgG (H+L) Alexa 488	Thermo Fisher Scientific	A11034
Goat anti-Chicken IgY (H+L) Alexa 488	Thermo Fisher Scientific	A11039
Goat anti-Rabbit IgG (H+L) Alexa 546	Thermo Fisher Scientific	A11010
Goat anti-Chicken IgY (H+L) Alexa 546	Thermo Fisher Scientific	A11040
Goat anti-Mouse IgG (H+L) Alexa 546	Thermo Fisher Scientific	A11030
Goat anti-Mouse IgG (H+L) Alexa 647	Thermo Fisher Scientific	A21235

Chemicals, peptides, and recombinant proteins		
Clozapine N-oxide	ENZO	BML-NS105
DAPI	Solarbio	C0065
Dispase® II	Roche	04942078001
Collagenase type 2	Worthington-biochem	LS004176
Yohimbine	Macklin	Y820631
Haloperidol hydrochloride	Aladdin	H275922
Bacterial and virus strains		
AAV2/9-hSyn-DIO-hM3Dq-mCherry	TaiToll	N/A
AAV2/9-hSyn-DIO-mCherry	TaiToll	N/A
AAV2/9-hSyn-DIO-EGFP	TaiToll	N/A
AAV2-retro-hSyn-DIO-Flp	BrainVTA	N/A
AAV2/9-hSyn-fDIO-hM3Dq-EGFP	BrainVTA	N/A
AAV2/9-hSyn-taCasp3-TEVp-EGFP	BrainVTA	N/A
AAV2/9-hSyn-EGFP	BrainVTA	N/A
AAV2/9-CaMKIIα-GCamp6s	BrainVTA	N/A
AAV2/9-hSyn-NE2h	BrainVTA	N/A
AAV2/9-hSyn-NE_mut	BrainVTA	N/A
AAV2/9-hSyn-DIO-C1V1-mCherry	BrainVTA	N/A
AAV2/9-EF1α-DIO-H2B-EGFP-T2A-TVA	BrainVTA	N/A
AAV2/9-EF1α-DIO-RVG	BrainVTA	N/A
RV-EnvA-△G-DsRed	BrainVTA	N/A
PRV-CAG-EGFP	BrainVTA	N/A

AAV2-retro-hSyn-Cre	BrainVTA	N/A
AAV1-hSyn-Flp	BrainVTA	N/A
AAV2/9-hSyn Con&Fon-hM3Dq-mCherry	BrainVTA	N/A
AAV2/9-hSyn Con&Fon-mCherry	BrainVTA	N/A
AAV2/9-hSyn-GRABeen DA2h	TaiToll	N/A
AAV2/9-hSyn-GRABeen DA2h_mut	TaiToll	N/A
AAV2/9-hSyn-C1V1-mCherry	BrainVTA	N/A

Table S2. Summary of all experimental designs

Figures	Aims	Mouse lines	AAV injection & optical fiber implantation	Type of data
Fig.1A-1I	Clarifying the role of TNS in defensive arousal in mice with TBI	*WT*	No AAV injection. No optical fiber implantation.	Behavior
Fig.1J-1N	Assessing the impact of TNS on motor abilities in mice with TBI	*WT*	No AAV injection. No optical fiber implantation.	Behavior
Fig. S1	Identify nuclei associated with TNS	*WT*	No AAV injection. No optical fiber implantation.	Histology
Fig.2A-2Q	Activation various TG neurons subtypes	*Piezo2*-Cre *Tac1*-Cre *Trpv1*-Cre *Mrgprb4*-Cre	AAV2/9-hSyn-DIO-hM3Dq-mCherry injected into the TG.	Behavior Slice physiology Histology
Fig.S2	Identify nuclei associated with the activation of distinct TG neuron subpopulations	*Piezo2*-Cre *Tac1*-Cre *Trpv1*-Cre *Mrgprb4*-Cre	AAV2/9-hSyn-DIO-hM3Dq-mCherry or AAV2/9-hSyn-DIO-mCherry injected into the TG.	Histology
Fig.S3	Activation various TG neurons subtypes	*Trpv1*-Cre *Mrgprb4*-Cre	AAV2/9-hSyn-DIO-hM3Dq-mCherry or AAV2/9-hSyn-DIO-mCherry injected into the TG.	Behavior
Fig.3A-3B	Anterograde tracing of TH+ LC neurons	*TH*-Cre	AAV2/9-hSyn-DIO-EGFP injected into the LC.	Histology
Fig.3C-3G	Activation of SC-projecting TH+ LC neurons	*TH*-Cre	AAV2-retro-DIO-Flp injected into the SC. AAV2/9-fDIO-hM3Dq-EGFP or AAV-fDIO-EGFP injected into the LC.	Behavior Histology Slice physiology
Fig.3G-3N	Partial ablation of LC while activating Tac1+ TG	*Tac1*-Cre	AAV2/9-hSyn-taCasp3-TEVp-EGFP or AAV2/9-hSyn-EGFP	Behavior Histology

			injected into the LC. AAV2/9-hSyn-DIO-hM3Dq-mCherry injected into the TG.	
Fig.4A-4G	Recording GCaMP signals in response to visual stimuli at various rates	*WT*	AAV2/9-CaMKIIα-GCaMP6s injected into the SC. Optical fiber implanted above the SC.	Behavior Histology Fiber photometry
Fig.4H-4L	Recording GCaMP signals in response to visual stimuli at various rates after TNS treatment	*WT*	AAV2/9-CaMKIIα-GCaMP6s injected into the SC. Optical fiber implanted above the SC.	Behavior Histology Fiber photometry
Fig.4M-4R	Recording GCaMP signals in response to visual stimuli at various rates after LC activation	*TH*-Cre	AAV2/9-CaMKIIα-GCaMP6s injected into the SC. AAV2/9-hSyn-DIO-hM3Dq-mCherry or AAV2/9-hSyn-DIO-mCherry injected into the LC. Optical fiber implanted above the SC.	Behavior Histology Fiber photometry
Fig.5A-5C Fig.S4A-S4B	Recording NE signals during TNS	*WT*	AAV2/9-hSyn-NE2h injected into the SC. Optical fiber implanted above the SC.	Histology Fiber photometry
Fig.5D-5M Fig.S4C-S4H	Recording NE signals during the activation of TH+ LC	*TH*-Cre	AAV2/9-hSyn-NE2h or AAV2/9-hSyn-NE_mut injected into the SC. AAV2/9-DIO-C1V1-mCherry injected into the LC. Optical fiber implanted above the SC and LC.	Histology Fiber photometry
Fig.6A-6E	Retrograde tracing of DS-SNc pathway	*DAT*-Cre	AAV-DIO-EGFP-T2A-TVA & AAV-DIO-RVG injected into the SNc. RV-EnvA-ΔG-DsRed injected into the DS.	Histology
Fig.6F-	Retrograde tracing of DS	*WT*	PRV-CAG-EGFP injected into the DS.	Histology
Fig.6G-	Activation of SNc	*WT*	AAV2-retro-Cre	Behavior

6J	neurons receiving anterograde projections from the PVN and retrograde projections from the DS		injected into the DS. AAV1-Flp injected into the PVN. AAV2/9-hSyn Con&Fon-hM3Dq-EGFP or AAV2/9-hSyn Con&Fon-EGFP injected into the SNc.	Histology Slice physiology
Fig.6K-6Q	Partial ablation of PVN while activating Piezo2+ TG	*Piezo2*-Cre	AAV2/9-hSyn-taCasp3-TEVp-EGFP or AAV2/9-hSyn-EGFP injected into the PVN. AAV2/9-hSyn-DIO-hM3Dq-mCherry injected into the TG.	Behavior Histology
Fig.7A-7C	Recording GRAB-DA signals during TNS	*WT*	AAV2/9-hSyn-GRABeen DA2h injected into the DS. Optical fiber implanted above the DS.	Histology Fiber photometry
Fig.7D-7K Fig.S5A-S5G	Recording GRAB-DA signals during the activation of PVN-SNc pathway	*WT*	AAV2/9-hSyn-GRABeen DA2h or AAV2/9-hSyn-EGFP injected into the DS. AAV2/9-C1V1-mCherry injected into the PVN. Optical fiber implanted above the SNc and DS.	Histology Fiber photometry

Table S3. Summary of Cell Counting Strategy

Brain region	Section type	Section Range	Total collection	Sampling
LC	Coronal section (40 μm)	Bregma (-5.28 to -5.68)	Approximately 5 sections	Sampling 1 section every 2 sections to obtain 5 sections evenly spaced by 80 μm.
PVN	Coronal section (40 μm)	Bregma (-0.58 to -1.20)	Approximately 5 sections	To sample 1 section every 3 sections to get 5 sections evenly spaced by 120 μm
The whole brain	Coronal section (40 μm)	The whole brain	Approximately 300 sections	To sample 1 section every 5 sections to get 50 sections evenly spaced by the whole brain

Table S4. Summary of statistical analyses

Figure	Sample size（N）	Statistical test	P values
1C	Sham: n = 16 mice TBI: n = 16 mice	Student t-test	Sham vs. TBI: P < 0.0001 ****
1E	Sham: n = 8 mice TBI: n = 8 mice TNS: n = 8 mice TBI+TNS: n = 8 mice	One-way ANOVA	Sham vs. TBI: P = 0.0004 *** Sham vs. TNS: P = 0.7548 ns TBI vs. TBI+TNS: P = 0.0021 ** TNS vs. TBI+TNS: P = 0.3804 ns
1F	Sham: n = 8 mice TBI: n = 8 mice TNS: n = 8 mice TBI+TNS: n = 8 mice	One-way ANOVA	Sham vs. TBI: P = 0.0050 ** Sham vs. TNS: P = 0.1607 ns TBI vs. TBI+TNS: P = 0.0187 * TNS vs. TBI+TNS: P = 0.0551 ns
1H	Sham: n = 8 mice TBI: n = 8 mice TNS: n = 8 mice TBI+TNS: n = 8 mice	One-way ANOVA	Sham vs. TBI: P < 0.0001 **** Sham vs. TNS: P = 0.9387 ns TBI vs. TBI+TNS: P = 0.0022 ** TNS vs. TBI+TNS: P = 0.2184 ns
1I	Sham: n = 8 mice TBI: n = 8 mice TNS: n = 8 mice TBI+TNS: n = 8 mice	One-way ANOVA	Sham vs. TBI: P < 0.0001 **** Sham vs. TNS: P = 0.8863 ns TBI vs. TBI+TNS: P = 0.0148 * TNS vs. TBI+TNS: P = 0.0069 **
1K	Sham:	Student t-	Sham vs. TBI: P < 0.0001 ****

	n = 16 mice TBI: n = 16 mice	test	
1L	Sham: n = 8 mice TBI: n = 8 mice TNS: n = 8 mice TBI+TNS: n = 8 mice	One-way ANOVA	Sham vs. TBI: P < 0.0001 **** Sham vs. TNS: P = 0.9997 ns TBI vs. TBI+TNS: P = 0.0107 * TNS vs. TBI+TNS: P < 0.0001 ****
1M	Sham: n = 8 mice TBI: n = 8 mice TNS: n = 8 mice TBI+TNS: n = 8 mice	One-way ANOVA	Sham vs. TBI: P < 0.0001 **** Sham vs. TNS: P = 0.0421 * TBI vs. TBI+TNS: P = 0.0005 *** TNS vs. TBI+TNS: P < 0.0001 ****
1N	Sham: n = 8 mice TBI: n = 8 mice TNS: n = 8 mice TBI+TNS: n = 8 mice	One-way ANOVA	Sham vs. TBI: P = 0.0106 * Sham vs. TNS: P = 0.5493 ns TBI vs. TBI+TNS: P > 0.9999 ns TNS vs. TBI+TNS: P = 0.2093 ns
2B	Before: n = 17 cells After: n = 17 cells	Two-way ANOVA	Before vs. After: 0 > 0.9999 ns 20 = 0.2255 ns 40 = 0.0899 ns 60 = 0.0307 * 80 = 0.0046 ** 100 = 0.0052 **
2F	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9792 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0014 **
2G	Saline / Ctrl: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9999 ns

	Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice		CNO / Ctrl vs. CNO / hM3Dq: P = 0.0126 *
2H	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8298 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0105 *
2I	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9887 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0002 ***
2J	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8169 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0007 ***
2K	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8211 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0013 **
2L	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9667 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0091 **

	CNO / hM3Dq: n = 8 mice		
2M	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8405 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0071 **
2N	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.5700 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0145 *
2O	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.1865 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0021 **
2P	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.6412 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.8806 ns
2Q	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9766 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.3278 ns
S3B	Saline / Ctrl: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8919 ns

	Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice		CNO / Ctrl vs. CNO / hM3Dq: P = 0.9855 ns
S3C	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9471 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.7152 ns
S3D	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9311 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.9077 ns
S3E	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8439 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.8421 ns
S3F	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8903 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.8839 ns
S3G	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.5904 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.9023 ns

	CNO / hM3Dq: n = 8 mice		
S3H	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.8714 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.9891 ns
S3I	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9762 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.9995 ns
3D	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.7526 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0112 *
3E	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9998 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0097 **
3J	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0012 **
3K	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0045 **
3L	Ctrl: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0031 **

	taCasp3: n = 8 mice		
3M	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.7573 ns
3N	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.4370 ns
4I	TBI n = 4 mice TBI+TNS: n = 4 mice	Two-way ANOVA	TBI vs. TBI+TNS: 10°/s > 0.9999 ns 20°/s = 0.9997 ns 40°/s > 0.9999 ns 60°/s > 0.9999 ns 80°/s > 0.9999 ns 120°/s = 0.9897 ns 160°/s = 0.9987 ns 320°/s = 0.9991 ns
4J	TBI n = 4 mice TBI+TNS: n = 4 mice	Two-way ANOVA	TBI vs. TBI+TNS: 10°/s = 0.8490 ns 20°/s = 0.0192 * 40°/s < 0.0001 **** 60°/s < 0.0001 **** 80°/s < 0.0001 **** 120°/s < 0.0001 **** 160°/s < 0.0001 **** 320°/s = 0.0384 *
4K	TBI n = 4 mice TBI+TNS: n = 4 mice	Two-way ANOVA	TBI vs. TBI+TNS: 10°/s = 0.1995 ns 20°/s = 0.0021 ** 40°/s < 0.0001 **** 60°/s < 0.0001 **** 80°/s < 0.0001 **** 120°/s < 0.0001 **** 160°/s < 0.0001 **** 320°/s < 0.0001 ****
4L	TBI n = 4 mice TBI+TNS: n = 4 mice	Two-way ANOVA	TBI vs. TBI+TNS: 10°/s = 0.9200 ns 20°/s = 0.8806 ns 40°/s = 0.6140 ns 60°/s = 0.8250 ns

			80°/s = 0.1125 ns 120°/s = 0.3883 ns 160°/s = 0.4057 ns 320°/s = 0.1194 ns
4O	Ctrl: n = 4 mice hM3Dq: n = 4 mice	Two-way ANOVA	Ctrl vs. hM3Dq: 10°/s = 0.9959 ns 20°/s = 0.9993 ns 40°/s = 0.9953 ns 60°/s = 0.0823 ns 80°/s = 0.9947 ns 120°/s = 0.9651 ns 160°/s = 0.9967 ns 320°/s = 0.9994 ns
4P	Ctrl: n = 4 mice hM3Dq: n = 4 mice	Two-way ANOVA	Ctrl vs. hM3Dq: 10°/s = 0.9859 ns 20°/s = 0.1321 ns 40°/s = 0.0044 ** 60°/s < 0.0001 **** 80°/s < 0.0001 **** 120°/s < 0.0001 **** 160°/s = 0.0040 ** 320°/s = 0.0407 *
4Q	Ctrl: n = 4 mice hM3Dq: n = 4 mice	Two-way ANOVA	Ctrl vs. hM3Dq: 10°/s = 0.9973 ns 20°/s = 0.5626 ns 40°/s = 0.0976 ns 60°/s = 0.0006 *** 80°/s < 0.0001 **** 120°/s < 0.0001 **** 160°/s = 0.0092 ** 320°/s = 0.2669 ns
4R	Ctrl: n = 4 mice hM3Dq: n = 4 mice	Two-way ANOVA	Ctrl vs. hM3Dq: 10°/s = 0.9964 ns 20°/s > 0.9999 ns 40°/s > 0.9999 ns 60°/s = 0.9793 ns 80°/s = 0.7364 ns 120°/s = 0.3403 ns 160°/s = 0.3165 ns 320°/s = 0.7128 ns
5M	1 mW n=20, 2 mW n=20,	One-way ANOVA	1 mW vs. 2 mW: P = 0.0236 * 2 mW vs. 3 mW: P < 0.0001 ****

	3 mW n=20, 4 mW n=20, 2 mW+YO n=20		3 mW vs. 4 mW: P = 0.0109 * 2 mW vs. 2 mW+YO: P < 0.0001 ****
6I	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9854 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0463 *
6J	Saline / Ctrl: n = 8 mice Saline / hM3Dq: n = 8 mice CNO / Ctrl: n = 8 mice CNO / hM3Dq: n = 8 mice	Student t-test	Saline / Ctrl vs. Saline / hM3Dq: P = 0.9946 ns CNO / Ctrl vs. CNO / hM3Dq: P = 0.0002 ***
6M	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0002 ***
6N	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0021 **
6O	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0166 *
6P	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0001 ***
6Q	Ctrl: n = 8 mice taCasp3: n = 8 mice	Student t-test	Ctrl vs. taCasp3: P = 0.0002 ***
7K	1 mW n=20, 2 mW n=20, 3 mW n=20, 2 mW+Haldol 0.4 mg/kg n=20,	One-way ANOVA	1 mW vs. 2 mW: P < 0.0001 **** 2 mW vs. 3 mW: P < 0.0001 **** 2 mW vs. 2 mW+Haldol 0.4 mg/kg: P < 0.0001 ****

	2 mW+Haldol 1.2 mg/kg n=20		2 mW vs. 2 mW+Haldol 1.2 mg/kg: P < 0.0001 ****