



Figure S1. **Electrophysiological identification of dopaminergic neurons.**

(A) Coronal sections of the brain atlas adapted from (Swanson, 2018) showing representative location of three recording tracks in the VTA (dashed line) and location of the deposit of the Chicago sky blue dye (black dot) B) Schematic representing the pattern of the cell/track sampling of the VTA. The population activity of dopamine (DA) neurons is determined by counting the number of spontaneously firing DA neurons encountered while making 5 to 9 vertical tracks separated by 200 μm . C) Waveform of an extracellular action potential presented as an example. As previously described (Grace and Bunney, 1983), neurons display a biphasic (positive-negative) action potential, typically with a “notch” in the rising phase corresponding to the calcium-dependent initial segment spike (arrow) and a prominent negative component, and with a total duration >2.2 ms overall. The duration from the spike initiation to the maximal negative phase of the action potential was ≥ 1.1 ms for all recorded neurons. D) Representative example of a recording of a putative DA neuron; the insert represents a close-up of a burst of action potentials.

Grace, A.A., and Bunney, B.S. (1983). Intracellular and extracellular electrophysiology of nigral dopaminergic neurons--1. Identification and characterization. *Neuroscience* 10: 301–15.

Swanson, L.W. (2018). Brain maps 4.0—Structure of the rat brain: An open access atlas with global nervous system nomenclature ontology and flatmaps. *J. Comp. Neurol.* 526: 935–943.