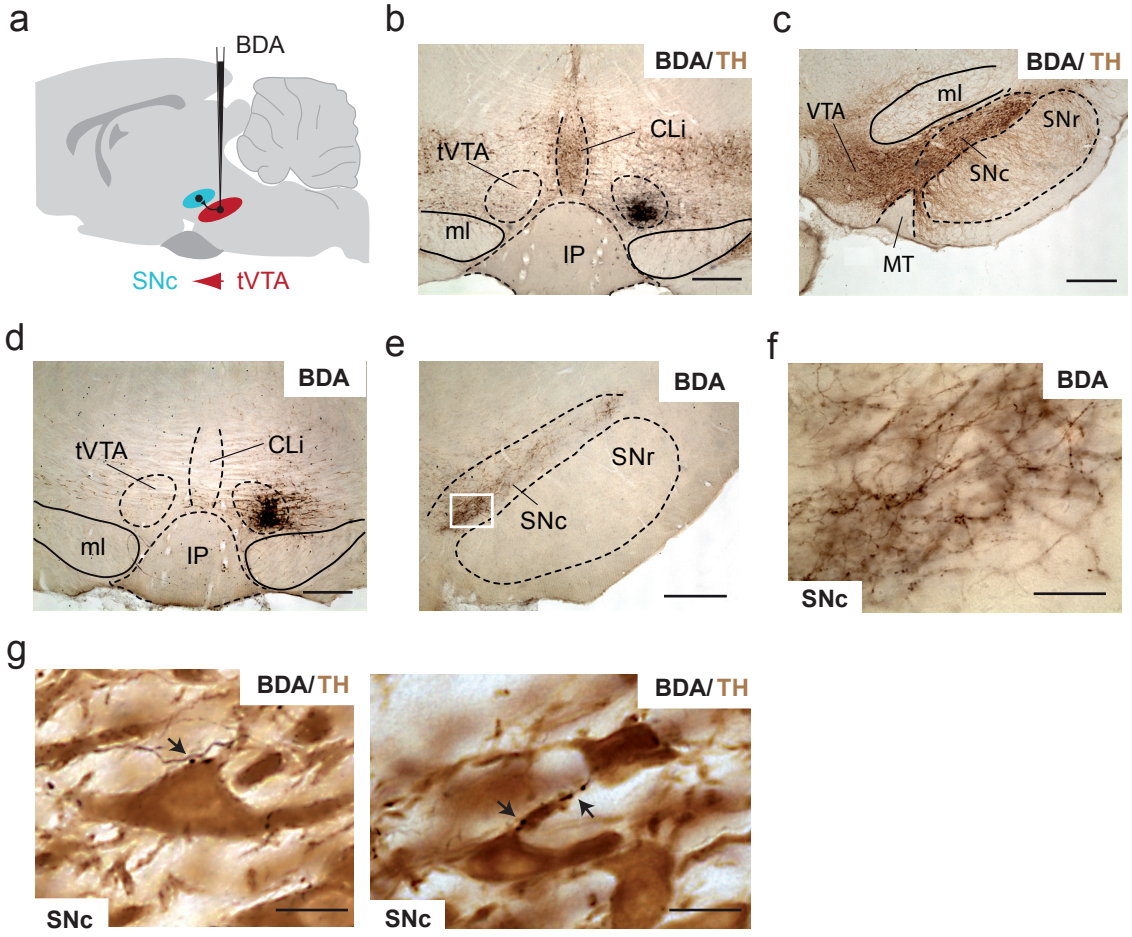

Figure S1. The tVTA neurons project to the SNc. (**a**) Experimental protocol for BDA injection into the tVTA (n = 7). (**b**) Example of a BDA injection site into the tVTA (black) with TH co-labeling (brown). (**c**) Example of the anterograde labeling observed in the SNc following BDA injection into the tVTA with TH co-labeling. (**d**) Example of a BDA injection site into the tVTA. (**e, f**) Example of the anterograde labeling observed in the SNc following BDA injection into the tVTA. (**e**, larger view; **f**, details of boxed area). (**g**) Examples of tVTA terminals making appositions (black arrows) on dopamine neurons in the SNc. BDA, biotinylated dextran amine; CLi, caudal linear nucleus of the raphe; CTb, cholera toxin β-subunit; IP, interpeduncular nucleus; ml, medial lemniscus; MT, medial terminal nucleus of the accessory optic tract; SNc, substantia nigra pars compacta; SNr, substantia nigra pars reticulata; TH, tyrosine hydroxylase; VTA, ventral tegmental area. Scale bars = 500 μm in (**b-e**), 10 μm in (**f, g**).

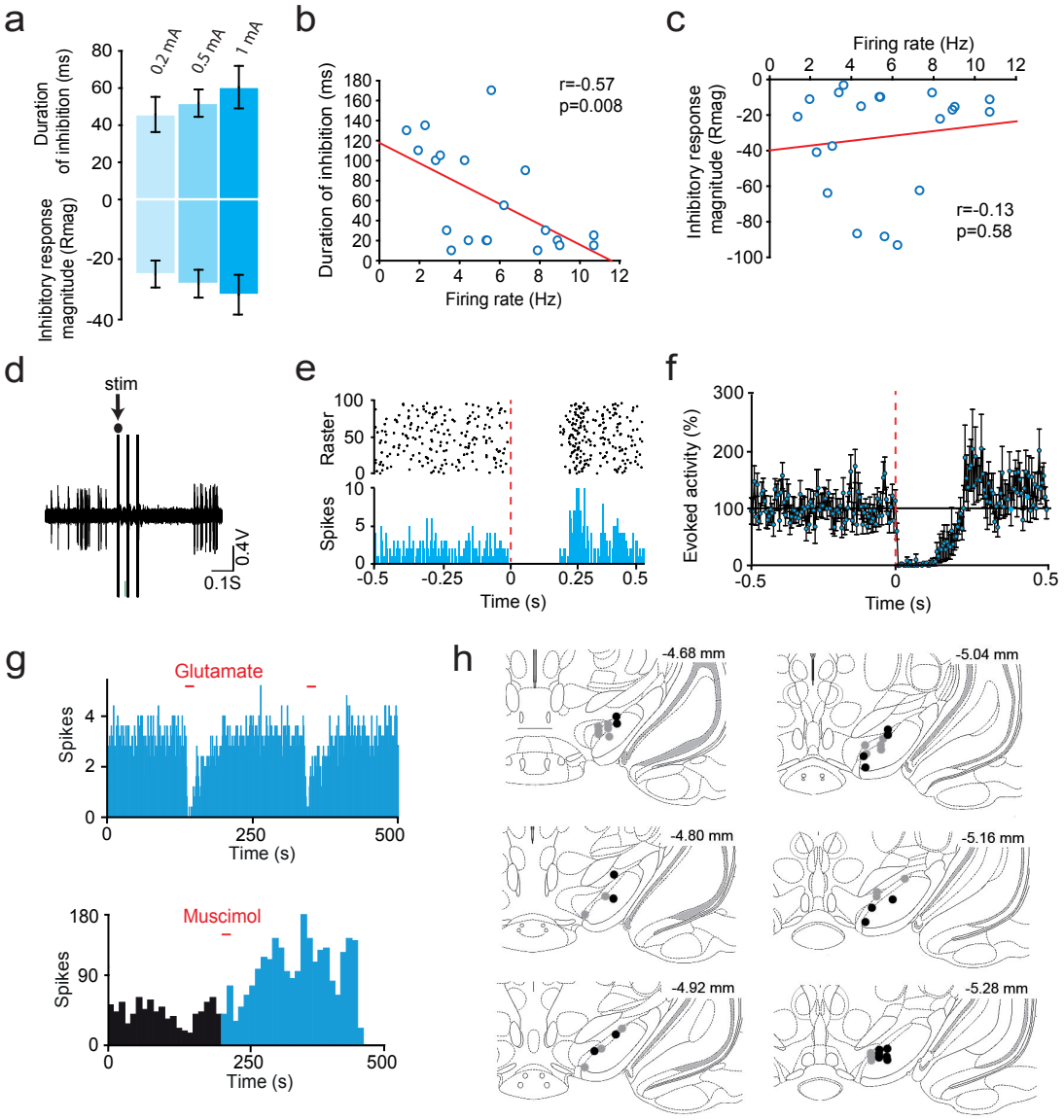

Figure S2. The tVTA exerts an inhibitory influence over SNc dopamine neurons. (**a**) The inhibition duration and inhibitory response magnitude of SNc dopamine neurons for tVTA stimulation at 0.2 (n = 13), 0.5 (n = 24) and 1 mA (n = 19). At 1 mA stimulation, 95% of neurons were inhibited (18 out of 19 neurons) with an onset of inhibition of 3.2 ± 1.3 ms, an inhibition duration of 60.5 ± 11.4 ms and an inhibition magnitude of -32.2 ± 6.6. (**b**) The duration of inhibition of SNc dopamine neurons is inversely correlated to their spontaneous activity (1 mA, n = 19; linear regression, r = -0.57, $p < 0.01$). (**c**) The magnitude of the inhibitory response of SNc dopamine neurons is not correlated to their spontaneous activity (1 mA, n = 19; linear regression, r = 0.13, $p = 0.58$). (**d**) Example of a spike trace of a SNc dopamine neuron with 3 pulses of tVTA stimulation at 1 mA. (**e**) Consequence of 3 pulses of tVTA stimulation on a single SNc dopamine neuron (**f**) and on the mean of 9 neurons (**f**, n = 9, $F_{98,784} = 5.6$, $p < 0.001$). (**g**) Examples of unitary activities from single SNc dopamine neurons after tVTA chemical manipulation. For glutamate, the chemical stimulation was repeated twice for the presented neuron. (**h**) Estimated locations of the recorded neurons in the SNc corresponding to Figure 4b (grey circles, control group; black circles, tVTA lesion group). Graphs represent mean ± SEM.