Table S3 Functional clustering of NSCs, astrocytes, OLs and neurons specifically expressed genes (p<=0.01).

NSC enriched functions			
Index	p-value	GO terms	FDR (%)
1	4.94E-12	GO:0022402~cell cycle process	7.77E-09
2	6.65E-12	GO:0007049~cell cycle	1.05E-08
3	8.50E-12	GO:0022403~cell cycle phase	1.34E-08
4	4.04E-11	GO:0000279~M phase	6.35E-08
5	2.21E-09	GO:0000278~mitotic cell cycle	3.47E-06
6	6.98E-09	GO:0000087~M phase of mitotic cell cycle	1.10E-05
7	4.68E-08	GO:0000280~nuclear division	7.35E-05
8	4.68E-08	GO:0007067~mitosis	7.35E-05
9	7.17E-08	GO:0048285~organelle fission	1.13E-04
10	7.03E-07	GO:0051301~cell division	1.11E-03
11	1.43E-09	GO:0003677~DNA binding	1.84E-06
12	2.34E-09	GO:0006350~transcription	3.67E-06
13	3.43E-08	GO:0045449~regulation of transcription	5.39E-05
14	4.34E-03	GO:0006355~regulation of transcription, DNA-dependent	6.61E+00
15	5.30E-03	GO:0051252~regulation of RNA metabolic process	8.02E+00
16	6.00E-03	GO:0030528~transcription regulator activity	7.44E+00
17	1.71E-05	GO:0006259~DNA metabolic process	2.69E-02
18	2.66E-05	GO:0006974~response to DNA damage stimulus	4.19E-02
19	1.78E-04	GO:0033554~cellular response to stress	2.79E-01
20	3.52E-04	GO:0006281~DNA repair	5.52E-01
21	7.82E-04	GO:0003682~chromatin binding	9.99E-01
22	1.60E-03	GO:0004386~helicase activity	2.04E+00
23	6.06E-03	GO:0042623~ATPase activity, coupled	7.51E+00
24	6.09E-03	GO:0016887~ATPase activity	7.55E+00
25	4.34E-03	GO:0006355~regulation of transcription, DNA-dependent	6.61E+00
26	5.30E-03	GO:0051252~regulation of RNA metabolic process	8.02E+00
27	6.00E-03	GO:0030528~transcription regulator activity	7.44E+00
28	9.84E-03	GO:0032886~regulation of microtubule-based process	1.44E+01
29	9.28E-03	GO:0016055~Wnt receptor signaling pathway	1.36E+01
30	3.98E-03	GO:0006396~RNA processing	6.07E+00
Astrocyte enriched functions			
Index	p-value	GO terms	FDR (%)
1	1.27E-04	GO:0030900~forebrain development	1.99E-01
2	4.70E-04	GO:0051960~regulation of nervous system development	7.34E-01
3	1.38E-03	GO:0045596~negative regulation of cell differentiation	2.14E+00
4	1.91E-03	GO:0050767~regulation of neurogenesis	2.96E+00
5	3.05E-03	GO:0045165~cell fate commitment	4.68E+00
6	4.27E-03	GO:0060284~regulation of cell development	6.49E+00
7	4.85E-03	GO:0045664~regulation of neuron differentiation	7.34E+00
8	5.24E-03	GO:0030182~neuron differentiation	7.91E+00

9	9.84E-03	GO:0042127~regulation of cell proliferation	1.44E+01
10	2.35E-03	GO:0007167~enzyme linked receptor protein signaling pathway	3.63E+00
11	1.27E-04	GO:0030900~forebrain development	1.99E-01
12	6.61E-04	GO:0048598~embryonic morphogenesis	1.03E+00
13	7.33E-04	GO:0048562~embryonic organ morphogenesis	1.14E+00
14	1.38E-03	GO:0045596~negative regulation of cell differentiation	2.14E+00
15	1.84E-03	GO:0051216~cartilage development	2.85E+00
16	2.99E-03	GO:0001501~skeletal system development	4.59E+00
17	3.05E-03	GO:0045165~cell fate commitment	4.68E+00
18	3.29E-03	GO:0007267~cell-cell signaling	5.04E+00
19	4.06E-03	GO:0030326~embryonic limb morphogenesis	6.18E+00
20	4.06E-03	GO:0035113~embryonic appendage morphogenesis	6.18E+00
21	5.24E-03	GO:0030182~neuron differentiation	7.91E+00
22	5.56E-03	GO:0048568~embryonic organ development	8.37E+00
23	7.40E-03	GO:0035108~limb morphogenesis	1.10E+01
24	7.40E-03	GO:0035107~appendage morphogenesis	1.10E+01
25	7.54E-03	GO:0007423~sensory organ development	1.12E+01
26	8.33E-03	GO:0048736~appendage development	1.23E+01
27	8.33E-03	GO:0060173~limb development	1.23E+01
28	9.02E-03	GO:0009953~dorsal/ventral pattern formation	1.32E+01
29	9.54E-03	GO:0040007~growth	1.39E+01
30	9.84E-03	GO:0042127~regulation of cell proliferation	1.44E+01
31	4.38E-04	GO:0008635~activation of caspase activity by cytochrome c	6.84E-01
32	7.54E-03	GO:0007423~sensory organ development	1.12E+01
33	2.35E-03	GO:0007167~enzyme linked receptor protein signaling pathway	3.63E+00
Oligodendrocye enriched functions			
Index	p-value	GO terms	FDR (%)
1	9.75E-06	GO:0007155~cell adhesion	1.56E-02
2	1.01E-05	GO:0022610~biological adhesion	1.61E-02
3	9.36E-04	GO:0019228~regulation of action potential in neuron	1.49E+00
4	1.64E-03	GO:0019226~transmission of nerve impulse	2.60E+00
5	2.14E-03	GO:0001508~regulation of action potential	3.38E+00
6	4.10E-03	GO:0042391~regulation of membrane potential	6.38E+00
7	4.13E-03	GO:0007272~ensheathment of neurons	6.43E+00
8	4.13E-03	GO:0008366~axon ensheathment	6.43E+00
9	4.95E-03	GO:0006873~cellular ion homeostasis	7.66E+00
10	6.04E-03	GO:0055082~cellular chemical homeostasis	9.26E+00
11	9.38E-03	GO:0048878~chemical homeostasis	1.40E+01
12	2.88E-04	GO:0005540~hyaluronic acid binding	3.88E-01
13	1.22E-04	GO:0022803~passive transmembrane transporter activity	1.64E-01
14	1.22E-04	GO:0015267~channel activity	1.64E-01
15	7.18E-04	GO:0005216~ion channel activity	9.67E-01
16	9.91E-04	GO:0022838~substrate specific channel activity	1.33E+00

17	2.54E-03	GO:0022836~gated channel activity	3.38E+00
18	2.84E-03	GO:0005261~cation channel activity	3.78E+00
19	4.71E-03	GO:0006811~ion transport	7.30E+00
20	9.05E-03	GO:0046873~metal ion transmembrane transporter activity	1.16E+01
21	3.31E-03	GO:0030182~neuron differentiation	5.18E+00
22	4.95E-03	GO:0006873~cellular ion homeostasis	7.66E+00
23	6.04E-03	GO:0055082~cellular chemical homeostasis	9.26E+00
24	9.38E-03	GO:0048878~chemical homeostasis	1.40E+01
25	7.18E-03	GO:0044092~negative regulation of molecular function	1.09E+01
Neuron enriched functions			
Index	p-value	GO terms	FDR (%)
1	7.58E-13	GO:0005261~cation channel activity	1.06E-09
2	3.29E-12	GO:0005216~ion channel activity	4.59E-09
3	5.36E-12	GO:0046873~metal ion transmembrane transporter activity	7.49E-09
4	7.44E-12	GO:0022838~substrate specific channel activity	1.04E-08
5	1.06E-11	GO:0022803~passive transmembrane transporter activity	1.48E-08
6	1.06E-11	GO:0015267~channel activity	1.48E-08
7	1.47E-11	GO:0022836~gated channel activity	2.05E-08
8	1.73E-08	GO:0006811~ion transport	2.78E-05
9	3.09E-08	GO:0030001~metal ion transport	4.97E-05
10	2.43E-07	GO:0006812~cation transport	3.91E-04
11	2.80E-07	GO:0022843~voltage-gated cation channel activity	3.91E-04
12	3.09E-07	GO:0005267~potassium channel activity	4.31E-04
13	3.26E-06	GO:0022832~voltage-gated channel activity	4.56E-03
14	3.26E-06	GO:0005244~voltage-gated ion channel activity	4.56E-03
15	4.11E-06	GO:0031420~alkali metal ion binding	5.73E-03
16	4.36E-06	GO:0030955~potassium ion binding	6.09E-03
17	5.18E-06	GO:0006813~potassium ion transport	8.34E-03
18	2.93E-05	GO:0005249~voltage-gated potassium channel activity	4.09E-02
19	5.28E-05	GO:0015672~monovalent inorganic cation transport	8.50E-02
20	2.97E-03	GO:0055085~transmembrane transport	4.68E+00
21	5.06E-08	GO:0030182~neuron differentiation	8.14E-05
22	1.47E-07	GO:0048666~neuron development	2.36E-04
23	5.44E-07	GO:0031175~neuron projection development	8.76E-04
24	1.26E-06	GO:0007409~axonogenesis	2.03E-03
25	3.30E-06	GO:0048812~neuron projection morphogenesis	5.31E-03
26	4.98E-06	GO:0048667~cell morphogenesis involved in neuron differentiation	8.03E-03
27	7.49E-06	GO:0000904~cell morphogenesis involved in differentiation	1.21E-02
28	1.76E-05	GO:0048858~cell projection morphogenesis	2.83E-02
29	3.10E-05	GO:0032990~cell part morphogenesis	4.99E-02
30	3.14E-05	GO:0007411~axon guidance	5.05E-02
31	3.16E-05	GO:0030030~cell projection organization	5.08E-02
32	6.30E-04	GO:0000902~cell morphogenesis	1.01E+00

33	2.40E-03	GO:0032989~cellular component morphogenesis	3.79E+00
34	3.72E-03	GO:0006928~cell motion	5.83E+00
35	6.94E-07	GO:0042923~neuropeptide binding	9.69E-04
36	6.94E-07	GO:0008188~neuropeptide receptor activity	9.69E-04
37	5.45E-06	GO:0004993~serotonin receptor activity	7.60E-03
38	8.55E-05	GO:0008227~amine receptor activity	1.19E-01
39	7.90E-03	GO:0051378~serotonin binding	1.05E+01
40	1.49E-11	GO:0030594~neurotransmitter receptor activity	2.08E-08
41	1.49E-11	GO:0042165~neurotransmitter binding	2.08E-08
42	6.94E-07	GO:0042923~neuropeptide binding	9.69E-04
43	6.94E-07	GO:0008188~neuropeptide receptor activity	9.69E-04
44	7.27E-05	GO:0001653~peptide receptor activity	1.02E-01
45	7.27E-05	GO:0008528~peptide receptor activity, G-protein coupled	1.02E-01
46	1.47E-03	GO:0042277~peptide binding	2.03E+00
47	3.79E-06	GO:0007268~synaptic transmission	6.11E-03
48	4.06E-06	GO:0019226~transmission of nerve impulse	6.53E-03
49	8.31E-06	GO:0007267~cell-cell signaling	1.34E-02
50	3.59E-05	GO:0006836~neurotransmitter transport	5.78E-02
51	5.01E-05	GO:0046903~secretion	8.06E-02
52	5.31E-05	GO:0003001~generation of a signal involved in cell-cell signaling	8.55E-02
53	8.08E-05	GO:0007269~neurotransmitter secretion	1.30E-01
54	2.62E-04	GO:0001505~regulation of neurotransmitter levels	4.20E-01
55	4.48E-04	GO:0032940~secretion by cell	7.19E-01
56	1.88E-03	GO:0006887~exocytosis	2.98E+00
57	2.72E-03	GO:0048489~synaptic vesicle transport	4.29E+00
58	4.66E-03	GO:0016079~synaptic vesicle exocytosis	7.24E+00
59	9.58E-03	GO:0046879~hormone secretion	1.44E+01
60	6.94E-07	GO:0042923~neuropeptide binding	9.69E-04
61	6.94E-07	GO:0008188~neuropeptide receptor activity	9.69E-04
62	3.86E-03	GO:0004994~somatostatin receptor activity	5.26E+00
63	7.75E-03	GO:0005179~hormone activity	1.03E+01
64	4.16E-04	GO:0005262~calcium channel activity	5.80E-01
65	8.45E-04	GO:0006816~calcium ion transport	1.35E+00
66	5.90E-03	GO:0015674~di-, tri-valent inorganic cation transport	9.09E+00
67	6.29E-04	GO:0030534~adult behavior	1.01E+00
68	1.64E-03	GO:0008344~adult locomotory behavior	2.60E+00
69	1.36E-04	GO:0005003~ephrin receptor activity	1.90E-01
70	9.48E-05	GO:0033555~multicellular organismal response to stress	1.52E-01
71	2.61E-03	GO:0001662~behavioral fear response	4.12E+00
72	2.61E-03	GO:0002209~behavioral defense response	4.12E+00
73	6.08E-03	GO:0007612~learning	9.35E+00
74	6.44E-03	GO:0042596~fear response	9.88E+00
75	2.80E-04	GO:0022834~ligand-gated channel activity	3.90E-01

76	2.80E-04	GO:0015276~ligand-gated ion channel activity	3.90E-01
77	3.46E-04	GO:0005230~extracellular ligand-gated ion channel activity	4.82E-01
78	4.68E-04	GO:0007611~learning or memory	7.51E-01
79	5.51E-03	GO:0008306~associative learning	8.51E+00
80	6.08E-03	GO:0007612~learning	9.35E+00
81	1.63E-03	GO:0008038~neuron recognition	2.59E+00
82	8.18E-03	GO:0007413~axonal fasciculation	1.24E+01
83	1.38E-03	GO:0045761~regulation of adenylate cyclase activity	2.20E+00
84	1.50E-03	GO:0019933~cAMP-mediated signaling	2.39E+00
85	1.64E-03	GO:0051339~regulation of lyase activity	2.60E+00
86	1.64E-03	GO:0031279~regulation of cyclase activity	2.60E+00
87	2.09E-03	GO:0030817~regulation of cAMP biosynthetic process	3.31E+00
88	2.26E-03	GO:0019935~cyclic-nucleotide-mediated signaling	3.57E+00
89	2.44E-03	GO:0030814~regulation of cAMP metabolic process	3.86E+00
90	2.92E-03	GO:0019932~second-messenger-mediated signaling	4.60E+00
91	3.05E-03	GO:0030808~regulation of nucleotide biosynthetic process	4.79E+00
92	3.05E-03	GO:0030802~regulation of cyclic nucleotide biosynthetic process	4.79E+00
93	3.76E-03	GO:0030799~regulation of cyclic nucleotide metabolic process	5.88E+00
94	4.30E-03	GO:0006140~regulation of nucleotide metabolic process	6.70E+00
95	9.58E-03	GO:0007190~activation of adenylate cyclase activity	1.44E+01
96	8.70E-05	GO:0043167~ion binding	1.21E-01
97	1.57E-04	GO:0046872~metal ion binding	2.19E-01
98	2.28E-04	GO:0043169~cation binding	3.18E-01
99	5.31E-05	GO:0003001~generation of a signal involved in cell-cell signaling	8.55E-02
100	9.58E-03	GO:0046879~hormone secretion	1.44E+01
101	2.31E-03	GO:0030900~forebrain development	3.65E+00
102	2.77E-03	GO:0007156~homophilic cell adhesion	4.36E+00
103	9.37E-03	GO:0016337~cell-cell adhesion	1.41E+01
104	1.96E-04	GO:0014070~response to organic cyclic substance	3.16E-01
105	3.24E-04	GO:0043279~response to alkaloid	5.20E-01
106	4.40E-03	GO:0019233~sensory perception of pain	6.85E+00
107	6.08E-03	GO:0007612~learning	9.35E+00
108	8.52E-03	GO:0031644~regulation of neurological system process	1.29E+01
109	5.76E-03	GO:0050767~regulation of neurogenesis	8.88E+00
110	9.48E-05	GO:0033555~multicellular organismal response to stress	1.52E-01
111	4.40E-03	GO:0019233~sensory perception of pain	6.85E+00
112	6.44E-03	GO:0048265~response to pain	9.88E+00
113	2.31E-03	GO:0030900~forebrain development	3.65E+00
114	2.61E-03	GO:0021879~forebrain neuron differentiation	4.12E+00
115	3.51E-03	GO:0021537~telencephalon development	5.50E+00
116	3.89E-03	GO:0021872~generation of neurons in the forebrain	6.09E+00
117	4.00E-03	GO:0021877~forebrain neuron fate commitment	6.26E+00
118	4.45E-03	GO:0021543~pallium development	6.93E+00

119	8.18E-03	GO:0021892~cerebral cortex GABAergic interneuron differentiation	1.24E+01
120	3.72E-03	GO:0006928~cell motion	5.83E+00
121	1.24E-03	GO:0043523~regulation of neuron apoptosis	1.97E+00

Different clusters were separated by different colors.