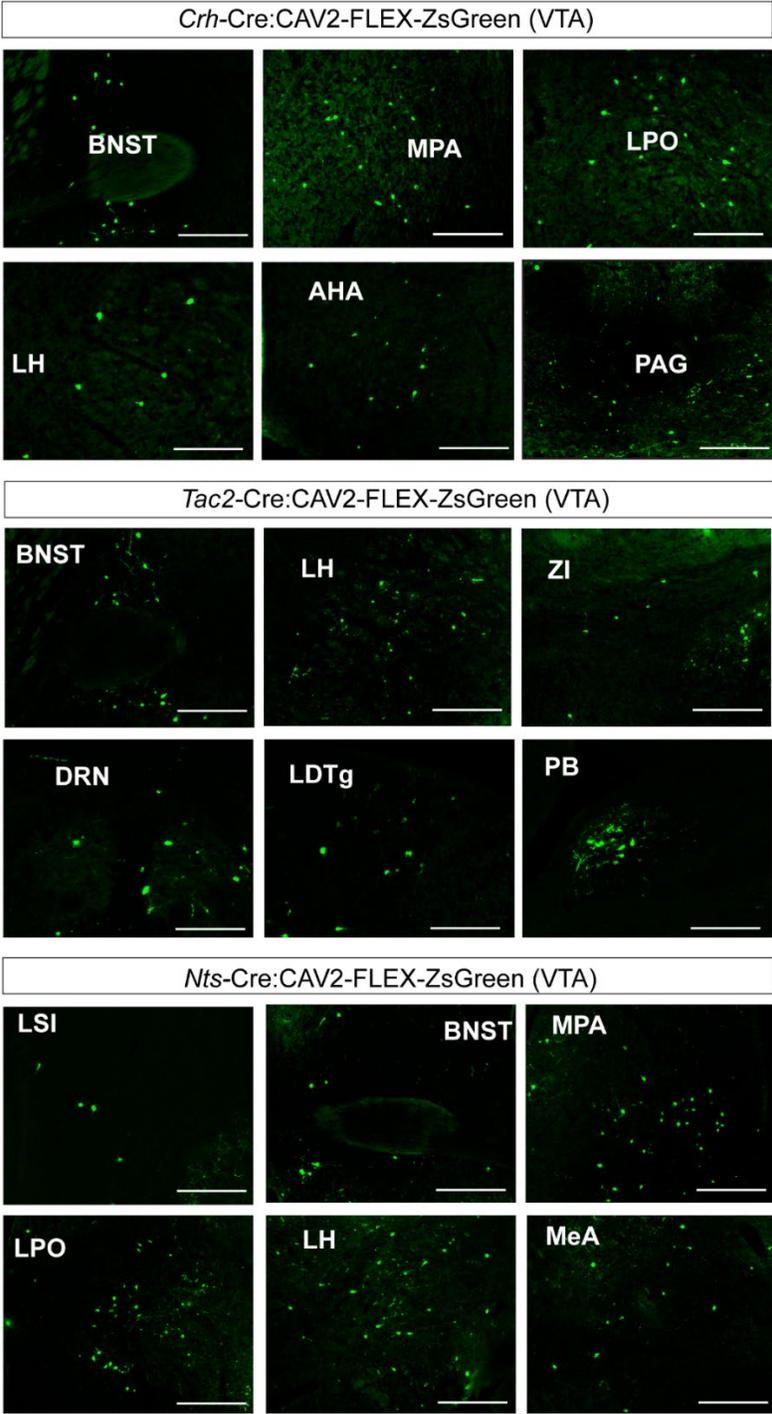
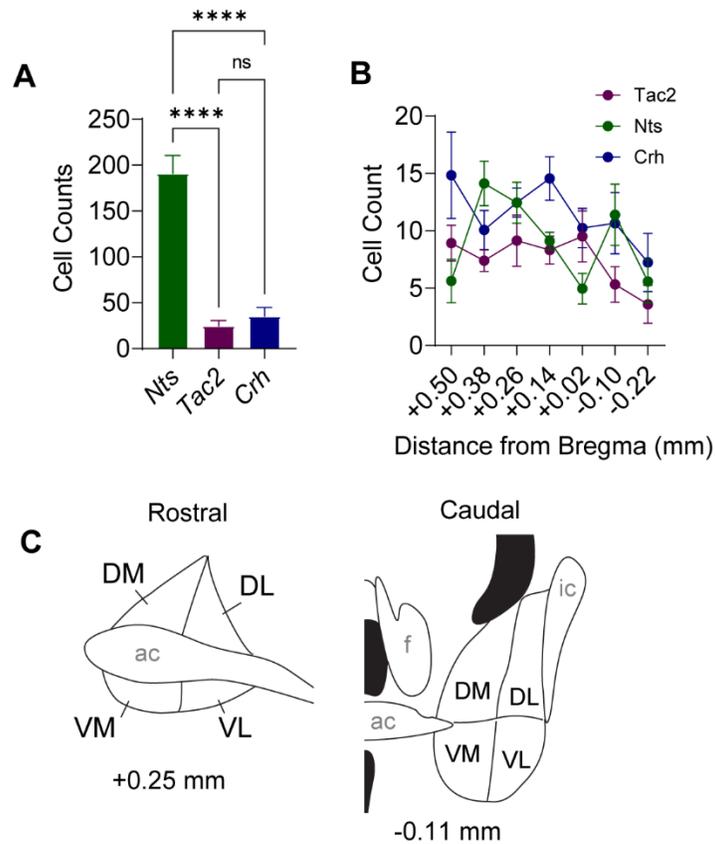


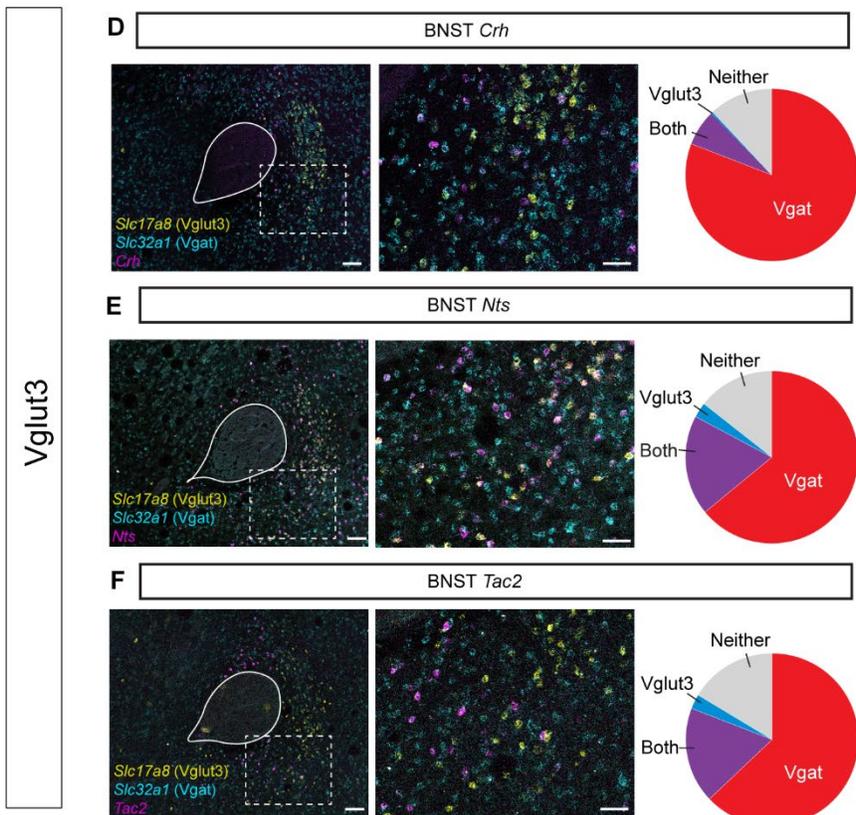
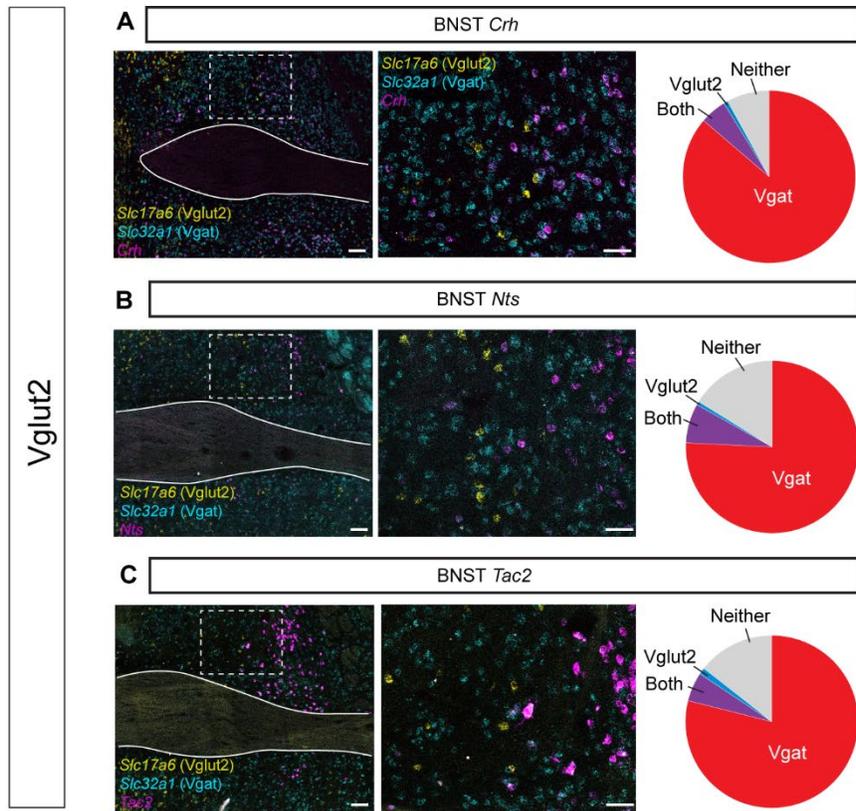
Supplementary Information



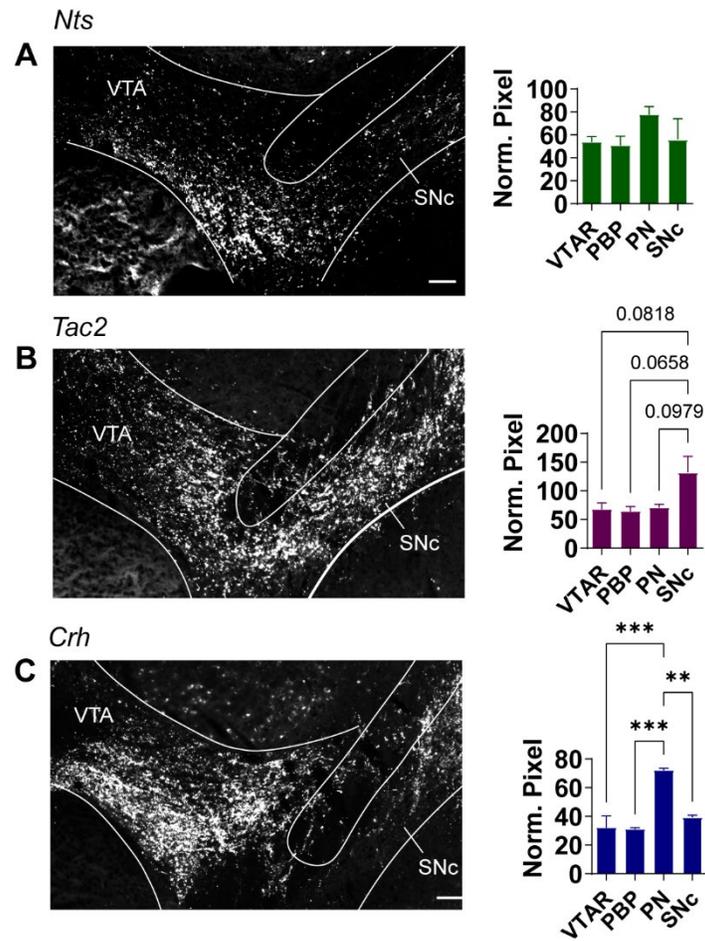
Supplemental Figure 1. Example images of zsGreen retrogradely labeled cells in various brain regions from each Cre line. Scale bars = 250 μ m.



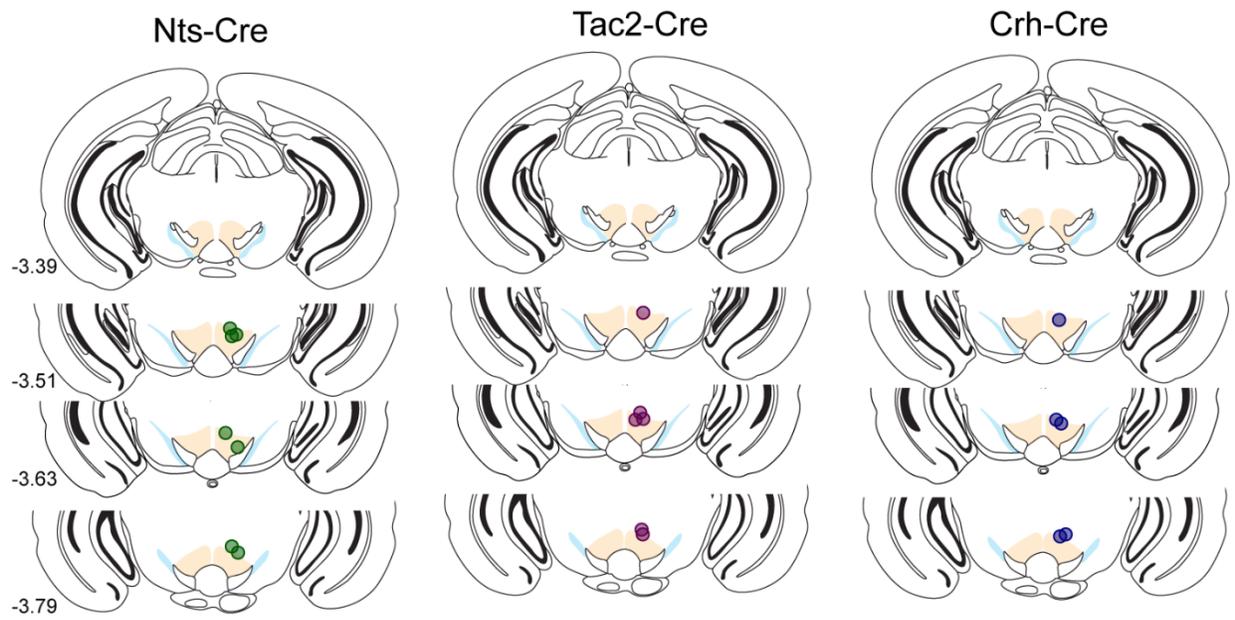
Supplemental Figure 2. (A) Counts of retrogradely labeled cells in the LH. **(B)** Rostral-caudal distribution of retrogradely labeled neurons in the BNST. **(C)** Designations of subregions in rostral and caudal BNST. DM: dorsomedial, DL: dorsolateral, VM: ventromedial, VL: ventrolateral, ac: anterior commissure, f: fornix, ic: internal capsule.



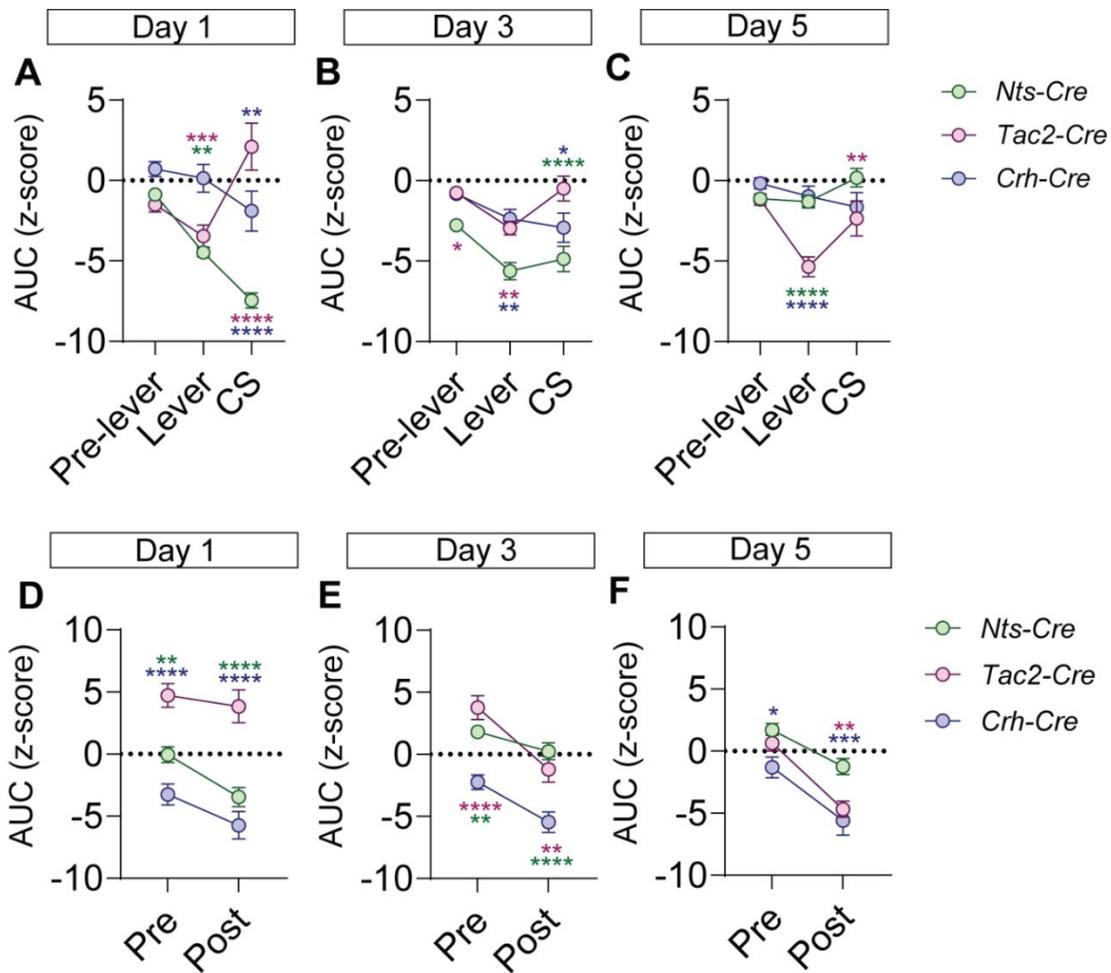
Supplemental Figure 3. (A-C) Example images of *in situ* for *Slc17a6* (Vglut2), *Slc32a1* (Vgat), and *Crh* (A), *Nts* (B), or *Tac2* (C), and pie chart showing Vglut2 and Vgat expression in peptide-positive neurons (cells counted in n=3 sections from each of N=4 mice for each peptide). Left: scale bar = 100 μ m. Right: scale bar = 50 μ m. **(D-F)** Example images of *in situ* for *Slc17a8* (Vglut3), *Slc32a1* (Vgat), and *Crh* (D), *Nts* (E), or *Tac2* (F), and pie chart showing Vglut3 and Vgat expression in peptide-positive neurons (cells counted in n=3 sections from each of N=3 mice for each peptide). Left: scale bar = 100 μ m. Right: scale bar = 50 μ m.



Supplemental Figure 4. (A-C) Left: Example images of syn-EGFP labeling in the VTA and SNc in each Cre line. Scale bar = 100 μ m. Right: Quantification of normalized pixel intensity in each subregion (N=3 mice/group, One-way ANOVA *Tac2*: $F_{(3,8)}=4.124$, $P=0.0484$, Tukey's multiple comparisons as listed, *Crh*: $F_{(3,8)}=20.17$, $P=0.0004$, Tukey's multiple comparisons ** $P<0.01$, *** $P<0.001$). Note: quantification of VTA subdivisions are the same as those presented in Figure 3. Data in bar graphs are presented as mean \pm SEM.



Supplemental Figure 5. Photometry fiber placements in the VTA. Orange shading represents the VTA, blue shading represents the SNc. Numbers are mm from bregma.



Supplemental Figure 6. (A-C) Area under the curve of the z-score for the 3 second period prior to the lever press, following the lever press, or during CS delivery on Day 1 (A), Day 3 (B), or Day 5 (C) of training (n=7 *Nts-Cre*, 5 *Tac2-Cre*, and 4 *Crh-Cre* mice, 2-way RM ANOVA Day 1 Interaction $F_{(4,39)}=18.42$, $P<0.0001$, Day 3 Effect of Cre Line $F_{(2,39)}=24.24$, $P<0.0001$, Effect of Time Period $F_{(2,39)}=9.834$, $P=0.0003$, Day 5 Interaction $F_{(4,39)}=4.764$, $P=0.0032$, Tukey's multiple comparisons * $P<0.05$, ** $P<0.01$, *** $P<0.001$, **** $P<0.0001$). **(D-E)** Area under the curve of the z-score for the 5-second period before or after the head entry on Day 1 (D), Day 3 (E), or Day 5 (F) of training (n=7 *Nts-Cre*, 5 *Tac2-Cre*, and 4 *Crh-Cre* mice, 2-way RM ANOVA Day 1 Effect of Cre Line $F_{(2,26)}=41.52$, $P<0.0001$, Effect of Time Period $F_{(1,26)}=8.542$, $P=0.0071$, Day 3 Effect of Cre Line $F_{(2,26)}=23.93$, $P<0.0001$, Effect of Time Period $F_{(1,26)}=25.72$, $P<0.0001$, Day 5 Effect of Cre Line $F_{(2,26)}=13.76$, $P<0.0001$, Effect of Time Period $F_{(1,26)}=48.93$, $P<0.0001$, Tukey's multiple comparisons * $P<0.05$, ** $P<0.01$, *** $P<0.001$, **** $P<0.0001$). Data are presented as mean \pm SEM.