RUNX1-EVI1 disrupts lineage determination and the cell cycle by interfering with RUNX1 and EVI1 driven gene regulatory networks

Sophie G. Kellaway, Peter Keane, Ella Kennett and Constanze Bonifer

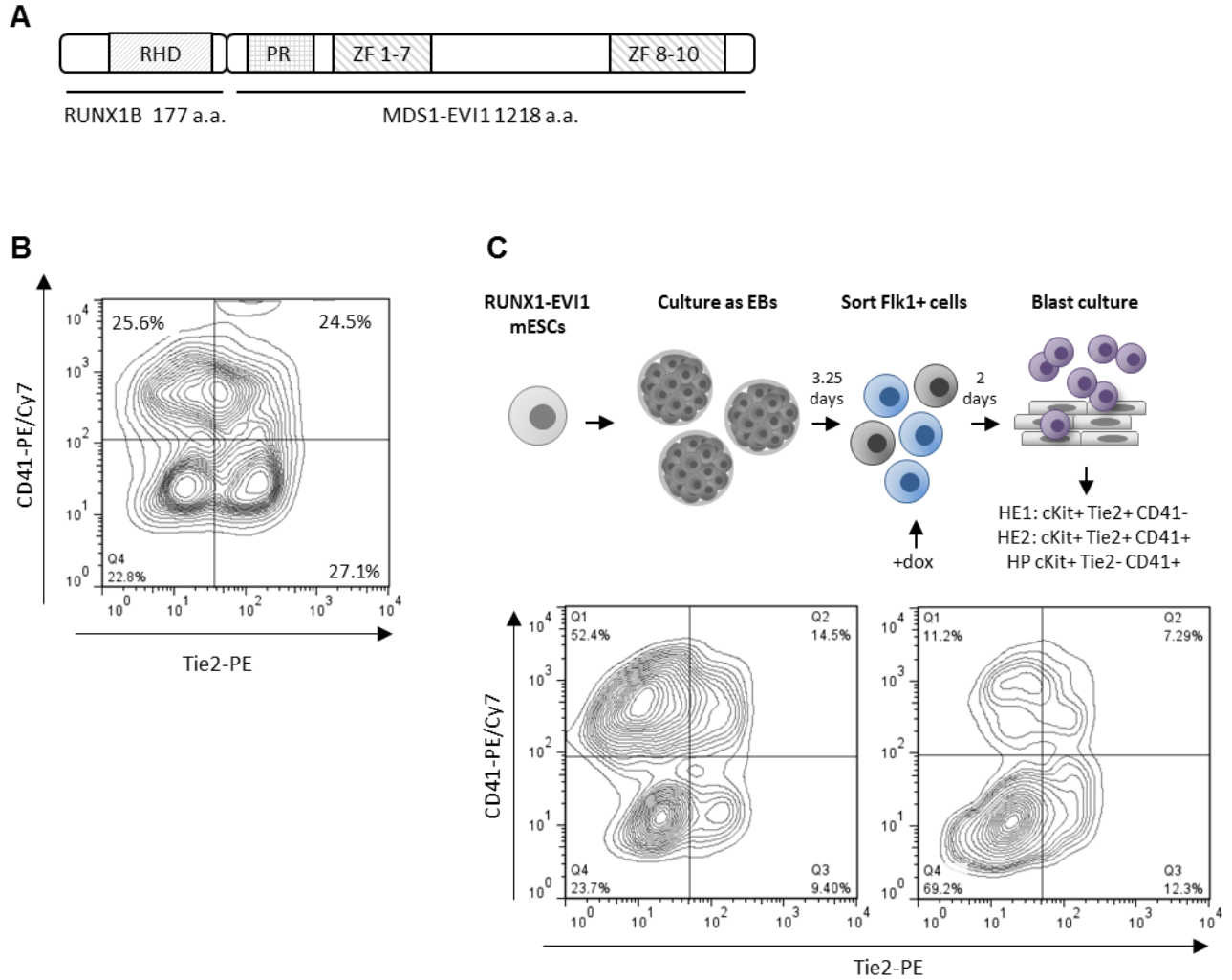Institute of Cancer and Genomic Sciences, University of Birmingham, Birmingham, UK

Supplementary Figure 1 Induction of RUNX1-EVI1 perturbs *Runx1* dependent endothelial to haematopoietic transition. (A) Structure of the RUNX1-EVI1 fusion protein structure, with the Runt homology domain (RHD), PRD1-BF1/RIZ1 (PR) domain and zinc fingers (ZF 1-7 and ZF 8-10) shown (B) The composition of the day 1 blast culture, at the point of dox induction, was analysed by flow cytometry using antibodies against cKit, Tie2 and CD41, a representative plot pre-gated by cKit+ is shown on which there are an approximately equal balance of HE1, HE2, HP and double negative cells (C) The composition of the day 2 blast culture, 2 days following dox induction in the Flk1+ cells as shown in the schematic, was analysed by flow cytometry using antibodies against cKit, Tie2 and CD41; representative plots for –dox and +dox samples are shown pre-gated by cKit+. This prevented almost all formation of HE1, HE2 or HP cells.
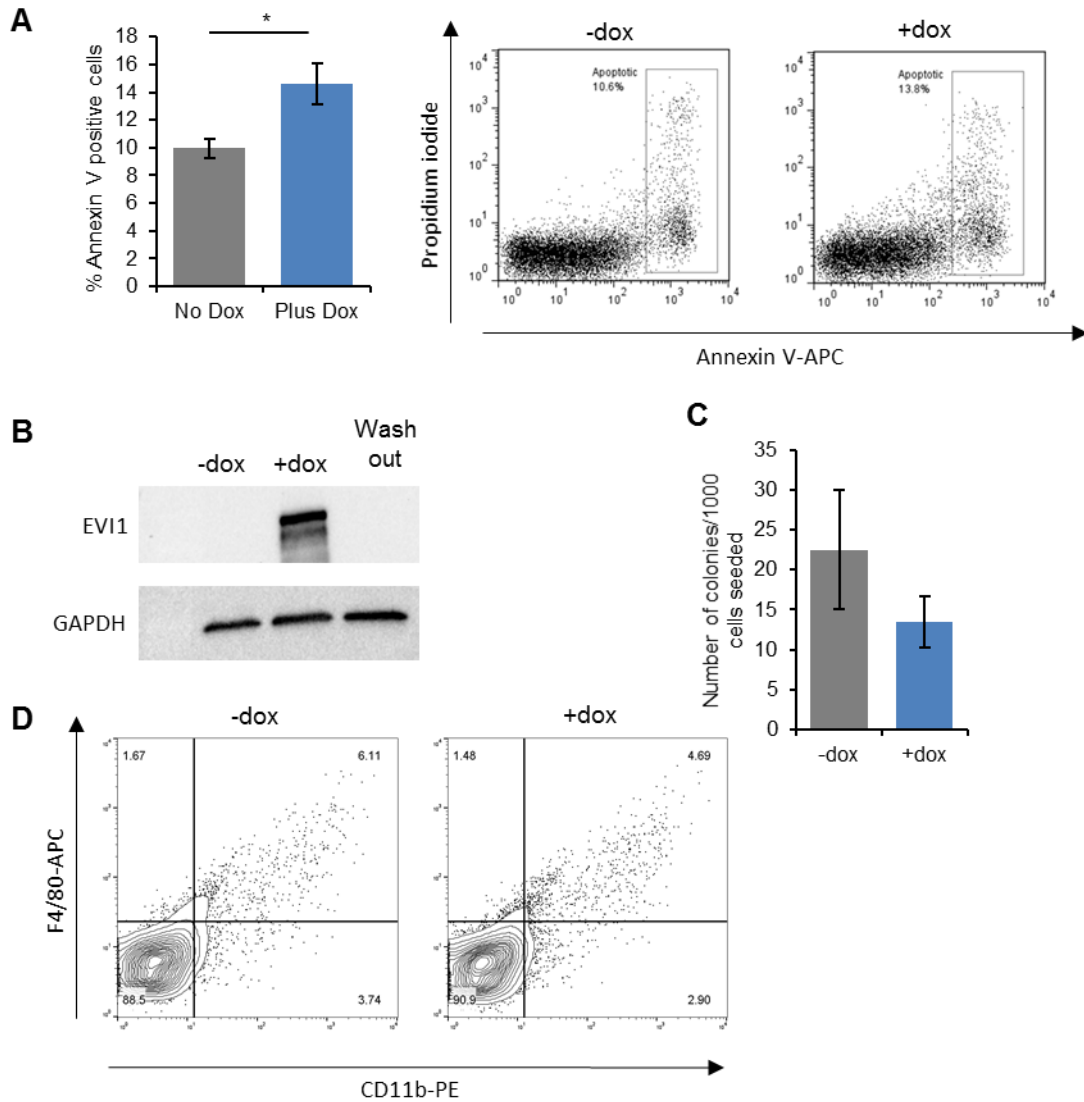
Supplementary Figure 2 RUNX1-EVI1 expression causes reduced cell cycling and colony forming capacity in HPs. (A) RUNX1-EVI1 induction caused a small but variable increase in apoptotic cells in the total d2 blast culture, n=5, * represents p<0.05, example FACS plots are shown on the right (B) RUNX1-EVI1 expression was not maintained in cells in those colony forming assays where dox was withdrawn, shown here 24 hours post washout (C) Reduced colony forming capacity was unrelated to reduced cKit expression, a similar reduction in colonies formed was seen when cKit positive sorted HPs were used with prior dox induction and withdrawal, n=4, difference was not significant. Error bars indicate standard error of the mean (D) HP cells matured for a further 24 hours in liquid culture did not show enhanced myeloid differentiation, analysed by flow cytometry using antibodies against CD11b and F4/80, representative plots are shown n=2.
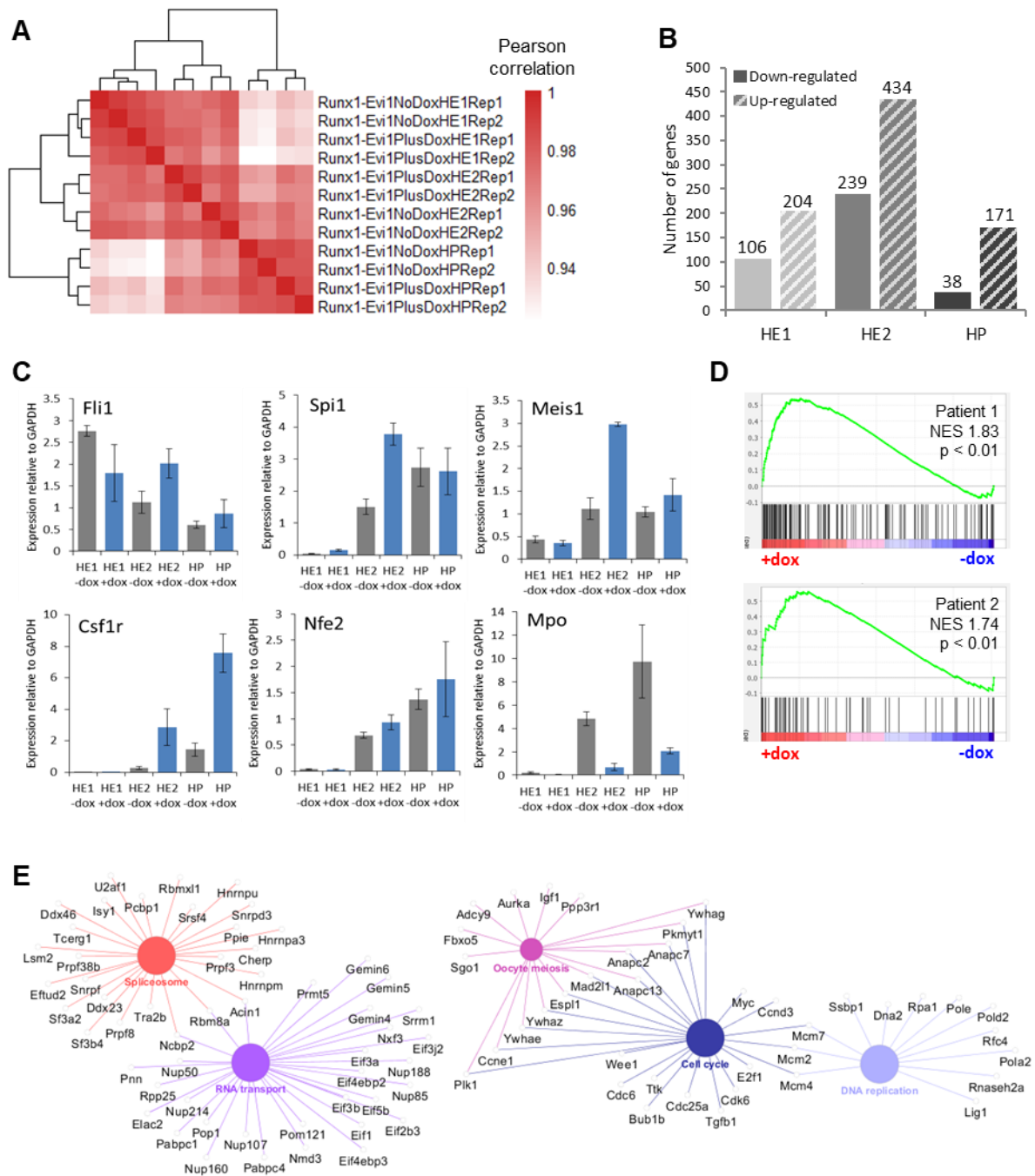
Supplementary Figure 3 Gene expression was de-regulated in a stage-specific manner following RUNX1-EVI1 induction. (A) Hierarchical clustering of pearson correlations of all expressed genes show that RNA-seq data cluster according to replicate, by cell type and by -/+ dox (B) The number of genes which were de-regulated by at least 2-fold (adj. p-value < 0.05) at each stage (C) Manual validation of selected genes identified in RNA-seq analysis was performed using qRT-PCR, all normalised to *Gapdh*, n=3, error bars indicate standard error of the mean (D) Gene set enrichment analysis showed genes upregulated after RUNX1-EVI1 induction in HPs corresponded closely to those genes which are specific to t(3;21) patients i.e. at least 2-fold upregulated as compared to healthy CD34+ cells[1] (E) KEGG pathway enrichment analysis of 2-fold downregulated genes in HE2, with differentially expressed genes associated with each enriched pathway shown
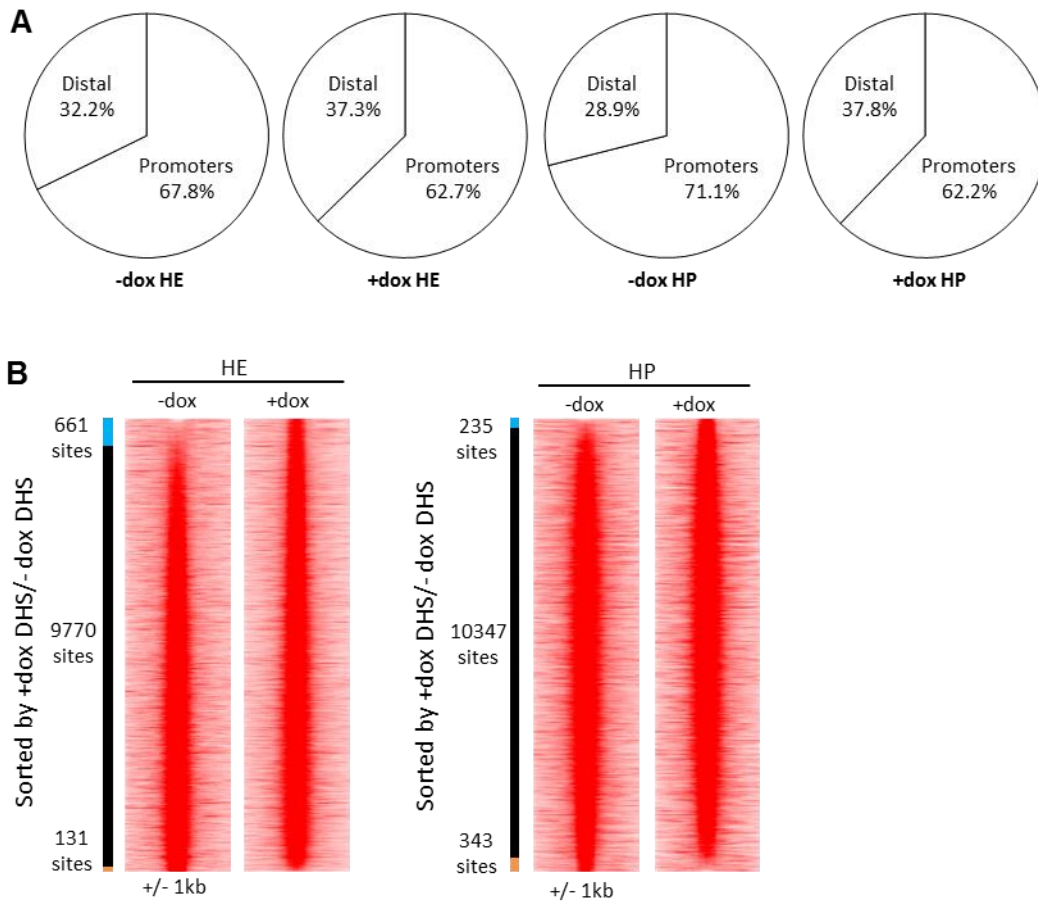
Supplementary Figure 4 RUNX1-EVI1 induction causes specific changes to chromatin accessibility.
(A) Pie charts showing the distribution of DNaseI-seq peaks between distal elements and promoters
(B) Promoter DHSs in HE cells (cKit+, Tie2+, CD41-/+) and HP cells (cKit+, Tie2-, CD41+) were ranked
by fold change +dox/-dox of the normalized tag count across a 2kb window. Sites were determined
as specific if there was at least a 2-fold change. The bar alongside indicates the +dox specific sites
(blue), shared sites (black) and –dox specific sites (orange).

A
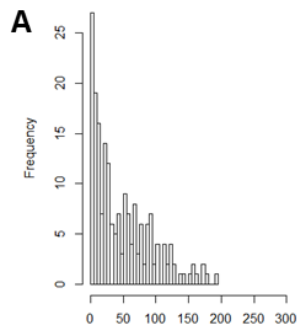
Proximity of -dox RUNX1 summits to RUNX1-EVI1 summits
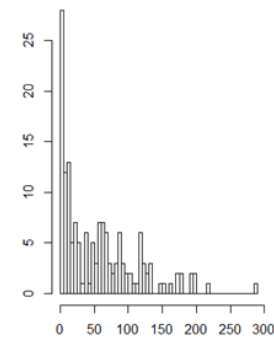
Proximity of +dox RUNX1 summits to RUNX1-EVI1 summits

B

+dox RUNX1 (distal) motifs

Motif	Match	% of sites	p-value
AACAGGAAGT	ETS/PU.1	33.77	1e-113
GGGCGGGGCC	Sp	23.49	1e-22
TIGTGGTTIT	RUNX	22.35	1e-47
AGATAAGG	GATA	22.02	1e-59
TCTGAGTCACTG	AP-1	17.29	1e-33

Shared RUNX1 (distal) motifs

Motif	Match	% of sites	p-value
ACAGGAASTXX	ETS/PU.1	37.05	1e-73
TGTGGTTA	RUNX	36.32	1e-68
CAGATAAG	GATA	25.42	1e-62
CGXTGACTCA	AP-1	16.71	1e-23

-dox RUNX1 (distal) motifs

Motif	Match	% of sites	p-value
AACAGGAAST	ETS/PU.1	38.46	1e-41
TGTGGTTT	RUNX	37.79	1e-71
CAGATAAGXX	GATA	37.12	1e-44

C

-dox RUNX1 unique sites — Distal 39.1% / Promoters 60.9%

Shared sites — Distal 37.6% / Promoters 62.4%

+dox RUNX1 unique sites — Distal 20.1% / Promoters 79.9%

RUNX1-EVI1 sites — Distal 66.6% / Promoters 33.4%
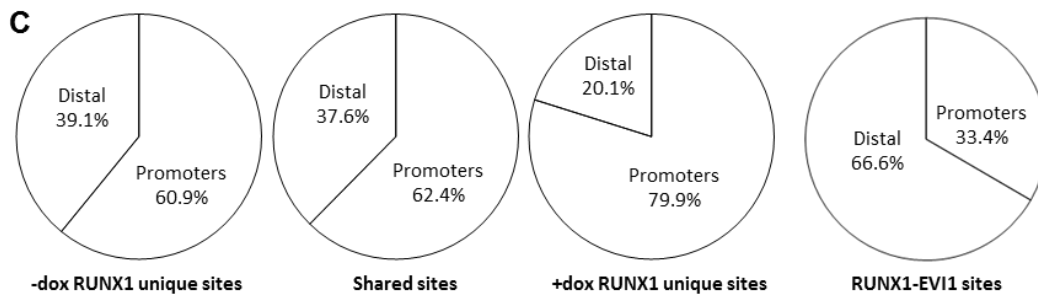
D

chr5:125183503–125183902 Ncor2

TACCTGCCCGCCCCCAAGCCCCACCCCCAAACACAGGAATCAGCAAATGG
GAAAGGAAGCCGTAGTTTCCATCATTACAGTATGGAGGAGGGACTGGCTG
TGTACCAGGCAGGGTAGAGTGACTGTAGCGGTAGCCGTAGCTACTATGGT
GGGGGCGGGGGTGGAATCTCACGGCCATAGGATGATCCATCCTCTCCAAG
CTATGCAAGCATCTCCGAGGATGTGGTTTGGAGCCCCCAGCCTTCCACCC
TCCACCCGCTTCACCACAAGAAACTGCAGAGTCACCCGCTTCCGCGTCCG
TCTGGACTTTATTTGTGGCACTGCCAAGCATTTCACAAGGGGCTGAGCAG
GGAACCACGAGGACCGCAGCGCTGTGGTCCTTGGCTGTTAGTGGCCGGAG

chr4: 21712205–21712604 Ccnc

GAGGTGCTGCCACTGTGGACAGCTCCTGTGGCACAGCTCCTGCAGTGGTA
TTTCACTAAGACTAGAGCTGAGACAGGAAAGAAGTTGTGGACAGCTCCTC
ATGACAGCCATAGTCTGAAGCAGGAAAGATATTGCCACCGTGGACAGCTC
CTGAGGGGCTGCTTTCGCTGAGGAGGGAAATGAGATGCTCCAGCTACCGT
GGACAGCTCCTGTGACAGCAGCAGGCTGAGCGGAAGTCACAGCGCGGCGA
TTTTTGACAGCTCCTTCTAGGGCATCTCACTGAGGCCCAGGGCTGAGGCA
GGGAGGAGGAGCCAGCGCCGCCTCGACTGATTTCGGATGTTGCTTAGGGA
CTACAGAAGTTGTAAGCACAAAAACATAATCTGAGTTGATGGACTTCAGT

Supplementary Figure 5 RUNX1-EVI1 disrupts to RUNX1 binding and has unique binding sites too.
(A) Histograms showing the proximity of the closest RUNX1 -/+dox ChIP-seq peak summits to RUNX1-EVI1 ChIP-seq summits in peaks that were bound by RUNX1-EVI1 in the +dox cells, and by RUNX1 in the –dox (top) and +dox (bottom) cells (B) De novo motif enrichment was performed within RUNX1 ChIP-seq peaks, at both the uniquely called peaks and those shared between - and +dox. (C) Pie charts showing the distribution of ChIP peaks between distal elements and promoters (D) DNA sequences underlying the ChIP-seq peaks shown in Figure 5D, with ETS motifs highlighted in

blue and RUNX motif highlighted in red. On the left is the Ncor -3 element which is bound by both RUNX1 and RUNX1-EVI1, on the right is the Ccnc -15 element which is bound by RUNX1-EVI1 alone. Chromosomal coordinates shown correspond to version mm10 of the mouse genome.
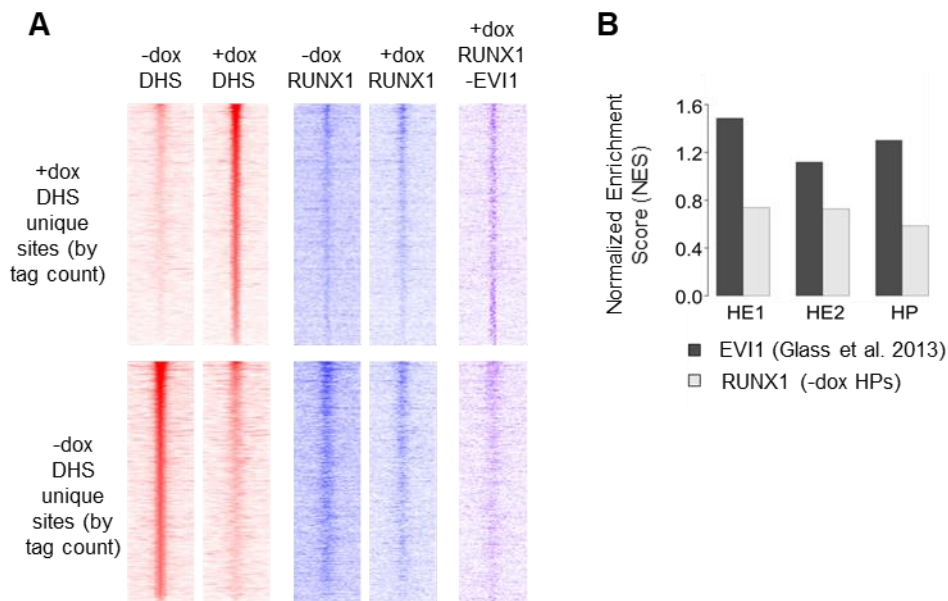
Supplementary Figure 6 Changes to chromatin organisation and gene expression are modulated by RUNX1 and RUNX1-EVI1 binding. (A) RUNX1 and RUNX1-EVI1 ChIP peaks were plotted alongside HP - or +dox unique DNaseI-seq peaks, which had been ranked by tag count and the density plotted across a 2kb window (B) Normalized Enrichment Scores (NES) from Gene Set Enrichment Analysis comparing gene expression changes after RUNX1-EVI1 induction in HE1, HE2 and HP cells to wild-type EVI1 targets from SKH1 cells[2] and RUNX1 targets from -dox cells. Genes that were upregulated after RUNX1-EVI1 induction were significantly enriched for EVI1 targets (FDR q-value < 0.0001 for HE1, HE2 and HP) but not RUNX1 targets (FDR q-value ≈ 1 for HE1, HE2 and HP)

Supplementary Methods

Mouse RUNX1-EVI1 ESC generation

RUNX1-EVI1 from the pME18s-RUNX1-EVI1 plasmid (a gift from Kinuko Mitani, Dokkyo Medical University, Japan) was cloned into the p2lox-targeting vector (a gift from Michael Kyba, University of Minnesota). A2lox ESCs (a gift from Michael Kyba) were transduced with 20 µg of p2lox-RUNX-EVI1 using the 4D-Nucleofector (Lonza) with the mouse ES program, with the P3 primary cell kit.

Individual colonies were expanded on mouse embryonic feeder cells in ES cell medium, comprising DMEM (Sigma D6546), 15% FCS (Sigma ES-009), 100 units/ml penicillin, 100 µg/ml streptomycin, 1 mM sodium pyruvate, 1mM L-glutamine, 0.15 mM monothioglycerol, 1x non-essential amino acids and 10^3 U/ml leukaemia inhibitory factor (ESGRO, Millipore) following 7 days of 300 µg/ml neomycin selection.

ESC Differentiation

ESCs were passaged twice onto gelatine-coated tissue culture plastic without MEFs, on the second passage DMEM was substituted for IMDM (Sigma I3390). Cells were then plated into bacterial-grade dishes at a density of 2.5×10^4 cells/ml with IMDM, 15% FCS (Gibco), 100 units/ml penicillin, 100 µg/ml streptomycin, 1 mM sodium pyruvate, 1mM L-glutamine, 0.15 mM monothioglycerol, 0.18 mg/ml hTransferrin (Roche), 50 µg/ml ascorbic acid. After 3.25 days the resulting embryoid bodies were dispersed using TrypLE express (Gibco) to single cells and FLK1+ cells were purified by magnetic cells sorting, using biotin-conjugated CD309 antibody (eBioscience), anti-biotin microbeads (Miltenyi Biotec) and LS columns (Miltenyi Biotec). These FLK1+ cells were then cultured in gelatin-coated flasks – 1.4×10^6 cells in a T150 flask – in IMDM, 10% FCS (Gibco), 20% D4T condition media, 100 units/ml penicillin, 100 µg/ml streptomycin, 1 mM sodium pyruvate, 1mM L-glutamine, 0.45 mM monothioglycerol, 0.18 mg/ml hTransferrin (Roche), 25 µg/ml ascorbic acid, 5 ng/ml mVEGF (Peprotech) and 10 ng/ml mIL-6 (Peprotech). After 1 day 0.5 µg/ml doxycycline was added where appropriate and cells were cultured in the same media for a further 18 hours prior to sorting for HE and HPs, or a further 42 hours for maturation in liquid/blast culture.

Cell cycle and apoptosis analysis

For cell cycle analysis cells were fixed in ice-cold 70% ethanol added dropwise with vortexing and kept at 4°C overnight. Cells were rehydrated in PBS, treated with 100 µg/ml RNase A at 37°C for 20 minutes, then resuspended in PBS containing 10 µg/ml 7-Aminoactinomycin D (7-AAD, Sigma). For G_0 analysis unfixed cells were incubated with 10 µg/ml Hoechst 33342 (Sigma) at 37°C for 45 minutes, then Pyronin Y (Sigma) was added to 5µg/ml for a further 15 minutes at 37°C at which point tubes were transferred onto ice. For apoptosis analysis cells were suspended in Annexin V and propidium iodide (eBioscience) at the concentrations indicated by the manufacturer for 15 minutes at room temperature. All samples were then analysed on a Cyan ADP flow cytometer (Beckman Coulter) with data analysis using Summit or FlowJo software.

Colony forming unit (CFU) assays

HP cells were taken as above and 5×10^3 cells were seeded in 1 ml MethoCult (M3434 STEMCELL Technologies) per dish, where appropriate 0.5 µg/ml doxycycline was also added. These were done in duplicate and then counted after 10 days.

Western blotting

20 µg of protein extracts in Laemmli buffer were run on a 4-20% gradient pre-cast gel (Bio-Rad) and transferred to nitrocellulose using Turbo transfer packs (Bio-Rad). Membranes were blocked using 5% milk, then 1:1000 EVI1 antibody (2593, Cell Signalling Technologies) was incubated overnight at 4°C in 5% milk. HRP-conjugated anti-rabbit antibody (Cell Signalling Technologies) was incubated for 1 hour at room temperature, enhanced chemiluminescent reagent (Amersham) applied and blot was visualised using a Gel Doc system (Bio-Rad). For loading controls membranes were stripped using Restore stripping buffer (Thermo Scientific) and GAPDH (ab8245, Abcam) was applied.

Gene expression analysis

RNA was isolated from sorted cells using the NucleoSpin RNA kit (Macherey-Nagel). RNA-seq libraries were prepared from two biological replicates using the True-Seq stranded total RNA kit (Illumina) and sequenced paired-end in a pool of 12 indexed libraries using a Next-Seq 500/550 high output kit v2 150 cycles (Illumina) at the Genomics Birmingham sequencing facility. cDNA was also generated for validation from RNA using Superscript II (Invitrogen) and qRT-PCR performed using SYBR green PCR master mix (Applied Biosystems) and primers indicated in the table below, then run on a StepOne qPCR machine. All kits were used according to the manufacturer's instructions.

Gene	Forward primer	Reverse primer
Cdkn1c	CTGAAGGACCAGCCTCTCTC	AAGAAGTCGTTCGCATTGGC
Csf1r	CTTTGGTCTGGGCAAAGAAGAT	CAGGGCCTCCTTCTCATCAG
Fli1	TCGTGAGGACTGGTCTGTATGG	GCTGTTGTCGCACCTCAGTTAC
Gapdh	ACCTGCCAAGTATGATGACATCA	GGTCCTCAGTGTAGCCCAAGAT
Meis1	GACGATGATGACCCTGATAAG	GTTCACTTGAAGGATGGTAAGTCC
Mpo	TTTGCCTGCTCTTAACATGCA	GGAAGCCCACAAAAGCGTC
Nfe2	GTTGTTGGCACAGTATCCGC	TCTTGCGACAGTTTTGGGCT
RUNT domain	AACAAGACCCTGCCCATCGCTTTC	CATCACAGTGACCAGAGTGCCAT
mRunx1	AGCGGTAGAGGCAAGAGCTTC	CGGATTTGTAAAGACGGTGATG
RUNX1-EVI1	CCACAGAGCCATCAAAATCA	TCTGGCATTTCTTCCAAAGG
Spi1	CCATAGCGATCACTACTGGGATTT	TGTGAAGTGGTTCTCAGGGAAGT

DNaseI-seq

DNaseI was performed as previously described[3]. 3×10^5 sorted cells were added directly to DNaseI (Worthington Biochemical Corporation) used between 6 and 13 U/ml for 3 minutes at 22°C. The reaction was terminated by addition of SDS to 0.5% and cell lysates treated with 0.5 mg/ml proteinase K overnight at 45°C overnight then 0.2 mg/ml RNaseA for 1 hour at 37°C. DNA was isolated by phenol/chloroform extraction and level of DNaseI digestion was assessed using qRT-PCR for the active TBP promoter compared to an inactive region of chromosome 1 to ensure comparable digestion points were used. DNaseI fragments were size selected on an agarose gel to between 50 and 250 bp then used

to generate a library using the KAPA hyper prep kit, according to the manufacturer's instructions. These were then further size selected to obtain fragments between 200 and 300 bp and sequenced single-end in a pool of 12 indexed libraries using a Next-Seq 500/550 high output kit v2 75 cycles (Illumina) at the Genomics Birmingham sequencing facility.

ChIP-seq

KIT+ floating progenitor cells were purified by taking cells in the media and loosened by one wash in MACS buffer, and using biotin-conjugated CD117 antibody (eBioscience) for magnetic cell sorting, then crosslinked for 45 minutes at room temperature in PBS with 0.83 mg/ml Di(N-succinimidyl) glutarate (Sigma), followed by a second crosslink for 10 minutes at room temperature in PBS with 1% formaldehyde (Pierce) which was quenched by adding 1/10th volume of 2M glycine. Nuclei were prepared as ref then sonicated for 8 cycles of 30s on/30s off using a Picoruptor (Diagenode), in 25 mM Tris 1 M pH 8.0, 150 mM NaCl, 2 mM EDTA pH 8.0, 1% TritonX-100 and 0.5% SDS. The chromatin fragments were diluted with 2 volumes of buffer containing 25 mM Tris pH 8.0, 150mM NaCl, 2 mM EDTA pH 8.0, 1% TritonX-100, 7.5% glycerol. Immunoprecipitation was carried out overnight at 4°C using 2 µg of RUNX1 (ab23980, Abcam) or EVI1 (2593, Cell Signalling Technologies) antibody coupled to 15 µg Dynabeads Protein G (Invitrogen) per 2 x 10^6 cells. The beads were then washed using low salt, high salt, LiCl and TE/NaCl buffers and eluted, the resulting material was incubated overnight with 0.25 mg/ml proteinase K. DNA from 2-3 immunoprecipitations was pooled and extracted using Ampure beads (Beckman Coulter) and ChIP quality was assessed using qRT-PCR. ChIP libraries were generated and sequenced as for DNaseI using the KAPA hyper prep kit, except libraries were size selected to obtain fragments between 150 and 450 bp.

RNA-seq analysis

Raw paired-end sequencing data were processed to remove low quality sequences and adaptors with Trimmomatic v0.32.[4] The processed reads were then aligned to the mouse genome (version mm10) using Hisat2 v2.1.0[5]with default parameters. Gene expression was measured as Fragments Per Kilobase of transcript per Million mapped reads (FPKM) values with Stringtie v1.3.3[6] using gene models from RefSeq as the reference transcriptome. Only genes that had an FPKM greater than 1 in at least one sample were considered expressed and were used in downstream analyses. FPKM values were normalized using quantile normalization implemented in the Limma package v3.26.9[7] in R v3.2.3 and further log2-transformed as log2(FPKM + 1). Differential gene expression analysis was carried out by fitting a linear model to the data with Limma. A gene was considered to be differentially expressed if it had a fold-change of at least 2 between experimental conditions and a Benjamini-Hochberg adjusted p-value < 0.05.

Gene Ontology (GO) biological process and Kyoto Encyclopaedia of Genes and Genomes (KEGG) pathway enrichment analysis was carried out on the sets of up and downregulated genes using the ClueGO plugin v2.5.0[8] in Cytoscape v3.6.1[9] using a right-sided hypergeometric test. The resulting p-values were corrected for multiple testing using the Benjamini-Hochberg method. A GO term or KEGG pathway was deemed to be significantly enriched of the adjusted p-value was < 0.05.Gene Set Enrichment Analysis was conducted using the GSEA software v2.2.4 from the Broad institute.[10]

Clustering of gene expression data was carried out by first calculating pair-wise Pearson correlations of the log2-transformed FPKM values for each pair of samples in R v3.2.2. The resulting correlation

values were then converted to a distance, which was calculated as 1 - pearson correlation. These were then hierarchically clustered using average linkage clustering and plotted as a heatmap in R.

DNaseI-seq analysis

Raw single-end reads from DNaseI-seq experiments were processed with Trimmomatic v0.32. The processed reads were aligned to the mouse genome (version mm10) using Bowtie2 v2.2.3[11] with the option --very-sensitive-local. The resulting alignments were filtered to remove potentially PCR duplicated reads using the MarkDuplicates function in Picard v2.10.5 (http://broadinstitute.github.io/picard). Peaks corresponding to regions of open chromatin were identified using MACS2 v2.1.1[12] with the options -g mm --keep-dup all -B --trackline --nomodel --shift -100 --extsize 200. These were then filtered against the mm10 blacklist and the simple repeats track from the UCSC table browser[13] to remove peaks that are potential artefacts from the data. Peaks were annotated to the nearest gene based on the transcriptional start site (TSS) using the annotatePeaks function in Homer v4.9.1,[14] and further sub-divided as either a promoter or distal element. A peak was considered to be in the promoter of a gene if it was within 1.5kb of the TSS and as a distal element otherwise.

To identify regions with differential chromatin accessibility, a peak union was first created between the pair of samples being analysed. A peak union was created by identifying peaks that had summit positions within 400bp of each other and merging them into a single peak. A new summit position was then defined for these peaks as the mid-point between the original summit positions. This average summit position was then used in all further down-stream analysis. The read density within a 200bp window centered on the peak summit was retrieved from the bedGraph files produced by MACS2 using the annotatePeaks function in Homer. Read counts were normalized as counts per million (CPM) in R, and further log2-transformed with a pseudocount of 1 being added to each of the normalized read counts prior to transformation. A peak was considered to be differentially accessible if it had a fold-difference greater than 2 between samples.

Read density plots were created by first ranking peaks according to fold-difference. The density in a 2kb window centered on the peak summit was then retrieved from the bedGraph files using the annotatePeaks function in Homer with the options -size 2000 -hist 10 -ghist. This was then plotted as a heatmap in Java TreeView v1.1.[15]

ChIP-seq analysis

Sequence reads from ChIP-seq experiments were pre-processed, aligned to the mouse genome and de-duplicated as described above for the DNaseI-seq data. Peaks were identified using MACS v2.1.1 with the options -g mm --keep-dup all -B --trackline. Only peaks that were found within open chromatin regions (as determined by the DNaseI-seq data) were retained for further analysis. Peaks that were specific to an experimental condition or that were shared between conditions were identified using the intersect function in bedtools v2.25.0.[16] The distance between RUNX1 and RUNX1-EVI1 binding sites was measured using bedtools closest. Read density plots for ChIP-seq data were created as described above for the DNaseI-seq data.

Generation of genome browser tracks

Coverage tracks for DNaseI-seq and ChIP-seq data were generated using the bamCoverage function in DeepTools v3.0.1. [17] Tracks were normalized as Counts Per Million (CPM) and multiplied by a scaling factor of 10 using the parameters --normalizeUsing CPM --scaleFactor 10. The resulting coverage tracks were then plotted using the UCSC Genome Browser.[18]

Motif enrichment analysis

A de-novo motif search was carried out in each of the specific and shared groups of DHSs and ChIP-seq peaks using the findMotifsGenome function in Homer v4.9.1 with the options -size 200 -noknown.

References

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Supplementary Table 1 Genes de-regulated in HE1 cells, FC given as +dox/-dox

Gene_ID	logFC	Pvalue	FDR
Hprt	3.48367	2.01E-39	2.28E-35
Nts	2.88441	1.37E-27	7.79E-24
Gja5	2.81504	2.33E-26	8.82E-23
Ltb	2.57122	2.87E-22	8.16E-19
St6galnac2	2.54343	7.97E-22	1.81E-18
Ctsh	2.49794	4.14E-21	7.85E-18
Mall	2.48852	5.81E-21	8.83E-18
Spint2	2.48663	6.22E-21	8.83E-18
Lgr6	2.41792	7.01E-20	8.86E-17
Tm4sf1	2.34104	9.77E-19	1.01E-15
Prom1	2.31998	1.98E-18	1.88E-15
Mogat2	2.31517	2.33E-18	2.03E-15
Smtnl1	2.30552	3.21E-18	2.60E-15
Sema7a	2.22753	4.10E-17	2.91E-14
Hid1	2.1488	4.94E-16	3.30E-13
Tmem255b	2.09002	2.99E-15	1.70E-12
Pdzk1ip1	2.07694	4.43E-15	2.40E-12
Lsr	2.05551	8.40E-15	4.34E-12
Cxcr4	2.0421	1.25E-14	6.18E-12
Spint1	2.01859	2.50E-14	1.09E-11
Slco4a1	1.99279	5.28E-14	2.22E-11
Slc12a2	1.96338	1.23E-13	4.98E-11
Marveld2	1.94956	1.81E-13	7.11E-11
Etv4	1.94684	1.96E-13	7.42E-11
Dag1	1.93245	2.94E-13	1.08E-10
Serpine1	1.86076	2.11E-12	7.06E-10
Dll4	1.83283	4.47E-12	1.41E-09
Zfp185	1.80966	8.26E-12	2.53E-09
Vegfc	1.75196	3.68E-11	1.10E-08
Chrnb1	1.721	8.06E-11	2.23E-08
Ivl	1.69912	1.39E-10	3.76E-08
Mal	1.69109	1.69E-10	4.38E-08
Stmn2	1.68639	1.90E-10	4.81E-08
Tnfrsf23	1.66765	3.01E-10	7.13E-08
Bcam	1.65309	4.28E-10	9.93E-08
Nedd9	1.65076	4.53E-10	1.03E-07
Pdgfa	1.65008	4.61E-10	1.03E-07
Nodal	1.64585	5.10E-10	1.11E-07
Pdlim2	1.62747	7.92E-10	1.70E-07
Dusp9	1.62466	8.46E-10	1.78E-07
Spon2	1.61928	9.61E-10	1.99E-07

Arhgap8	1.61171	1.15E-09	2.33E-07
Chmp4c	1.60481	1.35E-09	2.66E-07
Osmr	1.60466	1.36E-09	2.66E-07
Fam46b	1.59965	1.53E-09	2.94E-07
Ocln	1.58781	2.01E-09	3.81E-07
Cdkn1c	1.58633	2.08E-09	3.88E-07
Egfr	1.58536	2.13E-09	3.90E-07
Rdh10	1.57232	2.88E-09	5.03E-07
Dsp	1.56616	3.31E-09	5.62E-07
Sema3g	1.56102	3.73E-09	6.23E-07
Nmnat2	1.55785	4.01E-09	6.50E-07
Slc45a4	1.5536	4.41E-09	7.07E-07
Hba-a1	1.54256	5.67E-09	8.95E-07
Dusp5	1.54054	5.94E-09	9.16E-07
Gprc5a	1.53989	6.02E-09	9.16E-07
Rgs5	1.53974	6.04E-09	9.16E-07
Fbp1	1.53286	7.06E-09	1.05E-06
Crlf1	1.53117	7.33E-09	1.08E-06
Tmem154	1.52204	8.99E-09	1.29E-06
Ltbp4	1.51672	1.01E-08	1.44E-06
Synpo	1.50983	1.18E-08	1.65E-06
Fam110c	1.50381	1.35E-08	1.87E-06
Wnt11	1.5012	1.43E-08	1.95E-06
Snurf	1.49841	1.52E-08	2.05E-06
Prnd	1.49148	1.77E-08	2.36E-06
Hey1	1.48611	1.99E-08	2.63E-06
Slc16a9	1.48018	2.26E-08	2.92E-06
Cdkn2b	1.4716	2.72E-08	3.48E-06
Etv5	1.45751	3.69E-08	4.55E-06
Edn1	1.4552	3.87E-08	4.73E-06
Ubd	1.45464	3.92E-08	4.74E-06
Galnt3	1.44379	4.94E-08	5.91E-06
Sorcs2	1.44286	5.04E-08	5.97E-06
Krt18	1.43673	5.74E-08	6.52E-06
Col11a1	1.42411	7.49E-08	8.42E-06
Eps8l2	1.41206	9.63E-08	1.07E-05
Vwf	1.40522	1.11E-07	1.22E-05
Llgl2	1.39486	1.37E-07	1.49E-05
Serping1	1.37386	2.11E-07	2.24E-05
Fhl2	1.37341	2.13E-07	2.24E-05
Ptgs2	1.36321	2.62E-07	2.65E-05
Pla2g7	1.36165	2.70E-07	2.71E-05
Cxcl14	1.3576	2.93E-07	2.92E-05
Ifitm1	1.35506	3.08E-07	3.04E-05
Vgf	1.35362	3.17E-07	3.11E-05
Ano1	1.35013	3.40E-07	3.30E-05
Dmd	1.33454	4.63E-07	4.39E-05
Slc22a18	1.33081	4.98E-07	4.64E-05
Gadd45b	1.32909	5.16E-07	4.76E-05
Ethe1	1.30259	8.64E-07	7.79E-05
Adm	1.29232	1.05E-06	9.34E-05
Nqo1	1.29136	1.07E-06	9.44E-05
Arc	1.28864	1.13E-06	9.87E-05
Mt2	1.28743	1.16E-06	0.0001
Acta1	1.28541	1.20E-06	0.0001
Rps16	1.28081	1.31E-06	0.00011
Stk26	1.27856	1.37E-06	0.00012
Gpc1	1.27695	1.41E-06	0.00012

Cnksr1	1.27666	1.42E-06	0.00012
Gsn	1.27622	1.43E-06	0.00012
Ezr	1.26054	1.92E-06	0.00016
Prkcd	1.24966	2.35E-06	0.00018
Aes	1.24608	2.51E-06	0.00019
Mtmr7	1.24175	2.72E-06	0.00021
Tpd52	1.23751	2.94E-06	0.00022
Myl9	1.23731	2.96E-06	0.00022
Egr1	1.23459	3.11E-06	0.00023
Cyb561	1.23014	3.37E-06	0.00025
Cd68	1.22672	3.59E-06	0.00026
Slc35g3	1.22653	3.60E-06	0.00026
Ncs1	1.22562	3.66E-06	0.00026
Prkcdbp	1.22072	4.00E-06	0.00028
Gm4070	1.21829	4.18E-06	0.00029
Patj	1.21813	4.20E-06	0.00029
Clu	1.21781	4.22E-06	0.00029
Esrp2	1.21349	4.56E-06	0.00031
Kank1	1.21346	4.56E-06	0.00031
Cyr61	1.21247	4.65E-06	0.00032
Pramef12	1.21224	4.67E-06	0.00032
Tspan8	1.21133	4.74E-06	0.00032
Apoo-ps	1.21108	4.77E-06	0.00032
Eml2	1.20963	4.89E-06	0.00033
Rnd1	1.20914	4.94E-06	0.00033
Ablim1	1.2083	5.01E-06	0.00033
Tmem254c	1.20775	5.06E-06	0.00033
Hbegf	1.20567	5.25E-06	0.00034
Fblim1	1.19849	5.97E-06	0.00038
Emp2	1.19538	6.32E-06	0.0004
Jag1	1.19239	6.66E-06	0.00042
Mmp23	1.18145	8.08E-06	0.0005
Fam107a	1.17868	8.49E-06	0.00052
Ssh3	1.1786	8.50E-06	0.00052
Rhobtb2	1.17587	8.92E-06	0.00055
Unc13b	1.17278	9.41E-06	0.00057
Timd2	1.17114	9.69E-06	0.00058
Fbln2	1.16841	1.02E-05	0.0006
Hoxd1	1.1683	1.02E-05	0.0006
Laptm5	1.16793	1.02E-05	0.0006
Aph1b	1.16738	1.03E-05	0.00061
Bmx	1.1627	1.12E-05	0.00064
Krt19	1.15173	1.36E-05	0.00076
Npr3	1.15164	1.36E-05	0.00076
Sh3bgrl2	1.14925	1.42E-05	0.00079
2200002D01Rik	1.14637	1.49E-05	0.00082
Pfkfb3	1.14013	1.66E-05	0.0009
Chrna7	1.13263	1.88E-05	0.00101
Msrb3	1.12848	2.02E-05	0.00108
Tnfrsf26	1.12744	2.05E-05	0.00109
Pdgfd	1.12624	2.10E-05	0.0011
Ctgf	1.12624	2.10E-05	0.0011
F10	1.12321	2.20E-05	0.00114
Fmnl1	1.11642	2.47E-05	0.00126
Tec	1.11376	2.58E-05	0.0013
Gulp1	1.10948	2.77E-05	0.00138
Nrep	1.10733	2.88E-05	0.00141
Fgf15	1.09696	3.41E-05	0.00165

Itpr3	1.0967	3.43E-05	0.00165
Fam124b	1.09461	3.55E-05	0.0017
Slc12a7	1.09221	3.69E-05	0.00176
Igfbp3	1.0922	3.69E-05	0.00176
Dhh	1.09043	3.80E-05	0.0018
Coro1a	1.08375	4.24E-05	0.00199
Sp110	1.08235	4.34E-05	0.00203
Sel1l3	1.08205	4.36E-05	0.00203
Fos	1.07752	4.69E-05	0.00217
Tinagl1	1.07234	5.10E-05	0.00233
Map6	1.07221	5.11E-05	0.00233
Anxa1	1.07049	5.26E-05	0.00238
Hlx	1.07034	5.27E-05	0.00238
Cyp1a1	1.06554	5.69E-05	0.00253
Gm20594	1.06345	5.88E-05	0.00259
Hhex	1.06253	5.97E-05	0.00262
Rassf9	1.0624	5.98E-05	0.00262
Capn1	1.06203	6.02E-05	0.00262
Pfkp	1.06169	6.05E-05	0.00262
Wfdc2	1.06136	6.08E-05	0.00262
Ptp4a3	1.05822	6.40E-05	0.00272
Plpp2	1.05695	6.53E-05	0.00276
Spi1	1.05681	6.54E-05	0.00276
Arhgdig	1.05282	6.97E-05	0.00293
Fzd6	1.05007	7.28E-05	0.00304
Cpeb1	1.04998	7.29E-05	0.00304
P4ha3	1.03644	9.03E-05	0.0037
Tnfrsf12a	1.03591	9.10E-05	0.00372
Ccdc184	1.03251	9.60E-05	0.00387
A4galt	1.02862	0.0001	0.00409
Hacd4	1.02818	0.0001	0.0041
Aqp11	1.02813	0.0001	0.0041
Ctse	1.02786	0.0001	0.0041
Crym	1.0274	0.0001	0.00411
Slc9a3r1	1.02034	0.00012	0.00451
Pde3b	1.01993	0.00012	0.00451
Ccdc60	1.01876	0.00012	0.00456
Jag2	1.01661	0.00012	0.00467
Tcf7	1.01659	0.00012	0.00467
Tmc7	1.01619	0.00012	0.00467
Sprr2a3	1.0082	0.00014	0.00524
Grb7	1.00772	0.00014	0.00525
Sgms2	1.00761	0.00014	0.00525
Sprr2a1	1.00605	0.00014	0.00533
Pnp2	1.00599	0.00014	0.00533
Tmem100	1.0055	0.00015	0.00534
Tagln	1.0054	0.00015	0.00534
Car8	-1.0072	0.00014	0.00526
Mmd	-1.0085	0.00014	0.00523
Slc22a23	-1.0163	0.00012	0.00467
Arl4d	-1.0168	0.00012	0.00467
Npl	-1.0191	0.00012	0.00455
Atp6v0e2	-1.0198	0.00012	0.00451
Myzap	-1.0226	0.00011	0.00437
Hoxb5	-1.0241	0.00011	0.00428
Rab3il1	-1.0264	0.00011	0.00415
Arhgef3	-1.0266	0.00011	0.00415
Gpm6b	-1.0342	9.34E-05	0.00378

Lrp11	-1.0344	9.32E-05	0.00378
Pde4dip	-1.0353	9.18E-05	0.00374
Tet1	-1.0377	8.85E-05	0.00364
Hist1h2ao	-1.0398	8.56E-05	0.00354
Akr1c13	-1.0492	7.38E-05	0.00306
Postn	-1.0514	7.14E-05	0.00299
Lat	-1.0597	6.25E-05	0.00267
Hoxb2	-1.0608	6.14E-05	0.00263
Edil3	-1.0617	6.06E-05	0.00262
Hecw2	-1.065	5.74E-05	0.00254
Tbx3	-1.0653	5.71E-05	0.00253
Kank3	-1.067	5.56E-05	0.00249
Ednrb	-1.0675	5.51E-05	0.00248
Nlrc3	-1.0679	5.48E-05	0.00247
Trf	-1.0732	5.03E-05	0.00231
Plpp3	-1.0796	4.54E-05	0.0021
F2rl2	-1.0863	4.07E-05	0.00192
P2rx1	-1.0988	3.31E-05	0.00161
Tspan12	-1.1026	3.11E-05	0.00152
Slc38a10	-1.1044	3.02E-05	0.00148
Nefl	-1.1082	2.83E-05	0.0014
Ddah2	-1.1095	2.77E-05	0.00138
Acap1	-1.1097	2.76E-05	0.00138
Cnr2	-1.113	2.62E-05	0.00132
1600002H07Rik	-1.1149	2.53E-05	0.00128
Tubb3	-1.1197	2.34E-05	0.0012
Vcan	-1.1203	2.31E-05	0.00119
Mdm1	-1.1209	2.29E-05	0.00118
Kcnk9	-1.1245	2.16E-05	0.00112
Unc5c	-1.1256	2.12E-05	0.00111
Rnd2	-1.1342	1.83E-05	0.00099
Apcdd1	-1.1371	1.74E-05	0.00094
Bgn	-1.1382	1.71E-05	0.00093
Gas6	-1.1415	1.62E-05	0.00089
Adgrg3	-1.1481	1.44E-05	0.0008
Msh5	-1.1512	1.37E-05	0.00077
Peg3	-1.1564	1.25E-05	0.00071
Gpr182	-1.1615	1.15E-05	0.00065
Hapln1	-1.1646	1.09E-05	0.00063
Kcnk5	-1.1649	1.08E-05	0.00063
Cnnm2	-1.167	1.04E-05	0.00061
Lyve1	-1.1702	9.85E-06	0.00059
Ubash3b	-1.1716	9.61E-06	0.00058
B4galt7	-1.173	9.38E-06	0.00057
Sgk1	-1.1825	7.93E-06	0.0005
Slc29a1	-1.1861	7.45E-06	0.00047
Gem	-1.2075	5.08E-06	0.00033
Cyp26a1	-1.2126	4.64E-06	0.00032
Itga2b	-1.2258	3.65E-06	0.00026
Tfpi	-1.2287	3.46E-06	0.00025
Etv2	-1.2458	2.53E-06	0.00019
BC028528	-1.246	2.52E-06	0.00019
Gad2	-1.2502	2.33E-06	0.00018
Il4ra	-1.2526	2.23E-06	0.00018
Fmo1	-1.2568	2.06E-06	0.00016
Csgalnact1	-1.2584	2.00E-06	0.00016
Colec12	-1.2602	1.93E-06	0.00016
Igf1	-1.2762	1.43E-06	0.00012

Prtg	-1.2779	1.39E-06	0.00012
Brinp1	-1.2944	1.01E-06	9.05E-05
Gm20716	-1.3166	6.58E-07	5.98E-05
Ddc	-1.3175	6.47E-07	5.93E-05
Dcaf12l1	-1.3333	4.74E-07	4.45E-05
Cped1	-1.3377	4.35E-07	4.15E-05
Mrc1	-1.3393	4.22E-07	4.06E-05
Capn5	-1.3647	2.54E-07	2.60E-05
Glp1r	-1.3714	2.22E-07	2.29E-05
Lgals9	-1.3715	2.21E-07	2.29E-05
Gstk1	-1.3776	1.96E-07	2.10E-05
Aqp8	-1.4005	1.22E-07	1.34E-05
Add3	-1.4368	5.73E-08	6.52E-06
Slc26a10	-1.4378	5.61E-08	6.51E-06
Lhx6	-1.4385	5.53E-08	6.48E-06
Vwa7	-1.4604	3.46E-08	4.32E-06
Slc30a3	-1.4672	3.00E-08	3.78E-06
Sapcd1	-1.4841	2.07E-08	2.71E-06
Akr1b8	-1.5263	8.17E-09	1.19E-06
Gm13889	-1.5592	3.89E-09	6.40E-07
F2rl3	-1.57	3.03E-09	5.22E-07
Slc1a2	-1.5728	2.84E-09	5.03E-07
Fzd10	-1.5819	2.30E-09	4.16E-07
Ptgs1	-1.6719	2.71E-10	6.56E-08
Ucn	-1.6854	1.95E-10	4.82E-08
Hba-a2	-1.6911	1.69E-10	4.38E-08
Mecom	-1.7344	5.74E-11	1.63E-08
Gstp2	-1.7349	5.68E-11	1.63E-08
Syt13	-1.8462	3.13E-12	1.01E-09
Samsn1	-1.8657	1.85E-12	6.36E-10
Gas7	-1.8754	1.42E-12	5.04E-10
Oit3	-2.0194	2.44E-14	1.09E-11
Atp6v0c	-2.0323	1.67E-14	7.91E-12
C330021F23Rik	-2.1226	1.11E-15	6.62E-13
Aplnr	-2.1424	6.01E-16	3.79E-13
Has2	-2.232	3.56E-17	2.70E-14
Bmp2	-2.3418	9.52E-19	1.01E-15

Supplementary Table 2 Genes de-regulated in HE2 cells, FC given as +dox/-dox

Gene_ID	logFC	Pvalue	FDR
Ctsh	4.44373	8.13E-09	2.36E-05
Lars2	4.19568	0.01516	0.11841
Il1b	4.17331	1.24E-09	1.43E-05
Mogat2	3.97383	6.95E-09	2.36E-05
Rps27	3.65407	0.03389	0.18086
Smtnl1	3.52913	2.12E-08	4.10E-05
Pdzk1ip1	3.45691	7.19E-07	0.00049
Nts	3.35047	4.76E-05	0.00391
Hist2h2aa2	3.32962	0.03962	0.19684
Tspan8	3.30513	6.18E-07	0.00045
Gja5	3.10766	8.10E-05	0.00545
Coro1a	3.10765	1.89E-07	0.0002
Ltb	3.09971	1.68E-08	3.88E-05
Mt2	3.03835	9.02E-06	0.00141
Ocln	2.98124	3.10E-06	0.00106
Sprr2a3	2.88479	1.28E-06	0.00067

Pygl	2.85172	1.11E-06	0.00064
Hprt	2.84424	9.72E-08	0.00015
Cxcr4	2.78746	4.56E-06	0.00119
Ptprc	2.74089	1.02E-06	0.00062
Hid1	2.68791	2.10E-07	0.0002
Naaa	2.6628	1.25E-07	0.00015
Fam189a2	2.63411	2.97E-07	0.00026
Stk26	2.62808	1.22E-07	0.00015
Tm4sf1	2.58452	3.36E-05	0.00317
Slc16a9	2.57013	1.28E-07	0.00015
Marveld2	2.5667	3.36E-07	0.00028
Ifitm1	2.56251	2.95E-06	0.00105
Sema7a	2.52278	2.98E-06	0.00105
Cd200r3	2.4883	9.59E-07	0.00062
Prom1	2.47298	4.45E-06	0.00119
Dmd	2.4339	3.60E-06	0.00116
Serping1	2.30735	4.43E-07	0.00034
Lsr	2.30679	2.22E-06	0.00097
S100a4	2.27617	8.00E-06	0.00136
Capg	2.25266	1.21E-06	0.00067
Vegfc	2.25234	2.35E-06	0.00097
Stmn2	2.23951	1.33E-06	0.00067
Sprr2a1	2.22924	1.29E-05	0.00172
Bcam	2.22802	6.38E-06	0.00126
St6galnac2	2.1837	4.33E-06	0.00119
St8sia4	2.16673	0.0003	0.01201
Trim47	2.16363	3.90E-06	0.00119
Sprr2a2	2.15113	8.80E-06	0.0014
Sp100	2.143	2.25E-05	0.0025
Steap4	2.13489	1.13E-05	0.00155
Nedd9	2.13335	0.0012	0.0279
Procr	2.13276	4.70E-06	0.00119
Sema3g	2.13223	0.0001	0.00601
Ivl	2.12918	7.30E-06	0.00133
Matk	2.12733	1.42E-06	0.00068
Anpep	2.1027	3.44E-05	0.00319
Chrnb1	2.09891	2.99E-05	0.00301
Tnfrsf23	2.09337	3.29E-05	0.00316
Nos3	2.08564	9.10E-06	0.00141
Entpd1	2.06776	3.29E-06	0.00109
Mal	2.05833	7.93E-06	0.00136
Lgr5	2.04033	4.59E-06	0.00119
Ahrr	2.02233	1.72E-05	0.00208
Edn1	2.0218	0.00175	0.03455
Spint1	2.0197	5.27E-06	0.00122
Setbp1	2.004	4.05E-06	0.00119
Nr4a1	2.00023	1.00E-05	0.00149
Dll4	2.00002	0.00018	0.00876
Slc22a18	1.98825	1.03E-05	0.0015
Mall	1.96646	2.02E-06	0.00093
Fbp1	1.95733	5.21E-05	0.00411
Tyrobp	1.95491	5.38E-06	0.00122
Ssh3	1.94418	1.11E-05	0.00155
Acer2	1.94398	8.48E-06	0.00138
Pla2g7	1.93839	4.00E-05	0.00348
Ptchd1	1.93431	0.00055	0.01704
Tbxas1	1.92753	6.63E-06	0.00126
Lgr6	1.92293	6.33E-06	0.00126

Arhgap8	1.92002	6.62E-06	0.00126
Cdkn1c	1.91586	6.04E-06	0.00125
Galnt3	1.90711	7.45E-06	0.00133
Fam124b	1.89644	1.64E-05	0.00203
Coro2a	1.88901	2.64E-06	0.00102
Rhag	1.88724	2.87E-06	0.00105
Ptpn18	1.87961	4.15E-06	0.00119
Eps8l2	1.87479	5.04E-06	0.00119
Nqo1	1.87479	4.82E-06	0.00119
Tmem255b	1.87088	6.83E-06	0.00128
Cyp7b1	1.86118	8.30E-06	0.00138
Prex2	1.85425	0.00094	0.0239
Grb7	1.83435	5.55E-05	0.00429
Ret	1.82721	4.17E-06	0.00119
Pde9a	1.81331	9.31E-06	0.00142
Ube2l6	1.81294	1.12E-05	0.00155
Cygb	1.8003	8.57E-06	0.00138
Ms4a6d	1.78482	3.26E-05	0.00316
Sh3bgrl2	1.77995	2.74E-05	0.00283
Cldn5	1.77643	0.00087	0.02324
Cd79b	1.77414	3.15E-05	0.00315
Pik3ip1	1.771	1.51E-05	0.0019
Mocos	1.76689	2.74E-05	0.00283
Pdlim2	1.76151	1.20E-05	0.00162
Dusp6	1.7585	0.00019	0.00921
Robo4	1.74168	0.00192	0.03596
Adcy7	1.73542	9.69E-06	0.00146
Pglyrp1	1.73181	3.30E-05	0.00316
Sat1	1.73108	0.00011	0.00619
F10	1.72071	0.00128	0.02918
Mfsd6	1.71724	3.72E-05	0.00332
Fam134b	1.71219	1.05E-05	0.00151
Krt18	1.70863	7.40E-06	0.00133
Lgals3	1.70582	1.68E-05	0.00205
Serpinb6a	1.70438	0.00017	0.00852
Ctsj	1.70412	7.84E-06	0.00136
Atp9a	1.7011	8.37E-05	0.00545
Spn	1.69192	2.45E-05	0.00265
Arhgef6	1.68521	1.59E-05	0.00199
Unc13b	1.68202	1.85E-05	0.00219
Asb4	1.67741	8.75E-05	0.00554
Vill	1.6755	3.43E-05	0.00319
Hacd4	1.66962	9.79E-05	0.00595
Tmem100	1.65638	8.35E-05	0.00545
Snn	1.64391	6.55E-05	0.00472
Fam107a	1.6325	9.41E-05	0.00583
Unc93b1	1.62389	1.88E-05	0.0022
Plpp2	1.62065	0.00013	0.00706
Aqp11	1.6191	1.15E-05	0.00157
C130074G19Rik	1.61424	0.00125	0.02848
Cyp1b1	1.61408	2.00E-05	0.0023
Oas1a	1.609	0.00022	0.00973
Cyp4v3	1.6	1.42E-05	0.00183
Vwf	1.59673	1.81E-05	0.00217
Snx11	1.59431	0.00035	0.01328
Etv4	1.59236	2.36E-05	0.00258
Rassf9	1.58919	3.60E-05	0.00326
Lhfpl2	1.58465	4.08E-05	0.00351

Tpd52	1.5823	2.85E-05	0.0029
Dusp5	1.57395	0.00024	0.01053
Chmp4c	1.56852	7.48E-05	0.00521
Sorcs2	1.56467	2.76E-05	0.00283
Jag1	1.554	5.77E-05	0.00437
Abca1	1.5511	0.00287	0.04587
Plcb2	1.5468	0.00013	0.00689
Fam49a	1.54634	0.00012	0.00646
Slc16a4	1.54346	4.39E-05	0.00374
Ppm1j	1.54322	0.00105	0.02563
Rgs2	1.54285	0.00256	0.04258
Epas1	1.53953	0.00088	0.02325
Rdh10	1.5393	5.29E-05	0.00415
Fmnl1	1.53656	0.00011	0.00608
Trpv2	1.53532	5.72E-05	0.00436
Gsn	1.53381	8.34E-05	0.00545
Sfxn3	1.53231	8.61E-05	0.00554
Ubd	1.53165	0.02561	0.15674
Ttll7	1.53021	2.06E-05	0.00231
Kctd12b	1.52842	0.0047	0.06069
Naprt	1.52657	2.70E-05	0.00283
Pak1	1.52477	2.04E-05	0.00231
Traf3ip3	1.52283	2.57E-05	0.00273
Fblim1	1.51583	0.00021	0.00943
Ly6e	1.50658	0.0001	0.00601
Tmem154	1.50187	7.76E-05	0.00532
Ccl9	1.49987	0.0005	0.01603
Pdlim4	1.48887	3.97E-05	0.00348
Msrb3	1.48803	8.18E-05	0.00545
Spint2	1.48664	0.00023	0.01019
Tbc1d10c	1.48423	5.65E-05	0.00434
Osmr	1.47994	0.00041	0.01431
Sgk3	1.4797	0.0001	0.00602
Cd68	1.47278	5.13E-05	0.00408
Cnksr1	1.47234	4.89E-05	0.00394
Ly6a	1.47186	0.00011	0.00619
Spata13	1.46602	0.00048	0.01588
Cd82	1.46597	0.00011	0.00608
Jag2	1.45984	0.00016	0.00827
Llgl2	1.45862	0.00057	0.01747
Prnd	1.45792	0.01115	0.10004
Aldh1l1	1.45755	0.00036	0.0135
Tnfrsf26	1.45551	5.43E-05	0.00422
Plcd1	1.45293	0.00019	0.00921
Hey1	1.45091	6.05E-05	0.00453
Tmem254a	1.4498	0.0016	0.03297
Nxpe5	1.44832	3.53E-05	0.00322
Stab1	1.4464	0.00074	0.02075
Amigo2	1.44604	0.00017	0.00849
Slc35g3	1.44415	6.91E-05	0.00491
Fam43a	1.44386	0.00013	0.00692
Dsp	1.43578	9.80E-05	0.00595
Scn11a	1.43361	0.00017	0.0086
Bmx	1.43263	4.86E-05	0.00393
Cd53	1.42905	0.00451	0.05958
Clec4n	1.42236	0.00316	0.04796
Tppp3	1.41836	8.57E-05	0.00554
Pdk4	1.40853	9.91E-05	0.00595

Slc2a12	1.40698	7.24E-05	0.00512
Neurl3	1.40411	0.00041	0.01431
H2-D1	1.39979	0.00027	0.01149
Pld2	1.39952	0.00011	0.00627
Prkcdbp	1.39073	0.0002	0.00935
Rasa4	1.38765	6.35E-05	0.00463
Gbp2b	1.38696	0.0189	0.13238
Cgnl1	1.38606	0.00081	0.022
Trim14	1.38025	7.51E-05	0.00521
Hbb-y	1.37964	0.0009	0.0235
Zfp185	1.37602	8.01E-05	0.00545
Adcy4	1.37441	0.00093	0.02376
Hmgn3	1.37376	0.00042	0.01441
Cyth4	1.36657	0.0002	0.00935
Cpne8	1.36504	8.69E-05	0.00554
Serpine1	1.36276	0.00409	0.05651
Il13ra1	1.36152	0.00493	0.06206
Ccdc184	1.36143	0.00088	0.02325
Trim30a	1.36047	0.00706	0.07667
Sept10	1.35732	0.00078	0.02134
Smpdl3a	1.35606	6.31E-05	0.00463
Slc12a2	1.35576	0.00064	0.01895
Hoxd8	1.35034	6.34E-05	0.00463
Thsd1	1.34605	0.00061	0.0183
Nrep	1.34446	0.00745	0.07884
Fam213a	1.34412	6.49E-05	0.0047
Anxa6	1.33208	0.00114	0.02708
Dusp9	1.32979	0.00014	0.00748
Lgmn	1.32844	8.84E-05	0.00557
Mvp	1.32771	0.00023	0.01016
Nrtn	1.32637	0.00068	0.01979
Oas1g	1.32167	0.0002	0.00935
Uchl1	1.32151	0.00046	0.0153
Spi1	1.31903	0.00014	0.00748
Rps6ka3	1.31852	0.00242	0.04185
Vwa5a	1.3156	0.0003	0.01201
Pdgfa	1.31382	0.00081	0.022
Syne4	1.30957	0.00067	0.01958
Ethe1	1.30434	8.65E-05	0.00554
Asic1	1.30363	0.00069	0.01993
Plp2	1.30332	0.00151	0.03169
Tinagl1	1.3029	0.00154	0.03215
Zdhhc23	1.29662	0.00041	0.01431
Armcx2	1.29568	0.0004	0.01406
St14	1.29449	9.65E-05	0.00595
Sp110	1.29239	0.00011	0.0061
Cyp1a1	1.29031	0.00017	0.0086
Cxcl1	1.28889	0.0043	0.05789
Efna1	1.28606	0.00453	0.05977
Abhd14b	1.28475	0.00056	0.01736
Ttpa	1.28307	0.00057	0.0174
S1pr4	1.28274	9.72E-05	0.00595
Gstt3	1.27824	0.00012	0.00657
Pygm	1.27578	0.00014	0.00728
F2rl1	1.27222	0.00021	0.00959
Tmsb4x	1.26992	0.00246	0.04217
Slc35d2	1.26775	0.00027	0.01142
Tgfbr3	1.26649	0.00039	0.01398

Pde3b	1.26208	0.00015	0.0079
Etv5	1.25986	0.00024	0.01053
Camsap3	1.25638	0.00104	0.02553
Pim3	1.25529	0.00057	0.01747
Rtp4	1.25419	0.02709	0.16094
Myo1g	1.2538	0.00042	0.01438
4930412O13Rik	1.25104	0.00031	0.0123
Ajuba	1.24861	0.00014	0.00721
Map4k3	1.24565	0.00054	0.0169
Pdgfd	1.24268	0.00145	0.03115
Dsc2	1.24227	0.0002	0.00935
Erbb2	1.24226	0.00134	0.02974
Naip6	1.24053	0.00048	0.01588
Irak3	1.24013	0.00033	0.01278
Bcl11a	1.23954	0.00025	0.01079
Rasgef1b	1.23942	0.00035	0.01326
Ece1	1.23787	0.001	0.02484
Trib3	1.23726	0.00029	0.012
Dock10	1.23501	0.00027	0.01133
Tapbp	1.23227	0.00027	0.01149
Clu	1.22862	0.00047	0.01552
Fam187b	1.22683	0.00029	0.01192
Gulp1	1.22576	0.001	0.02492
Klc3	1.22448	0.0002	0.00935
Itpr3	1.21932	0.00039	0.01398
Ccdc136	1.21893	0.0008	0.02172
Cd55	1.21722	0.00018	0.00903
Mt1	1.21649	0.00277	0.04476
Mmp23	1.21443	0.0002	0.00935
Gja4	1.20705	0.00053	0.01672
Mapkapk3	1.20498	0.00027	0.01141
Rdh12	1.20397	0.00031	0.0123
Cpt1b	1.20373	0.00089	0.02325
Cd109	1.20279	0.01927	0.13352
Rrad	1.1991	0.0002	0.00935
Usp53	1.19789	0.00061	0.01843
Bmp4	1.19776	0.0004	0.01406
Uba7	1.19557	0.00026	0.01125
Prr5l	1.1949	0.00324	0.04868
Gbp9	1.19461	0.03143	0.17249
Fam110c	1.19102	0.00098	0.02436
Ncf2	1.18767	0.00031	0.01236
Hpn	1.18553	0.00019	0.00921
Nfkbie	1.1855	0.00072	0.02046
Slc52a3	1.18324	0.0003	0.01216
Pnp	1.18169	0.0003	0.01201
Samd9l	1.18166	0.0308	0.17085
Wdfy4	1.18161	0.0004	0.01414
Chrna7	1.18088	0.00068	0.0197
Sel1l3	1.18018	0.0002	0.00935
Rgs3	1.17981	0.0035	0.05126
Crym	1.17925	0.0002	0.00935
Cd44	1.17852	0.00509	0.06304
Slc7a7	1.17839	0.00037	0.01362
B3galnt1	1.17439	0.00069	0.01993
Parp9	1.17323	0.01598	0.12179
Phyh	1.17	0.00049	0.01592
Ptpn6	1.16993	0.00067	0.01956

Pld4	1.16944	0.0005	0.01607
Serpinf1	1.16874	0.00051	0.01614
Rps6ka4	1.16735	0.00043	0.01471
Hey2	1.16628	0.0005	0.01611
Mgst1	1.16536	0.00064	0.01893
Selp	1.16347	0.00124	0.02848
Tspan2	1.16304	0.00831	0.08506
Fat4	1.16213	0.01201	0.10372
Anxa1	1.16022	0.03896	0.19509
Car5b	1.15637	0.00025	0.01085
Unc13d	1.15553	0.00745	0.07884
Galnt12	1.15096	0.00032	0.01245
Emp2	1.14997	0.00024	0.01053
Socs3	1.14865	0.00077	0.02134
Angpt1	1.14816	0.00037	0.01361
Gap43	1.14641	0.00707	0.07667
Cst3	1.14544	0.00039	0.01398
Clcf1	1.141	0.00037	0.01361
A4galt	1.1408	0.00026	0.0113
Lsp1	1.13997	0.00028	0.01149
Tmem8	1.13844	0.00027	0.01141
Pik3ap1	1.1358	0.00138	0.03017
Tifa	1.13576	0.00176	0.03455
Tmem176a	1.13256	0.00041	0.01431
Gbp2	1.13209	0.01202	0.10372
Itga4	1.13103	0.00036	0.01347
Fos	1.13055	0.00168	0.03392
Icam1	1.13038	0.00314	0.0479
Stat4	1.12875	0.00102	0.02527
Patj	1.12803	0.00063	0.01888
Pstpip1	1.12712	0.00029	0.01192
Traf1	1.12647	0.00033	0.01278
Eva1a	1.12521	0.00157	0.03251
Fxyd5	1.12294	0.00468	0.06059
Xbp1	1.11993	0.00036	0.01347
Nmnat2	1.1186	0.00033	0.01284
Tm6sf1	1.11802	0.0015	0.03157
Emb	1.11749	0.00052	0.01642
Nrk	1.11685	0.00237	0.04121
Aldoc	1.11541	0.00085	0.02285
Cyb561	1.11305	0.00093	0.02376
Egfl7	1.113	0.00115	0.02708
Fzd6	1.11237	0.00115	0.0271
Clec2d	1.11214	0.00032	0.0125
Klf12	1.11106	0.00064	0.01893
Psmb8	1.11075	0.00067	0.01956
Gpc1	1.10895	0.00068	0.0197
Cyyr1	1.10727	0.00929	0.09024
Il17rc	1.10298	0.00086	0.02295
Timd2	1.10072	0.00039	0.01398
Pnp2	1.1007	0.00047	0.01556
Avpi1	1.09773	0.00073	0.02066
Ctse	1.09704	0.00191	0.03596
Tec	1.09646	0.00037	0.01361
H2-K1	1.09573	0.00044	0.01506
Ndrg2	1.09456	0.00048	0.01588
Arhgap9	1.09447	0.0008	0.02172
Diaph2	1.09341	0.0032	0.04832

Slc18a2	1.09279	0.00036	0.0134
Gatm	1.09091	0.00233	0.04087
Acvrl1	1.0904	0.00546	0.06602
Ifit2	1.0903	0.00724	0.07758
Mical1	1.08984	0.00069	0.01993
Arntl2	1.08885	0.00045	0.01512
Aph1b	1.08789	0.00092	0.02358
Apbb1	1.0865	0.00306	0.04728
Dkk2	1.08644	0.0049	0.062
Cracr2b	1.085	0.00096	0.02421
Mmrn2	1.08424	0.00553	0.06638
Npr2	1.08144	0.00219	0.03924
Cd24a	1.08009	0.00612	0.07089
Slc44a1	1.07931	0.00071	0.02025
B3gnt8	1.07815	0.00115	0.02708
Lcp1	1.07762	0.01086	0.09915
Col11a1	1.07747	0.00041	0.01431
Srgn	1.07471	0.00046	0.01538
Dtx3l	1.07379	0.01432	0.11379
Arid5b	1.07298	0.0029	0.04591
Sema6a	1.0723	0.00249	0.04218
Fyb	1.07102	0.00051	0.01625
Gimap4	1.0697	0.01136	0.10087
Vsig10	1.06752	0.00081	0.022
Pld3	1.06566	0.00106	0.02584
Fgd2	1.06438	0.0005	0.01603
Tspo	1.06369	0.00066	0.01941
Pik3r5	1.06114	0.0005	0.01603
Tnni2	1.05715	0.00223	0.03951
Tes	1.05711	0.00236	0.04121
Esam	1.05664	0.00253	0.04251
Casp4	1.05426	0.00355	0.05159
Rbp1	1.05383	0.00297	0.04656
Nr4a2	1.05373	0.00167	0.03376
Cd200r4	1.05037	0.00627	0.07147
Rilp	1.04931	0.00078	0.02134
Arhgef28	1.0477	0.00504	0.06282
Lipa	1.04759	0.00186	0.03558
Rnase6	1.04537	0.00089	0.02325
Zfp69	1.04382	0.00097	0.02428
Gpx1	1.04377	0.00147	0.03128
Pcdhb22	1.04311	0.00149	0.03141
Cd74	1.04308	0.00075	0.02097
Prr13	1.04219	0.00103	0.02538
Psmb9	1.03989	0.00176	0.03455
B3gnt5	1.03668	0.00412	0.05688
Als2cl	1.03319	0.00263	0.04339
Gsdmd	1.03209	0.00131	0.02943
Tnfaip8l1	1.02944	0.00088	0.02325
Jazf1	1.02871	0.00145	0.03115
Tlr4	1.02826	0.02179	0.14357
Fes	1.02451	0.00249	0.04218
2200002D01Rik	1.02432	0.00191	0.03596
Dusp26	1.02321	0.00097	0.02428
Man2b2	1.02111	0.00118	0.02757
Ecscr	1.01914	0.00652	0.07279
Dennd3	1.01904	0.00127	0.02893
Rbm47	1.01723	0.00094	0.02392

Ctsc	1.01536	0.00066	0.01954
Upp1	1.01373	0.03024	0.16956
Tmem176b	1.012	0.00137	0.03013
Ccl6	1.01151	0.00827	0.08482
Lims2	1.01139	0.00132	0.0295
Speg	1.01043	0.00237	0.04121
Rnd1	1.00957	0.00556	0.06658
Hlx	1.00916	0.00662	0.07329
Ncoa7	1.00872	0.00248	0.04218
Ift43	1.00421	0.00108	0.02614
Slc9a7	1.00212	0.00101	0.02512
Cdh24	1.001	0.00275	0.04467
Reln	-1.0001	0.03489	0.18382
Ezh2	-1.0022	0.00138	0.03013
Sept9	-1.0035	0.00161	0.03297
Nudc	-1.0041	0.00489	0.06194
Nob1	-1.0051	0.00429	0.05789
Cep131	-1.0063	0.00597	0.0699
Creb3l1	-1.0065	0.00124	0.02848
Dnph1	-1.0067	0.01242	0.10545
Ahdc1	-1.0088	0.00277	0.04476
Pprc1	-1.0128	0.00654	0.07279
Smarcc1	-1.0133	0.00176	0.03455
Banf1	-1.0144	0.00564	0.06729
Foxm1	-1.016	0.00192	0.03596
Naa50	-1.0166	0.00077	0.02134
Zbtb12	-1.0173	0.00377	0.05342
Iqgap2	-1.0191	0.00079	0.02167
Pigyl	-1.0222	0.00156	0.03246
Tsc1	-1.0234	0.00191	0.03596
Mast2	-1.0245	0.00164	0.03343
Ncor2	-1.0268	0.00278	0.04486
Ppm1g	-1.0269	0.00419	0.05757
Ccne1	-1.0276	0.00197	0.03654
Hoxb2	-1.0279	0.00184	0.03523
Clpp	-1.0282	0.00626	0.07147
Uhrf1	-1.0284	0.00264	0.04344
Fkbp2	-1.029	0.00252	0.04243
Ung	-1.0299	0.00359	0.05187
Raver1	-1.0308	0.00291	0.04598
Fcgr3	-1.0334	0.00353	0.05147
Nfxl1	-1.034	0.00064	0.01893
BC030867	-1.035	0.00204	0.03756
Eif5b	-1.0387	0.00125	0.02848
Pcdh7	-1.0444	0.00061	0.0183
Garem2	-1.0463	0.00074	0.02084
Fgf10	-1.0479	0.00244	0.04194
Ldlrap1	-1.0483	0.00193	0.03614
Aunip	-1.0519	0.00202	0.03718
Noc4l	-1.0528	0.002	0.03702
Pgd	-1.0531	0.0013	0.02942
Pcyt1b	-1.0531	0.00298	0.04656
Tiam1	-1.0541	0.00162	0.0332
Tspoap1	-1.0545	0.00119	0.02789
Lig1	-1.0554	0.00131	0.02945
Cyp26b1	-1.0572	0.01553	0.12027
Afg3l2	-1.0575	0.0016	0.03297
Vegfb	-1.0576	0.00653	0.07279

Gtf3c2	-1.067	0.00052	0.01644
Mfsd2b	-1.0714	0.00591	0.06958
Ncbp2	-1.0716	0.00041	0.01431
Capn5	-1.0724	0.00091	0.0235
Tdg	-1.0752	0.00072	0.02046
Dot1l	-1.0752	0.00255	0.04258
Phgdh	-1.0795	0.00318	0.04806
Pde4dip	-1.0805	0.00481	0.0615
Plk1	-1.081	0.00181	0.03523
Tspan14	-1.0831	0.00799	0.0829
Chaf1a	-1.0878	0.00269	0.04387
Col1a1	-1.0889	0.00083	0.02244
Stambp	-1.0899	0.00122	0.02811
Sparc	-1.0915	0.00166	0.03367
Terf1	-1.0931	0.00047	0.01552
Safb2	-1.0972	0.00217	0.03899
Rreb1	-1.0974	0.00239	0.04145
Tet1	-1.0978	0.0006	0.01816
F13a1	-1.0994	0.00037	0.01361
Car8	-1.1007	0.00055	0.01714
Pls1	-1.107	0.00037	0.01361
Mybbp1a	-1.1074	0.00254	0.04251
Mrps34	-1.1077	0.00147	0.03128
Plpp3	-1.114	0.00055	0.01714
Mns1	-1.1195	0.00143	0.03089
Hist1h2br	-1.1202	0.00072	0.02051
Ddx47	-1.1203	0.00049	0.01603
Hnrnpd	-1.1217	0.00053	0.01672
Mylk3	-1.1224	0.00034	0.01285
Hirip3	-1.1228	0.00106	0.02586
Prrc2c	-1.129	0.00063	0.01893
Ubash3b	-1.1323	0.00222	0.03943
Atp2a3	-1.1335	0.00289	0.04587
Mtfr2	-1.1348	0.00037	0.01362
Tmem108	-1.1359	0.00092	0.02358
Sptb	-1.1368	0.00038	0.01377
Cenpl	-1.1381	0.00033	0.0128
Cit	-1.1412	0.0019	0.03596
Gm6793	-1.1422	0.00228	0.04022
Nudt16l1	-1.1433	0.00096	0.02423
Wipf3	-1.1441	0.00189	0.03596
Pmm1	-1.1448	0.00468	0.06059
Srp68	-1.1455	0.00159	0.03294
Fam65a	-1.1508	0.00239	0.04149
Ctla2a	-1.1511	0.00131	0.02943
Fam222a	-1.1516	0.00045	0.01518
Prr12	-1.152	0.00166	0.03367
Wdr89	-1.1521	0.00075	0.02097
Rpp25	-1.1527	0.01214	0.10437
Safb	-1.1559	0.00146	0.03118
Csf3r	-1.1569	0.00088	0.02325
Klhl21	-1.1587	0.00134	0.02974
Apitd1	-1.1589	0.00221	0.0394
Ahcyl1	-1.1601	0.00044	0.01506
Rnf5	-1.1626	0.00154	0.03215
Rap2b	-1.165	0.00065	0.01928
Cdk11b	-1.1718	0.00067	0.01958
Gfra2	-1.172	0.00086	0.02295

Zcchc10	-1.1727	0.0003	0.01214
Samsn1	-1.1759	0.00033	0.01278
Sapcd1	-1.1763	0.01297	0.1077
Prpf3	-1.1791	0.00035	0.01326
Tspan7	-1.1804	0.00488	0.06194
Aurka	-1.1806	0.00039	0.01398
Nolc1	-1.1902	0.00183	0.03523
Ddx21	-1.1905	0.00073	0.02066
Nxpe3	-1.1918	0.00057	0.01739
Cap2	-1.1931	0.00026	0.01128
Adamts3	-1.1961	0.00134	0.02975
Pcbp1	-1.1961	0.00169	0.03392
BC048403	-1.1999	0.00077	0.02134
Muc13	-1.2015	0.00404	0.05612
Mdh2	-1.2156	0.00052	0.01652
Emilin1	-1.2205	0.00105	0.02563
Fth1	-1.2232	0.00196	0.03648
Hoxb5	-1.2265	0.0003	0.01201
Reep6	-1.228	0.00146	0.03118
Hnrnpa2b1	-1.2323	0.00024	0.01054
Car4	-1.2336	0.00015	0.00787
Gse1	-1.2404	0.00502	0.06272
Pom121	-1.241	0.00088	0.02325
Pitpnb	-1.241	0.00021	0.00943
Mbd3	-1.2454	0.00324	0.04868
Tgfb1	-1.2482	0.00152	0.03178
Desi1	-1.2492	0.00024	0.01053
Pdgfrb	-1.2494	0.0012	0.02794
Gar1	-1.2572	0.00119	0.02789
Hexim1	-1.2573	0.00029	0.01201
Psmd7	-1.2577	0.00041	0.01431
Srrm1	-1.266	0.00028	0.01158
P2rx1	-1.2837	0.00039	0.01398
Slc30a3	-1.2892	0.00245	0.04201
Hist1h1b	-1.29	0.00128	0.02919
Pcsk1n	-1.2933	0.00035	0.01324
E2f1	-1.2933	0.00129	0.02919
Fbl	-1.2996	0.00092	0.02358
Hsph1	-1.2998	0.00078	0.02134
Polr3c	-1.3	0.00024	0.01059
Gpatch4	-1.3006	0.00181	0.03523
Igf1	-1.3065	0.0001	0.006
Rasl11a	-1.3072	0.00709	0.07671
Nap1l2	-1.3124	0.00033	0.0128
Gpx3	-1.3275	0.00018	0.00873
Srm	-1.3287	0.00359	0.05187
Rrs1	-1.3332	0.00077	0.02134
Fam98a	-1.3463	0.00011	0.00608
Slc35e3	-1.3516	0.00014	0.00748
Mdm1	-1.3555	0.0002	0.00935
Smyd1	-1.3616	9.13E-05	0.00572
Cdca8	-1.3682	0.00018	0.00872
Scamp3	-1.3683	0.00011	0.00617
Nudt4	-1.3701	0.0002	0.00935
Tubg2	-1.3722	7.58E-05	0.00523
Fignl1	-1.3798	0.00211	0.03848
Vcan	-1.3801	0.00011	0.00615
Sall3	-1.3815	0.00095	0.02408

Fus	-1.383	0.00043	0.01476
Nefl	-1.3931	9.37E-05	0.00583
Minos1	-1.396	6.23E-05	0.00463
Aplnr	-1.3962	0.00194	0.03619
Lrrn2	-1.4001	6.68E-05	0.00478
Aqp8	-1.4045	0.0011	0.02639
Grap2	-1.4068	0.00039	0.01395
Lin28a	-1.4105	0.00183	0.03523
Lat	-1.4113	0.00046	0.01548
Cdadc1	-1.4118	0.00022	0.00978
Gtf3c5	-1.4141	0.00055	0.0171
Bgn	-1.4233	0.00109	0.02616
Hnrnph3	-1.4285	8.36E-05	0.00545
Myc	-1.4323	0.00017	0.00858
C1qbp	-1.4329	0.00031	0.01227
Hk2	-1.4363	0.00014	0.00728
Alas2	-1.4378	4.79E-05	0.00391
Prmt1	-1.4409	0.00123	0.02841
Tnfaip6	-1.4426	3.36E-05	0.00317
Apoo-ps	-1.467	0.02718	0.16113
Taf15	-1.4695	0.00011	0.00608
Olr1	-1.4703	0.0009	0.02344
Eif3b	-1.4732	0.00094	0.0239
Trim54	-1.4773	0.00052	0.01642
Nrgn	-1.4938	8.08E-05	0.00545
Rrm2	-1.4953	8.28E-05	0.00545
Gm13889	-1.5063	0.00174	0.03455
Mc5r	-1.5116	0.0015	0.03157
Slc24a3	-1.5265	0.00013	0.00715
Dynlt1f	-1.5273	0.00046	0.01538
Sigmar1	-1.5348	0.00016	0.00837
Irs2	-1.5405	0.00091	0.02358
Fam50a	-1.5435	4.09E-05	0.00351
Ptpn7	-1.5616	0.00019	0.00926
Anp32e	-1.5786	3.27E-05	0.00316
Dynll2	-1.5991	5.00E-05	0.004
Mrvi1	-1.6004	0.00011	0.00633
Adgrg3	-1.6191	5.98E-05	0.0045
Tnfaip8	-1.6208	4.73E-05	0.00391
Hnrnpa3	-1.6215	0.00032	0.01268
Prrt4	-1.6223	0.00015	0.00755
Samd14	-1.6311	0.00021	0.00971
Ptdss2	-1.6663	0.00017	0.00854
Ubash3a	-1.6694	1.39E-05	0.00181
Tnnt2	-1.6777	1.32E-05	0.00174
Mdga1	-1.6815	0.00011	0.00623
Has2	-1.7108	4.66E-05	0.00391
Rad51	-1.7261	3.70E-05	0.00332
Srsf4	-1.7321	4.76E-05	0.00391
Mpl	-1.7335	4.62E-05	0.00391
Nlrc3	-1.74	8.32E-06	0.00138
Ank3	-1.745	6.46E-06	0.00126
Kcnj5	-1.7501	6.03E-06	0.00125
F2rl2	-1.7505	2.27E-05	0.0025
Prtg	-1.8072	1.44E-05	0.00183
Ncl	-1.8123	3.85E-05	0.0034
Snrpd3	-1.8149	2.47E-05	0.00265
Phlda1	-1.8465	0.00013	0.00692

Bmp2	-1.8569	1.02E-05	0.0015
Hapln1	-1.8595	4.74E-06	0.00119
Etl4	-1.87	5.68E-06	0.00125
Gas7	-1.9061	4.91E-06	0.00119
Etv2	-1.9441	0.00057	0.01739
Syt13	-1.9797	7.45E-05	0.00521
Txn2	-1.9814	5.86E-06	0.00125
Kcnk9	-2.0627	2.55E-06	0.00102
Rnd2	-2.0925	0.00049	0.01603
Anp32b	-2.1036	3.21E-05	0.00316
Fzd10	-2.1061	9.87E-05	0.00595
Mrpl12	-2.3072	3.52E-05	0.00322
Igfbp5	-2.308	5.91E-06	0.00125
Mpo	-2.3186	2.25E-06	0.00097
Gstp2	-2.3663	0.04072	0.19917
Atp6v0c	-2.7443	0.01382	0.11156
Kctd12	-3.6978	1.99E-05	0.0023
Hist2h3c1	-3.9156	0.0398	0.19725
Rps16	-3.9973	2.65E-09	1.53E-05

Supplementary Table 3 Genes de-regulated in HP cells, FC given as +dox/-dox

Gene_ID	logFC	Pvalue	FDR
Hprt	3.27995	7.39E-06	0.0205
Mt2	3.22725	0.00287	0.09213
Pdzk1ip1	2.93616	9.10E-06	0.0205
Mogat2	2.2806	5.03E-05	0.027
Acer2	2.18015	3.22E-06	0.01814
Trim47	2.1665	7.26E-06	0.0205
Il1b	2.07834	0.00819	0.13927
Thsd1	2.05211	1.11E-05	0.02088
Rhag	2.04094	2.15E-05	0.02206
Cdh5	2.0043	1.62E-05	0.02204
Plp2	1.9538	0.00088	0.06026
Stk26	1.90548	0.00077	0.05723
Capg	1.87907	0.00059	0.04992
Naaa	1.87456	0.00014	0.03732
Nqo1	1.87156	0.00057	0.04956
Tspan8	1.83014	0.0001	0.03475
Ccnd1	1.82999	0.00081	0.05922
Nr4a1	1.80524	0.00079	0.0585
Sprr2a3	1.79399	8.70E-05	0.03381
Spint2	1.77538	0.00867	0.14161
Procr	1.77388	1.66E-05	0.02204
Adcy4	1.7617	3.57E-05	0.02316
Ramp2	1.75783	2.15E-05	0.02206
Asb4	1.7029	9.82E-05	0.03475
Amigo2	1.69977	0.00134	0.06999
Ptprb	1.6748	1.76E-05	0.02204
Egfl7	1.65281	5.01E-05	0.027
Neurl3	1.63584	0.00049	0.0491
Ly6a	1.6215	2.65E-05	0.02316
Sprr2a1	1.61291	0.00036	0.04404
Naprt	1.59854	0.00069	0.05384
Ltb	1.57856	0.00023	0.04077
Ccdc141	1.56302	0.00377	0.10309
Ivl	1.54409	0.00548	0.11738

Cdkn1c	1.53654	0.0004	0.04597
Nxpe5	1.53233	0.00016	0.03732
Ptpn18	1.53196	0.00011	0.03475
Bmp4	1.51992	3.32E-05	0.02316
Cd200r3	1.51794	0.0101	0.1529
Slc16a9	1.50548	0.00015	0.03732
Cd79b	1.46021	0.00018	0.03732
Selp	1.4567	0.0002	0.03904
Matk	1.43386	3.06E-05	0.02316
Armcx2	1.42074	0.00011	0.03475
S100a4	1.42033	0.0027	0.09022
Ms4a6d	1.39383	0.00693	0.13061
Mfng	1.37699	0.00083	0.05976
Lsp1	1.3756	0.03435	0.26479
Smtnl1	1.36941	0.00103	0.06242
Fgd5	1.36443	0.00017	0.03732
Lst1	1.36367	0.00042	0.04603
Plcb2	1.35391	4.76E-05	0.027
Sox18	1.33822	6.81E-05	0.02959
Sla	1.33681	0.00764	0.13502
Coro2a	1.33524	0.00076	0.05723
Sh3bgrl2	1.33041	0.00294	0.09276
Ctsj	1.32975	0.00011	0.03475
Acat3	1.32573	0.00744	0.1336
Ropn1l	1.31745	0.00853	0.14129
Cgnl1	1.31012	0.00325	0.09849
Vill	1.29873	0.00012	0.03475
Nrep	1.29287	0.00034	0.0439
Alox12	1.29273	0.01508	0.17886
Bcl11a	1.2927	0.00253	0.08838
Id3	1.27842	6.61E-05	0.02959
Krt19	1.27402	0.02486	0.22494
Ecscr	1.26618	0.00017	0.03732
Eya2	1.25984	0.00023	0.04077
Il4	1.25324	0.00097	0.06242
Ldhb	1.25241	0.00027	0.04106
Fgf3	1.24913	0.00342	0.10123
Zfp991	1.24616	0.02088	0.20722
Mgst3	1.24362	0.02804	0.23871
Fn1	1.24189	0.00483	0.11267
Icam2	1.24014	0.0005	0.0491
Vegfc	1.23622	0.00036	0.04404
Slc22a18	1.23219	0.00028	0.04106
Ehd2	1.22963	0.00107	0.06354
Rasgrp3	1.22935	7.12E-05	0.02959
Dusp5	1.22405	0.00155	0.07302
Ripk3	1.22228	0.00028	0.04106
Tgm2	1.21375	0.00025	0.04106
Irf6	1.20059	0.00283	0.09201
Rbp1	1.19446	0.00093	0.06239
Pim2	1.19173	0.00665	0.12835
Setbp1	1.18996	0.00036	0.04404
Esam	1.18842	0.00147	0.07092
Aldh1a1	1.18789	0.00161	0.07445
Gvin1	1.1875	0.00355	0.10124
Pygl	1.1853	0.00111	0.06354
Spn	1.18274	0.00232	0.08617
Slc6a20a	1.17634	0.00037	0.04425

Hes1	1.17447	0.00012	0.03475
Gap43	1.17051	0.02853	0.24035
Ptrf	1.16881	0.00023	0.04077
Gimap6	1.16869	0.00069	0.05384
Nrtn	1.16017	0.01061	0.15623
Plxnd1	1.15581	0.00012	0.03475
Sfxn3	1.155	0.00202	0.08328
Ssh3	1.14736	0.00012	0.03475
Cyp4v3	1.14666	0.00109	0.06354
Mt1	1.1436	0.01734	0.19002
Ces2g	1.13815	0.00109	0.06354
Notch1	1.1373	0.00016	0.03732
Ctse	1.13469	0.00031	0.0422
Ethe1	1.1336	0.00022	0.04077
Stat4	1.13278	0.00012	0.03475
Rab11fip5	1.12934	0.00061	0.05126
Adgre5	1.12884	0.00025	0.04106
Marveld2	1.12837	0.0003	0.0422
Ptchd1	1.12267	0.0095	0.14879
Pon3	1.12064	0.00018	0.03732
Patj	1.11836	0.00676	0.12854
Tfec	1.11732	0.00749	0.1336
Spint1	1.11627	0.0014	0.07025
Pak1	1.11348	0.00054	0.0494
Gimap5	1.11116	0.0005	0.0491
Chrnb1	1.10946	0.001	0.06242
Sp110	1.10889	0.00203	0.08328
Oas1g	1.10833	0.00462	0.11142
Npr2	1.10763	0.00033	0.0434
Mmrn1	1.10543	0.00089	0.06048
Ocln	1.10526	0.00027	0.04106
Abi3	1.09699	0.00218	0.08486
Fmnl1	1.08009	0.0022	0.08501
Adam33	1.07604	0.00027	0.04106
Ppm1j	1.07497	0.00043	0.04603
Sec14l2	1.07299	0.00425	0.10992
Hpn	1.07172	0.00066	0.05366
Anxa5	1.07079	0.00385	0.10421
Sox7	1.06986	0.01215	0.16475
Slc25a45	1.06817	0.00336	0.10002
Dock2	1.06812	0.00032	0.0434
Nos3	1.06582	0.00017	0.03732
Tnfaip2	1.06031	0.00145	0.07025
Cd55	1.05851	0.00302	0.09424
Rasip1	1.05635	0.00271	0.09022
Dsc2	1.05573	0.01349	0.16999
Gxylt2	1.05399	0.00026	0.04106
Etv4	1.05115	0.00454	0.11142
Rps6ka3	1.04951	0.00016	0.03732
Spry2	1.04745	0.00018	0.03732
Traf3ip3	1.04662	0.00169	0.07633
Pdgfb	1.04331	0.00028	0.04106
Adcy7	1.04084	0.00072	0.05525
Npy	1.03781	0.03038	0.24777
Ackr1	1.03779	0.00115	0.0641
Krt7	1.03543	0.00629	0.12449
Vamp5	1.03533	0.00328	0.09849
Rfx2	1.03325	0.00454	0.11142

Angpt1	1.03246	0.0099	0.15144
Sowaha	1.03161	0.01176	0.16394
Ptprc	1.03105	0.01957	0.20095
Pdlim2	1.03105	0.00674	0.12854
Fam189a2	1.0297	0.00028	0.04106
Rab27a	1.02776	0.00156	0.0731
Cyth4	1.02681	0.00351	0.10124
Pygm	1.02127	0.0002	0.03904
Palld	1.02095	0.00023	0.04077
Jag2	1.0209	0.00043	0.04603
Tmem176b	1.02058	0.00475	0.11214
Tle6	1.01937	0.00143	0.07025
Itih5	1.01853	0.00197	0.08248
Timp1	1.0167	0.01372	0.17056
Ccnd2	1.01299	0.00029	0.04154
Npr1	1.0111	0.00139	0.07025
Dusp4	1.00896	0.0002	0.03904
Tbxas1	1.00467	0.00034	0.04363
Dpysl3	1.00383	0.00349	0.10124
Acvrl1	1.00161	0.00141	0.07025
Antxr2	1.00057	0.00082	0.05949
Fech	-1.0019	0.02868	0.2414
Il10ra	-1.0098	0.00471	0.11192
Ccnb1ip1	-1.0141	0.00256	0.08845
Kctd12	-1.0181	0.03788	0.27653
Hecw2	-1.0203	0.0004	0.04597
Ddah1	-1.0225	0.00045	0.04708
Nudt4	-1.0297	0.00333	0.09963
Btn1a1	-1.0474	0.00075	0.05677
Pde5a	-1.0548	0.00374	0.10296
Irs2	-1.0571	0.00023	0.04077
Pcyt1b	-1.0583	0.002	0.08328
Cda	-1.0598	0.00278	0.0917
Slc14a1	-1.0758	0.00229	0.08582
Tmem56	-1.1108	0.00025	0.04106
Cpne7	-1.1226	0.00015	0.03732
Rpp25	-1.1283	0.00017	0.03732
Mdga1	-1.136	0.00224	0.08522
Usp51	-1.1388	0.00037	0.04432
Kcnj5	-1.1473	0.00053	0.0491
Reep1	-1.1498	0.00017	0.03732
Ajap1	-1.1665	0.0001	0.03475
Gja6	-1.2308	0.0003	0.0422
Phlda1	-1.231	0.00065	0.05342
Mylk3	-1.2429	7.36E-05	0.02959
Tmcc2	-1.244	6.65E-05	0.02959
Efnb1	-1.3017	0.00024	0.04077
Etl4	-1.3577	0.00029	0.04187
Enpp1	-1.4311	0.00054	0.0494
Slc38a5	-1.44	0.00213	0.0848
6030468B19Rik	-1.4432	7.35E-05	0.02959
Samd14	-1.477	3.30E-05	0.02316
Hsd3b1	-1.5003	0.0002	0.03904
Alas2	-1.5266	0.00243	0.08754
Fignl1	-1.7618	6.27E-05	0.02959
Aqp8	-1.7727	3.31E-05	0.02316
Apoo-ps	-2.2708	0.001	0.06242
Srp54b	-3.1904	7.03E-07	0.00792

Hbb-bs	-4.8154	3.70E-05	0.02316		

Supplementary Table 4 Genes de-regulated in HE1-HE2 transition, G11 – upregulated in both, G12 – upregulated in - dox, G21 – upregulated in + dox, G02 – downregulated in –dox, G20 – downregulated in +dox, G00 downregulated in both

G11	G12	G21	G02	G20	G00
AI467606	6030468B19Rik	2310039H08Rik	4931406P16Rik	Acta1	1500009L16Rik
Adgrg1	Abca2	Abhd11	6430548M08Rik	Adm	Abhd6
Adgrg3	Abhd15	Acap1	9430020K01Rik	Adrb1	Acta2
Alas2	Ache	Acss2	9930012K11Rik	Aebp1	Adam19
Aldh2	Acot11	Adap1	Abi3	Ano1	Adamts7
Alox5	Adcy9	Adcy7	Acer2	Arc	Adgrf5
Alox5ap	Adssl1	Adgre4	Acvr1	Arhgef17	Adgrg6
Ank3	Ahi1	Adgrg5	Adam15	Armcx4	Ahnak
Arhgap25	Apoc1	Ahrr	Adamts4	Atp11a	Akap12
Arhgap45	Apoo-ps	Akr1b10	Adcy4	Bex1	Amotl1
Arhgap6	B9d2	Alox12	Adrb3	Bex3	Apcdd1
Art4	Bcl7a	Angpt1	Afdn	Bex4	Arhgef15
Atp2a3	Camkk1	Apobec1	Amigo2	Bhlhe40	Bcar1
Atp2b4	Cap2	Arhgap4	Ankrd33b	Cacna1h	Bex2
Bin2	Ccdc88c	Arhgap9	Anxa5	Card10	Bin1
Btk	Ccnd2	Arhgef39	Apbb1	Ccnjl	Bmp6
Car2	Cst7	Arhgef6	Apbb2	Cd248	Cald1
Ccdc92b	D3Ertd751e	Arid5a	Aplp2	Cdkn2b	Camk2d
Ccl3	Dhrs11	Atp13a2	Arfgap3	Clip3	Capn6
Ccl6	Dhrs9	Atp8a1	Arhgef40	Col1a1	Ccnd1
Ccl9	Diaph1	BC055324	Arid5b	Col5a1	Cd40
Cd200r1	Dnph1	Batf	Arsa	Cpeb1	Cdh2
Cd200r4	Dtx4	Bcl11a	Atf3	Cryab	Chrna7
Cd52	Dyrk2	Blvrb	Atp7a	Cyr61	Clcf1
Cebpb	Elac2	Brinp1	B3gnt5	Dcbld1	Colec12
Cela1	Ell2	Cd200r3	BC028528	Dmrt3	Coro2b
Cep70	Eml2	Cd53	Batf3	Dock5	Creb3l2
Cited2	Faap24	Cd79b	Bcl6b	Dock6	Crip2
Cited4	Fam169a	Cebpa	Bik	Epb41l1	Crmp1
Clec1b	Gfra2	Clec4n	Bmp1	Etv5	Csf1
Clu	Gtf3c5	Coq8a	Cachd1	Fam46b	Cttnbp2nl
Coro1a	Hist1h2br	Coro2a	Camsap2	Fam50a	Cyp26a1
Csf2rb	Hk2	Cox7a1	Ccdc80	Flnc	Dab2
Csf2rb2	Hp	Csf1r	Cd24a	Furin	Dbn1
Csf3r	Ier3	Ctsj	Cdr2	Gm2897	Dchs1
Ctse	Igfbp5	Cyp1b1	Cdr2l	Gnb1	Disp2
Cyp26b1	Il17ra	Cytip	Cgnl1	Hbegf	Dlc1
Cyth4	Irs2	Dennd1c	Chst7	Hmox1	Dll4
Dapp1	Isoc1	Dennd2d	Ckap4	Igdcc3	Dpysl3
Def6	Kcnj5	Dennd4a	Cobll1	Itgav	Dusp9
Depdc1b	Kcnk9	Dnase2a	Col4a1	Itgb5	Dysf
Dnmt3b	Kctd12	Dock2	Col5a2	Kirrel	Edn1
Dok2	Lyl1	Fam181b	Colgalt2	Lamc1	Efnb2
Dyrk3	Map3k5	Fam189a2	Copz2	Lgr6	Enc1
E2f2	Mdga1	Fam46a	Cracr2b	Loxl4	Epha2
Emilin2	Mgst2	Fdxr	Creb3	Lrrn2	Erbb2
Epb41	Micall2	Fyb	Crip1	Ltbp4	Ermp1
Epb42	Mknk1	Gabarapl1	Crybg3	Ly75	Etv4
Epha7	Mrvi1	Gimap9	Csrp2	Mall	Fam114a1

Epor	Muc13	Glrx	Ctsh	Map6	Fam163a
Evi2a	Nap1l2	Gmfg	Ctsl	Mfap2	Fam57a
Evi2b	Nbeal2	Gp5	Cxcl16	Mpzl1	Fbln2
F13a1	Ninj1	Gpr84	Cxx1a	Myc	Fbn1
F2rl2	Nrgn	Gpsm3	Cxx1b	Myh10	Flrt2
F5	Nup210	Gramd1c	Dcaf12l1	Nav1	Flt1
Fam109b	Osgin1	Gucy1b3	Dennd5b	Ncs1	Fmo1
Fam46c	Panx1	Gxylt2	Dhx57	Ndst1	Foxc2
Fcer1g	Pbk	Hacd4	Dlg5	Nectin1	Foxf1
Fcgr3	Phgdh	Hbq1b	Dmwd	Nes	Fzd4
Fermt3	Pls1	Hddc3	Dok4	Nexn	Gap43
Fgl2	Ppif	Helb	Dscr3	Nhsl1	Gata4
Flt3l	Ppp1r14c	Hpgd	Dse	Nuak1	Gjc1
Fmnl1	Prkcd	Hpn	Dusp22	Nup62cl	Glipr2
Fut8	Ptpre	Igsf6	Ece1	Nus1	Gprc5a
Gata1	Ptprj	Il12rb2	Edil3	P2ry2	H2afy2
Gfi1	Rab27b	Il15	Efna4	P4ha3	Hand1
Gfi1b	Rap1gap2	Il1b	Eml1	Palld	Hip1r
Gna15	Rbm38	Il6ra	Epn2	Pcdh7	Hist2h3c1
Gnaz	Reep6	Irak3	Eva1c	Pcdhga9	Hoxb6
Grap2	Rnf150	Itgam	Ext1	Phlda1	Hoxb7
Gse1	Rreb1	Kcnn4	F8	Pitx2	Hspg2
Gucy1a3	Samd14	Klk8	Fam107a	Pkdcc	Iffo2
Gypa	Sema4d	Lgals3	Fam43a	Plxna2	Igf2
Gypc	Slc16a6	Lgr5	Farp1	Pmp22	Igfbp3
Hba-x	Slc24a3	Lmo2	Fermt2	Prr5	Il17rd
Hbb-bh1	Slc25a10	Lrrc25	Fgd6	Ptms	Itga3
Hbb-y	Slco4a1	Lrrc34	Fkbp14	Ptprf	Itpr3
Hcls1	Smox	Lst1	Flnb	Rasl11b	Kank1
Hist2h3c2	Smyd1	Ly6e	Flt4	Rgs5	Kcnh2
Hoxd1	Spry1	Man2b1	Fndc3b	Shank3	Kctd12b
I830077J02Rik	Sptb	Matk	Frmd4a	Shisa4	Kctd17
Ifitm1	Srl	Mef2c	Fstl1	Shroom2	Kdelr3
Ikzf1	Steap3	Mettl18	Fxyd6	Slc7a1	Kif26a
Ikzf2	Ston2	Mfng	Gas6	Smtn	Krt19
Il18rap	Tfap4	Mfsd6	Gata6	Sparc	Lama1
Inpp5d	Tfrc	Mt1	Gbp4	Specc1	Lama4
Itga2b	Tgfb1	Myo1g	Gdpd5	Spon2	Lamb1
Itga4	Tmem163	Naaa	Gja4	Ston1	Lhfp
Itgb2	Tnfaip8	Naga	Glp1r	Sulf2	Lrp1
Itgb3	Trim58	Nckap1l	Gm20716	Synpo	Map1b
Kcnj2	Tsc1	Ncoa4	Gm266	Tgfb1i1	Mb21d2
Klf1	Tspoap1	Nfkbid	Gm2a	Tgfbi	Mcam
Laptm5	Ttyh2	Nme3	Gng2	Tnfrsf12a	Mcc
Lcp2	Wdr89	Nr4a2	Gngt2	Tpbg	Meis2
Lgals9	Zbtb16	Nrtn	Gpm6a	Trib1	Mical2
Lilr4b		Nxpe5	Gpm6b	Tubb6	Mmp15
Lilrb4a		Orai2	Gpr19	Txn2	Msi1
Lrmp		P2ry13	Grrp1	Txndc5	Msx1
Lyve1		P2ry14	Hand2	Ube2ql1	Mxra7
Lyz2		Pak1	Hecw2	Vgf	Myadm
Madd		Pde3b	Hey2	Wnt11	Myo1b
Mamdc2		Pdk3	Hip1	Yap1	Myof
Map7		Pex7	Hoxb3		Nhsl2
Mc5r		Pfkfb4	Hoxb9		Nid1
Mctp1		Pglyrp1	Hspa12a		Nkx2-5
Mdm1		Pglyrp2	Hyal2		Nos3
Med12l		Pik3cg	Icam2		Notch4

Meis1		Pik3r5	Id3		Nova2
Mfsd2b		Plcb2	Jade2		Npdc1
Mgst3		Plcl2	Klhl13		Nrp2
Mmrn1		Pnpla7	Lama5		Osbpl10
Mpl		Ppfibp2	Lgals1		P4ha2
Mpo		Procr	Lifr		Palm
Ms4a6d		Psmb10	Lonrf3		Parva
Myb		Ptprc	Ly6a		Parvb
Mycn		Pygl	Ly6c1		Pcdh1
Myo1f		Pygm	Maff		Pcdh12
Myom1		Qprt	Magel2		Pcdhgc3
Ncf1		Rab17	Magi3		Pcolce
Ncf2		Rab37	Map4		Pdlim3
Neurl3		Rac2	Mapk12		Peg3
Nfe2		Rasa4	Mbnl3		Phldb2
Nmnat3		Rasgef1b	Mdfic		Pi16
Nrip3		Rbm43	Mecom		Plagl1
Nrros		Rbp1	Mest		Plat
Nupr1		Ret	Mogat2		Plcd1
Olr1		Rgs14	Msrb3		Plcd3
P2rx1		Rhag	Myo1c		Plk3
P2ry1		Rhof	Naalad2		Ppp1r14a
Paqr7		Rnase6	Nagk		Prickle2
Pdzk1ip1		Rnf130	Nckap1		Prss12
Perp		Rnf141	Nectin2		Pxdc1
Pik3ap1		S100a1	Neo1		Rcn3
Pik3cd		S100a4	Notch1		Rhoc
Pim2		Samsn1	Npr1		Rhou
Pla2g4a		Satb1	Nr2f2		Rtl1
Plcg2		Scn11a	Nr5a2		Rusc2
Plek		Sec11c	Nrk		S100a11
Plscr1		Sell	Oit3		S100a16
Pnpo		Selplg	Pald1		Samd4
Prkca		Serf1	Parp8		Samd5
Prkcq		Serpinb6b	Pcdhga11		Scarf2
Prrt4		Sesn1	Pde1b		Schip1
Ptafr		Setbp1	Pdzd2		Scpep1
Ptgs1		Skap2	Pea15a		Sema3e
Ptk2b		Slc24a5	Phldb1		Sema3f
Ptp4a3		Slc2a3	Pkp2		Serpine1
Ptpn6		Slc39a8	Pld2		Sox7
Ptpn7		Sord	Plekhh1		Sparcl1
Rab27a		Spn	Plekho1		Spats2l
Rab38		Sprr2a2	Plpp1		St3gal5
Rasgrp2		Sprr2a3	Prkch		Stab1
Rbm24		St8sia4	Ptch2		Steap2
Rcc2		Steap4	Ptprm		Tagln
Reln		Stk26	Rab31		Tbx20
Rgs10		Syce2	Ralb		Tcf7l1
Rgs18		Syk	Ramp2		Tead1
Rpia		Sytl5	Rapgef5		Tgfa
Runx1		Tbc1d10c	Raph1		Thbd
Sash3		Tbxas1	Rara		Timp1
Selenbp1		Tcp11l2	Rcan3		Timp2
Selp		Tdrp	Reck		Tinagl1
Serpinb1a		Tmod1	Rgmb		Tjp1
Sh3bp1		Tnfaip8l2	Rhbdf2		Tmem121
Sla		Tnni2	Rhpn2		Tnc

Sla2		Tom1l1	Rilpl1		Tnfaip1
Slc16a10		Trim10	Rims2		Tns1
Slc4a1		Trim14	Ripply3		Tox2
Slc6a9		Trpv2	Rnf165		Ttc9
Slc7a8		Tspan8	Rps6ka2		Unc5b
Slfn2		Ttc39b	Sash1		Zfp462
Smagp		Ttc7	Sdc3		Zim1
Smim1		Uba7	Sdpr		
Snca		Unc13d	Sec24d		
Spi1		Unc93b1	Sema4c		
Spp1		Wdfy4	Sema6a		
Spta1		Wnt2	Sept10		
Srgn			Serpina3i		
Stat4			Serpinb9b		
Susd1			Serpinf1		
Susd3			Sfxn3		
Syngr1			Sh3bp4		
Tgm1			Sh3bp5		
Tmem229b			Sh3gl3		
Tmem71			Sh3pxd2a		
Tnik			Sipa1l2		
Traf3ip3			Slc16a2		
Treml2			Slc1a2		
Tspan32			Slc26a10		
Tuba4a			Slc37a3		
Tuba8			Slc5a3		
Tubb1			Smarca1		
Tyrobp			Sorbs1		
Ubash3a			Sorbs3		
Unc119			Spats2		
Vav1			Steap1		
Was			Stmn2		
			Stn1		
			Stx3		
			Sulf1		
			Sumo3		
			Syne2		
			Tanc1		
			Tcaf1		
			Tceal9		
			Tead4		
			Tek		
			Tgfbr3		
			Tm6sf1		
			Tmem100		
			Tmem2		
			Tmem204		
			Tmem88		
			Tmem98		
			Tmsb10		
			Tnfaip8l1		
			Tnfaip8l3		
			Tnks1bp1		
			Tns2		
			Trio		
			Tro		
			Tulp4		
			Tyro3		

			Ushbp1			
			Usp29			
			Vegfa			
			Vsig2			
			Yes1			
			Ypel2			
			Zeb1			
			Zfp423			
			Zfp532			

Supplementary Table 5 Genes de-regulated in HE2-HP transition, G11 – upregulated in both, G12 – upregulated in - dox, G21 – upregulated in + dox, G02 – downregulated in –dox, G20 – downregulated in +dox, G00 downregulated in both

G11	G12	G21	G02	G20	G00
6030468B19Rik	1110008P14Rik	Abhd15	Abhd6	1700020L24Rik	1810011O10Rik
Ache	1300017J02Rik	Adam8	Ablim1	2200002D01Rik	Abi3
Acp5	Abcb10	Adamts3	Ackr1	2900026A02Rik	Acer2
Acss2	Abcb6	Adgrg1	Afap1l1	4930402H24Rik	Acsf2
Adap1	Abcg1	Adgrg3	Anapc2	4930412O13Rik	Acvr1
Adgre1	Acsl1	Adssl1	Ankrd33b	9230102O04Rik	Acvrl1
Adgre4	Acss1	Ank3	Apln	9430020K01Rik	Adam12
Ajap1	Adcy7	Anp32e	Apoe	A430105I19Rik	Adam15
Alas2	Adgrg5	Arhgap11a	Bahcc1	A4galt	Adam19
Alox12	Adra2b	Arhgap45	Bcl3	AU021092	Adamts1
Alox5	Asb1	Arhgef39	Bcl9l	Abca1	Adarb1
Amd2	B3gnt8	Art4	Bmper	Abhd17a	Adcy4
Angpt1	Bin2	Asf1b	Btbd3	Adrb3	Adgra2
Ank1	Blvrb	Atp2b4	Cables1	Agrn	Adgre5
Apobec1	Btn1a1	Aunip	Calr3	Ahrr	Adgrf5
Aqp8	Capn1	Aurka	Capn5	Ajuba	Adgrl2
Arhgap30	Ccnb1ip1	B4galnt1	Car8	Akr1cl	Adgrl4
Arhgap4	Ccrl2	Blm	Card10	Ankrd46	Afdn
Arhgap9	Cd28	C2	Carhsp1	Ano10	Agpat4
Atp2a3	Cd86	C3ar1	Cd81	Anpep	Akap12
Bcl2a1b	Cda	Camkk1	Cdc42bpb	Apbb1	Akap2
Bcl2a1d	Cebpa	Caprin2	Cdkn1a	Aplp2	Als2cl
Bmp2k	Cenpp	Cbfa2t3	Clip1	Apol10b	Amotl1
Btk	Cep70	Ccne1	Cmtm8	Aqp11	Amotl2
Capn3	Cgn	Cd244	Cnnm2	Arhgap28	Angptl8
Car1	Chchd10	Cd300ld	Cobll1	Arhgap44	Ankrd50
Car2	Colec11	Cd300lf	Cplx2	Arhgap8	Anxa2
Card9	Coro1a	Cdadc1	Cpt1c	Arntl2	Anxa5
Ccdc88b	Coro2a	Cdca8	Cryab	Asap2	Anxa6
Ccdc92b	Ctsc	Cela1	Csgalnact1	Atp7a	Apbb2
Ccl3	Cytip	Cenpl	Ctla2a	Avpi1	Apcdd1
Ccl4	D030056L22Rik	Cenpu	Ctxn1	B3galnt1	Aplnr
Ccl6	Dapk2	Cit	Cyp26a1	B9d1	Apold1
Ccl9	Dennd2c	Ckb	Cyp26b1	Bcam	App
Ccr1	Depdc1a	Clec1b	Dcaf12l1	Bend7	Aqp1
Ccr2	Dhrs11	Cmah	Dcbld1	Bex1	Arap3
Cd14	Diras2	Cox6b2	Ddah2	Bmx	Arhgap27
Cd180	Efnb1	Csf3r	Ddit4	C1qtnf9	Arhgap31
Cd226	Emb	Cxcr2	Dennd2a	C77370	Arhgef12
Cd300a	Eml2	Dclre1b	Dock1	Camk2d	Arhgef15
Cd300c2	Enpp1	Diaph1	Dusp4	Casp4	Arhgef17

Cd300lb	F10	Dna2	Dync2li1	Ccdc184	Arhgef28
Cd52	Fam110c	Dok2	Ecm1	Ccdc85a	Arhgef3
Cd69	Fam117a	Dok3	Erf	Cd59b	Arhgef5
Cdc25b	Fam169b	Dtl	Ets2	Cd82	Arid5b
Cenpk	Fancf	Dtx4	Exoc3l4	Cdkl1	Armcx1
Cercam	Fech	E2f2	Fam71f1	Ceacam1	Armcx2
Cited2	Fmnl1	E2f8	Fchsd2	Chrna7	Armcx4
Cited4	Galnt10	F13a1	Fkbp1a	Clcf1	Armcx6
Clec4d	Gan	Fam105a	Fscn1	Cnksr1	Arsa
Clec4n	Gm10509	Fam50a	Furin	Ctnnb1	Asah2
Clec5a	Gtf2a2	Fcgr2b	Fzd10	Ctsf	Asb4
Cnst	H2afz	Fcgr4	Gchfr	Ctsh	Atf3
Cpne7	Hacd4	Gas7	Gem	Cxcr4	Atp6v0e2
Cpox	Hexim2	Glrx5	Gfi1	Cyb561	Atp9a
Csf1r	Hist2h2aa2	Gpc4	Ghr	Cyp1b1	BC028528
Csf2rb	Ifitm1	Gria3	Glp1r	Cyp7b1	Bach2
Csf2rb2	Ifitm6	Gse1	Gna11	Cyr61	Bcar1
Csgalnact2	Igsf3	Gtf3c5	Gpx3	Dab2ip	Bcar3
Cst7	Inafm2	Gypc	Gpx7	Dennd3	Bcl6b
Cx3cr1	Ints6l	H2-T24	Gsta4	Dgkh	Bgn
Cyp4x1	Irak3	Hbq1a	Hapln1	Dgkk	Bin1
Dapp1	Itga4	Hexim1	Hist1h2br	Dhh	Bmp1
Dock8	Kalrn	Hist1h1a	Hmbox1	Diaph2	Bmp2
Dpf3	Kcnn4	Hist1h1b	Hmga2	Dmd	Bmp4
Dusp10	Lgals3	Hist1h2bh	Hmgn5	Dmwd	Bmp6
Ell2	Lilra6	Htra3	Hmox1	Dppa4	C130074G19Rik
Emilin2	Lims1	Icam4	Hoxb6	Dusp1	C1qtnf6
Epb42	Lpcat2	Ifi30	Ica1	Dusp26	Cachd1
Epor	Mapk6	Ikzf1	Igf1	Dusp6	Calcrl
Esco2	Mbnl1	Il17ra	Igfbp5	Dusp9	Cald1
Evi2a	Mcf2l	Il18rap	Il2rg	Efna4	Camsap2
F2rl2	Milr1	Itga2b	Il4ra	Emp2	Caskin2
Fam109b	Mllt3	Itgb3	Impdh1	Enpp2	Cav1
Fam46c	Mmp8	Kcnj5	Inpp5a	Entpd1	Cav2
Fam65c	Mpc1	Kctd12	Kank3	Eogt	Ccdc60
Fbxo48	Msrb1	Kif14	Ldlrap1	Epb41l3	Ccdc85b
Fcer1g	Myo1g	Klhl30	Lgals9	Eva1a	Ccm2l
Fcgr3	Nadk2	Lat	Lhfp	Ezh1	Ccnd1
Fermt3	Narf	Lilr4b	Lima1	F2rl1	Cd109
Fgd3	Ncoa4	Lpin2	Loxl2	Fam107a	Cd200
Fgl2	Ninl	Lst1	Lrp5	Fam124b	Cd276
Fyb	Nt5c3	Mc5r	Lrrc8a	Fam189a2	Cd38
G6b	Olfm1	Mcm10	Lrrn2	Fam198b	Cd40
Gata1	Ormdl1	Mdm1	Mapk7	Fam234a	Cd59a
Gfi1b	Otub2	Med12l	Mapre2	Fbp1	Cd93
Gja6	P2ry13	Mki67	Mapre3	Filip1l	Cdc42ep1
Glipr1	Pak1	Mkl1	Mast4	Fkbp14	Cdh2
Gm21975	Pdlim4	Mknk1	Me1	Fzd6	Cdh5
Gnaz	Penk	Mlec	Mfsd13a	Galnt11	Cdkn1c
Gp1ba	Pgm2l1	Mns1	Mpzl1	Galnt18	Cdr2l
Gp1bb	Pip5k1b	Mpeg1	Mrps6	Gdpd1	Cgnl1
Gp5	Pla2g7	Mpl	Mtss1l	Gimap9	Chd3
Gp6	Plac8	Mpo	Myo1c	Gnai1	Chn1
Gp9	Ppp3cc	Mrpl12	Nav1	Gpm6b	Chst2
Gpr141	Ptprc	Mrvi1	Nckap5l	Gpr173	Chst7
Grap2	Pycr1	Mtfr2	Ndst1	Gprc5b	Ckap4
Grtp1	Pygl	Mthfd2	Nefl	Grb7	Cldn5
Gucy1a3	Rab30	Mx1	Nes	Grk5	Clec14a

Gucy1b3	Rab3il1	Myb	Nhs	Hecw2	Clic6
Gypa	Rab44	Nap1l2	Nlrc3	Hhat	Cmtm3
Hba-a2	Reep1	Nbeal2	Nuak1	Hip1r	Cnn3
Hba-x	Rspo4	Neil3	P3h4	Hoxd1	Col18a1
Hbb-bh1	Selenbp1	Nomo1	Pcdhga7	Ift122	Col4a1
Hbb-bh2	Sla2	Nrgn	Pcdhga9	Igfbp3	Col4a2
Hbb-bs	Slc30a10	Olr1	Pcdhgb5	Il17rc	Col5a2
Hbb-y	Slc35d3	P2rx1	Pcnx	Il17rd	Colec12
Hbq1b	Slc44a1	Pbk	Peak1	Iqcg	Coro2b
Hck	Slc9a3r1	Pbx1	Phldb1	Kank1	Cped1
Hemgn	Slfn14	Pdcd4	Plec	Kcnip3	Cpne8
Hipk2	Spaca9	Pls1	Plekhb2	Lgals2	Cracr2b
Hmbs	Spi1	Ppp3r1	Plekhh1	Lgmn	Creb3l2
Hp	Spn	Prkar2b	Plekhh3	Lgr5	Crip1
Hsd3b1	Sppl2a	Prkcd	Polg	Lgr6	Crip2
I830077J02Rik	Ssx2ip	Ptpn13	Ppfibp1	Lhfpl2	Crmp1
Ifi202b	St3gal6	Ptpn7	Ppp1r13b	Lims2	Csf1
Igsf6	Stx11	Rab27b	Ppp1r14a	Lipa	Csrp2
Il10ra	Susd3	Rab38	Prkd2	Litaf	Ctsl
Il1r2	Syk	Rad51	Ptk7	Lmbr1l	Cttnbp2nl
Irf8	Syne4	Rad54l	Ptms	Lpar6	Cx3cl1
Irs2	Tbxas1	Rap1gap2	Rab13	Lrfn4	Cxcl1
Itgam	Tceanc	Rasgrp2	Ramp3	Lsr	Cxcl16
Itgb2	Tec	Rasl11a	Rapgef4	Ltb	Cxx1a
Kcna3	Tex9	Rbm38	Rarg	Ly6h	Cxx1b
Kel	Themis2	Rrm2	Rcn3	Mageh1	Cxx1c
Khk	Tmcc2	Slamf1	Ripk3	Magi3	Cyp1a1
Klf1	Tmem14c	Slc11a1	Rnf157	Mal	Cyp2j6
Knl1	Tmem184a	Slc16a3	Rprm	Mall	Cyyr1
Lair1	Tmem56	Slc24a3	Rrbp1	Map4k2	D930048N14Rik
Lilrb4a	Tmem60	Slc6a20a	Rtkn	Map4k5	Dab2
Lpl	Tnf	Slc7a11	S100a11	Mapk3	Dbn1
Lrrc25	Tnfaip8l2	Slc7a5	Sall3	Marcks	Dchs1
Ltbp2	Tom1l1	Smc2	Sema6b	Marveld2	Ddit4l
Ly6e	Tpd52	Spns2	Sept7	Mb21d2	Dennd5b
Ly6g6f	Traf3ip3	Srgap3	Slc16a2	Mdfic	Dhx57
Mamdc2	Trem1	Srsf4	Slc1a2	Meis2	Disc1
Matn1	Trib3	Syce2	Slc27a3	Mesdc1	Dlc1
Mbp	Trim14	Syne3	Slc30a3	Mfhas1	Dlg5
Mfsd2b	Ttc39a	Tango2	Slc5a3	Mocos	Dll4
Micall2	Tuft1	Taok3	Slco3a1	Msrb3	Dnajb5
Mmp19	Uba7	Tbc1d31	Smtn	Mtch1	Dock4
Mob1b	Ube2l6	Tdrd5	Smurf1	Myo1e	Dock6
Mpp2	Unc13d	Tgfb1	Sox12	Naalad2	Dock9
Ms4a6b	Unc93b1	Ticrr	Spry2	Nab2	Dok4
Mt1	Urod	Tnfaip8	Sptan1	Naip5	Dpysl2
Mt2	Uros	Tnik	Sptbn1	Naip6	Dpysl3
Muc13	Usp51	Tra2b	Srpx2	Nckap1	Dst
Mylk3	Vwce	Ttyh2	Ssfa2	Nfkb2	Dusp22
Myo1f	Vwf	Txn2	Stox2	Nfkbie	Dysf
Myom1	Zfp534	Ugt1a7c	Stxbp1	Nmnat2	Ebf1
Ncf1	Zfp758	Uhrf1	Sulf2	Nod1	Ece1
Ncf4	Zfp808	Ung	Tacc2	Nr2f6	Ecscr
Nckap1l	Zfp979	Zfand4	Tbkbp1	Nr4a1	Edil3
Nfam1	Zfp984		Tcf7l2	Nradd	Edn1
Nfe2			Thsd7a	Oaz2	Efna1
Nmnat3			Tll1	Osbpl10	Efnb2
Npy			Tmcc3	Osbpl5	Egfl7

Nrip3			Tmem108	Osmr	Ehd2
Nrros			Tmtc2	P2rx7	Elk3
Nt5e			Tnfrsf12a	Pam	Elmo1
P2rx5			Tnrc18	Parvb	Emcn
P2ry14			Trim26	Pcdh18	Eml1
Paqr7			Tspan14	Pde9a	Enc1
Pde5a			Tspan7	Pdgfa	Endod1
Perp			Tubg2	Pdk4	Eng
Pf4			Uaca	Pdzd2	Enho
Pfkfb4			Ucn	Pik3ip1	Epas1
Phf11b			Vamp5	Pkd2	Epha2
Pik3ap1			Vwa7	Pla2g16	Ephb4
Pik3cd			Wipf3	Plcd1	Epn2
Pim1			Wwc2	Plcd3	Erbb2
Pirb			Zcchc24	Pld2	Erg
Pkd1l3			Zfp467	Plod1	Esam
Pla2g4a			Zfp516	Plpp2	Ets1
Plek			Zfp521	Ppm1j	Evi5
Pnpo			Zmynd15	Praf2	Exoc3l
Ppp1r14c				Prcp	Ext1
Prkca				Prkcdbp	F11r
Prkcq				Prom1	Fam114a1
Prkg1				Prss12	Fam129b
Proser2				Ptchd1	Fam149a
Prtn3				Rab34	Fam163a
Pstpip2				Ralgds	Fam171a1
Ptafr				Rassf9	Fam171a2
Ptger3				Rcan1	Fam181b
Ptprj				Rcan3	Fam188b
Rab37				Rdh10	Fam219a
Rac2				Ret	Fam43a
Rap1b				Rgmb	Fam57a
Reep6				Rnd1	Farp1
Reln				Rnf122	Fat4
Rgs1				Rnf185	Fblim1
Rgs10				Rps6ka4	Fbln1
Rgs18				Rusc2	Fbn1
Rnf128				Samd12	Fbn2
Rpia				Scarf2	Fbxl7
Rps27rt				Schip1	Fbxo10
Samd14				Scn11a	Fermt2
Sema4d				Selenom	Fgd5
Siglecf				Selenop	Fgfr1
Sla				Sema3a	Fignl2
Slc14a1				Sema7a	Fkbp10
Slc16a10				Sept10	Flnb
Slc25a37				Serpinb6a	Flrt2
Slc2a6				Serpinf1	Flrt3
Slc38a5				Serping1	Flt1
Slc39a8				Sfxn3	Flt4
Slc6a9				Sgcd	Fmnl3
Smim1				Shc2	Fmo1
Smox				Slc12a2	Fn1
Snca				Slc16a9	Fndc3b
Soat2				Slc2a12	Frmd6
Spef1				Slc35g3	Fstl1
Spns3				Slc7a7	Fxyd5
Spp1				Smad7	Fzd1

Spta1				Smpdl3a	Gabbr1
Sptb				Smpdl3b	Gad2
Srgn				Smtnl1	Gap43
Steap3				Sncaip	Gas6
Ston2				Snrk	Gata3
Syt16				Snx21	Gata4
Tfrc				Socs3	Gata6
Thbs1				Sorcs2	Gdpd5
Tmem40				Sp100	Gimap1
Tmod1				Spaca6	Gimap4
Tnfrsf14				Spag9	Gimap5
Tnfsf14				Spata13	Gimap6
Tnni1				Spats2	Gimap8
Traf5				Spred3	Gja4
Treml1				Sprr2a2	Gja5
Treml2				Sprr2a3	Gjc1
Trim10				St6gal1	Gm13889
Trim58				St6galnac2	Gm1673
Tspan32				Stn1	Gna12
Tspan33				Stx3	Gng11
Tspoap1				Stx6	Gngt2
Tuba4a				Sulf1	Gpm6a
Tuba8				Tbc1d9	Gpr182
Tubb1				Tes	Gramd1a
Tyrobp				Timd2	Grap
Ubash3a				Timp3	Grasp
Ubash3b				Tm4sf1	Greb1l
Ufsp1				Tmem100	Grrp1
Vav1				Tmem120b	H2-Q4
Vsir				Tmem176a	H2afy2
Xk				Tmem254a	Hand2
Zbtb16				Tmem255b	Has2
				Tmem98	Hdac7
				Tnfaip8l1	Heg1
				Tnfrsf26	Hey1
				Tnnc1	Hey2
				Tpbg	Hid1
				Tppp3	Hip1
				Trp53inp2	Hmcn1
				Tspan2	Hoxb2
				Tspan6	Hoxb3
				Tspan8	Hoxb4
				Ttll7	Hoxb5
				Tubb2b	Hoxd4
				Twist1	Hoxd8
				Tyro3	Hoxd9
				Uchl1	Hspa12a
				Unc13b	Hspa12b
				Usp53	Hspg2
				Vegfc	Hyal1
				Xbp1	Hyal2
				Xxylt1	Icam1
				Ypel3	Icam2
				Zbtb4	Id1
				Zfp185	Id2
				Zfp287	Id3
				Zfp334	Ier5l
				Zfp618	Iffo2

				Zfp69	Igf2
				Zic2	Igfbp4
				Znrf1	Igfbp7
					Il27ra
					Il6st
					Irf2bpl
					Itga1
					Itga2
					Itga3
					Itga5
					Itga9
					Itm2c
					Itpkb
					Jag2
					Jup
					Kank2
					Kcnk9
					Kctd12b
					Kctd17
					Kdr
					Kif1c
					Kif26a
					Kif3c
					Kirrel
					Klf2
					Klf3
					Klf4
					Klhl13
					Klhl3
					Klhl4
					Lama4
					Lama5
					Lamb1
					Lamb2
					Laptm4b
					Large1
					Lats2
					Ldb2
					Lhx6
					Lifr
					Limch1
					Lix1l
					Lpp
					Lrp11
					Lrrc32
					Ltc4s
					Luzp1
					Ly6a
					Ly6c1
					Lyve1
					Madcam1
					Maff
					Maged2
					Magi1
					Man1c1
					Map1b
					Map3k11
					Map3k3

					Map4
					Map4k3
					Map4k4
					Map7d1
					Mapk11
					Mapk12
					Marcksl1
					Marveld1
					Mboat2
					Mcam
					Mest
					Mex3d
					Mfng
					Mgat4b
					Mmp11
					Mmp14
					Mmp15
					Mmp2
					Mmp28
					Mmrn2
					Mogat2
					Mpnd
					Mrc1
					Mtus1
					Mxra7
					Myct1
					Myo1b
					Myzap
					N4bp3
					Nav3
					Nectin2
					Nedd9
					Nek6
					Neo1
					Nfatc4
					Nfib
					Nfkb1
					Nfkbia
					Nhsl1
					Nhsl2
					Nid1
					Nid2
					Nos3
					Notch1
					Notch4
					Nova2
					Npdc1
					Npr1
					Nrarp
					Nrep
					Nrp1
					Nrp2
					Nts
					Ocln
					Oit3
					Orai1
					P3h3
					P4ha2

					Pald1
					Palld
					Palm
					Parva
					Pcdh1
					Pcdh12
					Pcdh17
					Pcdh19
					Pcdhb22
					Pcdhga10
					Pcdhga11
					Pcdhgb2
					Pcdhgb6
					Pcdhgb7
					Pcdhgc3
					Pde2a
					Pde4b
					Pdgfb
					Pdgfd
					Pdia5
					Pdlim1
					Pdlim3
					Pea15a
					Pecam1
					Peg10
					Peg3
					Phldb2
					Pi16
					Pik3c2b
					Pik3r3
					Pim3
					Pkdcc
					Plac1
					Plagl1
					Plat
					Plcg1
					Plekha1
					Plekhg1
					Plekhg5
					Plekho1
					Plk2
					Plpp1
					Pltp
					Plvap
					Plxnd1
					Ppp1r16b
					Prag1
					Prex2
					Prickle3
					Prkch
					Prnd
					Prnp
					Procr
					Prrg3
					Ptpn14
					Ptprb
					Ptprg
					Ptprm

					Ptrf
					Pvr
					Pxdc1
					Pxdn
					Rab11fip3
					Rab11fip5
					Ralb
					Ramp2
					Rapgef3
					Rapgef5
					Rara
					Rasal2
					Rasgrp3
					Rasip1
					Rassf3
					Rbms2
					Rbpms
					Rcbtb1
					Reck
					Relb
					Rell1
					Rftn1
					Rgl1
					Rgs16
					Rgs3
					Rhob
					Rhoc
					Rhoj
					Rhou
					Rilpl1
					Rin2
					Ripply3
					Rnf125
					Rnf144a
					Robo4
					Rps27
					Rps6ka2
					Rras
					Rspo3
					S100a16
					S1pr1
					Sall2
					Sash1
					Scarf1
					Scn1b
					Scpep1
					Scrn1
					Sec24d
					Selenon
					Sema3f
					Sema3g
					Sema4c
					Sema6a
					Sema6d
					Serpina3g
					Serpina3i
					Serpinb9b
					Serpinh1

					Sesn3
					Sgk1
					Sh3bp4
					Sh3bp5
					Sh3gl3
					Sh3pxd2a
					Sh3pxd2b
					Sh3tc1
					Shank3
					She
					Shroom2
					Sipa1l2
					Slc16a11
					Slc16a13
					Slc26a10
					Slc31a2
					Slc35g2
					Slc38a7
					Slc39a4
					Slc40a1
					Slc6a6
					Slc9a3r2
					Slit2
					Smad1
					Smad6
					Snn
					Sorbs1
					Sorbs3
					Sost
					Sox13
					Sox17
					Sox18
					Sox4
					Sox7
					Sparc
					Spata6
					Sprr2b
					Srgap1
					Srgap2
					St6galnac3
					Stab1
					Stap2
					Steap1
					Steap2
					Stmn2
					Syde1
					Syne2
					Synpo
					Tanc1
					Tax1bp3
					Tbx3
					Tcaf1
					Tcea2
					Tcf15
					Tcf4
					Tcf7l1
					Tead1
					Tead2

					Tead4
					Tecpr1
					Tek
					Tfpi
					Tgfbr2
					Tgif1
					Tgm2
					Thbd
					Thsd1
					Tie1
					Timp1
					Tinagl1
					Tjp1
					Tjp2
					Tmem176b
					Tmem2
					Tmem204
					Tmem44
					Tmem88
					Tmsb10
					Tnc
					Tnfaip1
					Tnfaip2
					Tnfrsf22
					Tnfrsf23
					Tnfsfm13
					Tnks1bp1
					Tns2
					Tram2
					Trim16
					Trim3
					Trio
					Trp53i11
					Tsku
					Tspan18
					Tspan9
					Ttc28
					Ttc9
					Tulp4
					Unc5b
					Upp1
					Ushbp1
					Vash1
					Vegfa
					Vim
					Vsig10
					Vsig2
					Wscd1
					Wwtr1
					Yap1
					Ypel2
					Zcchc14
					Zdhhc1
					Zfp365
					Zfp366
					Zfp36l1
					Zfp423
					Zfp503

					Zfp532
					Zfp57
					Zfpm2

Supplementary Table 6 ChIP target genes – ChIP peaks were assigned to the nearest transcription start site

NoDox Runx	PlusDox Runx			PlusDox Evi1
1700019M22Rik	1700019M22Rik	Klf3	Smox	Il31ra
4933402J10Rik	4933402J10Rik	Cox19	Ip6k1	Kpna1
Abcb11	Pak3	Slc1a4	Emc10	Pak3
Gad2	Limd1	Mrpl46	Erh	Igf2bp3
Pak3	Abcb11	Mul1	Rhoa	Limd1
Fam107a	Gad2	Cep164	Mcmbp	Hic2
Eea1	Fam107a	Tmem192	Jpt2	Gphn
Limd1	Eea1	Mapk7	Naglu	Tspan3
4933412E24Rik	Hic2	Creb3l2	E230029C05Rik	Gm20268
Igf2bp3	Kpna1	Foxe1	Cdkn1a	Dnah7b
Kpna1	Igf2bp3	Moxd2	Ldlrap1	Plekha1
Hic2	Tspan3	Mall	Vdac1	Dtnbp1
Nxph1	Il31ra	Nsd1	Adap1	Batf3
Jund	Gphn	Nedd1	Xxylt1	Myl12b
Il31ra	4933412E24Rik	Atp6v0a2	Bach2	Fam107a
Tspan3	Dtnbp1	Usp6nl	Nup160	Rsph3b
Gramd3	Gramd3	Exosc5	Btaf1	Rock1
Gphn	Nxph1	Nrbf2	Kif11	Ss18
Mir8105	9530002B09Rik	Mir7661	Srsf6	9530002B09Rik
Gm13283	Nfe2	Map2k7	Acvr2a	Gramd3
Lmna	Gm20268	Bbc3	Ndufa7	Plxdc2
Atg7	Slc44a2	Fig4	Jun	Zfp949
Cdh12	Gm12887	Socs6	Ndufab1	Trpm6
Atg7	Timm8a1	Pabpc4	Lbr	Gm12887
Nfe2	Inf2	Ppib	Foxo3	4930433N12Rik
Gm21119	Sde2	Atg14	Rpl7a	D130009I18Rik
Pknox1	Pisd-ps1	Uhrf2	Mdm4	Arhgap21
Cenpu	Gm2897	Rabl6	Mlec	Aldh9a1
Rara	Pknox1	Os9	Stk10	Malt1
Rara	Myl12b	Abhd12	Acadm	Fam227b
Snord116l2	Aspscr1	Ints11	Dnaaf1	Rps29
Myl12b	Socs3	Mir28b	Mir193a	Timm8a1
Sde2	Jund	Rab3il1	Imp3	Izumo1
Timm8a1	Lbr	Hist1h2al	Acot11	Ybx3
Zfp949	Cdh12	Pcmtd1	Akap1	Zfp945
Mir23a	Gm2093	Pou2f1	Dpp9	Atf2
Gm20268	Platr30	Haus8	St5	1700019M22Rik
F5	Cpt2	Ndufb9	Per2	Abcb11
Rpl22	Chaf1b	S1pr1	Sh2b1	Tex14
Neat1	Tuft1	Rab3gap1	Map3k3	Zfp821
Gm6194	F5	Dtnbp1	Rbbp4	Ifna13
Pik3cb	Cenpu	Mbtps1	Hist2h2bb	Adam10
Tyrp1	4933404K13Rik	Ciart	1110008F13Rik	Rprl1
Itsn1	Ccdc12	Bahd1	2810013P06Rik	4930455J16Rik
Polr2e	Ccdc9	Txndc2	Gpsm3	Alox5ap
Tle4	Gm21119	Syt3	Amdhd2	Tex14
Cd300a	Gm6194	Sympk	Pola2	4933417O13Rik
Pisd-ps1	Rnf44	Gmcl1	C030034L19Rik	Tmem131
Baz2a	Dynlt1b	Hipk2	Ilf3	Cerk

Pisd-ps2	Tspan9	Med7	Bop1	Tex14
Fam53a	Tspan9	Sin3b	M6pr	4930548G14Rik
Apbb1ip	Tyrp1	Cebpe	Tpx2	Gm16973
Platr30	Tyrp1	Gjb5	Zbtb12	Tex14
Mfap3l	Ifna13	F2rl3	BC107364	Sspn
Def8	Rpl22	Fbxo21	Rab5b	4933402J10Rik
Ap1m1	1110002J07Rik	Tmem206	Usp43	Tex14
Pisd-ps2	Rcc2	Ankrd24	Aldh2	Tex14
Dtnbp1	Orai1	Gmfb	Gm2788	Nemf
Rgs2	Mir23a	Lgmn	D730003I15Rik	Eapp
G530011O06Rik	Gm14486	Fam228b	Ptk2	Pknox1
Snord116l1	Cfap45	Pou2f1	Map2k3	Eapp
Tyrp1	Snord116	Zdhhc19	Fbxo9	Eea1
Bcar1	Emp3	1810026B05Rik	Nars2	Tex14
Etv6	Atg7	Trdmt1	Leprot	Eapp
G530011O06Rik	Map2k4	Ldb1	Rpl4	Btbd35f27
P2rx1	Fam212a	Stk11ip	Syngr2	Cyp27a1
G530011O06Rik	Tubb3	Gna12	Ppp4r1	Ncoa1
Pigl	Mir8105	Rnf146	Dcaf12	Gm26689
Gm4981	Dhrs4	Map3k4	Vamp8	Fam213b
Snord116l1	4930433N12Rik	Hspb7	Cntrob	Alox5ap
Gm3558	Pisd-ps2	Pth2	Ppp1r14b	Zfp106
Gm16998	Fam53a	Mpp6	Phip	Eapp
Fosb	Gm3696	A330074K22Rik	Cpsf2	Eapp
4930502E09Rik	Def8	Whrn	H2afz	Eapp
Trappc9	Dennd4a	Fam177a	Mast3	Eapp
Gm9758	Lmna	Tcea1	Bcl7b	BC107364
Tex14	Znrf3	Katnbl1	C1ql1	Cpxcr1
Gm2093	Gatad2a	Cnot6	Wdr53	Nxph1
Tex14	Mrpl45	4930483J18Rik	1810013L24Rik	Fut8
Gm5795	Fam46c	Pbx1	Fyttd1	Rpap3
Eif4a1	Itsn1	Mpp5	Kifc2	Rasgrf1
4931406P16Rik	F2r	Pbx1	Actg1	Eapp
G530011O06Rik	Tex2	Hif1a	Acvrl1	Rsph3a
Snord116l1	Snord116l1	E130307A14Rik	Tor1aip2	LOC666331
4930433N12Rik	Zfp945	Cdc42ep4	Cpsf2	4930404A05Rik
Ccl3	Gse1	Psma6	Taldo1	4933412E24Rik
Pdzk1ip1	Tex14	Scarna2	Ehmt2	Kcnn2
Ccdc85c	Pisd-ps2	Lgalsl	Swap70	Pdia5
Tubb3	Tex14	Arpc5	Ankrd28	Gm26689
Msh6	Cnih3	Cxxc5	Xrcc6	Eapp
4831440E17Rik	6820431F20Rik	Fbxo31	Atp6v0b	Rbm39
Tex14	D130009I18Rik	Atxn2l	Slc26a2	Sepsecs
Ccm2	Nkd1	Rnf141	3110021A11Rik	Gm29685
Cuedc1	Ccm2	Ckap5	Nasp	Zfp746
Plcl2	Cyth1	Plekhm1	Kmt2d	Naa20
Lamtor5	Ap1m1	Cxxc5	Stip1	Siah1a
Emp3	Zdhhc20	Snx1	Tmem181b-ps	Pdia6
Gm14486	Fosb	Zfp3	Rdm1	Tspan8
Mtss1	Ctnnbip1	Azi2	2010001A14Rik	Pisd-ps1
Pde8a	Rapgef6	Scyl1	Rab21	Hfe2
Gm2897	Orc5	Brd3os	Ovca2	Dohh
Lmna	Tex14	Caap1	Rbm15	Smchd1
Tox2	Clic4	Klhdc10	Ctns	Wdr5b
Tex2	Rara	Rspry1	Tmcc3	Igsf3
Gm3636	4931406P16Rik	Cebpg	Gck	Ago1
Atg7	Rara	Rpl23	Acap2	Zfp608
Inf2	Tex14	Gnai2	Dock8	Gm29678

Zfp746	Plcl2	Men1	Ubap1	Zfp791
Plxdc2	Zfp949	Cdkn2d	Pitx2	Tmem215
Fosb	Erdr1	1700030J22Rik	Pde5a	Mir1258
Runx1	Get4	Eif4e2	Muc13	Il1rapl1
Gm10406	Rabgef1	Hnrnpa3	Slc35b1	Bzw2
Atg7	Gm5795	Glg1	Scgn	Mir6955
Ddx5	Cnot1	Gm536	Il12a	Npm2
Tjp3	Tpmt	Luc7l	Draxin	1700017G19Rik
Aspscr1	Cdc34	Pisd	Fam174a	Gm5797
Rcc2	Gm4981	2810433D01Rik	Bcr	Ctsl
Trdmt1	Zfp868	Tatdn2	Pum1	4921534H16Rik
Tex14	4930502E09Rik	Fkbp2	Secisbp2	Ncbp3
Sep-09	Odc1	Gspt1	Telo2	Fbxo47
Ktn1	Atg7	Gata2	Sec24b	Atg7
Tcf7	Il17rd	Crebrf	Commd2	Cntnap2
Dyrk3	Fam20b	Fasn	Emilin1	Itsn1
Usp13	Trappc9	Chst12	Zfp628	Tusc1
Ybx3	Hs6st1	C130050O18Rik	Pde3b	Ninj2
Spn	Morc3	Sertad2	Dcxr	Fgfr2
Mief2	Usp12	Ltn1	Tigd3	Cops8
Fth1	Bcar1	Mdm2	Srm	Efnb2
Lrpprc	Bcl10	Mta3	Urb1	Hexim1
Rdm1	Far1	Smim15	Ckap5	Cntnap2
Dhrs4	Pmp22	Top3b	Tigd2	BC107364
Klf2	Tgif2	Mapkapk5	Ggct	Atp7a
Zfp991	Wipi2	Slc30a4	1500009L16Rik	Gtf3c2
6820431F20Rik	Lrpprc	Anapc10	Irf2	Jph1
Clic4	Slc6a9	Ncoa4	Agfg1	Ccny
Zfp395	Glis2	Usp2	Mcph1	Ywhaq
Ywhaz	Gpr33	Cenpm	Ngrn	Neto1
Zfp623	Mfge8	Zfp608	Kdm6b	Eif3h
1110002J07Rik	Atf2	Ncoa5	Ldha	Kcnip1
Tbc1d5	Cxcl5	Mir6957	Shroom1	Mir8105
Ccdc12	Dhrs9	Arsg	4933416M07Rik	Fnbp1
Gm21119	Fam35a	Rcor1	Mdm1	Zdhhc12
Hrh1	Lamtor5	Plec	Ankrd12	Lrp5
Gse1	Gm16998	Gata2	Cass4	Malat1
Mir7223	Mtrf1l	Coa6	Plk4	Malt1
Slc6a9	Phf12	Dhx9	Sorbs1	Atg7
F2r	Mmd	Neurl4	Mctp1	Asl
Fam212a	Mfap3l	5033406O09Rik	Klf6	Gad2
Mir193b	Cdc42se2	Gnai2	Fbxo34	Vstm4
Emilin2	Ccl3	Slc30a4	Nutf2	BC107364
Speer4f1	Zfand6	Gemin5	Erf	4930467E23Rik
Tspan9	Gm5069	Atxn7l3	Tmod3	Sep-06
Tspan9	4831440E17Rik	Pnpla8	Bysl	Col6a6
LOC666331	Ppcdc	Fli1	Dclre1c	Gp9
Gm5795	Slc39a13	Copz2	Riok2	Il1rapl1
LOC666331	Rdm1	Mir6951	Arl2bp	Naaa
Banp	Gm9758	Rras	Fam98a	Usp39
Hist1h2bc	Slc25a4	Ninl	Scn11a	2900052N01Rik
Maf1	Tmbim7	Fbxl3	Sephs1	I0C0044D17Rik
Grtp1	Pdzk1ip1	Gmds	Pold4	Snord67
Tbl1x	Btbd35f27	Arid1a	Ahcy	Tsr2
Tmbim4	4921513I03Rik	Map7d1	Pias1	Arl4d
Cdkn2aipnl	Apbb1ip	Thg1l	Runx1	AW554918
Myh9	Kdm5a	Taf5l	Hnrnpr	Platr30
Rabgef1	Mnt	Arl3	Tcf7	Hist1h2bn

Slc38a2	Rgs2	Map7d1	Wdr89	D230017M19Rik
Ubash3b	Myo1d	Abr	Kat8	Hist1h3i
Gcdh	Fnip1	Appbp2os	Gm13985	Ccdc114
Mrpl45	G530011O06Rik	Tmem50b	Susd3	Gtf2h1
Colgalt1	Ubash3b	Arrb2	Gm16845	Ncoa1
Gm3696	Ipo5	Gas2l1	Mapk1	Slc35b3
Snora16a	Lmnb1	Pold1	Zfp512	Mthfs
Ccdc9	Dennd4c	Paxip1	Polr2h	Tmtc2
Rnf44	1700028E10Rik	Gm21944	Appl2	Pak1ip1
Diaph1	Ssfa2	Gm8013	4930558J18Rik	Cdh12
Runx1	Man1c1	Smtnl2	Morn1	1700072O05Rik
9530002B09Rik	Itga2b	Clybl	Pex13	Cd44
Fcrls	Gas7	Tmem40	5430416N02Rik	Ly86
Cxcl5	Prdx3	Rab3gap2	Mgat4a	Rfx5
Zfp945	Baz2a	Pld2	Papola	Ptn
Gm5458	Usp3	Vps35	Mir6935	Cacng2
1700060C20Rik	Dnpep	Rhbdd2	Kat6b	Scn11a
Fam20b	Trip10	Rnu11	Nelfcd	Ypel1
Adgrg1	Rasa1	Cyp20a1	Cep120	8430429K09Rik
2610005L07Rik	P4hb	Rnf24	Tsc22d1	Parp16
Speer4cos	Pgs1	Wipi1	Trim68	Cltc
Smarcd2	Pim1	Adora2b	Pkdcc	Rdm1
Cxxc5	Plxdc2	Dynll2	Parp11	D230017M19Rik
Gm5796	Sntb2	Stom	Il4ra	Hist1h3h
Lbr	Txndc5	B3gnt2	Gm5122	Hist1h2bc
Dynlt1b	Add1	Epn1	Primpol	Cog1
Cbx7	Nyx	Rnu11	Dock4	Robo1
Etohd2	Ccne1	Mir5128	Tpm2	Tmed8
Gm10354	Ybx3	Adcy9	Riok2	Gm1653
Gm9758	Polg	Tjp3	Ybx2	Camsap2
Cdh5	Alox5	Gpm6a	Fam122a	Hist1h2be
Polg2	Fth1	Slc6a6	Tnpo1	Erh
Mdga1	G530011O06Rik	Rpl8	Sav1	A630001G21Rik
Ssc4d	Avpi1	Vasp	Bbs10	Snord116l2
Adgrg1	Agl	Rabggtb	Hps5	Sertad2
Pisd-ps2	Zbtb22	Pts	Gon7	Zdhhc19
Gm13056	4930431P22Rik	Fam234a	Fosb	Btbd35f28
Zbtb16	Dgkd	Ppp1r15a	Mtx1	Crxos
Dennd4a	Tbc1d5	6430548M08Rik	Il6st	Gm6194
Flywch1	Vcan	Cdkn2c	Prorsd1	Hist1h2af
Rwdd1	Bmpr1a	Relt	Akap13	Ctdspl2
Cmah	Gm5458	Grap2	Slc35f5	Gclm
Sfxn5	Smarcd2	Rbm4	Susd1	G530011O06Rik
Lpin1	Klhl21	Setd1a	Impa2	9530091C08Rik
Vcan	Ccsap	Nup50	Mir378b	Mirlet7i
Arntl	Brpf1	Unkl	Ptchd3	Gm28626
Tac4	Aldh9a1	Mrpl54	Srd5a1	Mir138-1
Odf2l	Xpr1	Fos	Preb	Tyrp1
Map7d1	Rab11fip1	Sel1l	Zbtb44	Grhpr
Map7d1	Ppm1g	Gm16104	Sft2d2	Rps15a
Atg7	Lysmd3	Tnpo1	Gpr19	Tmem114
Hrh1	Samd1	Mindy2	Myl12b	Glt28d2
Arid1a	Ldhd	Pacs1	Lrrc32	Mir1963
Gse1	P2rx1	Tlnrd1	Zfp219	Cdh20
Gm3696	Mindy1	Actr1b	Aunip	Cdk5rap2
Cfap45	Ugdh	Pan2	Med11	Svip
Pim1	Mir7021	Scaf8	Tpx2	Ddx20
Cdh5	Pdia6	Hist1h4k	Mir378b	2810004N23Rik

Hmgn1	Dppa4	Cox7a2l	Mir762	Gm3558
Smarca5	Zfp395	Pik3c2a	Lmln	Gm4981
Mindy1	Ss18	Tmub2	Gpn2	5730455P16Rik
Lgalsl	Plekha1	Flt3l	Smg5	Rdm1
Speer4d	Shkbp1	Sox12	Trim8	Pate1
Eapp	Tle4	Gorasp2	Bcl2l12	Krt14
Prdm14	Rasgef1b	Psmb2	Cd47	Lmo7
D130009I18Rik	Sh2b3	Vcl	Lrrc28	Hist1h2bl
Rock1	1810022K09Rik	Csrnp1	0610010K14Rik	Vav1
Dnah7b	Skp1a	Slc11a2	P4ha2	Stxbp6
Rplp1	Defb48	Ranbp3	Prpf8	Nyx
Fam227b	Tnrc6b	Hoxb1	Arrdc2	Apbb1ip
Sspn	Azin2	Ift20	Csrp1	Zfp36l2
Coro1c	Nemf	Naglu	Cpsf1	Camk2g
Adam10	Cbfa2t2	Setdb1	Uba3	Msl3l2
Orc5	Ep300	Zc3h12a	Adrm1	Opalin
Nt5c2	Sh2b3	Naa50	Gpx4	Gm31592
Hist1h4k	Itgb3	Mtrf1l	Rab3ip	Mir218-2
Far1	Nemp1	Cog2	Gm13375	Cacng8
Ubald2	Spryd7	Mrpl54	4930417O22Rik	9330182L06Rik
Eapp	Pcyt1a	Atp2a3	P3h4	Gm14812
BC107364	Phb	Zcchc11	Dync1i2	Lpar2
Atp2b4	Prkag1	Tspan4	Nrbp1	Acoxl
Atf2	Aldh3a2	Ccdc9	Ube2r2	Slc38a8
Ccdc102a	Gm13986	Capn5	Zbtb48	Pitpnm2
Ghdc	Dhrs3	Prpf40a	Acat2	Prok2
Dhx16	Slc25a51	Cib3	2310011J03Rik	Slc30a6
Fam58b	Rwdd1	Slc35b1	Aph1a	Atg14
Chaf1b	Mief2	Hist1h2bf	Drc3	Npy2r
Gtf3c5	Mtch1	Pbrm1	Egfl7	Uvrag
Gm21944	Plcg2	Phf13	Brd2	Trim33
Zfp385a	Wdr20	Pcnt	Uba3	Ctsm
Hmgxb3	Eif4a1	1810010H24Rik	Cds2	Armc2
Hist1h3e	Rhbdf2	Coro6	Ccdc115	Slfn14
Erdr1	1700016G22Rik	Phf19	Ctsl	4930463O16Rik
Hist1h3e	Cdk17	Anapc16	Fam102b	Nfyc
Aldh3a2	Bach1	Pop5	Diaph1	Hist1h4j
LOC105242399	Wsb1	Zbed4	Bag3	Zfp825
Dolpp1	Pkm	Etnk2	Wrnip1	Fam220a
Haus2	Dusp3	Gpatch8	Fam20c	Atp6v1d
Urod	Tex14	Uap1	Cep41	Gtf3c6
Zfp668	Slc25a40	Gpr146	Ldb1	Gm11423
Lmod3	Slc38a2	Gng5	Cdc42bpb	Cpeb2
Bcl9	Fem1c	Hhex	Ccdc115	Gm10409
Gm9530	Tex44	Jmjd6	Myo6	Dscr3
Gm9530	Sec23a	Ppie	Creg1	Hist1h2bj
Gm21190	Ppfia1	Fam161b	Chkb	Tle1
Skp1a	Apaf1	Tmem220	Cnot11	Plekhd1os
C5ar2	Foxl1	Grcc10	Rtn4	Bmp2
Gse1	Rdm1	Tmem140	Etv5	Eef2kmt
Rps29	Limd2	C77080	Ift22	Ssh2
Calm1	Etv6	Atg2a	Pebp1	4930519F16Rik
Ier2	Fzd5	Zbed4	Taf6l	Abca17
1700055C04Rik	Eapp	Pank4	Atxn1	Wnt5b
Fam213b	Diaph1	Hnrnpa2b1	Letmd1	Ube2u
Ftl1	Rnf115	Tpd52l2	Wasf1	Slc16a9
Mthfr	Hlf	Naglu	Slc23a3	Slco5a1
Pde5a	Lcp2	Eif4a1	Rps3a1	Nfasc

Btbd35f27	Msh6	Extl3	Bbc3	Gm5627
Dppa4	Hivep1	Kcnj16	1500004A13Rik	Chst11
H2afv	Clptm1	1810026B05Rik	Ska3	Hapln1
Ifna13	Runx1	Anln	Tpm3	Pigl
Zswim6	Mapk8	Slc39a13	Crip1	Ccl26
Hrh1	Rnf157	Pip5k1c	Acbd5	Gpihbp1
4930429F24Rik	Btbd35f28	Hist1h2bg	Elmsan1	Hk1
Cntnap2	Cpne3	Haspin		Klhl1
Gm16973	Neurl3	Slc45a1		E030013I19Rik
Il17rd	Kansl1l	Papd5		Zcchc14
2310033P09Rik	Dusp5	Alox5		Gm16573
Zfpm1	Zfp963	2900052L18Rik		Slmap
Rhob	Jph3	Gm15772		Bcan
Gm30173	Rgs18	Kctd10		Ktn1
Jph3	Hist2h2aa1	Zfp750		4930440C22Rik
Commd7	Heatr1	Zfp985		Usp8
Mir7021	Fcrls	Chd6		Mycs
Gm13427	Lzts3	Klf11		Crlf2
1700110I01Rik	Acsl1	Smc3		F2r
Mir3075	Klhl36	Dck		Kdm5a
Mex3b	Xylt2	Tmem120b		Sprr2a1
H3f3a	Arrdc3	Papss1		Srp68
Pcyt1a	Rps29	Tpm3		Hist1h4i
Gm21119	Rnd2	Armc7		Snord116
Map2k3	Wdr5	Ctnnb1		Gm10406
Gm5458	Daglb	Mrpl40		Rnu11
Pcx	Cib1	Gm21948		Rnu11
Slbp	Tle6	Zfp652os		Nts
Trappc9	Atox1	Arf2		Pirt
Gm21119	Nfe2l2	Ppard		Igtp
Gclm	Srebf2	Nlk		Rpl27
Mgea5	Kri1	G530011O06Rik		Chrnb1
Gm3383	Rps12	Fbxo5		Dnajb8
Zfp982	Arhgap21	Hyou1		Slc4a3
Cltc	Sertad2	Xrcc3		Tmprss12
G530011O06Rik	Arpc2	Rplp0		Dnmt3a
Kansl1	Grb2	9030025P20Rik		Rcn3
Zbtb22	Cdk2	Gm3383		Rufy1
Eapp	Dux	Ap3d1		Sbk1
Lims1	Ube2b	Rchy1		Epb41l4a
Mtmr4	Dhx16	Tial1		Fam96a
Eapp	Trappc9	Actn4		Neu1
Osgin1	Fzr1	Adam17		Nr2f1
Ptma	Alg11	Tomm40l		Srgn
Hist2h2aa1	Sfxn5	Gm26689		Bhlhb9
Irs2	Gm10941	Hdac1		Pisd-ps1
Slc39a13	Gcdh	Tcf19		F11r
Ccdc12	Pikfyve	Banp		Uqcc1
Daglb	Mtmr12	Acy1		Wnt2
Epn2	Wwp1	Fam160a2		2310015A10Rik
Ccdc77	Ascc2	Mc2r		Sfrp1
Gpr39	Tmed2	Pard3		Zdbf2
1810026B05Rik	Srsf2	Trpv4		Cnbp
Nop2	Igf1r	BC030867		Tmco4
Gm12887	Inf2	Plekhh1		Limk2
Ostc	Yif1b	Ccnl1		F830208F22Rik
Mdm1	Ska2	Nt5c3		Mir1947
Slc35a1	Mir26b	Ythdf1		Plcl2

Batf3	Hmgn1	Adamts10		Chsy1
Arhgap18	Inf2	Lactb2		Adam30
Klf11	Ldlrap1	Trpc1		Ang
Runx3	Tubb5	Rara		Npy
Iars	Ulk1	Dhx30		Mettl4
2700046G09Rik	Stradb	Asph		Zfyve26
Vgll4	Pdlim5	Mir1231		4930579G18Rik
Vdac2	Pgpep1	Slc46a3		Nr2f1
Gm13986	Styx	Stxbp3		Acvr2a
	Uba6	Tgm2		Procr
Arhgap21	Trim8	Ap3m1		Rabgef1
Hist1h2al	Nr1d1	Frmd4b		Sprr2a1
Defb48	Mir132	Trib2		Lmna
Ndfip1	Fam104a	Cep72		Hist1h2bq
Gm31520	Parp6	Stk17b		Snord116
Olfm3	G3bp2	Fos		Slc22a29
Tmed2	Tex14	Hyls1		4930559C10Rik
Tmbim7	Mnt	Cep152		Atp2a3
Tnrc6b	Epb41l2	Abhd17c		Pfas
Hrh1	Pknox1	Spry2		Tpp2
Slc25a39	Nxpe5	Gm10532		Mcts2
4930555G01Rik	Lyl1	Snhg15		A930015D03Rik
Phospho1	Mir721	Palb2		Polr2a
Cnnm2	Ccdc85c	Zc2hc1a		Cyb561
Rgl2	Atp6v0a1	Tbc1d22a		Hist1h2bg
Erdr1	Phc2	Gm26839		Setdb1
Atg7	Pak2	Casc3		Hist1h2bf
Nxpe5	Sun1	Amd1		Mapt
Gm21119	Wdfy2	Slc29a3		Gm3383
A630072M18Rik	Rnf149	Ctnna1		Mrgprb5
Itga2b	Arl4d	Lpin1		G530011O06Rik
Bbc3	Trim37	Uhmk1		Gm21119
Ppm1a	Adnp	Arhgap33		4930559C10Rik
0610037L13Rik	Dgkeos	Ly86		Efcab3
Atp2a3	Pias4	Cdk6		Zfp335
Tubb5	Gm9530	Cd81		Pisd-ps2
Tardbp	Dok4	D16Ertd472e		Snord116
Fes	Esrra	Mre11a		Dlc1
Speer4cos	Ktn1	Pabpn1		Ccdc9
Pmp22	Irs2	Gm28042		Clvs1
BC107364	Cdc42bpb	4933440J02Rik		Drd4
Klf10	Susd6	Ctnna1		Rplp1
Klhl21	Trim36	Afap1		Mlxipl
Gm21190	Tmem163	Fbxo46		Depdc7
Osbpl2	Ddx5	Ddx39		Sptan1
Thoc1	Fam227b	Mfsd8		Galk2
Ube2f	Gm9530	Sod2		Hist1h3e
Dusp3	Mfsd14a	Def6		Adnp
Ripor1	Mir30d	Efnb2		Cnih3
Wdr5	Qsox1	Smg1		Cdh18
Canx	Hic1	Fhl3		Gm28590
Gmpr	Afap1l1	Rbm38		Sptb
Cubn	Noxa1	Gpr39		Stk40
Cyp27a1	Ghdc	Gm15319		Lig1
A630001O12Rik	2610005L07Rik	Arhgap25		Mtor
Med17	Prrc2b	Cds1		4930520O04Rik
Sepsecs	Cnnm2	Rmrp		Alox5ap
Slc7a15	Clptm1l	Faf2		Mir6393

Swap70	Prkar1a	Fbp1		Sec61a1
Slc8b1	Eapp	Ermn		Stk40
Tppp3	Ptma	Zfhx2		Bmpr1a
Susd6	Efcab14	BC048403		Hist1h3e
Aldh9a1	Noxa1	Ubox5		Gm14635
Otud6b	Atr	Tm9sf4		Triml1
Scyl1	Iffo2	Mut		Baz2b
E230025N22Rik	Pabpc1	Gm12915		Zdhhc14
Mir148a	Eapp	Faiml		Stim1
4933404K13Rik	Asb1	Narfl		Lrguk
Tmem132b	Gatad1	4930430F21Rik		Mir29b-1
Tbl1xr1	Cyb5r3	Rpap3		Etl4
Grb2	Rab3d	Mir3075		Exoc3
Mylk3	Eapp	Qsox2		Wipf3
Mctp1	Mlf2	Gm6260		Erbb4
Uhrf1bp1l	Adcy9	Nap1l4		Mir6979
Rasgef1b	Gm5796	Npc2		Kcnb1
Gm21119	Klhl24	Phf21b		Prlr
Abhd1	Lmod3	Trnau1ap		Timd4
Neurl3	Vmn2r29	F2rl2		Kazn
Gale	Cdv3	Mboat2		Rbfox2
Umps	Mbd2	Incenp		Fbxo11
Glis2	Rhbdd3	Elmo1		Klf3
6030408B16Rik	Nabp1	Zcchc24		Sgk3
P4hb	Prodh	Slc46a3		Lctl
Srsf2	Trrap	Polr2j		2310043O21Rik
Tnrc6c	Zfand5	Ptpn2		Brdt
Mmd	Slc45a4	Rfx3		Fabp12
Mmd	LOC666331	Foxn3		Tyrp1
Odf1	Lmbr1l	Phf14		G3bp2
Cbfa2t3	Garem1	9330159M07Rik		Cntnap5a
Ccng2	LOC666331	Minos1		Tox3
Gm2897	Saraf	Pak1ip1		Dtl
1700125G22Rik	Pisd-ps2	Cdip1		Cdk2ap1
2900060B14Rik	Myl12a	1810026B05Rik		Sgo1
4930431P22Rik	Fam168b	Arap1		Pgm2
Fam104a	Lims1	Glcci1		4930467E23Rik
Vav1	Prpf40b	Mef2b		Abcd4
Sp7	Prx	Tgfbr1		Esyt2
Get4	Gclm	Atg5		Fam58b
Hyal2	Ppm1a	Optn		Hist1h2bh
Tal1	Gm5458	1700017B05Rik		Speer4cos
A630001O12Rik	Colgalt1	2900026A02Rik		1700055C04Rik
Tbc1d7	Znhit3	Tpgs2		Rpain
Adcy9	Cmtm6	Gm13285		Atf6
Hrh1	Tnrc6c	Ywhaq		Sirt6
Scamp1	Gpcpd1	0610038B21Rik		Smtnl2
Gm15319	Tmem2	Vars		Hist2h3c1
Polg	1700021F05Rik	Cic		Akap5
Smarca5-ps	Tbl1x	Slc4a11		Akap5
Smarca5-ps	Arpc5l	Smchd1		Mir193a
Zfp982	Supt20	Mdn1		Mir701
Mks1	Neto1	Mir21a		Hist2h3c1
Tex14	Coro1c	Camsap2		Herc1
Arhgap23	Tsga10	Arhgap18		Ulk2
Vcl	Pttg1ip	Mir7009		Ltc4s
Mir28b	Tmx4	1810043G02Rik		C3ar1
Tnk2os	Plbd1	Abhd18		Mettl3

Dusp5	Srebf1	Dhcr7		Itm2c
Ift57	Usp13	Smarca4		Zfand4
Mir29b-1	Usp33	Ftl1		Foxk1
Zfp106	Arid3b	Mia3		Nsl1
Pim3	Stim2	Serbp1		Xpo4
Tacc1	Mfsd6	Nomo1		Scgb2b27
Por	Eepd1	Insr		Stim1
G530011O06Rik	Bin2	Ubxn1		Lrrc69
Plekha1	Arntl	Bnip3l		Slc24a5
Arhgap21	Picalm	Snca		Map2k3
Clic5	Capzb	Arhgap29		4930563F08Rik
Alg11	Bcl9	Gm17359		Itpa
Lamp1	Runx3	Zer1		Rab11a
Ippk	Gm3636	Nsun4		Chrm3
Slc35b1	Birc5	Tpk1		Gm15506
Scn11a	Gale	Mcl1		Tiparp
1700064J06Rik	Swap70	Sdr42e1		Med7
Egln3	Gpbp1	Pank3		Nufip1
Dnajc10	Zbtb16	Trim62		Slc1a3
Meis1	Degs1	Lemd2		Hira
Pacrgl	Hmgn2	Cdpf1		1700049E22Rik
Gm38404	Atp23	Gfod1		Tmem40
Lcp2	Birc2	4930512M02Rik		Dlat
Gjb5	Inpp5f	Odf1		Fbxo38
Micu1	Gabpb1	Actr10		Smarca5
Csgalnact1	Dvl1	Cherp		Hgfac
Brpf1	Ddx59	Itgav		Zfp607a
Eapp	Rcan1	Pfkp		Ubtd1
Eapp	Acacb	Barhl2		1010001N08Rik
Tvp23b	Adgrg1	Spcs3		Wrb
Eapp	Ssh2	Fhod1		Asic3
Tmem229b	Spag9	Bod1		Irs2
Casp2	Prex1	Itih5		Edem1
Kansl3	A630072M18Rik	Atf2		Trip6
Rnf157	Prex1	Cmtm6		Atad3aos
Diablo	Dcaf5	Ptpn2		Ppp1r11
Scrib	BC020402	Zfp36l2		Gm8630
Jun	Cks2	Grhl1		Cxcr3
Gnaz	Pde8a	Vars		Acy1
Alox5	Gm16432	Eef2kmt		Lep
Hdgf	Chmp5			Tsfm
Cdc34	Klhl3	2010106C02Rik		Adgrl4
Ptpn1	Cbx7	Crispld2		Gak
Mir6388	Rab11fip5	Tbxas1		Ing4
Ddx19a	Myo6	Foxn2		Nup160
Sirt4	Desi2	Epb41		Ptp4a2
Kctd21	Nr1d2	Ier2		Btbd35f12
Snx1	Mmab	2210414B05Rik		Bcl2l10
Per3	Bnip3	Fam107b		Ergic2
Gata2	Rdm1	Slc4a11		Mak
Kctd10	Ola1	Eps8l3		Cav2
Gata2	Ski	Gucd1		Gm6260
Pisd-ps2	Tmem59	Rcsd1		Rab21
Cdc42se2	Tmem60	Gbe1		Ak2
Baiap2	Calm1	Ppp2r5d		Ncoa3
Hist2h3b	Zfp623	Rer1		Sirt4
Prr11	Per1	Gfod2		Tmed9
Arih2	Lrig1	AU022793		Zfp623

Hist2h2aa1	Cltc	Dclre1c		Gprc5c
Dux	Scrib	Rcl1		Hfe2
Fam214b	Zyx	Plcl2		Sertad2
Tuft1	Mir8102	Mir6996		Prkab1
Usp22	Per1	C77080		Cfap43
Arnt	Abca5	Maml3		Hspb9
Fos	Slc8b1	Cdkn3		Hist1h4n
Defa21	Tanc2	Agbl1		Rara
Hinfp	Wdr91	Birc6		Rara
Zfp143	Baiap2	Tcf4		Fasn
Wdfy2	A630001O12Rik	Hmgxb3		Prkca
Traf2	Zbtb7b	Ddx24		4930429F24Rik
Hist1h2ac	Mir148a	Aff4		Dynlt1f
Alox5ap	Arhgap29	Gm30570		6820431F20Rik
Nedd4	Canx	Ankrd1		Htt
Topbp1	Pcx	Gm31763		G530011O06Rik
Prrc2b	Rab22a	Slc25a29		Zfp981
Ubc	G530011O06Rik	Carns1		Cntnap1
Stub1	G530011O06Rik	Ddx10		Slc7a15
Usp12	Rnps1	Zfp667		Celf2
Fignl1	Alox5ap	Atp6v1d		Rbsn
Pitpnm2	Unc13a	Sp2		Pak3
Nfkbib	Mybl1	Gm21119		Noc3l
Apaf1	Mysm1	Cog6		1600002D24Rik
Gt(ROSA)26Sor	Psmd12	Edc3		Xpa
Usp3	Wnt7b	Cep85		Ube2n
Supt4a	Abcf1	Fbxo31		Mrto4
Rps6ka1	Mtch2	Clk3		Gm5547
Mical3	Kctd11	Med13		Igf2bp3
Gm21190	Slc9a8	Dido1		Pfkp
Manf	D230017M19Rik	Stub1		G3bp2
Pisd-ps1	Helb	Ctsz		Hps5
Slc2a3	Pdcd10	Snn		Oit3
Prkaca	Gmps	Daam1		Fam71d
Arl4d	Agbl1	Trir		Lincred1
Cdc42bpb	Sacs	Psmc6		Cybrd1
Plscr3	Mir148a	Rps5		Grik3
Amotl2	Igsf3	Mfsd12		Abhd3
Mar-07	Cgn	Coro1c		F2rl2
Raet1c	Ginm1	Nadk2		Amz1
Slc45a4	Csnk1a1	Sec24c		Gpr137b-ps
Arap1	Abhd1	Micu1		Trim67
Dnaja1	1700100I10Rik	Rcn1		Polr2e
Mcu	Gm13056	Tmem120a		Ipo11
Hist2h3c2	Mir3075	Nr4a2		Cps1
Setd1a	Kazn	Rnf111		Slc12a2
D230017M19Rik	Pcbp3	Ywhaq		Ndufb7
Tex14	Camkmt	Comtd1		Atp1a1
Prr14l	Prrc1	Myl12a		Fam109b
Tex44	Txndc11	Fbxl18		Rin3
Zfp637	Gpatch2l	C1ql1		Pik3r4
Adap1	Cdc16	Polr2d		Psmc2
Gm6260	Zfp746	Zfp692		Zfp90
Cebpe	Fam107b	Rbpj		C920006O11Rik
BC107364	Usp2	Ptpre		Gpr160
Mir1941	Ubp1	Rpl36al		Csf2ra
Gm10406	Ccdc112	Gnas		B230219D22Rik
Gsap	Atl2	Gm10033		Deaf1

Zmynd8	Tfam	Nedd4		Zfp825
Slc35d3	Egln2	Zhx3		Gm21283
Cdk19	Spsb1	Wiz		Shb
Ctnnb1	Sspn	St6galnac1		Spag6
Nyx	Mir193b	Mdh2		Ing1
Casc3	Mtmr4	1810013L24Rik		Usp3
Tprkb	Raf1	Id3		Hsph1
Zdhhc20	Plekha8	Zfp239		Tfap2d
Ybx3	1700025G04Rik	Pusl1		Zfp804a
Lmbr1l	Phf10	Clcn3		Speer4f1
Gpr33	Mob1a	Usp48		Hnrnpd
Optn	Dpysl2	Bnip2		Nupr1l
Gstz1	Rab14	Tcte3		Sntg1
D6Ertd527e	Map2k3	Dnajc7		Scaper
1700016G22Rik	1700029N11Rik	Prss42		Itga2b
Gulp1	Actr2	Dyrk2		Ckb
Wwox	Skil	Zbtb7a		Arhgap23
Ubp1	Erlin2	Rbpj		Selenbp1
Ep300	Rps29	Ubtd2		1810010D01Rik
Hsp90ab1	Inca1	Szt2		1810010D01Rik
Tex14	Gm13283	Dync1h1		LOC105242399
Hist2h3c2	Dmwd	Cox5a		Cep350
Gm5535	Klhl11	Gm3383		Igsf10
Slc24a5	Tpst2	Coq10a		1700074H08Rik
Rdm1	Gm21190	Mir7094-2		Nfkb2
Etaa1	Pak1	A930024E05Rik		Tom1l2
Tnik	Ftl1	Gas2l3		Nup155
Atr	Hinfp	Bcl3		Sdf2
Ifnar1	Arid5a	Lins1		Rtn4
4921513I03Rik	Mtmr14	Mtfmt		Sdf2
Cnnm4	Ubr5	Asap3		Arpc5l
Myadm	Cubn	Ube2h		4930502E09Rik
Hdgf	Lrif1	Arhgdia		Dnajc7
Bmpr1a	Mar-03	Gt(ROSA)26Sor		Raly
Hgfac	Tmem60	Akap13		Cryzl1
Gspt1	Map3k12	Abcb10		Tspan9
Zmiz1	Smap2	Tmtc2		Tspan9
Chmp5	Arhgap23	Atg7		Fkbp10
Ldhd	Dmrt1i	Ptprr		Dnttip2
Skil	Rab43	1700027F06Rik		Jun
Pgs1	Mks1	Mcm9		Rara
6030466F02Rik	Ern1	Srsf9		Wnk4
Mirlet7a-1	Usp22	Relt		Dcaf12
Abl2	Rap2b	Foxn2		Arrb1
Prkag1	Metap1	Copb2		Mrpl20
Gm26689	Ube2d3	Ywhah		Cdc42se2
Ypel5	Mex3c	Mcm9		Hist1h4n
G530011O06Rik	Meis1	Dph3		Ywhaz
Rab3gap2	Mex3c	Dusp7		Arhgef17
Mnt	Amz2	Hmga1		Irgm2
Iba57	Lrrfip1	Edem1		Hdgf
Gabpb1	Stk32c	Rbm5		Setd1b
Fbxl14	Xpc	Parp2		Snord118
Vamp2	2610005L07Rik	Limk2		Mex3b
Morc3	Mospd3	Celsr3		Def8
Armc7	Prkaca	Slc3a2		Pfn1
Sub1	Dgcr2	Prkca		Naglu
Lysmd3	Ppp3r1	Nub1		Ssh2

Cenpn	Ankrd50	Pigv		Slc25a19
Exd1	Cyb5a	Hipk1		5033406O09Rik
Wwc2	Cbx8	Lin54		Tubb3
Gm11437	Pdk1	Tm2d2		Klhdc2
Nr2c2	Fmnl3	Hnrnpd		Tal1
Jun	Cmip	Spg7		Slc47a1
Ell	Foxj1	Zfp281		Sep-09
Med24	Gtf2e2	Map1lc3a		Hist1h4k
Hist1h2bf	Slfn14	Ucp2		Nme1
Atf7ip	Nkain1	Ankrd40		Ints9
Ncoa4	Pole4	Polh		Ndufb9
Cited2	Prkab1	Chtf8		Tbc1d7
Wipi2	Mkl1	Odf2		Spdef
Nemf	A330069E16Rik	Ptpn1		Tyrp1
Hrh1	Celf6	Ensa		6030458C11Rik
Slc44a2	Bbip1	Rpl3		Ccnd3
Ppp2ca	Abhd2	Ube2g1		Hist1h2al
Rere	Rraga	Gosr1		Pgam1
Sh3gl1	Etv6	Atf7ip		Inf2
Hist1h2ah	Nt5dc3	Slc45a1		Gm3143
Cd3eap	Bard1	Cdr2l		Mctp2
Cd3eap	Gm2a	Slc25a33		Rnf24
Zfp981	Fggy	Rita1		Tjp2
Zbtb7b	Gm3558	Tapt1		Inf2
Commd7	Ccdc124	Zc3h7a		Vps37b
Prkar1a	Abhd11	Eif4g1		2310010J17Rik
1700045H11Rik	Purb	Rab1b		Tmem250-ps
St3gal2	Hist2h3c2	Hrh1		Tulp4
Hnrnpd	Erdr1	Atp5b		Taf5l
A330069E16Rik	4930413G21Rik	Slc35e4		Homer3
Gemin5	Iscu	Lrp8		Kti12
Yars	Pcca	Atg4c		Scoc
Spen	Llgl2	Lipc		Inf2
4930526I15Rik	Fosb	Txnip		0610009O20Rik
Arpc2	2610042L04Rik	Hist1h3f		1700086O06Rik
Cbfa2t3	Fbxl14	Fbxo48		Gm45915
4930555G01Rik	Calm3	Dnajc30		Shroom3
Mylip	Crocc	Tm9sf3		Specc1
Ube4b	Senp8	Herc1		Mir7021
G530011O06Rik	Faap100	Cnbp		Ubxn4
Wwox	Neat1	Sap18		Mir99ahg
4933401D09Rik	Kctd21	Abca7		Med13l
Smu1	Sh3glb2	Vps36		Xrcc4
Pkm	Cuedc1	Frs2		Rin1
Ikzf2	H2afv	Abtb1		Slit1
Zyx	Utp18	B330016D10Rik		Tufm
Zfp395	Gtf2a2	Zdhhc12		Arhgap18
Tmem57	Wwc2	Usp38		Tspan32
Mir1258	Inpp5a	Zfyve16		Aftph
Plcl2	Psen2	Rnf126		Ppp1r13b
Lhfpl2	Fech	Ptprs		Etl4
Rasa1	Sptbn1	Sptan1		Lrp10
Nudt2	Pnrc1	Snx30		Mir6374
Gm16432	Klf10	Kdelr2		2010010A06Rik
2900009J06Rik	Pkd1	A930018P22Rik		Itm2c
Appl1	Ywhaz	Ippk		Crk
Socs3	Sqstm1	Lrrc29		Ptprf
Ttc39b	Lclat1	Stt3b		Cars

1700110I01Rik	Dmtf1	Map2k2		Rtca
5033406O09Rik	Acer2	Vps37c		Serpinf1
Tcf3	Lig4	Fau		Dock8
Ccnd3	Speer4f1	Plcg1		Gimap6
Tjp1	Zfp821	Cpsf6		Txnrd1
Oit3	Snord116	Kmt5a		Meis1
C030034I22Rik	Parp16	Aacs		Zfp787
Fer	4930511A08Rik	Shmt1		Gxylt1
Atp23	Klf4	Abhd17a		Cct4
Gins2	Szrd1	Rps16		Ifngr2
Prmt5	Lamtor1	Gm7457		Zfp473
Eapp	Ccdc102a	Gm5535		Spen
Nfe2l2	Kiz	Zswim3		Dhrs9
Hook1	Hira	Pml		Rcn1
Slc30a4	Scaf4	Abhd17a		Desi2
Pias4	Fgfr3	Mcee		1810010D01Rik
4933440J02Rik	Tbc1d23	Cdc42		Dnajc10
Zfp868	Plekhf2	Kbtbd3		Nubp1
Gm10941	Bcap31	Slc20a1		D630024D03Rik
Ddb1	Fer	Rpl37		Mir7013
Kctd11	Tox2	Atp13a2		Luc7l
Pex5	Pfkp	Dnajc10		1110002L01Rik
Mcu	Fam43a	Slc39a13		Smad7
Ints10	Ryr2	Ptch1		Ceacam16
Tctex1d2	Mms19	G3bp2		Cubn
Psmd1	Dmac1	Tmf1		Gm9895
Zfand5	Pgbd5	Aipl1		Oca2
Tnpo1	Mturn	Mir1191b		Bcar1
Cdkal1	Stk3	Slc25a38		Nsun4
Alkbh7	Grsf1	Qrich1		Mars
Stau1	Sepsecs	Pnkp		Pim1
Celf2	Eif4ebp2	Strada		Rpl13a
Kctd3	Dnah7b	Ahcyl1		Phf10
Heatr1	Gulp1	Sox18		Gm5796
Psmd1	Ascc3	Guk1		Kif2c
1700096K18Rik	Rnaset2a	Gaa		Gm10406
Slc39a13	Trim24	Nudt2		Arl6ip1
2210414B05Rik	Rnf103	Arid3a		S100a10
Bcl3	Med26	Tom1l2		Vdac1
Ctps	Cstf2	Mir142		Gm3696
9130011E15Rik	Prdm14	Jup		Vdac1
Id1	Afg3l2	Kdsr		Pim1
Pabpc1	Clec9a	Opn3		Dcaf5
4930505N22Rik	Zfp791	Phykpl		Mob3c
Kri1	Tspan17	Ubiad1		Ctc1
Vangl1	Mien1	Ppp6r1		Mir23a
Mettl1	Twsg1	Gm21119		Dynlt1b
Med7	6030408B16Rik	Pde4dip		Mir7034
Gm10033	Armc6	Myl12b		Hhat
Smg6	Nfkbiz	Canx		Fxr2
Ctdsp1	Pik3cb	Bsn		Rack1
Josd1	Fam210b	Myl12b		Mir6388
Susd1	Mir193a	S1pr1		Rack1
Nme1	Rasa1	Mier3		Hist1h3f
Klf10	Cecr2	Dusp10		Fbxl19
Csnk1g2	Mnt	Nfkbib		Arhgdib
Gatad2a	Skap2	1700030F04Rik		Mettl23
Myo6	Gm10941	Hist1h2ap		Psmd3

Utp18	Klf10	Akirin1		2010001A14Rik
Gm3500	Hpcal1	Seh1l		Fbxl19
Med13l	Fam109a	Lsm7		Pgs1
Adipor2	Gins2	Plekha4		Myo1c
Gfi1	Nt5dc3	Ern1		Vmn2r-ps11
Cinp	1700123M08Rik	Hmgcr		Limd2
Ppp1r18	Ubald2	Ccar1		Myo1c
Cd276	Tmem123	Mpp2		Aurkb
Pcna	Mki67	Mknk2		Gt(ROSA)26Sor
Ndel1	Pex5	Wnk4		Gse1
Sptbn1	4930559C10Rik	Sp4		Cant1
Cnot1	Ogdh	A430078I02Rik		Smad7
Mcl1	Gga1	1700037H04Rik		Gp1ba
Zfp541	Map7	Dbil5		Hist2h3b
Cuedc1	Klf13	Kctd7		Plxdc1
Pikfyve	Polr2e	Klf9		Cuedc1
Wee1	Ogdh	Psme3		Def8
Itgb3	BC005537	Rundc1		Gm5797
Rere	Map2k4	Sep-09		Mir21a
Mob3a	Olfm3	Timm13		Rhbdf2
Ap1m1	Anapc4	Rapgefl1		Zfp960
Ipo5	Nt5dc3	Ilvbl		G3bp1
Akap5	Adipor2	Ndrg1		Tbxas1
Rap1gap2	Il6	Nt5c2		Adgrl1
Ppp2ca	Eapp	Map3k2		Btbd19
Usp3	Gpc2	Dhx30		Olfr225
Atxn2l	Odf2l	Fam58b		Kansl1
Serf2	Por	Sidt2		Gpatch1
Pafah1b2	C630043F03Rik	Atp2a2		Ubxn1
Srxn1	Polr2a	Gprc5c		Onecut3
Ppp1r15a	Rab5a	Fxr2		Mir5129
Tbkbp1	Manf	Usp3		4933404K13Rik
Qrich1	Polg2	Atic		Zzz3
Akap5	Zdhhc3	Tprgl		Alox5ap
4933411E08Rik	Ctdsp2	Brap		Olfr1389
Gas7	Srr	Lyl1		Kctd10
Arid3a	Tmbim4	Fars2		Erh
Cct4	Cbfa2t3	Josd1		Cbr4
Gnai2	1700125G22Rik	Dennd6a		Rpl7l1
Taf15	Junb	Arl4c		Mir7676-1
Trim8	Phf23	Hist3h2bb-ps		Vipas39
Foxn3	Ost4	E2f8		Lztfl1
Ptpn12	Sertad3	Pafah1b2		Ap5m1
P2ry1	Fbrsl1	Uvrag		Arhgap8
Ola1	Ccdc12	2900060B14Rik		Sema6b
Ube2d3	Tardbp	Arih1		Tmbim4
4932435O22Rik	Nxf1	Creld1		Acox3
Arid1a	Maf1	Mettl23		Ubr1
Dcaf11	Dhdds	Tln1		Bin2
Mnt	Mir6957	Fars2		Runx1
Atg7	Poln	Hras		Leng1
Gm21944	Dyrk1a	Junb		Slc46a2
Ppp1r9b	Fam213b	Grk6		Zfp873
Tatdn2	Epn2	Arhgap1		Glt28d2
Arf1	Vav1	Arfgap3		Ipo7
Fzd5	Calu	Tmpo		Olfr1151
Ppp2r5b	Snhg4	Hspa4l		Atad1
B3gnt7	Smad6	Syde2		Cops7a

Slc45a1	Rassf3	Fzd7		Cstf3
Hist1h2bn	Eapp	Drg2		1700016L04Rik
Tcf3	Cfap97	Srgap2		Nek6
Gm15471	Rps6ka5	Trp53		Egln3
Tln1	Lrpap1	Mtag2		B4galt1
Gm20605	D330050G23Rik	Rnf139		Stard8
Cmip	Tnfaip2	Spns2		Zfp825
Rnd2	Arid1a	Fzd7		Dand5
H3f3b	Iba57	Snx14		Parp4
Zfp750	Cry1	Rgs10		Amz2
Pign	BC107364	Fam120aos		Slc25a46
Efnb2	Slc22a5	Itpkc		Gstp2
Kbtbd2	Gpr155	Mir6951		Zfp637
Ttc41	Atp6v1b2	Hspa2		Myo5c
Itgb1bp1	Ankrd13d	Ksr1		8030442B05Rik
Fam109a	Ahsa2	Phf20		Tulp1
Map4	Cbfa2t3	Mpdu1		Utp11
Irs2	Arf5	Gm13034		Dyrk2
D730003I15Rik	Hdgf	Grcc10		Gm30570
Rgs3	Sgtb	Uchl5		Mettl6
Rpl31	Cd300lf	Micall2		Tmod3
1700029H14Rik	Stat3	Rnf139		Gfi1
Slc15a4	Haus2	Mir6546		Kbtbd7
Plbd2	BC049762	Ier5		Ccdc12
Zmym3	Slc30a1	Snx15		Aurkaip1
Gm33619	Mex3b	Rai1		3830408C21Rik
Psmd13	Pcsk7	Nrf1		Ptpn12
Gm19589	Ralb	Thrap3		Prps1l3
Azin2	Hist2h3c2	Azin1		Gpatch8
Axdnd1	Slc16a13	Actb		Pcyt1a
Mir7237	Ehmt1	6820431F20Rik		D230017M19Rik
Spns2	4933412E12Rik	Kazald1		Trim8
Diaph3	Dscr3	Tmem123		Prrc2b
Map4	Pik3cb	Rbbp4		Kcmf1
Zfp326	Klf2	Zmiz1		Fam173a
Nts	Mir29b-1	Epn2		Nop53
Ccdc54	Copg2	Rhot1		Birc6
Smad4	Utp14b	Nbeal2		Mtdh
Nrip1	Atg10	Sla		Cbr4
Rnf169	Dnaic1	Fam103a1		Tnfaip2
Nsun2	Bsg	Fam83g		Tbxas1
Mir6957	Frat2	Lrrc59		1700030F04Rik
Klrb1c	Polr3h	Ddx52		Arih1
Sgcd	Sod1	Cdk9		Rab8b
Syne3	Ap3s1	Park7		Shank3
Aasdh	2810410L24Rik	Dot1l		Cdkn1b
Dnmbp	Tubb4b	Slc23a2		Lrrc24
Ppp2r5d	Trpm6	Nolc1		Zfp84
Bmf	Ropn1l	Emc7		Txndc11
Egr3	Rprl1	Dnajc16		Crlf3
Uvssa	Pxk	Cnn3		Dhrs7
Phc2	Nup54	2700046G09Rik		Lsm4
Afap1l1	Cyp2b23	Cox18		Lyrm9
Smg9	Gm21119	Gimap6		Mir681
Syt7	Zfp991	Pias3		2410006H16Rik
Gng2	Ppp1r21	Pias3		Mgat1
Mir21a	Usp20	Morn3		Dynlt1b
Dyrk2	Rbm38	Atf6		Nup155

Gm33677	Sbf1	Camk2g		Speer4cos
Spag9	Tbc1d31	Foxo3		Sp7
Rcbtb2	Copg1	Nek2		Pak6
Cmtm6	Fam49b	Rpl27a		Scaf8
Ppm1g	Rock1	Vapa		Pisd-ps2
Tmem163	Speer4cos	Kif2c		Sap30l
Bin3	Ccne1	A730008H23Rik		Crk
Clec11a	Supt4a	Ngly1		Sirt7
Eif4ebp1	Phospho1	Ncbp3		G530011O06Rik
Ddx54	Rhob	Nespas		Mrpl45
Sertad2	Golph3	4930578M01Rik		G530011O06Rik
Mir7049	Lap3	Hexdc		Nrbp1
Arpc5l	Mpp7	Pmf1		Nktr
Arpc1b	Ube2n	Magi3		Tbcd
Pdcd5	Otud6b	Plekhg2		Gm13427
9030204H09Rik	Sgms1	Spryd3		Gm21944
Cbx8	Sugct	Mir6935		Dhx8
Stab2	Foxk1	Rsrp1		Rab11fip3
Taf6l	Mios	E2f3		Micall2
Tle1	Incenp	Txnl4a		Gm13285
Lrrn2	Rbm38	Tab2		Utrn
Ube2q2	A230028O05Rik	Rpl12		Smim3
Cep68	Ndfip1	Fam83g		Fasn
Kcnd3	D5Ertd615e	Atxn7l3		Gm4285
C2cd2	Slc46a2	Bzw2		Ankrd40
Tmem167b	Usp32	Atf3		P2rx1
Keap1	Oxct2a	Opa3		Ccdc43
Slc25a4	Nfxl1	Specc1		Grb2
Zfp963	Als2	Scamp1		Slc30a7
Gm35986	Arl6ip1	Fam229a		Sprr2a3
Mdm2	Mettl1	Zfp260		Snord65
Tmx4	Fbrsl1	Spag5		Ttc25
Fos	Gm5795	Diaph3		2900052L18Rik
Lrig2	Bicdl1	1110036E04Rik		Zfp984
Gtf2e2	Snx10	Haus2		Col19a1
B4galt1	Gmeb1	Olfr1151		Nfe2
Acot8	Fam220a	Mrpl41		Arid1b
Raf1	Trim3	Gtf3c5		Lbr
Cdkn2aipnl	Smpd1	Cdc25c		Pex3
Prkab1	Arl5b	Pa2g4		Frmd4b
Gm9958	Pik3r1	Nrbp1		Dennd4b
Nemp1	Baz1b	Capns1		M6pr
Stx2	Uqcrfs1	Poc5		Erp27
Vdac1	Lsm14b	Eef1a1		Nudt21
Mir142	Tmem183a	Arrdc1		Wdr47
Cirbp	Btg2	Vmn1r87		Med17
Exoc6b	Mcl1	Gm38404		Slc2a3
Ensa	Rock1	Txnrd3		Usp32
Hist2h2aa2	Elmod2	0610010K14Rik		Ntmt1
Pknox1	Slbp	Hpn		Gm5535
Zfp609	Slc25a23	Trappc11		Wdr5
Foxk1	Ctbp1	Nmur2		Rps21
Hist1h2bq	Tmem158	Pfas		6720489N17Rik
Rbpj	Tcf3	Cdc23		Nat10
Zfp706	Tcf12	Taldo1		Hist1h2al
Pkm	1600002D24Rik	Egr3		Agrn
Slc25a23	Zfp385a	Gtf2h5		Trappc8
Axin2	4921536K21Rik	Atg16l2		Dapp1

St6galnac1	Thoc1	Tarsl2		Mtss1
Ankrd13d	Yars	Slc37a4		Mrpl39
Utp14b	Sdccag3	Gm10646		Erdr1
Nup160	Fos	Gins4		Cdc42se1
Zkscan6	Arf4	4930441H08Rik		Gorasp2
Vdac1	Atp23	Rfesd		Srm
Canx	Limk1	Pdhb		Itsn1
Ptpn1	H3f3b	Cops8		Polr3e
Hist1h1c	Lrrc74b	Ncor1		Asb1
Cnih3	Rps6ka1	Ccdc94		4921513I03Rik
Atg7	Pitpnb	D230030E09Rik		Psmc1
Nfat5	Arrdc4	Ankrd37		Ifitm5
Myo1d	Casp2	Hgsnat		Nron
Mex3c	Aasdh	Gm38431		Rab21
Nucb1	Fancc	Narf		Il6st
Dennd2c	Ptbp1	Lars2		Ccdc191
Baz1b	Mesd	Ufl1		Tctex1d2
Clint1	Hnrnpu	Spry2		Slc38a2
Ccr4	Hsp90aa1	Pcm1		Lgr5
Gm3264	Gk5	Tspan2		Rnf222
Arl6ip1	Id3	Celf2		Bach2
Spns2	Rap1b	Serpinb6a		Mir181c
Srebf1	Magi1	Pi4k2b		Prkca
Lzts3	Chd2	Ikbkb		Apmap
Nsmce1	Kif16b	Gpsm2		Baz1b
Capzb	Eif5a2	Slc2a1		Ldlr
Mex3c	Commd7	Serf2		Tmem163
Mpp2	Golga5	Rlf		Zswim3
Mpv17l2	Cyth3	Wwox		Esrra
Lrrc27	Gm13848	Tnik		Tsga10
Ndst2	Itgb1bp1	1700063H04Rik		Mettl26
Mex3c	Nmt2	Tesk2		Nip7
Cntnap1	Vamp2	Ssx2ip		Ap4b1
1600002D24Rik	Pdxdc1	Clasrp		Plekha7
Mob1a	Puf60	Hibadh		Thap1
Slc16a11	Sub1	Fignl1		Eipr1
G630071F17Rik	Tnfaip8	Pgam5		Ap4e1
Gan	Usb1	Tbck		Htr2a
Pusl1	Gm21190	Heca		Gm20604
Rbm4b	C2cd5	Hadh		Exosc3
Nabp1	G530011O06Rik	A330074K22Rik		Nuak2
Dhrs7b	Cfap20	Wdr47		Leng1
Pcyt2	Sema3f	Rsrc2		Tstd3
Gm13283	Rmnd5b	Hist1h2ao		Car4
Gtf2a2	Ier2	Cdt1		Eif3c
Hmg20b	Harbi1	Atp5c1		Tbx3
Elmo2	Tnks1bp1	1110034G24Rik		Gm14164
Hist1h3i	Slc12a4	Atp8b1		Specc1l
Uchl5	Spata2l	1700016H13Rik		Psmc1
Tle6	Snx2	Mrm1		Kctd12
1700030F04Rik	Plxnd1	Ptma		Agbl1
Phf10	C2cd2	Trabd		Mir5122
Calu	Klf11	Tshz1		4930448I06Rik
1500004A13Rik	Ppil6	C3ar1		Zfp213
Atxn7l3	Stxbp1	Echdc1		Gpc5
Clic4	Plbd2	I830077J02Rik		Fignl1
Gm1821	Snx8	Rere		Ankrd1
G530011O06Rik	Grtp1	Hlcs		Snap23

Tuba1b	Slc41a3	Hey2		Mdm4
Phf12	E4f1	Cdkn2b		3930402G23Rik
Akap10	Cnnm3	Morf4l1		Treml2
Crlf3	Usp53	8030442B05Rik		Med8
Slc25a10	Lonp1	Ap1b1		Mob1b
Cyp2b23	2610042L04Rik	Atxn7l2		Gtpbp4
Clint1	Tra2b	Ric3		St7
Gm10941	Frmd6	Rgs3		Hist1h4c
Psmd3	Calm2	Cdc45		A630001O12Rik
Relt	Zfp326	Mir7237		Ubash3b
Ppp1r13l	Tal1	Mpc2		C330018D20Rik
Pias4	Zswim2	Abl2		Dph3
Fam114a2	Lmna	Pex16		Mad2l1bp
6820431F20Rik	Ankrd50	Slc38a11		Eif3a
Sbno1	Btbd2	Faim		Tmem240
Elob	Pdk2	Cep126		Hist1h1c
Adgrl1	Elac2	Abcf2		Gm21944
Usp36	Slc5a6	Onecut3		Clhc1
Kdm2b	Ppp3ca	Ltbp1		Mir6398
Pnrc1	Mical3	St3gal3		Tmem203
Rae1	Speer4d	Ddit4		Mfn1
Zfp608	Csnk1g2	Manbal		Saysd1
Sep-11	Zfp688	Acox3		Ezr
Ctnna1	Hyal2	Atl3		Malat1
Ttc25	Cd44	Ankrd9		Gpx4
Gatad1	Exoc7	Samd9l		Pkm
Mapk8	Ssc4d	Yipf4		Klhl3
2410006H16Rik	Sugt1	Aktip		Commd7
Rgs13	Clec1a	Pkn1		Tmbim1
B3galnt2	Mief1	Gm4262		Mlf2
Ly86	Exoc6b	Mapkbp1		Tmpo
Mllt1	Atg7	Lrch3		Hspbap1
BC005537	Alox5ap	Foxred1		Edem2
Zc3h12a	Peg10	Eif4b		Trappc9
Panx1	Abhd5	Gm13986		Tmem131
Eloa	Ube4b	Zscan21		Msra
Gm5532	Smyd4	Spry1		Chkb
Kdm1b	Btd	Zscan12		Usb1
Esco1	Zfp524	Utp18		Tspan18
Rab21	Slc25a10	Slco2b1		Prkca
Rpl10a	Myh9	Popdc2		Mfap3
Wdr43	Ube4b	Itln1		Arl16
Gclc	Gm10575	Tmprss11c		Ptrh2
Fam168b	Mtdh	Emcn		Pdzk1ip1
Hist1h4j	Pak4	Gm5122		Slc9a8
Lrp1	Polr1d	Slc16a10		Gm3264
Cep350	Slc38a10	Plin2		Lgals3bp
Bbc3	Numbl	AI413582		Commd6
Hadh	Cisd2	Bcat2		Slc25a19
Tspan17	Atg4d	Pdpk1		Cdh5
Odc1	Pecam1	Rgs3		Raet1c
Slc25a33	Nemf	Ptp4a3		Extl2
Tbxas1	Pacsin2	Mdm1		Cox4i2
Pdlim1	Eapp	Igsf11		Sprr2a3
Coa6	Twf2	Mtpap		Rapgef6
Rad52	Ctnnal1	Cdk7		Adprm
Ppp1cc	B4galt1	Rasgef1b		Kcnj16
1810013L24Rik	Ostc	Trp53bp2		Mir5100

Hfe2	Egln3	Tfip11		Isx
Luc7l	Adpgk	Aktip		Skil
Zfp568	Ppp2r5b	St6galnac1		Spns2
F630040K05Rik	Rere	Fmn1		Alyref2
Gm3230	Spn	Denr		Ift46
Milr1	Ccnh	Ccnd2		Ddx5
D5Ertd615e	Znrf2	Eif2b2		Atg7
Napepld	Bcl2l11	Manea		Flot2
Trnau1ap	Etohd2	D130040H23Rik		Gm13285
Rbm15b	Trdmt1	Gpx1		5730455P16Rik
Zfp12	Axdnd1	5730435O14Rik		Tbcd
Atg14	Cinp	Ccnc		Atg7
Gm13872	D230017M19Rik	Unc5b		Gm13285
A430035B10Rik	Akap13	Ppme1		Skil
1700028E10Rik	Fez2	Mcee		Kdm6b
Speer4cos	Map3k9	Prpf3		Mmd
Runx1	Angel1	Erich2		Srsf1
Birc2	Epg5	Scaf11		Hist2h3c2
Camsap2	Aacs	Svip		Slfn14
Pak2	Wdr43	Ppan		Tk1
Agbl1	Zdhhc13	Ei24		Zfp652os
Kiz	Lrmda	Tmem192		LOC105242399
Gm29685	4930405A10Rik	Hdac10		Pkm
Fbxo3	1700064J06Rik	Sptb		Gm10033
Sema4d	Etohd2	Mir7223		Mmd
D130040H23Rik	Gm20750	Iqgap1		Phb
Ascc3	Ptpn12	Zfp784		Sparc
Socs3	Rbm46	Ube2v1		Amotl2
Foxk1	Stxbp5	Sf3b1		Hrh1
Scd1	Adss	Fyn		Eftud2
Stk17b	Ptpn1	Tarsl2		4930467E23Rik
Rgs18	Wdr13	Csf2ra		Mmd
Zfp628	2810408I11Rik	Yae1d1		Gpm6a
Ston2	Prrc2b	Tspan3		Gm13285
Gpm6a	Slc34a1	Slc4a4		Sec24a
Pak4	Shf	Bag5		Ppp1r15a
Fbxo34	1700019E08Rik	Scaf11		Paf1
Mir6388	Vmn2r3	Pitrm1		Natd1
Atp8b1	Oit3	2310010J17Rik		Abcg2
Rnu12	Dhrs7b	D330046F09Rik		Gm15326
Snx10	Nr4a1	Psmd4		Dyrk3
Hist1h4n	Cdk12	Tsks		Chd2
Lactb2	Tnfaip8	BC029722		Hist1h2be
Kptn	Vdac2	Zdhhc21		Cenpw
Ppil6	Gxylt1	Elmsan1		Gm14005
Txn1	Pkn2	Abraxas2		Mbd6
Smim3	Dnajc3	Antxr2		Tbc1d7
Zdhhc5	Stk10	Plekhh3		Slco2a1
Runx1	Fez2	Fbxo42		Prpf18
Atf6	Rbp2	Enho		Mfsd10
Memo1	Snord116	Ndufaf7		Galk1
Srebf1	Ino80c	Zfp746		Tnfaip8
Gtf3c5	Zfp664	Ak7		1110002J07Rik
Hist1h3h	Cbwd1	Arl15		Nyx
Prkar1b	4932435O22Rik	Dtwd1		4930467E23Rik
Nbeal1	Irak3	Zfp572		Ltbp1
Mir8102	Rfxank	Osgin2		Eif3b
Abi2	Sdhc	Prr5		Mrpl52

Gle1	P2ry6	Phf14		Mrps34
Mkl1	5031425F14Rik	Sipa1l3		Isy1
H2afx	Rce1	Fmn1		Fam222b
Klf13	Mir210	Camkk1		Ptk2
Ung	Trp53bp2	Arhgap19		Emc7
Ap1m2	Srd5a3	Ptcd1		Cpsf6
Ung	Nup93	Sf1		Il17rd
Ap3m1	Sall3	Mir6936		Fam53a
Bin2	Dvl3	Rere		Csnk1g2
Suclg1	Speer4cos	Ndrg2		Mylk3
Map2k6	Fasl	Sbk1		Oraov1
Clta	Slc7a15	Ifit1		Msmp
Mtdh	Glt28d2	Espn		Znhit2
Shb	Ssh2	C530044C16Rik		Lrp8
Cry1	Pim3	Cisd2		Ptpn12
Ap1m2	Atp8b1	Hspa5		Gm16104
Zbed4	Cap1	Uxs1		Tpbgl
Gm21119	Bicd2	Slc41a1		Ubr2
Lman2	Sp7	3110045C21Rik		Sox7
Med16	Ift172	Dhrs1		Zfp3
Sertad2	Nr2c2	Dusp4		Sec24d
Yif1b	Lfng	Zfp217		Rab17
Notch2	4930548G14Rik	Lsm5		Ap1m1
Btg2	Ptch1	Rnf216		Dhrs3
Pnrc1	Ablim1	Dync1li1		Dpp8
Xxylt1	Chid1	Stat3		Rara
Tesk2	Gm26689	Rad51ap2		Rcc2
Gdpgp1	Eif4ebp1	Bbs2		Tlnrd1
Ptprr	Ptgs2os2	Mob3c		Heatr5a
Cfap20	D10Jhu81e	Ly86		Neurl3
Vasp	Dyrk2	Sgo1		8430423G03Rik
Cited2	Wwox	Nkx6-1		Speer4c
Psma6	Wee1	Bod1l		Ercc5
Ctr9	Mia3	Ndrg1		Prr5
G3bp2	Luc7l3	Tbc1d13		Dhrs7b
Kcmf1	Ntan1	Gm1968		Bcdin3d
Ncbp3	Gm2897	Ppp1r12a		Aipl1
Med26	Isy1	Fen1		Fra10ac1
Gm7457	Mad2l1	Map3k7		Zfp948
Manbal	Mrpl55	2900026A02Rik		Gm5129
B4galt1	Ubc	Limch1		Pcbp1
1700025G04Rik	Pgap2	Zfp438		D330050G23Rik
Rab4b	Zmynd19	Cdkn2aipnl		Mir7227
Tnfaip8	Gpr171	Cox20		Cltc
Lnpep	Urgcp	Abca7		Pdss1
Lockd	Psmd3	Atrnl1		Cdc20
Kcnj2	Ppp1r13b	Spns2		Ccsap
Atg7	Tcirg1	Mphosph9		Scd2
Hps6	Med17	Smarcd1		Rnf216
C2cd5	Smad6	Ptp4a3		Cebpg
Sh2b3	Crlf3	Ldlr		AU022793
Sacs	Rad23b	Itgb6		Brms1
Alkbh5	Dnaja1	Mir5133		4631405J19Rik
Cd300a	Camsap2	Arhgap35		4930467E23Rik
Itgb2	Ebf1	Litaf		Ppargc1b
Cyb5r1	Zfand2b	Got1		BC021767
Sh2b3	Retreg3	Ldlrad3		Kbtbd2
Snx22	Psmg1	Samd4b		Asic4

Adora2a	Rab5c	Appl1		Abi2
Hipk1	Eloa	Gps2		Rpl31
Taf9	Bbc3	Dcun1d4		Chrna9
Usp1	Osbp	Lonrf1		Mis18a
Grk6	Tead1	Six5		Npepps
Ptpre	Zfand2b	Rnu12		Ckap2
Vkorc1l1	Pnrc1	Gnaq		Synrg
Pelp1	Klf16	Stxbp4		Tubb3
Kpna2	Plscr3	Gbx2		Ninj2
Alkbh5	Snord118	Spata13		Add1
Atg7	Hist2h3c1	Dsn1		Ache
2900052L18Rik	Mrps18b	Mgat1		Cdk19
Ctnnbip1	Gpatch8	Mir152		Zfp991
Ift46	Pigs	Unc50		Med11
Kbtbd7	Tom1	Spdya		Gm13034
Rex2	2410006H16Rik	Hrh1		Tmem140
Igf1r	Nup107	Msl1		Fbxl19
Rpn2	Abcb9	Pgap3		Slc16a14
Ints3	Cyld	Aco2		Il12a
D230017M19Rik	Pigl	Rad9b		Tefm
Dgkeos	Aco1	Gsk3b		Ormdl3
Elac2	Pex10	Paox		Tpm3
Erdr1	Id1	LOC105242399		Mir23a
Pgp	Nfyc	Ccnd3		Zswim7
Plcg2	Scarb1	Zfp78		Ints9
Capn2	Ndc1	Ano10		Hrh1
Chd8	Elmo2	Gtf2a1		Gm3696
Cluh	Atp2b4	Nras		Socs3
Dennd6a	Psme4	Suco		Vps25
Ddx41	Syncrip	Eif2b1		Alkbh5
Gins1	Cdt1	Traf4		Mnt
Eftud2	Polk	Cep68		Atg7
Dynll2	Igf2bp3	2410002F23Rik		Mtss1
Ube2c	Btg1	Acyp1		Tjp2
Gm5797	Cenpn	Fbxo33		Zfpm1
Gm10575	Srxn1	Nedd4l		Gm13872
Rhbdd3	Kbtbd2	Tmem131		Cdkn2aipnl
Per1	Cmc2	Fut11		Gpr39
Per1	Larp1	Tdrd7		Golm1
Abca7	Mark4	Eif2ak4		Hs1bp3
Slc38a10	Pitx3	Cd180		Ttc7b
Hlf	Homer3	Shroom3		Fam207a
Tnpo1	Stau1	Hdgf		Ptprn
Adnp	Ndel1	Wnk1		Mir1983
Tmem131	Ndst2	Cyb561d1		Fggy
Sidt2	Macrod2	Gngt2		Elac2
Tmem39b	Gstm7	Hist1h2ag		Runx1
Cib3	Ddb1	Ddias		Slc37a4
Ifngr2	Ercc2	Zc3h15		Thg1l
Mcl1	Fbxo30	Ncdn		Nup153
Pold3	Tspan18	Acadvl		Mpv17
Abhd17a	Mrpl14	Tmem39b		Rnf19a
Snx8	Scpep1	Fbxo47		Itga4
Ppard	Snora16a	1700021N21Rik		Cdh5
Spata2l	Gm21057	Hist1h4n		1700020L24Rik
Usp40	Sqle	Tbc1d7		Mir3960
Cep70	Atf4	Trappc10		Ppm1d
Mrvi1	Map3k14	Pigp		Fam222b

Mir378b	Med13l	Zfp335		Gm10413
Cep19	Ddhd1	Nabp2		Ubash3b
Ackr2	Ankrd54	Dyrk1b		
Pard6b	4930559C10Rik	Gm28178		
Dusp18	9330102E08Rik	Nop2		
Oser1	Tmem41b	Eif5		
Noxa1	Cenpw	Snhg5		
Gmds	Errfi1	Aunip		
Rps12	Pcif1	Efcab11		
4930434J06Rik	Kdm2b	Tmem87a		
Mir132	Mmd	Gnpnat1		
Rab33b	Edem1	S1pr1		
Gm10646	Atp2b1	Mphosph9		
1700017B05Rik	Mlec	Lsm11		
Slc46a2	Ttc39b	Keap1		
Stxbp5	Dnaja2	Mir6769b		
Tbc1d8	Snx22	Maff		
Parp6	Atp2b1	Maff		
St6galnac1	Rbpj	Kmt5c		
Heatr5a	Mmd	Vamp3		
Stx12	Spen	Sar1a		
Tnfaip8	1600023N17Rik	Oxsr1		
Kif16b	Cdk19	Sbds		
Mar-03	Cep70	Rnf222		
Prx	BC005537	Rflnb		
AU040320	Rgp1	Zfyve27		
Atp6v0a1	Ccdc28a	G3bp2		
Cox5a	Crebl2	Tbc1d20		
5031425E22Rik	Gm10354	Ubl3		
Rpe	5031425E22Rik	Rpn2		
Rock2	9130011E15Rik	Ap3m1		
Ccdc146	Srsf4	Mtfr1		
Copg2	Sik2	Snhg3		
Ryr2	Mir17	Hist1h4d		
Noxa1	Ufsp1	Zfand3		
Zc3hav1	Cd300a	Card19		
Rasal1	C330018D20Rik	Gm2518		
Pja2	Xpo6	Ccdc9		
Gm28178	Vav2	Otub1		
Cxcr5	Tbl2	Lyst		
Atxn7l2	Acads	Eaf2		
Mbd2	Cep68	Ralgps1		
Arhgap33	Rgs12	B930059L03Rik		
Camk1d	Psen1	Ggps1		
Pstpip1	9130011E15Rik	Klc1		
Sdad1	Dcakd	Lamp1		
Cuta	Aldh9a1	Stag1		
Cisd2	Nphp3	Usp15		
Cpt2	Lnpep	Gpr19		
Igsf3	Mapre1	Mphosph8		
St6galnac1	Prrc2a	Arfip1		
Txnrd1	Gm20605	Stat1		
Kank2	Tvp23b	Tcf7		
Swap70	Shb	Sap30		
Ackr2	Mir8102	Pisd-ps1		
Rfx3	Tmed1	Hk1		
Eri2	Kcnj16	Lrrc3		
Cpne3	Asic1	Rnf5		

Tgfbrap1	Nucb1	Ireb2		
Hist1h2ao	1110059G10Rik	Dohh		
Cdc42ep4	Ppp1cc	Pard6b		
Rbm46	Dolpp1	Slc36a1os		
Cdc16	Zfp706	Rbpms2		
Mc2r	Hgfac	Tmem97		
Mir3961	Ist1	Axin2		
Zfp655	Gm12159	Sgf29		
Rbm39	Kbtbd7	Ggps1		
Ccne1	Gm5796	Lrrc74a		
Trmt13	Ncl	Ttc13		
Ptgs2os2	Pmm1	Plk3		
Cdk17	Mafk	Hspb11		
a	Rwdd3	Tgif1		
Mir8111	Fam214b	4930572O03Rik		
Itgb3bp	Ubr3	Bsdc1		
Creg1	Ep400	Thnsl1		
Ccdc80	Adgrg1	Parp16		
Fbxo46	Nck2	Sphk2		
Fbxo30	Tbc1d1	Rheb		
Stmnd1	Sae1	Zmym5		
Limd2	Slc17a8	Ltc4s		
Ncor2	1700008O03Rik	Cdc25a		
Tiam1	Tbc1d2	Luc7l2		
Foxl1	Borcs5	Tacc1		
Add3	Caprin1	Tmem167b		
Slc17a4	Zbtb9	Poldip2		
Med4	Tbc1d2	Limd2		
Nus1	Msmo1	Tacc3		
Slc38a11	Sec61a2	Prkar1b		
Psma1	Dnajb8	Map2k6		
Cep152	Ccdc14	Fchsd2		
Flt1	Tuba1c	Akap8l		
Kansl2	Lifr	Smc5		
Efcab14	Acaa2	Coa4		
2610005L07Rik	Pcgf3	Mbd3		
Rptor	Vps13a	Spata1		
Scaf4	Pex11b	Malat1		
Efcab2	Jarid2	Thra		
Foxk2	Acaa2	Thra		
Cpsf4	Psph	Foxk1		
Tpst2	Pfkp	Ppfia4		
Gpn3	Capn7	Rcor3		
Gpatch2l	Tbl1xr1	Derl1		
Cttn	Cxxc5	A630001O12Rik		
Gm536	Pex11b	Gatc		
Klf13	Ifnar2	Sacm1l		
Pabpc1	AW554918	Tmem205		
Parp16	Cnnm4	Klc3		
Ubfd1	Aldh2	Rrp8		
0610010K14Rik	Rap2b	Urod		
Pgpep1	Dennd2a	Gm21992		
Ccnk	Gp1ba	Ndfip1		
Zfand4	Tbc1d8	Ccdc85b		
Rap2b	Flt1	Rrp9		
Tmem251	Smim3	Tmpo		
Ndc1	Mnd1	Csf1		
Efcab2	Coa7	1190002N15Rik		

Kcnj16	Evl	Eme1		
Tmpo	Maff	Zfp526		
Prrc2b	Gm5797	Gtpbp4		
Agrn	Acer3	Chd8		
Gm10433	Ush2a	Ralgapb		
Snhg8	Fam13b	Yipf2		
Agl	Rplp1	Ing2		
Srm	Rab39	Hectd1		
Hnrnpa3	Gm527	Pkn3		
Ints6	2900093K20Rik	Plcg2		
Trafd1	1810055G02Rik	Atp13a3		
Eif4g2	Snapc3	Cactin		
Gm17019	Snrk	Rbm14		
Cbfa2t2	Dhx35	Hmbs		
Cxxc5	Urm1	Tuba1b		
Lamtor1	Csgalnact1	Agps		
Cep85	Hspa8	Cxxc5		
Dapp1	Gnaz	Hspa4		
Ccr1	1700029H14Rik	Tpm3		
Trp53inp2	Cmah	Lbr		
Guk1	Gars	B4galt5		
Spns2	Acadsb	Elovl6		
Clec9a	Zfp106	E2f2		
Usp35	Myo1c	Ankfy1		
Atp6v0c	Spcs3	Stk17b		
Rapgef6	Nudcd3	Dapp1		
Gnl3	Myo1c	Mfsd2b		
Dusp2	Gtf2f1	Slc25a11		
Paqr7	Cand1	Bscl2		
Mir33	Zfp7	Pno1		
Hrh1	Hrh1	Zfp541		
Bap1	Hspa8	Scamp4		
Plekho2	Amotl2	Sqstm1		
Mir762	Osbpl9	Rab11fip4os2		
Nudt18	Chtf18	Abl2		
Hexdc	Tyk2	Cyr61		
Lbr	Itsn1	Defa21		
Ssh2	Rab39	Sep-09		
Mob1b	Sun2	Zfand4		
Dmwd	Ppara	Prdx1		
Tpt1	Dyrk3	Zpbp2		
Gm5796	Cfdp1	Dhx33		
Tnip1	Nbeal1	Sirt4		
Taf5l	Efna3	Pgam1		
Tmx1	Chrnb1	Eif1		
Gm10354	Bclaf3	Jun		
Birc5	Osbpl8	Rnf114		
Kdelr2	4930455J16Rik	Chmp7		
Psmg1	Tedc2	Cic		
Neat1	Dock4	Srd5a3		
Mbtps1	Bap1	Cfl1		
Dmrtb1	Rpap3	Slc31a1		
Tmem158	Gtf2i	Tecr		
Znrf3	Cnot4	Btf3l4		
Alox5ap	Tubgcp6	Gm21119		
Zfp688	Rars	1190002N15Rik		
Slc35f5	Arih2	1110065P20Rik		
Wee1	Slc12a7	Xpo1		

Dyrk1a	Msl1	Dus3l		
Tmf1	Pik3r1	Wscd1		
Syde2	F630040K05Rik	Camsap1		
Polr2a	Bub1	9430091E24Rik		
Isy1	Lyst	Fam229a		
Fmnl3	Plrg1	Chtop		
Pgap2	Zfp608	Blmh		
Milr1	Rfk	Tfrc		
Mtch1	Zfp944	Cd164		
Mbtps1	Dlgap1	Fnbp4		
Ndc80	Gypc	Ap2a1		
Etohd2	Ikzf2	Rrp12		
Itln1	Npat	D8Ertd738e		
Unk	C230037L18Rik	Zc3h18		
Slc7a5	Zfand4	Ube2l3		
Rpl3	Dolk	Foxo3		
Tnfaip2	Depdc5	Smarca5-ps		
Papd5	Kmt2a	Csde1		
Hnrnpf	Tmem256	Celf1		
Paqr7	Ankrd11	Nme2		
Smarca4	Birc6	Srsf11		
Gm11127	Prkcd	Rffl		
Acvr1b	Tctex1d2	Klrb1b		
Btf3l4	Ksr1	Arl4d		
5430405H02Rik	Btg2	Ube2s		
A330074K22Rik	Sap130	Thap1		
Hist1h2bl	Spg21	Mylip		
Hand1	Phc2	Pik3r3		
Hist1h1d	Dhodh	Pigf		
Fbxo48	Nfe2l1	Garnl3		
Zcchc14	Ywhag	Ift140		
Abcf1	U2af1	Xpot		
Tmem250-ps	Nxn	4930429F24Rik		
Arid4a	Cd3eap	Ythdf2		
3110056K07Rik	Pop7	Dag1		
Matr3	Brd7	Mex3b		
Haspin	Klf3	Myh9		
Wapl	Cd3eap	Tug1		
Atl2	Pim3	Tgoln2		
Sdccag3	Rell1	Rrp12		
Nt5dc3	Ube2c	Cd164		
Nt5dc3	Rex2	4921524J17Rik		
Ric3	Ncapg2	Bcl7b		
Tpra1	Tax1bp1	Arid1a		
Smtnl2	Sesn2	Pdik1l		
Sfpq	Rgs2	Gm3230		
Abhd12	D030047H15Rik	Ptp4a1		
Gtf2a1	Ift57	Cyp2b23		
Sqstm1	Arnt	Smarca5-ps		
Fkbp8	Fignl1	Kif17		
Grap2	Mir22hg	Stil		
H1f0	Mon2	Taf11		
D030028A08Rik	Tab2	Hist1h4c		
Hint1	Oaz2	Rffl		
Clpx	Smg9	Sptbn1		
Chst12	Xpnpep1	Ablim2		
Gm3383	Gmnn	Gle1		
Trmt1l	Slc25a39	Fars2		

Tuba1c	Blvrb	Ctgf		
Ctdsp2	Pitpna	Cldn5		
Faap100	Gm3500	Pcdh7		
Znhit3	Gm10687	Tusc1		
Cbfa2t3	Gse1	Edrf1		
Scarna2	Adh5	Hacd3		
Arhgap25	Hat1	Rcbtb1		
Mir21c	Mef2c	Atad2		
Cyld	Vps13d	Arl16		
Afg3l1	Zfp78	3110002H16Rik		
Mir6352	Gas5	Dcp2		
F10	1110002L01Rik	Gm13212		
Sik3	Strn	Eif3d		
Rab3d	Ints10	Taf1d		
Ctgf	Smarcc1	Epha7		
Snhg5	Gzf1	Lcmt1		
Prkab1	Slc2a3	Ccdc107		
Atic	Ppp1r18	Rabl3		
Ccdc34	Rras	Cgrrf1		
Btnl10	4732414G09Rik	Clec4g		
Btnl10	Scarletltr	Mapkapk2		
Ctr9	Hnrnpf	Ldlrad3		
Bach2	Prickle1	Heatr5a		
Fdx1l	Dnajb1	Pdp2		
1700027F06Rik	Ergic3	Nub1		
Bbs2	Prc1	Gata3		
Rpl37	Ralgapa2	Gm6117		
Wisp3	Pnkd	B330016D10Rik		
Oaz2	Rngtt	Etfrf1		
Rab27b	Tcf7	Camk2g		
Fut10	Map2k1	Relb		
Trp53	Med6	Ormdl1		
Mrpl33	Tubb5	Apc		
Acaa2	Wapl	Pan3		
Tmed7	Hsp90ab1	Sgta		
Mmab	Tac4	Atad2b		
Bach1	Ell	Zfp628		
Hrh1	Fam69a	Eif1b		
Cenpw	Ypel5	Add3		
Ropn1l	Higd1a	Fkbp8		
Dpysl2	Ppp2ca	Pdcd4		
Ptch1	Rae1	Epas1		
Ssfa2	Eftud2	Fam118a		
Psmc4	Nectin2	Kdm4a		
1700031P21Rik	Mir181c	Insig2		
Sox7	Sh3bgrl3	Csnk2a1		
Arl4c	Eno1	Prr5		
Dcaf10	Asf1a	Ficd		
Slc24a3	Ppdpf	Lama5		
Sod2	Gpn3	Nedd4		
Wwp1	Gm46545	Mgst2		
Sgsm3	Dusp7	Sesn3		
1700052K11Rik	Atmin	Tspan13		
Pepd	Rpl31	Selenof		
Ralgps1	Chmp6	Hnrnpul2		
Fggy	Serinc5	Crkl		
Cpne7	Wbp2	Cenpf		
Timm50	Trp53inp1	Sp8		

Slc17a2	Gm4890	Hectd4		
Rasa1	Arpc1b	Mtmr12		
Rnaset2a	Katnb1	Cep57		
Ccpg1	Plk3	Stmnd1		
Vav2	Hist1h1e	Otulin		
Rwdd3	Sox7	Zbtb17		
Acaa2	Gm17019	Samd4b		
Tmem167	Tnip1	Gltp		
Prcp	Esd	Scyl2		
Egr3	Sep-10	Tubb2a		
D8Ertd738e	Reep3	Tex10		
Mtg2	Pisd-ps2	Plcl2		
Crem	Ano9	Ran		
Nup50	Zranb1	Prtg		
Lgr6	Ss18l2	Pag1		
Dgcr8	Fdxr	Aldh4a1		
Dhrs9	Klf13	Tmem51		
Acadsb	Eloc	Pdcd5		
Grcc10	Ywhaz	Faf1		
Ankmy2	Nme1	Ccr4		
Rnps1	BC107364	5031425E22Rik		
D230017M19Rik	Hnrnpm	Homez		
Dnajc3	Ifnar1	Nkiras1		
Paip2	Ctps	4932412D23Rik		
Ilf3	Zfp367	Dctn3		
Tmem120b	Lamc1	Mapt		
Rrp8	Ctps	Mtdh		
Spry1	Map4	Cdip1		
1810010D01Rik	Zmym6	Zfp2		
Ankrd28	Fkbp3	Tomm7		
Frmd4b	Tctn1	Coq8a		
Lyrm9	Igsf3	Gamt		
Ywhaz	Ctbs	Rnf26		
Ifitm3	Tnfrsf12a	Gtf3c5		
Tmem60	Mlxip	Slc7a1		
Mdm1	Zswim6	Zcchc14		
Asb1	Nat10	Car8		
Mki67	Trmt2a	4930434J06Rik		
Asf1a	Mapk9	Fbl		
Camkmt	Map4	Vmn2r-ps11		
Srp9	H3f3a	Kansl1		
Lrrc74b	Slc9a3r1	Arhgef17		
Pygo2	Gm21119	1110008P14Rik		
Ubxn1	Hic2	Gar1		
Klhl24	Zfp821	4933430I17Rik		
Mrpl32	Rad17	Crim1		
Ncaph	Opn3	Nop53		
Ndufa13	Mapk3	Gmpr		
Mir6546	Fzd9	Zcchc24		
Uspl1	Zfp672	Aip		
Cnot10	Bicdl1	Rbsn		
Zscan22	4930526I15Rik	Ctla2b		
Alkbh4	Psma3	Pik3ip1		
Sgms1	Gm21119	Zmym3		
Fam109b	Tec	1700031P21Rik		
A530013C23Rik	Rnf169	Ptpn6		
Nkd1	Banp	Rara		
Ddx21	Eprs	Nub1		

Tmbim1	Cdc42se2	Elovl5		
Pih1d1	Ywhae	Cdca7l		
Rnf149	Atp13a2	Ctdspl2		
Faf1	BC107364	Ankrd10		
Tmcc3	Mrps24	Tcaim		
Twsg1	Tmem229b	Dennd2c		
Herc1	Cirbp	Glul		
Draxin	Sh3gl1	Foxg1		
Ss18l1	Dr1	Mmadhc		
Cep72	Ptpn11	Tnfaip8l1		
Csrnp1	Rock2	Calr		
Ptdss2	Btbd19	Large1		
Cdv3	Aamp	Tars		
Bard1	Ippk	1700052K11Rik		
Slc30a9	Rab11b	Pdcl3		
Add1	Usp36	Lmo7		
Glt28d2	Add3	Pdlim7		
Lsm12	Lipt2	Slc39a3		
Ccdc138	Wdr1	Zxdc		
Xylt2	Gm21190	Cttn		
Espn	Wee1	Fanca		
Pdk1	Smdt1	H1f0		
Mon2	Ubc	Ccdc134		
Ccr1	Ahctf1	Lmbrd1		
Lyl1	Hrh1	Arhgap12		
Hist1h2ap	Ip6k2	Slc7a6os		
Ptp4a2	Ttc41	Cct8		
Crispld2	Dact3	Slc15a4		
Hhex	Smarca5-ps	Tdp2		
Sgms1	Nipa2	Fbxw2		
Inpp5a	G530011O06Rik	Erich1		
Sfr1	Mar-02	Rcan3		
Mir21a	Znhit2	Tspan3		
Frmd6	Usp49	Mir681		
Arhgap23	Pgrmc2	B230217C12Rik		
Rgs10	Mirlet7a-1	Dusp8		
C77080	Prkab2	Ctsd		
Gm5458	Ifngr1	Hook1		
Hmga1	Abca1	Wdr4		
Sema4d	Fam187b	Ppp1r21		
Atad2	St3gal3	Zc3h12a		
Gm5797	Pemt	Akirin2		
Hspa5	Atg7	Ckap2		
Atg16l2	Pacrgl	Hspa14		
Sgf29	Tram2	Psap		
Gp1ba	Egr3	Mcur1		
Pbrm1	Gclc	Acbd4		
Pim3	Snd1	Ptprc		
Trap1	4930511A08Rik	Ppard		
Ppp1r13b	Ppwd1	Gata2		
Pias3	Tmem251	Gm6634		
Prpf40b	Specc1l	Vgll4		
Ccdc43	Ncaph2	Entpd7		
3110045C21Rik	Fam96b	Zfp637		
Drg2	Mtf2	Pprc1		
Cpsf6	Nampt	Slc24a4		
Mageb3	Tppp	Wwtr1		
Rnf216	Cep295	Ccdc191		

Fbxo11	Atrn	Lin28b		
E4f1	Fam96b	Rpl5		
Med1	Prr12	Rab38		
Ahcy	Map7	Mcm4		
Ckap5	Stn1	Rhpn1		
Tpm1	Kpna3	Atg101		
Atp13a2	Fam198b	Tdrd1		
Jpt2	Insig1	Gm9530		
Gatc	Ccser2	Ube2q2		
Snx15	Hip1	1700060C20Rik		
Srsf9	Vcl	Ptchd1		
Srp68	Ccdc74a	2310043O21Rik		
Clptm1	Eef1e1	Ap2s1		
Rnf126	Dennd4a	Sft2d1		
Nr1h2	Ano1	Dcaf11		
Atp6v1d	Rwdd2a	Ankrd44		
Ubash3b	Foxo6	Osgin1		
Rab6a	Eci1	Rras2		
Eif4g3	Ube2d2a	Cdca2		
Lsm11	4930555G01Rik	Zfp959		
Caprin1	Gm10406	Zfp395		
Rpl32	Ralgps1	Nnt		
Ahctf1	2900052L18Rik	Zc3h3		
Erf	Crot	E2f7		
Hist1h1e	Tmem64	Pkmyt1		
Mgat1	Dusp2	Exo1		
Mknk1	Klhl26	Lonp2		
2810410L24Rik	Gsdmc	Slc35a1		
Mfsd5	Naa20	Sprr2a2		
Cenpm	Tm2d3	Ctdspl		
Phykpl	Raly	B3gat3		
Vmac	Gm10069	Cep57l1		
Kdm3a	Pold3	Amot		
D030028A08Rik	Tpt1	Derl2		
Mrpl20	Tnfaip3	Alkbh3		
Chd2	Mknk1	Lca5		
Ptpn1	Ehbp1	Rbm38		
A930024E05Rik	Akap5	Pigyl		
Hist1h4h	LOC105242399	Zfp143		
Xpc	Slc2a13	Jak1		
Btbd19	Csf2ra	Jpt1		
Hat1	Fam57b	Itm2b		
Larp7	Ppa1	Tmc6		
Mia2	Mrpl52	Atg7		
Stk40	F10	Gprc5c		
4930511A08Rik	Lyrm2	Glyr1		
Spns2	Rnf217	Ppia		
Cuedc1	Bhlha15	Wdr18		
Blvrb	Tnik	Raet1c		
Vcpkmt	Mtss1	Pla2g6		
Kansl1l	Clpx	Ccdc71l		
Kmt2a	Lman1	Pip4k2c		
Zc3h7a	Cpm	Nol12		
Slc5a3	Orc2	Frs2		
Actr2	1700006H21Rik	Aars2		
Arid1a	Lpin1	Smim3		
Ube2m	Serpinb8	Snapc2		
Arhgap1	Egr3	Mpst		

Cs	Mier2	A130010J15Rik		
Map2k1	Zbtb24	Zfp668		
Cbx1	Gm10785	Scd1		
Nt5dc3	Ifitm3	Trmt112		
Drc7	Neu1	Rps6kb1		
0610009L18Rik	D17Wsu92e	Apeh		
Recql5	Acadm	1500011B03Rik		
Mtmr4	Sclt1	Zcchc2		
Bsdc1	Ddit3	Stx4a		
Slc16a13	Tmem39a	Mtmr4		
Mir181c	2900009J06Rik	Patz1		
Arrdc2	Arid5a	Gss		
Nap1l4	Myadm	Khnyn		
Mapt	Ints6	Abcg2		
Phb	Zfp422	Dctpp1		
Zfp397	Cdk1	Pctp		
Manba	Nr3c2	Rasal2		
Twf2	Klf9	Enoph1		
Plk4	Serpinf1	Fzd2		
Nfe2l2	Psma6	Clcn3		
Mir6541	Akap5	Stx4a		
Mad1l1	Gm13872	Dgat1		
Mir1893	Cds2	Lrrc8d		
Tdrd1	Inpp4a	Odf2		
Srgn	Mfn1	Cat		
Cdk19	Serinc3	Hes6		
Atp2b1	Pdia4	Ubtf		
Fam220a	Npas4	Tmem203		
Yif1b	Flcn	Srebf1		
Rasal2	4930441H08Rik	Nkiras2		
Spred1	Bambi	Zswim7		
Appl2	Taf15	Gm16998		
Mir6957	Sgms1	Zfp513		
Lrrfip1	Batf3	Stx8		
Gm3696	Runx1	Diablo		
Styx	Setmar	Slc30a5		
Glul	Medag	Mir6388		
Crip1	Panx1	4931414P19Rik		
Cep57l1	Tmem86a	Msantd2		
Cks2	1700108F19Rik	Dcaf7		
Syne3	Irx2	Trip12		
Nutf2	Ankrd13d	Pdss2		
Efcab3	Magoh	Rpp38		
Akirin1	St3gal1	Erf		
Atp2b1	Flywch1	Ift81		
Ppp3r1	Tomm6	Sox18		
Cnot3	Hapln2	Zfp668		
Abhd5	Gm19589	Fam131a		
Mre11a	Alkbh7	Tmem131		
Mir7008	Carhsp1	Aen		
Glud1	Commd10	Arhgap8		
Dck	Fdft1	Surf4		
Entpd7	Cd276	Cfap45		
Nop56	Rbm39	Slc25a38		
Cdon	Crip2	Smyd2		
Sox6	Cuta	Borcs5		
Zmym6	Eef1d	Dgat2		
Rcn1	C5ar2	Zfp771		

Washc4	Gcnt2	Vps37a		
Herc3	Usp1	Ppox		
Mir5118	Tmem132b	Rbx1		
Ms4a10	Jade2	Nek8		
1110002J07Rik	Plppr2	Gsr		
Nt5c3	Gm15787	Noct		
Oxct2a	Syne3	Arf3		
Gabarapl2	2410131K14Rik	Rfwd3		
Rnu11	Nemp2	Gm21119		
Foxs1	Mir1904	Dnmt3b		
Slc26a6	Hist1h2an	Chuk		
Cass4	Snhg10	Memo1		
Senp8	Stim2	Hmgb2		
Lclat1	Tfap4	Blcap		
Epb41l2	Hist1h3e	Lrrc74a		
Psen2	Nlk	Cse1l		
Rasgrp2	Abhd16a	Mpzl1		
Rnu11	Hist1h2bl	Supt6		
Tmem168	Ogfod2	Wbp2		
Polr2d	Mir1941	Gcc1		
Ccdc130	Hist1h3i	Pygo2		
Akap13	Fus	Kif2a		
Skap2	Gm11437	Taf8		
Prkca	Ubtd2	Cd300a		
Coro6	Cnot3	Zfp36l1		
4930488B22Rik	Evpl	Src		
Wdr13	Topbp1	Itgb2		
Nabp2	Zmym4	Ubb		
1810026B05Rik	E230025N22Rik	Xrcc4		
Lims1	Sgca	Ticrr		
Scd3	Cited2	Cse1l		
Tpbgl	Agps	Kif1b		
Tmem123	Gmfg	Hey1		
Osbpl8	Psmd14	Brms1		
Ubxn6	Gfi1	Pacs1		
Akap13	Slc17a5	Gm9776		
Vmn2r23	Pelp1	Cep131		
Tmem181b-ps	Rab4b	Trim41		
Gosr2	Fbxo3	Tomm40		
Map2k4	Dapp1	Prpf40a		
Eif5a2	Cactin	Dbp		
Cnnm4	Csnk1g2	Cabin1		
Zfp91	Camk2g	Dnm2		
Apbb2	Anapc11	Exosc8		
Avpi1	Mir7031	Hist1h4h		
Mllt10	U2surp	Mrps23		
D430042O09Rik	Zfpm1	LOC102634389		
4930564D02Rik	Hist2h3b	Fkbp2		
Tigd2	Hist1h3e	Ube2z		
2410131K14Rik	Dsel	AA543186		
Dtl	Mtfr1l	Tpp2		
Rhbdd2	Gm7008	Fam58b		
Nfatc4	Socs3	Mar-02		
Sh3tc1	Actr5	Dazap1		
Bach2	Ten1	Gm13427		
Tor2a	Ddx41	Txnl1		
Als2	Snx21	Gemin4		
Rasgef1b	Akt2	Herc2		

Tmem43	Stk11	Suv39h2		
Trrap	Bend4	Nptn		
Zfp933	Bcl3	Tex2		
Slc25a40	Slc25a42	Mxd4		
Usp53	Hipk3	Sp2		
Zfp119b	9430015G10Rik	Qser1		
9130023H24Rik	Hspa12b	Commd5		
Irf1	Kctd2	Rbl1		
Lin7b	Acvr2b	Gan		
Coa7	Trap1	Mir3960		
Acox1	Arf1	Catsper2		
Rassf3	Cdk2ap2	Sprr2a2		
Ubr5	Ncbp3	Nktr		
Eif4a1	Unc119	Prkca		
Fbxo33	Slc25a42	Tbc1d17		
4930555G01Rik	Zcchc14	Pisd-ps2		
Mrps18b	Tjp1	Pbx3		
Slc16a6	Rnf19b	Maz		
Mir681	Gramd1b	Atp5g2		
Zdhhc19	Gpn1	Ifitm5		
4930559C10Rik	1810062O18Rik	Psmd8		
Scamp2	Tdp1	Inpp5d		
Atp6v1f	Cyp4b1	Selenos		
Mir7034	Otud7b	Slc5a3		
Gm14005	Ahctf1	Scly		
Jpt1	Nr1h2	6030468B19Rik		
Mapk9	Ssr1	Dusp1		
Mtf2	Napepld	Trappc4		
Mapkapk2	Nck1	Zmat3		
Ppp2r5a	Dennd4a	Rnf170		
Epb41	Sf1	Galk1		
Rcan3	Elk4	Cwc25		
Tdp1	Tmem94	Uck2		
Ddx59	Mar-07	Ube2f		
Frat2	Akap10	Ulk2		
1700064J06Rik	1110020A21Rik	Cdipt		
Tbc1d7	Thap1	Zfp639		
Fndc7	Rbm4b	Fut8		
Cry2	Tmem104	Arid4a		
Pacsin2	Pcyt2	Fbxo18		
Zcchc8	Pdxp	Slc45a1		
Nt5c2	Mir7235	Rap1gap2		
Rad17	Mreg	St6galnac1		
Sptan1	Cnot8	Tln1		
Rab11fip4os2	Rbbp5	Mxd4		
Hist1h2an	Tmcc1	Eef2		
Eapp	Qdpr	Sgcd		
Ldha	Rabep1	Impdh1		
Vps37b	Zswim4	Dad1		
Dscr3	Mprip	St3gal1		
Gas2l1	Banf1	Ell2		
4930515G01Rik	Pfkfb4	Slc44a1		
Ahsa2	Arrdc2	Dleu2		
Dyrk1a	4933433G15Rik	Nktr		
Map2k4	Pitpnm2	Aldh6a1		
St7	Mob1b	Phf20		
Sympk	Rnf14	Gtf3c6		
Farp2	Chka	Ezh1		

Phf13	Coq10b	Stx5a		
Ino80	0610037L13Rik	Aftph		
Magi3	Map1lc3b	Banp		
Kif2c	Cc2d1b	BC037704		
Cpsf6	Acot7	Ivns1abp		
Fus	Mir21a	Grpel1		
Mef2a	Carm1	Cirbp		
Prpf3	Guca2b	Trp53inp2		
Rpl21	Kansl3	Stx12		
Ranbp3	Med4	Dot1l		
Cmas	Ggta1	Thoc6		
Samd14	Arid1a	B3gntl1		
Chd2	Rpia	Ints3		
Smim3	Mgea5	Slc25a28		
Hook2	Mir144	Nr6a1		
Snhg9	Vgf	Atf7		
Dcaf11	Hrh1	Fem1b		
Ssb	Atp6v0c	Kifc1		
Dlx3	Ndor1	Pias4		
Pcbp1	Med16	Nrd1		
Cdkn2aip	Cep112	Cnot10		
Ankzf1	Dcaf11	Pard3		
Adgrl1	Qpctl	Gins1		
Src	Nectin2	Tomm20		
Slc39a1	Anxa11	Srrm2		
Il17ra	Emilin2	Phactr4		
Arrdc3	Sod1	Yy1		
Sod1	Xxylt1	Tnk2		
Mir23a	Arfgap3	Aph1c		
Ypel3	Ppp4c	Gm4285		
Hmgn2	Spag4	Nfatc2ip		
Calm2	Avl9	Ier2		
4933433G15Rik	Dcaf11	Zbtb21		
Mtmr12	Gcsh	Speer8-ps1		
Ubiad1	Gm21944	Cetn3		
Prkca	Myo10	Sart3		
Anapc11	Ostf1	Elf1		
Atxn7l3	Ing5	Park7		
Arrdc2	Nsun2	Kctd9		
Ptch1	Fam193a	Prkca		
Swt1	Taok3	Galnt10		
Ing5	Stam2	Cyfip2		
Ctdsp2	Traf2	Ctdsp1		
E130307A14Rik	Gm20753	Sfr1		
Rhoa	Klf10	Afmid		
Glg1	Luzp1	Npc2		
Arl2	Hmg20b	Dnajb12		
Mta3	5031439G07Rik	Natd1		
Sp2	Zfp511	Larp4		
Sp1	G530011O06Rik	Hnrnpk		
Mir144	Rnf7	Tmem170		
Cisd2	Nfe2l2	Slc43a2		
Rere	Ccng2	Cuedc1		
Gga1	P2ry1	Grpel1		
Nemp2	Atg7	Serp1		
Stt3b	Elf2	Sgk1		
Pdik1l	Txnrd1	Gm15663		
Abl2	Snap47	Rrp8		

Pole4	Pcf11	Trim28		
Lin52	Hist1h1c	Mir3473c		
Ogfod2	Flot1	Wbp1		
Zfp422	Farp2	4930563E22Rik		
Synrg	Paqr7	Pink1		
Gck	Ehd4	Fam102a		
Ncapd2	Smarca5	Sgms1		
Zhx3	Cluh	Cul7		
Mir3473c	Rad21	Tmem158		
Ccnc	Ugp2	Scd2		
Gm5547	Mir484	Lrrc58		
Nfkb2	Atad3a	Csrp2		
Polr2j	Ugp2	Strip1		
Ogfod2	Selenop	Rmi2		
Tm2d3	Sap30bp	Zfp619		
H6pd	9130023H24Rik	Pdlim1		
Oxsm	1810058I24Rik	Dynlt1f		
Gpr171	Zranb2	Megf9		
Btrc	Svbp	Stx1a		
Olfm1	Mir3473c	Trim33		
Usp32	Commd7	Sirt6		
Stt3b	Ugp2	Cdon		
Map7	Zfp46	Lats2		
Evpl	Arl6ip1	Xrcc5		
Cstf2	Zkscan6	Gne		
2700038G22Rik	Tnip1	G630071F17Rik		
Siva1	Tmem250-ps	Abr		
Jdp2	Ppp2ca	5031425E22Rik		
Tmcc1	Elovl5	Cln5		
1110036E04Rik	Trim47	Zfp712		
Snhg4	Itprip	Selenoo		
Arfgap2	Gm14207	Adnp2		
Elf2	Txn1	Iqgap3		
Gmfg	Zfp143	9330151L19Rik		
Ppp4r3b	E2f1	Wdfy3		
Borcs5	Rnf220	Syce2		
Tbc1d1	Cdkn2aip	Hsph1		
Snx14	Mxd1	Sec16a		
Mmadhc	Lipt2	Dhps		
Cntnap5b	Uqcrq	Pex19		
Tdrd7	Dstn	Mrps36		
Ablim2	Nudt18	Rhag		
Acsl1	Kdm3a	Tex30		
Pcgf5	Efcab3	Maml3		
1700012A03Rik	Golph3l	Hecw2		
4930557F10Rik	Agpat5	4930554C24Rik		
Gtpbp10	Crk	Mir21a		
Atg5	Psma2	Ybx3		
Adam17	Epb41	Rfxap		
Gm5796	Gigyf2	Irgq		
Hs6st1	Mob4	Samm50		
Gss	Cnih1	Irf2bpl		
Dtnbp1	Ypel2	Sh3bp4		
Mir22hg	Cbfa2t3	2700038G22Rik		
Esm1	Srm	Gm35978		
Pank3	Ypel3	Gm7854		
Pkd1l2	Dera	Cnep1r1		
Alox5	Gosr2	Lilr4b		

Tpm3	Lactb	Iqcd		
Gsdmc	Usp28	Rhobtb3		
Smad6	Rfng	Hist1h2bq		
Gm4285	Prpsap2	Plpbp		
Kdsr	Rbm15b	Mphosph6		
Sacm1l	Ctr9	Chpf		
Nav2	Hfe2	LOC106557447		
Ring1	Dlg4	Cpeb4		
Arrdc4	Txn1	Rnpc3		
C030034I22Rik	Gpbp1l1	Zfp608		
Ddx51	Kat6b	Myo5c		
Atad5	Clcn6	Gadd45g		
Ube2n	Hist1h2be	Mall		
Crk	Scd3	Kctd3		
Ufsp1	Cacybp	Pdcd5		
Cd244	Colgalt1	Dcun1d1		
Coro1c	3110056K07Rik	Mgst2		
Larp1	Tssc4	Rab10		
Seh1l	C2cd2l	Arhgap25		
Atg4d	Bax	Il6ra		
Atf6	Hexim1	Ubxn4		
Zdhhc3	Mir8112	Pfkfb3		
Mrpl12	Alg14	Nckap1		
Slfn14	Mcrip2	Dapk1		
Magi1	Mir5136	Cldn12		
2310033P09Rik	Slc35e3	Tmem217		
Trim7	3110056K07Rik	Ttc7b		
Nf1	Ubtf	Glrx3		
Zfp985	Reep6	Tpra1		
Hnrnpr	Tacc3	Nol7		
Stk11ip	Ogg1	Gfpt1		
Mxd1	Mfsd5	Rapgef2		
Sez6	Hint2	Maea		
Gm13290	Hist1h2bc	Zfp707		
Gm7160	Git2	Dennd3		
Xpo1	Phf1	Gm13032		
Actb	Rap2a	Mybbp1a		
Inpp5k	Fam109b	Fa2h		
A730008H23Rik	Olfr161	Nrip3		
Prkag2os1	Cep131	Gcnt1		
Sart3	0610010F05Rik	Bmf		
Pias3	Crk	Mroh1		
Exoc7	Sbno1	Fahd1		
Exosc7	Ccr1	Zfp446		
Rras	Nf1	Taf6		
Cdk2ap2	Mbd6	Pih1d1		
Mospd3	Wdr82	Fahd1		
Pard3	Lzts1	Tsfm		
Smarca4	Sarm1	Zcchc17		
Lemd1	Hspg2	Kif18b		
Wnk4	Zfand2a	Gm5547		
Prex1	Rab8b	Neil3		
Herpud1	Smurf1	Bach2		
Prpf40a	Efcab2	Gstm1		
Slc12a4	Nrtn	Tfg		
Bcs1l	Efcab2	Slfn14		
Chka	Iqgap1	Kctd10		
Atg7	Mcm2	Extl3		

Mtag2	Aaed1	Irak4		
Sp1	Rps19	Mcm8		
Zfp768	Park7	Rpl34		
Kif21b	Tmem19	Ptpn21		
Dcaf5	Pard6b	Dock8		
Mpzl1	Specc1	Akap6		
Cd164	Cdkn2aipnl	Aplp2		
Csrp1	Ctdsp1	Mtg1		
Gm14005	Cherp	Phf3		
Kif2c	Rgl2	Znrf1		
Tmem203	Lin7b	Zbtb43		
Narf	Comp	Col18a1		
Ywhaz	Tex14	Rhoq		
Pik3ip1	Usf1	Tra2a		
Rara	Tex14	Lyrm7		
Fastkd5	Cry2	4930404I05Rik		
Pmf1	S100pbp	Eif2ak3		
Metap1	Esyt2	Fam49a		
Aco2	Mtf1	Zdhhc5		
Dusp1	Srsf7	Sec62		
Cpsf2	Trmt10a	Ehd1		
Cdan1	Rps6ka1	Gm15706		
Srsf3	Pstpip1	Gse1		
Fancc	Unc13d	Kif1c		
Ncaph2	B230217O12Rik	Crem		
Cops3	Zmynd8	Mycbp		
Ano10	Nupl1	Wnt7b		
Zfp985	Inpp5k	Golga1		
Cks2	Tmem161b	Mybl2		
Chn1	Wisp3	N6amt1		
Eprs	Hps4	Agpat1		
Usp48	Pmepa1	4933401D09Rik		
Faf2	Mcfd2	Ccng1		
Pim1	Ccdc130	Gm33677		
Sep-09	Hist4h4	Gm29679		
Galnt10	Mirt1	Zfp866		
Galnt10	B3gnt4	Mars2		
Ost4	5730507C01Rik	Abca13		
Mrpl27	Wfs1	Mtpn		
Zswim3	Syt7	Pcyox1		
Idh2	Lin52	Kank2		
St3gal3	Zfp593	Kptn		
Mphosph6	Kif14	Mak16		
1700024I08Rik	Pabpc1	Anxa7		
Pmm1	Idi1	1810041H14Rik		
Sf3b5	Dlc1	Wdr34		
Pmepa1	Kti12	Crem		
Mras	Ccdc80	Fam114a2		
Tmem151b	Mon1b	Triobp		
Psap	Stk4	Tcf25		
8030442B05Rik	Rnf19a	Cnksr3		
Eif2ak3	Atp6v0d1	Dyrk3		
Raf1	Per3	Cct6b		
Pfkp	Rrm2	Cs		
St6galnac1	Gm5797	Malat1		
Ier2	Pgm3	Cyb5r1		
Wnt5b	Ski	Tbc1d10a		
Stk10	Phf20l1	Tonsl		

Stxbp5l	Eif4a2	Lig3		
Nuak2	Stxbp5l	Rabggta		
Fitm2	Atp8a1	Chn1		
Ptpn12	Noc2l	Tlk1		
Aaed1	St3gal6	Usf3		
Lctl	Hist2h2aa2	Exd1		
Tiparp	Atp10d	Susd6		
Abce1	Bbc3	Spred2		
Pcif1	Cd200r3	Zbtb1		
Prkci	8430426J06Rik	Fancc		
Ngdn	Sirt4	Eed		
Copg1	Foxs1	Srek1		
Snhg10	Myct1	Dcaf4		
Rcor1	Smad6	Ampd2		
Sh2b3	Id4	Casp9		
Crocc	Esm1	Sptlc2		
Ppp6r1	C77080	Ulk1		
Polr3h	Zfp521	Gdpd1		
Gm21119	Mdga1	1700055C04Rik		
Nfyc	Mis18a	Pym1		
Tiparp	Psma1	Sgf29		
Myh10	A530013C23Rik	Cox20		
Cxxc5	BC051665	Rabggta		
Borcs5	Zfp994	Sox12		
Txndc9	Unk	Akap11		
Ccdc9	Ero1lb	Zfp3		
B3galt4	Slc7a11	Nudt1		
Pdk2	Vrk1	Mir6769b		
Crk	Ccdc87	Rheb		
Gm10941	Mdm1	Ubxn6		
Ncl	Stx2	Lmln		
Srsf5	Nepro	Trmt61a		
Bbip1	Blm	Pdlim7		
Usf1	Nt5c2	Mrpl12		
Alg12	Kcnj16	Zfp787		
Nfe2l2	Rad54b	Slc6a6		
Olfr161	Tbccd1	Mir5128		
Ttf2	A630001O12Rik	Rps15		
Elovl5	Afg3l1	Rpl27		
Ncoa3	Icam2	Bach2		
Mapk14	Dpf1	Simc1		
Pemt	Arhgef28	Fam3c		
Ccnd3	Tjp1	Cdk13		
Map3k7	Zfp608	Slc35f5		
Hmgcs1	Fbxo47	Lypd4		
Ptp4a3	Ankle2	Vdac1		
Nmt1	Ybx3	Zfp787		
Sipa1l1	Ltv1	Samm50		
Cfap46	Zfp521	Paxx		
Uvrag	Tspan15	Ptges3		
Auh	H2afx	Rpl35		
P2rx4	Akap7	Shank3		
Hmg20b	Ints4	Cep83os		
Yes1	Zhx1	Ilf2		
Rap2a	Hspb7	Cnpy2		
Jpt2	Socs7	Dynlrb1		
Btg2	Tmem192	Klrb1c		
Afmid	Glt28d2	Hist1h2af		