

Supplemental Figures and Tables

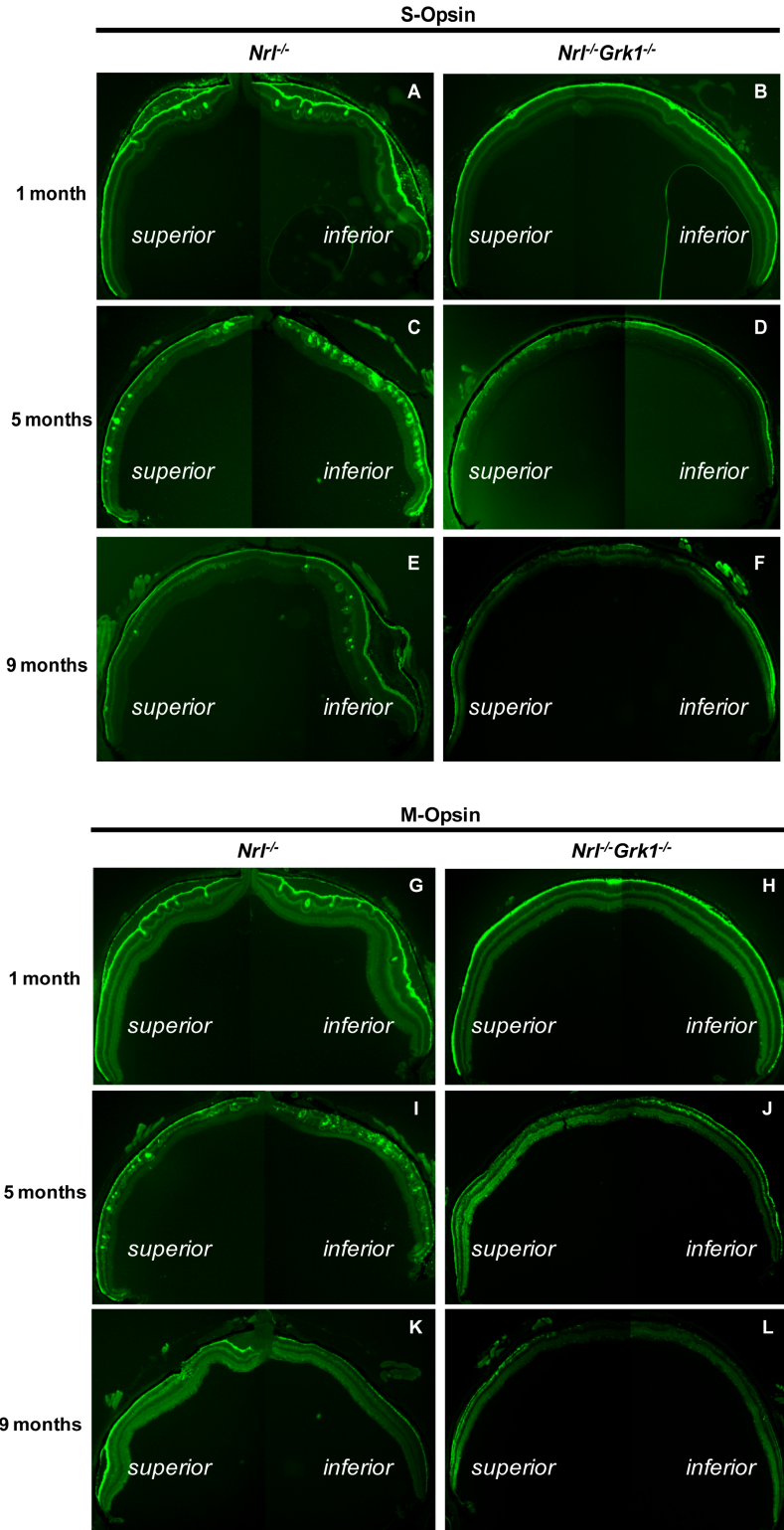


Figure S1: Both S-opsin (A-F) and M-opsin (G-L) Expressing Cones Degenerate in the *Nrl^{-/-}Grk1^{-/-}*. Mice were born and maintained throughout their lifespan in total darkness. Mice at the age of 1, 5 and 9 months were killed, and their eyes were fixed as described in Figure 1. Photographs of the superior and inferior halves of the retinal section were taken separately at lower magnification (5×10). The superior and inferior halves of the same section were then aligned to assemble the entire cross section.

Table S1: Biological Pathways Identified as Statistically Significant

Biological Pathways Identified as Statistically Significant		
Diseases and Disorders		
<i>Name</i>	<i>p-value</i>	<i># Molecules</i>
Neurological Disease	5.54E05-3.80D-02	108
Metabolic Disease	8.18E-08-2.27E-02	79
Genetic Disease	1.98E-04-3.80E-02	156
Cardiovascular Disease	3.03E-04-3.80E-02	70
Endocrine System Disorders	3.36E-04-3.69E-02	68
Molecular and Cellular Functions		
<i>Name</i>	<i>p-value</i>	<i># Molecules</i>
Cell Signaling	1.40E-04-2.24E-02	20
Cell morphology	2.07E-04-3.80E-02	40
Cellular Assembly and Organization	2.07E-04-3.80E-02	43
Cell-To-Cell Signaling and Interaction	3.29E-04-3.80E-02	35
Cell Death	3.67E-04-3.80E-02	68
Physiological System Development and Function		
<i>Name</i>	<i>p-value</i>	<i># Molecules</i>
Nervous System Development and Function	2.07E-04-3.80E-02	26
Embryonic Development	3.67E-04-3.80E-02	17
Tissue Morphology	3.67E-04-3.80E-02	14
Renal and Urological System Development and Function	1.35E-03-3.80E-02	10
Connective Tissue Development and Function	1.65E-03-3.80E-02	23

Table S2: Associated Functions of Top Networks

Associated Functions of Top Networks	
<i>Name</i>	<i>Score</i>
Cell Signaling, Cell Cycle, Cellular Movement	41
Renal and Urological System Development and Function	39
<i>Inflammatory Disease, Inflammatory Response</i>	37
Cellular Assembly and Organization	34
Cellular Compromise, Cell Cycle	25

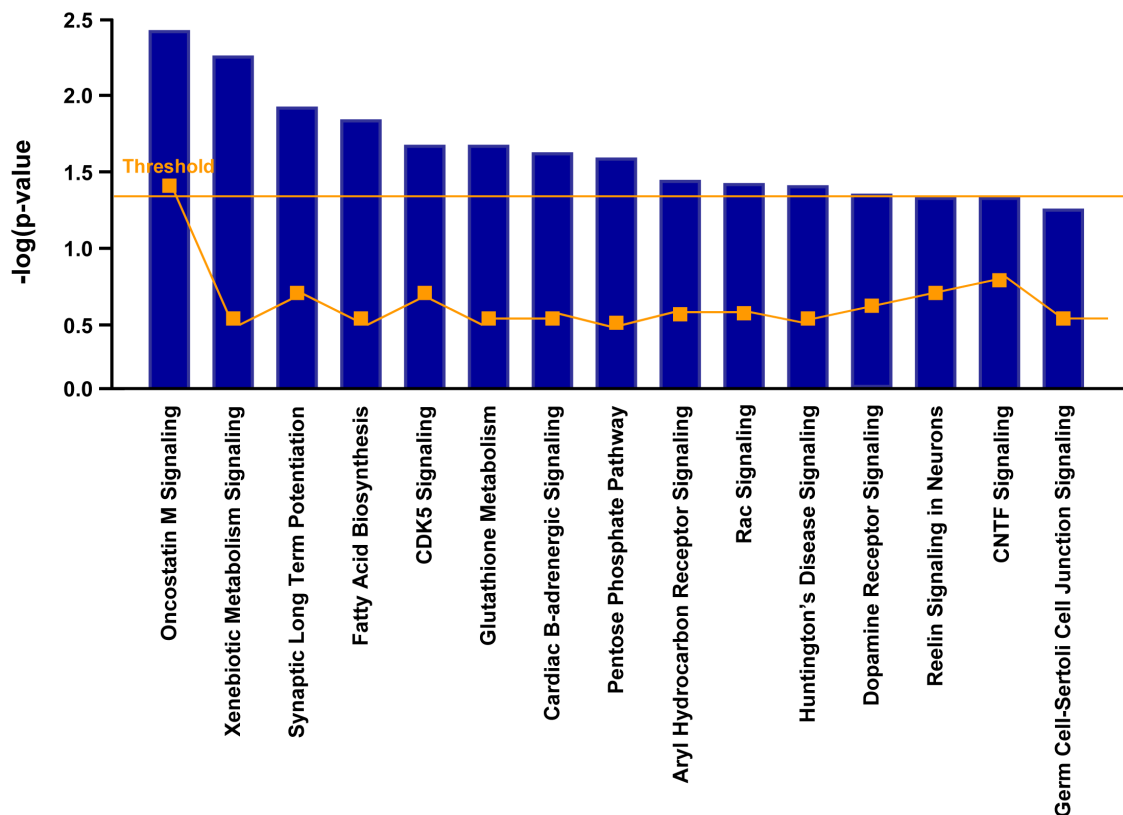


Figure S2: Top Canonical Pathways Identified by IPA. Canonical pathways are presented on the x axis, and the statistical significance of each pathway with a threshold of 0.05 is presented on the y axis. Canonical pathways above and just below the threshold value are presented. The orange line displays the ratio of up-regulated transcripts in the data set to the number of genes in each pathway; revealing Oncostatin M Signaling to have the largest ratio, while Synaptic Long Term Potentiation, CDK5 Signaling, and Rac Signaling among others, are above threshold for statistical significance.

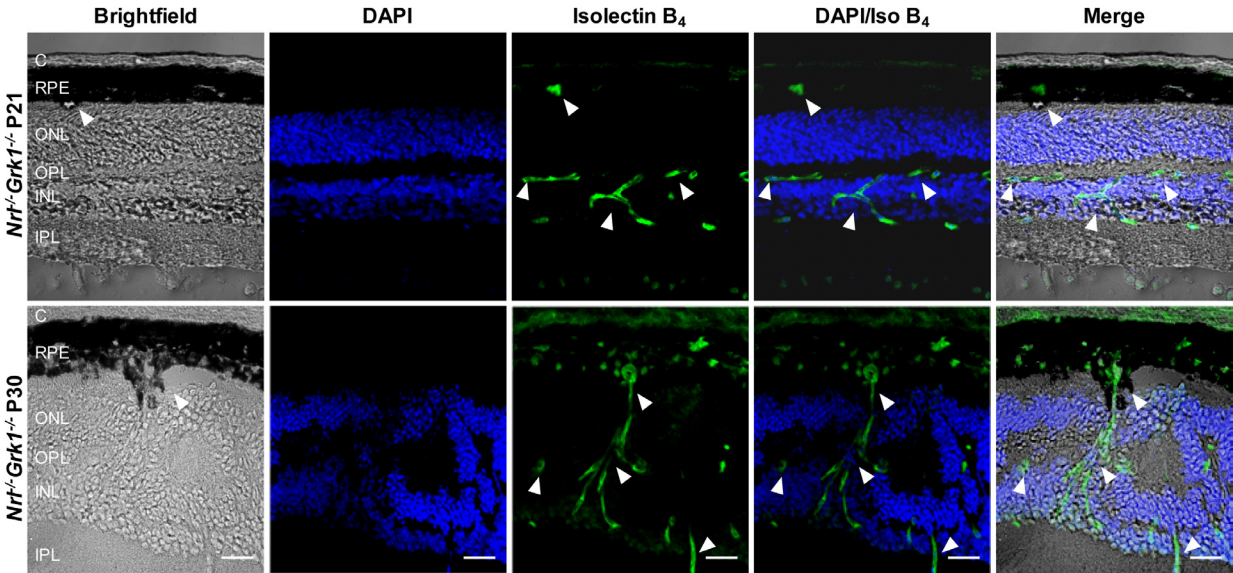


Figure S3: Retinal Anastomoses in *Nrl^{-/-}Grk1^{-/-}* Mice are Present Beginning at Post Natal Age (PN) 21. Retinas were harvested from PN21 (top panel) and PN30 (bottom panel) *Nrl^{-/-}Grk1^{-/-}* mice raised in cyclic light. Brightfield pictures demonstrate changes in the RPE structure (arrows). DAPI is used as a nuclear stain (blue), and fluorescein labeled GSL I – isolectin B4 (green) show penetration of blood vessels into the retina from the RPE (arrows) in *Nrl^{-/-}Grk1^{-/-}*. C, choroid; RPE, retinal pigment epithelium; ONL, outer nuclear layer; OPL, outer plexiform layer; IPL, inner plexiform layer; INL, inner nuclear layer. Scale bar represents a length of 20 μ m. Images were taken with a Confocal Laser Scan microscope using a 40x lens.

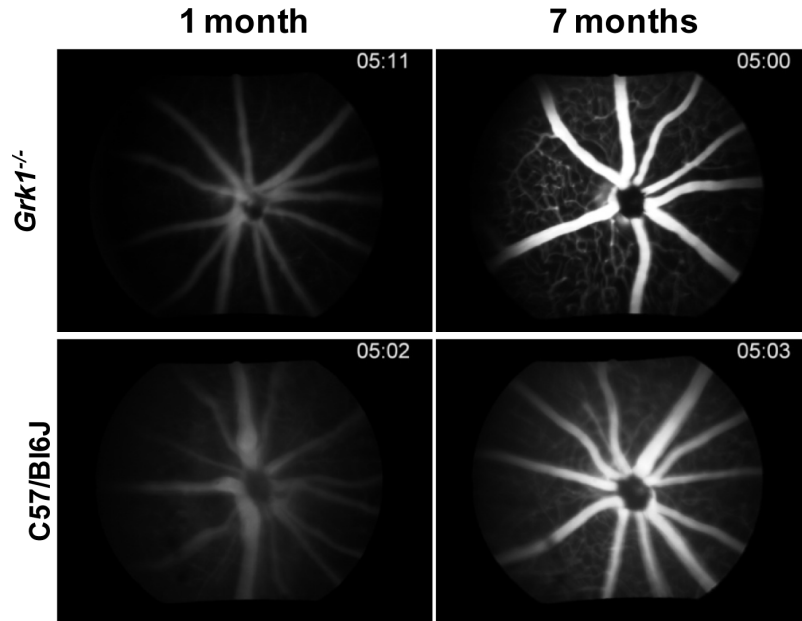


Figure S4: Fluorescein Angiography (FA) of C57/BI6J and *Grk1*^{-/-} Retinas. Images were taken of the central portion of the right eye of each animal at 1 and 7 months of age. The top panel represents *Grk1*^{-/-} mice while the bottom panel represents C57 controls. FA staining patterns show no differences in retinal vasculature between C57 and *Grk1*^{-/-} retinas at both ages examined.

Supplement Table 3: A Comprehensive List of Differentially Expressed Genes Between *Nrl*^{-/-} *Grk1*^{-/-} and *Nrl*^{-/-} Retinas

Symbol	Entrez Gene Name	ID	p-value	Fold Change
111003J19RIK	ribosomal protein S4, Y-linked 2	1452730_at	8.63E-04	-1.246
1700007L15RIK	RIKEN cDNA 1700007L15 gene	1435403_at	9.44E-04	-1.385
1700080G18RIK	RIKEN cDNA 1700080G18 gene	1430055_at	2.73E-03	-1.363
2010107G12RIK	RIKEN cDNA 2010107G12 gene	1455449_at	5.28E-05	-1.319
2310047D07RIK	RIKEN cDNA 2310047D07 gene	1458587_at	4.04E-04	-1.525
2310058N22RIK	RIKEN cDNA 2310058N22 gene	1429215_at	1.35E-03	-2.758
2810025M15RIK	RIKEN cDNA 2810025M15 gene	1428452_at	2.03E-03	-1.581
2810488G03RIK	RIKEN cDNA 2810488G03 gene	1429068_at	1.74E-03	2.927
2900006B11RIK	RIKEN cDNA 2900006B11 gene	1430253_at	1.07E-03	1.293
3100003L13RIK	RIKEN cDNA 3100003L13 gene	1432065_at	1.12E-03	1.246
4632415L05RIK	RRS1 ribosome biogenesis regulator homolog pseudogene	1419611_at	3.91E-03	-4.689
4833408G04RIK	RIKEN cDNA 4833408G04 gene	1454409_at	4.20E-03	6.083
4932415G12RIK	RIKEN cDNA 4932415G12 gene	1428376_at	8.22E-04	-1.321
4933439C10RIK	RIKEN cDNA 4933439C10 gene	1452696_a_at	2.66E-03	-1.299
4933439C20RIK	phosphatidylserine decarboxylase, pseudogene 1	1435353_a_at	6.42E-05	-3.843
5033425G24RIK	RIKEN cDNA 5033425G24 gene	1430204_at	2.95E-04	-1.452
5330438D12RIK	RIKEN cDNA 5330438D12 gene	1437265_at	1.48E-03	-1.260
5830433G22RIK	RIKEN cDNA 5830433G22 gene	1431266_at	2.83E-03	-2.202
5830469G19RIK	RIKEN cDNA 5830469G19 gene	1430089_at	3.45E-03	-1.371
6430590I03RIK	melanoma antigen family F, 1	1429479_at	4.51E-03	-1.578
6820431F20RIK	cadherin 11 pseudogene	1452997_at	4.23E-04	2.038
6820431F20RIK	cadherin 11 pseudogene	1457673_at	4.78E-04	1.521
9230114K14RIK	RIKEN cDNA 9230114K14 gene	1456643_at	4.38E-03	-1.223
9430027B09RIK	RIKEN cDNA 9430027B09 gene	1454232_at	2.64E-03	-21.358
9630005C17RIK	RIKEN cDNA 9630005C17 gene	1430268_at	3.69E-03	1.837
A2M	alpha-2-macroglobulin	1434719_at	1.91E-03	2.199
A330076H08RIK	RIKEN cDNA A330076H08 gene	1457557_at	1.69E-03	9.575
A430108E01RIK	RIKEN cDNA A430108E01 gene	1438049_at	1.84E-03	2.203
A930004D18RIK	RIKEN cDNA A930004D18 gene	1439514_at	2.49E-03	1.303
A930009L07RIK	RIKEN cDNA A930009L07 gene	1445124_at	2.33E-03	1.819
ABCB10	ATP-binding cassette, sub-family B (MDR/TAP), member 10	1416403_at	2.15E-03	-11.188
ABHD5	abhydrolase domain containing 5	1417566_at	3.15E-03	-1.843
ACTG2 (includes EG:72)	actin, gamma 2, smooth muscle, enteric	1416454_s_at	1.29E-03	4.155
ACTR1A	ARP1 actin-related protein 1 homolog A, centractin alpha (yeast)	1457970_at	1.98E-03	4.016
ADARB2	adenosine deaminase, RNA-specific, B2 (RED2 homolog rat)	1458112_at	1.22E-03	2.484
ADCY8	adenylate cyclase 8 (brain)	1418754_at	2.04E-03	1.401
AGA	aspartylglucosaminidase	1434665_at	4.10E-03	-1.778
AGBL3	ATP/GTP binding protein-like 3	1452619_a_at	3.44E-03	-1.312
AGPAT5	1-acylglycerol-3-phosphate O-acyltransferase 5 (lysophosphatidic acid acyltransferase, epsilon)	1434287_at	3.70E-03	-1.392
AGTPBP1	ATP/GTP binding protein 1	1418332_a_at	5.33E-04	1.215
AI605517	expressed sequence AI605517	1457797_at	2.29E-03	-6.042
AIFM3	apoptosis-inducing factor, mitochondrion-associated, 3	1434742_s_at	4.95E-03	1.308
AKAP9	A kinase (PRKA) anchor protein (yotiao) 9	1455151_at	3.47E-03	-1.487
AKR1B1	aldo-keto reductase family 1, member B1 (aldose reductase)	1448319_at	4.50E-04	-1.356
ALDH16A1	aldehyde dehydrogenase 16 family, member A1	1423731_at	6.70E-04	-1.487
ALS2	amyotrophic lateral sclerosis 2 (juvenile)	1417784_at	9.83E-04	-3.813
AMN1	antagonist of mitotic exit network 1 homolog (S. cerevisiae)	1453358_s_at	3.48E-03	-1.311
ANK1	ankyrin 1, erythrocytic	1419421_at	2.01E-03	1.296
ANKRD11	ankyrin repeat domain 11	1436967_at	1.28E-03	2.694
ANKRD32	ankyrin repeat domain 32	1423577_at	5.63E-04	-1.806
ANKRD6	ankyrin repeat domain 6	1437217_at	1.03E-03	1.326
ANKZF1	ankyrin repeat and zinc finger domain containing 1	1419818_x_at	1.56E-03	-1.202
ANXA1	annexin A1	1448213_at	8.48E-04	1.568
APC2	adenomatosis polyposis coli 2	1455231_s_at	4.15E-03	1.280
APCDD1	adenomatosis polyposis coli down-regulated 1	1454822_x_at	2.08E-03	1.279
APLP1	amyloid beta (A4) precursor-like protein 1	1435857_s_at	2.69E-04	1.500
APLP1	amyloid beta (A4) precursor-like protein 1	1416134_at	4.97E-03	1.630
ARFGAP1	ADP-ribosylation factor GTPase activating protein 1	1427245_at	2.66E-03	1.265
ARHGEF11	Rho guanine nucleotide exchange factor (GEF) 11	1434926_at	1.89E-04	1.232
ARHGEF17	Rho guanine nucleotide exchange factor (GEF) 17	1419938_s_at	2.14E-03	1.334
ARL6IP1	ADP-ribosylation factor-like 6 interacting protein 1	1423818_a_at	3.70E-03	1.239
ARRDC3	arrestin domain containing 3	1454617_at	3.36E-03	-1.267
ASF1B	ASF1 anti-silencing function 1 homolog B (S. cerevisiae)	1423714_at	2.63E-03	2.267
ASNS	asparagine synthetase	1451095_at	1.47E-04	-2.287
ASNS	asparagine synthetase	1433966_x_at	1.82E-04	-2.168
ATP1A1	ATPase, Na ⁺ /K ⁺ transporting, alpha 1 polypeptide	1451071_a_at	1.52E-03	1.219
AY512938	cDNA sequence AY512938	1458551_at	4.15E-03	3.468
B230114P17RIK	RIKEN cDNA B230114P17 gene	1456295_at	2.52E-03	1.328
B830008H07RIK	RIKEN cDNA B830008H07 gene	1457791_at	2.32E-03	2.341
BBS10	Bardet-Biedl syndrome 10	1430170_at	2.46E-03	-1.316
BCAT2	branched chain aminotransferase 2, mitochondrial	1425764_a_at	3.84E-03	-1.227
BPNT1	3'(2'), 5'-bisphosphate nucleotidase 1	1449211_at	2.92E-03	-1.573
BTRC	beta-transducin repeat containing	1457305_at	7.75E-04	1.478
BTRC	beta-transducin repeat containing	1446925_at	3.65E-03	-2.236
C030014A21RIK	RIKEN cDNA C030014A21 gene	1453897_at	1.81E-03	2.408
C030044B11RIK	RIKEN cDNA C030044B11 gene	1429264_at	2.25E-03	-1.250
C10ORF104	chromosome 10 open reading frame 104	1419994_s_at	2.51E-03	-1.212
C11ORF87	chromosome 11 open reading frame 87	1444026_at	3.17E-04	1.551
C12ORF4	chromosome 12 open reading frame 4	1449437_at	2.96E-03	-1.247
C14ORF149	chromosome 14 open reading frame 149	1424692_at	4.71E-03	-2.204
C16ORF80	chromosome 16 open reading frame 80	1419462_s_at	2.15E-04	-1.204
C19ORF2	chromosome 19 open reading frame 2	1433913_at	2.96E-03	-1.727
C1ORF192	chromosome 1 open reading frame 192	1429181_at	3.43E-03	-1.449
C22ORF23	chromosome 22 open reading frame 23	1422774_at	3.63E-03	-1.454
C2ORF77	chromosome 2 open reading frame 77	1454000_s_at	1.71E-03	-1.542
C4ORF47	chromosome 4 open reading frame 47	1453168_at	2.31E-05	-8.472
C8ORF41	chromosome 8 open reading frame 41	1424361_at	2.63E-03	1.440

C8ORF41	chromosome 8 open reading frame 41	1435309_at	3.77E-03	-4.650
C8ORF41	chromosome 8 open reading frame 41	1457906_at	4.23E-03	-2.414
C8ORF79	chromosome 8 open reading frame 79	1443902_at	1.94E-03	2.426
C9ORF21	chromosome 9 open reading frame 21	1434441_at	2.42E-04	-1.858
C9ORF46	chromosome 9 open reading frame 46	1460361_at	1.12E-03	-1.418
CADM1	cell adhesion molecule 1	1417378_at	1.56E-03	1.250
CADPS2	Ca++-dependent secretion activator 2	1451499_at	6.48E-04	1.815
CAMK2G	calcium/calmodulin-dependent protein kinase II gamma	1423942_a_at	1.22E-04	1.264
CAP1	CAP, adenylate cyclase-associated protein 1 (yeast)	1417461_at	2.39E-05	32.933
CAP1	CAP, adenylate cyclase-associated protein 1 (yeast)	1417462_at	4.13E-05	23.502
CAPN2	calpain 2, (mII) large subunit	1416257_at	8.03E-04	1.244
CCDC127	coiled-coil domain containing 127	1455248_at	3.39E-03	-1.547
CCDC21	coiled-coil domain containing 21	1432391_at	5.39E-05	-1.542
CCDC51	coiled-coil domain containing 51	1452891_at	1.56E-03	-1.507
CCND2	cyclin D2	1434745_at	1.33E-03	2.400
CCNG1	cyclin G1	1450017_at	4.97E-03	-1.284
CD44	CD44 molecule (Indian blood group)	1434376_at	2.96E-04	1.845
CD44	CD44 molecule (Indian blood group)	1423760_at	5.54E-04	1.758
CD47	CD47 molecule	1419554_at	1.30E-03	1.373
CD99L2	CD99 molecule-like 2	1456746_a_at	3.57E-04	-1.581
CDK2A1P1	cyclin-dependent kinase 2 associated protein 1	1435509_x_at	4.10E-03	-1.220
CELSR2	cadherin, EGF LAG seven-pass G-type receptor 2 (flamingo homolog, Drosophila)	1435336_at	2.31E-03	1.380
CH3L1	chitinase 3-like 1 (cartilage glycoprotein-39)	1451537_at	2.52E-04	1.646
CHL1	cell adhesion molecule with homology to L1CAM (close homolog of L1)	1435190_at	4.36E-03	1.472
CLN5	ceroid-lipofuscinosis, neuronal 5	1426886_at	4.42E-03	-1.220
CNOT6L	CCR4-NOT transcription complex, subunit 6-like	1451723_at	3.23E-03	-1.282
CNTNAP4	contactin associated protein-like 4	1419044_at	9.64E-04	1.422
COL4A2	collagen, type IV, alpha 2	1424051_at	3.01E-03	1.454
COPG2	coatamer protein complex, subunit gamma 2	1448761_a_at	2.59E-03	-1.304
CPNE8	copine VIII	1431146_a_at	2.87E-03	1.467
CPSF2	cleavage and polyadenylation specific factor 2, 100kDa	1431089_at	2.32E-03	-1.264
CRB1	crumbs homolog 1 (Drosophila)	1441330_at	1.03E-03	-6.324
CSF1R	colony stimulating factor 1 receptor	1419873_s_at	1.73E-03	1.354
CSF1R	colony stimulating factor 1 receptor	1419872_at	4.94E-03	1.589
CTSH	cathepsin H	1443814_x_at	1.54E-03	1.359
CWC22	CWC22 spliceosome-associated protein homolog (S. cerevisiae)	1424607_a_at	2.17E-03	-1.917
CWC22	CWC22 spliceosome-associated protein homolog (S. cerevisiae)	1424609_a_at	3.58E-03	-1.875
CYP26A1	cytochrome P450, family 26, subfamily A, polypeptide 1	1419430_at	1.80E-03	3.374
DAG1	dystroglycan 1 (dystrophin-associated glycoprotein 1)	1456131_x_at	2.87E-03	1.360
DAPK1	death-associated protein kinase 1	1426915_at	4.40E-03	1.703
DAPK1	death-associated protein kinase 1	1427358_a_at	4.73E-03	1.509
DDC2B	doublecortin domain containing 2B	1444714_at	2.18E-03	-9.736
DCTN6	dynactin 6	1416499_a_at	6.00E-04	-1.342
DFNB31	deafness, autosomal recessive 31	1436485_s_at	2.96E-03	-1.675
DHDH	dihydrodiol dehydrogenase (dimeric)	1453487_at	1.32E-03	6.802
DHRS4	dehydrogenase/reductase (SDR family) member 4	1451559_a_at	4.16E-04	-1.384
DMD	dystrophin	1417307_at	1.75E-03	-1.362
DSTN	destin (actin depolymerizing factor)	1417124_at	3.05E-03	-1.532
DTD1	D-tyrosyl-tRNA deacylase 1 homolog (S. cerevisiae)	1451040_at	1.39E-03	-1.419
DUSP19	dual specificity phosphatase 19	1448922_at	1.96E-03	-1.396
DUSP4	dual specificity phosphatase 4	1428834_at	1.40E-03	-1.475
ECE2	endothelin converting enzyme 2	1424561_at	5.38E-04	1.477
EFCA7	EF-hand calcium binding domain 7	1451349_at	4.05E-03	-1.493
EIF3E	eukaryotic translation initiation factor 3, subunit E	1460432_a_at	1.79E-03	-1.276
ELAVL1	ELAV (embryonic lethal, abnormal vision, Drosophila)-like 1 (Hu antigen R)	1440464_at	5.84E-04	-6.986
EPHA3	EPH receptor A3	1455426_at	3.74E-04	1.294
EPM2AIP1	EPM2A (laforin) interacting protein 1	1425624_at	2.29E-04	-1.838
ERAP1	endoplasmic reticulum aminopeptidase 1	1416942_at	4.33E-03	-1.517
ERI1	exoribonuclease 1	1418827_at	4.36E-03	-1.867
ERO1L	ERO1-like (S. cerevisiae)	1419029_at	4.72E-03	-1.430
ESCO1	establishment of cohesion 1 homolog 1 (S. cerevisiae)	1424324_at	2.18E-04	-6.056
ESF1	ESF1, nucleolar pre-rRNA processing protein, homolog (S. cerevisiae)	1434942_at	3.12E-04	-1.278
ESF1	ESF1, nucleolar pre-rRNA processing protein, homolog (S. cerevisiae)	1453727_at	4.45E-03	-1.799
FAM2	Fas apoptotic inhibitory molecule 2	1455410_at	4.42E-03	1.498
FAM189A1	family with sequence similarity 189, member A1	1433945_at	3.83E-03	1.926
FAM194A	family with sequence similarity 194, member A	1458320_at	5.65E-04	-1.951
FANCC	Fanconi anemia, complementation group C	1450861_at	1.60E-05	-1.690
FASN	fatty acid synthase	1423828_at	1.31E-03	1.258
FKBP9	FK506 binding protein 9, 63 kDa	1423677_at	1.02E-03	-4.767
FKBP9	FK506 binding protein 9, 63 kDa	1437687_x_at	4.93E-03	-3.196
FLYWCH1	FLYWCH-type zinc finger 1	1426982_at	3.87E-04	1.203
FNDC3B	fibronectin type III domain containing 3B	1433833_at	2.16E-03	1.252
FOXP4	forkhead box P4	1429719_at	1.45E-04	1.258
FOXP4	forkhead box P4	1431088_at	1.78E-03	1.722
FRMPD2	FERM and PDZ domain containing 2	1458506_at	1.97E-04	-1.980
FTL	ferritin, light polypeptide	1418364_a_at	1.63E-03	1.833
FUT10 (includes EG:84750)	fucosyltransferase 10 (alpha (1,3) fucosyltransferase)	1437388_at	3.29E-03	-4.601
FXDY7	FXDY domain containing ion transport regulator 7	1419200_at	2.22E-03	1.433
FZD6	frizzled homolog 6 (Drosophila)	1417301_at	3.35E-03	-2.631
G6PD	glucose-6-phosphate dehydrogenase	1422327_s_at	1.13E-03	-1.267
GAS7	growth arrest-specific 7	1417859_at	2.48E-03	-1.752
GCN1L1	GCN1 general control of amino-acid synthesis 1-like 1 (yeast)	1433713_at	2.25E-03	1.544
GLCC1	glucocorticoid induced transcript 1	1426218_at	3.71E-03	1.284
GM10374	predicted gene 10374	1436357_at	4.36E-03	-1.394
GM10397	predicted gene 10397	1435740_at	1.02E-03	1.398
GM11696	predicted gene 11696	1458888_at	6.10E-04	-1.613
GM3579	predicted gene 3579	1431214_at	1.88E-03	-3.881
GNA11	guanine nucleotide binding protein (G protein), alpha 11 (Gq class)	1434254_at	3.87E-03	1.289
GN10	guanine nucleotide binding protein (G protein), gamma 10	1450649_at	7.82E-04	1.259

GNPNAT1	glucosamine-phosphate N-acetyltransferase 1	1423158_at	3.26E-03	-1.334
GPI	glucose phosphate isomerase	1434814_x_at	3.03E-03	1.245
GPR135	G protein-coupled receptor 135	1441944_s_at	9.08E-04	-1.485
GPR135	G protein-coupled receptor 135	1459274_at	4.23E-03	-1.446
GRIA1	glutamate receptor, ionotropic, AMPA 1	1435239_at	1.95E-03	1.546
GRK1	G protein-coupled receptor kinase 1	1421361_at	9.36E-04	-72.593
GSTM4	glutathione S-transferase mu 4	1424835_at	4.74E-03	-1.339
GSTO1	glutathione S-transferase omega 1	1456036_x_at	2.09E-03	2.728
GSTO1	glutathione S-transferase omega 1	1416531_at	2.14E-03	1.904
HGSNAT	heparan-alpha-glucosaminide N-acetyltransferase	1450868_at	3.76E-03	-1.461
HIST1H1C	histone cluster 1, H1c	1436994_a_at	5.34E-04	1.644
HIST1H2BL	histone cluster 1, H2bl	1455095_at	2.20E-04	-1.631
HIST3H2A	histone cluster 3, H2a	1455712_at	3.32E-03	-1.324
HMGN5	high-mobility group nucleosome binding domain 5	1418152_at	4.54E-03	-1.227
HOMER2	homer homolog 2 (Drosophila)	1424367_x_at	2.38E-04	1.397
HPS3	Hermansky-Pudlak syndrome 3	1450647_at	3.03E-03	-1.335
HRASLS	HRAS-like suppressor	1428991_at	2.68E-04	-1.459
HUNK	hormonally up-regulated Neu-associated kinase	1418260_at	4.01E-03	1.224
IGFBP4	insulin-like growth factor binding protein 4	1437405_a_at	4.82E-04	1.451
IGFBP4	insulin-like growth factor binding protein 4	1437406_x_at	2.32E-03	1.290
IGSF3	immunoglobulin superfamily, member 3	1455049_at	3.13E-03	1.326
IL6ST	interleukin 6 signal transducer (gp130, oncostatin M receptor)	1452843_at	3.98E-03	1.282
IQGAP1	IQ motif containing GTPase activating protein 1	1417380_at	7.27E-04	1.324
IQSEC1	IQ motif and Sec7 domain 1	1452327_at	6.29E-04	1.218
IQSEC3	IQ motif and Sec7 domain 3	1437912_at	8.97E-04	1.345
ITGA6	integrin, alpha 6	1422444_at	1.45E-03	2.531
KCNAB1	potassium voltage-gated channel, shaker-related subfamily, beta member 1	1448468_a_at	1.86E-03	-1.200
KCND2	potassium voltage-gated channel, Shal-related subfamily, member 2	1422834_at	8.62E-04	1.265
KIAA1958	KIAA1958	1436852_at	4.35E-03	1.503
KIRREL	kin of IRRE like (Drosophila)	1434797_at	1.45E-03	1.442
KLHDC10	kelch domain containing 10	1433997_at	3.57E-03	1.240
KLHL23	kelch-like 23 (Drosophila)	1435743_at	4.72E-03	-1.294
KLHL36	kelch-like 36 (Drosophila)	1425123_at	3.74E-03	-1.658
KLK2	kallikrein-related peptidase 2	1425182_x_at	4.01E-05	29.665
KRT222	keratin 222	1457354_at	9.66E-04	-1.473
LAMP2	lysosomal-associated membrane protein 2	1434503_s_at	2.15E-03	1.228
LANCL3	LanC lantibiotic synthetase component C-like 3 (bacterial)	1437268_at	1.43E-04	19.525
LGALS4	lectin, galactoside-binding, soluble, 4	1451336_at	5.43E-04	3.480
LOC100131261	similar to hCG1728885	1416186_at	4.42E-03	-1.287
LOC729505	hypothetical LOC729505	1433507_x_at	9.24E-04	1.571
LRTM2	leucine-rich repeats and transmembrane domains 2	1433744_at	4.36E-03	1.404
LTBP3	latent transforming growth factor beta binding protein 3	1418049_at	4.06E-03	1.461
LYNX1	LY6/neurotoxin 1	1441952_x_at	2.09E-03	-1.894
LYPLAL1	lysophospholipase-like 1	1451490_at	1.01E-03	1.816
MAB21L2	mab-21-like 2 (C. elegans)	1418934_at	2.27E-03	1.428
MAF	v-maf musculoaponeurotic fibrosarcoma oncogene homolog (avian)	1447849_s_at	2.16E-03	1.368
MALT1	mucosa associated lymphoid tissue lymphoma translocation gene 1	1456429_at	3.45E-03	1.319
MANEAL	mannosidase, endo-alpha-like	1455202_at	3.41E-03	-1.237
MAP2K7	mitogen-activated protein kinase kinase 7	1457182_at	1.36E-03	-9.381
MAP7D2	MAP7 domain containing 2	1431403_a_at	1.77E-03	-1.396
MAPK8IP3	mitogen-activated protein kinase 8 interacting protein 3	1425975_a_at	2.72E-03	1.203
MCCC2	methylcrotonoyl-Coenzyme A carboxylase 2 (beta)	1428021_at	2.32E-03	-1.720
MFAP1	microfibrillar-associated protein 1	1449444_a_at	1.80E-03	-1.331
MGC42105	serine/threonine-protein kinase NIM1	1434297_at	2.07E-04	-1.323
MGLL	monoglyceride lipase	1426785_s_at	4.86E-03	1.575
MICAL3 (includes EG:194401)	microtubule associated monooxygenase, calponin and LIM domain containing 3	1434221_at	1.79E-04	1.363
MIOS	missing oocyte, meiosis regulator, homolog (Drosophila)	1424803_at	2.89E-04	2.488
MOGAT1	monoacylglycerol O-acyltransferase 1	1419504_at	2.54E-03	-3.350
MPHOSPH10	M-phase phosphoprotein 10 (U3 small nucleolar ribonucleoprotein)	1429080_at	5.43E-04	-1.246
MPP5	membrane protein, palmitoylated 5 (MAGUK p55 subfamily member 5)	1450113_at	1.52E-03	-1.239
MRPL45	mitochondrial ribosomal protein L45	1423492_at	4.30E-03	-1.286
MTHFS	5,10-methylenetetrahydrofolate synthetase (5-formyltetrahydrofolate cyclo-ligase)	1460257_a_at	1.72E-03	-1.363
MTMR7	myotubularin related protein 7	1447831_s_at	1.67E-03	-19.189
MTRR	5-methyltetrahydrofolate-homocysteine methyltransferase reductase	1452110_at	8.64E-05	2.083
MTUS1	microtubule associated tumor suppressor 1	1454824_s_at	6.16E-04	1.639
MYOF	myoferlin	1427318_s_at	1.72E-04	2.179
MYOM2	myomesin (M-protein) 2, 165kDa	1457435_x_at	2.13E-03	2.714
NACC2	NACC family member 2, BEN and BTB (POZ) domain containing	1429582_at	3.03E-03	1.294
NAV2 (includes EG:78286)	neuron navigator 2	1435981_at	5.84E-04	2.063
NDRG1	N-myc downstream regulated 1	1420760_s_at	3.85E-04	1.352
NDST1	N-deacetylase/N-sulfotransferase (heparan glucosaminyl) 1	1460436_at	1.91E-03	1.229
NEGR1	neuronal growth regulator 1	1456392_at	2.95E-03	-1.239
NEK3	NIMA (never in mitosis gene a)-related kinase 3	1418947_at	1.56E-03	-3.326
NFIX	nuclear factor IX (CCAAT-binding transcription factor)	1436364_x_at	1.63E-03	1.441
NFIX	nuclear factor IX (CCAAT-binding transcription factor)	1436363_a_at	2.76E-03	1.393
NHP2	NHP2 ribonucleoprotein homolog (yeast)	1416605_at	2.73E-03	-1.295
NLGN3	neuroligin 3	1436135_at	1.08E-03	1.549
NME1	non-metastatic cells 1, protein (NM23A) expressed in	1424110_a_at	1.11E-03	-2.224
NOB1	NIN1/RPN12 binding protein 1 homolog (S. cerevisiae)	1454957_at	2.97E-03	-1.221
NPH3	nephronophthisis 3 (adolescent)	1433545_s_at	1.72E-04	-1.247
NT5E	5'-nucleotidase, ecto (CD73)	1428547_at	6.86E-04	-1.304
NUDT19	nudix (nucleoside diphosphate linked moiety X)-type motif 19	1432332_a_at	2.96E-04	3.337
NUDT19	nudix (nucleoside diphosphate linked moiety X)-type motif 19	1434216_a_at	7.10E-04	7.046
NUP62	nucleoporin 62kDa	1415926_at	4.60E-03	1.972
OCIA1	OCIA domain containing 1	1424952_at	1.29E-03	3.339
OCRL	oculocerebrorenal syndrome of Lowe	1438396_at	1.83E-04	1.209
OMG	oligodendrocyte myelin glycoprotein	1418212_at	1.93E-03	1.250
OPLAH	5-oxoprolinase (ATP-hydrolysing)	1424359_at	7.53E-04	1.272
OPTN	optineurin	1435679_at	3.50E-04	-1.341

OSBPL3	oxysterol binding protein-like 3	1438724_at	2.57E-04	4.146
OSBPL6	oxysterol binding protein-like 6	1457881_at	2.22E-03	2.043
OSMR	oncostatin M receptor	1418674_at	3.56E-03	1.724
P4HA2	prolyl 4-hydroxylase, alpha polypeptide II	1417149_at	5.59E-04	1.447
PALM	paralemmin	1423967_at	3.36E-03	1.480
PAQR4	progesterin and adipoQ receptor family member IV	1423101_at	4.74E-03	-1.360
PCDHB12 (includes EG:56124)	protocadherin beta 12	1420443_at	1.69E-03	1.393
PCDHB15	protocadherin beta 15	1418941_at	3.96E-03	1.567
PCNP	PEST proteolytic signal containing nuclear protein	1452735_at	7.30E-04	1.583
PCNXL2	pecanex-like 2 (Drosophila)	1455559_at	1.04E-03	1.552
PCOLCE	procollagen C-endopeptidase enhancer	1437165_a_at	8.70E-05	2.191
PCP2	Purkinje cell protein 2	1424944_at	6.07E-04	-2.580
PEX11A	peroxisomal biogenesis factor 11 alpha	1419365_at	1.85E-03	-1.228
PFKFB2	6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 2	1422091_at	2.03E-04	-2.259
PGAP2	post-GPI attachment to proteins 2	1424614_at	1.27E-03	-1.458
PGBD5	piggyBac transposable element derived 5	1460570_at	1.54E-04	1.339
PGGT1B	protein geranylgeranyltransferase type I, beta subunit	1438230_at	1.43E-03	-1.934
PHACTR4	phosphatase and actin regulator 4	1434258_s_at	3.23E-03	1.438
PHYHD1	phytanoyl-CoA dioxygenase domain containing 1	1428394_at	2.65E-03	-1.280
PIH1D1	PIH1 domain containing 1	1452726_a_at	8.79E-04	-1.423
PK3AP1	phosphoinositide-3-kinase adaptor protein 1	1429831_at	2.20E-03	-4.017
PISD	phosphatidylserine decarboxylase	1426387_x_at	3.66E-03	-2.420
PLAGL1	pleiomorphic adenoma gene-like 1	1426208_x_at	1.55E-04	1.280
PLXNA3	plexin A3	1420996_at	2.99E-03	1.249
PLXNA4	plexin A4	1441371_at	1.49E-03	1.377
PLXNB1	plexin B1	1435254_at	3.86E-03	1.260
PNPLA6	patatin-like phospholipase domain containing 6	1416517_at	1.76E-03	1.577
POP4	processing of precursor 4, ribonuclease P/MRP subunit (S. cerevisiae)	1448419_at	1.90E-03	-2.221
PPIG	peptidylprolyl isomerase G (cyclophilin G)	1435341_at	4.13E-03	-1.218
PPM1L	protein phosphatase, Mg2+/Mn2+ dependent, 1L	1435787_at	1.28E-03	1.345
PPP1R14C	protein phosphatase 1, regulatory (inhibitor) subunit 14C	1417701_at	8.21E-04	-2.419
PPP1R3C	protein phosphatase 1, regulatory (inhibitor) subunit 3C	1433691_at	1.09E-03	2.185
PPP1	palmitoyl-protein thioesterase 1	1422467_at	1.41E-03	1.428
PRPF31	PRP31 pre-mRNA processing factor 31 homolog (S. cerevisiae)	1457083_at	2.64E-04	-1.483
PTOV1	prostate tumor overexpressed 1	1416945_at	1.81E-03	-1.685
PTPN14	protein tyrosine phosphatase, non-receptor type 14	1455359_at	2.42E-03	1.451
PTPRF	protein tyrosine phosphatase, receptor type, F	1420843_at	4.08E-03	-1.823
PTTG1	pituitary tumor-transforming 1	1424105_a_at	2.13E-06	70.022
PTTG1	pituitary tumor-transforming 1	1438390_s_at	2.85E-05	130.741
QARS	glutamyl-tRNA synthetase	1453237_at	1.54E-03	-1.851
RAI1	retinoic acid induced 1	1453200_at	4.03E-03	1.367
RAPGEF5	Rap guanine nucleotide exchange factor (GEF) 5	1455840_at	2.58E-03	-1.646
RBM45	RNA binding motif protein 45	1437904_at	1.97E-03	-12.899
RBP3	retinol binding protein 3, interstitial	1457855_at	4.93E-03	-1.206
RBPMS	RNA binding protein with multiple splicing	1455936_a_at	4.42E-03	2.459
RCOR3 (includes EG:55758)	REST corepressor 3	1428343_at	1.02E-03	1.648
RET	ret proto-oncogene	1436359_at	2.04E-03	1.672
RIOK1	RIO kinase 1 (yeast)	1440893_at	3.22E-03	-1.771
RNASE4	ribonuclease, RNase A family, 4	1422603_at	1.80E-03	1.358
RNF144B	ring finger protein 144B	1443252_at	3.46E-03	-1.203
RNF160	ring finger protein 160	1452612_at	4.39E-03	-1.263
RNLS	renalase, FAD-dependent amine oxidase	1453180_at	3.40E-03	-3.510
RPAP3	RNA polymerase II associated protein 3	1448555_at	2.29E-03	-1.244
RPH3A	rabphilin 3A homolog (mouse)	1434635_at	7.11E-04	1.331
RPS6KA4	ribosomal protein S6 kinase, 90kDa, polypeptide 4	1448498_at	4.47E-03	1.239
RRM2B	ribonucleotide reductase M2 B (TP53 inducible)	1437222_x_at	1.55E-03	-2.199
RWDD4A	RWD domain containing 4A	1424243_at	2.32E-03	1.523
RWDD4A	RWD domain containing 4A	1457983_s_at	2.57E-03	1.727
SAMD14	sterile alpha motif domain containing 14	1454630_at	2.53E-03	1.273
SAMD4A	sterile alpha motif domain containing 4A	1436356_at	4.94E-03	1.709
SCGN	secretagogin, EF-hand calcium binding protein	1451534_at	1.79E-03	1.353
SDCCAG8	serologically defined colon cancer antigen 8	1431203_at	1.51E-03	-1.589
SDF4	stromal cell derived factor 4	1448367_at	2.37E-03	-1.300
SDK2	sidekick homolog 2 (chicken)	1430425_at	3.78E-03	1.342
SENP7	SUMO1/sentrin specific peptidase 7	1436860_at	3.49E-03	1.425
SEPN1 (includes EG:57190)	selenoprotein N, 1	1426680_at	1.82E-03	1.696
SERINC4	serine incorporator 4	1426035_at	1.51E-04	-1.316
SH3RF1	SH3 domain containing ring finger 1	1445178_at	7.31E-04	1.544
SHANK2	SH3 and multiple ankyrin repeat domains 2	1442823_at	1.91E-03	1.380
SIDT2	SID1 transmembrane family, member 2	1426940_at	2.86E-03	1.235
SIRT2	sirtuin (silent mating type information regulation 2 homolog) 2 (S. cerevisiae)	1423507_a_at	5.24E-04	-1.554
SKIV2L2	superkiller viralicidal activity 2-like 2 (S. cerevisiae)	1447517_at	1.48E-04	-28.664
SLC25A32	solute carrier family 25, member 32	1453149_at	1.50E-03	-1.782
SLC26A7	solute carrier family 26, member 7	1436279_at	2.18E-03	1.829
SLC2A3	solute carrier family 2 (facilitated glucose transporter), member 3	1455898_x_at	2.61E-03	1.359
SLC41A3 (includes EG:54946)	solute carrier family 41, member 3	1425439_a_at	1.12E-04	-1.249
SLC6A17 (includes EG:388662)	solute carrier family 6, member 17	1436137_at	1.33E-03	1.293
SLC6A20	solute carrier family 6 (proline IMINO transporter), member 20	1427221_at	1.32E-05	3.117
SLC7A2	solute carrier family 7 (cationic amino acid transporter, y+ system), member 2	1436555_at	2.98E-03	1.969
SLC7A3	solute carrier family 7 (cationic amino acid transporter, y+ system), member 3	1417022_at	3.15E-03	-1.854
SLC7A6OS	solute carrier family 7, member 6 opposite strand	1429596_at	1.69E-03	-1.263
SLCQ3A1	solute carrier organic anion transporter family, member 3A1	1448918_at	4.82E-03	1.655
SMAD3	SMAD family member 3	1454960_at	3.65E-03	1.535
SMAD5	SMAD family member 5	1451873_a_at	2.29E-03	-1.723
SNAPC1	small nuclear RNA activating complex, polypeptide 1, 43kDa	1429335_at	2.72E-03	-1.574
SORBS1	sorbin and SH3 domain containing 1	1425826_a_at	5.27E-05	1.896
SORD	sorbitol dehydrogenase	1426584_a_at	2.26E-03	1.281
SPOCK1	sparc/osteonectin, cwcv and kazal-like domains proteoglycan (testican) 1	1419672_at	3.61E-03	2.226
SPON1	spondin 1, extracellular matrix protein	1441226_at	1.23E-03	1.336

SPON1	spondin 1, extracellular matrix protein	1442613_at	2.13E-03	1.668
SSR1	signal sequence receptor, alpha	1417764_at	4.59E-03	2.335
STAT1	signal transducer and activator of transcription 1, 91kDa	1440481_at	1.13E-03	1.486
STIM1	stromal interaction molecule 1	1448320_at	8.72E-04	1.267
STK3	serine/threonine kinase 3 (STE20 homolog, yeast)	1418512_at	2.65E-03	-1.268
STK35	serine/threonine kinase 35	1439802_at	3.75E-03	1.288
SURF6	surfeit 6	1416864_at	3.93E-03	-1.312
SYNJ2	synaptojanin 2	1452344_at	7.29E-05	1.216
TALDO1	transaldolase 1	1425129_a_at	2.02E-03	-1.223
TATDN3	TatD DNase domain containing 3	1428769_at	1.68E-03	-1.608
TBCE	tubulin folding cofactor E	1428282_at	8.31E-04	-1.286
TEAD1	TEA domain family member 1 (SV40 transcriptional enhancer factor)	1429556_at	1.61E-03	1.442
TGM2	transglutaminase 2 (C polypeptide, protein-glutamine-gamma-glutamyltransferase)	1455900_x_at	3.01E-03	1.483
THG1L	tRNA-histidine guanylyltransferase 1-like (S. cerevisiae)	1432393_a_at	4.62E-03	-2.627
TMM10	translocase of inner mitochondrial membrane 10 homolog (yeast)	1417499_at	3.08E-03	-1.256
TMM44	translocase of inner mitochondrial membrane 44 homolog (yeast)	1448801_a_at	3.02E-03	-1.230
TM2D2	TM2 domain containing 2	1456663_x_at	3.46E-04	-3.249
TMEM132D	transmembrane protein 132D	1446492_at	3.60E-04	1.203
TMEM136 (includes EG:23530)	transmembrane protein 136	1457701_at	2.19E-03	-1.332
TMEM158	transmembrane protein 158 (gene/pseudogene)	1428074_at	2.69E-03	-1.348
TMEM20	transmembrane protein 20	1435452_at	1.84E-03	-1.923
TMEM201	transmembrane protein 201	1454868_at	1.69E-03	1.247
TMEM30A	transmembrane protein 30A	1448339_at	6.11E-05	-1.257
TMEM60	transmembrane protein 60	1428000_at	9.68E-04	-1.240
TMEM68	transmembrane protein 68	1423649_at	6.23E-04	1.254
TMEM70	transmembrane protein 70	1424541_at	1.71E-03	-1.215
TMTC1	transmembrane and tetratricopeptide repeat containing 1	1435261_at	1.19E-03	1.502
TNK	TRAF2 and NCK interacting Kinase	1430579_at	9.50E-04	1.335
TRM3	tropomyosin 3	1427260_a_at	2.00E-03	1.256
TRAPPC5	trafficking protein particle complex 5	1448999_at	8.54E-04	-1.497
TRIP10	thyroid hormone receptor interactor 10	1418092_s_at	4.80E-03	-1.491
TRIP6	thyroid hormone receptor interactor 6	1449041_a_at	2.54E-03	1.240
TRNP1	TMF1-regulated nuclear protein 1	1453008_at	2.89E-03	1.204
TRPS1	trichorhinophalangeal syndrome I	1434286_at	3.36E-03	-1.381
TSPAN6	tetraspanin 6	1416872_at	4.02E-03	1.428
TTC28	tetratricopeptide repeat domain 28	1435456_at	5.16E-06	1.727
TTL11	tubulin tyrosine ligase-like family, member 11	1430064_at	6.37E-04	-1.435
TTR	transthyretin	1459737_s_at	1.40E-03	1.602
TTR	transthyretin	1454608_x_at	2.22E-03	1.711
TUBE1	tubulin, epsilon 1	1443481_at	7.26E-04	-1.288
UBE2F	ubiquitin-conjugating enzyme E2F (putative)	1429568_x_at	6.34E-04	-1.209
UBLCP1	ubiquitin-like domain containing CTD phosphatase 1	1429606_at	4.69E-03	3.165
UBLCP1	ubiquitin-like domain containing CTD phosphatase 1	1415790_at	4.97E-03	-1.208
UBXN4	UBX domain protein 4	1426484_at	1.38E-05	-1.244
UEVLD	UEV and lactate/malate dehydrogenase domains	1455551_at	4.05E-03	-2.574
USH1C	Usher syndrome 1C (autosomal recessive, severe)	1450001_a_at	1.19E-03	-4.839
UTP18	UTP18, small subunit (SSU) processome component, homolog (yeast)	1447266_at	3.72E-03	-3.114
VAV3	vav 3 guanine nucleotide exchange factor	1448600_s_at	2.34E-03	1.514
VPS36	vacuolar protein sorting 36 homolog (S. cerevisiae)	1424417_at	1.61E-03	-1.743
VPS37A	vacuolar protein sorting 37 homolog A (S. cerevisiae)	1429363_at	8.60E-04	2.165
WDR60	WD repeat domain 60	1436396_at	3.47E-03	1.770
WDR78	WD repeat domain 78	1434793_at	3.52E-03	-1.823
WWC2	WW and C2 domain containing 2	1448611_at	1.37E-03	-1.459
YIPF4	Yip1 domain family, member 4	1426417_at	3.40E-03	-8.031
ZDHHC17	zinc finger, DHHC-type containing 17	1458363_at	3.34E-03	-1.388
ZFP14	zinc finger protein 14 homolog (mouse)	1441619_at	4.37E-03	-1.586
ZFP36	zinc finger protein 36, C3H type, homolog (mouse)	1452519_a_at	3.27E-04	1.763
ZFP36L2	zinc finger protein 36, C3H type-like 2	1437626_at	3.94E-03	1.470
ZFP386	zinc finger protein 386 (Kruppel-like)	1451146_at	4.95E-03	-2.177
ZFP874	zinc finger protein 874	1434171_at	2.13E-04	-29.670
ZNF259	zinc finger protein 259	1419281_a_at	4.04E-03	-1.265
ZNF26	zinc finger protein 26	1444092_at	3.73E-04	-30.101
ZNF593	zinc finger protein 593	1447703_x_at	1.21E-03	-1.948
ZNF658	zinc finger protein 658	1439181_at	6.61E-04	-2.674
ZNF780B	zinc finger protein 780B	1440171_x_at	4.11E-03	1.284
ZNF99	zinc finger protein 99	1442654_at	2.34E-03	2.447
ZNF99	zinc finger protein 99	1438491_x_at	4.60E-03	1.291
ZNHIT1	zinc finger, HIT type 1	1425531_at	2.69E-03	-1.224
ZSWIM6	zinc finger, SWIM-type containing 6	1451819_at	4.43E-03	1.379