

Figure S2: Neurodevelopmental genes examined in this study

Gene	Description	Ref	Accession
ACHE	acetylcholinesterase	[1]	NM_000665
ADORA1	adenosine receptor A1, belongs to the G-protein coupled receptor 1 family	[2]	NM_000674
ADORA2A	adenosine receptor A2a, belongs to the G-protein coupled receptor 1 family	[2]	NM_000675
ALK	receptor tyrosine kinase expressed specifically in the nervous system	[3]	NM_004304
APBB1	multimodular adaptor protein, binds to APP; required for synaptogenesis	[4]	NM_001164
APOE	apolipoprotein E; associated with Alzheimer's disease	[5]	NM_000041
ARNT2	neuronal transcription factor, regulating cell cycle progression and preventing cell death	[6]	NM_014862
ARTN	artemin; ligand for the RET receptor and uses GFR-alpha 3 as a coreceptor	[7]	NM_003976
ASCL1 (MASH1)	proneural transcription factor; dopaminergic differentiation	[8]	NM_004316
BAI1	P53-target gene specifically expressed in the brain; expressed in neuronal cells of the cortex but not in astrocytes	[9]	NM_001702
BDNF	brain-derived neurotrophic factor	[10]	NM_001709
BMP15	member of the bone morphogenetic protein family which is part of the transforming growth factor-beta superfamily	[11]	NM_005448
BMP2	member of the bone morphogenetic protein family which is part of the transforming growth factor-beta superfamily	[12]	NM_001200
BMP4	member of the bone morphogenetic protein family which is part of the transforming growth factor-beta superfamily	[12]	NM_130851
BMP8B	member of the bone morphogenetic protein family which is part of the transforming growth factor-beta superfamily	[13]	NM_001720
CDK5R1 (p35)	activator of CDK5, which is involved in neuronal migration during CNS development, synaptic activity in matured neurons, and neuronal cell death in neurodegenerative diseases	[14]	NM_003885
CDK5RAP1 (C42)	binds CDK5R1	[15]	NM_016408
CDK5RAP2 (C48)	binds CDK5R1	[15]	NM_018249
CDK5RAP3 (C53)	binds CDK5R1	[15]	NM_176096
CHRM2	muscarinic cholinergic receptor	[16]	NM_000739
CXCL1	C-X-C-motif chemokine 1	[17]	NM_001511
DLG4 (PSD95)	linked to NMDA receptors at synaptic sites, key role in mediating trafficking, clustering, and downstream signaling events, following receptor activation	[18]	NM_001365
DLL1	expression is found in mature DA neurons of the substantia nigra (SN) and ventral tegmental area (VTA); role in differentiation	[19]	NM_005618
DRD1	dopamine receptor D1; expressed postsynaptically on dopamine target cells	[20]	NM_000794

Gene	Description	Ref	Accession
DRD2	dopamine receptor D2; expressed postsynaptically on dopamine target cells and presynaptically on dopaminergic neurons	[20]	NM_000795
DVL3	axonal specification, neurite outgrowth	[21]	NM_004423
EFNB1	presynaptic development: Ephrin-B1 (EFNB1) and EFNB2 function with EphB to mediate presynaptic development via syntenin-1	[22]	NM_004429
EGF	epidermal growth factor; involved in growth, proliferation and differentiation	[23]	NM_001963
EP300	histone acetyltransferase p300; regulates transcription via chromatin remodeling, important in the processes of cell proliferation and differentiation	[24]	NM_001429
ERBB2	member of the epidermal growth factor (EGF) receptor family of receptor tyrosine kinases; roles in neuronal migration, axon guidance and synaptic plasticity	[25]	NM_004448
FEZ1	interaction of FEZ1 with microtubules was shown to promote neurite extension	[26]	NM_005103
FGF13	fibroblast growth factor 13	[27]	NM_004114
FGF2 (BFGF)	basic fibroblast growth factor	[28]	NM_002006
FLNA	neuronal migration	[29]	NM_001456
GDNF	ability to promote survival of mesencephalic DA neurons	[30]	NM_000514
GNAO1	guanine nucleotide-binding protein G(o) subunit alpha; involved in transmembrane signaling	[31]	NM_020988
GPI	glucose-6-phosphate isomerase	[32]	NM_000175
GRIN1 (NMDAR1)	one of the major mediators of excitatory neurotransmission in the central nervous system	[18]	NM_007327
HDAC4	histone deacetylation, class IIa HDAC, highly expressed in brain, can be neuroprotective	[33]	NM_006037
HDAC7	histone deacetylation, class IIa HDAC, class IIa HDACs interact with the DNA-binding domains of MEF2 proteins and convert them from activators to repressors	[34]	NM_016596
HES1	member of basic helix-loop-helix family of transcription factors; transcriptional repressor	[35]	NM_005524
HEY1	member of the hairy and enhancer of split-related (HESR) family of basic helix-loop-helix (bHLH)-type transcriptional factors, Notch target gene, not neuro-specific	[35]	NM_012258
HEY2	member of the hairy and enhancer of split-related (HESR) family of basic helix-loop-helix (bHLH)-type transcriptional factors	[35]	NM_012259
HEYL (HEY3)	member of the hairy and enhancer of split-related (HESR) family of basic helix-loop-helix (bHLH)-type transcription factors	[35]	NM_014571
IL3	interleukin 3; growth promoting cytokine	[36]	NM_000588
INHBA	inhibin beta A	[37]	NM_002192
MDK	mouse: promotes survival of mesencephalic neurons in culture, might have ubiquitous neurotrophic effect on DA neurons	[38]	NM_002391
MEF2C	mouse: mef2 genes appear to be associated with withdrawal of neurons from cell cycle and expression of a differentiated phenotype	[39]	NM_002397
MLL	histone methyltransferase; neuronal differentiation	[40]	NM_005933

Gene	Description	Ref	Accession
NCOA6	potential to enhance the activity of various transcription factors; could modulate chromatin structure by recruiting factors with HAT activity to the promoter (e.g., CBP/p300)	[41]	NM_014071
NDN	expressed in post-mitotic neurons; binds to ARNT2	[42]	NM_002487
NDP	Norrie disease protein; activates Wnt pathway, mutations lead to Norrie disease, expressed in the neural tube in mice	[43,44]	NM_000266
NEUROD1	proneural basic helix-loop-helix transcription factor that is essential for the development of the CNS; neuronal differentiation	[45]	NM_002500
NOG	important for specification of midbrain DA neurons and may be necessary for their long-term survival	[46]	NM_005450
NOTCH2	role in a various developmental processes, controlling cell fate decisions	[47]	NM_024408
NPTX1	synaptogenic activity; constitutively expressed in adult neurons and can form small cell surface clusters that can cocluster AMPA receptors	[48]	NM_002522
NRCAM	expressed by ventro-mesencephalic DA neurons; co-receptor for NRP2, also required for full manifestation of the repulsive effect of Sema3B and 3F	[49]	NM_005010
NRG1	major role in neural, mammary and cardiac development; axonally derived NRG1 binds to erbb2 receptors expressed on Schwann cells	[50]	NM_013957
NRP1	Sema3A receptor; neuronal cell guidance and axonal growth during the development of the nervous system	[51]	NM_003873
NRP2	Sema3F receptor; expressed in the ventral mesencephalon and ventro-mesencephalic DA neurons during development and in the adult brain	[49]	NM_003872
NTN1	axon guidance	[52]	NM_004822
ODZ1	odd Oz/ten-m homolog 1; cellular signal transducer	[53]	NM_014253
PAFAH1B1	influences microtubule function	[54]	NM_000430
PARD3 (PAR3)	part of a protein complex that includes Par6, atypical protein kinases C and the Cdc42 GTPase	[55]	NM_019619
PARD6B (PAR6B)	part of a protein complex that includes Par3, atypical protein kinases C and the Cdc42 GTPase, regulates cell polarity in different cell types.	[55,56,57]	NM_032521
PAX3	member of the paired box (PAX) family of transcription factors; neural stem cell marker	[58]	NM_181461
PAX5	member of the paired box (PAX) family of transcription factors	[59]	NM_016734
PAX6	member of the paired box (PAX) family of transcription factors; neural stem cell marker	[58,60]	NM_000280
POU3F3 (BRN1)	transcription factor, expressed in CNS	[61]	NM_006236
POU4F1 (BRN3A)	transcription factor, also found in subpopulations of DA neurons or in DA neuron region	[62]	NM_006237
PTN	pleiotrophin; neurite outgrowth promotin activity	[63]	NM_002825
RAC1	promotes cell spreading, lamellopodia formation and neurite outgrowth	[64]	NM_006908
ROBO1	axon guidance; rat: in developing and adult mdDA neurons, expressed in neurons throughout the SN and VTA	[52]	NM_002941
RTN4 (NOGO)	inhibitor of neurite outgrowth; involvement in restricting the plasticity of the CNS	[65]	NM_007008

Gene	Description	Ref	Accession
S100A6	binds calcium; found in subpopulations of neurons and astrocytes	[66]	NM_014624
S100B	S100 calcium binding protein B	[67]	NM_006272
SEMA4D	semaphorin 4D; transmembrane protein, axon guidance	[68]	NM_006378
SHH	morphogen, expressed in midbrain regions, required for proper development of mdDA neurons	[69]	NM_000193
SLIT2	axon guidance; rat: SLIT2 is expressed in adult SN neurons only	[52,69]	NM_004787
SOX8	transcription factor, regulation of embryonic development and in the determination of the cell fate	[70]	NM_014587
STAT3	signal transducer and activator of transcription 3 ; transcription factor	[71]	NM_003150
TNR	extracellular matrix protein, primarily expressed in the central nervous system	[72]	NM_003285
VEGFA	isoform VEGF165 binds to both NRP1 and NRP2	[73]	NM_003376
YWHAH (14-3-3 eta)	most abundantly expressed in brain; putative functions: cell survival, signaling, cell growth, division, adhesion, differentiation, apoptosis, regulation of ion channels	[74]	NM_003405

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