

Supplemental Data

Olig2-Regulated Lineage-Restricted Pathway

Controls Replication Competence

in Neural Stem Cells and Malignant Glioma

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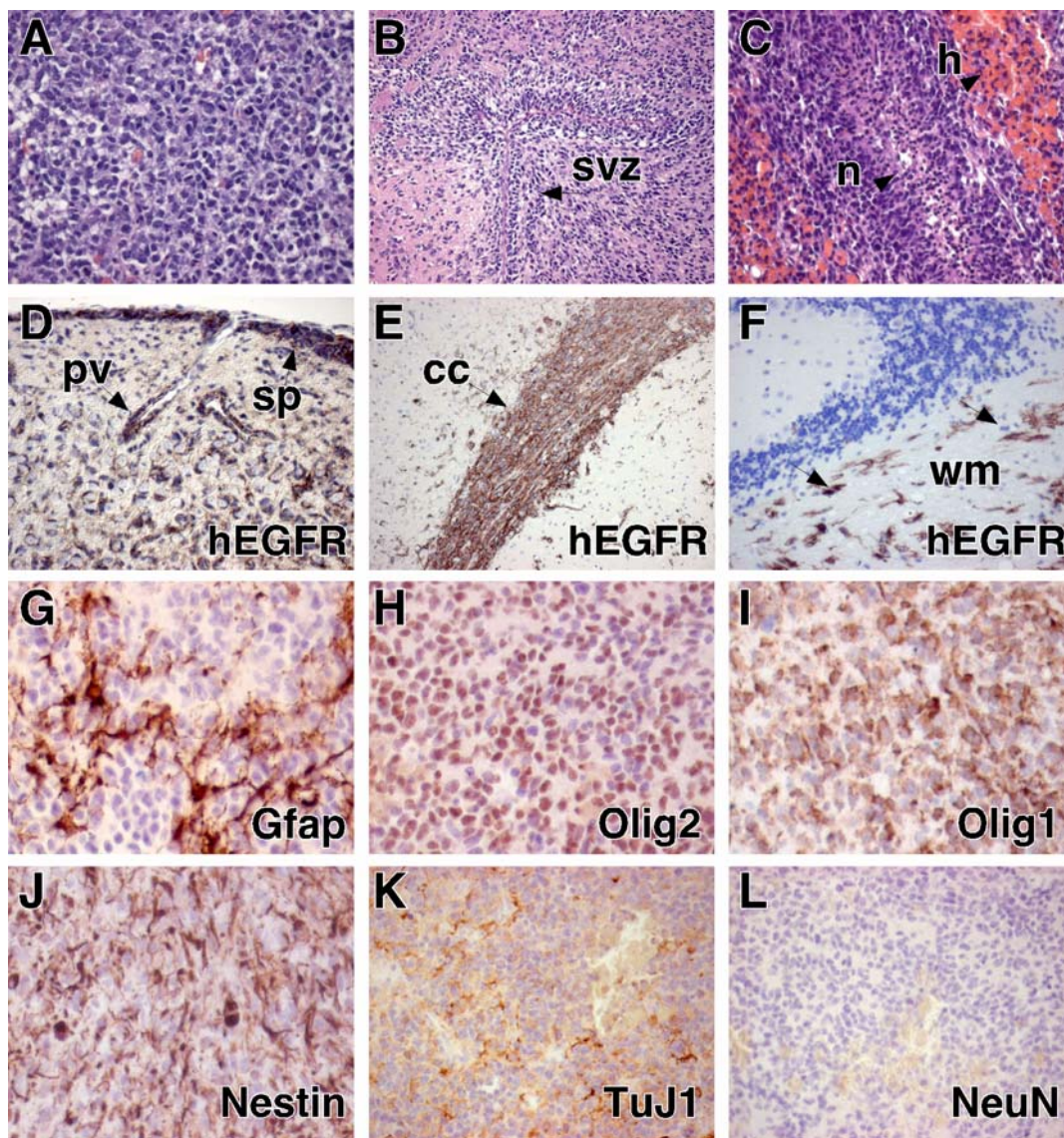


Figure S1. *Olig1/2*^{+/-} *Ink4a/Arf*^{-/-} EGFRvIII Gliomas Express Characteristic Morphologic and Immunophenotypic Features of Human Malignant Gliomas

(A) Tumors exhibit dense cellularity and atypia.

(B) Characteristic infiltration of host SVZ stem cell niche.

(C) Although occasional tumors exhibited pseudopalisading necrosis (n, arrowhead) and hemorrhage (h, arrowhead) similar to human GBM (Astrocytoma WHO Grade IV), most tumors lacked these features.

(D) IHC for hEGFR highlights hallmark feature of human gliomas, including perivascular (pv) and subpial (sp) accumulation of tumor cells, (E) striking white matter tropism of tumor cells in corpus callosum (cc), and (F) distant single cell infiltration of cerebellar white matter (wm, arrows).

(G-J) Immunohistochemical markers characteristic of human tumors (Gfap, Olig2, Olig1, Nestin) are present.

(K and L) Weak staining for the early neuronal marker TuJ1 and absence of the differentiated neuronal marker, NeuN similar to human glioma and consistent with heterogeneous lines of partial differentiation.

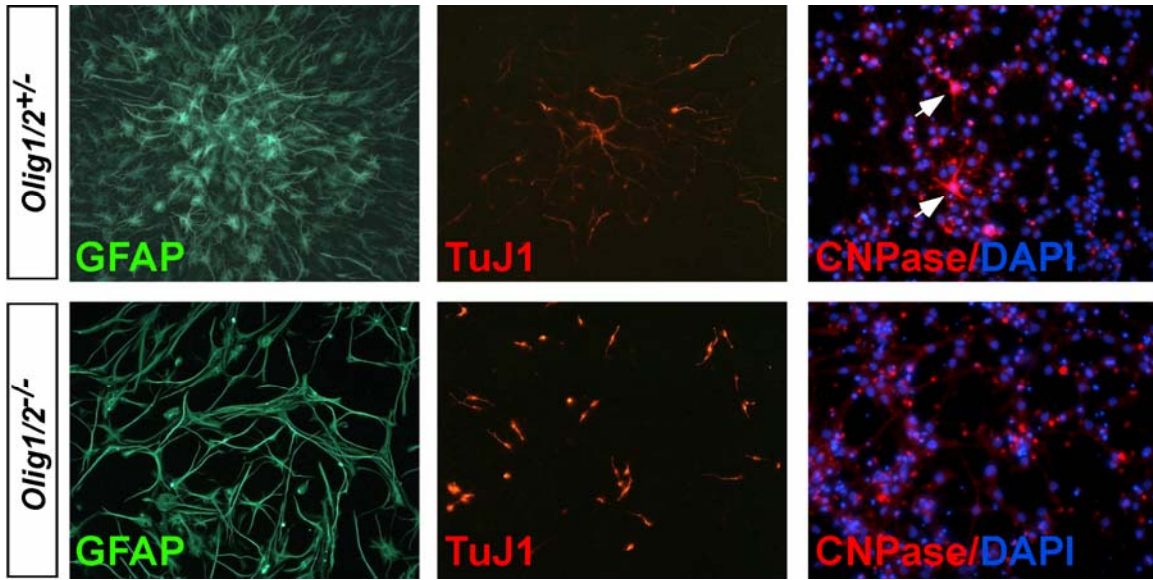


Figure S2. *Olig1/2^{+/−} Ink4a/Arf[−]EGFRvIII* Neurospheres Are Multipotent and *Olig1/2^{−/−} Ink4a/Arf[−]EGFRvIII* Neurospheres Are Bipotent
Olig1/2^{+/−} or *Olig1/2^{−/−} Ink4a/Arf[−]EGFRvIII* neurospheres were allowed to differentiate for 6 days in medium without EGF. Cells were stained for astrocytic (GFAP), neuronal (TuJ1) or oligodendrocytic (CNPase) differentiation markers. *Olig1/2^{+/−}* cells were able to generate CNPase⁺ cells (arrows) in opposition to *Olig1/2^{−/−}* cells.

Table S1. Genes with Higher Expression in Olig2 KO versus WT NSCs

Gene ID	Gene Symbol	Gene Name	Average Fold Change (log2)
13184	Dcpp	demilune cell and parotid protein	7.95
30937	Lmcd1	LIM and cysteine-rich domains 1	6.53
19734	Rgs16	regulator of G-protein signaling 16	6.06
13184	Dcpp	demilune cell and parotid protein	5.59
14580	Gfap	glial fibrillary acidic protein	5.17
58807	Slco1c1	solute carrier organic anion transporter family, member 1c1	5.04
11749	Anxa6	annexin A6	4.86
18768	Pkib	protein kinase inhibitor beta, cAMP dependent, testis specific	4.70
67784	Plxnd1	plexin D1	4.62
14580	Gfap	glial fibrillary acidic protein	4.56
13837	Epha3	Eph receptor A3	4.54
237761	Ankrd43	ankyrin repeat domain 43	4.44
57811	Rgr	retinal G protein coupled receptor	4.19
14633	Gli2	GLI-Kruppel family member GLI2	4.08
13593	Ebf3	early B-cell factor 3	4.05
22417	Wnt4	wingless-related MMTV integration site 4	4.04
19734	Rgs16	regulator of G-protein signaling 16	4.04
27984	Efhd2	EF hand domain containing 2	4.03
13642	Efnb2	ephrin B2	3.96
18073	Nid1	nidogen 1	3.90
20198	S100a4	S100 calcium binding protein A4	3.80
18159	Nppc	natriuretic peptide precursor type C	3.79
19734	Rgs16	regulator of G-protein signaling 16	3.78
70839	P2ry12	purinergic receptor P2Y, G-protein coupled 12	3.78
140723	Cacng5	calcium channel, voltage-dependent, gamma subunit 5	3.77
75646	Rai14	retinoic acid induced 14	3.75
240753	Plekha6	pleckstrin homology domain containing, family A member 6	3.74
53901	Dscr111	Down syndrome critical region gene 1-like 1 transmembrane and tetratricopeptide repeat containing 4	3.72
70551	Tmtc4		3.70
114249	Npnt	nephronectin	3.64
18575	Pde1c	phosphodiesterase 1C	3.63
13837	Epha3	Eph receptor A3	3.63
19736	Rgs4	regulator of G-protein signaling 4	3.58
212712	Satb2	special AT-rich sequence binding protein 2	3.53
114249	Npnt	nephronectin	3.46
58208	Bcl11b	B-cell leukemia/lymphoma 11B serine (or cysteine) peptidase inhibitor, clade B, member 1a	3.45
66222	Serpinb1a		3.40
74318	Hod	homeobox only domain	3.40
21813	Tgfbr2	transforming growth factor, beta receptor II	3.39
15904	Id4	inhibitor of DNA binding 4	3.37

12411	Cbs	cystathionine beta-synthase	3.35
16574	Kif5c	kinesin family member 5C	3.33
89867	Lztr2	leucine zipper transcription regulator 2	3.30
18798	Plcb4	phospholipase C, beta 4	3.29
22045	Trhr	thyrotropin releasing hormone receptor	3.29
15904	Id4	inhibitor of DNA binding 4	3.26
15904	Id4	inhibitor of DNA binding 4	3.26
74147	Ehhadh	enoyl-Coenzyme A, hydratase/3-hydroxyacyl Coenzyme A dehydrogenase	3.26
20443	St3gal4	ST3 beta-galactoside alpha-2,3-sialyltransferase 4	3.24
67082	1700011H14Rik	RIKEN cDNA 1700011H14 gene	3.20
171170	Mbnl3	muscleblind-like 3 (Drosophila)	3.19
320078	Olfml2b	olfactomedin-like 2B	3.15
80890	Trim2	tripartite motif protein 2	3.15
233328	Lrrk1	leucine-rich repeat kinase 1	3.13
56353	Rybp	RING1 and YY1 binding protein	3.13
53625	B3gnt2	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 2	3.12
72704	2810051F02Rik	RIKEN cDNA 2810051F02 gene	3.12
19771	Rlbp1	retinaldehyde binding protein 1	3.11
15874	Iapp	islet amyloid polypeptide	3.11
74318	Hod	homeobox only domain	3.10
13602	Sparcl1	SPARC-like 1 (mast9, hevin)	3.07
68939	Rasl11b	RAS-like, family 11, member B	3.03
80890	Trim2	tripartite motif protein 2	3.01
66066	Gng11	guanine nucleotide binding protein (G protein), gamma 11	2.97
18768	Pkib	protein kinase inhibitor beta, cAMP dependent, testis specific	2.97
18018	Nfatc1	nuclear factor of activated T-cells, cytoplasmic, calcineurin-dependent 1	2.95
27403	Abca7	ATP-binding cassette, sub-family A (ABC1), member 7	2.95
114249	Npnt	nephronectin	2.93
20692	Sparc	secreted acidic cysteine rich glycoprotein	2.92
66195	1110058A15Rik	RIKEN cDNA 1110058A15 gene	2.91
56878	Rbms1	RNA binding motif, single stranded interacting protein 1	2.90
80890	Trim2	tripartite motif protein 2	2.86
246730	Oas1a	2'-5' oligoadenylate synthetase 1A	2.86
80890	Trim2	tripartite motif protein 2	2.81
50876	Tmod2	tropomodulin 2	2.81
100727	Ugt2b34	UDP glucuronosyltransferase 2 family, polypeptide B34	2.78
15937	Ier3	immediate early response 3	2.77
71602	Myo1e	myosin IE	2.76
19223	Ptgis	prostaglandin I2 (prostacyclin) synthase	2.76
17380	Mme	membrane metallo endopeptidase	2.76
67841	Atg3	autophagy-related 3 (yeast)	2.71
81897	Tlr9	toll-like receptor 9	2.71
106906	AI450241	expressed sequence AI450241	2.71

234199	Fgl1	fibrinogen-like protein 1	2.71
74122	Tmem43	transmembrane protein 43	2.70
108116	Slco3a1	solute carrier organic anion transporter family, member 3a1	2.70
22139	Ttr	transthyretin	2.69
16449	Jag1	jagged 1	2.69
27971	D8Wsu26e	DNA segment, Chr 8, Wayne State University 26, expressed	2.68
13591	Ebf1	early B-cell factor 1	2.67
17096	Lyn	Yamaguchi sarcoma viral (v-yes-1) oncogene homolog	2.65
67483	1700028P14Rik	RIKEN cDNA 1700028P14 gene	2.65
19332	Rab20	RAB20, member RAS oncogene family	2.64
11749	Anxa6	annexin A6	2.63
114249	Npnt	nephronectin	2.62
22439	Xkh	Kell blood group precursor (McLeod phenotype) homolog	2.62
209047	Gipc3	GIPC PDZ domain containing family, member 3	2.61
12350	Car3	carbonic anhydrase 3	2.60
26879	B3galnt1	UDP-GalNAc:betaGlcNAc beta 1,3-galactosaminyltransferase, polypeptide 1	2.58
15904	Id4	inhibitor of DNA binding 4	2.57
12350	Car3	carbonic anhydrase 3	2.54
14595	B4galt1	UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 1	2.54
12945	Dmbt1	deleted in malignant brain tumors 1	2.53
384009	Glipr2	GLI pathogenesis-related 2	2.53
12494	Cd38	CD38 antigen	2.53
11568	Aebp1	AE binding protein 1	2.52
20583	Snai2	snail homolog 2 (Drosophila)	2.51
15904	Id4	inhibitor of DNA binding 4	2.50
17960	Nat1	N-acetyltransferase 1 (arylamine N-acetyltransferase)	2.48
17300	Foxc1	forkhead box C1	2.47
19659	Rbp1	retinol binding protein 1, cellular	2.47
21922	Clec3b	C-type lectin domain family 3, member b	2.46
14633	Gli2	GLI-Kruppel family member GLI2	2.44
235587	Parp3	poly (ADP-ribose) polymerase family, member 3	2.43
23936	Lynx1	Ly6/neurotoxin 1	2.41
18584	Pde8a	phosphodiesterase 8A	2.38
20336	Exoc4	exocyst complex component 4	2.37
14486	Gcap8	granule cell antiserum positive 8	2.37
193385	6330500D04Rik	RIKEN cDNA 6330500D04 gene	2.37
11898	Ass1	argininosuccinate synthetase 1	2.35
13592	Ebf2	early B-cell factor 2	2.35
214855	Arid5a	AT rich interactive domain 5A (Mrf1 like)	2.35
21813	Tgfb2	transforming growth factor, beta receptor II	2.34
20473	Six3	sine oculis-related homeobox 3 homolog (Drosophila)	2.34
30805	Slc22a4	solute carrier family 22 (organic cation transporter), member 4	2.33
23934	Ly6h	lymphocyte antigen 6 complex, locus H	2.31

17096	Lyn	Yamaguchi sarcoma viral (v-yes-1) oncogene homolog	2.30
11601	Angpt2	angiopoietin 2	2.30
12411	Cbs	cystathionine beta-synthase	2.29
21835	Thrsp	thyroid hormone responsive SPOT14 homolog (Rattus)	2.29
11906	Atbf1	AT motif binding factor 1	2.27
14696	Gnb4	guanine nucleotide binding protein, beta 4	2.26
105859	Ccdc2	cold shock domain containing C2, RNA binding	2.25
14696	Gnb4	guanine nucleotide binding protein, beta 4	2.25
18073	Nid1	nidogen 1	2.22
19288	Ptx3	pentraxin related gene	2.22
56878	Rbms1	RNA binding motif, single stranded interacting protein 1	2.22
68337	Crip2	cysteine rich protein 2	2.21
12522	Cd83	CD83 antigen	2.21
14395	Gabra2	gamma-aminobutyric acid (GABA-A) receptor, subunit alpha 2	2.20
104001	Rtn1	reticulon 1	2.20
21835	Thrsp	thyroid hormone responsive SPOT14 homolog (Rattus)	2.20
12841	Col9a3	procollagen, type IX, alpha 3	2.20
21923	Tnc	tenascin C	2.20
67198	2810022L02Rik	RIKEN cDNA 2810022L02 gene	2.19
12585	Cdr2	cerebellar degeneration-related 2	2.17
319146	Irfz	interferon zeta	2.17
14681	Gnao1	guanine nucleotide binding protein, alpha o	2.15
269608	Plekhg5	pleckstrin homology domain containing, family G (with RhoGef domain) member 5	2.15
231238	2310045A20Rik	RIKEN cDNA 2310045A20 gene	2.14
20450	St8sia2	ST8 alpha-N-acetyl-neuraminide alpha-2,8-sialyltransferase 2	2.14
70202	2310051M13Rik	RIKEN cDNA 2310051M13 gene	2.14
18081	Ninj1	ninjurin 1	2.14
20969	Sdc1	syndecan 1	2.13
13593	Ebf3	early B-cell factor 3	2.13
21857	Timp1	tissue inhibitor of metalloproteinase 1	2.12
71914	Antxr2	anthrax toxin receptor 2	2.11
67111	Asahl	N-acylsphingosine amidohydrolase (acid ceramidase)-like	2.10
14457	Gas7	growth arrest specific 7	2.10
11648	Akp3	alkaline phosphatase 3, intestine, not Mn requiring	2.09
80837	Rhoj	ras homolog gene family, member J	2.09
13593	Ebf3	early B-cell factor 3	2.08
53625	B3gnt2	UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 2	2.08
22761	Zfp1	zinc finger protein, multitype 1	2.06
227612	A830007P12Rik	RIKEN cDNA A830007P12 gene	2.06
14371	Fzd9	frizzled homolog 9 (Drosophila)	2.06
14715	Gnrhr	gonadotropin releasing hormone receptor	2.06
13844	Ephb2	Eph receptor B2	2.06

14960	H2-Aa	histocompatibility 2, class II antigen A, alpha	2.06
18830	Pltp	phospholipid transfer protein	2.06
12469	Cct8	chaperonin subunit 8 (theta)	2.04
12038	Bche	butyrylcholinesterase	2.03
214944	Mobkl2b	MOB1, Mps One Binder kinase activator-like 2B (yeast)	2.02
16949	Loxl1	lysyl oxidase-like 1	2.02
227580	C1ql3	C1q-like 3	2.02
21391	Tbxas1	thromboxane A synthase 1, platelet	2.01
69097	Trim15	tripartite motif protein 15	2.01
170677	Pcdh21	protocadherin 21	2.01
208177	Phldb2	pleckstrin homology-like domain, family B, member 2	2.01
22413	Wnt2	wingless-related MMTV integration site 2	2.00
242653	Cldn19	claudin 19	2.00
320982	Arl4c	ADP-ribosylation factor-like 4C transmembrane and tetratricopeptide repeat containing	1.99
70551	Tmtc4	4	1.98
64085	Clstn2	calsyntenin 2	1.97
85030	Tnfrsf25	tumor necrosis factor receptor superfamily, member 25	1.96
14314	Fstl1	follistatin-like 1	1.95
170571	Cntnap4	contactin associated protein 4	1.95
12825	Col3a1	procollagen, type III, alpha 1	1.93
18029	Nfic	nuclear factor I/C	1.93
14264	Fmod	fibromodulin	1.93
56847	Aldh1a3	aldehyde dehydrogenase family 1, subfamily A3	1.92
13650	Rhbf1	rhomboid family 1 (Drosophila)	1.90
16660	Krt1-1	keratin complex 1, acidic, gene 1	1.90
11568	Aebp1	AE binding protein 1	1.89
227541	Camk1d	calcium/calmodulin-dependent protein kinase ID	1.88
240442	BC024969	cDNA sequence BC024969	1.88
16574	Kif5c	kinesin family member 5C	1.88
14456	Gas6	growth arrest specific 6	1.87
11749	Anxa6	annexin A6	1.87
27027	Tspan32	tetraspanin 32	1.87
11676	Aldoc	aldolase 3, C isoform	1.85
270192	Rab6b	RAB6B, member RAS oncogene family	1.85
228357	Lrp4	low density lipoprotein receptor-related protein 4	1.84
14164	Fgf1	fibroblast growth factor 1	1.83
16004	Igf2r	insulin-like growth factor 2 receptor	1.81
22045	Trhr	thyrotropin releasing hormone receptor	1.81
99543	Olfml3	olfactomedin-like 3	1.80
26878	B3galt2	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase, polypeptide 2	1.80
246228	Vwa1	von Willebrand factor A domain containing 1	1.80
212307	Mapre2	microtubule-associated protein, RP/EB family, member 2	1.80
14204	Il4i1	interleukin 4 induced 1	1.78
12494	Cd38	CD38 antigen	1.78
69852	Tcf23	transcription factor 23	1.78
13642	Efnb2	ephrin B2	1.78
235041	Ankrd25	ankyrin repeat domain 25	1.76
14264	Fmod	fibromodulin	1.76

108013	Brunol4	bruno-like 4, RNA binding protein (Drosophila)	1.76
211652	Wwc1	WW, C2 and coiled-coil domain containing 1	1.75
12728	Clcn5	chloride channel 5	1.75
20362	Sept8	septin 8	1.75
26377	Dapp1	dual adaptor for phosphotyrosine and 3-phosphoinositides 1	1.74
15572	Elavl4	ELAV (embryonic lethal, abnormal vision, Drosophila)-like 4 (Hu antigen D)	1.74
16004	Igf2r	insulin-like growth factor 2 receptor	1.74
75646	Rai14	retinoic acid induced 14	1.73
12587	Mia1	melanoma inhibitory activity 1	1.73
12484	Cd24a	CD24a antigen	1.70
66890	Lman2	lectin, mannose-binding 2	1.70
18164	Nptx1	neuronal pentraxin 1	1.69
18786	Plaa	phospholipase A2, activating protein	1.69
101202	AI987662	expressed sequence AI987662	1.68
107747	Aldh111	aldehyde dehydrogenase 1 family, member L1	1.68
56508	Rapgef4	Rap guanine nucleotide exchange factor (GEF) 4	1.68
52392	D1Ert622e	DNA segment, Chr 1, ERATO Doi 622, expressed	1.68
170768	Pfkfb3	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3	1.68
12832	Col5a2	procollagen, type V, alpha 2	1.67
14164	Fgf1	fibroblast growth factor 1	1.67
15209	Hesx1	homeo box gene expressed in ES cells	1.67
11636	Ak1	adenylate kinase 1	1.65
214444	Cdk5rap2	CDK5 regulatory subunit associated protein 2	1.65
216164	Dos	downstream of Stk11	1.65
214663	Slc25a29	solute carrier family 25 (mitochondrial carrier, palmitoylcarnitine transporter), member 29	1.65
56632	Sphk2	sphingosine kinase 2	1.65
17150	Mfap2	microfibrillar-associated protein 2	1.64
19126	Prom1	prominin 1	1.64
20969	Sdc1	syndecan 1	1.63
227541	Camk1d	calcium/calmodulin-dependent protein kinase ID	1.61
66141	Ifitm3	interferon induced transmembrane protein 3	1.60
19206	Ptch1	patched homolog 1	1.60
20204	Prrx2	paired related homeobox 2	1.59
75415	Arhgap12	Rho GTPase activating protein 12	1.59
18164	Nptx1	neuronal pentraxin 1	1.59
12007	Azgp1	alpha-2-glycoprotein 1, zinc	1.58
56741	Nope	neighbor of Punc E11	1.58
15572	Elavl4	ELAV (embryonic lethal, abnormal vision, Drosophila)-like 4 (Hu antigen D)	1.57
76413	1700016D06Rik	RIKEN cDNA 1700016D06 gene	1.57
11479	Acvr1b	activin A receptor, type 1B	1.57
17387	Mmp14	matrix metalloproteinase 14 (membrane-inserted)	1.57
18366	Olf65	olfactory receptor 64	1.57
29815	Bcar3	breast cancer anti-estrogen resistance 3	1.56
109135	Plekha5	pleckstrin homology domain containing, family A member 5	1.55

16172	Il17ra	interleukin 17 receptor A	1.55
18481	Pak3	p21 (CDKN1A)-activated kinase 3	1.54
56744	Cxcl4	chemokine (C-X-C motif) ligand 4	1.53
192657	Ell2	elongation factor RNA polymerase II 2	1.53
216835	Usp43	ubiquitin specific peptidase 43	1.52
69953	2810025M15Rik	RIKEN cDNA 2810025M15 gene	1.52
22158	Tulp3	tubby-like protein 3	1.52
56508	Rapgef4	Rap guanine nucleotide exchange factor (GEF) 4	1.52
16402	Itga5	integrin alpha 5 (fibronectin receptor alpha)	1.51
68178	Cgnl1	cingulin-like 1	1.51
17300	Foxc1	forkhead box C1	1.51
14451	Gas1	growth arrest specific 1	1.51
12832	Col5a2	procollagen, type V, alpha 2	1.51
14451	Gas1	growth arrest specific 1	1.50
217893	Pacs2	phosphofurin acidic cluster sorting protein 2	1.49
14221	Fjx1	four jointed box 1 (Drosophila)	1.49
18014	Neurog1	neurogenin 1	1.48
18830	Pltp	phospholipid transfer protein	1.46
60510	Syt9	synaptotagmin IX	1.46
11936	Fxyd2	FXYP domain-containing ion transport regulator 2	1.46
234582	Ccdc102a	coiled-coil domain containing 102A	1.45
11682	Alk	anaplastic lymphoma kinase	1.45
52392	D1Ertd622e	DNA segment, Chr 1, ERATO Doi 622, expressed	1.45
12738	Cldn2	claudin 2	1.44
13983	Esr2	estrogen receptor 2 (beta)	1.44
110911	Cds2	CDP-diacylglycerol synthase (phosphatidate cytidyltransferase) 2	1.44
29806	Limd1	LIM domains containing 1	1.44
52331	D5Ertd593e	DNA segment, Chr 5, ERATO Doi 593, expressed	1.43
63959	Slc29a1	solute carrier family 29 (nucleoside transporters), member 1	1.43
56741	Nope	neighbor of Punc E11	1.43
214663	Slc25a29	solute carrier family 25 (mitochondrial carrier, palmitoylcarnitine transporter), member 29	1.43
72174	Atxn7l4	ataxin 7-like 4	1.42
58804	Cdc42ep5	CDC42 effector protein (Rho GTPase binding) 5	1.41
103213	Traf3ip2	Traf3 interacting protein 2	1.41
68861	1190002N15Rik	RIKEN cDNA 1190002N15 gene	1.40
97095	C81521	expressed sequence C81521	1.40
20346	Sema3a	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3A	1.40
17532	Mras	muscle and microspikes RAS	1.39
243362	Stard13	serologically defined colon cancer antigen 13	1.39
26987	Eif4e2	eukaryotic translation initiation factor 4E member 2	1.39
67880	Dcxr	dicarbonyl L-xylulose reductase	1.39
215512	5730593F17Rik	RIKEN cDNA 5730593F17 gene	1.39

69696	2310057N15Rik	RIKEN cDNA 2310057N15 gene	1.38
66193	1110049F12Rik	RIKEN cDNA 1110049F12 gene	1.38
14114	Fbln1	fibulin 1	1.38
12484	Cd24a	CD24a antigen	1.38
330662	Dock1	dedicator of cyto-kinesis 1	1.37
18481	Pak3	p21 (CDKN1A)-activated kinase 3	1.37
214968	Sema6d	sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6D	1.36
83395	Sp6	trans-acting transcription factor 6	1.36
21677	Tead2	TEA domain family member 2	1.36
75273	Pelp1	proline, glutamic acid and leucine rich protein 1	1.35
11878	Arx	aristales related homeobox gene (Drosophila)	1.35
229474	6330505N24Rik	RIKEN cDNA 6330505N24 gene	1.35
12561	Cdh4	cadherin 4	1.33
217684	4933426M11Rik	RIKEN cDNA 4933426M11 gene	1.33
20362	Sept8	septin 8	1.33
12476	Cd151	CD151 antigen	1.33
29806	Limd1	LIM domains containing 1	1.33
12890	Cplx2	complexin 2	1.33
19094	Mapk11	mitogen-activated protein kinase 11	1.32
20907	Stx1a	syntaxin 1A (brain)	1.32
16870	Lhx2	LIM homeobox protein 2	1.32
211652	Wwc1	WW, C2 and coiled-coil domain containing 1	1.32
12839	Col9a1	procollagen, type IX, alpha 1	1.32
14645	Glul	glutamate-ammonia ligase (glutamine synthetase)	1.31
72077	Gcnt3	glucosaminyl (N-acetyl) transferase 3, mucin type	1.30
16391	Isgf3g	interferon dependent positive acting transcription factor 3 gamma	1.30
140492	Kcnn2	potassium intermediate/small conductance calcium-activated channel, subfamily N, member 2	1.30
109624	Cald1	caldesmon 1	1.30
83814	Nedd4l	neural precursor cell expressed, developmentally down-regulated gene 4-like	1.30
16404	Itga7	integrin alpha 7	1.29
16564	Kif21a	kinesin family member 21A	1.28
80880	Ankrd47	ankyrin repeat domain 47	1.28
23920	Insrr	insulin receptor-related receptor	1.28
80880	Ankrd47	ankyrin repeat domain 47	1.28
16882	Lig3	ligase III, DNA, ATP-dependent	1.28
68581	Tmed10	transmembrane emp24-like trafficking protein 10 (yeast)	1.27
97294	C79468	expressed sequence C79468	1.27
242687	Wasf2	WAS protein family, member 2	1.27
17121	Mxd3	Max dimerization protein 3	1.27
26417	Mapk3	mitogen activated protein kinase 3	1.27
19130	Prox1	prospero-related homeobox 1	1.27
211770	Trib1	tribbles homolog 1 (Drosophila)	1.27
21974	Top2b	topoisomerase (DNA) II beta	1.26

14645	Glul	glutamate-ammonia ligase (glutamine synthetase)	1.26
73173	Pcdh18	protocadherin 18	1.25
208104	Mlxip	MLX interacting protein	1.25
16071	Igk-C	immunoglobulin kappa chain, constant region	1.25
22003	Tpm1	tropomyosin 1, alpha	1.23
241308	Ralgps1	Ral GEF with PH domain and SH3 binding motif 1	1.22
68861	1190002N15Rik	RIKEN cDNA 1190002N15 gene	1.22
19266	Ptprd	protein tyrosine phosphatase, receptor type, D	1.22
65970	Lima1	LIM domain and actin binding 1	1.21
57370	B4galt3	UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 3	1.21
20365	Serf1	small EDRK-rich factor 1	1.21
14291	Fpr-rs4	formyl peptide receptor, related sequence 4	1.20
54409	Ramp2	receptor (calcitonin) activity modifying protein 2	1.20
18015	Nf1	neurofibromatosis 1	1.20
14615	Gja7	gap junction membrane channel protein alpha 7	1.20
223753	Cerk	ceramide kinase	1.19
64213	St7	Suppression of tumorigenicity 7	1.19
12484	Cd24a	CD24a antigen	1.19
14314	Fstl1	follistatin-like 1	1.19
16061	Igh-VJ558	immunoglobulin heavy chain (J558 family)	1.18
107869	Cth	cystathionase (cystathionine gamma-lyase)	1.18
22373	Wap	whey acidic protein	1.18
14183	Fgfr2	fibroblast growth factor receptor 2	1.17
109624	Cald1	caldesmon 1	1.17
71228	Dlg5	discs, large homolog 5 (Drosophila)	1.16
387524	Znrf2	zinc and ring finger 2	1.16
67525	Trim62	tripartite motif-containing 62	1.16
209039	Tenc1	tensin like C1 domain-containing phosphatase	1.16
110391	Qdpr	quininoid dihydropteridine reductase	1.15
109624	Cald1	caldesmon 1	1.15
29857	Mapk12	mitogen-activated protein kinase 12	1.15
20167	Rtn2	reticulon 2 (Z-band associated protein)	1.14
66860	Tanc1	tetratricopeptide repeat, ankyrin repeat and coiled-coil containing 1	1.14
235431	Coro2b	coronin, actin binding protein, 2B	1.14
19222	Ptgir	prostaglandin I receptor (IP)	1.14
73173	Pcdh18	protocadherin 18	1.13
114606	Tle6	transducin-like enhancer of split 6, homolog of Drosophila E(spl)	1.13
235587	Parp3	poly (ADP-ribose) polymerase family, member 3	1.13
65970	Lima1	LIM domain and actin binding 1	1.13
18628	Per3	period homolog 3 (Drosophila)	1.13
22213	Ube2g2	ubiquitin-conjugating enzyme E2G 2	1.13
216543	Cep68	centrosomal protein 68	1.13
11820	App	amyloid beta (A4) precursor protein	1.12
20620	Plk2	polo-like kinase 2 (Drosophila)	1.12
21886	Tle2	transducin-like enhancer of split 2, homolog of Drosophila E(spl)	1.12

70747	Tspan2	tetraspanin 2	1.11
93686	Rbm9	RNA binding motif protein 9	1.11
18081	Ninj1	ninjurin 1	1.11
225655	BC019561	cDNA sequence BC019561	1.11
67951	Tubb6	tubulin, beta 6	1.11
76954	St5	suppression of tumorigenicity 5	1.10
50523	Lats2	large tumor suppressor 2	1.10
78896	1500015O10Rik	RIKEN cDNA 1500015O10 gene	1.10
20975	Synj2	synaptojanin 2	1.10
15572	Elavl4	ELAV (embryonic lethal, abnormal vision, Drosophila)-like 4 (Hu antigen D)	1.10
20474	Six4	sine oculis-related homeobox 4 homolog (Drosophila)	1.09
244668	Sipa1l2	signal-induced proliferation-associated 1 like 2	1.08
20379	Sfrp4	secreted frizzled-related sequence protein 4	1.08
19214	Ptgdr	prostaglandin D receptor	1.08
14183	Fgfr2	fibroblast growth factor receptor 2	1.07
19042	Ppm1a	protein phosphatase 1A, magnesium dependent, alpha isoform	1.07
18845	Plxna2	plexin A2	1.07
56874	Rnf32	ring finger protein 32	1.07
57295	Icmt	isoprenylcysteine carboxyl methyltransferase	1.07
20454	St3gal5	ST3 beta-galactoside alpha-2,3-sialyltransferase 5	1.07
18034	Nfkb2	nuclear factor of kappa light polypeptide gene enhancer in B-cells 2, p49/p100	1.06
20502	Slc16a2	solute carrier family 16 (monocarboxylic acid transporters), member 2	1.06
16622	Klk1b5	kallikrein 1-related peptidase b5	1.06
224014	Fgd4	FYVE, RhoGEF and PH domain containing 4	1.06
11676	Aldoc	aldolase 3, C isoform	1.05
29875	Iqgap1	IQ motif containing GTPase activating protein 1	1.05
19266	Ptprd	protein tyrosine phosphatase, receptor type, D	1.05
55985	Cxcl13	chemokine (C-X-C motif) ligand 13	1.04
17121	Mxd3	Max dimerization protein 3	1.04
63986	Gmfg	glia maturation factor, gamma	1.04
23808	Ash2l	ash2 (absent, small, or homeotic)-like (Drosophila)	1.04
110911	Cds2	CDP-diacylglycerol synthase (phosphatidate cytidyltransferase) 2	1.04
54635	Pdgfc	platelet-derived growth factor, C polypeptide	1.04
26970	Pla2g2e	phospholipase A2, group IIE	1.04
20346	Sema3a	sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3A	1.03
227580	C1ql3	C1q-like 3	1.03
338351	B230333C21Rik	RIKEN cDNA B230333C21 gene	1.03
20969	Sdc1	syndecan 1	1.03
72121	Dennd2d	DENN/MADD domain containing 2D	1.03
50793	Orc3l	origin recognition complex, subunit 3-like (S. cerevisiae)	1.02
14349	Fv1	Friend virus susceptibility 1	1.02
65964	B230120H23Rik	RIKEN cDNA B230120H23 gene	1.02

56405	Dusp14	dual specificity phosphatase 14	1.02
17304	Mfge8	milk fat globule-EGF factor 8 protein	1.02
68581	Tmed10	transmembrane emp24-like trafficking protein 10 (yeast)	1.00
19266	Ptprd	protein tyrosine phosphatase, receptor type, D	1.00
14415	Gad1	glutamic acid decarboxylase 1	0.99
21823	Th	tyrosine hydroxylase	0.99
18027	Nfia	nuclear factor I/A	0.99
170753	Zfp704	zinc finger protein 704	0.98
56214	Scamp4	secretory carrier membrane protein 4	0.98
100689	Spon2	spondin 2, extracellular matrix protein	0.98
16599	Klf3	Kruppel-like factor 3 (basic)	0.98
22350	Vil2	villin 2	0.97
140780	Bmp2k	BMP2 inducible kinase	0.97
223672	BC020489	cDNA sequence BC020489 NIMA (never in mitosis gene a)-related expressed	0.97
59126	Nek6	kinase 6	0.97
22352	Vim	vimentin	0.97
67151	Psmd9	proteasome (prosome, macropain) 26S subunit, non-ATPase, 9	0.96
74134	Cyp2s1	cytochrome P450, family 2, subfamily s, polypeptide 1	0.96
22385	Baz1b	bromodomain adjacent to zinc finger domain, 1B	0.96
384817	4930448N21Rik	RIKEN cDNA 4930448N21 gene transmembrane protein with EGF-like and two follistatin-like domains 1	0.96
230157	Tmeff1	like domains 1	0.95
65945	Clstn1	calsyntenin 1	0.95
246102	Rttm	rotatin	0.95
19762	Rit2	Ras-like without CAAX 2	0.94
244216	G630024C07Rik	RIKEN cDNA G630024C07 gene DNA segment, Chr 19, Wayne State University 12, expressed	0.94
226090	D19Wsu12e	expressed	0.94
16000	Igf1	insulin-like growth factor 1	0.94
13527	Dtna	dystrobrevin alpha	0.94
14415	Gad1	glutamic acid decarboxylase 1	0.94
237336	Tbpl1	TATA box binding protein-like 1	0.94
66457	2810002D19Rik	RIKEN cDNA 2810002D19 gene	0.94
69745	Pold4	polymerase (DNA-directed), delta 4	0.94
17984	Ndn	necdin	0.93
50915	Grb14	growth factor receptor bound protein 14	0.93
216134	Pdxk	pyridoxal (pyridoxine, vitamin B6) kinase	0.93
78255	Ralgps2	Ral GEF with PH domain and SH3 binding motif 2	0.93
68095	Ociad1	OCIA domain containing 1 sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3 F	0.92
20350	Sema3f	domain, secreted, (semaphorin) 3 F	0.92
29871	Scmh1	sex comb on midleg homolog 1	0.91
68581	Tmed10	transmembrane emp24-like trafficking protein 10 (yeast)	0.91
14009	Etv1	ets variant gene 1	0.91
114249	Npnt	nephronectin	0.91
69774	Ms4a6b	membrane-spanning 4-domains, subfamily A, member	0.91

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234353	4931420C21Rik	RIKEN cDNA 4931420C21 gene	0.91
18207	Nth1	nth (endonuclease III)-like 1 (E.coli)	0.91
18294	Ogg1	8-oxoguanine DNA-glycosylase 1	0.91
13131	Dab1	disabled homolog 1 (Drosophila)	0.90
66940	Scotin	scotin gene	0.90
223254	Farp1	FERM, RhoGEF (Arhgef) and pleckstrin domain protein 1 (chondrocyte-derived)	0.90
59126	Nek6	NIMA (never in mitosis gene a)-related expressed kinase 6	0.90
78248	Armcx1	armadillo repeat containing, X-linked 1	0.90
12724	Clcn2	chloride channel 2	0.90
12492	Scarb2	scavenger receptor class B, member 2	0.90
67815	Sec14l2	SEC14-like 2 (S. cerevisiae)	0.90
12017	Bag1	Bcl2-associated athanogene 1	0.90
13076	Cyp1a1	cytochrome P450, family 1, subfamily a, polypeptide 1	0.89
29875	Iqgap1	IQ motif containing GTPase activating protein 1	0.89
11820	App	amyloid beta (A4) precursor protein	0.89
67803	Limd2	LIM domain containing 2	0.89
18227	Nr4a2	nuclear receptor subfamily 4, group A, member 2	0.89
70935	Speer4f	spermatogenesis associated glutamate (E)-rich protein 4f	0.88
17967	Ncam1	neural cell adhesion molecule 1	0.88
66890	Lman2	lectin, mannose-binding 2	0.88
13713	Elk3	ELK3, member of ETS oncogene family	0.88
66943	Pqlc1	PQ loop repeat containing 1	0.88
19012	Ppap2a	phosphatidic acid phosphatase 2a	0.88
19012	Ppap2a	phosphatidic acid phosphatase 2a	0.87
225164	Mib1	mindbomb homolog 1 (Drosophila)	0.87
215114	Hip1	huntingtin interacting protein 1	0.87
52471	D13Ertd37e	DNA segment, Chr 13, ERATO Doi 37, expressed	0.87
56693	Crtap	cartilage associated protein	0.87
21406	Tcf12	transcription factor 12	0.87
14235	Foxm1	forkhead box M1	0.86
66943	Pqlc1	PQ loop repeat containing 1	0.86
13518	Dst	dystonin	0.86
70779	Prdm5	PR domain containing 5	0.86
22323	Vasp	vasodilator-stimulated phosphoprotein	0.86
16522	Kcnj6	potassium inwardly-rectifying channel, subfamily J, member 6	0.85
192176	Flna	filamin, alpha	0.85
18230	Nxn	nucleoredoxin	0.85
330171	Kctd10	potassium channel tetramerisation domain containing 10	0.85
13557	E2f3	E2F transcription factor 3	0.85
56294	Ptpn9	protein tyrosine phosphatase, non-receptor type 9	0.85
107771	Bmyc	brain expressed myelocytomatosis oncogene	0.84
217038	Mrm1	mitochondrial rRNA methyltransferase 1 homolog (S. cerevisiae)	0.84
23947	Mid2	midline 2	0.83

19714	Rev3l	REV3-like, catalytic subunit of DNA polymerase zeta RAD54 like (<i>S. cerevisiae</i>)	0.83
232086	Tmem150	transmembrane protein 150	0.83
14584	Gfpt2	glutamine fructose-6-phosphate transaminase 2	0.83
72055	1810073N04Rik	RIKEN cDNA 1810073N04 gene	0.82
56470	Rgs19	regulator of G-protein signaling 19	0.82
23872	Ets2	E26 avian leukemia oncogene 2, 3' domain	0.82
12831	Col5a1	procollagen, type V, alpha 1	0.82
68581	Tmed10	transmembrane emp24-like trafficking protein 10 (yeast)	0.81
71412	Dhrs2	dehydrogenase/reductase member 2	0.81
19248	Ptpn12	protein tyrosine phosphatase, non-receptor type 12 N-deacetylase/N-sulfotransferase (heparan glucosaminyl) 1	0.81
15531	Ndst1	dopamine receptor 4	0.80
13491	Drd4	double cortin and calcium/calmodulin-dependent protein kinase-like 1	0.80
13175	Dcamk1l	PHD finger protein 13	0.80
230936	Phf13	disabled homolog 2 (<i>Drosophila</i>) interacting protein	0.79
69601	Dab2ip	rabaptin, RAB GTPase binding effector protein 2	0.79
70314	Rabep2	coiled-coil domain containing 50	0.79
67501	Ccdc50	zinc finger protein 704	0.79
170753	Zfp704	quininoid dihydropteridine reductase	0.79
110391	Qdpr	cysteine-rich hydrophobic domain 1	0.79
12212	Chic1	AT hook, DNA binding motif, containing 1	0.79
230793	Ahdc1	histocompatibility 13	0.79
14950	H13	CD160 antigen	0.79
54215	Cd160	nudix (nucleoside diphosphate linked moiety X)-type motif 6	0.78
229228	Nudt6	a disintegrin and metallopeptidase domain 12 (meltrin alpha)	0.78
11489	Adam12	actinin alpha 4	0.78
60595	Actn4	paxillin	0.78
19303	Pxn	leucine-rich repeat-containing G protein-coupled receptor 6	0.78
329252	Lgr6	UDP-glucuronate decarboxylase 1	0.78
67883	Uxs1	procollagen, type XI, alpha 1	0.78
12814	Col11a1	cAMP responsive element modulator	0.77
12916	Crem	DNA segment, Chr 16, Brigham & Women's Genetics 1543 expressed	0.77
52910	D16Bwg1543e	Scm-like with four mbt domains 2	0.77
353282	Sfmbt2	BTB (POZ) domain containing 3	0.77
228662	Btbd3	golgi phosphoprotein 2	0.77
105348	Golph2	achalasia, adrenocortical insufficiency, alacrimia	0.77
223921	Aaas	superoxide dismutase 3, extracellular	0.77
20657	Sod3	inositol 1,4,5-triphosphate receptor 1	0.77
16438	Itpr1	nuclear receptor co-repressor 2	0.76
20602	Ncor2	LysM, putative peptidoglycan-binding, domain containing 2	0.76
70082	Lysmd2	scavenger receptor class B, member 2	0.76
12492	Scarb2	ribulose-5-phosphate-3-epimerase	0.76
66646	Rpe		0.76

18992	Pou3f2	POU domain, class 3, transcription factor 2	0.76
215114	Hip1	huntingtin interacting protein 1 src homology 2 domain-containing transforming protein C1	0.76
20416	Shc1		0.76
67501	Ccdc50	coiled-coil domain containing 50	0.76
69162	Sec311f	SEC31-like 1 (<i>S. cerevisiae</i>)	0.75
218763	Lrrc3b	leucine rich repeat containing 3B	0.75
12313	Calm1	calmodulin 1	0.75
13030	Ctsb	cathepsin B	0.75
17967	Ncam1	neural cell adhesion molecule 1	0.75
11535	Adm	adrenomedullin	0.75
107975	Pacs1	phosphofurin acidic cluster sorting protein 1	0.75
78832	2700078E11Rik	RIKEN cDNA 2700078E11 gene	0.75
15423	Hoxc4	homeo box C4	0.74
12916	Crem	cAMP responsive element modulator	0.74
227753	Gsn	gelsolin	0.74
26394	Lypla2	lysophospholipase 2	0.74
67299	Dock7	dedicator of cytokinesis 7 nuclear factor of kappa light chain gene enhancer in B-cells inhibitor, alpha	0.74
18035	Nfkbia		0.74
50875	Tmod3	tropomodulin 3	0.74
105859	Csdc2	cold shock domain containing C2, RNA binding	0.74
67803	Limd2	LIM domain containing 2	0.74
78593	Nrip3	nuclear receptor interacting protein 3	0.73
19731	Rgl1	ral guanine nucleotide dissociation stimulator,-like 1	0.72
72055	1810073N04Rik	RIKEN cDNA 1810073N04 gene	0.72
14773	Gprk5	G protein-coupled receptor kinase 5	0.72
20239	Atxn2	ataxin 2	0.72
29875	Iqgap1	IQ motif containing GTPase activating protein 1	0.72
170625	Snag1	sorting nexin associated golgi protein 1	0.72
109857	Cbr3	carbonyl reductase 3 UDP-Gal:betaGlcNAc beta 1,4-galactosyltransferase, polypeptide 6	0.72
56386	B4galt6		0.72
22352	Vim	vimentin	0.71
70772	Ggnbp1	gametogenetin binding protein 1	0.71
319719	4732471D19Rik	RIKEN cDNA 4732471D19 gene	0.71
108673	Ccdc86	coiled-coil domain containing 86	0.71
72065	Rap2c	RAP2C, member of RAS oncogene family	0.71
12839	Col9a1	procollagen, type IX, alpha 1	0.71
24063	Spry1	sprouty homolog 1 (<i>Drosophila</i>)	0.71
192232	Hps4	Hermansky-Pudlak syndrome 4 homolog (human)	0.71
77569	3732412D22Rik	RIKEN cDNA 3732412D22 gene	0.71
72065	Rap2c	RAP2C, member of RAS oncogene family	0.70
219140	Spata13	spermatogenesis associated 13	0.70
20742	Spnb2	spectrin beta 2	0.70
234582	Ccdc102a	coiled-coil domain containing 102A	0.70
67839	Gpsm1	G-protein signalling modulator 1 (AGS3-like, <i>C. elegans</i>)	0.70

269424	Phf17	PHD finger protein 17	0.70
101206	Tada3l	transcriptional adaptor 3 (NGG1 homolog, yeast)-like	0.70
12874	Cpd	carboxypeptidase D	0.70
22682	Za20d2	zinc finger, A20 domain containing 2	0.69
53602	Hpcal1	hippocalcin-like 1	0.69
68842	Tulp4	tubby like protein 4	0.69
50754	Fbxw7	F-box and WD-40 domain protein 7, archipelago homolog (Drosophila)	0.69
11784	Apba2	amyloid beta (A4) precursor protein-binding, family A, member 2	0.69
432486	Gnptab	N-acetylglucosamine-1-phosphate transferase, alpha and beta subunits	0.68
22632	Yy1	YY1 transcription factor	0.68
80877	Lrba	LPS-responsive beige-like anchor	0.68
16599	Klf3	Kruppel-like factor 3 (basic)	0.68
19739	Rgs9	regulator of G-protein signaling 9	0.67
15204	Herc2	hect (homologous to the E6-AP (UBE3A) carboxyl terminus) domain and RCC1 (CHC1)-like domain (RLD) 2	0.67
15228	Foxg1	forkhead box G1	0.67
266692	Cpne1	copine I	0.67
53322	Nucb2	nucleobindin 2	0.67
83768	Dpp7	dipeptidylpeptidase 7	0.66
19084	Prkar1a	protein kinase, cAMP dependent regulatory, type I, alpha	0.66
13527	Dtna	dystrobrevin alpha	0.66
74287	Kcmf1	potassium channel modulatory factor 1	0.66
14225	Fkbp1a	FK506 binding protein 1a	0.66
99152	Anapc2	anaphase promoting complex subunit 2	0.66
114715	Spred1	sprouty protein with EVH-1 domain 1, related sequence	0.66
78246	Phf23	PHD finger protein 23	0.66
19025	Ppgb	protective protein for beta-galactosidase	0.66
106522	AW548124	expressed sequence AW548124	0.66
330814	Lphn1	latrophilin 1	0.66
12313	Calm1	calmodulin 1	0.66
207565	Camkk2	calcium/calmodulin-dependent protein kinase kinase 2, beta	0.66
229615	Pias3	protein inhibitor of activated STAT 3	0.65
12338	Capn6	calpain 6	0.65
67905	Ppm1m	protein phosphatase 1M	0.65
26432	Plod2	procollagen lysine, 2-oxoglutarate 5-dioxygenase 2	0.64
67763	Prpsap1	phosphoribosyl pyrophosphate synthetase-associated protein 1	0.64
23849	Klf6	Kruppel-like factor 6	0.64
11502	Adam9	a disintegrin and metallopeptidase domain 9 (meltrin gamma)	0.64
216131	Tmem1	transmembrane protein 1	0.64
50786	Hs6st2	heparan sulfate 6-O-sulfotransferase 2	0.64
16801	Arhgef1	Rho guanine nucleotide exchange factor (GEF) 1	0.64
21413	Tcf4	transcription factor 4	0.63
227937	Pkp4	plakophilin 4	0.63

22352	Vim	vimentin	0.63
286940	Flnb	filamin, beta	0.63
22601	Yap1	yes-associated protein 1	0.63
18230	Nxn	nucleoredoxin	0.62
235431	Coro2b	coronin, actin binding protein, 2B	0.62
70575	Gfod2	glucose-fructose oxidoreductase domain containing 2 protein phosphatase 1A, magnesium dependent, alpha isoform	0.62
19042	Ppm1a		0.62
12313	Calm1	calmodulin 1	0.62
22025	Nr2c1	nuclear receptor subfamily 2, group C, member 1	0.62
66515	Cul7	cullin 7	0.61
56726	Sh3bgrl	SH3-binding domain glutamic acid-rich protein like	0.61
15975	Ifnar1	interferon (alpha and beta) receptor 1	0.61
233724	Tmem41b	transmembrane protein 41B	0.61
13175	Dcamk1l	double cortin and calcium/calmodulin-dependent protein kinase-like 1	0.61
11787	Apbb2	amyloid beta (A4) precursor protein-binding, family B, member 2	0.61
227937	Pkp4	plakophilin 4	0.60
240913	Adamts4	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 4	0.60
19248	Ptpn12	protein tyrosine phosphatase, non-receptor type 12	0.60
53867	Col5a3	procollagen, type V, alpha 3	0.60
69608	Sec24d	SEC24 related gene family, member D (<i>S. cerevisiae</i>)	0.60
12593	Cdyl	chromodomain protein, Y chromosome-like	0.60
72055	1810073N04Rik	RIKEN cDNA 1810073N04 gene	0.60
57247	Zfp276	zinc finger protein (C2H2 type) 276	0.59
50914	Olig1	oligodendrocyte transcription factor 1	0.59
14287	Fpgs	folylpolyglutamyl synthetase	0.59
12927	Bcar1	breast cancer anti-estrogen resistance 1	0.59
227700	Sh3glb2	SH3-domain GRB2-like endophilin B2	0.59
12313	Calm1	calmodulin 1	0.59
11853	Rhoc	ras homolog gene family, member C	0.59
230761	BC039093	cDNA sequence BC039093	0.58
22381	Wbp5	WW domain binding protein 5	0.58
75751	Ipo4	importin 4	0.58
19027	Sypl	synaptophysin-like protein	0.58
117606	Boc	biregional cell adhesion molecule-related/down-regulated by oncogenes (Cdon) binding protein	0.58
218397	Rasa1	RAS p21 protein activator 1	0.58
14182	Fgfr1	fibroblast growth factor receptor 1	0.58
108705	Pttg1ip	pituitary tumor-transforming 1 interacting protein	0.58
217370	BC017643	cDNA sequence BC017643	0.57
319565	Syne2	synaptic nuclear envelope 2	0.57
224250	Cldnd1	claudin domain containing 1	0.57
54418	Fmn2	formin 2	0.57
56876	Nelf	nasal embryonic LHRH factor	0.57
110829	Lims1	LIM and senescent cell antigen-like domains 1	0.57
16795	Large	like-glycosyltransferase	0.56

20742	Spnb2	spectrin beta 2	0.56
110829	Lims1	LIM and senescent cell antigen-like domains 1	0.56
70686	Dusp16	dual specificity phosphatase 16	0.55
229473	D930015E06Rik	RIKEN cDNA D930015E06 gene	0.55
28018	D7Wsu128e	DNA segment, Chr 7, Wayne State University 128, expressed	0.55
18747	Prkaca	protein kinase, cAMP dependent, catalytic, alpha	0.55
320011	Ugcgl1	UDP-glucose ceramide glucosyltransferase-like 1	0.55
68703	Rere	arginine glutamic acid dipeptide (RE) repeats	0.55
67554	Slc25a30	solute carrier family 25, member 30	0.55
80515	A030009H04Rik	RIKEN cDNA A030009H04 gene	0.54
13175	Dcamk1	double cortin and calcium/calmodulin-dependent protein kinase-like 1	0.54
21679	Tead4	TEA domain family member 4	0.54
66074	0610041E09Rik	RIKEN cDNA 0610041E09 gene	0.54
13855	Epn2	epsin 2	0.54
26557	Homer2	homer homolog 2 (Drosophila)	0.54
19697	Rela	v-rel reticuloendotheliosis viral oncogene homolog A (avian)	0.53
114715	Spred1	sprouty protein with EVH-1 domain 1, related sequence	0.53
19280	Ptprs	protein tyrosine phosphatase, receptor type, S	0.53
232944	Mark4	MAP/microtubule affinity-regulating kinase 4	0.53
19248	Ptpn12	protein tyrosine phosphatase, non-receptor type 12	0.53
22632	Yy1	YY1 transcription factor	0.53
108705	Pttg1ip	pituitary tumor-transforming 1 interacting protein	0.53
228829	Phf20	PHD finger protein 20	0.53
236520	9130229H14Rik	RIKEN cDNA 9130229H14 gene	0.53
228829	Phf20	PHD finger protein 20	0.52
54151	Cyhr1	cysteine and histidine rich 1	0.52
26433	Plod3	procollagen-lysine, 2-oxoglutarate 5-dioxygenase 3	0.52
12142	Prdm1	PR domain containing 1, with ZNF domain	0.52
12505	Cd44	CD44 antigen	0.51
17246	Mdm2	transformed mouse 3T3 cell double minute 2	0.51
65113	Ndfip1	Nedd4 family interacting protein 1	0.51
107702	Rnh1	ribonuclease/angiogenin inhibitor 1	0.51
106633	Ift140	intraflagellar transport 140 homolog (Chlamydomonas)	0.51
12575	Cdkn1a	cyclin-dependent kinase inhibitor 1A (P21)	0.50
23955	Nek4	NIMA (never in mitosis gene a)-related expressed kinase 4	0.50
83796	Smarcd2	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily d, member 2	0.50
218397	Rasa1	RAS p21 protein activator 1	0.50
225010	Lycat	lysocardiolipin acyltransferase	0.50
57376	Smarce1	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily e, member 1	0.50
232440	H2afj	H2A histone family, member J	0.50
56726	Sh3bgrl	SH3-binding domain glutamic acid-rich protein like	0.50

50754	Fbxw7	F-box and WD-40 domain protein 7, archipelago homolog (Drosophila)	0.50
234407	Glt25d1	glycosyltransferase 25 domain containing 1	0.50
66999	Med28	mediator of RNA polymerase II transcription, subunit 28 homolog (yeast)	0.50
18764	Pkd2	polycystic kidney disease 2	0.50
14924	Magi1	membrane associated guanylate kinase, WW and PDZ domain containing 1	0.49
51793	Ddah2	dimethylarginine dimethylaminohydrolase 2	0.49
20068	Rps17	ribosomal protein S17	0.49
331563	C130006E23	hypothetical protein C130006E23	0.49
20742	Spnb2	spectrin beta 2	0.49
16976	Lrpap1	low density lipoprotein receptor-related protein associated protein 1	0.49
67298	Gprasp1	G protein-coupled receptor associated sorting protein 1	0.48
233724	Tmem41b	transmembrane protein 41B	0.48
14924	Magi1	membrane associated guanylate kinase, WW and PDZ domain containing 1	0.48
226525	Rasal2	RAS protein activator like 2	0.47
226178	D19Wsu162e	DNA segment, Chr 19, Wayne State University 162, expressed	0.47
56205	Ensa	endosulfine alpha	0.47
330814	Lphn1	latrophilin 1	0.47
211548	Nomo1	nodal modulator 1	0.47
14225	Fkbp1a	FK506 binding protein 1a	0.47
20623	Snrk	SNF related kinase	0.47
93836	Rnf111	ring finger 111	0.47
19089	Prkcsh	protein kinase C substrate 80K-H	0.47
19291	Purb	purine rich element binding protein B	0.47
109674	Ampd2	adenosine monophosphate deaminase 2 (isoform L)	0.46
27081	Zfp275	zinc finger protein 275	0.46
78521	B230219D22Rik	RIKEN cDNA B230219D22 gene	0.46
75605	Jarid1b	jumonji, AT rich interactive domain 1B (Rbp2 like)	0.46
53421	Sec61a1	Sec61 alpha 1 subunit (S. cerevisiae)	0.46
20227	Sart1	squamous cell carcinoma antigen recognized by T-cells 1	0.46
234023	9430010O03Rik	RIKEN cDNA 9430010O03 gene	0.45
227648	AU024582	expressed sequence AU024582	0.45
74585	Sppl3	signal peptide peptidase 3	0.45
217864	Rcor1	REST corepressor 1	0.45
19056	Ppp3cb	protein phosphatase 3, catalytic subunit, beta isoform	0.44
13542	Dvl1	dishevelled, dsh homolog 1 (Drosophila)	0.44
228994	Ythdf1	YTH domain family 1	0.44
16570	Kif3c	kinesin family member 3C	0.43
100210	Atpbd1b	ATP binding domain 1 family, member B	0.43
78656	Brd8	bromodomain containing 8	0.43
20624	Eftud2	elongation factor Tu GTP binding domain containing 2	0.43
68911	Pygo2	pygopus 2	0.43

14225	Fkbp1a	FK506 binding protein 1a	0.43
16451	Jak1	Janus kinase 1	0.42
19365	Rad52	RAD52 homolog (<i>S. cerevisiae</i>)	0.42
269774	Aak1	AP2 associated kinase 1	0.42
193742	Bat5	HLA-B associated transcript 5	0.42
28006	D6Wsu116e	DNA segment, Chr 6, Wayne State University 116, expressed	0.41
97287	1110061O04Rik	RIKEN cDNA 1110061O04 gene	0.41
21413	Tcf4	transcription factor 4	0.41
57773	Wdr4	WD repeat domain 4	0.41
14265	Fmr1	fragile X mental retardation syndrome 1 homolog	0.41
68379	Ciz1	CDKN1A interacting zinc finger protein 1	0.40
22221	Ubp1	upstream binding protein 1	0.40
19342	Rab4b	RAB4B, member RAS oncogene family	0.40
103583	Fbxw11	F-box and WD-40 domain protein 11	0.40
67760	Slc38a2	solute carrier family 38, member 2	0.40
12876	Cpe	carboxypeptidase E	0.40
22401	Wig1	wild-type p53-induced gene 1	0.39
106143	Cggbp1	CGG triplet repeat binding protein 1	0.39
67287	Parp6	poly (ADP-ribose) polymerase family, member 6	0.39
66646	Rpe	ribulose-5-phosphate-3-epimerase	0.39
12751	Tpp1	tripeptidyl peptidase I	0.39
217127	Myst2	MYST histone acetyltransferase 2	0.39
74315	3732413I11Rik	RIKEN cDNA 3732413I11 gene	0.38
78656	Brd8	bromodomain containing 8	0.38
17122	Mxd4	Max dimerization protein 4	0.38
192192	Shkbp1	Sh3kbp1 binding protein 1	0.38
80517	Herpud2	HERPUD family member 2	0.38
68964	1500010J02Rik	RIKEN cDNA 1500010J02 gene	0.37
66498	1500034J01Rik	RIKEN cDNA 1500034J01 gene	0.37
97064	Wwtr1	WW domain containing transcription regulator 1	0.37
21413	Tcf4	transcription factor 4	0.37
21848	Trim24	tripartite motif protein 24	0.37
67160	Eef1g	eukaryotic translation elongation factor 1 gamma	0.36
13043	Ctnn	cortactin	0.36
216856	Nlgn2	neuroligin 2	0.36
54383	Phc2	polyhomeotic-like 2 (<i>Drosophila</i>)	0.36
21982	Tparl	TPA regulated locus	0.36
66642	Ctnnb1	catenin, beta like 1	0.36
18458	Pabpc1	poly A binding protein, cytoplasmic 1	0.36
64652	Nisch	nischarin	0.36
66494	2610524G07Rik	RIKEN cDNA 2610524G07 gene	0.36
320394	Cenpt	centromere protein T	0.35
67399	Pdlim7	PDZ and LIM domain 7	0.35
20163	Rsu1	Ras suppressor protein 1	0.35

218236	BC010304	cDNA sequence BC010304	0.34
65105	Arl6ip4	ADP-ribosylation factor-like 6 interacting protein 4	0.34
107338	Gbf1	golgi-specific brefeldin A-resistance factor 1	0.33
66411	Ckap1	cytoskeleton-associated protein 1	0.33
12660	Chka	choline kinase alpha	0.33
66923	Pb1	polybromo 1	0.33
18222	Numb	numb gene homolog (Drosophila)	0.33
83486	Rbm5	RNA binding motif protein 5	0.33
71765	Klhdc3	kelch domain containing 3	0.33
54170	Rragc	Ras-related GTP binding C	0.32
104418	Dgkz	diacylglycerol kinase zeta	0.32
14758	Gpm6b	glycoprotein m6b	0.32
22121	Rpl13a	ribosomal protein L13a	0.32
67268	2900073G15Rik	RIKEN cDNA 2900073G15 gene	0.32
23918	Impdh2	inosine 5'-phosphate dehydrogenase 2	0.31
20586	Smarca4	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily a, member 4	0.31
73218	3110056O03Rik	RIKEN cDNA 3110056O03 gene	0.31
19079	Prkab1	protein kinase, AMP-activated, beta 1 non-catalytic subunit	0.30
16202	Ilk	integrin linked kinase	0.30
17210	Mcl1	myeloid cell leukemia sequence 1	0.30
19325	Rab10	RAB10, member RAS oncogene family	0.30
75415	Arhgap12	Rho GTPase activating protein 12	0.30
69981	Tmem30a	transmembrane protein 30A	0.30
66235	Eif1ay	eukaryotic translation initiation factor 1A, Y-linked ZW10 homolog (Drosophila), centromere/kinetochore protein	0.30
26951	Zw10	ubiquitin-conjugating enzyme E2G 1 (UBC7 homolog, C. elegans)	0.29
67128	Ube2g1	ubiquitin-conjugating enzyme E2G 1 (UBC7 homolog, C. elegans)	0.29
544752	Tug1	taurine upregulated gene 1	0.29
13018	Ctcf	CCCTC-binding factor	0.29
56787	Ascl3	achaete-scute complex homolog-like 3 (Drosophila)	0.28
19324	Rab1	RAB1, member RAS oncogene family	0.28
21413	Tcf4	transcription factor 4	0.28
207165	Falz	fetal Alzheimer antigen	0.28
20832	Ssr4	signal sequence receptor, delta	0.28
268996	Ss18	synovial sarcoma translocation, Chromosome 18	0.28
192231	Hexim1	hexamethylene bis-acetamide inducible 1	0.27
12151	Bmi1	B lymphoma Mo-MLV insertion region 1	0.27
103554	Psme4	proteasome (prosome, macropain) activator subunit 4	0.27
73744	Man2c1	mannosidase, alpha, class 2C, member 1	0.25
53599	Cd164	CD164 antigen	0.25
17524	Mpp1	membrane protein, palmitoylated	0.25
26430	Parg	poly (ADP-ribose) glycohydrolase	0.25
54401	Ywhab	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptide	0.25
28088	D10Wsu52e	DNA segment, Chr 10, Wayne State University 52, expressed	0.24

54616	Extl3	exostoses (multiple)-like 3	0.24
22121	Rpl13a	ribosomal protein L13a	0.23
71994	Cnn3	calponin 3, acidic	0.23
13046	Cugbp1	CUG triplet repeat, RNA binding protein 1	0.22
70356	St13	suppression of tumorigenicity 13	0.22
67040	Ddx17	DEAD (Asp-Glu-Ala-Asp) box polypeptide 17	0.22
19042	Ppm1a	protein phosphatase 1A, magnesium dependent, alpha isoform	0.20
20843	Stag2	stromal antigen 2	0.20
71994	Cnn3	calponin 3, acidic	0.19
320717	Pptc7	PTC7 protein phosphatase homolog (<i>S. cerevisiae</i>)	0.19
22210	Ube2b	ubiquitin-conjugating enzyme E2B, RAD6 homology (<i>S. cerevisiae</i>)	0.18
54401	Ywhab	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptide	0.17
108143	Taf9	TAF9 RNA polymerase II, TATA box binding protein (TBP)-associated factor	0.17
22630	Ywhaq	tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, theta polypeptide	0.15
107358	Tm9sf3	transmembrane 9 superfamily member 3	0.13
14489	Mtpn	myotrophin	0.10
19989	Rpl7	ribosomal protein L7	0.06
110954	Rpl10	ribosomal protein 10	0.06
20055	Rps16	ribosomal protein S16	0.05
19896	Rpl10a	ribosomal protein L10A	0.05
16898	Rps2	ribosomal protein S2	0.05
66480	Rpl15	ribosomal protein L15	0.05
20054	Rps15	ribosomal protein S15	0.04

Table S1. Summary of probe sets de-repressed in Olig-2 null neurospheres relative to wild-type neurospheres. The genes present on this list have an increased level of expression relative to wild type neurosphere. The fold change is reported as the log (base 2) of the difference. See Figure 6 for methods.

Table S2. Genes with Downregulated Expression in Olig2 KO versus WT NSCs

Gene ID	Gene Symbol	Gene Name	Average Fold Change (log2)
16525	Kcnk1	potassium channel, subfamily K, member 1	4.27
18377	Omg	oligodendrocyte myelin glycoprotein	4.18
171580	Mical1	microtubule associated monooxygenase, calponin and LIM domain containing 1	3.98
171580	Mical1	microtubule associated monooxygenase, calponin and LIM domain containing 1	3.9
12955	Cryab	crystallin, alpha B	3.81
56710	Dbc1	deleted in bladder cancer 1 (human)	3.7
18595	Pdgfra	platelet derived growth factor receptor, alpha polypeptide	3.68
13508	Dscam	Down syndrome cell adhesion molecule	3.68
18761	Prkcq	protein kinase C, theta	3.63
67755	Ddx47	DEAD (Asp-Glu-Ala-Asp) box polypeptide 47	3.57
16508	Kcnd2	potassium voltage-gated channel, Shal-related family, member 2	3.45
116731	Pcdha1	protocadherin alpha 1	3.45
268543	G630039L02	hypothetical protein G630039L02	3.43
16508	Kcnd2	potassium voltage-gated channel, Shal-related family, member 2	3.41
54159	Ear5	eosinophil-associated, ribonuclease A family, member 5	3.4
11658	Alcam	activated leukocyte cell adhesion molecule	3.39
12870	Cp	ceruloplasmin	3.32
16186	Il2rg	interleukin 2 receptor, gamma chain	3.28
14160	Lgr5	leucine rich repeat containing G protein coupled receptor 5	3.23
16842	Lef1	lymphoid enhancer binding factor 1	3.12
116731	Pcdha1	protocadherin alpha 1	3.09
226922	Kcnq5	potassium voltage-gated channel, subfamily Q, member 5	3.05
12955	Cryab	crystallin, alpha B	3.03
20356	Sema5a	sema domain, seven thrombospondin repeats (type 1 and type 1-like), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 5A	3.01
12319	Car8	carbonic anhydrase 8	2.99
17196	Mbp	myelin basic protein	2.98
252838	Tox	thymocyte selection-associated HMG box gene	2.94
17196	Mbp	myelin basic protein	2.93
216613	Ccdc85a	coiled-coil domain containing 85A	2.92
15203	Heph	hephaestin	2.91
18823	Plp1	proteolipid protein (myelin) 1	2.89
17196	Mbp	myelin basic protein	2.89
16508	Kcnd2	potassium voltage-gated channel, Shal-related family, member 2	2.88
219134	Tmem46	transmembrane protein 46	2.87
14871	Gstt1	glutathione S-transferase, theta 1	2.87

67448	Plxdc2	plexin domain containing 2	2.87
23967	Osr1	odd-skipped related 1 (Drosophila)	2.85
16525	Kcnk1	potassium channel, subfamily K, member 1	2.84
78558	Htra3	HtrA serine peptidase 3	2.84
66270	1810015C04Rik	RIKEN cDNA 1810015C04 gene	2.83
223433	BC052328	cDNA sequence BC052328	2.8
12263	C2	complement component 2 (within H-2S)	2.78
12805	Cntn1	contactin 1	2.76
18526	Pcdh10	protocadherin 10	2.75
57740	Stk32c	serine/threonine kinase 32C	2.74
16658	Mafb	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein B (avian)	2.73
64214	Rgs18	regulator of G-protein signaling 18	2.73
13612	Edil3	EGF-like repeats and discoidin I-like domains 3	2.73
14248	Fliih	flightless I homolog (Drosophila)	2.72
23794	Adamts5	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 5 (aggrecanase-2)	2.71
13137	Daf2	decay accelerating factor 2	2.69
320557	B230112C05Rik	RIKEN cDNA B230112C05 gene	2.67
66607	Ms4a4d	membrane-spanning 4-domains, subfamily A, member 4D	2.67
116731	Pcdha1	protocadherin alpha 1	2.65
12552	Cdh11	cadherin 11	2.65
225341	Lims2	LIM and senescent cell antigen like domains 2	2.64
71704	Arhgef3	Rho guanine nucleotide exchange factor (GEF) 3	2.64
12964	Cryga	crystallin, gamma A	2.63
66434	2010003O02Rik	RIKEN cDNA 2010003O02 gene	2.63
67634	Ftmt	ferritin mitochondrial	2.61
17870	Mycs	myc-like oncogene, s-myc protein	2.56
27368	Tbl2	transducin (beta)-like 2	2.56
103098	Slc6a15	solute carrier family 6 (neurotransmitter transporter), member 15	2.56
12870	Cp	ceruloplasmin	2.54
30054	Rnf17	ring finger protein 17	2.5
12569	Cdk5r1	cyclin-dependent kinase 5, regulatory subunit (p35) 1	2.49
20471	Six1	sine oculis-related homeobox 1 homolog (Drosophila)	2.48
53870	Cntn6	contactin 6	2.48
20563	Slit2	slit homolog 2 (Drosophila)	2.46
50913	Olig2	oligodendrocyte transcription factor 2	2.45
107831	Bai1	brain-specific angiogenesis inhibitor 1	2.43
216829	BC025076	cDNA sequence BC025076	2.43
114304	Slc28a3	solute carrier family 28 (sodium-coupled nucleoside transporter), member 3	2.43
22317	Vamp1	vesicle-associated membrane protein 1	2.42
13661	Ehf	ets homologous factor	2.42
12010	B2m	beta-2 microglobulin	2.39
14860	Gsta4	glutathione S-transferase, alpha 4	2.36
13123	Cyp7b1	cytochrome P450, family 7, subfamily b, polypeptide 1	2.32

432700	-	-	2.31
17885	Myh8	myosin, heavy polypeptide 8, skeletal muscle, perinatal	2.3
18606	Enpp2	ectonucleotide pyrophosphatase/phosphodiesterase 2	2.3
18424	Otx2	orthodenticle homolog 2 (Drosophila)	2.28
79196	Osbpl5	oxysterol binding protein-like 5	2.26
118446	Gje1	gap junction membrane channel protein epsilon 1	2.26
20312	Cx3cl1	chemokine (C-X3-C motif) ligand 1	2.24
72058	Jam4	junction adhesion molecule 4	2.23
14025	Bcl11a	B-cell CLL/lymphoma 11A (zinc finger protein)	2.22
22329	Vcam1	vascular cell adhesion molecule 1	2.2
14405	Gabrg1	gamma-aminobutyric acid (GABA-A) receptor, subunit gamma 1	2.19
12805	Cntn1	contactin 1	2.17
12319	Car8	carbonic anhydrase 8	2.17
117066	Cts3	cathepsin 3	2.16
11819	Nr2f2	nuclear receptor subfamily 2, group F, member 2	2.16
20510	Slc1a1	solute carrier family 1 (neuronal/epithelial high affinity glutamate transporter, system Xag), member 1	2.14
331531	AV320801	expressed sequence AV320801	2.14
328092	6530401N04Rik	RIKEN cDNA 6530401N04 gene	2.13
12889	Cplx1	complexin 1	2.12
71660	Rarres2	retinoic acid receptor responder (tazarotene induced) 2	2.11
225994	BC016495	cDNA sequence BC016495	2.1
11745	Anxa3	annexin A3	2.1
27428	Shrm	shroom	2.09
15132	Hbb-bh1	hemoglobin Z, beta-like embryonic chain	2.09
26875	Pclo	piccolo (presynaptic cytomatrix protein)	2.09
14396	Gabra3	gamma-aminobutyric acid (GABA-A) receptor, subunit alpha 3	2.09
22063	Trpc1	transient receptor potential cation channel, subfamily C, member 1	2.08
26365	Ceacam1	CEA-related cell adhesion molecule 1	2.07
11418	Accn1	amiloride-sensitive cation channel 1, neuronal (degenerin)	2.07
70546	Zdhhc2	zinc finger, DHHC domain containing 2	2.06
20617	Snca	synuclein, alpha	2.06
12870	Cp	ceruloplasmin	2.05
14168	Fgf13	fibroblast growth factor 13	2.02
245555	C77370	expressed sequence C77370	2
12565	Cdh9	cadherin 9	2
17880	Myh11	myosin, heavy polypeptide 11, smooth muscle	2
54216	Pcdh7	protocadherin 7	1.99
20754	Sprr1b	small proline-rich protein 1B	1.99
19259	Ptpn5	protein tyrosine phosphatase, non-receptor type 5	1.98
29867	Cabp1	calcium binding protein 1	1.95
74100	Arpp21	cyclic AMP-regulated phosphoprotein, 21	1.95
16114	Igk-V28	immunoglobulin kappa chain variable 28 (V28)	1.95
17231	Mcpt8	mast cell protease 8	1.94
17305	Mfng	manic fringe homolog (Drosophila)	1.93

73390	1700060H10Rik	RIKEN cDNA 1700060H10 gene	1.92
54712	Plxnc1	plexin C1	1.92
12162	Bmp7	bone morphogenetic protein 7	1.91
121021	Cspg4	chondroitin sulfate proteoglycan 4	1.9
54353	Scap2	src family associated phosphoprotein 2	1.9
54712	Plxnc1	plexin C1	1.89
12293	Cacna2d1	calcium channel, voltage-dependent, alpha2/delta subunit 1	1.87
64011	Nrgn	neurogranin	1.87
11484	Aspa	aspartoacylase (aminoacylase) 2	1.86
140709	Emid2	EMI domain containing 2	1.86
21388	Tbx5	T-box 5	1.85
64450	Gpr85	G protein-coupled receptor 85	1.84
18823	Plp1	proteolipid protein (myelin) 1	1.84
22329	Vcam1	vascular cell adhesion molecule 1	1.84
64450	Gpr85	G protein-coupled receptor 85	1.84
14433	LOC14433	similar to glyceraldehyde-3-phosphate dehydrogenase	1.84
11488	Adam11	a disintegrin and metallopeptidase domain 11	1.83
11519	Add2	adducin 2 (beta)	1.82
18574	Pde1b	phosphodiesterase 1B, Ca ²⁺ -calmodulin dependent	1.81
235402	Lrrn6a	leucine rich repeat neuronal 6A	1.81
21984	Tpbpa	trophoblast specific protein alpha	1.81
17174	Masp1	mannan-binding lectin serine peptidase 1	1.8
12386	Ctnna2	catenin (cadherin associated protein), alpha 2	1.79
319504	C130076O07Rik	RIKEN cDNA C130076O07 gene	1.79
114642	Brdt	bromodomain, testis-specific	1.78
54377	Cacng4	calcium channel, voltage-dependent, gamma subunit 4	1.77
54561	Nap1l3	nucleosome assembly protein 1-like 3	1.77
17968	Ncam2	neural cell adhesion molecule 2	1.77
234593	Ndr4	N-myc downstream regulated gene 4	1.77
20394	Scg5	secretogranin V	1.77
77945	Rpgrip1	retinitis pigmentosa GTPase regulator interacting protein 1	1.76
170717	AF119384	cDNA sequence AF119384	1.75
19017	Ppargc1a	peroxisome proliferative activated receptor, gamma, coactivator 1 alpha	1.74
11790	Spep	SPEG complex locus	1.74
70546	Zdhhc2	zinc finger, DHHC domain containing 2	1.73
17470	Cd200	Cd200 antigen	1.72
19017	Ppargc1a	peroxisome proliferative activated receptor, gamma, coactivator 1 alpha	1.72
72016	1600002H07Rik	RIKEN cDNA 1600002H07 gene	1.69
17751	Mt3	metallothionein 3	1.68
52538	Acaa2	acetyl-Coenzyme A acyltransferase 2 (mitochondrial 3-oxoacyl-Coenzyme A thiolase)	1.67
14254	Flt1	FMS-like tyrosine kinase 1	1.67
27413	Abcb11	ATP-binding cassette, sub-family B (MDR/TAP), member 11	1.66

50505	Ercc4	excision repair cross-complementing rodent repair deficiency, complementation group 4	1.65
19225	Ptgs2	prostaglandin-endoperoxide synthase 2	1.65
22658	Pcgf2	polycomb group ring finger 2	1.65
14405	Gabrg1	gamma-aminobutyric acid (GABA-A) receptor, subunit gamma 1	1.65
15208	Hes5	hairy and enhancer of split 5 (Drosophila)	1.64
12870	Cp	ceruloplasmin	1.63
74100	Arpp21	cyclic AMP-regulated phosphoprotein, 21	1.63
16372	Irx2	Iroquois related homeobox 2 (Drosophila)	1.62
14378	G6pc2	glucose-6-phosphatase, catalytic, 2	1.61
19017	Ppargc1a	peroxisome proliferative activated receptor, gamma, coactivator 1 alpha	1.61
20617	Snca	synuclein, alpha	1.61
19281	Ptprt	protein tyrosine phosphatase, receptor type, T	1.6
27276	Plekhb1	pleckstrin homology domain containing, family B (evectins) member 1	1.6
12870	Cp	ceruloplasmin	1.58
12519	Cd80	CD80 antigen	1.58
71911	Bdh1	3-hydroxybutyrate dehydrogenase, type 1	1.58
17174	Masp1	mannan-binding lectin serine peptidase 1	1.58
20312	Cx3cl1	chemokine (C-X3-C motif) ligand 1	1.58
20295	Ccl17	chemokine (C-C motif) ligand 17	1.57
15208	Hes5	hairy and enhancer of split 5 (Drosophila)	1.57
66193	1110049F12Rik	RIKEN cDNA 1110049F12 gene	1.57
59125	Nek7	NIMA (never in mitosis gene a)-related expressed kinase 7	1.56
71904	Paqr7	progesterin and adipoQ receptor family member VII	1.56
76886	6430514L14Rik	RIKEN cDNA 6430514L14 gene	1.56
14166	Fgf11	fibroblast growth factor 11	1.56
13123	Cyp7b1	cytochrome P450, family 7, subfamily b, polypeptide 1	1.55
12404	Cbln1	cerebellin 1 precursor protein	1.55
252838	Tox	thymocyte selection-associated HMG box gene	1.55
52538	Acaa2	acetyl-Coenzyme A acyltransferase 2 (mitochondrial 3-oxoacyl-Coenzyme A thiolase)	1.55
50701	Ela2	elastase 2, neutrophil	1.54
18783	Pla2g4a	phospholipase A2, group IVA (cytosolic, calcium-dependent)	1.54
11861	Arl4a	ADP-ribosylation factor-like 4A	1.54
107765	Ankrd1	ankyrin repeat domain 1 (cardiac muscle)	1.53
13618	Ednrb	endothelin receptor type B	1.51
54158	Copg2as2	coatamer protein complex, subunit gamma 2, antisense 2	1.5
14609	Gja1	gap junction membrane channel protein alpha 1	1.5
13618	Ednrb	endothelin receptor type B	1.5
18606	Enpp2	ectonucleotide pyrophosphatase/phosphodiesterase 2	1.49
51801	Ramp1	receptor (calcitonin) activity modifying protein 1	1.49
98314	D2hgdh	D-2-hydroxyglutarate dehydrogenase	1.49
110595	Timp4	tissue inhibitor of metalloproteinase 4	1.48

16882	Lig3	ligase III, DNA, ATP-dependent serine (or cysteine) peptidase inhibitor, clade I, member 1	1.48
20713	Serpini1		1.47
21928	Tnfaip2	tumor necrosis factor, alpha-induced protein 2	1.46
13824	Epb4.1l4a	erythrocyte protein band 4.1-like 4a	1.46
11464	Actc1	actin, alpha, cardiac	1.45
54712	Plxnc1	plexin C1	1.45
23871	Ets1	E26 avian leukemia oncogene 1, 5' domain	1.45
76219	6530401D17Rik	RIKEN cDNA 6530401D17 gene	1.43
233836	Slc5a11	solute carrier family 5 (sodium/glucose cotransporter), member 11	1.43
14609	Gja1	gap junction membrane channel protein alpha 1	1.43
171212	Galnt10	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 10	1.43
30800	Mmp20	matrix metalloproteinase 20 (enamelysin)	1.42
96935	Susd4	sushi domain containing 4	1.42
53412	Ppp1r3c	protein phosphatase 1, regulatory (inhibitor) subunit 3C	1.42
12491	Cd36	CD36 antigen	1.41
54611	Pde3a	phosphodiesterase 3A, cGMP inhibited	1.41
18526	Pcdh10	protocadherin 10	1.4
22329	Vcam1	vascular cell adhesion molecule 1	1.4
22141	Tub	tubby candidate gene	1.4
16181	Il1rn	interleukin 1 receptor antagonist	1.4
232670	Tspan33	tetraspanin 33	1.4
232670	Tspan33	tetraspanin 33	1.4
16324	Inhbb	inhibin beta-B	1.4
434002	-	-	1.4
14609	Gja1	gap junction membrane channel protein alpha 1	1.4
117149	Tirap	toll-interleukin 1 receptor (TIR) domain-containing adaptor protein	1.4
74185	Gbe1	glucan (1,4-alpha-), branching enzyme 1	1.39
12569	Cdk5r1	cyclin-dependent kinase 5, regulatory subunit (p35) 1	1.39
108653	4933426K21Rik	RIKEN cDNA 4933426K21 gene	1.39
14667	Gm2a	GM2 ganglioside activator protein	1.39
11658	Alcam	activated leukocyte cell adhesion molecule	1.39
65971	1700021K02Rik	RIKEN cDNA 1700021K02 gene	1.38
109332	Cdcp1	CUB domain containing protein 1	1.37
23871	Ets1	E26 avian leukemia oncogene 1, 5' domain	1.37
12162	Bmp7	bone morphogenetic protein 7	1.36
67685	Dyx1c1	dyslexia susceptibility 1 candidate 1 homolog (human)	1.36
110596	Rgnef	Rho-guanine nucleotide exchange factor	1.36
214359	Tmem51	transmembrane protein 51	1.35
17968	Ncam2	neural cell adhesion molecule 2	1.35
14609	Gja1	gap junction membrane channel protein alpha 1	1.35
110648	Lmx1a	LIM homeobox transcription factor 1 alpha	1.35
245555	C77370	expressed sequence C77370	1.35
76219	6530401D17Rik	RIKEN cDNA 6530401D17 gene	1.35

67460	Decr1	2,4-dienoyl CoA reductase 1, mitochondrial coatomer protein complex, subunit gamma 2, antisense	1.34
54158	Copg2as2	2	1.34
20525	Slc2a1	solute carrier family 2 (facilitated glucose transporter), member 1	1.34
60525	Acss2	acyl-CoA synthetase short-chain family member 2	1.34
73284	Ddit4l	DNA-damage-inducible transcript 4-like	1.33
20193	S100a1	S100 calcium binding protein A1	1.33
228858	Gdap11l	ganglioside-induced differentiation-associated protein 1-like 1	1.33
11517	Adcyap1r1	adenylate cyclase activating polypeptide 1 receptor 1	1.32
66214	1190002H23Rik	RIKEN cDNA 1190002H23 gene	1.31
22427	Wrn	Werner syndrome homolog (human)	1.31
77813	A930012N16Rik	RIKEN cDNA A930012N16 gene	1.3
13690	Eif4g2	eukaryotic translation initiation factor 4, gamma 2	1.3
52538	Acaa2	acetyl-Coenzyme A acyltransferase 2 (mitochondrial 3-oxoacyl-Coenzyme A thiolase)	1.3
69634	Clybl	citrate lyase beta like	1.29
72479	Hsd12	hydroxysteroid dehydrogenase like 2	1.29
27528	D0H4S114	DNA segment, human D4S114	1.29
103712	6330403K07Rik	RIKEN cDNA 6330403K07 gene	1.28
67310	Prlpc2	prolactin-like protein C 2	1.27
20599	Smr1	submaxillary gland androgen regulated protein 1	1.27
53412	Ppp1r3c	protein phosphatase 1, regulatory (inhibitor) subunit 3C	1.26
103172	Ndg2	Nur77 downstream gene 2	1.26
209558	Enpp3	ectonucleotide pyrophosphatase/phosphodiesterase 3	1.26
11790	Speg	SPEG complex locus	1.25
17196	Mbp	myelin basic protein	1.25
16832	Ldhb	lactate dehydrogenase B	1.25
56857	Slc37a2	solute carrier family 37 (glycerol-3-phosphate transporter), member 2	1.24
110596	Rgnef	Rho-guanine nucleotide exchange factor	1.24
14942	Gzme	granzyme E	1.24
14972	H2-K1	histocompatibility 2, K1, K region	1.24
20962	Sycp3	synaptonemal complex protein 3	1.22
27364	Srr	serine racemase	1.22
228731	Nkx2-4	NK2 transcription factor related, locus 4 (Drosophila)	1.21
21827	Thbs3	thrombospondin 3	1.21
13389	Dll3	delta-like 3 (Drosophila)	1.21
67588	Rnf41	ring finger protein 41	1.2
27360	Add3	adducin 3 (gamma)	1.2
14733	Gpc1	glypican 1	1.2
54393	Gabbr1	gamma-aminobutyric acid (GABA-B) receptor, 1	1.2
16419	Itgb5	integrin beta 5	1.2
14667	Gm2a	GM2 ganglioside activator protein	1.19
72479	Hsd12	hydroxysteroid dehydrogenase like 2	1.19
66253	Aig1	androgen-induced 1	1.19
27528	D0H4S114	DNA segment, human D4S114	1.19

18751	Prkcb1	protein kinase C, beta 1	1.18
246104	Rhbdl3	rhomboid, veinlet-like 3 (Drosophila)	1.17
60525	Acss2	acyl-CoA synthetase short-chain family member 2	1.17
26357	Abcg2	ATP-binding cassette, sub-family G (WHITE), member 2	1.17
53611	Vti1a	vesicle transport through interaction with t-SNAREs homolog 1A (yeast)	1.17
66109	Tspan13	tetraspanin 13	1.17
14585	Gfra1	glial cell line derived neurotrophic factor family receptor alpha 1	1.16
54651	Usp27x	ubiquitin specific peptidase 27, X chromosome	1.16
268595	D430019H16Rik	RIKEN cDNA D430019H16 gene	1.16
16419	Itgb5	integrin beta 5	1.16
13195	Ddc	dopa decarboxylase	1.15
226778	Mark1	MAP/microtubule affinity-regulating kinase 1	1.15
243328	Slc29a4	solute carrier family 29 (nucleoside transporters), member 4	1.15
192216	Tmem47	transmembrane protein 47	1.14
19893	Rpgr	retinitis pigmentosa GTPase regulator	1.14
66514	Asrgl1	asparaginase like 1	1.13
67307	3110049J23Rik	RIKEN cDNA 3110049J23 gene	1.13
16071	Igk-C	immunoglobulin kappa chain, constant region	1.13
56363	Tmeff2	transmembrane protein with EGF-like and two follistatin-like domains 2	1.13
54613	St3gal6	ST3 beta-galactoside alpha-2,3-sialyltransferase 6	1.13
110351	Rap1gap	Rap1 GTPase-activating protein	1.13
78890	2310079F23Rik	RIKEN cDNA 2310079F23 gene	1.13
20525	Slc2a1	solute carrier family 2 (facilitated glucose transporter), member 1	1.13
14169	Fgf14	fibroblast growth factor 14	1.12
50918	Myadm	myeloid-associated differentiation marker	1.12
29858	Pmm1	phosphomannomutase 1	1.12
66995	Zcchc18	zinc finger, CCHC domain containing 18	1.11
74352	Zfp84	zinc finger protein 84	1.11
50796	Dmrt1	doublesex and mab-3 related transcription factor 1	1.11
13852	Epim	epimorphin	1.1
13804	Endog	endonuclease G	1.1
58200	Ppp1r1a	protein phosphatase 1, regulatory (inhibitor) subunit 1A	1.09
433144	LOC433144	similar to thioredoxin-related transmembrane protein 2	1.09
27364	Srr	serine racemase	1.09
76566	1500005K14Rik	RIKEN cDNA 1500005K14 gene	1.08
13839	Epha5	Eph receptor A5	1.08
16832	Ldhb	lactate dehydrogenase B	1.08
320873	Cdh10	cadherin 10	1.08
66848	Fuca2	fucosidase, alpha-L- 2, plasma	1.07
14699	Gngt1	guanine nucleotide binding protein (G protein), gamma transducing activity polypeptide 1	1.07

22418	Wnt5a	wingless-related MMTV integration site 5A	1.07
21817	Tgm2	transglutaminase 2, C polypeptide	1.06
17035	Lxn	latexin	1.06
19267	Ptpre	protein tyrosine phosphatase, receptor type, E	1.06
20613	Snai1	snail homolog 1 (Drosophila)	1.06
16658	Mafb	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein B (avian)	1.06
20917	Suc1g2	succinate-Coenzyme A ligase, GDP-forming, beta subunit	1.06
68966	1500001L15Rik	RIKEN cDNA 1500001L15 gene	1.05
56421	Pfkp	phosphofructokinase, platelet	1.05
20646	Snrpn	small nuclear ribonucleoprotein N	1.05
17930	Myom2	myomesin 2	1.04
69976	Galk2	galactokinase 2	1.04
71746	Rgl3	ral guanine nucleotide dissociation stimulator-like 3	1.04
29858	Pmm1	phosphomannomutase 1	1.04
14664	Slc6a9	solute carrier family 6 (neurotransmitter transporter, glycine), member 9	1.04
19293	Pvalb	parvalbumin	1.04
56092	Cts7	cathepsin 7	1.03
67564	Tmem35	transmembrane protein 35	1.03
13798	En1	engrailed 1	1.02
18631	Pex11a	peroxisomal biogenesis factor 11a	1.02
52552	Parp8	poly (ADP-ribose) polymerase family, member 8	1.02
20404	Sh3gl2	SH3-domain GRB2-like 2	1.01
11306	Abcb7	ATP-binding cassette, sub-family B (MDR/TAP), member 7	1.01
67468	Mmd	monocyte to macrophage differentiation-associated	1.01
15550	Htr1a	5-hydroxytryptamine (serotonin) receptor 1A	1.01
12862	Cox6a2	cytochrome c oxidase, subunit VI a, polypeptide 2	1.01
22619	Siae	sialic acid acetyltransferase	1.01
16419	Itgb5	integrin beta 5	1
74320	Wdr33	WD repeat domain 33	1
110751	Adam33	a disintegrin and metalloproteinase domain 33	1
108653	4933426K21Rik	RIKEN cDNA 4933426K21 gene	1
76223	Agbl3	ATP/GTP binding protein-like 3	0.99
225845	Hrasls3	HRAS like suppressor 3	0.99
24001	Tiam2	T-cell lymphoma invasion and metastasis 2	0.99
110595	Timp4	tissue inhibitor of metalloproteinase 4	0.99
20686	Spa17	sperm autoantigenic protein 17	0.98
69833	Polr2f	polymerase (RNA) II (DNA directed) polypeptide F	0.98
67252	Cap2	CAP, adenylate cyclase-associated protein, 2 (yeast)	0.98
114874	Ddhd1	DDHD domain containing 1	0.98
80892	Zfx4	zinc finger homeodomain 4	0.97
68736	1110034B05Rik	RIKEN cDNA 1110034B05 gene	0.96
75541	1700019G17Rik	RIKEN cDNA 1700019G17 gene	0.96
14658	Glr1b	glycine receptor, beta subunit	0.96

11705	Amh	anti-Mullerian hormone	0.95
232969	2410005H09Rik	RIKEN cDNA 2410005H09 gene	0.95
11803	Aplp1	amyloid beta (A4) precursor-like protein 1	0.95
76884	Cyfp2	cytoplasmic FMR1 interacting protein 2	0.94
67468	Mmd	monocyte to macrophage differentiation-associated	0.94
107094	AA408556	expressed sequence AA408556	0.94
27360	Add3	adducin 3 (gamma)	0.94
14275	Folr1	folate receptor 1 (adult)	0.94
22700	Zfp40	zinc finger protein 40	0.93
16832	Ldhb	lactate dehydrogenase B	0.93
15132	Hbb-bh1	hemoglobin Z, beta-like embryonic chain	0.92
12176	Bnip3	BCL2/adenovirus E1B interacting protein 1, NIP3	0.92
72930	Ppp2r2b	protein phosphatase 2 (formerly 2A), regulatory subunit B (PR 52), beta isoform	0.92
110959	Nudt19	nudix (nucleoside diphosphate linked moiety X)-type motif 19	0.92
12491	Cd36	CD36 antigen	0.92
14961	H2-Ab1	histocompatibility 2, class II antigen A, beta 1	0.91
20312	Cx3cl1	chemokine (C-X3-C motif) ligand 1	0.91
56043	Akr1e1	aldo-keto reductase family 1, member E1	0.91
66152	1110020P15Rik	RIKEN cDNA 1110020P15 gene	0.91
234593	Ndr4	N-myc downstream regulated gene 4	0.91
20679	Sox6	SRY-box containing gene 6	0.9
16424	Itih1	inter-alpha trypsin inhibitor, heavy chain 1	0.9
77219	Zadh1	zinc binding alcohol dehydrogenase, domain containing 1	0.9
57339	Jph1	junctionophilin 1	0.9
14609	Gja1	gap junction membrane channel protein alpha 1	0.9
56295	Higd1a	HIG1 domain family, member 1A	0.9
212862	Chpt1	choline phosphotransferase 1	0.89
66514	Asrgl1	asparaginase like 1	0.89
26757	Dpysl4	dihydropyrimidinase-like 4	0.89
21802	Tgfa	transforming growth factor alpha	0.89
67015	Ccdc91	coiled-coil domain containing 91	0.89
320262	A830073O21Rik	RIKEN cDNA A830073O21 gene	0.88
192663	Abcg4	ATP-binding cassette, sub-family G (WHITE), member 4	0.88
13110	Cyp2j6	cytochrome P450, family 2, subfamily j, polypeptide 6	0.88
66098	Chchd6	coiled-coil-helix-coiled-coil-helix domain containing 6	0.88
77219	Zadh1	zinc binding alcohol dehydrogenase, domain containing 1	0.88
15110	Hand1	heart and neural crest derivatives expressed transcript 1	0.88
11758	Prdx6	peroxiredoxin 6	0.88
51789	Tnk2	tyrosine kinase, non-receptor, 2	0.88
67126	Atp5e	ATP synthase, H+ transporting, mitochondrial F1 complex, epsilon subunit	0.87
106931	Kctd1	potassium channel tetramerisation domain containing 1	0.87
14783	Grb10	growth factor receptor bound protein 10	0.86
18645	Pfn2	profilin 2	0.86

26947	Tuba-rs1	tubulin alpha, related sequence 1	0.86
56376	Pdlim5	PDZ and LIM domain 5	0.86
76142	Ppp1r14c	protein phosphatase 1, regulatory (inhibitor) subunit 14c	0.86
14166	Fgf11	fibroblast growth factor 11	0.86
98366	Smap1	stromal membrane-associated protein 1	0.85
30938	Fgd3	FYVE, RhoGEF and PH domain containing 3	0.85
17873	Gadd45b	growth arrest and DNA-damage-inducible 45 beta	0.85
11517	Adcyap1r1	adenylate cyclase activating polypeptide 1 receptor 1	0.85
52197	DXErtD223e	DNA segment, Chr X, ERATO Doi 223, expressed	0.85
76892	0610013E23Rik	RIKEN cDNA 0610013E23 gene	0.85
12569	Cdk5r1	cyclin-dependent kinase 5, regulatory subunit (p35) 1	0.84
320802	6330512M04Rik	RIKEN cDNA 6330512M04 gene	0.84
50496	E2f6	E2F transcription factor 6	0.84
12889	Cplx1	complexin 1	0.83
71911	Bdh1	3-hydroxybutyrate dehydrogenase, type 1	0.83
99586	Dpyd	dihydropyrimidine dehydrogenase	0.83
17268	Meis1	myeloid ecotropic viral integration site 1	0.83
29820	Tnfrsf19	tumor necrosis factor receptor superfamily, member 19	0.83
246196	Zfp277	zinc finger protein 277	0.83
17161	Maoa	monoamine oxidase A	0.82
77809	Lrrc42	leucine rich repeat containing 42	0.82
16832	Ldhb	lactate dehydrogenase B	0.82
231086	Hadhb	hydroxyacyl-Coenzyme A dehydrogenase/3-ketoacyl-Coenzyme A thiolase/enoyl-Coenzyme A hydratase (trifunctional protein), beta subunit	0.82
67914	Coq9	coenzyme Q9 homolog (yeast)	0.81
66832	Rshl2	radial spokehead-like 2	0.81
14609	Gja1	gap junction membrane channel protein alpha 1	0.8
93692	Glxr	glutaredoxin	0.8
76816	Sdccag8	serologically defined colon cancer antigen 8	0.8
12183	Bpgm	2,3-bisphosphoglycerate mutase	0.8
20531	Slc34a2	solute carrier family 34 (sodium phosphate), member 2	0.8
21859	Timp3	tissue inhibitor of metalloproteinase 3	0.8
16922	Phyh	phytanoyl-CoA hydroxylase	0.8
83382	Siglece	sialic acid binding Ig-like lectin E	0.8
54375	Azin1	antizyme inhibitor 1	0.8
12183	Bpgm	2,3-bisphosphoglycerate mutase	0.8
66454	Nmnat1	nicotinamide nucleotide adenylyltransferase 1	0.8
56046	2410003P15Rik	RIKEN cDNA 2410003P15 gene	0.79
26462	Txnrd2	thioredoxin reductase 2	0.79
13131	Dab1	disabled homolog 1 (Drosophila)	0.79
16865	Lgtn	ligatin	0.78
20404	Sh3gl2	SH3-domain GRB2-like 2	0.78
18645	Pfn2	profilin 2	0.78
109232	Sccpdh	saccharopine dehydrogenase (putative)	0.78
94180	Acsbg1	acyl-CoA synthetase bubblegum family member 1	0.78

11429	Aco2	aconitase 2, mitochondrial	0.78
217473	Ankmy2	ankyrin repeat and MYND domain containing 2	0.78
67414	Mfn1	mitofusin 1	0.78
20525	Slc2a1	solute carrier family 2 (facilitated glucose transporter), member 1	0.78
54326	Elovl2	elongation of very long chain fatty acids (FEN1/Elo2, SUR4/Elo3, yeast)-like 2	0.77
13202	Ddt	D-dopachrome tautomerase	0.77
72157	Pgm2	phosphoglucomutase 2	0.76
67451	Pkp2	plakophilin 2	0.76
71777	Ing3	inhibitor of growth family, member 3	0.76
66154	Tmem14c	transmembrane protein 14C	0.76
27053	Asns	asparagine synthetase	0.75
20745	Spock1	sparc/osteonectin, cwcv and kazal-like domains proteoglycan 1	0.75
69487	2310003L22Rik	RIKEN cDNA 2310003L22 gene	0.75
108653	4933426K21Rik	RIKEN cDNA 4933426K21 gene	0.75
217082	Hlf	hepatic leukemia factor	0.75
93692	Glrx	glutaredoxin	0.75
27357	Gyg	glycogenin	0.74
27053	Asns	asparagine synthetase	0.74
18645	Pfn2	profilin 2	0.74
13685	Eif4ebp1	eukaryotic translation initiation factor 4E binding protein 1	0.74
21991	Tpi1	triosephosphate isomerase 1	0.74
65111	Dap3	death associated protein 3	0.73
67062	2810402A17Rik	RIKEN cDNA 2810402A17 gene	0.73
76483	2400010G15Rik	RIKEN cDNA 2400010G15 gene	0.73
105439	9630044O09Rik	RIKEN cDNA 9630044O09 gene	0.73
14088	Fancc	Fanconi anemia, complementation group C	0.73
208715	Hmgcs1	3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1	0.73
29813	Zfp385	zinc finger protein 385	0.73
66388	Cutc	cutC copper transporter homolog (E.coli)	0.73
13528	Dtnb	dystrobrevin, beta	0.73
20482	Skil	SKI-like	0.72
11306	Abcb7	ATP-binding cassette, sub-family B (MDR/TAP), member 7	0.72
72938	2900042B11Rik	RIKEN cDNA 2900042B11 gene	0.72
66514	Asrgl1	asparaginase like 1	0.72
28080	Atp5o	ATP synthase, H+ transporting, mitochondrial F1 complex, O subunit	0.72
16081	Igk-V1	immunoglobulin kappa chain variable 1 (V1)	0.72
68077	Gltscr2	glioma tumor suppressor candidate region gene 2	0.72
17762	Mapt	microtubule-associated protein tau	0.72
16206	Lrig1	leucine-rich repeats and immunoglobulin-like domains 1	0.72

231086	Hadhb	hydroxyacyl-Coenzyme A dehydrogenase/3-ketoacyl-Coenzyme A thiolase/enoyl-Coenzyme A hydratase (trifunctional protein), beta subunit	0.72
171212	Galnt10	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 10	0.71
67122	Nrarp	Notch-regulated ankyrin repeat protein	0.71
12568	Cdk5	cyclin-dependent kinase 5	0.71
19092	Prkg2	protein kinase, cGMP-dependent, type II	0.71
20744	Strbp	spermatid perinuclear RNA binding protein	0.71
66958	Txndc14	thioredoxin domain containing 14	0.71
22151	Tubb2a	tubulin, beta 2a	0.7
110855	Pde6c	phosphodiesterase 6C, cGMP specific, cone, alpha prime	0.7
14719	Got2	glutamate oxaloacetate transaminase 2, mitochondrial	0.7
67059	2810409H07Rik	RIKEN cDNA 2810409H07 gene	0.7
12265	C2ta	class II transactivator	0.7
18415	Hspa4l	heat shock protein 4 like	0.7
83603	Elov14	elongation of very long chain fatty acids (FEN1/Elo2, SUR4/Elo3, yeast)-like 4	0.7
16865	Lgtn	ligatin	0.7
68241	9530058B02Rik	RIKEN cDNA 9530058B02 gene	0.7
233046	Rasgrp4	RAS guanyl releasing protein 4	0.7
75778	Them4	thioesterase superfamily member 4	0.69
24056	Sh3bp5	SH3-domain binding protein 5 (BTK-associated)	0.69
110446	Acat1	acetyl-Coenzyme A acetyltransferase 1	0.69
110446	Acat1	acetyl-Coenzyme A acetyltransferase 1	0.69
15107	Hadhsc	L-3-hydroxyacyl-Coenzyme A dehydrogenase, short chain	0.69
12183	Bpgm	2,3-bisphosphoglycerate mutase	0.69
15962	Ifna1	interferon alpha family, gene 1	0.69
17527	Mpv17	Mpv17 transgene, kidney disease mutant	0.68
68157	6720475J19Rik	RIKEN cDNA 6720475J19 gene	0.68
98388	Chst10	carbohydrate sulfotransferase 10	0.68
14066	F3	coagulation factor III	0.68
15926	Idh1	isocitrate dehydrogenase 1 (NADP+), soluble	0.68
229487	Pet112l	PET112-like (yeast)	0.68
73873	4930430E16Rik	RIKEN cDNA 4930430E16 gene	0.68
109552	Sri	sorcin	0.68
68121	Cep70	centrosomal protein 70	0.68
93757	Imp2l	IMP2 inner mitochondrial membrane peptidase-like (S. cerevisiae)	0.68
56335	Mettl3	methyltransferase-like 3	0.67
56046	2410003P15Rik	RIKEN cDNA 2410003P15 gene	0.67
56376	Pdlim5	PDZ and LIM domain 5	0.67
77697	Mmab	methylmalonic aciduria (cobalamin deficiency) type B homolog (human)	0.67

74008	Arsg	arylsulfatase G	0.67
57279	Slc25a20	solute carrier family 25 (mitochondrial carnitine/acylcarnitine translocase), member 20	0.67
66152	1110020P15Rik	RIKEN cDNA 1110020P15 gene	0.67
18616	Peg3	paternally expressed 3	0.67
13382	Dld	dihydrolipoamide dehydrogenase	0.66
319625	Galm	galactose mutarotase	0.66
13405	Dmd	dystrophin, muscular dystrophy	0.66
107797	V1rb6	vomeronasal 1 receptor, B6	0.66
27660	1700088E04Rik	RIKEN cDNA 1700088E04 gene	0.66
96957	Tmem62	transmembrane protein 62	0.66
73102	3110004L20Rik	RIKEN cDNA 3110004L20 gene	0.66
66108	Ndufa9	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 9	0.66
217473	Ankmy2	ankyrin repeat and MYND domain containing 2	0.66
16195	Il6st	interleukin 6 signal transducer	0.66
208836	BC025462	cDNA sequence BC025462	0.65
16419	Itgb5	integrin beta 5	0.65
15926	Idh1	isocitrate dehydrogenase 1 (NADP+), soluble	0.65
110532	Adarb1	adenosine deaminase, RNA-specific, B1	0.65
211550	T2bp	Traf2 binding protein	0.65
27389	Dusp13	dual specificity phosphatase 13	0.65
232536	Mrps35	mitochondrial ribosomal protein S35	0.65
12896	Cpt2	carnitine palmitoyltransferase 2	0.65
57443	Fbxo3	F-box only protein 3	0.64
70358	Steap1	six transmembrane epithelial antigen of the prostate 1	0.64
18631	Pex11a	peroxisomal biogenesis factor 11a	0.64
76338	Rab2b	RAB2B, member RAS oncogene family	0.64
67523	1700094J05Rik	RIKEN cDNA 1700094J05 gene	0.64
70911	Phyhipl	phytanoyl-CoA hydroxylase interacting protein-like	0.64
110842	Etfa	electron transferring flavoprotein, alpha polypeptide	0.64
18016	Nf2	neurofibromatosis 2	0.64
57279	Slc25a20	solute carrier family 25 (mitochondrial carnitine/acylcarnitine translocase), member 20	0.64
18134	Nova1	neuro-oncological ventral antigen 1	0.64
20501	Slc16a1	solute carrier family 16 (monocarboxylic acid transporters), member 1	0.63
67216	Mboat2	membrane bound O-acyltransferase domain containing 2	0.63
11363	Acadl	acyl-Coenzyme A dehydrogenase, long-chain	0.63
19171	Psmb10	proteasome (prosome, macropain) subunit, beta type 10	0.63
66075	Chchd3	coiled-coil-helix-coiled-coil-helix domain containing 3	0.63
68145	5730466H23Rik	RIKEN cDNA 5730466H23 gene	0.63
18744	Pja1	praja1, RING-H2 motif containing	0.63
77219	Zadh1	zinc binding alcohol dehydrogenase, domain containing 1	0.63

212531	Sh3bgrl2	SH3 domain binding glutamic acid-rich protein like 2	0.63
11899	Astn1	astrotactin 1	0.63
210029	Metrn1	meteorin, glial cell differentiation regulator-like	0.62
234258	Neil3	nei like 3 (E. coli)	0.62
114874	Ddhd1	DDHD domain containing 1	0.62
106572	Rab31	RAB31, member RAS oncogene family	0.62
20656	Sod2	superoxide dismutase 2, mitochondrial	0.62
170461	Stard6	StAR-related lipid transfer (START) domain containing 6	0.62
69981	Tmem30a	transmembrane protein 30A	0.61
212862	Chpt1	choline phosphotransferase 1	0.61
56298	Arl6ip2	ADP-ribosylation factor-like 6 interacting protein 2	0.61
20970	Sdc3	syndecan 3	0.61
66736	4921531G14Rik	RIKEN cDNA 4921531G14 gene	0.61
15925	Ide	insulin degrading enzyme	0.61
11810	Apobec1	apolipoprotein B editing complex 1	0.61
14460	Gata1	GATA binding protein 1	0.61
433594	LOC433594	phosphoglycerate kinase 1-like	0.61
19878	Rock2	Rho-associated coiled-coil containing protein kinase 2	0.61
12419	Cbx5	chromobox homolog 5 (Drosophila HP1a)	0.61
110446	Acat1	acetyl-Coenzyme A acetyltransferase 1	0.6
100637	B230342M21Rik	RIKEN cDNA B230342M21 gene	0.6
18744	Pja1	praja1, RING-H2 motif containing	0.6
67636	4930469P12Rik	RIKEN cDNA 4930469P12 gene	0.6
68349	Ndufs3	NADH dehydrogenase (ubiquinone) Fe-S protein 3	0.6
67238	2810453I06Rik	RIKEN cDNA 2810453I06 gene	0.6
17174	Masp1	mannan-binding lectin serine peptidase 1	0.6
76123	Gpsm2	G-protein signalling modulator 2 (AGS3-like, C. elegans)	0.59
17448	Mdh2	malate dehydrogenase 2, NAD (mitochondrial)	0.59
67942	Atp5g2	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit c (subunit 9), isoform 2	0.59
67013	Oma1	OMA1 homolog, zinc metallopeptidase (S. cerevisiae)	0.59
66052	Sdhc	succinate dehydrogenase complex, subunit C, integral membrane protein	0.59
19201	Pstpip2	proline-serine-threonine phosphatase-interacting protein 2	0.59
229709	Ahcyl1	S-adenosylhomocysteine hydrolase-like 1	0.59
66925	Sdhd	succinate dehydrogenase complex, subunit D, integral membrane protein	0.58
59056	Evc	Ellis van Creveld gene homolog (human)	0.58
217779	Lysmd1	LysM, putative peptidoglycan-binding, domain containing 1	0.58
56376	Pdlim5	PDZ and LIM domain 5	0.58
27878	Tada1l	transcriptional adaptor 1 (HF11 homolog, yeast) like	0.58
18105	Nqo2	NAD(P)H dehydrogenase, quinone 2	0.58
66361	Zfand1	zinc finger, AN1-type domain 1	0.58
27364	Srr	serine racemase	0.58

69692	Hddc2	HD domain containing 2	0.58
22038	Plscr1	phospholipid scramblase 1	0.58
11740	Slc25a5	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 5	0.57
12478	Cd19	CD19 antigen	0.57
108760	Galnt1	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase-like 1	0.57
69009	Thap7	THAP domain containing 7	0.57
11739	Slc25a4	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 4	0.57
56018	Stard10	START domain containing 10	0.57
21807	Tsc22d1	TSC22 domain family, member 1	0.57
67003	Uqcrc2	ubiquinol cytochrome c reductase core protein 2	0.57
12850	Coq7	demethyl-Q 7	0.57
319974	Auts2	autism susceptibility candidate 2	0.57
208715	Hmgcs1	3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1	0.57
11740	Slc25a5	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 5	0.57
66359	2310005N03Rik	RIKEN cDNA 2310005N03 gene	0.57
28080	Atp5o	ATP synthase, H+ transporting, mitochondrial F1 complex, O subunit	0.57
229709	Ahcy1	S-adenosylhomocysteine hydrolase-like 1	0.56
17918	Myo5a	myosin Va	0.56
66594	Uqcr	ubiquinol-cytochrome c reductase (6.4kD) subunit	0.56
76051	Ganc	glucosidase, alpha; neutral C	0.56
11429	Aco2	aconitase 2, mitochondrial	0.56
72865	Cxx1c	CAAX box 1 homolog C (human)	0.56
225115	Svil	supervillin	0.56
15107	Hadhsc	L-3-hydroxyacyl-Coenzyme A dehydrogenase, short chain	0.56
13804	Endog	endonuclease G	0.56
66291	1810030N24Rik	RIKEN cDNA 1810030N24 gene	0.56
14735	Gpc4	glypican 4	0.55
56695	Pnkd	paroxysmal nonkinesigenic dyskinesia regulator of chromosome condensation (RCC1) and BTB (POZ) domain containing protein 1	0.55
71330	Rcbtb1	cytochrome c-1	0.55
66445	Cyc1	cytochrome c-1	0.55
77559	Agl	amylo-1,6-glucosidase, 4-alpha-glucanotransferase	0.55
14972	H2-K1	histocompatibility 2, K1, K region	0.55
11740	Slc25a5	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 5	0.55
108000	Cenpf	centromere protein F	0.55
12858	Cox5a	cytochrome c oxidase, subunit Va	0.55
270624	9630042H07Rik	RIKEN cDNA 9630042H07 gene	0.55
230027	Coq3	coenzyme Q3 homolog, methyltransferase (yeast)	0.54
11949	Atp5c1	ATP synthase, H+ transporting, mitochondrial F1 complex, gamma polypeptide 1	0.54

433771	2310028O11Rik	RIKEN cDNA 2310028O11 gene	0.54
16886	Limk2	LIM motif-containing protein kinase 2	0.54
52822	Rufy3	RUN and FYVE domain containing 3	0.54
11890	Asgr2	asialoglycoprotein receptor 2	0.54
22418	Wnt5a	wingless-related MMTV integration site 5A	0.54
67212	Mrpl55	mitochondrial ribosomal protein L55	0.54
18597	Pdha1	pyruvate dehydrogenase E1 alpha 1	0.54
66477	Usmg5	upregulated during skeletal muscle growth 5	0.54
14252	Flot2	flotillin 2	0.54
59125	Nek7	NIMA (never in mitosis gene a)-related expressed kinase 7	0.54
217473	Ankmy2	ankyrin repeat and MYND domain containing 2	0.53
104010	Cdh22	cadherin 22	0.53
66109	Tspan13	tetraspanin 13	0.53
66273	1810020D17Rik	RIKEN cDNA 1810020D17 gene	0.53
14467	Gbas	glioblastoma amplified sequence	0.53
105014	Rdh14	retinol dehydrogenase 14 (all-trans and 9-cis)	0.53
54483	Mefv	Mediterranean fever	0.53
14788	Gpr162	G protein-coupled receptor 162	0.53
57874	Ptplad1	protein tyrosine phosphatase-like A domain containing 1	0.53
11950	Atp5f1	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit b, isoform 1	0.53
66531	2310061C15Rik	RIKEN cDNA 2310061C15 gene	0.53
69527	Mrps9	mitochondrial ribosomal protein S9	0.53
11740	Slc25a5	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 5	0.52
18708	Pik3r1	phosphatidylinositol 3-kinase, regulatory subunit, polypeptide 1 (p85 alpha)	0.52
12568	Cdk5	cyclin-dependent kinase 5	0.52
106572	Rab31	RAB31, member RAS oncogene family	0.52
11950	Atp5f1	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit b, isoform 1	0.52
225887	Ndufs8	NADH dehydrogenase (ubiquinone) Fe-S protein 8	0.52
229534	Pbxip1	pre-B-cell leukemia transcription factor interacting protein 1	0.52
11946	Atp5a1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit, isoform 1	0.52
67122	Nrarp	Notch-regulated ankyrin repeat protein	0.52
56451	Suclg1	succinate-CoA ligase, GDP-forming, alpha subunit	0.52
26370	Cetn2	centrin 2	0.52
52906	Ahi1	Abelson helper integration site	0.51
67414	Mfn1	mitofusin 1	0.51
11841	Arf2	ADP-ribosylation factor 2	0.51
66046	Ndufb5	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 5	0.51
103743	Tmem98	transmembrane protein 98	0.51
260299	Igsf4c	immunoglobulin superfamily, member 4C	0.51
18719	Pip5k1a	phosphatidylinositol-4-phosphate 5-kinase, type 1 alpha	0.51

107371	Exoc6	exocyst complex component 6	0.51
114896	Afg311	AFG3(ATPase family gene 3)-like 1 (yeast)	0.51
68034	2900009I07Rik	RIKEN cDNA 2900009I07 gene	0.51
67036	Mrpl45	mitochondrial ribosomal protein L45	0.51
76155	6330509M23Rik	RIKEN cDNA 6330509M23 gene	0.51
58243	Nap115	nucleosome assembly protein 1-like 5	0.51
546103	-	-	0.51
105675	Ppif	peptidylprolyl isomerase F (cyclophilin F) solute carrier family 22 (organic cation transporter), member 17	0.5
59049	Slc22a17		0.5
12419	Cbx5	chromobox homolog 5 (Drosophila HP1a)	0.5
56736	Rnf14	ring finger protein 14	0.5
15929	Idh3g	isocitrate dehydrogenase 3 (NAD+), gamma	0.5
14007	Cugbp2	CUG triplet repeat, RNA binding protein 2	0.5
17762	Mapt	microtubule-associated protein tau NADH dehydrogenase (ubiquinone) 1 alpha subcomplex 10	0.5
67273	Ndufa10		0.5
234796	BC025816	cDNA sequence BC025816	0.5
225887	Ndufs8	NADH dehydrogenase (ubiquinone) Fe-S protein 8	0.5
217082	Hlf	hepatic leukemia factor	0.5
70791	Harsl	histidyl-tRNA synthetase-like	0.49
72129	Pex13	peroxisomal biogenesis factor 13	0.49
18611	Pea15	phosphoprotein enriched in astrocytes 15	0.49
227707	BC005624	cDNA sequence BC005624	0.49
268566	Gphn	gephyrin	0.49
11674	Aldoa	aldolase 1, A isoform	0.49
67530	Uqcrb	ubiquinol-cytochrome c reductase binding protein	0.49
66423	2410022L05Rik	RIKEN cDNA 2410022L05 gene	0.49
17920	Myo6	myosin VI	0.49
224481	Tfb1m	transcription factor B1, mitochondrial succinate dehydrogenase complex, subunit A, flavoprotein (Fp)	0.48
66945	Sdha		0.48
17252	Rdh11	retinol dehydrogenase 11	0.48
18611	Pea15	phosphoprotein enriched in astrocytes 15	0.48
65973	Asph	aspartate-beta-hydroxylase	0.48
68728	Trp53inp2	tumor protein p53 inducible nuclear protein 2	0.48
227960	Gca	grancalcin	0.48
94063	Mrpl16	mitochondrial ribosomal protein L16	0.48
66641	5730470L24Rik	RIKEN cDNA 5730470L24 gene	0.47
66894	Wwp2	WW domain containing E3 ubiquitin protein ligase 2	0.47
66818	9130011J15Rik	RIKEN cDNA 9130011J15 gene succinate dehydrogenase complex, subunit B, iron sulfur (Ip)	0.47
67680	Sdhb		0.47
14433	LOC14433	similar to glyceraldehyde-3-phosphate dehydrogenase	0.47
17995	Ndufv1	NADH dehydrogenase (ubiquinone) flavoprotein 1	0.47

117109	Pop5	processing of precursor 5, ribonuclease P/MRP family (S. cerevisiae)	0.47
57316	C1d	nuclear DNA binding protein	0.47
12868	Cox8a	cytochrome c oxidase, subunit VIIIa	0.47
223978	C530044N13Rik	RIKEN cDNA C530044N13 gene	0.47
66377	Ndufc1	NADH dehydrogenase (ubiquinone) 1, subcomplex unknown, 1	0.47
11416	Slc33a1	solute carrier family 33 (acetyl-CoA transporter), member 1	0.46
66694	Uqcrcs1	ubiquinol-cytochrome c reductase, Rieske iron-sulfur polypeptide 1	0.46
70561	5730420B22Rik	RIKEN cDNA 5730420B22 gene	0.46
23797	Akt3	thymoma viral proto-oncogene 3	0.46
66414	Ndufa12	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 12	0.46
12419	Cbx5	chromobox homolog 5 (Drosophila HP1a)	0.46
14297	Fxn	frataxin	0.46
12531	Cdc25b	cell division cycle 25 homolog B (S. cerevisiae)	0.46
18016	Nf2	neurofibromatosis 2	0.46
224454	Zdhhc14	zinc finger, DHHC domain containing 14	0.46
170718	Idh3b	isocitrate dehydrogenase 3 (NAD+) beta	0.46
28193	D10Ucla1	DNA segment, Chr 10, University of California at Los Angeles 1	0.46
14433	LOC14433	similar to glyceraldehyde-3-phosphate dehydrogenase	0.46
66576	Uqcrcs1	ubiquinol-cytochrome c reductase hinge protein	0.45
20749	Dbp1	DNA binding protein with his-thr domain	0.45
52683	D15Ertd785e	DNA segment, Chr 15, ERATO Doi 785, expressed	0.45
66286	Sec11I3	Sec11-like 3 (S. cerevisiae)	0.45
15574	Hus1	Hus1 homolog (S. pombe)	0.45
52665	Echdc1	enoyl Coenzyme A hydratase domain containing 1	0.45
71706	1200006F02Rik	RIKEN cDNA 1200006F02 gene	0.45
66789	Alg14	asparagine-linked glycosylation 14 homolog (yeast)	0.45
72857	2900006A08Rik	RIKEN cDNA 2900006A08 gene	0.45
18648	Pgam1	phosphoglycerate mutase 1	0.45
71927	Itfg1	integrin alpha FG-GAP repeat containing 1	0.45
224008	2310008H04Rik	RIKEN cDNA 2310008H04 gene	0.45
75430	3200002M19Rik	RIKEN cDNA 3200002M19 gene	0.45
76238	Grhpr	glyoxylate reductase/hydroxypyruvate reductase	0.44
239706	BC024814	cDNA sequence BC024814	0.44
229211	Acad9	acyl-Coenzyme A dehydrogenase family, member 9	0.44
67532	Mfap1	microfibrillar-associated protein 1	0.44
66218	Ndufb9	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 9	0.44
12868	Cox8a	cytochrome c oxidase, subunit VIIIa	0.44
18212	Ntrk2	neurotrophic tyrosine kinase, receptor, type 2	0.44

59057	Zfp191	zinc finger protein 191	0.44
74257	Tspan17	tetraspanin 17	0.44
14154	Fem1a	feminization 1 homolog a (C. elegans)	0.44
54525	Syt7	synaptotagmin VII	0.44
76467	Msrb2	methionine sulfoxide reductase B2	0.44
22365	Vps45	vacuolar protein sorting 45 (yeast)	0.43
67063	2810432L12Rik	RIKEN cDNA 2810432L12 gene	0.43
192166	Sardh	sarcosine dehydrogenase	0.43
66307	Isoc1	isochorismatase domain containing 1	0.43
57246	Tbx20	T-box 20	0.43
17449	Mdh1	malate dehydrogenase 1, NAD (soluble)	0.43
27057	Ncoa4	nuclear receptor coactivator 4	0.43
67532	Mfap1	microfibrillar-associated protein 1	0.43
226849	Ppp2r5a	protein phosphatase 2, regulatory subunit B (B56), alpha isoform	0.43
23821	Bace1	beta-site APP cleaving enzyme 1	0.43
81535	Sgpp1	sphingosine-1-phosphate phosphatase 1	0.43
73739	Pgea1	PKD2 interactor, golgi and endoplasmic reticulum associated 1	0.43
19883	Rora	RAR-related orphan receptor alpha	0.42
75734	5230400G24Rik	RIKEN cDNA 5230400G24 gene	0.42
72003	Synpr	synaptoporin	0.42
72900	Ndufv2	NADH dehydrogenase (ubiquinone) flavoprotein 2	0.42
22361	Vnn1	vanin 1	0.42
11946	Atp5a1	ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit, isoform 1	0.42
66082	Abhd6	abhydrolase domain containing 6	0.42
226162	5330431N19Rik	RIKEN cDNA 5330431N19 gene	0.42
11818	Apoh	apolipoprotein H	0.42
71354	Wdr31	WD repeat domain 31	0.42
22017	Tpmt	thiopurine methyltransferase	0.42
12858	Cox5a	cytochrome c oxidase, subunit Va	0.42
56297	Arl6	ADP-ribosylation factor-like 6	0.41
170755	Sgk3	serum/glucocorticoid regulated kinase 3	0.41
14433	LOC14433	similar to glyceraldehyde-3-phosphate dehydrogenase	0.41
78920	Dlst	dihydrolipoamide S-succinyltransferase (E2 component of 2-oxo-glutarate complex)	0.41
209212	BC010311	cDNA sequence BC010311	0.41
66945	Sdha	succinate dehydrogenase complex, subunit A, flavoprotein (Fp)	0.41
57423	Atp5j2	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit f, isoform 2	0.41
11732	Ank	progressive ankylosis	0.41
27425	Atp5l	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit g	0.41
52717	D10Ertd641e	DNA segment, Chr 10, ERATO Doi 641, expressed	0.41
216558	Ugp2	UDP-glucose pyrophosphorylase 2	0.41

19655	Rbmx	RNA binding motif protein, X chromosome	0.41
19272	Ptprk	protein tyrosine phosphatase, receptor type, K	0.4
67144	Lrrc40	leucine rich repeat containing 40	0.4
212862	Chpt1	choline phosphotransferase 1	0.4
11739	Slc25a4	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 4	0.4
407785	Ndufs6	NADH dehydrogenase (ubiquinone) Fe-S protein 6	0.4
19299	Abcd3	ATP-binding cassette, sub-family D (ALD), member 3	0.4
140488	Igf2bp3	insulin-like growth factor 2 mRNA binding protein 3	0.4
27368	Tbl2	transducin (beta)-like 2	0.39
67997	Ddx59	DEAD (Asp-Glu-Ala-Asp) box polypeptide 59	0.39
12858	Cox5a	cytochrome c oxidase, subunit Va	0.39
24056	Sh3bp5	SH3-domain binding protein 5 (BTK-associated)	0.39
69804	Tmem147	transmembrane protein 147	0.39
66073	Txnrc12	thioredoxin domain containing 12 (endoplasmic reticulum)	0.39
21945	Dedd	death effector domain-containing	0.39
68327	0610007P22Rik	RIKEN cDNA 0610007P22 gene	0.39
18791	Plat	plasminogen activator, tissue	0.39
66140	1110001A07Rik	RIKEN cDNA 1110001A07 gene	0.39
22422	Wnt7b	wingless-related MMTV integration site 7B	0.39
22217	Usp12	ubiquitin specific peptidase 12	0.39
76614	Immt	inner membrane protein, mitochondrial	0.39
15929	Idh3g	isocitrate dehydrogenase 3 (NAD+), gamma	0.39
66520	2610001J05Rik	RIKEN cDNA 2610001J05 gene	0.38
24071	Synj2bp	synaptojanin 2 binding protein	0.38
70223	Nars	asparaginyl-tRNA synthetase	0.38
109778	Blvra	biliverdin reductase A	0.38
50529	Mrps7	mitochondrial ribosomal protein S7	0.38
116940	Ncoa6ip	nuclear receptor coactivator 6 interacting protein	0.38
64933	Ap3m2	adaptor-related protein complex 3, mu 2 subunit	0.38
71799	Ptcd1	pentatricopeptide repeat domain 1	0.38
17918	Myo5a	myosin Va	0.38
72844	Kctd17	potassium channel tetramerisation domain containing 17	0.38
14289	Fpr-rs2	formyl peptide receptor, related sequence 2	0.38
66307	Isoc1	isochorismatase domain containing 1	0.38
52064	Coq5	coenzyme Q5 homolog, methyltransferase (yeast)	0.38
13929	X83328	EST X83328	0.38
66398	Commd5	COMM domain containing 5	0.37
72981	Prkrir	protein-kinase, interferon-inducible double stranded RNA dependent inhibitor, repressor of (P58 repressor)	0.37
11370	Acadvl	acyl-Coenzyme A dehydrogenase, very long chain	0.37
68653	Samm50	sorting and assembly machinery component 50 homolog (S. cerevisiae)	0.37
12864	Cox6c	cytochrome c oxidase, subunit VIc	0.37
69882	2010321M09Rik	RIKEN cDNA 2010321M09 gene	0.37
15108	Hadh2	hydroxyacyl-Coenzyme A dehydrogenase type II	0.37

24131	Ldb3	LIM domain binding	0.37
11740	Slc25a5	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 5	0.36
212285	Centd1	centaurin, delta 1	0.36
67942	Atp5g2	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit c (subunit 9), isoform 2	0.36
13175	Dcamk1	double cortin and calcium/calmodulin-dependent protein kinase-like 1	0.36
17765	Mtf2	metal response element binding transcription factor 2	0.36
76223	Agbl3	ATP/GTP binding protein-like 3	0.36
20598	Smpd2	sphingomyelin phosphodiesterase 2, neutral	0.36
57785	2400006H24Rik	RIKEN cDNA 2400006H24 gene	0.36
67921	Ube2f	ubiquitin-conjugating enzyme E2F (putative)	0.36
23827	Bpnt1	bisphosphate 3'-nucleotidase 1	0.36
107817	Ptdsr	phosphatidylserine receptor	0.36
18016	Nf2	neurofibromatosis 2	0.36
22222	Ubr1	ubiquitin protein ligase E3 component n-recognin 1	0.35
71116	Stx18	syntaxin 18	0.35
108667	6330549H03Rik	RIKEN cDNA 6330549H03 gene	0.35
17434	Mocs2	molybdenum cofactor synthesis 2	0.35
58520	0610007P14Rik	RIKEN cDNA 0610007P14 gene	0.35
56196	Ttrap	Traf and Tnf receptor associated protein	0.35
56382	Rab9	RAB9, member RAS oncogene family	0.35
12033	Bcap29	B-cell receptor-associated protein 29	0.35
17995	Ndufv1	NADH dehydrogenase (ubiquinone) flavoprotein 1 v-ral simian leukemia viral oncogene homolog B (ras related)	0.35
64143	Ralb		0.35
269423	3110057O12Rik	RIKEN cDNA 3110057O12 gene	0.35
70380	Mospd1	motile sperm domain containing 1	0.35
76252	Atp6v0e2	ATPase, H ⁺ transporting, lysosomal V0 subunit E2	0.35
19691	Recql	RecQ protein-like	0.34
76890	0610016J10Rik	RIKEN cDNA 0610016J10 gene	0.34
67247	Mosc2	MOCO sulphurase C-terminal domain containing 2	0.34
68795	1110059H15Rik	RIKEN cDNA 1110059H15 gene	0.34
19277	Ptpro	protein tyrosine phosphatase, receptor type, O RFad1, flavin adenine dinucleotide synthetase, homolog (yeast)	0.34
319945	Flad1		0.34
20129	Rptn	repetin	0.34
110379	Sec13l1	SEC13-like 1 (<i>S. cerevisiae</i>)	0.34
110323	Cox6b1	cytochrome c oxidase, subunit VIb polypeptide 1	0.33
11957	Atp5j	ATP synthase, H ⁺ transporting, mitochondrial F0 complex, subunit F	0.33
11740	Slc25a5	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 5	0.33
170755	Sgk3	serum/glucocorticoid regulated kinase 3	0.33

19718	Rfc2	replication factor C (activator 1) 2	0.33
11740	Slc25a5	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 5	0.33
56282	Mrpl12	mitochondrial ribosomal protein L12	0.33
57440	Ehd3	EH-domain containing 3	0.33
14319	Fth1	ferritin heavy chain 1	0.33
67811	Poldip2	polymerase (DNA-directed), delta interacting protein 2	0.33
50753	Fbxo8	F-box only protein 8	0.33
66194	Pycl	pyrroline-5-carboxylate reductase-like	0.33
12859	Cox5b	cytochrome c oxidase, subunit Vb	0.33
72621	Pdzd11	PDZ domain containing 11	0.32
66599	Rdm1	RAD52 motif 1	0.32
226139	Cox15	COX15 homolog, cytochrome c oxidase assembly protein (yeast)	0.32
73024	2900064A13Rik	RIKEN cDNA 2900064A13 gene	0.32
66921	Prpf38b	PRP38 pre-mRNA processing factor 38 (yeast) domain containing B	0.32
53605	Nap111	nucleosome assembly protein 1-like 1	0.32
19085	Prkar1b	protein kinase, cAMP dependent regulatory, type I beta	0.32
22646	Zfp105	zinc finger protein 105	0.31
20440	St6gal1	beta galactoside alpha 2,6 sialyltransferase 1	0.31
15369	Hmox2	heme oxygenase (decycling) 2	0.31
58875	Hibadh	3-hydroxyisobutyrate dehydrogenase	0.31
27643	Ubl4	ubiquitin-like 4	0.31
229801	Tram111	translocation associated membrane protein 1-like 1	0.31
11739	Slc25a4	solute carrier family 25 (mitochondrial carrier, adenine nucleotide translocator), member 4	0.31
216873	Spag7	sperm associated antigen 7	0.3
18203	Ntan1	N-terminal Asn amidase	0.3
56807	Scamp5	secretory carrier membrane protein 5	0.3
80286	Tusc3	tumor suppressor candidate 3	0.3
56428	Mtch2	mitochondrial carrier homolog 2 (C. elegans)	0.3
105675	Ppif	peptidylprolyl isomerase F (cyclophilin F)	0.3
73078	Pmpcb	peptidase (mitochondrial processing) beta signaling intermediate in Toll pathway-evolutionarily conserved	0.3
26940	Sitpec		0.3
67657	Rabl3	RAB, member of RAS oncogene family-like 3	0.3
216724	Rufy1	RUN and FYVE domain containing 1	0.3
52840	Dbnnd2	dysbindin (dystrobrevin binding protein 1) domain containing 2	0.29
68572	Ict1	immature colon carcinoma transcript 1	0.29
22166	Txn1	thioredoxin 1	0.29
64051	Sv2a	synaptic vesicle glycoprotein 2 a	0.29
67019	Actr6	ARP6 actin-related protein 6 homolog (yeast)	0.29
66916	Ndufb7	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 7	0.29
19302	Pxmp3	peroxisomal membrane protein 3	0.29
54388	Hils1	histone H1-like protein in spermatids 1	0.29
71891	Cdadc1	cytidine and dCMP deaminase domain containing 1	0.28
12725	Cln3	chloride channel 3	0.28

66656	Eef1d	eukaryotic translation elongation factor 1 delta (guanine nucleotide exchange protein)	0.28
66818	9130011J15Rik	RIKEN cDNA 9130011J15 gene	0.28
72114	Zbed3	zinc finger, BED domain containing 3	0.28
68276	Toe1	target of EGR1, member 1 (nuclear)	0.28
70208	Crsp3	cofactor required for Sp1 transcriptional activation, subunit 3	0.28
16601	Klf9	Kruppel-like factor 9	0.27
319615	6330416L07Rik	RIKEN cDNA 6330416L07 gene	0.27
192166	Sardh	sarcosine dehydrogenase	0.27
11364	Acadm	acyl-Coenzyme A dehydrogenase, medium chain	0.27
68385	Tlcd1	TLC domain containing 1	0.27
53621	Cnot4	CCR4-NOT transcription complex, subunit 4	0.27
12866	Cox7a2	cytochrome c oxidase, subunit VIIa 2	0.27
64291	Osbp1a	oxysterol binding protein-like 1A	0.26
18655	Pgk1	phosphoglycerate kinase 1	0.26
230279	6330416G13Rik	RIKEN cDNA 6330416G13 gene	0.26
70103	Znhit1	zinc finger, HIT domain containing 1	0.26
66592	Stoml2	stomatin (Epb7.2)-like 2	0.26
68117	9430083G14Rik	RIKEN cDNA 9430083G14 gene	0.26
231464	Cnot6l	CCR4-NOT transcription complex, subunit 6-like	0.25
76793	Snip1	Smad nuclear interacting protein 1	0.25
16886	Limk2	LIM motif-containing protein kinase 2	0.25
26398	Map2k4	mitogen activated protein kinase kinase 4	0.25
77721	Mrps5	mitochondrial ribosomal protein S5	0.25
67509	1810063B07Rik	RIKEN cDNA 1810063B07 gene	0.25
58875	Hibadh	3-hydroxyisobutyrate dehydrogenase	0.25
223527	Eny2	enhancer of yellow 2 homolog (Drosophila)	0.25
103850	Nt5m	5',3'-nucleotidase, mitochondrial	0.24
52717	D10Ert641e	DNA segment, Chr 10, ERATO Doi 641, expressed sorting and assembly machinery component 50 homolog (S. cerevisiae)	0.24
68653	Samm50		0.24
18679	Phka1	phosphorylase kinase alpha 1	0.24
104130	Ndufb11	NADH dehydrogenase (ubiquinone) 1 beta subcomplex, 11	0.24
70103	Znhit1	zinc finger, HIT domain containing 1	0.24
50755	Fbxo18	F-box protein 18	0.24
13430	Dnm2	dynamamin 2	0.23
20333	Sec22b	SEC22 vesicle trafficking protein homolog B (S. cerevisiae)	0.23
67979	Atad1	ATPase family, AAA domain containing 1	0.23
228033	Atp5g3	ATP synthase, H+ transporting, mitochondrial F0 complex, subunit c (subunit 9), isoform 3	0.23
12068	Bet1	blocked early in transport 1 homolog (S. cerevisiae)	0.23
98053	Gtf2f1	general transcription factor IIF, polypeptide 1	0.23

68611	Mrpl28	mitochondrial ribosomal protein L28	0.23
20022	Polr2j	polymerase (RNA) II (DNA directed) polypeptide J	0.23
23917	Impdh1	inosine 5'-phosphate dehydrogenase 1	0.22
216821	Tmem11	transmembrane protein 11	0.21
17955	Nap1l4	nucleosome assembly protein 1-like 4	0.2
81703	Jundm2	Jun dimerization protein 2	0.2
56248	Ak3	adenylate kinase 3	0.2
12861	Cox6a1	cytochrome c oxidase, subunit VI a, polypeptide 1	0.2
236604	4933439C20Rik	RIKEN cDNA 4933439C20 gene	0.2
16592	Fabp5	fatty acid binding protein 5, epidermal	0.2
68332	0610010E21Rik	RIKEN cDNA 0610010E21 gene	0.19
67881	1810034K20Rik	RIKEN cDNA 1810034K20 gene	0.19
28075	D15Wsu75e	DNA segment, Chr 15, Wayne State University 75, expressed	0.19
94353	Hmgn3	high mobility group nucleosomal binding domain 3	0.19
65102	Nif3l1	Ngg1 interacting factor 3-like 1 (S. pombe)	0.19
66071	Ethe1	ethylmalonic encephalopathy 1	0.19
66861	Dnajc10	DnaJ (Hsp40) homolog, subfamily C, member 10	0.19
67530	Uqcrb	ubiquinol-cytochrome c reductase binding protein	0.18
12140	Fabp7	fatty acid binding protein 7, brain	0.18
72736	Txndc1	thioredoxin domain containing 1	0.18
76338	Rab2b	RAB2B, member RAS oncogene family	0.17
227743	Mapkap1	mitogen-activated protein kinase associated protein 1	0.17
66521	Rwdd1	RWD domain containing 1	0.17
28295	D10Jhu81e	DNA segment, Chr 10, Johns Hopkins University 81, expressed	0.17
69976	Galk2	galactokinase 2	0.16
56417	Adar	adenosine deaminase, RNA-specific	0.16
76281	Tax1bp3	Tax1 (human T-cell leukemia virus type I) binding protein 3	0.16
83679	Pde4dip	phosphodiesterase 4D interacting protein (myomegalin)	0.16
28084	Vps25	vacuolar protein sorting 25 (yeast)	0.15
19775	Xpr1	xenotropic and polytropic retrovirus receptor 1	0.15
20656	Sod2	superoxide dismutase 2, mitochondrial	0.15
22697	Zipro1	zinc finger proliferation 1	0.15
78935	Saal1	serum amyloid A-like 1	0.14
109232	Sccpdh	saccharopine dehydrogenase (putative)	0.14
20751	Spr	sepiapterin reductase	0.14
231600	Chfr	checkpoint with forkhead and ring finger domains	0.13
74316	Hbld1	HESB like domain containing 1	0.13
66460	2610042O14Rik	RIKEN cDNA 2610042O14 gene	0.13
66168	Grina	glutamate receptor, ionotropic, N-methyl D-aspartate-associated protein 1 (glutamate binding)	0.12
69080	Gmppa	GDP-mannose pyrophosphorylase A	0.1
12283	Cab39	calcium binding protein 39	0.09
22186	Uba52	ubiquitin A-52 residue ribosomal protein fusion product 1	0.07

Table S2. Summary of probe sets repressed in Olig-2 null neurospheres relative to wild-type neurospheres. The genes present on this list have an decreased level of expression relative to wild type neurospheres – the fold change is reported as the log (base 2) of the difference. See Figure 6 for methods.

Table S3. E-box-Enriched Genes with Upregulated Expression in Olig2 KO versus WT NSC

Gene ID	Gene Symbol	Gene Name	Average Fold Change (log2)
58807	Slco1c1	Solute carrier organic anion transporter family, member 1c1	5.04
57811	Rgr	Retinal G protein coupled receptor	4.19
22417	Wnt4	Wingless-related MMTV integration site 4	4.04
18159	Nppc	Natriuretic peptide precursor type C	3.79
70839	P2ry12	Purinergic receptor P2Y, G-protein coupled 12	3.78
240753	Plekha6	Pleckstrin homology domain containing, family A member 6	3.74
53901	Dscr11l	Down syndrome critical region gene 1-like 1	3.72
19736	Rgs4	Regulator of G-protein signaling 4	3.58
18798	Plcb4	Phospholipase C, beta 4	3.29
74147	Ehhadh	Enoyl-Coenzyme A, hydratase/3-hydroxyacyl Coenzyme A	3.26
20443	Siat4c	RIKEN cDNA 9330161A08 gene	3.24
171170	Mbnl3	Muscleblind-like 3 (Drosophila)	3.19
56353	Rybp	RING1 and YY1 binding protein	3.13
13602	Sparcl1	SPARC-like 1 (mast9, hevin)	3.07
18018	Nfatc1	Nuclear factor of activated T-cells, cytoplasmic	2.95
27403	Abca7	ATP-binding cassette, sub-family A (ABC1), member 7	2.95
80890	Trim2	Tripartite motif protein 2	2.86
71602	Myo1e	Myosin IE	2.76
234199	Fgl1	Fibrinogen-like protein 1	2.71
19332	Rab20	RAB20, member RAS oncogene family	2.64
209047	Rgs19ip3	Regulator of G-protein signaling 19 interacting protein 3	2.61
26879	B3galt3	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase	2.58
12945	Dmbt1	Deleted in malignant brain tumors 1	2.53
20336	Sec8l1	SEC8-like 1 (S. cerevisiae)	2.37
11898	Ass1	Argininosuccinate synthetase 1	2.35
214855	Arid5a	AT rich interactive domain 5A (Mrf1 like)	2.35
20473	Six3	Sine oculis-related homeobox 3 homolog (Drosophila)	2.34
30805	Slc22a4	Solute carrier family 22 (organic cation transporter), member 4	2.33
23934	Ly6h	Lymphocyte antigen 6 complex, locus H	2.31
21835	Thrsp	Thyroid hormone responsive SPOT14 homolog (Rattus)	2.29
56878	Rbms1	RIKEN cDNA 6030432P03 gene	2.22
68337	Crip2	Cysteine rich protein 2	2.21
231238	2310045A20Rik	RIKEN cDNA 2310045A20 gene	2.14
14457	Gas7	Growth arrest specific 7	2.10
11648			2.09
227612	A830007P12Rik	RIKEN cDNA A830007P12 gene	2.06
214944	Mobkl2b	MOB1, Mps One Binder kinase activator-like 2B (yeast)	2.02
320982	Arl7	ADP-ribosylation factor-like 7	1.99

70551	4930403J22Rik	RIKEN cDNA 4930403J22 gene	1.98
12825	Col3a1	Procollagen, type III, alpha 1	1.93
16660	Krt1-1	Keratin complex 1, acidic, gene 1	1.90
11749	Anxa6	Annexin A6	1.87
246228	4932416A11Rik	RIKEN cDNA 4932416A11 gene	1.80
12587	Mia1	Melanoma inhibitory activity 1	1.73
12832	Col5a2	Procollagen, type V, alpha 2	1.67
14164	Fgf1	Fibroblast growth factor 1	1.67
17150	Mfap2	Microfibrillar-associated protein 2	1.64
227541	Camk1d	Calcium/calmodulin-dependent protein kinase ID	1.61
19206	Ptch1	Patched homolog 1	1.60
18164	Nptx1	Neuronal pentraxin 1	1.59
29815	Bcar3	Breast cancer anti-estrogen resistance 3	1.56
69953	2810025M15Rik	RIKEN cDNA 2810025M15 gene	1.52
56508	Rapgef4	RIKEN cDNA 6330581N18 gene	1.52
68178	4933421H10Rik	RIKEN cDNA 4933421H10 gene	1.51
60510	Syt9	Synaptotagmin 9	1.46
11936	Fxyd2	FXDY domain-containing ion transport regulator 2	1.46
52392	D1Ertd622e	DNA segment, Chr 1, ERATO Doi 622, expressed	1.45
12738	Cldn2	Claudin 2	1.44
56741	Nope	Neighbor of Punc E11	1.43
58804	Cdc42ep5	CDC42 effector protein (Rho GTPase binding) 5	1.41
26987	Eif4e2	Eukaryotic translation initiation factor 4E member 2	1.39
67880	Dcxr	Dicarbonyl L-xylulose reductase	1.39
14114	Fbln1	Fibulin 1	1.38
18481	Pak3	P21 (CDKN1A)-activated kinase 3	1.37
214968	Sema6d	Sema domain, transmembrane domain TM	1.36
75273	4930563C04Rik	RIKEN cDNA 4930563C04 gene	1.35
20362	38968	Septin 8	1.33
242687	Wasf2	WAS protein family, member 2	1.27
19130	Prox1	Prospero-related homeobox 1	1.27
12484	Cd24a	CD24a antigen	1.19
14314	Fstl1	Follistatin-like 1	1.19
66860	1200003E16Rik	RIKEN cDNA 1200003E16 gene	1.14
114606	Tle6	Transducin-like enhancer of split 6, homolog of E(spl)	1.13
21886	Tle2	Transducin-like enhancer of split 2, homolog of Drosophila E(spl)	1.12
18081	Ninj1	Ninjurin 1	1.11
78896	1500015O10Rik	RIKEN cDNA 1500015O10 gene	1.10
18845	Plxna2	Plexin A2	1.07
20454	Siat9	Sialyltransferase 9 (CMP-NeuAc:lactosylceramide alpha-2,3-sialyltransferase)	1.07
224014	Fgd4	FYVE, RhoGEF and PH domain containing 4	1.06

19266	Ptprd	Protein tyrosine phosphatase, receptor type, D	1.05
56405	Dusp14	Dual specificity phosphatase 14	1.02
56214	Scamp4	Secretory carrier membrane protein 4	0.98
59126	Nek6	NIMA (never in mitosis gene a)-related expressed kinase 6	0.97
74134	Cyp2s1	Cytochrome P450, family 2, subfamily s, polypeptide 1	0.96
246102	Rttm	Rotatin	0.95
216134	Pdxk	Pyridoxal (pyridoxine, vitamin B6) kinase	0.93
78255	Ralgps2	Ral GEF with PH domain and SH3 binding motif 2	0.93
68095	Ociad1	OCIA domain containing 1	0.92
66940	Scotin	Scotin gene	0.90
78248	Armcx1	Armadillo repeat containing, X-linked 1	0.90
67815	Sec14l2	SEC14-like 2 (<i>S. cerevisiae</i>)	0.90
16522	Kcnj6	Potassium inwardly-rectifying channel, subfamily J, member 6	0.85
217038	A530065E19Rik	RIKEN cDNA A530065E19 gene	0.84
23872	Ets2	E26 avian leukemia oncogene 2, 3' domain	0.82
170753			0.79
110391	Qdpr	Quininoid dihydropteridine reductase	0.79
230793	D030015G18Rik	RIKEN cDNA D030015G18 gene	0.79
14950	H13	Histocompatibility 13	0.79
60595	Actn4	Actinin alpha 4	0.78
19303	Pxn	Paxillin	0.78
67883	Uxs1	UDP-glucuronate decarboxylase 1	0.78
353282	Sfmbt2	Scm-like with four mbt domains 2	0.77
20602	Ncor2	Nuclear receptor co-repressor 2	0.76
215114	Hip1	Huntingtin interacting protein 1	0.76
218763	Lrrc3b	Leucine rich repeat containing 3B	0.75
13030	Ctsb	Cathepsin B	0.75
107975	Pacs1	RIKEN cDNA D430030G11 gene	0.75
26394	Lypla2	Lysophospholipase 2	0.74
50875	Tmod3	Tropomodulin 3	0.74
105859	AI481750	Expressed sequence AI481750	0.74
70772	Ggnbp1	Gametogenetin binding protein 1	0.71
12839	Col9a1	Procollagen, type IX, alpha 1	0.71
24063	Spry1	Sprouty homolog 1 (<i>Drosophila</i>)	0.71
77569	3732412D22Rik	RIKEN cDNA 3732412D22 gene	0.71
12874	Cpd	Carboxypeptidase D	0.70
22682	Za20d2	Zinc finger, A20 domain containing 2	0.69
11784	Apba2	Amyloid beta (A4) precursor protein-binding, family A, member 2	0.69
99152	Anapc2	Anaphase promoting complex subunit 2	0.66
106522	AW548124	Expressed sequence AW548124	0.66
50786	Hs6st2	Heparan sulfate 6-O-sulfotransferase 2	0.64
235431	Coro2b	Coronin, actin binding protein, 2B	0.62
70575	5730466C23Rik	RIKEN cDNA 5730466C23 gene	0.62

240913	Adamts4	A disintegrin-like and metalloprotease (reprolysin type) with thrombospondin type 1 motif, 4	0.60
12593	Cdyl	Chromodomain protein, Y chromosome-like	0.60
50914	Olig1	Oligodendrocyte transcription factor 1	0.59
75751	Ipo4	Importin 4	0.58
217370	BC017643	CDNA sequence BC017643	0.57
56876	Nelf	Nasal embryonic LHRH factor	0.57
16795	Large	RIKEN cDNA B930093H17 gene	0.56
229473	D930015E06Rik	RIKEN cDNA D930015E06 gene	0.55
320011	Ugcgl1	UDP-glucose ceramide glucosyltransferase-like 1	0.55
67554	Slc25a30	Solute carrier family 25, member 30	0.55
80515	A030009H04Rik	RIKEN cDNA A030009H04 gene	0.54
19248	Ptpn12	Protein tyrosine phosphatase, non-receptor type 12	0.53
12142	Prdm1	PR domain containing 1, with ZNF domain	0.52
12575	Cdkn1a	Cyclin-dependent kinase inhibitor 1A (P21)	0.50
234407	Glt25d1	Glycosyltransferase 25 domain containing 1	0.50
20742	Spnb2	Spectrin beta 2	0.49
16976	Lrpap1	Low density lipoprotein receptor-related protein associated protein 1	0.49
67298	Gprasp1	G protein-coupled receptor associated sorting protein 1	0.48
93836	Rnf111	Ring finger 111	0.47
16451	Jak1	Janus kinase 1	0.42
14265	Fmr1	Fragile X mental retardation syndrome 1 homolog	0.41
19342	Rab4b	RAB4B, member RAS oncogene family	0.40
22401	Wig1	Wild-type p53-induced gene 1	0.39
66646	Rpe	Ribulose-5-phosphate-3-epimerase	0.39
12751	Cln2	Ceroid-lipofuscinosis, neuronal 2	0.39
17122	Mxd4	RIKEN cDNA 2810410A03 gene	0.38
13043	Ctnn	Cortactin	0.36
216856	Nlgn2	Neurologin 2	0.36
54383	Phc2	Polyhomeotic-like 2 (Drosophila)	0.36
66494	2610524G07Rik	RIKEN cDNA 2610524G07 gene	0.36
107338	Gbf1	Golgi-specific brefeldin A-resistance factor 1	0.33
12660	Chka	Choline kinase alpha	0.33
16202	Ilk	Integrin linked kinase	0.30
26951	Zw10	ZW10 homolog (Drosophila), centromere/kinetochore protein	0.30
13018	Ctcf	CCCTC-binding factor	0.29
53599	Cd164	CD164 antigen	0.25
26430	Parg	Poly (ADP-ribose) glycohydrolase	0.25
28088	D10Wsu52e	DNA segment, Chr 10, Wayne State University 52, expressed	0.24
320717	9130017A15Rik	RIKEN cDNA 9130017A15 gene	0.19
54401	Ywhab	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, beta polypeptide	0.17
14489	Mtpn	Myotrophin	0.10
110954	Rpl10	Ribosomal protein 10	0.06

19896	Rpl10a	Ribosomal protein L10A	0.05
16898	Rps2	Phosphodiesterase 6A, cGMP-specific, rod, alpha	0.05
66480	Rpl15	Ribosomal protein L15	0.05

Table S3. E-box containing genes with upregulated expression in olig-2 null mice. Genes related to the p53 signaling axis are highlighted in red. See Figure 6 for methods.