Supplement 1

Supplemental Methods and Materials

Construction of the *Clock* shRNA and AAV Purification

A small hairpin RNA (shRNA) against *Clock mRNA* was constructed by selecting a unique 24 base sequence (5'-GAACATCAGGCTATGATTACTATC-3') in the coding region of *Clock* mRNA. For the scrambled shRNA, a random sequence of 24 bases (5'-CGGAATTTAGTTACGGGGATCCAC-3') that had no sequence similarities with any known genes/mRNA was used. An antisense sequence of the selected mRNA region followed by a miR23 loop of 10 nucleotide (CTTCCTGTCA) was added at the 5'end of the above sequences. These shRNAs were designed as synthetic duplexes with overhang ends identical to those created by Sap I and Xba I restriction enzyme digestion. The annealed oligonucleotides were cloned into the adeno-associated virus (AAV) plasmid expressing enhanced green fluorescent protein (Stratagene, La Jolla, CA). Viral production was carried out using a helper-free triple transfection method in HEK 293 cells (ATCC) as described in Hommel *et al.* (1) and was purified according to Zolotukhin *et al.* (2).

Stereotaxic Surgery

Mice were anesthetized with a mixture of ketamine (50 mg/kg body weight) and xylazine (10 mg/kg body weight) in saline (0.9% NaCl). Bilateral stereotaxic injections of 1 µl of purified high titer AAV encoding scrambled or *Clock* shRNA was injected into the VTA (from bregma: angle 7^0, AP-3.2 mm, Lat +1.0, DV -4.6) using a 33 gauge hamilton syringe (Hamilton, Reno, NV). Injection speed was 0.1 µl/minute, and the needle was kept in place for an additional 5 minutes before it was slowly withdrawn. Mice recovered for two weeks in their home cage before testing.

Immunohistochemistry

Mice were anesthetized with a mixture of Nembutal (50 mg/kg) in saline, and they were perfused transcardially with 4% paraformaldehyde in 1X PBS (1 mM KH_2PO_4, 10 M Na_2HPO_4, 137 mM NaCl, 2.7 mM KCl, pH 7.4) and placed in 1X PBS-30% glycerol. 30 µm brain sections were obtained with a microtome (Leica, Wetzlar, Germany) and immunohistochemical staining was carried out using standard procedures (3). The following antibodies were used: tyrosine hydroxylase mouse monoclonal antibody (Sigma, St. Louis, MO), and GFP rabbit polyclonal antibody (AbCam, Cambridge, MA). Secondary antibodies (anti-mouse or rabbit conjugated with Alexa 488/rhodamine) were purchased from Molecular Probes (Carlsbad, CA). Brain sections were mounted using Vectashield (Vector Labs, Burlingame, CA) and observed with an epiflorescence microscope.

Validation of Injections and Infections

To identify the location of viral injection and/or EGFP expression, mice were killed after the completion of behavioral tests and the brain sections were immunostained with TH antibody and GFP. Subsequently, individual brain sections were visualized using a fluorescence microscope with 4 and 20X objectives. VTA cells showing more than 30% of EGFP co-localization with TH antibody staining were included for the analyses of different behavioral pattern. Mice (~2-3%) with injections that were visibly outside of the VTA were excluded from the study. As reported previously (4), the AAV infected only neurons and did not cause detectable toxicity.

Behavioral Measures

Locomotor Response to Novelty: Mice were individually placed in automated locomotor activity chambers equipped with infrared photobeams (San Diego Instruments, San Diego, CA) and measurements began immediately. Activity of the animal was continuously measured and the data was collected in 5-min blocks over a period of 2 hours.

Circadian Rhythms: To record the rhythm of locomotor activity, mice were individually housed in cages equipped with 12.5-cm diameter stainless steel running wheels. Wheel revolutions were registered by a microswitch mounted on the outside of the cage. Above cages were placed inside a ventilated and timer controlled lighting chambers (interior dimensions: 56 × 44 × 180 cm). Lighting within the chamber was provided by a 40 W "cool white" fluorescent light, with intensity measured at 300 to 600 lux inside the cages. Mice were maintained under a 12:12 light/dark (L/D) cycle. After collecting running wheel activity data for one week, the mice were released into constant darkness (D/D) and activity data were collected for an additional 15 days. Period and amplitude are obtained and analyzed from the activity records (actograms) using ClockLab software (Actimetrics, Wilmette, IL) (5). Recordings from individual animals during L/D and D/D portions of the experiment were analyzed separately.

Elevated Plus Maze: Mice were placed in the center of an elevated plus maze (arms are 30 × 5 cm, with 25 cm tall walls on the closed arms) under low light levels and their behavior was monitored for 5 min. The time spent on the closed and open arms, as well as the number of explorations of open and closed arms were determined by video tracking software, Ethovision 3.0 (Noldus, Leesburg, VA). Time spent on the open arm and percent of entries into the open arm are both negatively correlated with anxiety-like behavior. The apparatus was cleaned and allowed to dry between every mouse.

Dark/Light Test: The dark/light apparatus consisted of 2-chambered boxes (25 cm x 26 cm for each side, Med Associates, St. Albans, VT). One side was kept dark (room light entry limited) and the other side was brightly lit by a fluorescent bulb across the top. Mice were first placed in dark side for 2 min, then the automatic door between the compartments was opened and they were allowed to freely explore either the light or dark side for 10 min. Anxiety-like behavior was measured as the time spent in the lit side during the final 10 min.

Open Field: Mice were placed in at the periphery of an open field (44 x 44 cm, with 30 cm high wall on the periphery of the field) and allowed to explore for 5 min. Mice were tracked by video camera and time spent at the periphery (5 cm from the wall) and the center (14 x 14 cm) was calculated by video tracking software, Ethovision 3.0 (Noldus).

Forced Swim Test: The forced swim test was performed according to Krishnan *et al*., 2007 (6). Mice were videotaped while they were in a 4 liter Pyrex glass beaker containing 3 liters of water at 24 ± 1°C for 6 min. After a 2 min lead time, latency to immobility (latency) was determined as the first cessation of all movement. The videotape was scored manually by a trained and blinded observer. Total immobility was measured as the time spent without any motion except for single limb paddling to maintain flotation.

Learned Helplessness: Mice were placed in a chamber (Med Associates) where they received 2 foot shocks (5 sec duration, 0.35 mA) per min for one hour and the door of the chamber was closed so that they could not escape. After one hour they were returned to their home cage. This was repeated for 2 days. On the 3rd day the automatic door was opened simultaneously with the delivery of each foot shock (0.35 mA, 25 sec) letting the mice escape. The mice received 15 trials on the test day. The latency to escape and the number of failures was measured.

Microarray Analysis

RNA from VTA punches was isolated from 3 animals/group (*Clock* shRNA or scr shRNA). The RNA was amplified and labeled according to the manufacturer's instructions (Affymetrix, Santa Clara, CA). Affymetrix mouse genome 430A 2.0 arrays were hybridized with RNA from individual animals, washed, and scanned in our microarray facility at UT Southwestern according to the manufacturer's instructions. All arrays were normalized using the probe logarithmic intensity error estimation (PLIER) algorithm in the Genespring program. Details on

quality control measures can be found in the MIAME report, below. Comparative analysis was performed in Genespring using the Mann Whitney statistical test followed by t-tests to determine statistical significance. Genes were considered to be regulated if there was a greater than 1.36 fold change and *p* value less than 0.05 following both tests. Analysis is similar to that published in Wallace *et al*., 2009 (7). Benjamini Hochberg analysis for these arrays indicates a false discovery rate of ~0.2 and in our post hoc analysis by qPCR we found that ~90% of changes were similarly replicated.

Real Time PCR

cDNA was mixed with buffer, primers, SYBR green, and hot start Taq polymerase in a prepared master mix (Applied Biosystems, Foster City, CA). PCR reactions followed by a dissociation reaction to determine specificity of the amplified product were run on a Real-Time PCR machine (7300 Real Time PCR machine, Applied Biosystems). The amount of gene expression was quantified using the ΔΔCt method as previously described (8). A list of primers used in this study are given in Table S3.

Electrophysiology

Horizontal sections of the VTA (250 µm) were prepared with a vibratome (DTK-1000, Japan) in sucrose–artificial cerebrospinal fluid (aCSF). Slices were placed in a holding chamber and allowed to recover for at least 1 hr before being placed in the recording chamber at 32–34°C containing aCSF composed of (in mM): (128 NaCl, 3 KCl, 1.25 NaH_2PO_4, 10 D-glucose, 24 $NaHCO_3$, 2 $CaCl_2$, and 2 $MgSO_4$), (pH 7.35, 295–305 mOsm) and saturated with 95% O_2-5% CO_2. Cells were visualized using infrared differential interference contrast video microscopy. The partial access recording mode was used to measure the firing rate of VTA neurons. This recording mode was similar to one described by Han *et al.* (9). Patch pipettes (3–5 MΩ) for partial access recording were filled with an internal solution (115 mM potassium gluconate, 20

mM KCl, 10 mM HEPES, 1.0 mM EGTA, 4 mM ATP-Mg, and 0.3 mM GTP (pH 7.2, 280–290 mOsm)). After making a giga seal, the partial access recording mode was established by maintaining the giga seal and regular spontaneous spikes of VTA neurons could be seen clearly after the mode establishment. The average firing rate for each cell was recorded at 3 min after obtaining a stable baseline firing. The whole cell current-clamp recordings were performed to measure Ih current after finishing the firing rate recording. Dopamine neurons were identified electrophysiologically by the presence of an Ih current, using an 800 ms and 300 pA hyperpolarizing step from a holding potential of −70 mV. Although Ih is present in both dopamine and non-dopamine VTA neurons, previous works have suggested a high correlation between the presence of Ih and tyrosine hydroxylase, indicative of dopamine neurons (10,11)

Supplemental Results

Table S1. Genes that are significantly regulated following *Clock* knock-down in the VTA

Affy ID	Fold	Change	Symbol	Gene
1450468_at	8.502007	Up	Myoc	myocilin
1416236_a_at	6.627885	Up	Mpzl2	myelin protein zero-like 2
1416325_at	4.9057035	Up	Crisp1	cysteine-rich secretory protein 1
1422324_a_at	4.164185	Up	Pthlh	parathyroid hormone-like peptide
1424525_at	3.8077345	Up	Grp	gastrin releasing peptide
1451297_at	2.9860055	Up	Gulo	gulonolactone (L-) oxidase
1419533_at	2.8283818	Up	Nhlh1	nescient helix loop helix 1
1423171_at	2.8068814	Up	Gpr88	G-protein coupled receptor 88
1449838_at	2.7924569	Up	Crisp3	cysteine-rich secretory protein 3
1456934_at	2.7801776	Up	Calb1	calbindin 1
1437588_at	2.7762008	Up	Pou4f2	POU domain, class 4, transcription factor 2
1448738_at	2.7489667	Up	Calb1	calbindin 1
1459916_at	2.705844	Up		
1440534_at	2.7044392	Up	ENSMUSG00000056615	predicted gene, ENSMUSG00000056615
1422318_at	2.6855168	Up	Foxd4	forkhead box D4
1417262_at	2.6400938	Up	Ptgs2	prostaglandin-endoperoxide synthase 2
1418047_at	2.6122668	Up	Neurod6	neurogenic differentiation 6
1418601_at	2.5793004	Up	Aldh1a7	aldehyde dehydrogenase family 1, subfamily A7
1421855_at	2.5686846	Up	Fgl2	fibrinogen-like protein 2
1455931_at	2.567009	Up	Chrna3	cholinergic receptor, nicotinic, alpha polypeptide 3
1420799_at	2.561983	Up	LOC100047803 /// Ntsr1	similar to neurotensin receptor type 1 /// neurotensin receptor 1
1421811_at	2.5502687	Up	LOC640441 /// Thbs1	similar to thrombospondin 1 /// thrombospondin 1
1419569_a_at	2.453646	Up	Isg20	interferon-stimulated protein
1452010_at	2.450356	Up	Chrna3	cholinergic receptor, nicotinic, alpha polypeptide 3
1438483_at	2.4389315	Up	Nos1	nitric oxide synthase 1, neuronal
1442035_at	2.419081	Up	Chrna5	cholinergic receptor, nicotinic, alpha polypeptide 5
1460482_at	2.397706	Up	3110047P20Rik	RIKEN cDNA 3110047P20 gene
1443990_at	2.3600848	Up	Ntrk1	neurotrophic tyrosine kinase, receptor, type 1
1452514_a_at	2.3454661	Up	Kit	kit oncogene
1429330_at	2.3322966	Up	Gabra4	gamma-aminobutyric acid (GABA-A) receptor, subunit alpha 4
1437502_x_at	2.3252919	Up	Cd24a /// EG621324	CD24a antigen /// predicted gene, EG621324
1418734_at	2.3143573	Up	BE136769	expressed sequence BE136769

1423754_at	2.3140225	Up	Ifitm3	interferon induced transmembrane protein 3
1417504_at	2.3058531	Up	Calb1	calbindin 1
1449431_at	2.3052564	Up	Trpc6	transient receptor potential cation channel, subfamily C, member 6
1436370_at	2.2696326	Up	Gucy2c	guanylate cyclase 2c
1437932_a_at	2.2634416	Up	Cldn1	claudin 1
1423505_at	2.2450657	Up	Tagln	transgelin
1448213_at	2.2360156	Up	Anxa1	annexin A1
1433715_at	2.2167685	Up	Cpne7	copine VII
1440148_at	2.2105973	Up	Gpr6	G protein-coupled receptor 6
1449917_at	2.203227	Up	Pitx3	paired-like homeodomain transcription factor 3
1439575_at	2.197783	Up	E130009J12Rik	RIKEN cDNA E130009J12 gene
1437340_x_at	2.1867504	Up	Gkn1	gastrokine 1
1430130_at	2.168724	Up	Vwce	von Willebrand factor C and EGF domains
1423213_at	2.1667786	Up	Plxnc1	plexin C1
1448182_a_at	2.1466467	Up	Cd24a /// EG621324	CD24a antigen /// predicted gene, EG621324
1416454_s_at	2.131175	Up	Acta2	actin, alpha 2, smooth muscle, aorta
1428657_at	2.130883	Up	Rreb1	ras responsive element binding protein 1
1437029_at	2.1299975	Up	Tacr3	tachykinin receptor 3
1424113_at	2.128647	Up	Lamb1-1	laminin B1 subunit 1
1417917_at	2.1226532	Up	Cnn1	calponin 1
1437079_at	2.1214695	Up	Slc18a2	solute carrier family 18 (vesicular monoamine), member 2
1433707_at	2.1211236	Up	Gabra4	gamma-aminobutyric acid (GABA-A) receptor, subunit alpha 4
1441926_x_at	2.1167936	Up	Tmie	transmembrane inner ear
1460528_at	2.1096199	Up	4930413G21Rik	RIKEN cDNA 4930413G21 gene
1434442_at	2.1038942	Up	Stbd1	starch binding domain 1
1424114_s_at	2.0818143	Up	Lamb1-1	laminin B1 subunit 1
1436013_at	2.077168	Up	Gsg1l	GSG1-like
1430480_at	2.0743778	Up	Nub1	negative regulator of ubiquitin-like proteins 1
1429210_at	2.0743515	Up	Col23a1	collagen, type XXIII, alpha 1
1442558_at	2.0733955	Up	ENSMUSG00000072792	predicted gene, ENSMUSG00000072792
1460332_at	2.072344	Up	Pln	phospholamban
1451139_at	2.0679665	Up	Slc39a4	solute carrier family 39 (zinc transporter), member 4
1416953_at	2.057563	Up	Ctgf	connective tissue growth factor
1428812_at	2.0517435	Up	1700040L02Rik	RIKEN cDNA 1700040L02 gene
1450427_at	2.0469482	Up	Chrna6	cholinergic receptor, nicotinic, alpha polypeptide 6
1418950_at	2.040756	Up	Drd2	dopamine receptor 2
1418440_at	2.0376909	Up	Col8a1	collagen, type VIII, alpha 1

1455925_at	2.0366232	Up	A730035I17Rik /// LOC100045224	RIKEN cDNA A730035I17 gene /// similar to PR domain containing 8
1443964_at	2.0362587	Up	Tmie	transmembrane inner ear
1450803_at	2.0361693	Up	Ntf3	neurotrophin 3
1420546_at	2.0306873	Up	Th	tyrosine hydroxylase
1441223_at	2.0250852	Up	4-Mar	membrane-associated ring finger (C3HC4) 4
1437339_s_at	2.011117	Up	Pcsk5	proprotein convertase subtilisin/kexin type 5
1438851_x_at	2.0087943	Up	Cldn1	claudin 1
1424409_at	2.0052593	Up	Cldn23	claudin 23
1421854_at	1.9955586	Up	Fgl2	fibrinogen-like protein 2
1446877_at	1.991153	Up		
1440803_x_at	1.9636214	Up	Tacr3	tachykinin receptor 3
1427633_a_at	1.9606423	Up	Pappa	pregnancy-associated plasma protein A
1443139_at	1.9556761	Up		
1418697_at	1.9500623	Up	Inmt	indolethylamine N-methyltransferase
1417429_at	1.9476374	Up	Fmo1	flavin containing monooxygenase 1
1448669_at	1.937879	Up	Dkk3	dickkopf homolog 3 (Xenopus laevis)
1429887_at	1.9353999	Up	Nos1	nitric oxide synthase 1, neuronal
1419738_a_at	1.9284675	Up	Tpm2	tropomyosin 2, beta
1450750_a_at	1.9268079	Up	Nr4a2	nuclear receptor subfamily 4, group A, member 2
1429987_at	1.9204223	Up	9930013L23Rik	RIKEN cDNA 9930013L23 gene
1437996_s_at	1.9195483	Up	Cnpy1	canopy 1 homolog (zebrafish)
1435184_at	1.9132181	Up	Npr3	natriuretic peptide receptor 3
1427201_at	1.9110541	Up	Mustn1	musculoskeletal, embryonic nuclear protein 1
1416007_at	1.9035245	Up	Satb1	special AT-rich sequence binding protein 1
1460011_at	1.9017785	Up	Cyp26b1	cytochrome P450, family 26, subfamily b, polypeptide 1
1445642_at	1.9005165	Up	Lemd1	LEM domain containing 1
1445371_at	1.8934183	Up	Tmem207	Transmembrane protein 207 (Tmem207), mRNA
1433578_at	1.8898611	Up	EG545758 /// Slc10a4	predicted gene, EG545758 /// solute carrier family 10 (sodium/bile acid cotransporter family), member 4
1427401_at	1.8720524	Up	Chrna5	cholinergic receptor, nicotinic, alpha polypeptide 5
1456632_at	1.8460486	Up	Bcl11a	B-cell CLL/lymphoma 11A (zinc finger protein)
1454966_at	1.8420863	Up	Itga8	integrin alpha 8
1434025_at	1.8394747	Up		
1432591_at	1.838851	Up	Pappa	pregnancy-associated plasma protein A
1434785_at	1.8343841	Up	Cacng5	calcium channel, voltage-dependent, gamma subunit 5
1454974_at	1.8332845	Up	LOC672215 /// Ntn1	similar to Netrin-1 precursor /// netrin 1
1441729_at	1.8293824	Up		

1420512_at	1.7983209	Up	Dkk2	dickkopf homolog 2 (Xenopus laevis)
1433389_at	1.7838995	Up	Cyp4f18 /// LOC100044439	cytochrome P450, family 4, subfamily f, polypeptide 18 /// similar to cytochrome P450 CYP4F18
1460043_at	1.7811419	Up		
1435553_at	1.778185	Up	Pdzd2	PDZ domain containing 2
1456123_at	1.7775337	Up	AI481121	expressed sequence AI481121
1423551_at	1.777498	Up	Cdh13	cadherin 13
1456722_at	1.7747763	Up	Chrdl1	chordin-like 1
1430036_at	1.771898	Up	2310015B20Rik	RIKEN cDNA 2310015B20 gene
1418493_a_at	1.7710798	Up	Snca	synuclein, alpha
1443749_x_at	1.7691233	Up	Slc1a3	solute carrier family 1 (glial high affinity glutamate transporter), member 3
1455365_at	1.7658752	Up	Cdh8	cadherin 8
1455034_at	1.7657745	Up	Nr4a2	nuclear receptor subfamily 4, group A, member 2
1457072_at	1.7627686	Up	Bcl11a	B-cell CLL/lymphoma 11A (zinc finger protein)
1439808_at	1.7621288	Up	A130090K04Rik	RIKEN cDNA A130090K04 gene
1418934_at	1.7540219	Up	Mab21l2	mab-21-like 2 (C. elegans)
1451499_at	1.7526492	Up	Cadps2	Ca2+-dependent activator protein for secretion 2
1433716_x_at	1.7517176	Up	Gfra2	glial cell line derived neurotrophic factor family receptor alpha 2
1419639_at	1.7514428	Up	Efnb2	ephrin B2
1418762_at	1.7504878	Up	Cd55	CD55 antigen
1453282_at	1.7370312	Up	Cxadr	coxsackie virus and adenovirus receptor
1433529_at	1.7367507	Up	E430002G05Rik	RIKEN cDNA E430002G05 gene
1438662_at	1.7324018	Up	Ajap1	adherens junction associated protein 1
1451450_at	1.7298579	Up	2010011I20Rik	RIKEN cDNA 2010011I20 gene
1423062_at	1.7277421	Up	Igfbp3	insulin-like growth factor binding protein 3
1434802_s_at	1.7267414	Up	Ntf3	neurotrophin 3
1418868_at	1.7265222	Up	En2	engrailed 2
1419638_at	1.7229978	Up	Efnb2	ephrin B2
1424067_at	1.720637	Up	Icam1	intercellular adhesion molecule 1
1436359_at	1.713911	Up	Ret	ret proto-oncogene
1450749_a_at	1.7138649	Up	Nr4a2	nuclear receptor subfamily 4, group A, member 2
1452202_at	1.7138015	Up	Pde2a	phosphodiesterase 2A, cGMP-stimulated
1455416_at	1.7118311	Up	C130021I20Rik	Riken cDNA C130021I20 gene
1457008_at	1.7110441	Up	Chrnb4	cholinergic receptor, nicotinic, beta polypeptide 4
1416008_at	1.708343	Up	Satb1	special AT-rich sequence binding protein 1
1424679_at	1.7036554	Up	Mab21l1	mab-21-like 1 (C. elegans)
1451023_at	1.6997546	Up	Hcn3	hyperpolarization-activated, cyclic nucleotide-gated K+ 3
1448436_a_at	1.6956029	Up	Irf1	interferon regulatory factor 1

1440456_at	1.6901668	Up	Dnahc7a	dynein, axonemal, heavy chain 7A
1419085_at	1.6890106	Up	Pcp2	Purkinje cell protein 2 (L7)
1445129_at	1.6855676	Up		
1438456_at	1.6842091	Up	H13	histocompatibility 13
1449939_s_at	1.6826832	Up	Dlk1	delta-like 1 homolog (Drosophila)
1459306_at	1.6806967	Up		
1429622_at	1.677523	Up	Cand2	cullin-associated and neddylation-dissociated 2 (putative)
1416271_at	1.6755182	Up	Perp	PERP, TP53 apoptosis effector
1423422_at	1.6718394	Up	Asb4	ankyrin repeat and SOCS box-containing 4
1432556_a_at	1.6696161	Up	3100002J23Rik	RIKEN cDNA 3100002J23 gene
1455238_at	1.6693113	Up	Mum1l1	melanoma associated antigen (mutated) 1-like 1
1440911_at	1.668121	Up	Col23a1	collagen, type XXIII, alpha 1
1418847_at	1.6665175	Up	Arg2	arginase type II
1426215_at	1.6636685	Up	Ddc	dopa decarboxylase
1426340_at	1.6629692	Up	Slc1a3	solute carrier family 1 (glial high affinity glutamate transporter), member 3
1459847_x_at	1.662883	Up	Gfra2	glial cell line derived neurotrophic factor family receptor alpha 2
1453102_at	1.6613677	Up	Flrt3 /// LOC100048721	fibronectin leucine rich transmembrane protein 3 /// similar to fibronectin leucine rich transmembrane protein 3
1421595_at	1.6605097	Up	Fam184b	family with sequence similarity 184, member B
1456642_x_at	1.6554	Up	S100a10	S100 calcium binding protein A10 (calpactin)
1428444_at	1.6536677	Up	Asb2	ankyrin repeat and SOCS box-containing 2
1418957_at	1.6522067	Up	Stac	src homology three (SH3) and cysteine rich domain
1417677_at	1.6504122	Up	Opn3	opsin 3
1452473_at	1.6442739	Up	Prr15	proline rich 15
1438470_at	1.6442543	Up	Socs2	suppressor of cytokine signaling 2
1444970_at	1.6439086	Up	C79870	expressed sequence C79870
1428785_at	1.6417966	Up	Amotl1	angiomotin-like 1
1425926_a_at	1.6415231	Up	Otx2	orthodenticle homolog 2 (Drosophila)
1439568_at	1.6413953	Up	Greb1 /// LOC100045413	gene regulated by estrogen in breast cancer protein /// similar to Greb1 protein
1440177_at	1.6398797	Up	9630027E11 /// Grik3	hypothetical protein 9630027E11 /// glutamate receptor, ionotropic, kainate 3
1422642_at	1.6376499	Up	Cdc42ep3	CDC42 effector protein (Rho GTPase binding) 3
1419477_at	1.6373031	Up	Clec2d	C-type lectin domain family 2, member d
1417962_s_at	1.6361214	Up	Ghr	growth hormone receptor
1420965_a_at	1.6360092	Up	Enc1	ectodermal-neural cortex 1
1451112_s_at	1.6348406	Up	Dap	death-associated protein

1442724_at	1.6344196	Up	Dlk1	delta-like 1 homolog (Drosophila)
1417043_at	1.6278259	Up	Lcat	lecithin cholesterol acyltransferase
1459994_x_at	1.6238517	Up	Trfr2	transferrin receptor 2
1438009_at	1.622522	Up	Hist1h2ab /// Hist1h2ac /// Hist1h2ad /// Hist1h2ae /// Hist1h2ag /// Hist1h2ai /// Hist1h2an /// Hist1h2ao /// RP23-480B19.10	histone cluster 1, H2ab /// histone cluster 1, H2ac /// histone cluster 1, H2ad /// histone cluster 1, H2ae /// histone cluster 1, H2ag /// histone cluster 1, H2ai /// histone cluster 1, H2an /// histone cluster 1, H2ao /// similar to histone 2a
1439204_at	1.6223154	Up	Scn3a	sodium channel, voltage-gated, type III, alpha
1416674_at	1.6222103	Up	Ptpru	protein tyrosine phosphatase, receptor type, U
1436275_at	1.6222006	Up	Kcnip2	Kv channel-interacting protein 2
1454869_at	1.6204101	Up	Wdr40b	WD repeat domain 40B
1447182_at	1.6192892	Up	C77815	expressed sequence C77815
1427155_at	1.6101992	Up	Fchsd1	FCH and double SH3 domains 1
1455119_at	1.609856	Up	Ppapdc1a	phosphatidic acid phosphatase type 2 domain containing 1A
1455918_at	1.6089259	Up	Adrb3	adrenergic receptor, beta 3
1424367_a_at	1.6083498	Up	Homer2	homer homolog 2 (Drosophila)
1422052_at	1.6077404	Up	Cdh8	cadherin 8
1456180_at	1.6076146	Up	Rbm24	RNA binding motif protein 24
1428374_at	1.6068869	Up	Glce	glucuronyl C5-epimerase
1458814_at	1.6061257	Up	AU022855	expressed sequence AU022855
1454752_at	1.6044868	Up	Rbm24	RNA binding motif protein 24
1434470_at	1.6034775	Up	Syt13	synaptotagmin XIII
1453093_at	1.6018263	Up	Rasgef1c	RasGEF domain family, member 1C
1422037_at	1.6010566	Up	Dlx3	distal-less homeobox 3
1436853_a_at	1.5954702	Up	Snca	synuclein, alpha
1436182_at	1.5949404	Up		
1455970_at	1.5940446	Up		
1460159_at	1.5937691	Up	Mysm1	myb-like, SWIRM and MPN domains 1
1434828_at	1.5935757	Up	Fam102b	family with sequence similarity 102, member B
1434685_at	1.58843	Up	D3Bwg0562e	DNA segment, Chr 3, Brigham & Women's Genetics 0562 expressed
1459894_at	1.5869296	Up	Iqgap2	IQ motif containing GTPase activating protein 2
1438133_a_at	1.58072	Up	Cyr61	cysteine rich protein 61
1433987_at	1.580328	Up	Hpcal4	hippocalcin-like 4
1422109_at	1.580049	Up	Rfx1	regulatory factor X, 1 (influences HLA class II expression)
1435125_at	1.5789719	Up		
1457347_at	1.5789703	Up	Ryr1	ryanodine receptor 1, skeletal muscle
1452407_at	1.576035	Up	Spag4	sperm associated antigen 4
1438575_a_at	1.575552	Up		

1458366_at	1.5728172	Up	Asxl2	Additional sex combs like 2 (Drosophila), mRNA (cDNA clone MGC:176101 IMAGE:9055752)
1450700_at	1.5723724	Up	Cdc42ep3	CDC42 effector protein (Rho GTPase binding) 3
1451775_s_at	1.5721519	Up	Il13ra1	interleukin 13 receptor, alpha 1
1433854_at	1.5714246	Up	Tmem164	CDNA clone IMAGE:6815971
1431751_a_at	1.5708989	Up	Mpped2	metallophosphoesterase domain containing 2
1453772_at	1.5689534	Up	Syngr1	synaptogyrin 1
1449241_at	1.5672234	Up	Klhl1	kelch-like 1 (Drosophila)
1415972_at	1.5636109	Up	Marcks	myristoylated alanine rich protein kinase C substrate
1454622_at	1.5635604	Up	Slc38a5	solute carrier family 38, member 5
1430210_at	1.5630816	Up	C330024D12Rik	RIKEN cDNA C330024D12 gene
1435285_at	1.5622306	Up	Mpped2	metallophosphoesterase domain containing 2
1455247_at	1.560091	Up	Amotl1	angiomotin-like 1
1434098_at	1.56009	Up	Glra2	glycine receptor, alpha 2 subunit
1450852_s_at	1.5590885	Up	F2r	coagulation factor II (thrombin) receptor
1419156_at	1.5586221	Up	Sox4	SRY-box containing gene 4
1417676_a_at	1.5579439	Up	Ptpro	protein tyrosine phosphatase, receptor type, O
1424445_at	1.5575364	Up	Tm4sf5	transmembrane 4 superfamily member 5
1416762_at	1.5568894	Up	S100a10	S100 calcium binding protein A10 (calpactin)
1449843_at	1.5567697	Up	St8sia2	ST8 alpha-N-acetyl-neuraminide alpha-2,8-sialyltransferase 2
1419968_at	1.5565042	Up	C77370	expressed sequence C77370
1450967_at	1.5541344	Up	Ptplad2	protein tyrosine phosphatase-like A domain containing 2
1457046_s_at	1.5536314	Up	C77370	expressed sequence C77370
1428765_at	1.5528535	Up	Meg3	maternally expressed 3
1417109_at	1.5527397	Up	Tinagl1	tubulointerstitial nephritis antigen-like 1
1455735_at	1.5524896	Up	Ap1s3	adaptor-related protein complex AP-1, sigma 3
1451583_a_at	1.5523838	Up	Mmgt2	membrane magnesium transporter 2
1447707_s_at	1.550929	Up	Pde2a	phosphodiesterase 2A, cGMP-stimulated
1440683_at	1.5485262	Up	A930004D18Rik	RIKEN cDNA A930004D18 gene
1448169_at	1.5472023	Up	Krt18	keratin 18
1428927_at	1.5455942	Up	Shq1	SHQ1 homolog (S. cerevisiae)
1433885_at	1.5440698	Up	Iqgap2	IQ motif containing GTPase activating protein 2
1449154_at	1.5410964	Up	Col11a1	collagen, type XI, alpha 1
1433575_at	1.5405136	Up	Sox4	SRY-box containing gene 4
1439794_at	1.540297	Up		
1428861_at	1.5398382	Up	Filip1l	filamin A interacting protein 1-like
1446791_at	1.5387299	Up		

1451863_at	1.5380356	Up	Uts2r	urotensin 2 receptor
1454783_at	1.5372832	Up	Il13ra1	interleukin 13 receptor, alpha 1
1428021_at	1.5368217	Up	Mccc2	methylcrotonoyl-Coenzyme A carboxylase 2 (beta)
1437417_s_at	1.5364466	Up	Gpc6 /// LOC100045283	glypican 6 /// similar to Glypican 6
1450061_at	1.5364088	Up	Enc1	ectodermal-neural cortex 1
1427107_at	1.5360421	Up	Slc16a11	solute carrier family 16 (monocarboxylic acid transporters), member 11
1459665_s_at	1.5357426	Up	Mrvi1	MRV integration site 1
1437034_x_at	1.5323119	Up	Marcks	myristoylated alanine rich protein kinase C substrate
1438257_at	1.5319103	Up		
1455540_at	1.53174	Up	Cps1	carbamoyl-phosphate synthetase 1
1440589_at	1.5314581	Up		
1416025_at	1.5308375	Up	Fgg	fibrinogen, gamma polypeptide
1425470_at	1.5307047	Up		
1449178_at	1.5302672	Up	Pdlim3	PDZ and LIM domain 3
1417704_a_at	1.529264	Up	Arhgap6	Rho GTPase activating protein 6
1425175_at	1.5290182	Up	C1ql3	C1q-like 3
1457823_at	1.5284975	Up	Cyr61	cysteine rich protein 61
1434583_at	1.5245005	Up	Tmem26	transmembrane protein 26
1452148_at	1.5241073	Up	Lrpap1	low density lipoprotein receptor-related protein associated protein 1
1431617_at	1.521239	Up	4933405E24Rik	RIKEN cDNA 4933405E24 gene
1438841_s_at	1.5208722	Up	Arg2	arginase type II
1417312_at	1.5202004	Up	Dkk3	dickkopf homolog 3 (Xenopus laevis)
1433944_at	1.5194346	Up	Hectd2	HECT domain containing 2
1442555_at	1.5175948	Up	Kcnd3	potassium voltage-gated channel, Shal-related family, member 3
1423812_s_at	1.51685	Up	AW146242	expressed sequence AW146242
1459993_at	1.5161444	Up		
1446389_at	1.5160809	Up		
1453172_at	1.5150595	Up	Hspa13	heat shock protein 70 family, member 13
1442166_at	1.5137258	Up	Cpne5	copine V
1440487_at	1.5133146	Up	Dcc	deleted in colorectal carcinoma
1445576_at	1.5108254	Up	Rsph10b2	radial spoke head 10 homolog B (Chlamydomonas)
1418257_at	1.5090921	Up	Slc12a7	solute carrier family 12, member 7
1437226_x_at	1.5084283	Up	Marcksl1	MARCKS-like 1
1441572_at	1.5067456	Up	Dcc	deleted in colorectal carcinoma
1456512_at	1.5059689	Up	Pdzrn4	PDZ domain containing RING finger 4
1417263_at	1.5059327	Up	Ptgs2	prostaglandin-endoperoxide synthase 2
1425381_a_at	1.5059073	Up	Trfr2	transferrin receptor 2
1438576_x_at	1.5055757	Up		
1417022_at	1.5052674	Up	Slc7a3	solute carrier family 7 (cationic amino acid

				transporter, y+ system), member 3
1454806_at	1.5044953	Up	Fam49a	family with sequence similarity 49, member B
1424807_at	1.5032468	Up	Lama4	laminin, alpha 4
1456247_x_at	1.502681	Up	Plp2	proteolipid protein 2
1437522_x_at	1.5023501	Up	Gh	growth hormone
1437631_at	1.5019226	Up	Kcnip4	Kv channel interacting protein 4
1437405_a_at	1.5003332	Up	Igfbp4	insulin-like growth factor binding protein 4
1433607_at	1.500161	Up	Cbln4	cerebellin 4 precursor protein
1458692_at	1.4993296	Up		
1421422_at	1.4992616	Up	5033411D12Rik	RIKEN cDNA 5033411D12 gene
1455489_at	1.4991502	Up	Lrrtm2	leucine rich repeat transmembrane neuronal 2
1418497_at	1.499058	Up	Fgf13	fibroblast growth factor 13
1429402_at	1.4986705	Up	Glt8d2	glycosyltransferase 8 domain containing 2
1450139_at	1.4986243	Up	Ern2	endoplasmic reticulum (ER) to nucleus signalling 2
1426353_at	1.4985538	Up	Stat6	signal transducer and activator of transcription 6
1428647_at	1.4981245	Up	LOC676870 /// Pbx1	region containing RIKEN cDNA 2310056B04 gene; pre B-cell leukemia transcription factor 1 /// pre B-cell leukemia transcription factor 1
1449158_at	1.4980116	Up	Kcnk2	potassium channel, subfamily K, member 2
1428994_s_at	1.4978852	Up	1110017I16Rik	RIKEN cDNA 1110017I16 gene
1433306_at	1.4968022	Up	4930456K20Rik	RIKEN cDNA 4930456K20 gene
1427511_at	1.496412	Up		
1439006_x_at	1.4950204	Up	Fam70a	family with sequence similarity 70, member A
1425078_x_at	1.4946569	Up	C130026I21Rik /// LOC100041885	RIKEN cDNA C130026I21 gene /// similar to C130026I21Rik protein
1444840_at	1.493143	Up	C87487	expressed sequence C87487
1429298_at	1.492103	Up	Ddah1	dimethylarginine dimethylaminohydrolase 1
1427247_at	1.4915609	Up	D3Bwg0562e	DNA segment, Chr 3, Brigham & Women's Genetics 0562 expressed
1438379_x_at	1.4912577	Up	2310007F21Rik	RIKEN cDNA 2310007F21 gene
1427312_at	1.4908887	Up	Cmya5	cardiomyopathy associated 5
1455234_at	1.4907293	Up	B3galt1	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase, polypeptide 1
1436821_at	1.4907205	Up	Plcxd3	phosphatidylinositol-specific phospholipase C, X domain containing 3
1444558_at	1.4904909	Up		
1428319_at	1.4903791	Up	Pdlim7	PDZ and LIM domain 7
1446828_at	1.4870532	Up		
1435190_at	1.4867765	Up	Chl1	cell adhesion molecule with homology to L1CAM
1426758_s_at	1.4856683	Up	Meg3	maternally expressed 3

1424030_at	1.4853804	Up	Grhl1 /// LOC100043996	grainyhead-like 1 (Drosophila) /// similar to Grhl1 protein
1453418_at	1.4850934	Up	Col24a1	collagen, type XXIV, alpha 1
1438310_at	1.4840958	Up		
1448216_at	1.4828877	Up	Syngr3	synaptogyrin 3
1422692_at	1.481833	Up	Sub1	SUB1 homolog (S. cerevisiae)
1456596_at	1.4787209	Up	Fam70a	family with sequence similarity 70, member A
1442101_at	1.478417	Up	Elfn1	leucine rich repeat and fibronectin type III, extracellular 1
1423852_at	1.4768808	Up	Shisa2	shisa homolog 2 (Xenopus laevis)
1441384_at	1.4759248	Up	Gadl1	glutamate decarboxylase-like 1
1434857_at	1.4757786	Up	A230106D06Rik	RIKEN cDNA A230106D06 gene
1430230_at	1.4757309	Up	Rcsd1	RCSD domain containing 1
1446952_at	1.4751726	Up	D11Ertd506e	DNA segment, Chr 11, ERATO Doi 506, expressed
1416098_at	1.4731517	Up	Syngr3	synaptogyrin 3
1426756_at	1.4721859	Up	Galnt2	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase 2
1456197_x_at	1.4713638	Up	Ajap1	Adherens junction associated protein 1, mRNA (cDNA clone MGC:182386 IMAGE:9056280)
1442609_at	1.4704452	Up		
1452415_at	1.4693041	Up	Actn1	actinin, alpha 1
1428074_at	1.4680412	Up	Tmem158	transmembrane protein 158
1439777_at	1.4669615	Up	Cugbp2	CUG triplet repeat, RNA binding protein 2
1428499_at	1.4669166	Up	2810454L23Rik	RIKEN cDNA 2810454L23 gene
1435627_x_at	1.466194	Up	668321 /// Marcksl1	predicted gene, 668321 /// MARCKS-like 1
1458349_s_at	1.4658045	Up		
1439888_at	1.4653491	Up		
1427413_a_at	1.4651767	Up	Cugbp1	CUG triplet repeat, RNA binding protein 1
1432509_at	1.4626149	Up	5033430I15Rik	RIKEN cDNA 5033430I15 gene
1443567_at	1.4616401	Up	BC032203	cDNA sequence BC032203
1434115_at	1.4598144	Up	Cdh13	cadherin 13
1424145_at	1.4585243	Up	Prr3	proline-rich polypeptide 3
1443408_at	1.4582673	Up		
1438968_x_at	1.4576685	Up	Spint2	serine protease inhibitor, Kunitz type 2
1419710_at	1.4573756	Up	Nxph3	neurexophilin 3
1418301_at	1.4567301	Up	Irf6	interferon regulatory factor 6
1436260_at	1.4564286	Up		
1447795_at	1.4559544	Up	Bspry	B-box and SPRY domain containing
1440468_at	1.454797	Up	D630023F18Rik	RIKEN cDNA D630023F18 gene
1455701_at	1.4521872	Up	Snx26	sorting nexin 26
1429790_at	1.4520029	Up	Brunol6	bruno-like 6, RNA binding protein (Drosophila)

1456937_at	1.4518137	Up	Cdh26	cadherin-like 26
1426231_at	1.4499255	Up	Vit	vitrin
1424356_a_at	1.449864	Up	Metrnl	meteorin, glial cell differentiation regulator-like
1436465_at	1.4495344	Up	Klhl1	kelch-like 1 (Drosophila)
1417377_at	1.4492843	Up	Cadm1	cell adhesion molecule 1
1453354_at	1.4484876	Up	Ndufs1	NADH dehydrogenase (ubiquinone) Fe-S protein 1
1425374_at	1.4483262	Up	Oas3	2'-5' oligoadenylate synthetase 3
1424958_at	1.4482144	Up	Car8 /// LOC676792	carbonic anhydrase 8 /// similar to Carbonic anhydrase-related protein (CARP) (CA-VIII)
1426864_a_at	1.4472594	Up	Ncam1	neural cell adhesion molecule 1
1458834_at	1.4467461	Up		
1435415_x_at	1.4462866	Up	Marcksl1	MARCKS-like 1
1447769_x_at	1.4456441	Up	Amigo2	adhesion molecule with Ig like domain 2
1454926_at	1.445626	Up	Sphkap	SPHK1 interactor, AKAP domain containing
1456357_at	1.4454665	Up	A930041I02Rik	RIKEN cDNA A930041I02 gene
1451867_x_at	1.4450359	Up	Arhgap6	Rho GTPase activating protein 6
1439334_at	1.4449083	Up		
1451021_a_at	1.4445472	Up	Klf5	Kruppel-like factor 5
1450757_at	1.4437927	Up	Cdh11	cadherin 11
1440118_at	1.4437672	Up	Slc25a39	solute carrier family 25, member 39
1448594_at	1.4436008	Up	Wisp1	WNT1 inducible signaling pathway protein 1
1417741_at	1.4427385	Up	Pygl	liver glycogen phosphorylase
1435805_at	1.4408371	Up	Lin7a	lin-7 homolog A (C. elegans)
1443392_at	1.4400741	Up	Trpv1	transient receptor potential cation channel, subfamily V, member 1
1452731_x_at	1.4398159	Up	100041195 /// 100041874 /// 100042164 /// 666442 /// 666637 /// B930046C15Rik /// ENSMUSG00000063277 /// ENSMUSG00000068790 /// ENSMUSG00000072735 /// LOC100036568 /// LOC100041530 /// LOC671957	predicted gene, 100041195 /// predicted gene, 100041874 /// predicted gene, 100042164 /// predicted gene, 666442 /// predicted gene, 666637 /// RIKEN cDNA B930046C15 gene /// predicted gene, ENSMUSG00000063277 /// predicted gene, ENSMUSG00000068790 /// predicted gene, ENSMUSG00000072735 /// hypothetical LOC100036568 /// similar to 1700001E04Rik protein /// hypothetical protein LOC671957
1455056_at	1.4392586	Up	Lmo7	LIM domain only 7
1447708_x_at	1.43884	Up	Pde2a	phosphodiesterase 2A, cGMP-stimulated
1442273_at	1.4387869	Up	4932413O14Rik	RIKEN cDNA 4932413O14 gene
1442614_at	1.4386626	Up	Il1rap	interleukin 1 receptor accessory protein
1449876_at	1.438583	Up	Prkg1	protein kinase, cGMP-dependent, type I

1425163_at	1.4379032	Up	AI661453	expressed sequence AI661453
1451335_at	1.4378779	Up	Plac8	placenta-specific 8
1418298_s_at	1.4365002	Up	Dpysl4	dihydropyrimidinase-like 4
1423478_at	1.436329	Up	Prkcb	protein kinase C, beta
1438344_at	1.4359518	Up	4833424O15Rik	RIKEN cDNA 4833424O15 gene
1423602_at	1.4352864	Up	Traf1	Tnf receptor-associated factor 1
1423456_at	1.4350133	Up	Bzw2	basic leucine zipper and W2 domains 2
1442261_at	1.434876	Up	Gpr150	G protein-coupled receptor 150
1425901_at	1.4337589	Up	Nfatc2	nuclear factor of activated T-cells, cytoplasmic, calcineurin-dependent 2
1427318_s_at	1.4331636	Up	Myof	myoferlin
1447825_x_at	1.4317456	Up	Pcdh8	protocadherin 8
1423420_at	1.4315784	Up	Adrb1	adrenergic receptor, beta 1
1454193_at	1.4307438	Up	5430401H09Rik	RIKEN cDNA 5430401H09 gene
1417680_at	1.4306799	Up	Kcna5	potassium voltage-gated channel, shaker-related subfamily, member 5
1453424_at	1.429785	Up	Fyco1	FYVE and coiled-coil domain containing 1
1445110_at	1.4274068	Up		
1441997_at	1.4268777	Up	Zfp184	zinc finger protein 184 (Kruppel-like)
1428301_at	1.426676	Up	100041195 /// 100041874 /// 544988 /// 666442 /// 666637 /// ENSMUSG00000063277 /// ENSMUSG00000068790 /// ENSMUSG00000072735 /// LOC100036568 /// LOC671957	predicted gene, 100041195 /// predicted gene, 100041874 /// predicted gene, 544988 /// predicted gene, 666442 /// predicted gene, 666637 /// predicted gene, ENSMUSG00000063277 /// predicted gene, ENSMUSG00000068790 /// predicted gene, ENSMUSG00000072735 /// hypothetical LOC100036568 /// hypothetical protein LOC671957
1452207_at	1.4266478	Up	Cited2	Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 2
1418286_a_at	1.4256914	Up	Efnb1	ephrin B1
1441396_at	1.424596	Up	B3galt1	UDP-Gal:betaGlcNAc beta 1,3-galactosyltransferase, polypeptide 1
1424041_s_at	1.424479	Up	C1s /// LOC100044326	complement component 1, s subcomponent /// similar to Complement component 1, s subcomponent
1434146_at	1.4240093	Up	Gria2	glutamate receptor, ionotropic, AMPA2 (alpha 2)
1422631_at	1.4238509	Up	Ahr	aryl-hydrocarbon receptor
1443982_at	1.4231638	Up	Rgnef	Rho-guanine nucleotide exchange factor (Rgnef), mRNA
1424694_at	1.4230363	Up	2010011I20Rik	RIKEN cDNA 2010011I20 gene
1423166_at	1.4226451	Up	Cd36	CD36 antigen
1454877_at	1.4225385	Up	Sertad4	SERTA domain containing 4
1434889_at	1.4225011	Up	Plekha7	pleckstrin homology domain containing, family A member 7
1431146_a_at	1.4217652	Up	Cpne8	copine VIII
1441288_at	1.4217168	Up		

1426363_x_at	1.421227	Up	H2afy2	H2A histone family, member Y2
1438132_at	1.4206125	Up	C030005G22Rik	RIKEN cDNA C030005G22 gene
1455172_at	1.4201072	Up	AU020094	expressed sequence AU020094
1417795_at	1.4198594	Up	Chl1	cell adhesion molecule with homology to L1CAM
1430785_at	1.419306	Up	Sdr9c7	4short chain dehydrogenase/reductase family 9C, member 7
1417561_at	1.4190549	Up	Apoc1	apolipoprotein C-I
1434438_at	1.4182289	Up	Samhd1	SAM domain and HD domain, 1
1435560_at	1.4181749	Up	Itgal	integrin alpha L
1457671_at	1.4176599	Up	9330120H11Rik	RIKEN cDNA 9330120H11 gene
1425878_at	1.4172931	Up	Cabp4	calcium binding protein 4
1435424_x_at	1.4160658	Up		
1417051_at	1.4147162	Up	Pcdh8	protocadherin 8
1420377_at	1.4145503	Up	St8sia2	ST8 alpha-N-acetyl-neuraminide alpha-2,8-sialyltransferase 2
1446884_at	1.4144003	Up	AU022554	expressed sequence AU022554
1428642_at	1.414232	Up	Slc35d3	solute carrier family 35, member D3
1426973_at	1.414088	Up	Gpr153	G protein-coupled receptor 153
1433434_at	1.4135543	Up	AW551984	expressed sequence AW551984
1423033_at	1.4122103	Up	Stt3a	STT3, subunit of the oligosaccharyltransferase complex, homolog A (S. cerevisiae)
1439697_at	1.4118327	Up	Il1rap	interleukin 1 receptor accessory protein
1419302_at	1.4117737	Up	Heyl	hairy/enhancer-of-split related with YRPW motif-like
1429209_at	1.4114347	Up	Col23a1	collagen, type XXIII, alpha 1
1460028_at	1.4109973	Up	Grip2	glutamate receptor interacting protein 2
1458397_at	1.4088435	Up	622208	predicted gene, 622208
1456874_at	1.4083447	Up	Flrt2	fibronectin leucine rich transmembrane protein 2
1452480_at	1.4080709	Up	4930529M08Rik	RIKEN cDNA 4930529M08 gene
1421129_a_at	1.4075565	Up	Atp2a3	ATPase, Ca++ transporting, ubiquitous
1443906_at	1.4073391	Up	Cd55	CD55 antigen
1447873_x_at	1.4065794	Up	Bid	BH3 interacting domain death agonist
1436304_at	1.4064412	Up	C030003D03Rik	RIKEN cDNA C030003D03 gene
1457345_at	1.4060882	Up		
1423753_at	1.4054184	Up	Bambi	BMP and activin membrane-bound inhibitor, homolog (Xenopus laevis)
1447819_x_at	1.4048563	Up	Col8a1	collagen, type VIII, alpha 1
1422465_a_at	1.4040818	Up	Nxn	nucleoredoxin
1444232_at	1.4037651	Up	Prkg1	protein kinase, cGMP-dependent, type I
1426174_s_at	1.4036258	Up	Igh-3 /// Ighg	immunoglobulin heavy chain 3 (serum IgG2b) /// Immunoglobulin heavy chain (gamma polypeptide)
1435850_at	1.4032999	Up	Xkr4	MKIAA1889 protein

1442272_at	1.4029396	Up		
1456700_x_at	1.4026469	Up	Marcks	myristoylated alanine rich protein kinase C substrate
1419109_at	1.402431	Up	Hrc	histidine rich calcium binding protein
1458332_x_at	1.4014657	Up	Sox4	SRY-box containing gene 4
1456387_at	1.3999523	Up	Nol4	nucleolar protein 4
1451935_a_at	1.3991067	Up	Spint2	serine protease inhibitor, Kunitz type 2
1429269_at	1.3988593	Up	BC068157	cDNA sequence BC068157
1417272_at	1.3986429	Up	Fam114a1	family with sequence similarity 114, member A1
1425176_at	1.3984948	Up	C1ql3	C1q-like 3
1438981_at	1.398392	Up		
1456883_at	1.3981694	Up	Stox1	storkhead box 1
1443560_at	1.3978887	Up	ENSMUSG00000078444	predicted gene, ENSMUSG00000078444
1425697_at	1.3973627	Up	Sdccag1	serologically defined colon cancer antigen 1
1418507_s_at	1.3969234	Up	Socs2	suppressor of cytokine signaling 2
1453510_s_at	1.396915	Up	Fam184a	family with sequence similarity 184, member A
1455200_at	1.3967186	Up	Pak6	p21 (CDKN1A)-activated kinase 6
1425876_a_at	1.3958808	Up	Glce	glucuronyl C5-epimerase
1443007_at	1.3956964	Up		
1428585_at	1.395267	Up	Actn1	actinin, alpha 1
1417559_at	1.3947008	Up	Sfxn1	sideroflexin 1
1445524_at	1.3946935	Up		
1417376_a_at	1.3944135	Up	Cadm1	cell adhesion molecule 1
1459564_at	1.3942895	Up	1E+08	predicted gene, 100043819
1431236_at	1.3925279	Up	Stk32b	serine/threonine kinase 32B
1430520_at	1.3921043	Up	Cpne8	copine VIII
1433950_at	1.3920764	Up	Igsf21	immunoglobin superfamily, member 21
1456261_at	1.3917334	Up	Sh3kbp1	SH3-domain kinase binding protein 1
1421556_at	1.3913864	Up	Serpina3a	serine (or cysteine) peptidase inhibitor, clade A, member 3A
1429725_at	1.3913757	Up	Zfhx3	zinc finger homeobox 3
1459439_at	1.3904827	Up	Mrps5	mitochondrial ribosomal protein S5
1449290_at	1.3901896	Up	Dpysl5	dihydropyrimidinase-like 5
1446754_a_at	1.3894461	Up	Vax2os1	Vax2 opposite strand transcript 1
1437371_at	1.3878278	Up	Fam160a1	family with sequence similarity 160, member A1
1434170_at	1.3868997	Up	Wdr40b	WD repeat domain 40B
1418509_at	1.3866204	Up	Cbr2	carbonyl reductase 2
1453446_at	1.3848702	Up	6430411K18Rik	RIKEN cDNA 6430411K18 gene
1460244_at	1.3846155	Up	Upb1	ureidopropionase, beta
1417001_a_at	1.384605	Up	D4Wsu53e	DNA segment, Chr 4, Wayne State University 53, expressed

1424245_at	1.3845197	Up	Ces2 /// ENSMUSG00000031884	carboxylesterase 2 /// predicted gene, ENSMUSG00000031884
1435409_at	1.3843749	Up		
1437393_at	1.3840691	Up	Prkca	protein kinase C, alpha
1437197_at	1.3838333	Up	Sorbs2	sorbin and SH3 domain containing 2
1418770_at	1.3837955	Up	Cd2	CD2 antigen
1449239_at	1.3830386	Up	1700045I19Rik	RIKEN cDNA 1700045I19 gene
1415971_at	1.3828074	Up	Marcks	myristoylated alanine rich protein kinase C substrate
1454741_s_at	1.382287	Up	Tmem164	transmembrane protein 164
1455447_at	1.3817693	Up	D430019H16Rik	RIKEN cDNA D430019H16 gene
1460292_a_at	1.3816053	Up	Smarca1	SWI/SNF related, matrix associated, actin dependent regulator of chromatin, subfamily a, member 1
1421261_at	1.3816034	Up	Lipg	lipase, endothelial
1454995_at	1.3807461	Up		
1427280_at	1.3806566	Up	Scn2a1	sodium channel, voltage-gated, type II, alpha 1
1453444_at	1.3800524	Up	5730437C12Rik	RIKEN cDNA 5730437C12 gene
1433154_at	1.3797706	Up	B230204H03Rik	RIKEN cDNA B230204H03 gene
1417560_at	1.3797407	Up	Sfxn1	sideroflexin 1
1423730_at	1.3789948	Up	Clptm1l	CLPTM1-like
1420981_a_at	1.3786819	Up	Lmo4	LIM domain only 4
1418451_at	1.3783891	Up	Gng2	guanine nucleotide binding protein (G protein), gamma 2
1455096_at	1.377683	Up	Flrt2	fibronectin leucine rich transmembrane protein 2
1444495_at	1.3775945	Up		
1447527_at	1.3773663	Up		
1454136_a_at	1.3772463	Up	4921524J17Rik	RIKEN cDNA 4921524J17 gene
1426124_a_at	1.3771917	Up	Clk1	CDC-like kinase 1
1434494_at	1.3763491	Up	Zar1	zygote arrest 1
1431080_at	1.3756305	Up	Galntl6	UDP-N-acetyl-alpha-D-galactosamine:polypeptide N-acetylgalactosaminyltransferase-like 6
1434275_at	1.3755267	Up	Nkd2	naked cuticle 2 homolog (Drosophila)
1426471_at	1.3751547	Up	Zfp52	zinc finger protein 52
1415973_at	1.3742394	Up	Marcks	myristoylated alanine rich protein kinase C substrate
1443817_x_at	1.3737491	Up	Nkx2-6	NK2 transcription factor related, locus 6 (Drosophila)
1456127_at	1.3731071	Up	Cnpy1	canopy 1 homolog (zebrafish)
1453192_at	1.372555	Up	Fam101a	family with sequence similarity 101, member A
1436410_at	1.3718975	Up	Gm941	gene model 941, (NCBI)
1449109_at	1.3713565	Up	Socs2	suppressor of cytokine signaling 2
1443578_at	1.3711306	Up		

1447325_at	1.3706259	Up		
1447640_s_at	1.370247	Up	Pbx3	pre B-cell leukemia transcription factor 3
1421812_at	1.369959	Up	Tapbp	TAP binding protein
1428764_at	1.3693413	Up	Meg3	maternally expressed 3
1454862_at	1.3689189	Up	Phldb2	pleckstrin homology-like domain, family B, member 2
1423186_at	1.3684255	Up	Tiam2	T-cell lymphoma invasion and metastasis 2
1418615_at	1.3681707	Up	Astn1	astrotactin 1
1418091_at	1.3667921	Up	Tcfcp2l1	transcription factor CP2-like 1
1419002_s_at	1.366707	Up	Baat	bile acid-Coenzyme A: amino acid N-acyltransferase
1440642_at	1.3666874	Up	D630042P16Rik	RIKEN cDNA D630042P16 gene
1456210_at	1.3662177	Up	5430407P10Rik	RIKEN cDNA 5430407P10 gene
1434450_s_at	1.3659079	Up	Adrbk2	adrenergic receptor kinase, beta 2
1453304_s_at	1.3653591	Up	Ly6e	lymphocyte antigen 6 complex, locus E
1448656_at	1.3651067	Up	Cacnb3	calcium channel, voltage-dependent, beta 3 subunit
1449604_at	1.364345	Up	665717 /// 677788 /// Acp1 /// LOC631286	predicted gene, 665717 /// predicted gene, 677788 /// acid phosphatase 1, soluble /// similar to acid phosphatase 1, soluble
1442063_at	1.3640869	Up	Adamtsl1	ADAMTS-like 1
1423489_at	1.3635477	Up	LOC100047565 /// Mmd	similar to monocyte to macrophage differentiation-associated /// monocyte to macrophage differentiation-associated
1452179_at	1.3634021	Up	Phf17	PHD finger protein 17
1434364_at	1.3630025	Up	Map3k14	mitogen-activated protein kinase kinase kinase 14
1453701_at	1.3629915	Up	4921515E04Rik	RIKEN cDNA 4921515E04 gene
1434262_at	1.3627357	Up		
1453809_at	1.3622651	Up	Lypd5	Ly6/Plaur domain containing 5
1423635_at	1.3619847	Up	Bmp2	bone morphogenetic protein 2
1437332_at	1.3619019	Up		
1437168_at	1.3618839	Up	RP23-12I24.6	serine-arginine repressor protein
1429983_at	1.3618526	Up	2010002M09Rik	RIKEN cDNA 2010002M09 gene
1426064_at	1.3608264	Up	Cyp3a44	cytochrome P450, family 3, subfamily a, polypeptide 44
1448338_at	1.3608116	Up	Pgcp	plasma glutamate carboxypeptidase
1437702_at	1.3603585	Up	Tgm6	transglutaminase 6
1437754_at	1.3603101	Up	AW146299	expressed sequence AW146299
1448861_at	1.360119	Up	Traf5	Tnf receptor-associated factor 5
1449471_at	1.3600719	Up	Kcnmb4 /// LOC100047870	potassium large conductance calcium-activated channel, subfamily M, beta member 4 /// similar to calcium activated potassium channel beta 4 subunit

1450610_at	16.173891	Down	Ucn	urocortin
1423606_at	9.21812	Down	Postn	periostin, osteoblast specific factor
1422825_at	8.876153	Down	Cartpt	CART prepropeptide
1447592_at	8.297856	Down	Dbh	dopamine beta hydroxylase
1427789_s_at	6.3654084	Down	Gnas	GNAS (guanine nucleotide binding protein, alpha stimulating) complex locus
1442315_at	5.5174475	Down	Foxd2	forkhead box D2
1446634_at	4.8349915	Down	D830036C21Rik	RIKEN cDNA D830036C21 gene
1451440_at	4.5607104	Down	Chodl	chondrolectin
1445237_at	4.0598435	Down		
1449253_at	3.9332232	Down	Smc1b	structural maintenance of chromosomes 1B
1440672_at	3.4024205	Down	Zfp541	zinc finger protein 541
1419681_a_at	2.8521724	Down	Prok2	prokineticin 2
1444189_at	2.7473714	Down		
1449967_at	2.7309074	Down	Sim1	single-minded homolog 1 (Drosophila)
1430977_at	2.543762	Down	Fam159b	family with sequence similarity 159, member B
1425957_x_at	2.4961114	Down	1700021K02Rik	RIKEN cDNA 1700021K02 gene
1454660_at	2.448857	Down	1100001E04Rik	RIKEN cDNA 1100001E04 gene
1429742_at	2.3721392	Down	Rcbtb2	regulator of chromosome condensation (RCC1) and BTB (POZ) domain containing protein 2
1439037_at	2.3576212	Down	Ddx17	DEAD (Asp-Glu-Ala-Asp) box polypeptide 17
1437769_at	2.0290477	Down		
1423856_at	1.9905156	Down	Popdc3	popeye domain containing 3
1420921_at	1.9830313	Down	Cd151	CD151 antigen
1420098_s_at	1.981642	Down	D13Ertd787e	DNA segment, Chr 13, ERATO Doi 787, expressed
1449133_at	1.9649194	Down	Sprr1a	small proline-rich protein 1A
1453807_at	1.9621962	Down	6330563C09Rik	RIKEN cDNA 6330563C09 gene
1439974_at	1.9326849	Down	Cdc26 /// Fkbp15	cell division cycle 26 /// FK506 binding protein 15
1422644_at	1.9157398	Down	Sh3bgr	SH3-binding domain glutamic acid-rich protein
1457048_at	1.891068	Down	Qrfpr	pyroglutamylated RFamide peptide receptor
1436449_at	1.8891056	Down		
1441401_at	1.8582479	Down	C79329	expressed sequence C79329
1443202_at	1.852861	Down		
1422860_at	1.8139789	Down	Nts	neurotensin
1447051_at	1.812841	Down	Rnf43	Ring finger protein 43, mRNA (cDNA clone IMAGE:5025887)
1434877_at	1.8095164	Down	Nptx1	neuronal pentraxin 1
1438148_at	1.7986373	Down	Cxcl3	chemokine (C-X-C motif) ligand 3

1450268_at	1.7680202	Down	Fign	fidgetin
1456049_at	1.7551692	Down	Rala	v-ral simian leukemia viral oncogene homolog A (ras related)
1417802_at	1.7407538	Down	1110032A04Rik	RIKEN cDNA 1110032A04 gene
1460111_at	1.7186016	Down	Myt1l	myelin transcription factor 1-like
1432741_at	1.7180464	Down	9530071P10Rik	RIKEN cDNA 9530071P10 gene
1438112_at	1.7168565	Down	9430021M05Rik	RIKEN cDNA 9430021M05 gene
1459570_at	1.7112045	Down		
1417156_at	1.7111756	Down	Krt19	keratin 19
1418983_at	1.7082597	Down	Inadl	InaD-like (Drosophila)
1442873_at	1.691454	Down		
1443746_x_at	1.6843995	Down	Dmp1	dentin matrix protein 1
1443745_s_at	1.6790313	Down	Dmp1	dentin matrix protein 1
1439936_at	1.6679906	Down	BE949265	cDNA sequence BE949265
1431700_at	1.6668944	Down	Grin2b	glutamate receptor, ionotropic, NMDA2B (epsilon 2)
1450252_at	1.6517788	Down	Onecut1	one cut domain, family member 1
1420090_at	1.6505996	Down		
1418203_at	1.6488825	Down	Pmaip1	phorbol-12-myristate-13-acetate-induced protein 1
1460124_at	1.6480864	Down	Nccrp1	non-specific cytotoxic cell receptor protein 1 homolog (zebrafish)
1459168_at	1.6429302	Down		
1420418_at	1.6384014	Down	Syt2	synaptotagmin II
1439703_at	1.634911	Down	Cd200r1	CD200 receptor 1
1459837_at	1.6324334	Down		
1421740_at	1.6293948	Down	Gnas	GNAS (guanine nucleotide binding protein, alpha stimulating) complex locus
1431757_s_at	1.6259425	Down	100040511 /// 5033417F24Rik /// LOC100045477	predicted gene, 100040511 /// RIKEN cDNA 5033417F24 gene /// hypothetical protein LOC100045477
1442973_at	1.6198915	Down	C80865	expressed sequence C80865
1423874_at	1.615682	Down	Wdr33	WD repeat domain 33
1438217_at	1.608605	Down	A2bp1	ataxin 2 binding protein 1
1443540_at	1.6064776	Down	Map3k1	mitogen-activated protein kinase kinase kinase 1
1443256_at	1.6046002	Down		
1456495_s_at	1.6008676	Down	Osbpl6	oxysterol binding protein-like 6
1450193_at	1.5999472	Down	Hcn1	hyperpolarization-activated, cyclic nucleotide-gated K+ 1
1420751_at	1.5879183	Down	ENSMUSG00000068074	predicted gene, ENSMUSG00000068074
1427038_at	1.5863004	Down	Penk1	preproenkephalin 1
1438661_a_at	1.5853121	Down	Arf2	ADP-ribosylation factor 2
1421368_at	1.5849022	Down	Scrt1	scratch homolog 1, zinc finger protein (Drosophila)

1442576_at	1.5834031	Down	Creb5	cAMP responsive element binding protein 5
1420063_at	1.5758913	Down		
1456764_at	1.5757145	Down	Slc35f3	solute carrier family 35, member F3
1441027_at	1.573377	Down		
1424939_at	1.5732677	Down	Asz1	ankyrin repeat, SAM and basic leucine zipper domain containing 1
1441985_at	1.5692582	Down	4933416C03Rik	RIKEN cDNA 4933416C03 gene
1459709_at	1.5605116	Down		
1420887_a_at	1.5592368	Down	Bcl2l1	BCL2-like 1
1425829_a_at	1.5556602	Down	Steap4	STEAP family member 4
1441693_at	1.5529088	Down	Adamts3	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 3
1454102_at	1.5474818	Down	5031425E22Rik	RIKEN cDNA 5031425E22 gene
1442994_at	1.5402776	Down		
1441276_at	1.529882	Down	Ptprk	protein tyrosine phosphatase, receptor type, K
1426938_at	1.5235516	Down	Nova1	neuro-oncological ventral antigen 1
1457192_at	1.5235362	Down		
1438364_x_at	1.5227835	Down	Ang4	angiogenin, ribonuclease A family, member 4
1458008_at	1.5222739	Down		
1453043_at	1.5212953	Down	0610012H03Rik	RIKEN cDNA 0610012H03 gene
1453445_at	1.5162067	Down	9030601B04Rik	RIKEN cDNA 9030601B04 gene
1448393_at	1.5123023	Down	Cldn7	claudin 7
1419698_at	1.5118649	Down	Cxcl11 /// LOC630447	chemokine (C-X-C motif) ligand 11 /// similar to Small inducible cytokine B11 precursor (CXCL11) (Interferon-inducible T-cell alpha chemoattractant) (I-TAC)
1431202_at	1.5091759	Down	Herc3	hect domain and RLD 3
1456065_at	1.5078704	Down	Ubash3a	ubiquitin associated and SH3 domain containing, A
1422927_at	1.5067229	Down	Yipf7	Yip1 domain family, member 7
1425444_a_at	1.5020697	Down	Tgfbr2	transforming growth factor, beta receptor II
1449031_at	1.5005687	Down	Cited1	Cbp/p300-interacting transactivator with Glu/Asp-rich carboxy-terminal domain 1
1422700_at	1.4974418	Down	Alox12	arachidonate 12-lipoxygenase
1435482_at	1.4965173	Down	Fibcd1	fibrinogen C domain containing 1
1431361_at	1.4953748	Down	Prcp	prolylcarboxypeptidase (angiotensinase C)
1425267_a_at	1.4951977	Down	Pear1	platelet endothelial aggregation receptor 1
1438628_x_at	1.494821	Down	Cntn3	contactin 3
1417489_at	1.4923755	Down	Npy2r	neuropeptide Y receptor Y2
1453298_at	1.4918015	Down	Ptpn21	protein tyrosine phosphatase, non-

				receptor type 21
1422136_at	1.4889983	Down	LOC677213 /// Uhmk1	similar to U2AF homology motif (UHM) kinase 1 /// U2AF homology motif (UHM) kinase 1
1449565_at	1.4873782	Down	Cyp2g1	cytochrome P450, family 2, subfamily g, polypeptide 1
1419003_at	1.4869812	Down	Bves	blood vessel epicardial substance
1416905_at	1.4823568	Down	Guca2a	guanylate cyclase activator 2a (guanylin)
1419539_at	1.4808258	Down	Irx4	Iroquois related homeobox 4 (Drosophila)
1418845_at	1.4795423	Down	Proc	protein C
1454473_at	1.4785581	Down	4933433M23Rik	RIKEN cDNA 4933433M23 gene
1431206_at	1.4777828	Down	5730601F06Rik	RIKEN cDNA 5730601F06 gene
1454529_at	1.4768867	Down		
1459422_at	1.4762946	Down		
1431369_at	1.4760915	Down	Ddef2	development and differentiation enhancing factor 2
1441395_at	1.4755491	Down	AU021933	expressed sequence AU021933
1440942_at	1.4738885	Down	Dact2	dapper homolog 2, antagonist of beta-catenin (xenopus)
1422225_s_at	1.4705684	Down	ENSMUSG00000052469 /// Gpr31c /// LOC100048768 /// Tcp10a /// Tcp10b /// Tcp10c	predicted gene, ENSMUSG00000052469 /// G protein-coupled receptor 31, D17Leh66c region /// similar to t-complex protein 10c /// t-complex protein 10a /// t-complex protein 10b /// t-complex protein 10c
1439842_at	1.4672835	Down	Zfp287	Zinc finger protein 287, mRNA (cDNA clone IMAGE:5352159)
1448845_at	1.4669638	Down	Rpp25	ribonuclease P 25 subunit (human)
1436475_at	1.4651537	Down	Nr2f2	nuclear receptor subfamily 2, group F, member 2
1421404_at	1.4635819	Down	Cxcl15	chemokine (C-X-C motif) ligand 15
1457052_at	1.4602299	Down	Kcng1	potassium voltage-gated channel, subfamily G, member 1
1433846_s_at	1.4588301	Down	Fam175b	family with sequence similarity 175, member B
1418659_at	1.4575241	Down	Clock	Circadian locomotor output cycles kaput
1454592_at	1.4562539	Down	9430012M22Rik	RIKEN cDNA 9430012M22 gene
1441047_at	1.4538276	Down	Slc45a4	solute carrier family 45, member 4
1427744_at	1.4533246	Down	Ccnb3	cyclin B3
1447236_at	1.4508848	Down	Kif21a	kinesin family member 21A
1436440_at	1.4503018	Down	Slc25a12	solute carrier family 25 (mitochondrial carrier, Aralar), member 12
1434026_at	1.4465281	Down	Atp8b2	ATPase, class I, type 8B, member 2
1436274_at	1.446226	Down	Mrap2	melanocortin 2 receptor accessory protein 2
1441211_at	1-Jan	Down		

1456074_at	1.4449158	Down	Sdr9c7	4short chain dehydrogenase/reductase family 9C, member 7
1428771_at	1.4443241	Down	Klhdc10	kelch domain containing 10
1455358_at	1.444206	Down	A2bp1	Hexaribonucleotide binding protein 1 (Hrnbp1)
1442898_at	1.4439242	Down		
1433659_at	1.4427999	Down	Tubgcp4	tubulin, gamma complex associated protein 4
1421572_at	1.4407928	Down	Hif3a	hypoxia inducible factor 3, alpha subunit
1456283_at	1.4403324	Down	Neto1	neuropilin (NRP) and tolloid (TLL)-like 1
1447152_at	1.439853	Down		
1424187_at	1.438569	Down	Ccdc80	coiled-coil domain containing 80
1439818_at	1.4383178	Down	AI931714	expressed sequence AI931714
1453177_at	1.4376773	Down	Snx31	sorting nexin 31
1442052_at	1.4375372	Down		
1432814_at	1.4372432	Down	2900064F13Rik	RIKEN cDNA 2900064F13 gene
1430477_s_at	1.4351379	Down		
1441530_at	1.4343128	Down		
1426320_at	1.4331483	Down	Snx29	sorting nexin 29
1438219_at	1.4280138	Down	Pura	Purine rich element binding protein A (Pura), mRNA
1443855_at	1.4265387	Down	Kcnc1	potassium voltage gated channel, Shaw-related subfamily, member 1
1440046_at	1.424309	Down	BC031748	cDNA sequence BC031748
1430636_at	1.4242462	Down	Ppp4r1l	protein phosphatase 4, regulatory subunit 1-like
1459250_at	1.4234334	Down	Tshz2	teashirt zinc finger family member 2
1446573_at	1.4231948	Down	Edil3	Del1 minor splice variant (Del1)
1447289_at	1.4229891	Down	AA763521	expressed sequence AA763521
1449666_at	1.4228305	Down	Atrnl1	Attractin like 1, mRNA (cDNA clone IMAGE:5354506)
1436168_at	1.4209912	Down	C730029A08Rik	RIKEN cDNA C730029A08 gene
1428776_at	1.4202423	Down	Slc10a6	solute carrier family 10 (sodium/bile acid cotransporter family), member 6
1439755_at	1.4201276	Down	Sipa1l1	signal-induced proliferation-associated 1 like 1
1444914_at	1.4198054	Down		
1432263_a_at	1.4197311	Down	Cox7a2l	cytochrome c oxidase subunit VIIa polypeptide 2-like
1441167_at	1.4187241	Down		
1444553_at	1.4157374	Down		
1456473_x_at	1.4151565	Down	Arf2	ADP-ribosylation factor 2
1458408_at	1.4113505	Down	Samd8	sterile alpha motif domain containing 8
1440192_at	1.411134	Down	Ttc39b	tetratricopeptide repeat domain 39B
1429273_at	1.4098935	Down	Bmper	BMP-binding endothelial regulator
1419065_at	1.4090718	Down	Nepn	nephrocan

1458565_at	1.4011527	Down	Arl2	ADP-ribosylation factor-like 2
1450947_at	1.4006761	Down	2610528J11Rik	RIKEN cDNA 2610528J11 gene
1433279_at	1.4006194	Down	5830440H09Rik	RIKEN cDNA 5830440H09 gene
1446191_at	1.40053	Down	Abi3	ABI gene family, member 3
1440557_at	1.3982913	Down	Ipw	Ipw mRNA, partial sequence
1419399_at	1.3972638	Down	Mttp	microsomal triglyceride transfer protein
1425132_at	1.3970522	Down	Neto1	neuropilin (NRP) and tolloid (TLL)-like 1
1423015_at	1.3969625	Down	Kirrel	kin of IRRE like (Drosophila)
1420713_a_at	1.3969257	Down	Mdfi	MyoD family inhibitor
1449369_at	1.3943688	Down	Tmprss2	transmembrane protease, serine 2
1450813_a_at	1.3932084	Down	Tnni1	troponin I, skeletal, slow 1
1417349_at	1.3919843	Down	Pldn	pallidin
1454574_at	1.3911515	Down	C430049A07Rik	RIKEN cDNA C430049A07 gene
1427313_at	1.3900918	Down	Ptgir	prostaglandin I receptor (IP)
1444150_at	1.3899661	Down	Epb4.1	erythrocyte protein band 4.1
1447012_at	1.3891221	Down		
1441590_at	1.3877763	Down	Kcnj5	potassium inwardly-rectifying channel, subfamily J, member 5
1443129_at	1.3871737	Down		
1454515_at	1.3860133	Down	5430425E15Rik	RIKEN cDNA 5430425E15 gene
1446247_at	1.3859707	Down	Adamts18	a disintegrin-like and metallopeptidase (reprolysin type) with thrombospondin type 1 motif, 18
1451793_at	1.3857527	Down	Klhl24	kelch-like 24 (Drosophila)
1437989_at	1.3854432	Down	Pde8b	phosphodiesterase 8B
1431838_at	1.3846707	Down	1700128E19Rik	RIKEN cDNA 1700128E19 gene
1439292_at	1.3841722	Down		
1431376_at	1.384003	Down	Wdr62	WD repeat domain 62
1447419_at	1.3811703	Down		
1460299_at	1.3798462	Down	Mnx1	motor neuron and pancreas homeobox 1
1431678_at	1.3785907	Down	4930556N08Rik	RIKEN cDNA 4930556N08 gene
1419983_at	1.3783932	Down	Zfp644	zinc finger protein 644
1453528_at	1.3776819	Down	Lta4h	leukotriene A4 hydrolase
1418586_at	1.376154	Down	Adcy9	adenylate cyclase 9
1442988_at	1.374853	Down		
1443484_at	1.374545	Down	Rpap1	RNA polymerase II associated protein 1
1441316_at	1.3736535	Down	LOC677060 /// Wnt8b	similar to wingless related MMTV integration site 8b /// wingless related MMTV integration site 8b
1444355_at	1.3727648	Down	Atp8a1	ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1 (Atp8a1), transcript variant 2, mRNA
1450489_at	1.3719501	Down	Sall1	sal-like 1 (Drosophila)
1450184_s_at	1.3700032	Down	Tef	thyrotroph embryonic factor

1446232_at	1.3688856	Down		
1435548_at	1.3681084	Down	Mrs2	MRS2 magnesium homeostasis factor homolog (S. cerevisiae)
1443365_at	1.3666875	Down	Htr4	5 hydroxytryptamine (serotonin) receptor 4
1421772_a_at	1.3663312	Down	Cox7a2l	cytochrome c oxidase subunit VIIa polypeptide 2-like
1450256_at	1.364704	Down	Cer1	cerberus 1 homolog (Xenopus laevis)
1440957_at	1.3645707	Down	Defb29	defensin beta 29
1447441_at	1.3642951	Down	Arhgef17	Rho guanine nucleotide exchange factor (GEF) 17
1442471_at	1.3640573	Down		
1446259_at	1.36287	Down		
1440348_at	1.361499	Down	Zfyve9	zinc finger, FYVE domain containing 9
1435031_at	1.3602613	Down	Tmem120a	transmembrane protein 120A

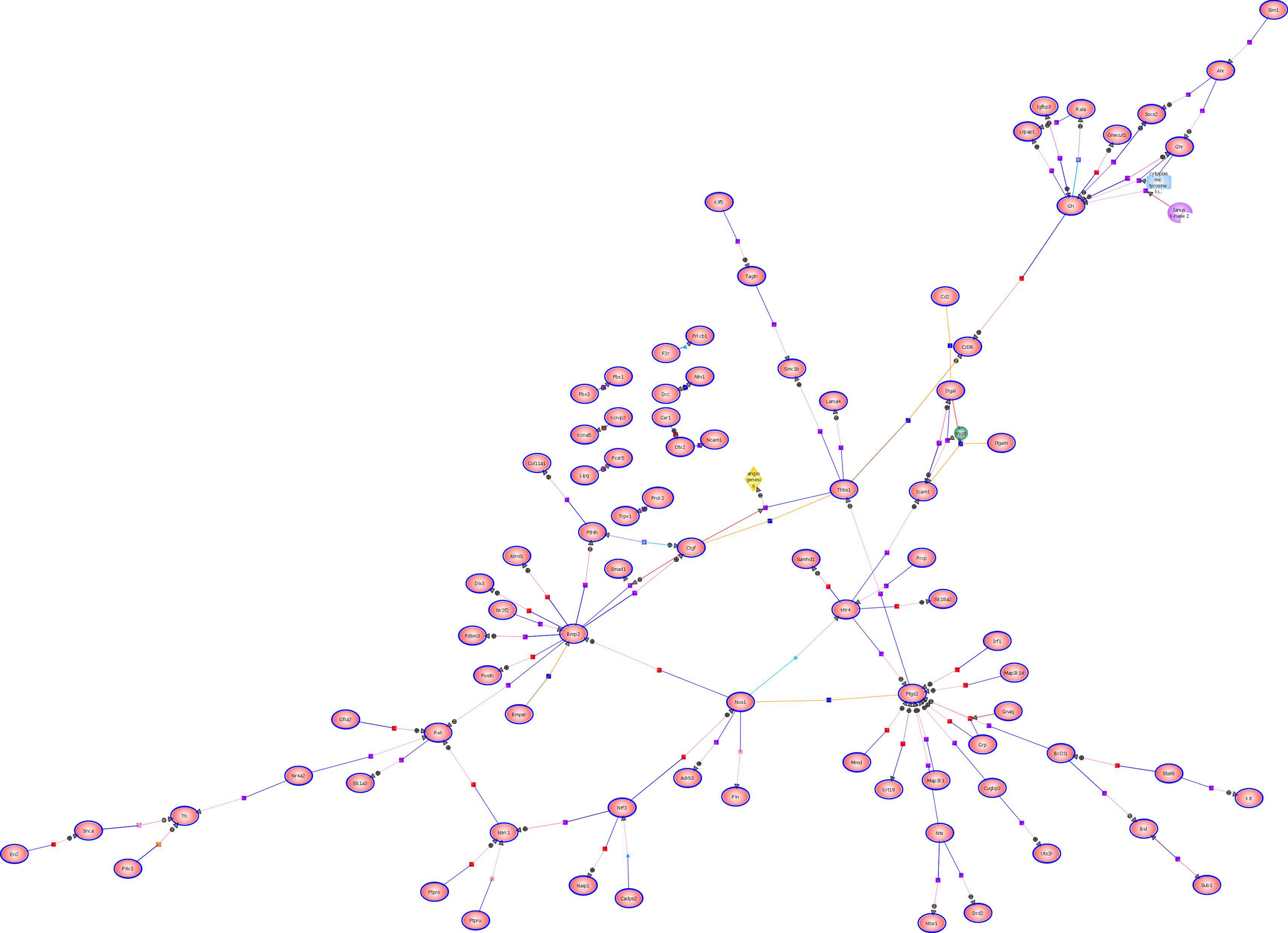
Sim1
Ahr
Igfbp3
Rala
Socs2
Lrpap1
Onecut1
Ghr
cytoplasmic tyrosine ki..
Gh
Janus kinase 2
Klf5
Tagln
Cd2
Cd36
Prlr.cb1
F2r
Smc1b
Itgal
Pbx1
Ntn1
Lama4
Pbx3
Dcc
Kcnip2
Cer1
trypt
Itgam
Kcna5
Otx2
Ncam1
Pcsk5
Col11a1
Lipg
angiogenesis
Thbs1
Icam1
Prok2
Trpv1
Pthlh
Ctgf
Atrnl1
Smad1
Samhd1
Prcp
Dlx3
Htr4
Slc18a2
Nr2f2
Pdlim3
Bmp2
Irf1
Map3k14
Postn
Ptgs2
Nos1
Gnaq
Bmper
Gfra2
Ret
Grp
Mmd
Bcl2l1
Stat6
Nr4a2
Adrb3
Krt19
Map3k1
Cugbp2
Kit
Slc1a3
Pln
Th
Ntf3
Nts
Bid
Snca
Ntrk1
Uts2r
En2
Ptx3
Naip1
Ptpro
Cadps2
Sub1
Ptpru
Ntsr1
Drd2

Figure S1. Significant direct interactions ($P < 0.05$) between regulated genes were determined using Agilent Genespring software. Genes that were regulated on the array are highlighted with blue circles.

Table S2. CLOCK knockdown in the VTA changes the gene expression pattern

Genes	RT PCR	Fold change	Microarray	Fold change
CHRNA3	Up regulated	2.0*	Up-regulated	2.6*
Gabra	Up regulated	1.7*	Up-regulated	2.3*
Trpc6	Up regulated	2.1*	Up-regulated	2.3*
HCN1	Down regulated	2.9*	Down-regulated	1.6*
Kctd9	Down regulated	1.7*	Down-regulated	1.9*
CART	Down regulated	11.0*	Down-regulated	8.8*
TH	Up regulated	2.0*	Up-regulated	2.0*
DR2	Up regulated	3.4*	Up-regulated	2.4*
Nos1	Up regulated	2.3*	Up-regulated	2.3*
Penk1	Down regulated	2.1*	Down-regulated	1.5*

Gene expression was measured using RT-PCR with gene specific primers (Table S3).
*$p < 0.05$, $n = 6$.

Table S3. List of primers used for RT PCR

Genes	Forward primer	Reverse primer
CHRNA3	acgtctaggatcaaggtgcca	ccaagattccagaaacactcgccct
Gabra	taatacaacaggggctgctg	atgctccaaatgtgactgg
Trpc6	caagtacaaggagctcagaag	tccttatcaatctgggcctg
HCN1	ctctttttgctaacgccgat	cattgaaattgtccaccgaa
Kctd9	ctgtgaacacagtagtagggcct	tagaacccatttggacacagc
CART	ccctggacatctactctgccgtgg	ttgagcttcttcaggacttcttgca
TH	caggatgagctgcacaccctg	atgcaggaccatcctggagc
DR2	tcttctggtggtggccacactggttat	acaggttcaagatgcttgctgtgc
Nos1	tccgaagtttttggcaacag	taggcagtgtacagctctctg
Penk1	ccaacaatgacgaagacatgagca	tagtccatccaccactcggggcgtc

Minimum Information About a Microarray Experiment (MIAME)

Array design description:

1) Array used: Affymetrix mouse genome 430 2.0 (information regarding the details of this array can be found at www.affymetrix.com)

2) Normalization: All arrays were normalized using the probe logarithmic intensity error estimation (PLIER) algorithm in the Genespring program.

Experimental design:

1) Corresponding author contact information: Colleen McClung (Colleen.McClung@UTSouthwestern.edu)

2) Types of experiments:

Gene knock-down by RNAi

3) Experimental factors:

Viral manipulation of gene expression

4) Number of hybridizations in the study: 6

5) A common reference RNA was not used.

6) Quality control measures used: Arrays were only used if: 3'/5' ratios of β-actin and GAPDH were < 3 and both genes were present at high levels, the overall percent genes "present" was > 40%, and the spiked controls were present in the appropriate amounts. Labeled RNA was not used for array analysis if the 260/280 ratio was less then 1.9 or the final amount of RNA recovered after amplification was < 30 μgs. All arrays were done in triplicate with biological replicates (i.e. RNA from separate animals was used in the hybridization). As well, realtime PCR reactions were performed to validate array results.

7) Description of the experiments: The following sets were analyzed:

Clock shRNA AAV infection

Scr shRNA AAV infection

Samples used, extract preparation and labeling:

1) Bio-source properties:

a) All mice were adult males.

b) Tissue was taken at ~10 weeks of age

c) The area of the brain investigated was the VTA

d) Strain of mouse used in each experiment: C57/Bl6 Jackson Labs

2) Biomaterial manipulations:

a) All mice were raised under 12:12 dark/light conditions, housed 4 per cage with food and water *ad libitum*.

b) The VTA was dissected from 300 μM slices using a dissection scope.

3) Extract preparation: tissue punches were dissected and immediately frozen on dry ice. Total RNA was isolated from tissue punches from individual mice using the TriZol Reagent (Invitrogen) according to the manufacturer's instructions. Following RNA extraction, any remaining genomic DNA was digested for 15 min using the DNA Free system according to the manufacturer's instructions (Ambion, Austin, TX).

4) cDNA synthesis from total RNA (Invitrogen reagents), cRNA amplification and labeling (Affymetrix kit), hybridization (hybridization oven 640), and washing (fluidics station 400) were accomplished according to the manufacturer's instructions (Affymetrix).

5) Affymetrix standard spike controls were used in all experiments (eukaryotic hybridization control kit). For additional information on hybridization procedures and reagents please visit www.Affymetrix.com

Measurement data and specifications:

1) Arrays were scanned on the Agilent Gene Array scanner (Affymetrix).

2) Image analysis was performed using Microarray Suite 5.0 (Affymetrix).

3) The raw data were initially analyzed and normalized using the PLIER algorithm in the Genespring program. Comparative analysis was also preformed in Genespring utilizing the Mann Whitney test followed by an unpaired t-test to compare the *Clock* shRNA group with control animals that were handled, treated, and dissected at the same time. For this study, we used the Benjamini Hochberg method for false discovery rates which compares the computed *P* values to adjusted *P* values and utilized a false discovery rate in this experiment of ~0.2 for all arrays. Each experiment was performed in triplicate, from completely separate animals. Data files from Genespring were exported into Excel (Microsoft). Genes were considered to be regulated if they were expressed in this tissue (raw value > 20) greater than 1.36 fold regulated with a $p < 0.05$ following both statistical tests.

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