

Supplemental Table 5: Genes with important functions during brain development, including those encoding receptors and channels, transcription factors, apoptosis and disease-related proteins.

Cluster	UCSC Known Genes Descriptions	Single-end		Paired-end 1		Paired-end 2	
		E18	P7	E18	P7	E18	P7
<u>Receptors and channels</u>							
Glutamate Receptors							
3168	Gria1::glutamate receptor, ionotropic, AMPA1 (alpha 1)	274	489	535	711	514	970
15355	Gria2::glutamate receptor, ionotropic, AMPA2 (alpha 2)	2016	1576	2120	850	2209	2152
26610	Gria3::glutamate receptor, ionotropic, AMPA3 (alpha 3)	56	120	76	63	117	321
24669	Gria4::glutamate receptor, ionotropic, AMPA4 (alpha 4)	97	132	172	152	187	200
6898	Grid1::glutamate receptor, ionotropic, delta 1	11	34	20	35	30	72
19987	Grid2::glutamate receptor, ionotropic, delta 2	1	7	0	0	2	2
9400	Grik1::glutamate receptor, ionotropic, kainate 1	58	58	91	54	68	68
1672	Grik2::glutamate receptor, ionotropic, kainate 2	16	9	10	0	15	13
17292	Grik3::glutamate receptor, ionotropic, kainate 3	3	9	0	14	0	0
25078	Grik4::glutamate receptor, ionotropic, kainate 4	11	35	24	49	13	38
21416	Grik5::glutamate receptor, ionotropic, kainate 5 (gamma 2)	313	452	533	856	721	1015
12723	Grin1::glutamate receptor, ionotropic, NMDA1 (zeta 1)	99	503	147	878	208	1249
8826	Grin2a::glutamate receptor, ionotropic, NMDA2A (epsilon 1)	0	2	0	12	0	3
20928	Grin2b::glutamate receptor, ionotropic, NMDA2B (epsilon 2)	209	397	288	511	126	219
4351	Grin2c::glutamate receptor, ionotropic, NMDA2C (epsilon 3)	3	11	1	17	14	48
21880	Grin2d::glutamate receptor, ionotropic, NMDA2D (epsilon 4)	16	40	23	87	23	36
2067	Grin3b::glutamate receptor, ionotropic, NMDA3B	4	1	4	0	3	2
8180	Grina::glutamate receptor, ionotropic, NMDA-associated protein 1 (glutamate binding)	375	680	699	1063	792	1512
25725	Grin1a::glutamate receptor, ionotropic, NMDA-like 1A	296	363	396	382	674	750
1439	Grm1::glutamate receptor, metabotropic 1	12	18	19	55	9	21
25999	Grm2::glutamate receptor, metabotropic 2	39	60	45	124	60	121
17896	Grm3::glutamate receptor, metabotropic 3	21	76	7	70	21	142
10159	Grm4::glutamate receptor, metabotropic 4	21	38	41	122	51	112
22493	Grm5::glutamate receptor, metabotropic 5	178	328	120	192	194	382
20373	Grm7::glutamate receptor, metabotropic 7	29	109	31	91	62	188
19587	Grm8::glutamate receptor, metabotropic 8	7	26	20	22	13	31
GABA Receptors							
10471	Gabbr1::gamma-aminobutyric acid (GABA-B) receptor 1	505	1199	757	1503	1333	2471
16534	Gabbr2::gamma-aminobutyric acid (GABA) B receptor 2	8	15	1	48	3	11
2982	Gabra1::gamma-aminobutyric acid (GABA-A) receptor, alpha 1	38	153	14	65	66	440
18283	Gabra2::gamma-aminobutyric acid (GABA-A) receptor, alpha 2	36	33	17	8	12	36

26751	Gabra3::gamma-aminobutyric acid (GABA-A) receptor, alpha 3	5	8	26	0	5	10
18285	Gabra4::gamma-aminobutyric acid (GABA-A) receptor, alpha 4	18	107	22	63	47	222
21971	Gabra5::gamma-aminobutyric acid (GABA-A) receptor, alpha 5	92	317	125	246	183	596
2983	Gabra6::gamma-aminobutyric acid (GABA-A) receptor, alpha6	0	1	0	0	0	0
18286	Gabrb1::gamma-aminobutyric acid (GABA-A) receptor, beta 1	58	152	49	147	41	159
2984	Gabrb2::gamma-aminobutyric acid (GABA-A) receptor, beta 2	329	604	344	289	405	1011
21972	Gabrb3::gamma-aminobutyric acid (GABA) A receptor, beta 3	215	487	343	454	585	942
17805	Gabrd::gamma-aminobutyric acid (GABA-A) receptor, delta	6	24	0	59	8	90
26749	Gabre::gamma-aminobutyric acid (GABA-A) receptor, epsilon	2	0	2	0	0	0
18281	Gabrg1::gamma-aminobutyric acid (GABA-A) receptor, gamma 1	25	44	22	20	54	116
2981	Gabrg2::gamma-aminobutyric acid (GABA-A) receptor, gamma 2	136	234	177	156	229	435
21970	Gabrg3::gamma-aminobutyric acid (GABA-A) receptor, gamma 3	1	2	6	2	0	0
2956	Gabrp::gamma-aminobutyric acid (GABA-A) receptor, pi	1	0	0	0	0	0
26752	Gabrq::gamma-aminobutyric acid (GABA-A) receptor, theta	3	11	0	9	6	15
16276	Gabrr1::gamma-aminobutyric acid (GABA) receptor, rho 1	1	0	0	0	0	0
16275	Gabrr2::gamma-aminobutyric acid (GABA-C) receptor, rho 2	0	1	0	0	1	0
9323	Gabrr3::gamma-aminobutyric acid (GABA) receptor, rho 3	1	1	0	0	0	0

Glycine Receptors

3165	Gla1::glycine receptor, alpha 1 subunit	0	0	0	0	0	0
27272	Gla2::glycine receptor, alpha 2 subunit	78	89	132	57	172	155
23813	Gla3::glycine receptor, alpha 3 subunit	0	0	0	0	0	0
27103	Gla4::glycine receptor, alpha 4 subunit	0	0	0	0	0	0
15356	GlrB::glycine receptor, beta subunit	63	254	79	140	138	491

Cholinergic Receptors

11942	Chrm1::cholinergic receptor, muscarinic 1, CNS	38	215	57	517	92	567
19671	Chrm2::cholinergic receptor, muscarinic 2, cardiac	2	0	0	0	2	0
5486	Chrm3::cholinergic receptor, muscarinic 3, cardiac	6	9	0	14	0	14
13541	Chrm4::cholinergic receptor, muscarinic 4	2	2	0	12	2	6
13888	Chrm5::cholinergic receptor, muscarinic 5	0	0	0	0	0	1
13188	Chrna1::cholinergic receptor, nicotinic, alpha 1	0	0	0	0	0	0
7428	Chrna2::cholinergic receptor, nicotinic, alpha 2	0	3	0	0	0	2
25357	Chrna3::cholinergic receptor, nicotinic, alpha 3	12	13	4	4	26	20
14963	Chrna4::cholinergic receptor, nicotinic, alpha 4	17	86	38	133	71	169
25356	Chrna5::cholinergic receptor, nicotinic, alpha 5	2	0	0	0	0	3
23681	Chrna6::cholinergic receptor, nicotinic, alpha 6	0	2	0	0	0	2
21993	Chrna7::cholinergic receptor, nicotinic, alpha 7	0	2	0	0	2	0
18256	Chrna9::cholinergic receptor, nicotinic, alpha 9	0	0	0	0	0	0

22630	Chrna10::cholinergic receptor, nicotinic, alpha 10	0	1	0	0	0	1
3406	Chrnb1::cholinergic receptor, nicotinic, beta 1	3	3	0	0	3	3
15500	Chrnb2::neuronal nicotinic acetylcholine receptor beta 2	110	91	178	157	209	187
23680	Chrnb3::cholinergic receptor, nicotinic, beta 3	0	0	0	0	0	0
25358	Chrnb4::cholinergic receptor, nicotinic, beta 4	1	0	3	0	1	1
557	Chrnd::cholinergic receptor, nicotinic, delta	0	1	0	0	0	0
3456	Chrne::cholinergic receptor, nicotinic, epsilon	0	0	1	0	0	0
558	Chrng::cholinergic receptor, nicotinic, gamma	0	3	0	0	0	0

Dopamine Receptors

5973	Drd1a::dopamine receptor D1A	14	23	2	23	11	56
25183	Drd2::dopamine receptor 2	2	8	4	8	8	12
9198	Drd3::dopamine receptor 3	0	0	0	0	0	0
23329	Drd4::dopamine receptor 4	0	0	5	9	4	2
18158	Drd5::dopamine receptor 5	1	2	0	0	4	5

Serotonin Receptors

6398	Htr1a::5-hydroxytryptamine (serotonin) receptor 1A	6	13	9	20	16	31
25808	Htr1b::5-hydroxytryptamine (serotonin) receptor 1B	0	0	0	0	0	0
17515	Htr1d::5-hydroxytryptamine (serotonin) receptor 1D	5	0	0	9	4	10
9339	Htr1f::5-hydroxytryptamine (serotonin) receptor 1F	4	2	4	0	3	2
7510	Htr2a::5-hydroxytryptamine (serotonin) receptor 2A	0	0	0	0	0	0
539	Htr2b::5-hydroxytryptamine (serotonin) receptor 2B	0	0	0	0	0	0
27160	Htr2c::5-hydroxytryptamine (serotonin) receptor 2C	12	63	11	15	12	88
25177	Htr3a::5-hydroxytryptamine (serotonin) receptor 3A	9	2	15	1	27	9
25178	Htr3b::5-hydroxytryptamine (serotonin) receptor 3B	0	0	0	0	0	0
11422	Htr4::5-hydroxytryptamine (serotonin) receptor 4	0	6	0	0	3	2
18003	Htr5a::5-hydroxytryptamine (serotonin) receptor 5A	2	23	15	9	21	51
760	Htr5b::5-hydroxytryptamine (serotonin) receptor 5B	1	6	0	4	4	10
17561	Htr6::5-hydroxytryptamine (serotonin) receptor 6	1	5	5	5	4	3
12261	Htr7::5-hydroxytryptamine (serotonin) receptor 7	11	24	3	52	12	60

Calcium Channels

24083	Cacna1a::calcium channel, voltage-dependent, P/Q type, alpha 1A subunit	90	215	69	349	109	327
12696	Cacna1b::calcium channel, voltage-dependent, N type, alpha 1B subunit	47	82	97	112	61	117
20468	Cacna1c::calcium channel, voltage-dependent, L type, alpha 1C subunit	9	13	16	8	1	5
6814	Cacna1d::calcium channel, voltage-dependent, L type, alpha 1D subunit	90	114	87	151	136	131
990	Cacna1e::calcium channel, voltage-dependent, R type, alpha 1E subunit	18	28	26	36	16	13
26385	Cacna1f::calcium channel, voltage-dependent, L type, alpha 1F subunit	2	0	0	0	1	0
3853	Cacna1g::calcium channel, voltage-dependent, T type, alpha 1G subunit	77	205	178	445	189	404
9848	Cacna1h::calcium channel, voltage-dependent, T type, alpha 1H subunit	204	149	309	283	477	248
8353	Cacna1i::calcium channel, voltage-dependent, alpha 1I	20	121	21	189	43	278
899	Cacna1s::calcium channel, voltage-dependent, L type, alpha 1S subunit	0	1	0	5	0	0

17920	Cacna2d1::calcium channel, voltage-dependent, alpha2/delta subunit 1	46	72	34	72	20	69
26010	Cacna2d2::calcium channel, voltage-dependent, alpha2/delta subunit 2	69	42	110	66	97	94
6808	Cacna2d3::calcium channel, voltage-dependent, alpha2/delta subunit 3	51	140	58	145	84	234
20470	Cacna2d4::calcium channel, voltage-dependent, alpha2/delta subunit 4	0	1	0	0	0	6
3958	Cacnb1::calcium channel, voltage-dependent, beta 1 subunit	20	38	20	90	31	43
12641/ 12642	Cacnb2::calcium channel, voltage-dependent, beta 2 subunit	7	8	2	25	7	21
8597	Cacnb3::calcium channel, voltage-dependent, beta 3 subunit	295	309	508	470	737	655
13057	Cacnb4::calcium channel, voltage-dependent, beta 4 subunit	103	201	163	138	120	353
4271	Cacng1::voltage-dependent calcium channel gamma 1 subunit	3	6	0	0	4	7
8244	Cacng2::calcium channel, voltage-dependent, gamma 2 subunit	33	66	63	175	90	149
23034	Cacng3::voltage-dependent calcium channel gamma 3 subunit	10	29	8	73	15	68
4272	Cacng4::voltage-dependent calcium channel gamma 4 subunit	44	52	67	85	37	48
4274	Cacng5::calcium channel, voltage-dependent, gamma 5 subunit	17	48	16	73	55	109
21050	Cacng6::voltage-dependent calcium channel gamma 6 subunit	0	0	0	6	0	0
21047	Cacng7::voltage-dependent calcium channel gamma 7 subunit	34	46	32	53	57	58
21048	Cacng8::voltage-dependent calcium channel gamma 8 subunit	5	24	16	15	14	31

Potassium Channels

20603	Kcna1::potassium voltage-gated channel, shaker-related subfamily, member 1	29	74	11	64	31	168
15828	Kcna2::potassium voltage-gated channel, shaker-related subfamily, member 2	5	9	1	14	1	6
15825	Kcna3::potassium voltage-gated channel, shaker-related subfamily, member 3	4	2	12	0	0	0
13829	Kcna4::potassium voltage-gated channel, shaker-related subfamily, member 4	3	32	10	18	15	51
20602	Kcna5::potassium voltage-gated channel, shaker-related subfamily, member 5	4	5	0	16	6	19
20604	Kcna6::potassium voltage-gated channel, shaker-related subfamily, member 6	39	139	71	179	100	223
21843	Kcna7::potassium voltage-gated channel, shaker-related subfamily, member 7	0	0	0	0	0	0
15829	Kcna10::potassium voltage-gated channel, shaker-related subfamily, member 10	0	0	0	0	0	0
15303	Kcnab1::potassium voltage-gated channel, shaker-related subfamily, beta member 1	11	73	15	29	33	154
17768	Kcnab2::potassium voltage-gated channel, shaker-related subfamily, beta member 2	45	144	32	306	104	600
3381	Kcnab3::potassium voltage-gated channel, shaker-related subfamily, beta member 3	6	22	9	20	18	40
14799	Kcnb1::potassium voltage gated channel, Shab-related subfamily, member 1	12	37	27	75	13	82
49	Kcnb2::potassium voltage gated channel, Shab-related subfamily, member 2	9	20	7	42	12	15
21895	Kcnc1::potassium voltage gated channel, Shaw-related subfamily, member 1	102	114	117	159	161	164

2469	Kcnc2::potassium voltage gated channel, Shaw-related subfamily, member 2	19	48	23	27	30	66
21790	Kcnc3::potassium voltage gated channel, Shaw-related subfamily, member 3	49	103	93	185	104	194
15835	Kcnc4::potassium voltage gated channel, Shaw-related subfamily, member 4	13	119	28	231	51	338
26396	Kcnd1::potassium voltage-gated channel, Shal-related family, member 1	3	7	0	2	0	6
19559	Kcnd2::potassium voltage-gated channel, Shal-related family, member 2	66	243	78	115	106	326
15800	Kcnd3::potassium voltage-gated channel, Shal-related family, member 3	83	56	86	65	123	106
9462	Kcne1::potassium voltage-gated channel, Isk-related subfamily, member 1	0	0	0	0	0	0
9458	Kcne2::potassium voltage-gated channel, Isk-related subfamily, member 2	0	5	0	0	3	3
22586	Kcne3::potassium voltage-gated channel, Isk-related subfamily, member 3	0	0	0	7	0	1
488	Kcne4::potassium voltage-gated channel, Isk-related subfamily, member 4	0	1	0	5	1	1
27143	Kcne11::potassium voltage-gated channel, Isk-related subfamily, member 11	14	32	15	47	58	83
4637	Kcnf1::potassium voltage-gated channel, subfamily F, member 1	26	165	29	232	65	400
14821	Kcng1::potassium voltage-gated channel, subfamily G, member 1	3	17	21	37	3	10
10945	Kcng3::potassium voltage-gated channel, subfamily G, member 3	1	0	0	0	0	0
24514	Kcng4::potassium voltage-gated channel, subfamily G, member 4	0	1	0	0	0	3
1373	Kcnh1::potassium voltage-gated channel, subfamily H, member 1	5	41	15	45	10	81
17965	Kcnh2::voltage-gated potassium channel, subfamily H, member 2	23	18	60	46	55	45
8626	Kcnh3::potassium voltage-gated channel, subfamily H, member 3	59	228	77	484	115	650
4904	Kcnh5::potassium voltage-gated channel, subfamily H, member 5	1	2	4	0	1	6
4234	Kcnh6::potassium voltage-gated channel, subfamily H member 6	2	2	0	0	1	1
13103	Kcnh7::potassium voltage-gated channel, subfamily H, member 7	36	36	43	1	21	30
10663/ 10664	Kcnh8::potassium voltage-gated channel, subfamily H, member 8	7	4	5	17	7	3
24904	Kcnj1::potassium inwardly-rectifying channel, subfamily J, member 1	1	0	0	0	0	0
4312	Kcnj2::potassium inwardly-rectifying channel, subfamily J, member 2	1	2	0	0	3	3
13065	Kcnj3::potassium inwardly-rectifying channel, subfamily J, member 3	0	3	6	0	1	8
8328	Kcnj4::potassium inwardly-rectifying channel, subfamily J, member 4	10	105	6	220	12	315
24903	Kcnj5::potassium inwardly-rectifying channel, subfamily J, member 5	0	0	9	0	3	2
9485	Kcnj6::potassium inwardly-rectifying channel, subfamily J, member 6	4	6	0	7	3	11
20979	Kcnj8::potassium inwardly-rectifying channel, subfamily J, member 8	18	13	50	0	40	39
1182	Kcnj9::potassium inwardly-rectifying channel, subfamily J, member 9	8	60	20	137	13	216

1183	Kcnj10::potassium inwardly-rectifying channel, subfamily J, member 10	26	112	32	114	50	289
21888	Kcnj11::potassium inwardly-rectifying channel, subfamily J, member 11	52	30	50	101	80	76
3279	Kcnj12::potassium inwardly-rectifying channel, subfamily J, member 12	10	6	9	5	10	24
21877	Kcnj14::potassium inwardly-rectifying channel, subfamily J, member 14	0	0	0	4	0	0
9487	Kcnj15::potassium inwardly-rectifying channel, subfamily J, member 15	0	2	0	0	0	0
4311	Kcnj16::potassium inwardly-rectifying channel, subfamily J, member 16	1	19	0	11	0	40
24635	Kcnk1::potassium channel, subfamily K, member 1	25	89	28	97	77	230
1340	Kcnk2::potassium channel, subfamily K, member 2	86	131	78	105	111	207
18033	Kcnk3::potassium channel, subfamily K, member 3	25	77	63	148	58	139
11906	Kcnk4::potassium channel, subfamily K, member 4	0	22	1	20	2	31
6604	Kcnk5::potassium channel, subfamily K, member 5	3	3	10	1	4	4
21551	Kcnk6::potassium inwardly-rectifying channel, subfamily K, member 6	0	2	0	3	0	9
11852	Kcnk7::potassium channel, subfamily K, member 7	0	2	0	0	1	0
8041	Kcnk9::potassium channel, subfamily K, member 9	2	0	0	0	0	0
5211	Kcnk10::potassium channel, subfamily K, member 10	12	5	11	34	22	8
10984	Kcnk12::potassium channel, subfamily K, member 12	0	17	3	29	4	60
5239	Kcnk13::potassium channel, subfamily K, member 13	1	4	0	9	1	13
14716	Kcnk15::potassium channel, subfamily K, member 15	0	0	0	0	0	0
12530	Kcnk18::potassium channel, subfamily K, member 18	0	0	0	0	0	0
2959	Kcnmb1::potassium large conductance calcium-activated channel, subfamily M, beta member 1	0	0	0	0	1	0
15103	Kcnmb2::potassium large conductance calcium-activated channel, subfamily M, beta member 2	18	16	18	11	19	14
2486	Kcnmb4::potassium large conductance calcium-activated channel, subfamily M, beta member 4	42	91	83	194	97	228
23934	Kcnn1::potassium intermediate/small conductance calcium-activated channel, subfamily N, member 1	25	69	20	74	40	91
11306	Kcnn2::potassium intermediate/small conductance calcium-activated channel, subfamily N, member 2	18	43	62	52	65	99
15498	Kcnn3::potassium intermediate/small conductance calcium-activated channel, subfamily N, member 3	3	3	0	2	6	9
21389	Kcnn4::potassium intermediate/small conductance calcium-activated channel, subfamily N, member 4	0	1	0	0	2	0
23385	Kcnq1::potassium voltage-gated channel, subfamily Q, member 1	1	2	0	0	1	3
14964	Kcnq2::potassium voltage-gated channel, subfamily Q, member 2	175	249	235	308	301	394
8025	Kcnq3::potassium voltage-gated channel, subfamily Q, member 3	1	8	7	12	7	16
17223	Kcnq4::potassium voltage-gated channel, subfamily Q, member 4	3	7	14	7	1	4
87	Kcnq5::potassium voltage-gated channel, subfamily Q, member 5	8	5	10	5	2	10
14722	Kcns1::K+ voltage-gated channel, subfamily S, 1	5	35	7	82	7	64
7793	Kcns2::K+ voltage-gated channel, subfamily S, 2	3	5	5	6	6	17
4613	Kcns3::potassium voltage-gated channel, delayed-rectifier, subfamily S, member 3	2	6	0	8	2	14
934	Kcnt2::potassium channel, subfamily T, member 2	0	6	0	5	3	10
23653	Kcnu1::potassium channel, subfamily U, member 1	9	8	15	7	16	19

7853	Kcnv1::potassium channel, subfamily V, member 1	22	101	19	63	52	171
12190	Kcnv2::potassium channel, subfamily V, member 2	0	0	0	0	0	0
Sodium Channels							
25055	Scn3b::voltage-gated sodium channel beta-3 subunit	277	397	358	445	597	658
13116	Scn1a::sodium channel, voltage-gated, type I, alpha	43	99	66	19	38	84
21646	Scn1b::sodium channel, voltage-gated, type I, beta	17	181	9	289	31	442
13112	Scn2a1::sodium channel, voltage-gated, type II, alpha 1	160	600	235	341	184	673
25142	Scn2b::sodium channel, voltage-gated, type II, beta	18	96	30	137	32	266
13110	Scn3a::sodium channel, voltage-gated, type III, alpha	121	94	136	64	70	66
4249	Scn4a::sodium channel, voltage-gated, type IV, alpha	0	1	0	0	0	0
25143	Scn4b::sodium channel, type IV, beta	0	12	0	29	0	40
26203	Scn5a::voltage-gated sodium channel type V alpha	8	12	19	20	13	19
13119	Scn7a::sodium channel, voltage-gated, type VII, alpha	0	2	0	0	0	2
8670/8671	Scn8a::sodium channel, voltage-gated, type VIII, alpha	166	425	243	589	227	674
13118	Scn9a::sodium channel, voltage-gated, type IX, alpha	16	18	17	1	17	7
26204	Scn10a::sodium channel, voltage-gated, type X, alpha	1	0	0	0	3	0
26205	Scn11a::sodium channel, voltage-gated, type XI, alpha	1	1	2	0	0	3
20594	Scnn1a::sodium channel, nonvoltage-gated, type I, alpha	0	12	0	20	1	27
23023	Scnn1b::sodium channel, nonvoltage-gated 1 beta	0	0	0	0	1	1
23021	Scnn1g::sodium channel, nonvoltage-gated 1 gamma	0	0	0	0	0	0
Chloride Channels							
16082	Al747448::calcium activated chloride channel	0	0	0	0	0	0
16077	Clca1::chloride channel calcium activated 1	0	1	5	2	1	1
16079	Clca2::chloride channel calcium activated 2	0	0	0	0	0	0
16084	Clca3::chloride channel calcium activated 3	0	0	0	0	0	0
16080	Clca4::chloride channel calcium activated 4	0	0	0	0	0	0
16085	Clca5::chloride channel calcium activated 5	0	0	0	0	0	0
16083	Clca6::chloride channel calcium activated 6	0	0	0	0	0	0
15873	Clcc1::chloride channel CLIC-like 1	28	18	31	15	51	47
19782	Clcn1::chloride channel 1	4	1	0	2	1	2
8991	Clcn2::chloride channel 2	11	20	9	26	19	25
23829	Clcn3::chloride channel 3	242	400	289	324	462	821
21164	Clcn4-2::chloride channel 4	509	748	575	872	916	1286
26378	Clcn5::chloride channel 5	2	0	7	0	1	1
17695	Clcn6::chloride channel 6	16	9	8	11	17	10
9834	Clcn7::chloride channel 7	73	116	141	146	173	200
17600	Clcnka::chloride channel Ka	0	0	0	0	0	0
17602	Clcnkb::chloride channel Kb	0	0	0	0	0	0
22543	Clns1a::chloride channel, nucleotide-sensitive, 1A	158	119	173	112	196	178
Potassium/chloride Cotransporter							
11372	Slc12a2::Nkcc1, sodium/potassium/chloride cotransporter	76	84	70	70	194	134
14774	Slc12a5::KCC2, potassium/chloride cotransporter	109	548	166	801	319	1127

Clust er	UCSC Known Genes Descriptions	Single		Paired 1		Paired 2	
		E18	P7	E18	P7	E18	P7
<u>Genes encoding Wnts, BMPs, and hedgehogs</u>							
Wnts							
2536	Wif1::Wnt inhibitory factor 1	1	1	0	5	2	1
8031	Wisp1::WNT1 inducible signaling pathway protein 1	0	0	0	0	0	6
14715	Wisp2::WNT1 inducible signaling pathway protein 2	0	1	0	0	0	1
8606	Wnt1::wingless-related MMTV integration site 1	0	0	0	0	0	0
19553	Wnt2::wingless-related MMTV integration site 2	0	8	0	11	2	13
15797	Wnt2b::wingless-related MMTV integration site 2b	3	2	0	4	2	3
4211	Wnt3::wingless-related MMTV integration site 3	4	4	5	15	17	8
3233	Wnt3a::wingless-related MMTV integration site 3A	2	0	2	0	2	0
17527	Wnt4::wingless-related MMTV integration site 4	1	35	7	60	12	76
6807	Wnt5a::wingless-related MMTV integration site 5A	9	16	19	6	23	26
20473	Wnt5b::wingless-related MMTV integration site 5B	2	6	8	5	8	7
444	Wnt6::wingless-related MMTV integration site 6	2	6	0	1	1	2
20298	Wnt7a::wingless-related MMTV integration site 7A	79	52	125	72	159	93
8466	Wnt7b::wingless-related MMTV integration site 7B	220	138	432	302	553	310
11165	Wnt8a::wingless-related MMTV integration site 8A	0	0	0	0	0	0
12394	Wnt8b::wingless related MMTV integration site 8b	6	0	0	0	1	1
3234	Wnt9a::wingless-type MMTV integration site 9A	3	17	7	23	11	65
4210	Wnt9b::wingless-type MMTV integration site 9B	0	0	0	0	0	1
445	Wnt10a::wingless-related MMTV integration site 10a	0	2	6	0	1	2
8605	Wnt10b::wingless-related MMTV integration site 10b	0	0	0	0	0	0
22559	Wnt11::wingless-related MMTV integration site 11	0	2	1	0	1	2
19564	Wnt16::wingless-related MMTV integration site 16	0	1	0	0	2	1
BMPs							
1022	6430517E21Rik::BMP/retinoic acid-inducible neural-specific protein 2	100	167	161	248	240	418
20209	Aak1::AP2 associated kinase 1 isoform 1	175	331	264	411	399	777
14029	AK040009::BMP and activin membrane-bound inhibitor, pseudogene (<i>Xenopus laevis</i>)	2	2	0	0	4	5
11019	Bambi::BMP and activin membrane-bound inhibitor	5	10	22	20	21	22
7482	Bmp1::bone morphogenetic protein 1	83	47	127	113	164	154
14179	Bmp2::bone morphogenetic protein 2	2	14	3	16	11	31
18474	Bmp2k::BMP2 inducible kinase	12	20	8	21	22	34
18486	Bmp3::bone morphogenetic protein 3	1	3	2	0	0	7
7024	Bmp4::bone morphogenetic protein 4	0	15	1	12	0	18
25769	Bmp5::bone morphogenetic protein 5	0	1	0	4	0	1
5804	Bmp6::bone morphogenetic protein 6	1	5	0	10	4	15
14851	Bmp7::bone morphogenetic protein 7	4	9	1	15	6	18
17248	Bmp8a::bone morphogenetic protein 8a	2	0	0	0	0	0
17241	Bmp8b::bone morphogenetic protein 8b	0	0	0	1	0	2
20217	Bmp10::bone morphogenetic protein 10 preproprotein	0	0	0	0	0	0
26373	Bmp15::bone morphogenetic protein 15	0	1	0	0	0	1

24863	Bmper::BMP-binding endothelial regulator	15	5	38	7	36	24
6892	Bmpr1a::bone morphogenetic protein receptor, type 1A	82	65	73	30	142	150
16059	Bmpr1b::bone morphogenetic protein receptor, type 1B	15	21	27	19	41	51
327	Bmpr2::bone morphogenetic protein receptor, type II	11	3	8	11	3	9
10905	Crim1::cysteine rich transmembrane BMP regulator 1	2	2	0	4	4	1
Hedgehogs							
8615	Dhh::desert hedgehog	0	0	0	0	2	0
450	Ihh::Indian hedgehog	0	0	0	0	0	2
18008	Shh::sonic hedgehog	1	2	1	3	2	6
1374	Hhat::hedgehog acyltransferase	3	2	3	2	3	2
26237	Hhatl::hedgehog acyltransferase-like	0	2	0	6	2	18
24033	Hhip::Hedgehog-interacting protein	0	1	6	0	1	0
17830	Dvl1::dishevelled, dsh homolog 1	157	212	287	329	492	486
3429	Dvl2::dishevelled 2, dsh homolog	56	34	86	61	144	103
8980	Dvl3::dishevelled 3, dsh homolog	58	30	64	54	72	33

Cluster	UCSC Known Genes Descriptions	Single		Paired1		Paired2	
		E18	P7	E18	P7	E18	P7
<u>Deferentially expressed transcription factors</u>							
39	Ncoa2::nuclear receptor coactivator 2 isoform a/b	127	113	138	56	154	141
107	Phf3::PHD finger protein 3	157	127	257	98	218	202
184	Npas2::neuronal PAS domain protein 2	0	10	0	17	2	19
206	Pou3f3::POU domain, class 3, transcription factor 3	403	154	375	112	672	194
284	Satb2::special AT-rich sequence binding protein 2	354	192	345	234	630	274
360	Creb1::cAMP responsive element binding protein 1	236	99	192	109	326	153
611	Hes6::hairy and enhancer of split 6	171	71	298	199	387	107
870	Jarid1b::PLU1	238	124	384	216	532	211
1114	Rxrg::retinoid X receptor gamma	76	60	107	43	126	76
1116	Pbx1::pre B-cell leukemia transcription factor 1	1535	985	2046	1101	1800	1221
1173	Nhlh1::nescient helix loop helix 1	6	1	25	0	31	3
1250	Zfp238::zinc finger protein 238 isoform 1/2	277	231	243	98	296	213
1389	Plxna2::plexin A2 Plxna2::Plxna2 protein.	631	240	612	313	788	345
1448	Plagl1::Zinc finger protein ZAC1	56	37	80	4	58	28
1457	Hivep2::human immunodeficiency virus type I enhancer	223	549	310	483	360	721
1702	Hsf2::heat shock factor 2	66	34	53	12	118	62
1806	Ccar1::Cell division cycle and apoptosis regulator protein 1 (CARP-1).	310	179	349	88	242	172
2097	Tcf3::Transcription factor E2-alpha (Immunoglobulin enhancer-binding factor E12/E47) (Transcription factor 3) (TCF-3) (Transcription factor A1). Tcf2a::transcription factor E2a	97	52	126	77	202	66
2101	Klf16::Kruppel-like factor 16	36	50	50	138	65	149
2255	Prdm4::PR domain containing 4	95	72	160	70	189	133
2333	Ascl1::achaete-scute complex homolog-like 1	50	18	104	14	89	25
2591	Stat6::signal transducer and activator of transcription	6	21	3	22	8	33
2619	Stat2::signal transducer and activator of transcription	51	47	77	45	135	92
2727	Patz1::POZ (BTB) and AT hook containing zinc finger 1 mazr::Mus musculus mazr mRNA for transcription factor MAZR, complete cds.	55	36	78	37	102	62
2857	Meis1::Homeobox protein Meis1 (Myeloid ecotropic viral integration site 1).	37	14	44	9	63	18
2874	Otx1::orthodenticle 1	30	22	33	16	53	30

2897	Bcl11a::B-cell lymphoma/leukemia 11A (B-cell CLL/lymphoma 11A) (COUP-TF- interacting protein 1) (Ecotropic viral integration site 9 protein) (EVI-9)(Zinc finger protein)	560	284	790	453	870	541
2999	Ebf1::early B-cell factor 1	16	1	31	7	32	6
3039	Zfp62::zinc finger protein 62 isoform 1/2	89	43	122	22	119	54
3075	Zfp354c::zinc finger protein 354C	200	128	225	83	331	188
3079	Zfp2::zinc finger protein 2	75	35	106	17	121	52
3087	Zfp354a::zinc finger protein 354A	15	18	18	1	40	26
3238	BC050078::hypothetical protein LOC237775	35	36	72	38	79	45
3310	Zfp287::zinc finger protein 287	49	38	56	37	90	61
3384	Chd3::chromodomain helicase DNA binding protein 3	313	326	475	430	314	301
3392	p53::Mus musculus mRNA for p53, complete cds. Trp53::transformation related protein 53	84	36	94	32	127	41
3405	Zbtb4::Zinc finger and BTB domain containing 4	58	150	100	229	117	263
3623	Phf12::PHD finger protein 12	131	93	139	67	263	129
3686	Zfp207::zinc finger protein 207	305	221	400	185	480	346
3749	Aatf::apoptosis antagonizing transcription factor	49	31	63	21	71	37
3814	Vezf1::vascular endothelial zinc finger 1	250	100	223	124	409	183
3918	Nfe2l1::nuclear factor, erythroid derived 2,-like 1	118	201	157	376	294	602
3965	Neurod2::neurogenic differentiation 2	1030	309	1471	540	1672	479
3983	Thra::Thyroid hormone receptor alpha (C-erbA-alpha) (c-erbA-1).	1563	2285	2963	4493	4186	6030
3984	Nr1d1::nuclear receptor subfamily 1, group D, member 1	30	94	52	175	98	276
3997	Smarca1::SWI/SNF related, matrix associated, actin	251	107	283	74	350	106
4389	Unk::zinc finger CCCH type containing 5	63	38	137	101	179	93
4423	Jmjd6::jumonji domain containing 6 PtDsr::Protein PTDSR (Phosphatidylserine receptor) (Apoptotic cell clearance receptor PtdSerR)	43	34	64	32	69	51
4460	Cbx2::chromobox homolog 2	30	5	120	15	151	17
4621	Mycn::neuroblastoma myc-related oncogene 1	190	54	191	35	320	110
4666	Klf11::Kruppel-like factor 11	31	21	60	24	72	38
4673	Id2::inhibitor of DNA binding 2	654	436	663	261	859	526
4679	Sox11::SRY-box 11	5850	524	7331	510	7819	501
4689	Myt1l::Myelin transcription factor 1-like protein (MyT1L protein) (Postmitotic neural gene 1 protein) (Zinc finger protein Png-1) (Neural zinc finger factor 1) (NZF-1).	732	622	834	513	825	805
4759	Foxg1::forkhead box G1	724	227	814	158	1338	357
4799	Insm2::insulinoma-associated 2	8	9	13	0	10	1
4804	Titf1::thyroid transcription factor 1	10	2	22	4	46	6
4898	Hif1a::hypoxia inducible factor 1, alpha subunit	161	131	144	84	219	214
4994	Zfp410::zinc finger protein 410 Apa1::Mus musculus another partner for ARF 1 (Apa1) mRNA, complete cds.	54	58	71	28	102	65
5023	Fos::FBJ osteosarcoma oncogene	3	20	6	24	5	25
5024	Jundm2::Jun dimerization protein 2	8	30	0	42	15	47
5327	Bcl11b::B-cell leukemia/lymphoma 11B isoform a/b	1048	414	1325	405	1299	523
5417	Mta1::metastasis associated 1	176	119	204	145	305	186
5431	Zfp386::zinc finger protein 386 (Kruppel-like) isoform.	92	45	77	39	94	50
5445	Sp4::trans-acting transcription factor 4	151	62	143	23	151	68
5509	Arid4b::retinoblastoma binding protein 1-like 1 isoform	212	122	225	60	196	177
5516	Gli3::GLI-Kruppel family member GLI3	43	27	55	21	71	14
5554	Zkscan3::zinc finger with KRAB and SCAN domains 3	189	79	232	89	195	94
5562	Zfp192::zinc finger protein 192	56	19	72	8	88	48
5591	Zfp184::Zinc finger protein 184 (Kruppel-like)	20	5	35	13	66	16
5724	Sox4::SRY-box containing gene 4	2415	435	4047	778	2718	485
5859	Dek::DEK oncogene (DNA binding)	122	87	97	35	160	148

5864	Id4::inhibitor of DNA binding 4	176	86	163	45	215	97
5958	Nfil3::nuclear factor, interleukin 3, regulated	91	33	139	52	224	58
6000	Nsd1::nuclear receptor-binding SET-domain protein 1	268	277	420	360	506	454
6003	Mxd3::Max dimerization protein 3	27	13	30	10	57	16
6037	Smad5::MAD homolog 5	236	90	364	69	439	186
6132	Mterfd1::MTERF domain containing 1	63	40	51	10	63	47
6150	Zfp87::zinc finger protein 87	42	22	63	11	82	52
6223	Rhobtb3::Rho-related BTB domain containing 3	159	66	193	43	236	89
6239	Nr2f1::nuclear receptor subfamily 2, group F, member 1	798	547	968	660	951	649
6252	Mef2c::myocyte enhancer factor 2C	268	882	319	540	154	581
6456	Isl1::ISL1 transcription factor, LIM/homeodomain	90	15	145	7	175	17
6550	Fezf2::Fez family zinc finger 2	103	68	142	94	203	153
6632	Myst4::Histone acetyltransferase MYST4 (EC 2.3.1.48) (EC 2.3.1.-) (MYST protein 4) (MOZ, YBF2/SAS3, SAS2 and TIP60 protein 4) (Querkopf protein)	122	37	83	24	91	41
6640	Zfp503::zinc finger protein 503	35	14	73	9	87	31
6830	Pbrm1::Hypothetical protein (Fragment)	678	389	732	295	700	356
7045	Otx2::orthodenticle homolog 2	8	4	11	0	26	7
7122	Zfp219::zinc finger protein 219	151	65	321	158	304	157
7244	Acin1::apoptotic chromatin condensation inducer 1	450	219	561	313	702	393
7323	Zmym5::zinc finger, MYM-type 5	87	54	97	18	126	82
7325	Zmym2::zinc finger protein 198	128	61	185	27	177	88
7340	Zdhhc20::DHHC-containing protein 20	205	147	244	100	195	172
7346	Rcbtb1::regulator of chromosome condensation (RCC1)	106	43	62	18	92	38
7409	Hmbox1::homeobox containing 1	89	75	97	70	164	106
7469	Egr3::Egr3 protein. Egr3::early growth response 3	21	108	10	113	40	238
7486	Hr::hairless protein	24	36	26	95	64	131
7531	Tsc22d1::TSC22 domain family, member 1 isoform 1/2	837	711	949	596	1471	1259
7606	Rbm26::RNA binding motif protein 26	287	194	312	132	305	230
7625	Sox21::SRY-box 21	37	27	31	16	80	48
7638	Mbnl2::muscleblind-like 2 isoform 1/2	51	148	20	66	47	209
8028	Phf20l1::PHD finger protein 20-like 1	188	96	217	44	131	97
8155	Zfp41::zinc finger protein 41	84	44	175	67	242	93
8167	Zfp623::zinc finger protein 623	42	26	69	29	99	68
8219	Zfp647::zinc finger protein 647	54	27	78	21	97	29
8319	Sox10:: Mus musculus putative transcription factor (Sox10) mRNA	10	73	9	154	25	194
8376	Tef::thyrotroph embryonic factor isoform 1/2	93	238	102	405	218	593
8385	Xrcc6::X-ray repair complementing defective repair in	40	25	46	20	72	53
8410	Tcf20::transcription factor 20	37	17	54	29	22	9
8455	Phf21b::PHD finger protein 21B	94	9	113	15	154	11
8553	Dbx2::developing brain homeobox 2	0	9	3	18	3	22
8660	Pou6f1::POU domain, class 6, transcription factor 1 (Octamer-binding transcription factor EMB) (Transcription regulatory protein MCP-1)	163	115	268	175	486	300
8677	Nr4a1::nuclear receptor subfamily 4, group A, member 1	15	52	29	80	38	104
8717	Znf740::Zinc finger protein 740	148	115	301	101	400	178
8726	Sp1::trans-acting transcription factor 1	76	58	85	44	138	61
8766	Zfp263::zinc finger protein 263	65	56	86	56	152	66
8783	Tcfap4::transcription factor AP4	27	4	61	9	34	7
8805	Rogdi::leucine zipper domain protein	66	188	57	239	150	373
9113	Zfp148::zinc finger protein 148	164	120	174	73	275	204
9196	Zbtb20::zinc finger and BTB domain containing 20	463	242	572	310	355	212
9399	Bach1::BTB and CNC homology 1	39	20	34	9	35	13
9440	Olig1::oligodendrocyte transcription factor 1	93	403	147	769	312	1052
9496	Hmgn1::high mobility group nucleosomal binding domain	106	36	9	0	32	9

9637	Phf10::PHD finger protein 10	51	35	112	35	77	54
9703	Zfp160::zinc finger protein 160	70	34	83	22	99	52
9715	Zfp760::zinc finger protein 760	31	13	45	19	69	24
9722	6330416L07Rik::hypothetical protein LOC319615	31	33	19	5	46	23
9724	1300003B13Rik::hypothetical protein LOC74149	37	21	46	23	42	18
9737	Zfp40::zinc finger protein 40	70	29	82	21	112	55
9904	Phf1::PHD finger protein 1 Tctex-3::Mus musculus Tctex-3 mRNA, complete cds.	38	31	63	31	58	43
10239	Pknox1::Pbx/knotted 1 homeobox	71	34	63	31	145	71
10261	9030612M13Rik::hypothetical protein LOC208292	195	163	256	99	339	199
10262	Zfp811::zinc finger protein 811	77	38	80	35	85	29
10263	6030490I01Rik::zinc finger protein	37	15	35	11	43	10
10270	1700065O13Rik::RIKEN cDNA 1700065O13	35	46	69	13	93	59
10272	Zfp563::zinc finger protein ZFP413	54	46	62	34	127	58
10280	Zfp101::zinc finger protein 101	49	17	100	15	58	23
10340	Pbx2::pre B-cell leukemia transcription factor 2	88	58	127	57	176	143
10469	Zfp57::zinc finger protein 57	351	129	639	221	1214	296
10611	Tref1::transcriptional regulating factor 1 isoform 1/2	36	23	53	34	40	26
10628	Tcf7::transcription factor EB	4	7	1	26	3	29
10644	Nfya::nuclear transcription factor-Y alpha	9	13	30	11	38	10
11029	Zeb1::zinc finger E-box binding homeobox 1	117	95	111	75	184	171
11074	Zfp521::zinc finger protein 521 isoform 1	38	13	44	13	62	42
11110	Zfp397::zinc finger protein 397	95	42	108	7	125	72
11113	Zfp191::zinc finger protein 191	81	71	115	41	139	116
11177	Jmjd1b::jumonji domain containing 1B	85	60	107	52	199	88
11179	Egr1::early growth response 1	12	100	21	137	25	337
11269	Nr3c1::nuclear receptor subfamily 3, group C, member 1	37	135	17	110	39	243
11386	Rbm22::RNA binding motif protein 22	108	74	145	112	250	173
11439	Onecut2::one cut domain, family member 2	35	8	33	10	33	5
11449	Zfp532::zinc finger protein 532	116	58	173	75	251	113
11637	Tcf4::transcription factor 4 isoform a/b	2701	1865	2990	1788	3719	2573
11649	Smad4::MAD homolog 4	215	124	248	91	310	179
11656	Cxxc1::CXXC finger 1 (PHD domain)	116	85	166	113	222	132
11672	Smad2::MAD homolog 2	76	56	99	61	116	81
11678	Pias2::protein inhibitor of activated STAT 2	56	29	81	14	93	64
11694	Setbp1::SET binding protein 1	124	61	137	57	138	83
11723	Tshz1::teashirt zinc finger family member 1	186	89	236	93	244	143
11823	Sf3b2::splicing factor 3b, subunit 2	348	310	418	309	733	620
11864	Gja10::Gja10 protein. Dpf2::D4, zinc and double PHD fingers family 2	87	62	74	28	113	61
11923	Rcor2::REST corepressor 2	177	19	293	110	378	74
11970	Mta2::metastasis-associated gene family, member 2	186	81	241	130	375	174
12077	Zfp91-cntf::Zfp91-Cntf readthrough protein Zfp91::zinc finger protein 91	156	192	199	86	300	282
12162	Klf9::Kruppel-like factor 9	17	356	9	488	33	839
12221	Uhrf2::E3 ubiquitin-protein ligase UHRF2 (EC 6.3.2.-) NIRF::NIRF mRNA for Np95-like ring finger protein, complete cds.	158	103	276	83	308	118
12371	Nkx2-3::NK2 transcription factor related, locus 3	4	0	10	0	15	0
12534	Emx2::empty spiracles homolog 2	35	14	42	11	73	35
12830	Ttf1::transcription termination factor 1	30	18	35	17	39	23
12931	Zbtb43::zinc finger protein 297B isoform b Zbtb43::zinc finger protein 297B isoform a	74	57	87	47	149	91
12938	Pbx3::Pre-B-cell leukemia transcription factor 3 (Homeobox protein PBX3)	119	33	101	38	183	49
12964	Lhx6::LIM homeobox protein 6 isoform 1/2/3/4	112	70	145	77	194	91
13001	Zbtb26::zinc finger and BTB domain containing 26	15	7	23	6	32	9
13010	Lhx2::LIM homeobox protein 2	308	166	361	185	489	296
13031	Zeb2::zinc finger homeobox 1b isoform 2	571	261	683	199	862	355
13096	Tbr1::T-box brain gene 1	399	194	490	96	690	358
13161	Dlx1::distal-less homeobox 1	282	102	476	148	584	144

13163	Dlx2::distal-less homeobox 2	91	22	118	25	188	39
13175	Sp3::Sp3 transcription factor isoform 1/2	149	70	107	21	182	116
13190	Atf2::activating transcription factor 2 isoform 1/2	162	224	183	129	316	310
13236	Neurod1::neurogenic differentiation 1	162	64	161	25	148	62
13275	Ssrp1::structure specific recognition protein 1	285	198	441	206	507	292
13544	Creb3l1::cAMP responsive element binding protein 3-like	8	32	10	39	6	55
13815	Pax6::paired box gene 6 Pax6::Mus musculus PAX6 mRNA, partial cds, alternatively spliced	40	12	57	14	61	23
13908	Mrg1::homeobox protein Meis2 Meis2::Homeobox protein Meis2 (Meis1-related protein 1)	829	301	702	169	1270	453
13968	Mga::MAX-interacting protein	182	104	215	77	183	125
14236	Insm1::insulinoma-associated 1	232	16	220	18	371	20
14243	Nkx2-2::NK2 transcription factor related, locus 2	2	14	0	34	3	23
14537	Sox12::SRY-box containing gene 12	354	212	552	406	877	336
14806	Zfp313::zinc finger protein 313	113	59	252	100	343	190
14819	Adnp::activity-dependent neuroprotective protein	341	283	507	158	757	448
14822	Nfatc2::nuclear factor of activated T-cells,	5	11	5	36	6	49
14829	Tshz2::teashirt zinc finger family member 2	38	118	83	161	84	157
14850	Tcfap2c::transcription factor AP-2, gamma	19	1	13	0	22	1
14952	Dio-1::Mus musculus mRNA for death inducer-obliterator-1 (Dio-1).	82	74	129	66	165	125
14993	Myt1::myelin transcription factor 1	85	30	93	29	143	31
14999	Zfx4::zinc finger homeodomain 4	72	9	85	18	74	14
15003	3110050N22Rik::hypothetical protein LOC67306	266	251	301	170	512	430
15046	Bhlhb5::basic helix-loop-helix domain containing, class	450	259	497	212	764	359
15090	Mynn::myoneurin	40	14	45	27	53	30
15104	Zmat3::wild-type p53-induced gene 1	66	147	78	221	103	277
15121	Sox2::sex-determining region Y-box 2	182	89	159	71	329	178
15209	Elf2::ets family transcription factor ELF2A2	45	15	94	12	75	24
15616	Pogz::pogo transposable element with ZNF domain	74	74	123	80	92	74
15622	Zfp687::zinc finger protein 687	46	38	94	30	62	42
15758	Nhlh2::nescient helix loop helix 2	31	3	47	4	51	10
15966	Neurog2::neurogenin 2	105	0	118	0	169	3
16008	Ints12::integrator complex subunit 12	25	23	39	21	69	35
16181	Tox::thymocyte selection-associated HMG box	56	34	43	11	57	25
16265	Bach2::BTB and CNC homology 2	37	12	65	20	22	4
16504	Zbtb5::zinc finger and BTB domain containing 5	36	23	91	38	72	51
16585	Zfp462::zinc finger protein 462	501	131	676	149	405	121
16720	Akna::AT-hook transcription factor	22	5	39	9	26	12
16766	Nfib::Nuclear factor 1 B-type (Nuclear factor 1/B) (CCAAT-box-binding transcription factor) (CTF) (TGGCA-binding protein).	674	242	977	248	839	236
16803	Klhl9::kelch-like 9	304	252	291	175	505	471
16944	Nfia::nuclear factor I/A	68	43	89	17	101	47
17072	Dmrta2::doublesex and mab-3 related transcription factor	56	10	64	22	67	18
17167	Jmjd2a::JmJc domain-containing histone demethylation protein 3A (EC 1.14.11.-) (Jumonji domain-containing protein 2A)	146	79	237	115	291	148
17239	Myc1::lung carcinoma myc related oncogene 1	118	67	191	65	334	138
17448	Arid1a::AT rich interactive domain 1A	425	239	337	255	383	175
17509	Id3::inhibitor of DNA binding 3	26	115	59	151	91	275
17605	Zbtb17::zinc finger and BTB domain containing 17	90	48	98	62	167	91
17628	Prdm2::PR domain containing 2, with ZNF domain	50	32	110	62	75	33
17739	Rere::arginine glutamic acid dipeptide (RE) repeats	110	102	144	62	129	97
17787	Prdm16::transcription factor MEL1	26	22	93	13	61	36
17992	Mll3::myeloid/lymphoid or mixed-lineage leukemia 3	355	179	401	142	312	156
18064	Zfp512::zinc finger protein 512	184	153	255	158	459	233
18097	Whsc1::Wolf-Hirschhorn syndrome candidate 1	65	19	38	17	82	36
18154	Znf509::Zinc finger protein 509	27	12	34	18	42	22

18343	Hopx::HOP homeobox	20	34	5	67	47	97
18557	Zfp644::zinc finger motif enhancer binding protein 2	181	151	196	107	224	200
18577	Mtf2::metal response element binding transcription	245	113	204	110	251	157
18926	Lhx5::LIM homeobox protein 5	4	1	10	0	16	1
18968	Cutl2::cut-like 2	58	44	106	78	121	83
19197	Tsc22d4::TSC22-related inducible leucine zipper 2	72	116	115	185	106	313
19209	Zkscan1::zinc finger protein 36 isoform 2 Zkscan1::zinc finger protein 36 isoform 1	113	62	195	39	226	121
19210	Zscan21::zinc finger proliferation 1	136	55	170	64	237	101
19211	Zfp113::zinc finger protein 113	45	19	76	4	44	22
19225	Zfp157::zinc finger protein 157	117	73	160	61	224	124
19227	Zfp68::zinc finger protein 68 isoform a/b	136	80	253	30	330	110
19228	A430033K04Rik::hypothetical protein LOC243308	37	23	86	7	65	34
19242	Uncx4.1::Unc4.1 homeobox	1	1	8	0	12	2
19284	Zfp12::zinc finger protein 12 Zfp12::Zfp12 protein.	61	42	89	42	124	73
19326	Zfp655::zinc finger protein 655 isoform a/b	50	39	95	22	134	78
19474	Pds5b::PDS5, regulator of cohesion maintenance, homolog	120	149	145	84	299	248
19512	Dlx5::distal-less homeobox 5 isoform 1/2	29	10	27	0	59	20
19529	Phf14::PHD finger protein 14	152	75	108	36	149	60
19542	Foxp2::forkhead box P2	223	94	296	86	344	166
19550	Met::met proto-oncogene	30	112	35	101	68	173
19828	Zfp398::zinc finger protein 398 isoform 1/2	52	28	50	7	33	19
19881	Nfe2l3::nuclear factor, erythroid derived 2, like 3	37	24	55	15	74	27
19934	Neurod6::neurogenic differentiation 6	1030	397	999	288	1526	474
20031	Jmjd1a::jumonji domain containing 1A isoform 1	66	27	127	11	124	49
20103	Pole4::DNA polymerase epsilon subunit 4	155	181	170	109	261	245
20149	Znf638::Zinc finger protein 638 (Nuclear protein 220) (Zinc-finger matrin-like protein).	220	137	238	60	314	216
20166	Egr4::early growth response 4	0	42	10	93	2	141
20369	Bhlhb2::basic helix-loop-helix domain containing, class	20	53	18	73	47	139
20389	Brpf1::bromodomain and PHD finger containing, 1	54	44	104	78	138	98
20449	Zfp422::zinc finger protein 422	116	65	85	40	136	39
20578	Acrbp::proacrosin binding protein	40	12	78	33	75	15
20580	Chd4::chromodomain helicase DNA binding protein 4	349	224	457	248	518	352
20804	Foxm1::forkhead box M1	40	6	69	22	59	19
20991	Sox5::SRY (sex determining region Y)-box 5 mSox5L::Mus musculus mSox5L mRNA	86	54	132	55	69	50
21107	Zfp579::zinc finger protein 579	109	54	133	103	239	142
21159	5730403M16Rik::hypothetical protein LOC232853	26	31	60	17	73	38
21174	Zik1::zinc finger protein interacting with K protein	92	38	130	22	160	54
21195	Zfp606::zinc finger protein 606 isoform 1/2	68	15	50	5	103	33
21202	Zfp329::zinc finger protein 329	133	74	138	29	163	95
21203	Zfp110::zinc finger protein 110	36	19	45	15	44	16
21209	Zfp446::Zfp446 protein	15	13	14	1	34	18
21212	Trim28::tripartite motif protein 28	574	381	1000	598	1293	692
21246	Mrg2::myeloid ecotropic viral integration site-related	106	71	126	96	203	120
21380	Zfp235::zinc finger protein 235	23	20	32	11	41	24
21385	Zfp61::zinc finger protein 61	41	22	75	34	85	47
21447	Hnrpul1::Heterogeneous nuclear ribonucleoprotein U-like protein 1	76	59	114	84	96	65
21491	Zfp60::zinc finger protein 60	92	43	100	19	225	101
21498	Zfp780b::zinc finger protein 780B	59	44	32	15	73	32
21514	Zfp36::zinc finger protein 36	10	6	18	1	30	12
21556	Neud4::neuronal d4 domain family member	198	134	282	207	372	207
21560	Zfp84::zinc finger protein 84	77	34	89	33	137	61
21561	Zfp30::Zinc finger protein 30 (Zfp-30).	39	27	64	19	73	55
21566	Zfp27::zinc finger protein 27	32	24	66	22	68	39
21571	Zfp14::zinc finger protein 14	20	17	28	8	40	22
21574	Zfp260::zinc finger protein 260	129	81	152	43	229	149
21669	Cebpg::CCAAT/enhancer binding protein gamma	123	60	201	68	227	109

21685	Tshz3::teashirt zinc finger family member 3	99	83	140	95	177	99
21686	Zfp536::zinc finger protein 536	84	56	124	63	113	56
21723	Zfp715::zinc finger protein 715	49	22	58	7	58	38
21735	BC043301::hypothetical protein LOC210104	24	8	57	12	55	18
21834	Tead2::TEA domain family member 2	88	9	123	40	165	43
21868	Dbp::D site albumin promoter binding protein	16	40	27	127	49	222
21995	Klf13::Kruppel-like factor 13	49	123	57	165	43	145
22139	Nr2f2::nuclear receptor subfamily 2, group F, member 2	293	125	260	119	381	183
22403	Zfp710::zinc finger protein 710	79	45	147	78	124	59
22423	Zscan2::zinc finger and SCAN domain containing 2	28	12	81	22	86	16
22910	Zfp143::zinc finger protein 143	27	13	32	11	65	26
23114	Zfp768::zinc finger protein 768	50	33	81	53	103	64
23117	E430018J23Rik::hypothetical protein LOC101604	6	0	21	4	17	4
23131	Zfp629::zinc finger protein 629	61	43	74	53	163	67
23142	Zfp646::zinc finger protein 646	25	6	77	21	44	12
23330	Deaf1::deformed epidermal autoregulatory factor 1	134	341	219	457	255	616
23427	Zfp358::zinc finger protein 358	113	84	191	146	283	161
23487	Ing1::inhibitor of growth family, member 1	78	56	119	52	114	66
23620	Myst3::MYST histone acetyltransferase (monocytic)	180	112	190	56	289	145
23711	Thex1::histone mRNA 3' end-specific exonuclease	53	37	63	32	108	60
23871	D10627::hypothetical protein LOC234358	20	16	29	8	36	22
23874	AI449175::Kruppel-like zinc finger protein	51	20	57	20	100	46
23877	D330038O06Rik::hypothetical protein LOC330788	117	56	106	77	184	72
24003	Hmgb2l1::high mobility group box 2-like 1	58	47	104	76	127	81
24028	Smad1::MAD homolog 1	107	97	154	114	144	113
24090	Nfix::nuclear factor I/X isoform 1/2/3	509	302	783	673	339	302
24140	Zfp423::zinc finger protein 423	27	16	47	23	77	25
24152	Tox3::TOX high mobility group box family member 3	118	38	138	12	174	55
24336	Ctcf::CCCTC-binding factor	203	106	264	120	373	233
24370	Zfp90::zinc finger protein 90	73	40	113	83	150	70
24388	Nfat5::nuclear factor of activated T-cells 5 isoform a/b Nfat5::NFATz1.	98	65	85	55	163	105
24396	Zfhx3::AT motif binding factor 1	182	33	201	49	200	36
24406	4930566A11Rik::4930566A11Rik protein (Fragment). 4930566A11Rik::hypothetical protein LOC75871	164	138	238	191	368	246
24482	Maf::avian musculoaponeurotic fibrosarcoma (v-maf)	144	117	154	113	160	130
24764	Zfp75::zinc finger protein 75	71	47	75	24	124	84
24782	Zfp26::zinc finger protein 26	77	42	105	28	157	74
24783	Zfp426::zinc finger protein 426	66	56	89	66	168	99
24785	2210010B09Rik::hypothetical protein LOC244721	52	39	89	29	76	56
24845	Zfp653::zinc finger protein Zip67	48	28	81	39	65	45
24858	Zfp810::zinc finger protein ZFP	33	29	55	6	61	37
25131	Mll1::myeloid/lymphoid or mixed-lineage leukemia 1	382	226	492	358	477	213
25365	Scaper::S phase cyclin A-associated protein in the ER	176	122	165	86	196	178
25371	Hmg20a::high mobility group 20A	248	153	350	294	464	294
25718	Sltm::modulator of estrogen induced transcription	253	156	376	206	353	238
25728	Tcf12::transcription factor 12	24	13	41	6	29	12
25731	Suhw4::suppressor of hairy wing homolog 4	158	83	150	54	166	106
25825	Ibtk::inhibitor of Bruton's tyrosine kinase	99	34	120	43	138	56
25870	Zic1::Zic family member 1	71	43	85	39	142	44
25871	Zic4::zinc finger protein of the cerebellum 4	42	12	88	21	102	28
25893	Tfdp2::transcription factor Dp-2	18	8	8	0	23	7
26151	Ubp1::upstream binding protein 1 isoform a/b	130	113	243	62	338	176
26184	Eomes::eomesodermin homolog	129	8	165	4	206	4
26252	Zfp445::zinc finger protein 445	341	302	459	178	499	304
26474	Utx::ubiquitously transcribed tetratricopeptide	42	22	39	14	56	38
26601	Zbtb33::kaiiso protein	97	53	107	20	116	69
26633	Suhw3::Suppressor of hairy wing homolog 3. Zfp280c::zinc finger protein 280c	51	45	76	11	117	56
26715	Sox3::SRY-box containing gene 3	17	2	32	10	40	22

26770	Zfp275::Zinc finger protein 275	53	42	45	24	134	82
26807	Plxna3::plexin A3	232	151	383	166	609	221
26875	Arx::aristaless related homeobox gene	309	107	347	152	403	152
26880	Zfx::zinc finger protein X-linked Zfx::Zfx protein.	56	36	123	43	87	64
27021	Zfp711::zinc finger protein 711	84	60	110	28	121	52
27189	Jarid1c::jumonji, AT rich interactive domain 1C (Rbp2)	58	34	127	48	106	87
Cluster	MGI annotation	Single		Paired 1		Paired 2	
		E18	P7	E18	P7	E18	P7
Genes related to autophagy and apoptosis							
Autophagy genes							
13540	Ambra1::autophagy/beclin 1 regulator 1	94	67	118	190	190	213
6268	Atg10::autophagy-related 10 (yeast)	12	15	4	11	3	20
11318	Atg12:: autophagy-related 12 (yeast)	113	143	126	126	279	273
567	Atg16l1::autophagy-related 16-like 1 (yeast)	77	93	155	129	191	200
22607	Atg16l2::autophagy related 16 like 2 (S. cerevisiae)	12	16	10	14	22	31
222	Atg3::autophagy-related 3 (yeast)	64	57	82	39	169	108
27136	Atg4a::autophagy-related 4A (yeast)	6	4	0	0	1	0
678	Atg4b::autophagy-related 4B (yeast)	91	90	161	138	247	202
16957	Atg4c::autophagy-related 4C (yeast)	38	56	44	8	46	53
24813	Atg4d::autophagy-related 4D (yeast)	26	11	39	13	33	45
1665	Atg5::autophagy-related 5 (yeast)	50	52	72	62	119	101
20416	Atg7::autophagy-related 7 (yeast)	18	31	44	43	34	60
457	Atg9a::autophagy-related 9A (yeast)	98	225	157	303	191	413
11888	Atg2a:: ATG2 autophagy related 2 homolog A (S. cerevisiae)	41	68	100	145	93	109
5320	Atg2b::ATG2 autophagy related 2 homolog B (S. cerevisiae)	63	102	146	91	131	175
17968	Atg9b::ATG9 autophagy related 9 homolog B (S. cerevisiae)	6	14	6	21	6	25
4097	Becn1::beclin 1, autophagy related	78	92	106	154	250	273
2342	1200002N14Rik::human ortholog name: damage-regulated autophagy modulator	0	7	4	11	8	4
Apoptosis genes							
2364	Apaf1::apoptotic protease activating factor 1	48	44	75	75	130	93
11908	Bad::Bcl-associated death promoter	55	83	95	135	131	168
21849	Bax::Bcl2-associated X protein	100	144	160	157	273	224
16091	Bcl10::B-cell leukemia/lymphoma 10	32	39	43	28	53	48
2897	Bcl11a::B-cell lymphoma/leukemia 11A	560	284	790	453	870	541
5327	Bcl11b::B-cell leukemia/lymphoma 11B	1048	414	1325	405	1299	523
712	Bcl2::B-cell leukemia/lymphoma 2 isoform 1	86	39	70	49	102	84
9033	Bcl6::B-cell leukemia/lymphoma 6	19	30	26	7	40	44
3438	Bcl6b::B-cell CLL/lymphoma 6, member B	13	19	39	10	34	56
19003	Bcl7a::B-cell CLL/lymphoma 7A	267	173	432	248	501	328
19128	Bcl7b::B-cell CLL/lymphoma 7B	27	48	62	79	78	92
23132	Bcl7c::B-cell CLL/lymphoma 7C	77	73	65	96	100	80
15712	Bcl9::B-cell CLL/lymphoma 9	54	40	97	61	83	46
23784	Casp3::caspase 3	101	67	70	79	138	44
17617	Casp9::caspase 9	36	46	66	62	84	94
8186	Cyc1::cytochrome c-1	194	313	262	436	430	658
12601	Cugbp2/Napor-1: apoptosis-related RNA binding protein	3509	2327	4367	2003	4850	3454
19009	Diablo::diablo homolog (Drosophila), Smac	104	104	138	179	253	207

Gene/ Cluster	UCSC Known Genes Descriptions	Single-end		Paired-end 1		Paired-end 2	
		E18	P7	E18	P7	E18	P7
<u>Some disease-related genes</u>							
Disease Related Genes							
22002	Apba2::amyloid beta (A4) precursor protein-binding, family A, member 2	307	406	392	545	345	445
9383	App::amyloid beta (A4) precursor protein	696	2026	832	1578	1238	3947
26985	Atrx:: alpha thalassemia/mental retardation syndrome X-linked homolog (human)	691	484	840	305	832	823
8465	Atxn10::ataxin 10	584	800	680	698	1063	1315
19097	Auts2::autism susceptibility candidate 2	371	109	389	180	355	126
14160	Prnp::prion protein	285	513	483	477	729	1466
17156	Prnpip1::prion protein interacting protein 1	269	471	489	756	709	990
3621	Sez6::seizure related gene 6	583	529	995	939	1373	1084