

Table S2. A summary of various neuron-specific proteins used to identify DA-neurons.

Transcription factor	Description	Markers
EN1	Encode homeodomain-containing proteins and implicate in the control of pattern formation during development of the central nervous system	mature mDA neurons
TH	An enzyme responsible for catalyzing the amino acid L-tyrosine to dihydroxyphenylalanine (DOPA). The rate-determining initial step in the biosynthesis of catecholamines such as dopamine, noradrenaline and adrenaline	mDA synthesis marker
DAT	An membrane-spanning protein that pumps the neurotransmitter dopamine out of the synapse back into cytosol. Mediate the active reuptake of dopamine from the synapse and is a principal regulator of dopaminergic neurotransmission	mDA uptake marker
DDC	A lyase enzyme that implicate in two metabolic pathways, synthesizing two important neurotransmitters, dopamine and serotonin	mDA synthesis marker
Vmat2	An integral membrane protein that acts to transport cytosolic monoamines into synaptic vesicles, using the proton gradient maintained across the synaptic vesicular membrane	mDA storage marker
CHAT	An enzyme that catalyzes the biosynthesis of acetylcholine	Cholinergic neuron marker
SLC32A1	An integral membrane protein involved in gamma-aminobutyric acid (GABA) and glycine uptake into synaptic vesicles	GABAergic neuron marker
SLC6A4	An integral membrane protein that transports the neurotransmitter serotonin from synaptic spaces into presynaptic neurons	Serotonin transporter neuron marker