Table 1. Statistical details of exact p-values and critical values for SNr input to ChAT+ PPN neurons

			ChAT+	
Parameter	**Statistical Test**	**p-value**	**Rostral**	**Caudal**
oIPSC Amplitude	unpaired t-test, t=0.9041, df=33	0.3725	n=15, 92.6 ± 18 pA	n=20, 115.2 ± 17 pA
PPR	unpaired t-test, t=0.1082, df=33	0.9145	n=15, 0.96 ± 0.04	n=20, 0.97 ± 0.05
Avg membrane potential	Mann Whitney, U=87	0.4706	n=11, -54.24 (-56.94 to -50.20) mV	n=19, -53.00 (-55.38 to -48.84) mV
% Pre-Opto Frq	Repeated Measures 2way ANOVA Stimulation: F(1, 35)=81.9 Region: F(1, 35)=0.002052 Interaction: F(1, 35)=3.273	 <0.0001 0.9641 0.0790	n=14 During: 35.62 ± 8.869 % Post: 136.1 ± 7.803 %	n=23 During: 52.11 ± 8.432 % Post: 119.1 ± 4.614 %
ΔFrq During Opto	Mann Whitney, U=131	0.3602	n=14, -2.47 (-3.37 to -1.44) Hz	n=23, -2.10 (-3.11 to -0.84) Hz
ΔRebound Frq	Mann Whitney, U=79	0.0142	n=14, 1.64 (1.00 to 2.17) Hz	n=22, 0.83 (0.42 to 1.14) Hz

Table 2. Statistical details of exact p-values and critical values for SNr input to Vgat+ PPN neurons

			Vgat+	
Parameter	**Statistical Test**	**p-value**	**Rostral**	**Caudal**
oIPSC Amplitude	Mann Whitney, U=50	0.6005	n=9, 76.5 (27.0 to 209.9) pA	n=13, 59.7 (37.7 to 269.7) pA
PPR	Mann Whitney, U=48	0.5123	n=9, 1.01 (0.88 to 1.16)	n=13, 1.06 (0.96 to 1.15);
Avg membrane potential	unpaired t-test, t=2.468, df=13	0.0282	n=5, -57.91 ± 1.630 mV	n=10, -52.00 ± 1.472 mV
% Pre-Opto Frq	Repeated Measures 2way ANOVA Stimulation: F(1, 24)=44.63 Region: F(1, 24)=0.09642 Interaction: F(1, 24)=0.8841	 <0.0001 0.7588 0.3565	n=7 During: 37.91 ± 15.91 % Post: 100.0 ± 14.57 %	n=19 During: 35.62 ± 8.869 % Post: 113.2 ± 5.187 %
ΔFrq During Opto	Mann Whitney, U=55	0.5336	n=7, -5.03 (-5.55 to -1.34) Hz	n=19, -4.29 (-11.02 to -2.94) Hz
ΔRebound Frq	Mann Whitney, U=63	>0.9999	n=7, 0.80 (-1.31 to 2.33) Hz	n=18, 0.59 (-2.35 to 1.47) Hz

Table 3. Statistical details of exact p-values and critical values for SNr input to Vglut2+ PPN neurons

			Vglut2+	
Parameter	**Statistical Test**	**p-value**	**Rostral**	**Caudal**
oIPSC Amplitude	Mann Whitney, U=29	0.0035	n=13, 61.6 (19.2 to 113.9) pA	n=13, 313.5 (143.8 to 729.1) pA
PPR	Mann Whitney, U=77	0.7241	n=13, 1.07 (0.86 to 1.38)	n=13, 0.92 (0.89 to 1.02)
Avg membrane potential	unpaired t-test, t=0.3838, df=25	0.7043	n=11, -53.03 ± 1.815	n=16, -52.09 ± 1.601
% Pre-Opto Frq	Repeated Measures 2way ANOVA Stimulation: F(1,28)=133.6 Region: F(1, 28)=0.5214 Interaction: F(1,28)=0.1765	 <0.0001 0.4762 0.6776	n=13 During: 32.62 ± 10.21 % Post: 100.3 ± 6.113 %	n=17 During: 24.71 ± 7.297 % Post: 97.48 ± 2.228 %
ΔFrq During Opto	Mann Whitney, U=55	0.0343	n=13, -3.21 (-12.21 to -1.95) Hz	n=17, -14.08 (-20.04 to -6.07) Hz
ΔRebound Frq	Mann Whitney, U=88	0.3627	n=13, 0.37 (-0.027 to 0.48) Hz	n=17, -0.23 (-0.82 to 1.08) Hz

Table 4. Statistical details of exact p-values and critical values for GPe input to ChAT+, Vgat+, and Vglut2+ PPN neurons

Parameter	Statistical Test	p-value	ChAT+	Vgat+	Vglut2+
oIPSC Amplitude	Kruskal-Wallis, H(2,37)=3.050	0.2176	n=6, 22.6 (9.75 to 50.20) pA	n=19, 24.77 (6.72 to 54.17) pA	n=15, 65.71 (14.50 to 133.4) pA
PPR	Mann Whitney, U=76	0.0206		n=19, 0.97 (0.76 to 1.2)	n=15, 0.81 (0.55 to 0.93
Avg membrane potential	Kruskal-Wallis, H(2,69)=2.963	0.2273	n=25, -54.16 (-58.05 to -51.10) mV	n=18, -54.28 (-55.47 to -48.77) mV	n=29, -55.32 (-57.97 to -52.28) mV
% Pre-Opto Frq	Repeated Measures 2way ANOVA Stimulation: F(1, 69)=25.46 Cell type: F(1, 69)=4.444 Interaction: F(1, 69)=2.805	 <0.0001 0.0153 0.0674	n=29 During: 92.39 ± 7.59 % Post: 104.10 ± 5.23 %	n=18 During: 57.70 ± 10.11 % Post: 91.81 ± 6.98 %	n=24 During: 64.15 ± 7.63 % Post: 104.7 ± 5.39 %
	Uncorrected Fisher's LSD, df=138 t=2.971 t=3.223 t=0.6177 t=0.1407 t=1.076 t=1.236	 0.0035 0.0016 0.5378 0.8883 0.2838 0.2184	During: ChAT+ vs. Vglut2+: 28.24 (CI 9.446 to 47.03) ChAT+ vs. Vgat+: 34.69 (CI 13.41 to 55.97) Vglut2+ vs. Vgat+: 6.454 (CI -14.21 to 27.11) Post: ChAT+ vs. Vglut2+: -1.337 (CI -20.13 to 17.45) ChAT+ vs. Vgat+: 11.58 (CI -9.702 to 32.86) Vglut2+ vs. Vgat+: 12.92 (CI -7.741 to 33.58)		
ΔFrq During Opto	Kruskal-Wallis, H(2,69)=17.21	0.0002	n=25, -0.16 (-0.90 to 0.03) Hz	n=18, -1.92 (-3.85 to -0.60) Hz	n=29, -0.89 (-3.28 to -0.43) Hz
	Uncorrected Dunn's test	0.0009 0.0002 0.4020	ChAT+ vs. Vglut2+: Z=3.332 ChAT+ vs. Vgat+: Z=3.755 Vglut2+ vs. Vgat+: Z=0.8380		
ΔRebound Frq	Kruskal-Wallis, H(2,69)=17.21	0.6772	n=8, 0.1041 (-0.52 to 0.41) Hz	n=19, 0.07082 (-0.36 to 0.57) Hz	n=7, -0.1421 (-2.58 to 0.71) Hz