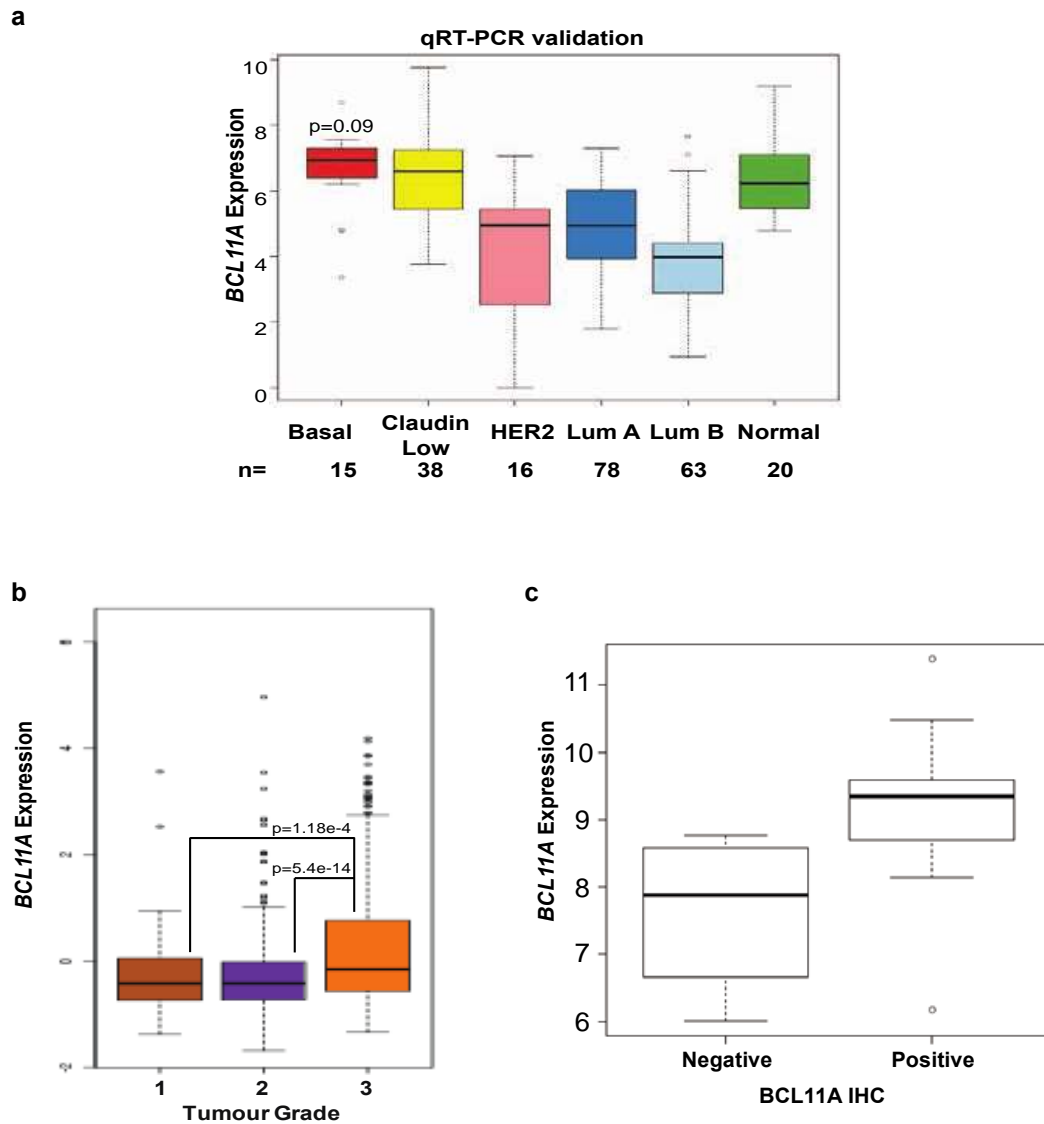


**Supplementary Figure 1. Expression analysis of *BCL11* in various published microarray datasets**

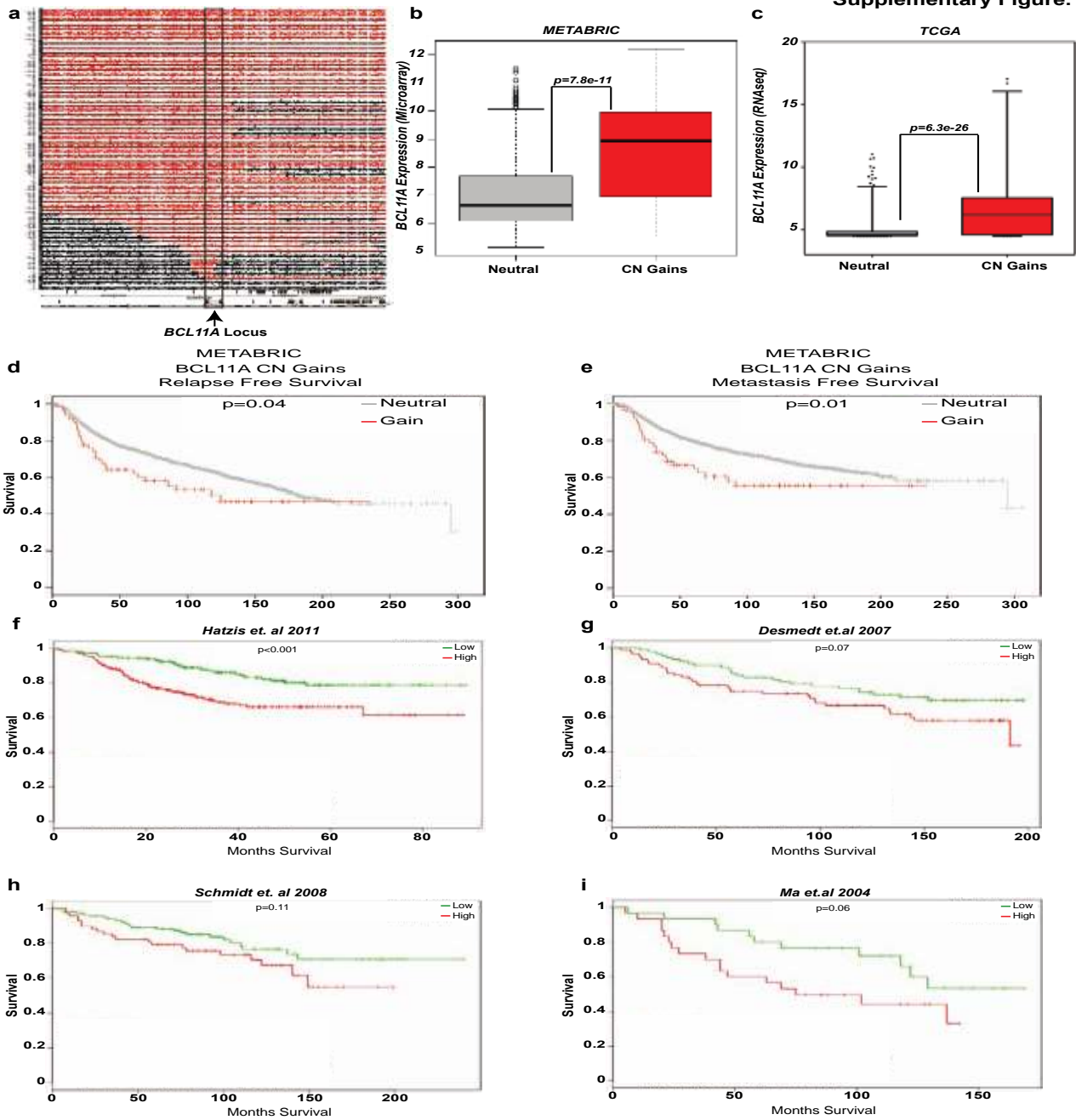
(a) Heatmap showing the expression analysis of a list of selected key hematopoiesis genes in 337 breast cancer patients<sup>6</sup> across different breast cancer molecular subtypes. (b) Analysis of *BCL11A* expression in the six microarray datasets from the ICR ROCK database. Box plots showing high levels of *BCL11A* in the basal subtype of breast cancer. All 6 data sets had *BCL11A* expression called at the basal subgroup and had a q-value less than 0.05.



**Supplementary Figure 2. Systematic analysis of *BCL11A* expression in the METABRIC dataset**

(a) qRT-PCR analysis of *BCL11A* in 230 randomly selected patients from the METABRIC dataset. p-value refers to t-test comparing the Basal subtype vs. all other subtypes. (b) Correlation of *BCL11A* expression and the high clinical grades (1, 2, and 3) in patients from the METABRIC study (c) Correlation between *BCL11A* protein staining and the RNA levels. T-test was performed and the p-values are displayed on each panel.

Supplementary Figure 3

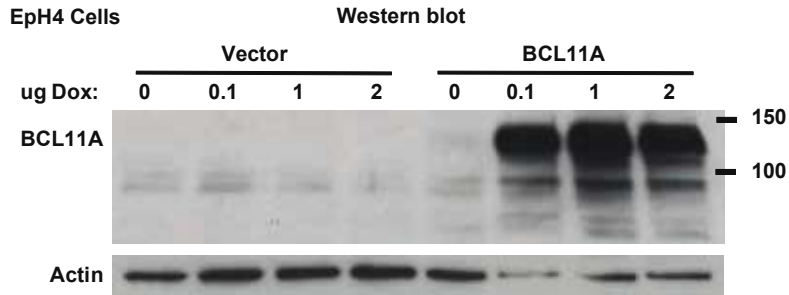


**Supplementary Figure 3. Analysis of *BCL11A* copy number alterations in the METABRIC and TCGA datasets**  
**(a)** Array comparative genomic hybridization (aCGH) plots showing CN gains at the *BCL11A* locus. A minimum region of CN gains can be defined around the *BCL11A* locus. **(b-c)** High *BCL11A* expression in patients with CN gains at the *BCL11A* locus in both the METABRIC and TCGA datasets. T-test was performed and the p-value is displayed on the plots. **(d-e)** Kaplan-Meier plots comparing relapse or metastasis survival rates between patients with *BCL11A* CN gains or those without. **(f-i)** Kaplan-Meier plots depicting the survival of *BCL11A* high vs. low patients in four independent datasets. Data was generated using the ICR ROCK database.

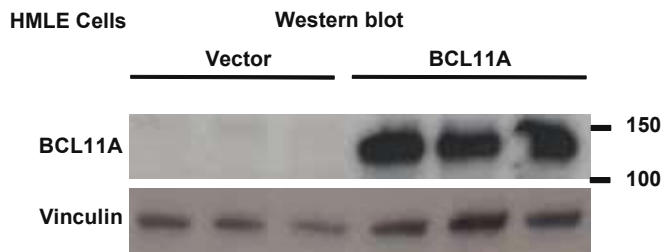
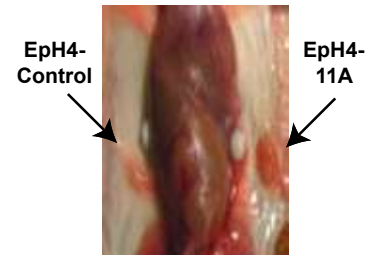
## Supplementary Figure. 4

**a**

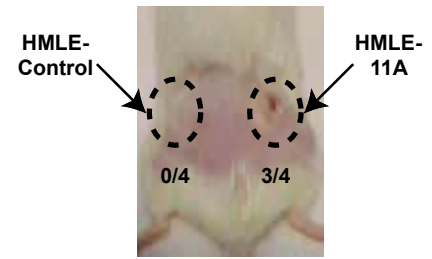
PB-TRE-BCL11A



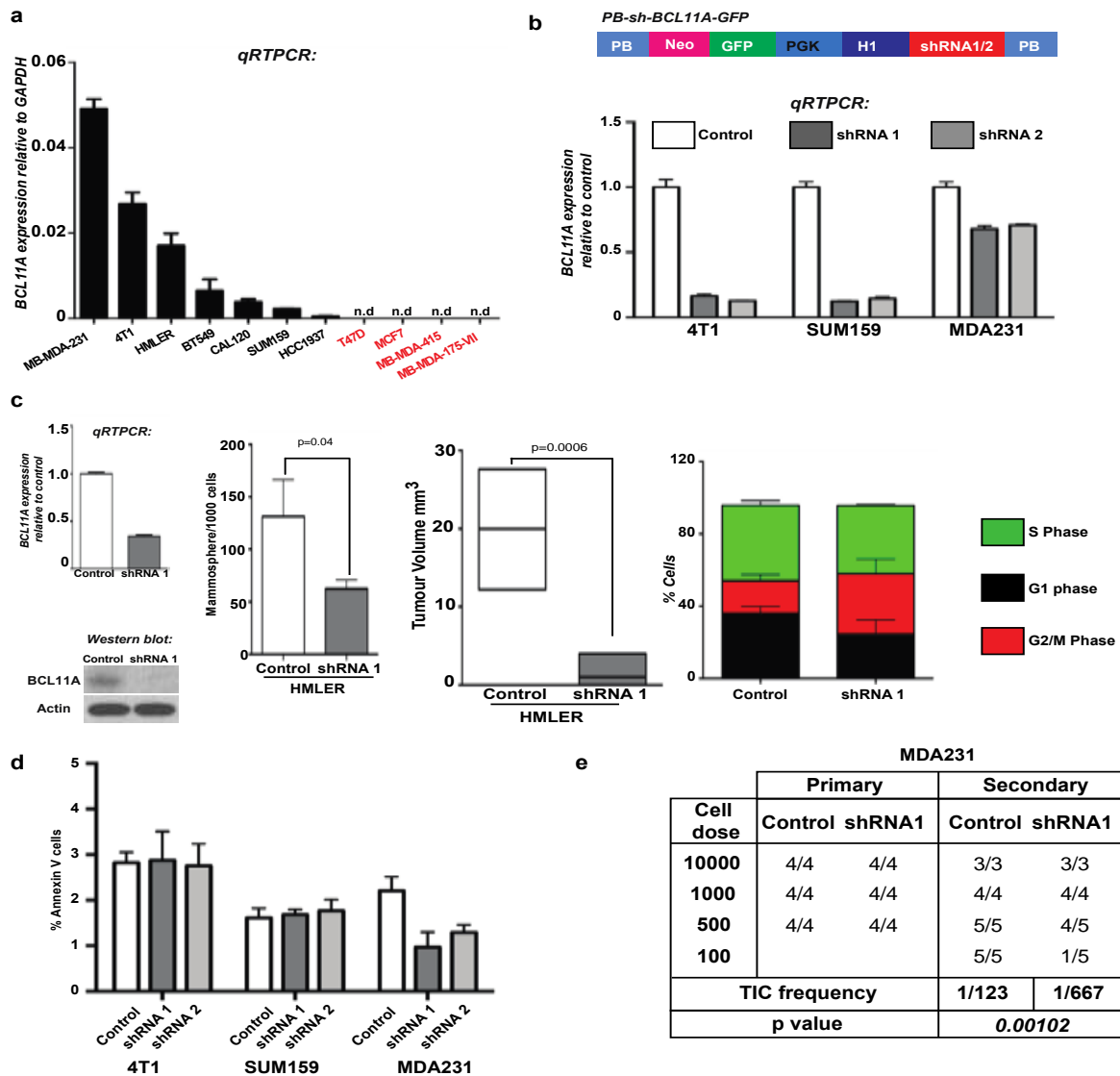
**b**



**c**

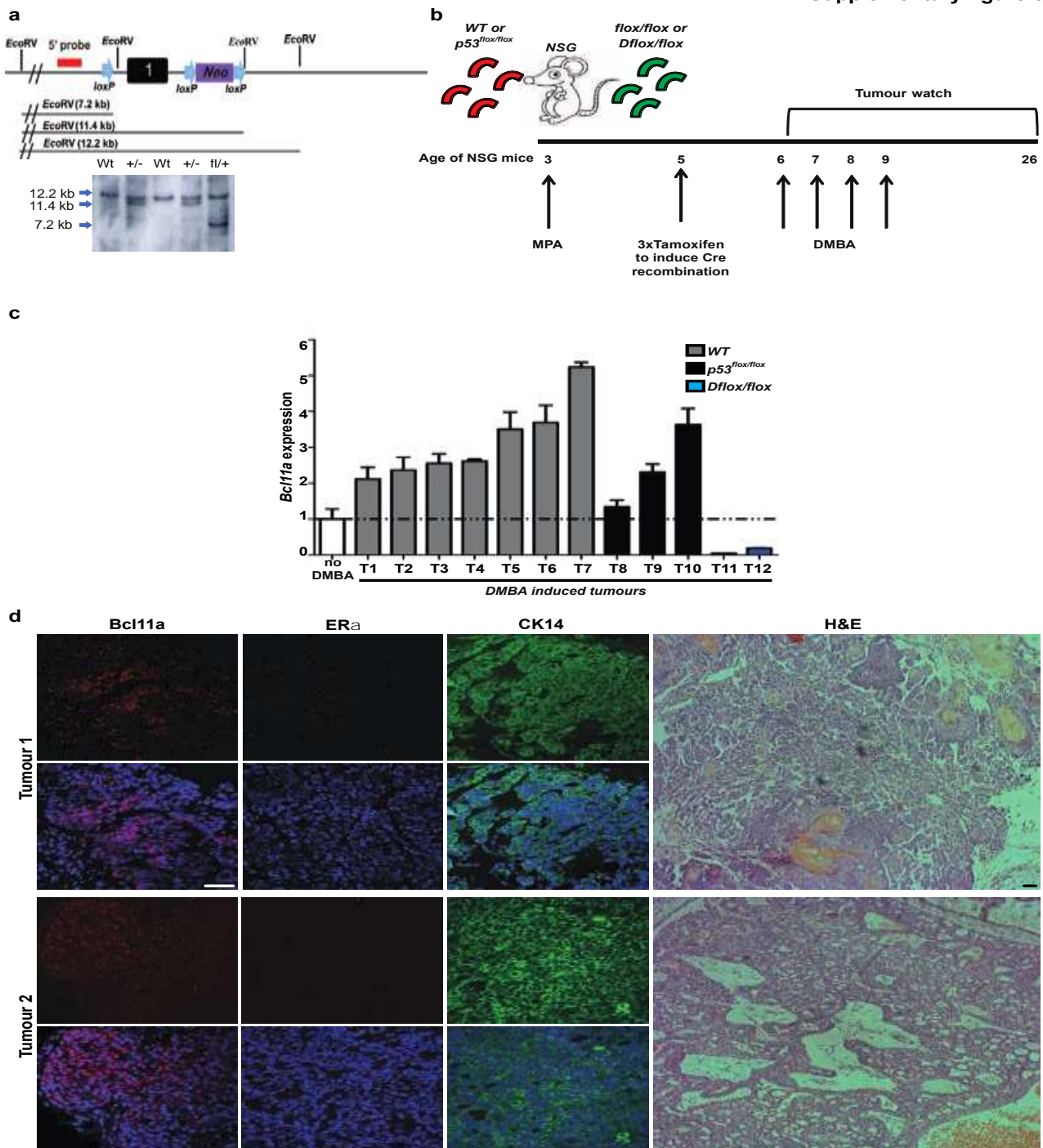


**Supplementary Figure 4. *BCL11A* overexpression promotes colony formation and induces tumour development**  
**(a)** Schematic diagram of the *BCL11A* overexpression vector used in this study. The expression cassette is cloned in a *piggyBac* transposon and is delivered to cells by the *piggybac* (PB) transposition. Western blot shows *BCL11A* transgene expression in EpH4 and HMLE cells. **(b-c)** Images of tumours formed by EpH4-11A and HMLE-11A cells.



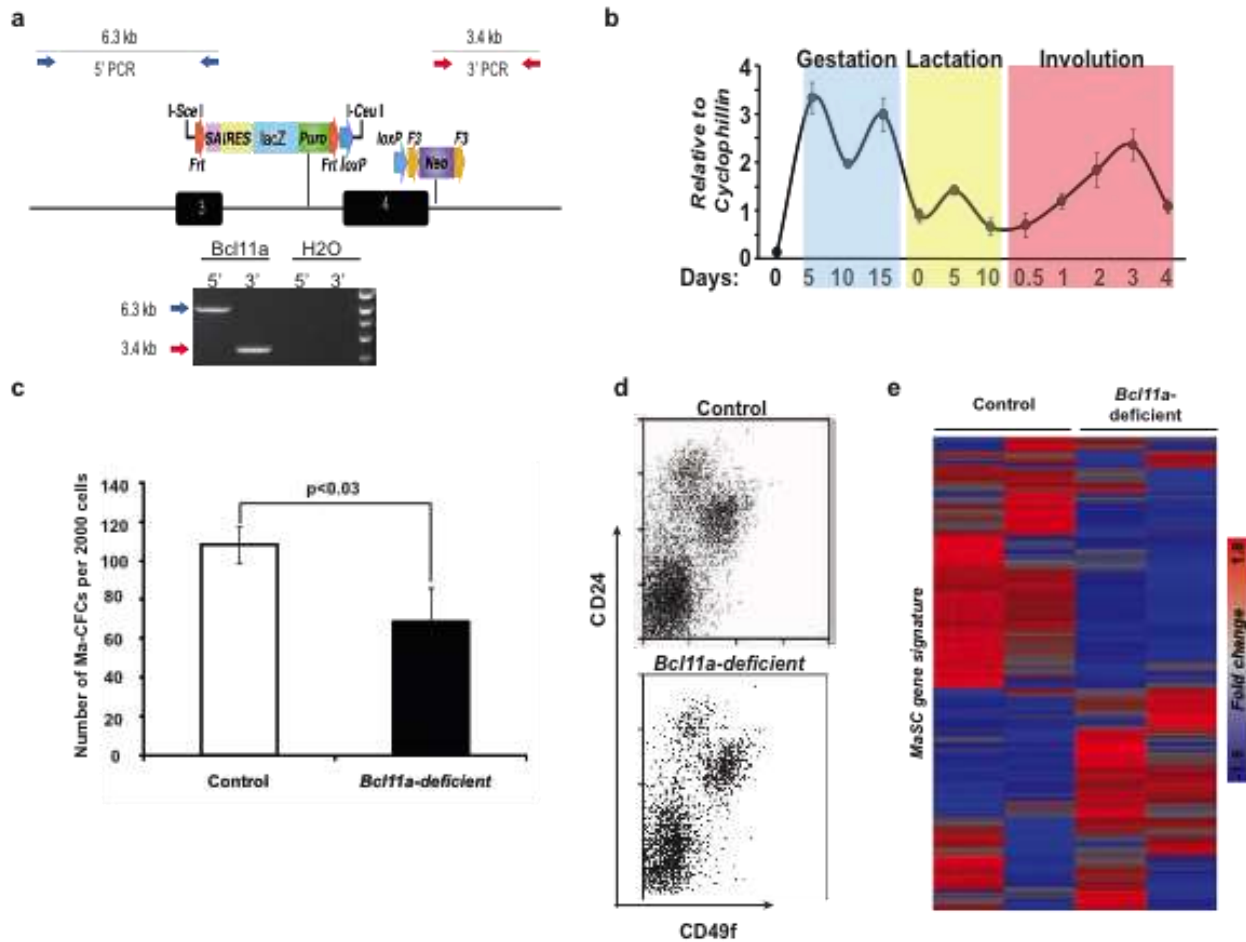
### Supplementary Figure 5. Knockdown of *BCL11A* in breast cancer cells suppresses tumour development

(a) qRT-PCR analysis of *BCL11A* expression in a panel of breast cancer cell lines. The cell lines in black font are TNBC and the cell lines in red font are luminal. n.d. indicates “not detectable”. (b) Top: Schematic of the *BCL11A* shRNA knockdown vector in the PB transposon. Bottom: qRT-PCR on 4T1, SUM159 and MDA231 cells transfected with either the control (Scramble shRNA) or the *BCL11A* shRNA 1 or 2 vectors, Data are presented as mean  $\pm$  SD (n=3). (c) *BCL11A* knockdown efficiency, mammosphere quantification, EdU cell cycle analysis and tumour data from HMLER cells transfected with control and shRNA1 vectors. Data are presented as mean  $\pm$  SD (n=3). (d) Annexin V analysis of control or shRNA cells show that *BCL11A* knockdown has no impact on cell death in tissue culture. (e) Primary and secondary limiting dilution analysis of MDA231 control or shRNA1 cells reveals a reduction in the number of TIC in knockdown cells during secondary transplants. TIC frequency and p-value were calculated using calculated using L-Calc (see methods).



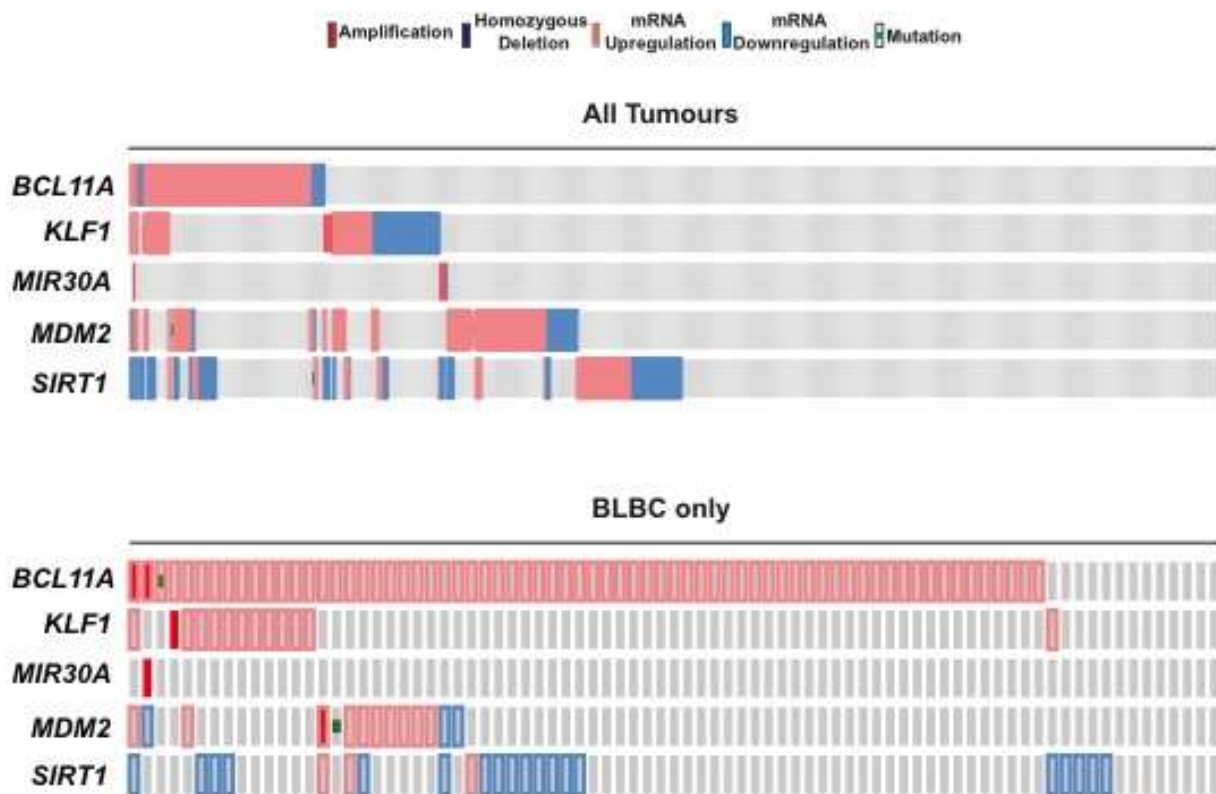
### Supplementary Figure 6. Generation of *Bcl11a* conditional knockout mouse

Schematic diagram of the *Bcl11a* conditional knockout allele used in this study. Exon 1 of *Bcl11a* is flanked by *loxP* sites for deletion. Southern analysis on the right shows detection of the conditional knockout allele in mice. WT: wild type allele. fl: conditional knockout allele. **(b)** Experimental plan for the DMBA/MPA mediated tumorigenesis protocol. Mammary fragments from WT, *flox/flox*, *p53<sup>flox/flox</sup>* and *Dflox/flox* mice were transplanted into cleared fat pads of 3-weeks old NSG mice. At the time of surgery the medroxyprogesterone acetate (MPA) slow-release-pellet was also implanted subcutaneously. The mice were allowed to recover for two weeks and then *Bcl11a* deletion was induced using three injections of tamoxifen. One week after deletion of *Bcl11a*, DMBA was administered orally; this was followed by three further doses of DMBA over three weeks. Mice were then examined weekly for tumour incidence. **(c)** qRT-PCR showing the expression levels of *Bcl11a* in DMBA induced tumours on WT, *p53<sup>flox/flox</sup>* and *Dflox/flox* genetic backgrounds. *Bcl11a* expression is normalised to total mammary epithelial cell expression not treated with DMBA. Data are presented as mean  $\pm$  SD (n=3). **(d)** IHC analysis of two DMBA induced tumours showing positive staining for BCL11A, CK14 and negative staining for ER $\alpha$ . (Scale bar = 40 $\mu$ m)



### Supplementary Figure 7. Expression of *Bcl11a* in mouse mammary epithelial cells

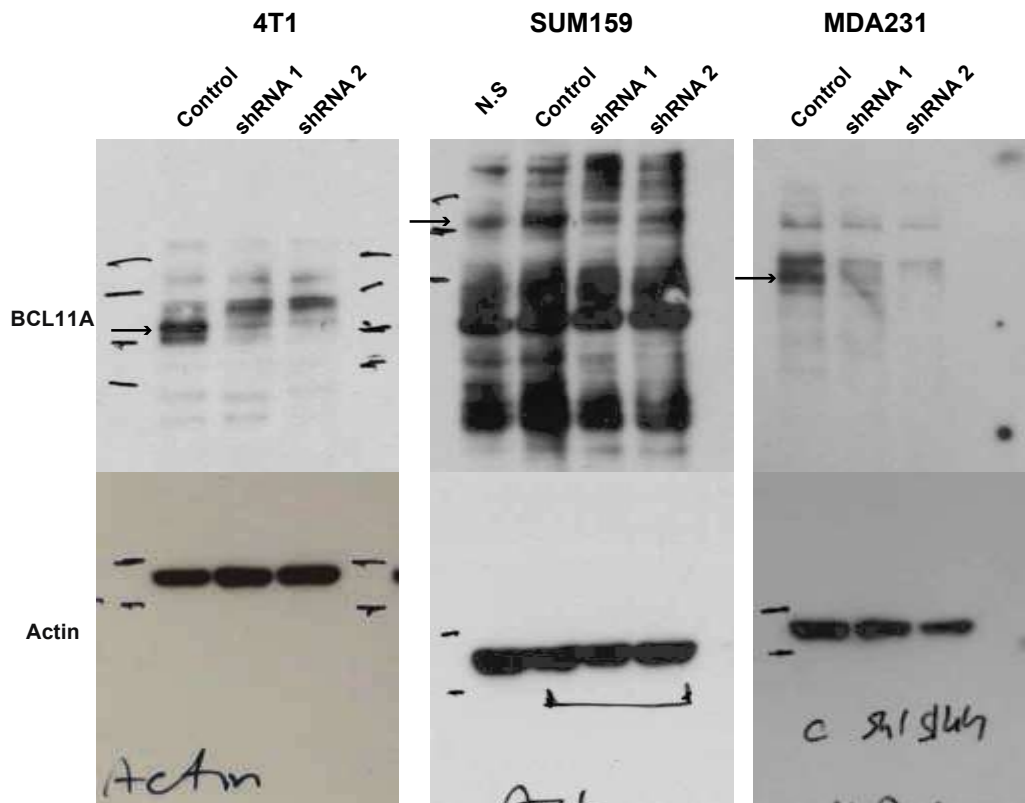
(a) Schematic diagram of the *Bcl11a-lacZ* allele. The SA-IRES-lacZ cassette was targeted to intron 3 of the *Bcl11a* locus. (b) Expression of *Bcl11a* at different developmental stages of mouse mammary gland development detected by qRT-PCR. Data are presented as mean  $\pm$  SD (n=3). (c) Significant decrease of Ma-CFCs upon *Bcl11a* deletion. Error bars denote standard deviation. Data are presented as mean  $\pm$  SD (n=3). T-test was performed and the p-values are displayed on the graph. (d) FACS profiles of the control (*lox/+*) and the mutant (*lox/lox*) mammary epithelial cells one week post tamoxifen injection, the time point at which cells were sorted for the fat-pad transplantation and microarray experiments. Most epithelial cell populations are still present at this stage. (e) Gene expression analysis of *Bcl11a*-deficient MaSCs focusing on stem cell signature genes. The full gene lists are in Supplementary Tables 1. *Bcl11a* deletion in the mouse reduces expression of genes that are normally expressed in stem cells whereas *BCL11A* overexpression upregulates these genes



Supplementary Figure 8. TCGA olncoprint data depicting the lack of correlation between *BCL11A* expression and known *BCL11A* targets and in regulators in other cell types



Supplementary Figure. 9



Supplementary Figure 9. Un-cropped Western blots corresponding to the cropped images in Figure 4a. N.S. indicates a non-specific lane. Arrows indicate BCL11A band.

Supplementary Table 1

Column ID	p-value(KO vs. WT)	Fold-Change(KO vs. WT)
GLYCAM1	0.0115838	1046.9
SYVN1	0.0436103	37.7442
NDRG1	0.0380901	13.5986
ETS2	0.0494484	5.46734
TCFAP2C	0.0163037	4.536
VEGFA	0.00740769	3.2764
LMO4	0.0281296	1.5472
ETF1	0.0402482	1.51407
GSK3B	0.0196512	1.26023
TNFRSF11A	0.00204748	1.22492
MPP6	0.0477028	1.13048
NFAT5	0.0305385	1.0906
MYSM1	0.0254741	1.06206
PDIA3	0.0715047	53.0613
HERPUD1	0.0719123	47.5875
LDHA	0.020959	13.9667
IER3	0.0550579	8.0296
OAT	0.0180899	7.65035
MBNL2	0.0177637	7.63077
HSPA9	0.0493653	6.8779
RN18S	0.0736481	6.08801
2810423A18RIK	0.0591128	5.63919
SLC35B1	0.0371218	5.54558
ALDH1L2	0.0652081	5.3942
H47	0.0615762	4.90228
RPN2	0.0684499	4.45927
SERPINH1	0.0665414	4.39015
PTTG1IP	0.035419	4.28898
PDLIM1	0.0670925	4.11028
MYD116	0.0286962	4.06994
DEB1	0.0496911	4.05518
TMBIM6	0.0195185	3.8657
LOC100041569	0.0710527	3.76456
4732462B05RIK	0.0121286	3.60503
NSEP1	0.0392899	3.33886
LOC666676	0.0331728	3.29366
LOC100042427	0.0704957	3.24452
ATF4	0.0256431	3.22727
VCP	0.0612251	3.10911
DNAJB9	0.0424506	3.04215
GARS	0.0343635	3.02095
LOC677551	0.0748016	3.00498
TMED9	0.0671342	2.9145
D3UCLA1	0.0594446	2.88822
SERINC1	0.0575128	2.8635
LOC673501	0.0292459	2.83348
CYB5R1	0.0519013	2.83232
NPM1	0.0404045	2.78736
KLF9	0.014108	2.74291
MTHFD2	0.0100631	2.68264
LOC100047619	0.0503871	2.64645
CXADR	0.0178336	2.63263
ARL1	0.0416219	2.61082
DDIT4	0.055177	2.53846

TES	0.00207262	2.53139
GNL3	0.0338031	2.49353
BAG1	0.0762813	2.48734
HSPA5	0.0212666	2.42345
MAGED1	0.0748936	2.42273
SURF4	0.0265892	2.42065
LOC632230	0.0630886	2.41706
ATF5	0.0627761	2.36497
TMEM66	0.051648	2.35549
EMP2	0.0753342	2.33577
GTPBP2	0.0792519	2.30018
RAB2A	0.0255304	2.23765
ASNS	0.0257098	2.16522
FRMD6	0.000852198	2.15957
ARRDC3	0.00222955	2.15749
PPID	0.0226155	2.14159
PSMC2	0.0327666	2.13677
4930564D15RIK	0.0176103	2.136
AARS	0.00731448	2.0994
LOC100047184	0.0338157	2.06222
LEPROTL1	0.0388277	2.03284
DAG1	0.0657733	2.0142
UNC5B	0.020868	1.99822
2310016C08RIK	0.0390916	1.93367
CAR9	0.0668378	1.9326
PHF10	0.0307945	1.92007
ZFP131	0.00138053	1.90832
AMOTL1	0.0140476	1.90574
MATR3	0.0662897	1.90277
EIF4A1	0.0630459	1.89525
XBP1	0.0517098	1.845
ANGPTL6	0.067795	1.83673
CLIC4	0.0230876	1.82725
DNAJB1	0.0153923	1.82499
ATP6AP1	0.0628326	1.82357
LSM14A	0.0369352	1.81944
PHF17	0.0250547	1.81786
5430434G16RIK	0.0285426	1.80986
PDAP1	0.00136208	1.79807
PTP4A2	0.0256614	1.79342
5830407P18RIK	0.0696165	1.7851
LARS	0.0358683	1.78468
APP	0.00752626	1.77956
MAP3K7IP2	0.0134131	1.77925
MAPRE1	0.0817428	1.7565
SGPP1	0.0170613	1.73542
EIF1A	0.0198072	1.73532
C230075M21RIK	0.0527679	1.72364
KLF7	0.065102	1.71812
TDE2	0.00853208	1.69764
ACBD3	0.0818107	1.69487
NPC1	0.046168	1.6948
ARPC2	0.0449064	1.68939
CHD7	0.0419693	1.68736
B230350I06RIK	0.00278371	1.6814
ATXN1	0.0459388	1.67093
TMEM11	0.0570433	1.6698
SEPT2	0.0282158	1.66913

EIF5	0.0747865	1.65601
HDLBP	0.0384094	1.63695
RHBDD1	0.0263829	1.62166
CDR2	0.00503554	1.60396
SEC11C	0.0747305	1.60273
SFRS1	0.0118548	1.59675
PDLIM7	0.0662166	1.57859
PLA2G12A	0.0307543	1.57598
SRR	0.0250287	1.57565
YWHAZ	0.00296551	1.57409
SCL0002975.1_346	0.0323048	1.56854
GDF15	0.0175754	1.55388
NFE2L1	0.0380368	1.54195
LOC100044779	0.0429152	1.53997
SLC39A6	0.0514506	1.53002
PALLD	0.0155917	1.52999
ZBTB7A	0.0161306	1.52203
PIGA	0.0424155	1.51847
2310004N11RIK	0.0198673	1.5155
LMAN1	0.0808293	1.49971
TBC1D20	0.0331891	1.49174
SERTAD2	0.0167245	1.48949
LOC385825	0.00967628	1.48925
LOC100040573	0.00297983	1.48685
TRIM39	0.00136037	1.48316
GOT2	0.0788918	1.48068
B230363H02RIK	0.0197226	1.48016
NOL5	0.00090104	1.47976
TRIB3	0.00509689	1.46915
ATP6V1A	0.0156408	1.46387
UBE2L3	0.00718441	1.46192
4833414E09RIK	0.0558558	1.45836
DDX3X	0.0148139	1.45768
LOC386218	0.0801434	1.45513
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CCT4	0.0511784	1.45207
ZFC3H1	0.00199781	1.45182
LOC100041388	0.0332207	1.44971
TRIO	0.0405929	1.43583
PJA2	0.0372816	1.43147
FNDC3B	0.0206864	1.42638
AI450540	0.0112198	1.42455
GHITM	0.0338714	1.42416
SLAIN2	0.0222799	1.42162
ZFP292	0.0634885	1.4214
ACTR3	0.0246466	1.41916
3300001P08RIK	0.0702191	1.4114
AHCYL1	0.0136768	1.40613
RNF11	0.00483154	1.40033
BRD2	0.00235381	1.398
RNF103	0.0798836	1.39745
GORASP2	0.035533	1.39319
AMPD3	0.0430843	1.38945
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MAT2A	0.0186903	1.3806
LOC628101	0.0706715	1.37652
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LOC386005	0.0112833	1.37321
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PHXR4	0.0385397	1.36858
RAP1B	0.0760382	1.36687
C330049H01RIK	0.028841	1.3646
HYOU1	0.0296663	1.3614
DAZAP2	0.0638268	1.361
SEC63	0.0810866	1.36087
CTAGE5	0.0126316	1.36076
4933407C03RIK	0.014583	1.35353
XPOT	0.0574847	1.35342
AARD	0.0385003	1.35306
LOC386021	0.0361196	1.35305
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CDKN1A	0.0451696	1.35016
BC004022	0.02455	1.34862
BTA1F1	0.0145028	1.34695
A530089A20RIK	0.0129494	1.34634
IMP3	0.0667546	1.33763
2810003C17RIK	0.0299259	1.33563
WASL	0.0390466	1.33314
LOC382157	0.0809253	1.33162
LOC632684	0.0142012	1.33152
CCT8	0.00148574	1.32523
BC003940	0.0338723	1.3243
RNF145	0.0564885	1.32331
TMEM68	0.0304339	1.32297
SLC25A33	0.0183183	1.31955
TIMM8A1	0.0359779	1.31748
RASA1	0.0437328	1.31729
LOC100045882	0.00166876	1.31444
RBM13	0.0726117	1.31037
SLC4A7	0.0267135	1.30995
BC030476	0.0480239	1.30921
MCL1	0.00350473	1.30289
STARD5	0.0564875	1.30258
LOC386078	0.0240107	1.30182
MRPL50	0.0196983	1.29935
CALU	0.0662393	1.29437
SUPT5H	0.024837	1.29063
E030027H19RIK	0.0560051	1.28855
FCHO2	0.0821821	1.28372
UBE2O	0.0110508	1.27679
C530050E15RIK	0.00414077	1.27367
ZFP263	0.0661815	1.27175
NAP1L4	0.00343848	1.27164
SEC24D	0.0176635	1.27019
TFG	0.0743444	1.26857
FAM171B	0.016221	1.26728
SCL0004190.1_3	0.0815645	1.26688
5330401F18RIK	0.00885043	1.26512
CCRN4L	0.0314148	1.2631
GNA13	0.0681361	1.25904
C230070D10RIK	0.0228396	1.25894
2700092H06RIK	0.0132383	1.25804
EIF4A2	0.0440495	1.25632

2810403A07RIK	0.0792377	1.25478
LOC385068	0.0347998	1.25456
M6PR	0.0411173	1.25438
C730026J16	0.0254506	1.25402
IQGAP1	0.0381867	1.25247
TRUB2	0.0268411	1.25179
LOC622404	0.0555303	1.24914
SLC38A2	0.0617957	1.24883
2010009J12RIK	0.0321995	1.24539
LOC639931	0.0681379	1.24512
SMEK2	0.0355666	1.24503
SLC39A7	0.0693955	1.24047
LOC100041797	0.0726652	1.23998
GALNT2	0.0618391	1.23923
CCNT1	0.0835955	1.23839
RBM9	0.0113845	1.23562
IRF2	0.0252141	1.23533
0610007L01RIK	0.027303	1.23233
ZFP639	0.0797507	1.23219
SPCS3	0.0763736	1.23184
PNRC2	0.0708981	1.2299
STRAP	0.0779072	1.22911
KCTD4	0.0611754	1.22871
WDR75	0.0408621	1.22818
PTBP1	0.0311989	1.22808
BC031781	0.0164027	1.228
AHCTF1	0.015383	1.22675
NRD1	0.0514927	1.22529
6720458F09RIK	0.0468486	1.22383
TSHZ1	0.069827	1.22379
RCOR1	0.041274	1.22339
PIP5K1A	0.0186022	1.22155
GPT2	0.0748073	1.22075
THYN1	0.0655867	1.22057
TFRC	0.0532706	1.21564
D130077B20RIK	0.0109502	1.21515
KRT15	0.0585891	1.21381
AHI1	0.00183642	1.21276
HNRPM	0.0637759	1.21228
D2ERTD391E	0.0240117	1.20955
1500001L15RIK	0.0639766	1.20918
NKTR	0.0140592	1.20829
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ELAVL1	0.0172692	1.20464
2310007O11RIK	0.0460993	1.20272
C630030A18RIK	0.0199023	1.20201
SILG111	0.0372419	1.20169
5330403J18RIK	0.0298877	1.20167
EIF2S2	0.00033657	1.20002
5031436O03RIK	0.0183185	1.19835
ZC3H18	0.00157172	1.19821
CCND2	0.0644247	1.19487
SIAH1A	0.0120281	1.19486
DDX1	0.0311899	1.19378
WFS1	0.0802049	1.19072
RRP1B	0.000245274	1.18898
5033413D16RIK	0.0418341	1.18759
LOC216443	0.0248742	1.18638

2810407C02RIK	0.0450203	1.18534
RBMS1	0.0840315	1.18378
G3BP2	0.0301857	1.18185
GAPVD1	0.00752808	1.18162
AI314180	0.0293066	1.18042
RAB1	0.00496573	1.17871
PTK2	0.00826469	1.17834
PRDM2	0.00218927	1.17676
PPP3CA	0.0622103	1.17667
E130318A13RIK	0.0418311	1.17635
VPS54	0.0486565	1.1739
4930461P20RIK	0.0349111	1.17198
LOC100044376	0.00341812	1.17196
BRD3	0.0747018	1.17169
CCNL1	0.0631192	1.17048
ISCA1	0.011329	1.17023
2310051N18RIK	0.0199717	1.16994
SERBP1	0.0747354	1.16993
ZFP148	0.00421232	1.16921
CBFB	0.0423377	1.16825
NIPBL	0.0775885	1.16788
ANKHD1	0.0535946	1.1668
TUT1	0.0412818	1.16578
DOKIST3	0.0368873	1.16573
YTHDF1	0.0067695	1.16571
RAP2C	0.020734	1.16486
CRIM1	0.0452301	1.16442
ZRANB2	0.076342	1.16164
DHX15	0.0265177	1.16135
9630032J03RIK	0.0505558	1.1606
NPM3	0.0697828	1.16042
LOC386360	0.0116986	1.15903
ZXDA	0.011716	1.15806
USO1	0.079429	1.15804
EDNRB	0.0783654	1.15758
NFKBIZ	0.00904545	1.15578
PDPK1	0.0167721	1.15258
RSL1D1	0.076662	1.15257
D0HXS9928E	0.0842822	1.15164
ARHGAP17	0.0294607	1.15102
6720477C19RIK	0.0229761	1.15086
HTATSF1	0.0272365	1.1508
ARL8B	0.0690676	1.1506
OSR1	0.0834256	1.15047
5430417L22RIK	0.068416	1.14985
ARMCX1	0.0772276	1.1495
NOL14	0.026541	1.14929
LOC100046817	0.0124591	1.14927
DUSP4	8.96E-05	1.14755
IER3IP1	0.0688004	1.14712
5830406C17RIK	0.00401435	1.14629
EIF3A	0.0218889	1.14609
SCL0002315.1_12	0.0177747	1.14443
CHKA	0.0650491	1.14417
A730098D12RIK	0.0779526	1.14376
LOC100039607	0.00241932	1.14318
USP39	0.0569984	1.14268
2310037I24RIK	0.0444974	1.14155

ERO1LB	0.077709	1.14148
9130011J15RIK	0.0189891	1.14009
1110001P04RIK	0.0453299	1.13963
C80913	0.0397766	1.13957
LHFPL2	0.00565402	1.13951
RARS	0.0517262	1.13944
TAF15	0.0183504	1.13828
ARF2	0.0294974	1.13793
HS3ST3B1	0.0147083	1.13789
HSPB6	0.063335	1.13767
IGF1R	0.0342507	1.13723
ZWINT	0.0178771	1.13716
DDX26	0.0565768	1.13707
TCOF1	0.000350485	1.13674
SYNCRIP	0.00465206	1.13632
SRA1	0.0274233	1.13592
EXOSC1	0.0742061	1.13542
2610101N10RIK	0.0696579	1.13475
LRRC59	0.0382503	1.13446
MED26	0.0680082	1.13396
9430008C03RIK	0.0582019	1.1334
ODZ2	0.0347469	1.13332
HSPD1	0.0452864	1.13326
5730494N06RIK	0.0449191	1.13323
C730026O12RIK	0.0175504	1.13283
CEBPG	0.0496107	1.13272
FASTKD5	0.0758444	1.13185
A630082K20RIK	0.0357983	1.13167
ANP32E	0.0325609	1.13074
UCK2	0.0531995	1.13025
ENSMUSG00000074075	0.0201671	1.12988
AI115600	0.0277822	1.12979
2610020C11RIK	0.000704179	1.12815
LUC7L	0.0288471	1.12813
TCERG1	0.0213594	1.12789
TMEM63B	0.0426256	1.12717
TMEM97	0.0820599	1.12695
2510012J08RIK	0.0357656	1.12599
C330006D17RIK	0.0100217	1.12585
TSSC8	0.000886579	1.12526
5730405I09RIK	0.0188509	1.12477
CCDC86	0.0377796	1.1245
A730021C13RIK	0.00382688	1.12422
RUVBL2	0.0712747	1.12405
C530036F05RIK	0.0196028	1.1235
PATL1	0.0163141	1.12188
ASCC2	0.0486624	1.12146
RABGEF1	0.0801622	1.12093
LOC100043821	0.0546252	1.12046
DAD1	0.0594016	1.12043
1110029L17RIK	0.0522243	1.12016
NAPB	0.00310464	1.11972
A630056H20RIK	0.00647165	1.1182
ZDHHC21	0.014315	1.11806
B230387C07RIK	0.065464	1.11801
HUWE1	0.00631252	1.11755
YTHDF2	0.0654789	1.11729
HS3ST3A1	0.0702617	1.11542



JMJD3	0.0721425	1.11507
B230386D16RIK	0.0425729	1.11471
EPHB1	0.0668196	1.11469
D17WSU104E	0.0707713	1.11332
6030458P06RIK	0.00714127	1.11265
6430540M20RIK	0.0111407	1.11225
EPRS	0.0786996	1.11167
LOC100044172	0.0372759	1.11084
C230043G09RIK	0.078572	1.11078
AFTPH	0.0523372	1.11065
DDX26B	0.0623933	1.1106
EIF3S8	0.0705829	1.11022
ANKRD11	0.0123771	1.10995
E330027P06RIK	0.0549151	1.1091
UBE2E2	0.0120468	1.10895
TCP1	0.0375911	1.10852
PGRMC2	0.00119574	1.10808
CREB5	0.0396605	1.10759
C330023M02RIK	0.043827	1.10732
DUSP11	0.0514681	1.10725
HSD3B2	0.0775332	1.10725
2010007K12RIK	0.0211633	1.1072
SPG20	0.000575066	1.10685
B930011A14RIK	0.0550849	1.10608
TESK1	0.0707215	1.10562
RAB33B	0.0340133	1.10519
ABI2	0.0079958	1.10445
2610528B01RIK	0.0253706	1.10396
HECTD1	0.00818801	1.10326
A930004J17RIK	0.0229614	1.10288
SARS	0.0487723	1.10286
9330180L10RIK	0.0632532	1.10277
B230208H17RIK	0.000493433	1.10221
PUM1	0.0500008	1.10197
UBE4B	0.0692614	1.10179
CSNK2A1-RS3	0.0470877	1.10164
NHLRC2	0.0171242	1.10163
MSH6	0.0615565	1.10093
ATG2B	0.0296601	1.1009
R3HDM1	0.0496784	1.10087
2410002F23RIK	0.063688	1.10038
IPO5	0.014224	1.10025
B230213E18RIK	0.0757012	1.10015
FOSL2	0.0744274	1.10006
GOLGA3	0.0311349	1.0995
PRKRIR	0.0656386	1.09945
CHUK	0.0107028	1.09882
CSDA	0.00489669	1.09855
LRRC28	0.0111325	1.09767
UGP2	0.0154432	1.09734
SULT1A1	0.0807816	1.09699
STT3A	0.0390678	1.09677
MFAP1B	0.0630782	1.0963
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BBX	0.0175432	1.09498
MAST2	0.06025	1.09484
SCL0004020.1_31	0.0148467	1.09471
SEC31A	0.073395	1.09456

ADAM9	0.00513106	1.09436
SSFA2	0.041822	1.09428
ARL5B	0.0667491	1.09393
CLDND1	0.0108185	1.09373
FAM129A	0.0348774	1.09366
HMGB2L1	0.00937019	1.09349
RIOK1	0.0140593	1.09335
LOC640972	0.0832942	1.09283
LOC100046891	0.0812128	1.09249
4933432B13RIK	0.0117666	1.09242
TAF13	0.000345728	1.09228
SAR1A	0.0236314	1.09222
VGLL4	0.0278014	1.09182
6430562A12RIK	0.00578776	1.09131
EIF4EBP2	0.0277484	1.09105
GRPEL1	0.0701818	1.09039
PA2G4	0.0125248	1.09005
C730046C01RIK	0.012863	1.08987
LOC100046483	0.0207642	1.08967
TMEM93	0.0306805	1.08955
ANKRD49	0.0473284	1.08927
2410016O06RIK	0.00832156	1.08904
LOC100041567	0.000224179	1.08902
2310079P03RIK	0.0584297	1.0882
A530082L16RIK	0.0103266	1.08792
UBQLN1	0.0471097	1.08737
TXNDC12	0.0595766	1.0868
SFRS4	0.0433524	1.0865
GATAD2B	0.0554915	1.0863
SCL0002785.1_49	0.0471539	1.08518
LOC100046841	0.0590711	1.08487
PLAA	0.0225664	1.08363
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MAPK6	0.0790551	1.08315
A130039H09RIK	0.0285578	1.08292
LIMS2	0.0615164	1.08274
ARPC5L	0.0765401	1.08235
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A430096A09RIK	0.00350776	1.08119
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GBE1	0.0319895	1.08042
1810055E12RIK	0.0441545	1.08042
SHC1	0.0666061	1.08021
MTERFD1	0.0527988	1.08008
LOC545056	0.0132827	1.07997
SACM1L	0.0335637	1.07991
PEX11A	0.0148735	1.07977
STXBP3	0.0756435	1.07938
BIRC2	0.0217221	1.07915
CASC3	0.00822219	1.07901
BIRC1CL	0.0814493	1.0788
CDC2L5	0.0299354	1.07863
PAPPA	0.0711519	1.07862
9630021O20RIK	0.0583959	1.07792
9130005N14RIK	0.0336476	1.07789
TNS1	0.00669315	1.07743
HPBRII4	0.0632245	1.07742

NDUFA10	0.0676991	1.07718
WIPF2	0.00223778	1.07711
DCUN1D5	0.000731884	1.07705
ATG16L1	0.0580533	1.07681
TLK2	0.0576693	1.07576
ARMCX3	0.0327027	1.07515
NAMPT	0.0413757	1.07497
HAX1	0.0734338	1.07483
A130047F11RIK	0.0588331	1.07463
OSBP	0.061821	1.07443
HYAL1	0.0495127	1.07442
9530062M13RIK	0.0511659	1.07433
BAG2	0.0215762	1.07421
LUC7L2	0.076081	1.07381
NCRNA00117	0.0713186	1.07371
PARD6A	0.0519627	1.0735
FIN14	0.0222183	1.07332
MTAP1B	0.000913543	1.07327
LOC100047794	0.0668872	1.07276
DTNB	0.0316582	1.07205
RRP12	0.0291556	1.07188
GDF10	0.0306525	1.07169
1110007M04RIK	0.0611767	1.0715
LOC100047323	0.0543415	1.07135
BCAT2	0.0442628	1.07116
LOC381739	0.0431577	1.07048
9130422G05RIK	0.0336779	1.07006
BAG5	0.0239648	1.06932
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CNOT4	0.033067	1.068
LOC100048645	0.0121439	1.06782
LOC386246	0.0559469	1.06756
DDX27	0.083415	1.06754
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IMPAD1	0.0410716	1.06632
ECEL1	0.0550143	1.06622
EG433182	0.0270497	1.06614
EP300	0.0646713	1.06583
LOC100044566	0.0292019	1.06561
PREP	0.0793014	1.06558
RAD23B	0.00797853	1.06512
9130020K20RIK	0.0442333	1.06511
LOC100047419	0.0492304	1.06462
SLC25A39	0.0319843	1.06453
D330001F19RIK	0.00883507	1.06437
TOR1B	0.0261033	1.06422
IL6ST	0.0525715	1.06369
AUTS2	0.00161096	1.0634
D230047F17RIK	0.021436	1.06339
AI847670	0.0554138	1.06326
A130004B21RIK	0.028701	1.06324
2810008M24RIK	0.00928179	1.06291
GOLGB1	0.045854	1.06263
IDE	0.0627551	1.06249
COG8	0.073108	1.06246

LOC100046343	0.0127738	1.06243
APH1B	0.0262149	1.06217
C230055K21RIK	0.00449773	1.06205
9530005P22RIK	0.0718825	1.0618
NIBAN	0.0802005	1.06174
COBLL1	0.0668264	1.06157
FAM168B	0.0466494	1.06152
ADORA2B	0.0206988	1.06098
KIF3A	0.067353	1.06088
9630005B22RIK	0.0134901	1.06071
CDH23	0.0101631	1.06068
6430510M02RIK	0.0455131	1.06064
PURB	0.0279173	1.06061
LOC671878	0.0122314	1.06028
SNUPN	0.0749016	1.05986
LEO1	0.0505432	1.05982
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PAPOLA	0.00101661	1.05934
USP33	0.0446985	1.05919
CREB3L2	0.0834707	1.05916
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ZFYVE20	0.0401408	1.05877
9030425E11RIK	0.0416945	1.05869
LIN54	0.0566464	1.05848
XAB1	0.0598041	1.05838
TXNDC13	0.0319223	1.05765
WHSC2	0.0392252	1.05741
D230046F09RIK	0.0334314	1.05736
TRNT1	0.0274379	1.05701
ADAMTS18	0.0474681	1.0567
TGFBR1	0.00888551	1.05651
4921506J03RIK	0.0144873	1.05613
HIGD1A	0.0150046	1.056
TTC14	0.000316498	1.05591
SFRS11	0.0844056	1.05542
ZC3H6	0.0156883	1.05531
PK3	0.0805574	1.05529
BAT2D	0.0845103	1.05524
TNPO3	0.00544093	1.05498
4921513D23RIK	0.0627338	1.05493
ZMIZ1	0.038093	1.05483
CHD1	0.0249425	1.05466
NOL8	0.0216216	1.05456
VAMP2	0.0447594	1.05436
MLL3	0.0192111	1.05431
FOXJ3	0.00516726	1.05422
LOC383077	0.00816754	1.05408
DDX50	0.060691	1.05387
A930007B11RIK	0.00593028	1.05361
GMPPB	0.0758665	1.05352
SLTM	0.0363391	1.05342
OXR1	0.0318853	1.05327
KCNN1	0.0734885	1.05323
MIST1	0.0575795	1.05313
B3GALNT2	0.072001	1.05306
SRPRB	0.0409259	1.05304
9330177P18RIK	0.0558781	1.05296
NCOR1	0.0267168	1.05278

ARL10C	0.0358503	1.0527
CREBBP	0.0606916	1.05265
NXF1	0.0447015	1.05252
LOC386144	0.0552565	1.05211
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A430023D23RIK	0.00896896	1.0517
6430548O12RIK	0.0636226	1.0515
4931403I22RIK	0.00562659	1.05142
A330084H10RIK	0.00135936	1.05137
TMEM57	0.0288484	1.05125
CDC14B	0.055966	1.05088
RAB40C	0.0568365	1.05077
A530025E09RIK	0.0227938	1.05071
ZFP180	0.00726798	1.05055
GOLGA4	0.0341208	1.05054
2610319H10RIK	0.0750431	1.05047
BHLHB8	0.0773172	1.05043
1110001C20RIK	0.0554894	1.05019
CHK	0.017706	1.05016
USP16	0.0543123	1.04964
RAB5B	0.00669928	1.04953
XPO6	0.0399919	1.0494
TPD52L2	0.000788565	1.04934
DIS3	0.0435882	1.04905
A730086L23RIK	0.000937123	1.04903
UQCRB	0.0490721	1.04898
4833444G19RIK	0.0285489	1.04895
BC016608	0.0641053	1.04894
2610207I05RIK	0.00538366	1.04892
ARFGAP3	0.0222861	1.04887
ZRANB3	0.0737259	1.04828
PIAS1	0.0393118	1.0482
CWF19L2	0.00351195	1.04798
LOC219106	0.0371972	1.04795
XPNPEP3	0.0435422	1.0478
STK40	0.0313008	1.04779
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SWAP70	0.0704615	1.04758
5830431A10RIK	0.0337864	1.0475
PLEKHA3	0.012946	1.04745
RWDD4A	0.00811141	1.04738
AMMECR1L	0.0689945	1.04706
ARCN1	0.067398	1.04694
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LOC100047762	0.0386644	1.04632
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SEMA3C	0.033918	1.04593
TARS	0.0144493	1.04587
GIGYF1	0.059949	1.04582
STARD3NL	0.0269799	1.04581
1110007L15RIK	0.0527111	1.04579
GTF2E1	0.0587876	1.04578
NRF1	0.0323685	1.04564
USP36	0.000324605	1.04558

SOS2	0.0709155	1.04556
5430440L12RIK	0.0451831	1.0454
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DNAJC1	0.044571	1.04518
NAT12	0.0621189	1.04517
SBF1	0.0334752	1.04497
HEG1	0.024587	1.04492
ERN1	0.05001	1.04464
PRKX	0.0496579	1.04457
LOC382128	0.0566627	1.04413
IBTK	0.0718751	1.04343
UBE2D3	0.0768009	1.04338
LOC233771	0.047641	1.04332
ZBTB38	0.00591782	1.04275
ZFP143	0.053251	1.0425
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FARSA	0.0357447	1.0423
ZFP318	0.0407883	1.0422
D630041L13RIK	0.0699446	1.0422
FOXP1	0.0065887	1.04187
VMN2R-PS14	0.0530873	1.04185
PCYT1A	0.0154448	1.04169
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LTV1	0.0532955	1.04063
ZUBR1	0.0133611	1.0406
LOC386270	0.00299238	1.04052
H13	0.0342683	1.04043
C87860	0.0375579	1.04042
VHL	0.0786351	1.04018
ZFP655	0.0579708	1.03994
TMEM23	0.0155357	1.03992
CSNK1G3	0.000183637	1.03991
BRPF1	0.0725568	1.03989
POGK	0.0346007	1.03976
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STK39	0.0567904	1.03971
BC038156	0.0168926	1.03966
A230067E15RIK	0.0560517	1.03949
FERT2	0.0656079	1.03945
KCMF1	0.0719232	1.03943
GNL2	0.00931313	1.03939
9630015D15RIK	0.052709	1.03933
MAP2K1	0.0497732	1.03927
4832404P21RIK	0.00313548	1.03921
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AFF4	0.0445214	1.03909
E130016E03RIK	0.0306483	1.03908
1600021P15RIK	0.000885614	1.03907
1700109H08RIK	0.0049231	1.03905
5730455O13RIK	0.0772817	1.03887
4921505C17RIK	0.00343175	1.03883
N6AMT1	0.0440464	1.03881
TXNRD3	0.0307985	1.03867
A730004F22RIK	0.00489134	1.03864
B930046C15RIK	0.0449461	1.03861
ZSWIM1	0.0318779	1.03853
MYST4	0.071996	1.03829
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SEC61A	0.0351235	1.0379
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CPEB2	0.0103482	1.03776
MORC3	0.00248511	1.03763
RALGPS1	0.0834656	1.0376
ZMAT3	0.0409881	1.03753
EHBP1L1	0.0387732	1.03739
CSE1L	0.00181102	1.03737
MAPK1IP1	0.0099415	1.03733
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2310045K21RIK	0.0210109	1.03717
A330017A19RIK	0.0226348	1.03696
B230345P09RIK	0.0768838	1.03684
IL6RA	0.0376357	1.03674
MASP2	0.0464832	1.03651
2010203O07RIK	0.058147	1.03651
SRFBP1	0.0311329	1.0365
RAI1	0.0127066	1.03646
C230009C22RIK	0.0194253	1.03636
LOC240672	0.0827984	1.03634
C230064E07RIK	0.0502024	1.0363
6030458C11RIK	0.00223868	1.03629
MARK3	0.0554764	1.03624
FBXO42	0.0172887	1.03621
3632431M01RIK	0.00223541	1.03613
9330171D12RIK	0.0433417	1.03604
SLC25A16	0.0117659	1.03595
ERGIC2	0.0663396	1.03586
5530401J07RIK	0.034997	1.0358
MOSPD1	0.081935	1.03568
NARG1L	0.00182543	1.03566
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MADH1	0.0775623	1.03558
RBM26	0.014438	1.03556
A830006J06RIK	0.000786775	1.03537
IKZF5	0.0486748	1.03532
RPP38	0.0485561	1.03531
ALKBH	0.0658259	1.03521
AI551093	0.0359483	1.0352
1810073N04RIK	0.0533558	1.0352
EIF4ENIF1	0.0823625	1.03508
ING2	0.0185592	1.03499
5730564L20RIK	0.0270008	1.03499
2810405J23RIK	0.036068	1.03499
DDX3Y	0.0444172	1.03498
PRMT5	0.0129732	1.03495
THSD4	0.0446834	1.03481
DYSF	0.00258272	1.03472
SKI	0.0351318	1.03442
D230020C06RIK	0.046518	1.03439
D130059P03RIK	0.046096	1.0343
8030474H12RIK	0.0451872	1.03408
USP1	0.0374506	1.034
4933417E08RIK	0.0830951	1.03399
EIF2C2	0.0627086	1.03394
NRIP2	0.0566495	1.03391
D430035B07RIK	0.00876015	1.03387

3230401L03RIK	0.0726835	1.03371
3110038B19RIK	0.0259348	1.03357
ZC3H13	0.0356374	1.0333
2310032M22RIK	0.0345063	1.03329
ZFP91-CNTF	0.0231234	1.03327
SLC31A1	0.051535	1.03327
9130215G10RIK	0.0479315	1.03324
MAGOH	0.0350338	1.03312
2210417D09RIK	0.0128371	1.03308
C030048B08RIK	0.0174142	1.03287
SMURF1	0.0476468	1.03264
LOC100045040	0.0680264	1.03261
RARRES1	0.0328031	1.0326
4432404P07RIK	0.00297719	1.03257
GPLD1	0.0849321	1.03256
CUL5	0.0222698	1.03244
4733401O04RIK	0.0526338	1.03237
WHSC1	0.0298223	1.03219
TAF1A	0.0510136	1.03214
LOC386199	0.0560143	1.03213
G0S2	0.00969458	1.03204
LOC624198	0.0132218	1.03156
6030419I20RIK	0.0408862	1.03153
ICK	0.0496261	1.03148
PRPF8	0.0637097	1.03146
RASD2	0.0419723	1.03139
OGFRL1	0.0231435	1.03138
FUBP1	0.0306875	1.03133
A530021E08RIK	0.0459492	1.03131
ADRBK2	0.0658923	1.0313
PUM2	0.0284171	1.03125
KANK1	0.0133565	1.03119
UBFD1	0.0766715	1.0309
E530004K11RIK	0.0060592	1.03085
NARG1	0.0272428	1.03079
9130416J18RIK	0.0270334	1.03078
ELAC1	0.0284949	1.03063
E130112J05RIK	0.0187418	1.0304
8430415N23RIK	0.055509	1.03036
GDAP10	0.0216499	1.03034
ATF2	0.0561052	1.03033
TRMT2A	0.034538	1.03024
NSUN2	0.0615544	1.03022
D7ERTD413E	0.0255057	1.0301
MAPK8	0.0346151	1.03009
4930402E16RIK	0.0304574	1.02996
B230380D07RIK	0.0551239	1.0299
NECAP1	0.0429851	1.02988
C230066H01RIK	0.0120474	1.02983
PIAS4	0.0747519	1.02966
SPRR1A	0.046188	1.0295
PDXDC1	0.058757	1.02925
D830050E09RIK	0.0815636	1.02912
C030034J23RIK	0.0311329	1.02851
VBP1	0.0477297	1.02843
UBR2	0.0599329	1.02843
C430045L21RIK	0.0304945	1.02841
RAB22A	0.041827	1.0284



RRN3	0.0239163	1.02836
6030434H13RIK	0.0126445	1.02833
4932441K18RIK	0.00707956	1.02818
CDK8	0.0432287	1.02814
5830418G11RIK	0.0621709	1.02808
CHERP	0.0129765	1.02799
COQ5	0.0131071	1.02798
ZFP770	0.0660223	1.02793
RAB7	0.0284928	1.02789
CD3EAP	0.0393296	1.02777
TRB	0.00435373	1.02762
ZFP91	0.0288366	1.02759
MARCH6	0.0824744	1.02758
WHDC1	0.00551647	1.02755
CYLD	0.0724443	1.02752
B130008D24RIK	0.0466695	1.02749
9630009A08RIK	0.0278855	1.02707
BDNF	0.00171452	1.02705
5730403B10RIK	0.0197516	1.02687
ZBTB39	0.00488301	1.02684
PLCXD1	0.019326	1.02681
SPAG9	0.0391539	1.02664
ANXA11	0.074733	1.02651
VPS18	0.0111112	1.02649
2610015J01RIK	0.0328914	1.02648
2410042D21RIK	0.0439135	1.02648
LOC381243	0.0482481	1.02643
5330435L01RIK	0.0487007	1.0264
1810007M14RIK	0.030571	1.02639
TASP1	0.0274129	1.02637
TOP3B	0.0540368	1.02634
PLEKHM1	0.0237698	1.02632
MOBK1B	0.0726419	1.02622
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A430089I07RIK	0.00494493	1.02602
GALNT11	0.0344969	1.026
PTRH2	0.0309781	1.02599
NPHP3	0.0338131	1.02593
A430083I17RIK	0.0790942	1.02579
KITL	0.0210403	1.02578
LOC100048020	0.027238	1.02577
FBXO30	0.0122246	1.02575
4732471D19RIK	0.0367326	1.02566
NPTX2	0.0183101	1.02556
TPP2	0.0258527	1.02553
2700024H10RIK	0.0362638	1.02545
ZFP322A	0.0355278	1.0254
9030605E16RIK	0.000389755	1.02536
ANXA7	0.0389979	1.02532
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NMD3	0.0579215	1.0253
CDKL5	0.0157448	1.02528
GMPS	0.0688657	1.02503
9530062G19RIK	0.0390291	1.02498
ZFP317	0.0781367	1.02492
D530007E13RIK	0.0599098	1.02485
HOOK3	0.0100123	1.02475
LOC385959	0.0772862	1.02463

AKAP8	0.00883582	1.02462
A130053G17RIK	0.0109287	1.02456
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RC3H2	0.0507115	1.0245
4631409F12RIK	0.00718045	1.02447
LOC385019	0.0408043	1.02442
TBRG4	0.0633097	1.02441
SCFD1	0.0455507	1.02425
RBBP4	0.0177325	1.02411
ACOT5	0.0522969	1.02404
ZFP445	0.0372643	1.02402
TRIM56	0.0257979	1.02388
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7030401E22RIK	0.0321246	1.02377
B230312I18RIK	0.0196652	1.02364
PSG23	0.0585064	1.02361
C230091E20RIK	0.0129345	1.0236
6720406L13RIK	0.0317164	1.02359
3110023B02RIK	0.0545185	1.02349
C130072A16RIK	0.030762	1.02334
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GPR23	0.0210981	1.02304
4930518I15RIK	0.0609838	1.02281
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RNMT	0.0788181	1.02278
LOC547150	0.0478574	1.02277
AA408296	0.0631656	1.02269
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USP42	0.00844412	1.02249
LLPH	0.0303291	1.02244
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CEP57	0.0472976	1.02238
SH3GL1	0.0643029	1.02233
LOC386179	0.0206896	1.02231
LOC227393	0.0812895	1.02228
DDX46	0.0336371	1.02226
E4F1	0.0496532	1.02223
5930437C20RIK	0.0812568	1.02201
SUHW4	0.0560656	1.02198
GM1815	0.0478444	1.02195
ABCC1A	0.0478841	1.02193
C230081A13RIK	0.0414853	1.02188
LOC277385	0.0607574	1.02181
DICER1	0.0457071	1.02173
B130017I01RIK	0.0733693	1.02172
CUEDC1	0.0423334	1.02165
SSR1	0.0165322	1.02164
SKZ1-PENDING	0.0115851	1.02159
PKNOX1	0.0137748	1.02159
9930013M16RIK	0.0246169	1.02158
LOC100046963	0.0813164	1.02154
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6330400D04	0.0749409	1.02143
1200003I07RIK	0.0647951	1.02139
CACNA2D1	0.0732181	1.02134
NARS2	0.0406144	1.02128
CTTNBP2	0.00949906	1.02119
LSM12	0.0322379	1.02119

<b>BRAF</b>	0.00531224	1.02114
<b>AFG3L2</b>	0.0192853	1.02113
<b>E130309L16RIK</b>	0.0263174	1.02112
<b>PIK3CA</b>	0.0601536	1.02109
<b>RAPGEF5</b>	0.00695914	1.02105
<b>SNX27</b>	0.0810337	1.02097
<b>D430021P20RIK</b>	0.00216232	1.02091
<b>SNIP1</b>	0.0483343	1.02091
<b>D130004H04RIK</b>	0.0805811	1.02091
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<b>SENP1</b>	0.0428873	1.02075
<b>BC021438</b>	0.0239862	1.02069
<b>REV1</b>	0.00583549	1.02067
<b>OVGP1</b>	0.0235316	1.02064
<b>RASA2</b>	0.0385461	1.0206
<b>TM9SF2</b>	0.0471081	1.02054
<b>TRRP4AP-PENDING</b>	0.028588	1.02052
<b>ATPI</b>	0.0221453	1.02049
<b>IFRD2</b>	0.0302283	1.02047
<b>YIPF6</b>	0.0193652	1.02041
<b>TRPV4</b>	0.0611553	1.02041
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<b>METTL6</b>	0.0713244	1.01999
<b>A130019H11RIK</b>	0.0317517	1.01996
<b>E330020K23RIK</b>	0.0640867	1.01995
<b>ZFML</b>	0.0125969	1.01992
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<b>A230067G21RIK</b>	0.0198252	1.01958
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<b>PTEN</b>	0.0578439	1.01945
<b>ABCF3</b>	0.00351509	1.01944
<b>TERF2IP</b>	0.03854	1.01936
<b>TNRC6B</b>	0.0450809	1.01928
<b>CCDC155</b>	0.0554619	1.01927
<b>2810455B08RIK</b>	0.0132637	1.01925
<b>D030070I18RIK</b>	0.0142466	1.01924
<b>B430109P06RIK</b>	0.00618526	1.01923
<b>LOC100041103</b>	0.0650487	1.01921
<b>A430090L17RIK</b>	0.0735139	1.01911
<b>ZFP106</b>	0.0275739	1.01904
<b>PRPF40A</b>	0.00787931	1.01895
<b>B9D2</b>	0.0140384	1.0189
<b>JMJD2C</b>	0.0171392	1.01888
<b>WARS2</b>	0.0143238	1.01875
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<b>TFB1M</b>	0.0747347	1.01874
<b>TGS1</b>	0.0108762	1.01871
<b>3930402G23RIK</b>	0.0777469	1.01864
<b>A530030B07RIK</b>	0.0362753	1.01863
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PI4K2B	0.0104906	1.01854
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PHF14	0.0356219	1.01852
PVRL3	0.0561438	1.01852
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BC024659	0.0389993	1.01836
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ABCE1	0.0034702	1.01828
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NOL11	0.0239269	1.01814
PTPDC1	0.0431353	1.0181
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IMPDH1	0.057804	1.01782
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TEX10	0.0614418	1.01776
TMEM16B	0.0605924	1.01773
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ENSA	0.00884078	1.01764
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ZFP790	0.00366899	1.01757
ANK2	0.0570894	1.01755
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NFRKB	0.0586286	1.01752
SPRR2F	0.024852	1.01748
PARN	0.0437173	1.01741
RNPC2	0.024208	1.01738
LOC384344	0.0128529	1.01734
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PLP1	0.0375471	1.01726
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DYNC1LI1	0.0342973	1.01712
WWP1	0.052597	1.01708
FADS3	0.0298814	1.01707
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LOC100045679	0.0309524	1.01689
DHX8	0.0507591	1.01685
SMCX	0.0107197	1.01683
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RIF1	0.0220095	1.0168
EXTL1	0.0742154	1.01673
LOC100043402	0.0322624	1.01669
HSPA4	0.055064	1.01667
5330438F16RIK	0.0641931	1.01666
PNPO	0.0142715	1.01663
9230112E08RIK	0.0744083	1.01662
C130090G16RIK	0.0283366	1.0166
RECQL4	0.0585087	1.01655
CNPY3	0.0365435	1.01654
ZFP553	0.00747907	1.01653

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LOC234374	0.0705556	1.01642
UTP14A	0.0192992	1.01639
A430071O12RIK	0.0612354	1.01639
C130039O16RIK	0.0253972	1.01636
HMG20A	0.036259	1.0163
A630075K04RIK	0.0337112	1.01627
OTUB2	0.0754048	1.01623
2010007L18RIK	0.0122847	1.01621
E330019D12RIK	0.0591092	1.01608
LOC386081	0.063856	1.01606
LOC100046905	0.0459095	1.01597
OTUD3	0.0358645	1.01593
C920016N10RIK	0.0318113	1.01589
ARRB1	0.0578322	1.01583
SYCE2	0.071342	1.01576
ARFGAP1	0.00441882	1.01564
RCN3	0.0730752	1.01563
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IFNGR2	0.0338799	1.01555
5730419I09RIK	0.0821827	1.01555
GNMT	0.00381814	1.0154
2610027L16RIK	0.00044252	1.01522
PPM1L	0.0122024	1.01521
4932441P04RIK	0.0476648	1.0152
CTH	0.0509882	1.01509
B430114K07RIK	0.00593319	1.01504
2610301F02RIK	0.0510301	1.01499
SDCCAG1	0.0788404	1.01499
B230337C21RIK	0.0126379	1.01489
B130044D17RIK	0.0267252	1.01484
DLD	0.0708449	1.01484
E530018O14RIK	0.0621385	1.0148
C630002L24RIK	0.0343689	1.01478
1700064E03RIK	0.0140482	1.01476
E330013M12RIK	0.0397127	1.01471
MED1	0.0529711	1.0147
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C630011I23	0.0308038	1.01468
C430014M02RIK	0.0240155	1.01465
LOC100047009	0.0341913	1.01461
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ARF4	0.0330002	1.01459
RASSF4	0.0252276	1.01449
LOC381336	0.034537	1.01445
PRPF4	0.000648491	1.01444
GOPC	0.0149719	1.01443
4933411D12RIK	0.0721192	1.0144
6030439I24RIK	0.0340264	1.01439
9830118G07RIK	0.0747277	1.01434
GLT1D1	0.0781029	1.01424
RBBP6	0.0272242	1.01421
LOC626061	0.0382177	1.01415
BC031575	0.0289957	1.0141
6820437F20RIK	0.0157764	1.01407
USP48	0.049561	1.01404
FBXW2	0.0240901	1.014

ADSS2	0.0614792	1.014
9630044E13RIK	0.0181928	1.0139
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9430043O10RIK	0.031615	1.01389
9530071H01RIK	0.00527525	1.01385
CYP20A1	0.000628452	1.01384
LOC381747	0.0411877	1.01384
EPB4.1	0.0104852	1.01378
CPEB4	0.00327353	1.01373
PTPRZ1	0.0166678	1.0137
LOC668047	0.069967	1.0137
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A130099L09RIK	0.0202122	1.01364
TTC23	0.0212627	1.01358
PCNX	0.0190994	1.01356
OCRL	0.0137636	1.01355
ALG11	0.00679904	1.01354
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BIRC6	0.0438821	1.0134
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2310047C21RIK	0.0730347	1.01335
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KPNA3	0.0694361	1.01314
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RPN1	0.00444598	1.0131
5730410E15RIK	0.0608519	1.01308
A730082L10RIK	0.051055	1.01305
C130072C03RIK	0.019688	1.01303
IRGQ	0.0130312	1.01296
A630024K09RIK	0.0356007	1.01286
FOXN2	0.00203542	1.01284
SP3	0.0251412	1.01284
LOC636687	0.024621	1.01283
PCDH7	0.0186217	1.01273
RAN	0.0657602	1.01271
GABPB1	0.030674	1.01267
SNX7	0.0155193	1.01254
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MGA	0.0108013	1.01239
NUDEL-PENDING	0.021905	1.01234
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GTL7	0.0200671	1.01228
SLC38A10	0.0558161	1.01228
KCNN4	0.00163057	1.01226
GCC2	0.0163786	1.01222
SLU7	0.060887	1.01219
C130071E11RIK	0.0131642	1.01218
C130060B01RIK	0.0340107	1.01215
TBC1D2	0.0536754	1.01215
HCFC2	0.08275	1.01214

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SPRED2	0.0472716	1.01204
ZFH4	0.0336252	1.01203
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VPS39	0.0807279	1.012
LOC381105	0.0233733	1.0119
LOC381151	0.0791336	1.01187
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A530092L01RIK	0.0328876	1.01177
STX3	0.0419809	1.01176
STAG1	0.0573785	1.01173
AI447711	0.0580281	1.01164
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ASTE1	0.0611768	1.01149
TRAF5	0.0178716	1.01147
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2210015D19RIK	0.0789024	1.01137
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BTBD3	0.0735594	1.01068
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CCDC98	0.0508384	1.01049
6430544C07RIK	0.0590456	1.01049
MAD	0.076803	1.01049
ENPP4	0.0134369	1.01048
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SERPINB1B	0.000564435	1.00529
OLFR689	0.00869432	1.00528
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SPIB	0.0305958	1.00514
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SLC17A1	0.0730602	1.00511
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IIGP1	0.000182894	1.005
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HEATR5A	0.0622071	1.00499
FOXL2	0.0127498	1.00498
KRT79	0.0269727	1.00498
MEFV	0.00823271	1.00497
GPR150	0.0705876	1.00496
XEDAR EDA-A2R	0.0360307	1.00495
KLK1	0.072205	1.00495
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CASKIN1	0.0276887	1.00492
EMU2-PENDING	0.0533032	1.00492
LOC386442	0.0711015	1.00492
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SIX2	0.0165063	1.00488
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LOC380869	0.080792	1.00481
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VNN1	0.0839453	1.00322
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LOC381269	0.0440611	1.00321
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SFXN2	0.060343	1.0032
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LOC330630	0.0823148	1.00315
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AK5	0.0489703	1.00314
PLN	0.0656491	1.00314
CD19	0.0671159	1.00312
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LOC240879	0.0662485	1.00309
RAD21	0.0676197	1.00309

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GNAL	0.0836829	1.00309
GYPA	0.0630301	1.00308
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TEP1	0.0549351	1.00307
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SSFA1	0.0741959	1.00305
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THSD2	0.0370747	1.00303
GATA5	0.080805	1.00303
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STAG3	0.0404577	1.00302
CD300LG	0.083347	1.00302
LOC382008	0.0203829	1.00301
KCNA4	0.037185	1.00301
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PDE6A	0.0170239	1.003
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CES6	0.0806743	1.003
BC030307	0.00268813	1.00299
APBA2	0.0205195	1.00299
LOC385308	0.061384	1.00299
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LOC330441	0.0744127	1.00298
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OLFR883	0.0215048	1.00297
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SCFD2	0.00622898	1.00296
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1190020E20RIK	0.0166506	1.00295
V1RI5	0.0294288	1.00295
ZFP759	0.040095	1.00295
DMC1	0.0686524	1.00295
D1ERTD622E	0.0711518	1.00295
MYOD1	0.0723168	1.00295
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LACTB2	0.0188497	1.00293
3110052M02RIK	0.0286893	1.00293
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TEX22	0.0592133	1.00293
SENP5	0.0652863	1.00293
REX2	0.0770347	1.00293
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LOC384616	0.0804339	1.00292

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CHRM2	0.0342631	1.00287
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POP1	0.0722499	1.00284
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CGB	0.0809553	1.00278
MPV17L	0.00492281	1.00277
LOC381992	0.0376398	1.00277
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LOC381452	0.0201323	1.00274
OLFR678	0.0536572	1.00274
GM749	0.0536869	1.00274
LOC240779	0.00670592	1.00273
2410089E03RIK	0.026813	1.00273
ACCN5	0.0389459	1.00273
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GM378	0.0717724	1.00268
5730575G16RIK	0.0751181	1.00268
LOC229571	0.0339347	1.00267
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SYT2	0.0527075	1.0026
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ADCY1	0.077168	1.00258
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PRIM1	0.0764276	1.00257
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LOC383111	0.0799707	1.00256
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LOC383541	0.0116799	1.00231
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OLFR527	0.0184579	1.00177
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LOC384839	0.0241915	1.00138
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LOC675815	0.0545299	1.00137
4933404G15RIK	0.0741884	1.00137
PSG26	0.0247074	1.00134
MAST1	0.0380787	1.00134
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AFP	0.0778517	1.0013
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LOC230970	0.057785	1.00128
LZTFL1	0.0128845	1.00127
RNASE13	0.0172886	1.00126
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NAT8L	0.0283944	1.00122
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GALNT9	0.037699	1.00111
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ENTPD7	0.0744101	1.00107
KLF15	0.0603859	1.00106
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SEC15L1	0.00145612	1.00105
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LOC633661	0.0263417	1.00104
CREB1	0.0450144	1.00104
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LOC385292	0.0666582	1.001
1110034B05RIK	0.0285768	1.00099
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SGIP1	0.0350527	1.00097
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CNTNAP5C	0.0561378	1.00055
KREMEN-PENDING	0.015939	1.00052
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LOC386560	0.0628404	1.00051
LOC384190	0.0379325	1.00049
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CNTF	0.0285575	-1.00101
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COPS8	0.0709171	-1.0021
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HK3	0.0797608	-1.00244
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LOC100044622	0.028787	-1.00246

CMYA5	0.053989	-1.00246
IQCF3	0.0682596	-1.00247
FIGNL1	0.0317048	-1.0025
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CAMKK1	0.0774096	-1.00254
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IGF1	0.0344616	-1.0026
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OLFR69	0.0701869	-1.00267
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CORO2A	0.0769585	-1.00268
OLFR419	0.0186551	-1.00269
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2310033E01RIK	0.0627853	-1.00369
PGM2L1	0.077006	-1.00372
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PATZ1	0.0335604	-1.00383
TACR1	0.0593122	-1.00383
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RAD9	0.045742	-1.0044

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PRODH	0.0351523	-1.00473
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CEBPA	0.0190412	-1.00474
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REC8	0.0576699	-1.00481
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ASB6	0.0658259	-1.00492
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CHST5	0.053225	-1.00571
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MCOLN2	0.0812214	-1.006
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LOC100043313	0.010292	-1.00604
LPXN	0.00579448	-1.00605
CRSP3	0.00765288	-1.00609
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DNALC1	0.0589139	-1.00611
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SGOL2	0.00469818	-1.00626
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LIG1	0.0646636	-1.00652
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TUSC1	0.0798861	-1.00655
KIFC3	0.0571116	-1.00657
HTRA3	0.0619624	-1.00659
GAS2L1	0.0565273	-1.00662
UPK2	0.067739	-1.00663
METAPL1	0.00452707	-1.00664
DYNC2H1	0.0131378	-1.00668
LOC100045439	0.00179357	-1.00675
LOC383561	0.0818662	-1.00675
ACAD10	0.0275404	-1.00676
EXOSC6	0.0370814	-1.00676
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SCRN2	2.35E-05	-1.00681
LOC100047603	0.0219977	-1.00681
KANK3	0.0111675	-1.00682
XRCC1	0.0187961	-1.00682
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APIP	0.0608627	-1.00689
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C1QTNF1	0.0386241	-1.00692
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GREB1	0.00845036	-1.00701
LRSAM1	0.0162467	-1.00701
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TLCD2	0.0172901	-1.00703
1700009P17RIK	0.0533772	-1.00705
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CCDC125	0.0128102	-1.00708
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6430598A04RIK	0.0264559	-1.0071

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TMCO3	0.00734753	-1.00733
ADARB1	0.0584929	-1.00735
PIK3AP1	0.0256613	-1.00739
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MAPK11	0.0339714	-1.00745
SH3GL2	0.00508497	-1.0075
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TMEM46	0.0284116	-1.00762
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3830406C13RIK	0.0419265	-1.00765
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GBP5	0.015175	-1.00774
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1300018I17RIK	0.0304534	-1.00774
LOC629763	0.0730944	-1.00777
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PCOLCE2	0.0430541	-1.00787
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SFI1	0.0319386	-1.00801
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MFSD9	0.000204497	-1.00838
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IL18	0.013271	-1.00841
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KLHDC1	0.0559393	-1.00849
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AMDHD2	0.0767134	-1.00872
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TAF6	0.0104991	-1.00907
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SPIRE2	0.048911	-1.0099
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TREX1	0.0132412	-1.01522
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IFNB1	0.0619214	-1.01686
GPS2	0.0653646	-1.01689
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ACTR1B	0.0465175	-1.01697
ETV5	0.0611206	-1.01699
LOC225927	0.0768941	-1.01699
SCL000416.1_19	0.0119166	-1.01701
ACP2	0.0535433	-1.01702
GATAD1	0.0824893	-1.01705
2610029K11RIK	0.0132938	-1.01707
C030003A18RIK	0.00925017	-1.01708
KIFC2	0.00148004	-1.01708
ABCG4	0.010585	-1.0171
MCPT4	0.0388655	-1.01714
CD164L2	0.0797798	-1.01714
LOC100045680	0.0276332	-1.01715
SPNB3	0.030813	-1.01716
SQRDL	0.074825	-1.01728
B230339H12RIK	0.00367888	-1.01729
BEX2	0.0252394	-1.01729
CALCOCO1	0.0276955	-1.01732
POPDC2	0.00824498	-1.01736
GSTT2	0.00785553	-1.01742
HEXA	0.0199611	-1.01743

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FBXL17	0.0763788	-1.01744
TTC5	0.00835426	-1.01752
MRPS28	0.0114211	-1.01752
2010002N04RIK	0.0749428	-1.01755
1700021C14RIK	0.00592209	-1.0176
LOC100046844	0.0100126	-1.01767
1110029I05RIK	0.0392584	-1.01767
PPM1K	0.0761031	-1.01771
CRIPT	0.0666177	-1.01772
2310004N24RIK	0.0654011	-1.01774
WRN	0.0186451	-1.01781
GLI3	0.0395454	-1.01783
RABL5	0.0124505	-1.01789
PAK4	0.0780871	-1.01795
RTKN	0.00403409	-1.01798
LOC209281	0.0461857	-1.01799
ADAM15	0.0620903	-1.01799
MSC	0.0261805	-1.01804
DNASE2A	0.0324597	-1.01804
9030624G23RIK	0.0163827	-1.01811
A330042I21RIK	0.00523355	-1.01815
5330417C22RIK	0.0666138	-1.01816
IL3RA	0.0334283	-1.01817
FZD10	0.0513188	-1.01818
CD248	0.0676994	-1.01819
C920006O11RIK	0.0162747	-1.01823
DNAJC12	0.00461553	-1.01824
SCD2	0.0200752	-1.01829
SART1	0.0380907	-1.01831
EG245190	0.0481048	-1.01833
PCMT1	0.0535741	-1.01835
CEP63	0.0353482	-1.01839
BCL11B	0.0730894	-1.01845
PCP2	0.0325564	-1.01848
ARAF	0.0127384	-1.01853
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ARHGAP27	0.0215687	-1.01867
2310003C23RIK	0.0278978	-1.01871
NOTCH3	0.080403	-1.01871
UBE2E3	0.0763952	-1.01872
4833421E05RIK	0.0502848	-1.01876
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VAR52	0.0254008	-1.01878
GFOD2	0.0329331	-1.0188
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CITED1	0.0462598	-1.01886
CTTN	0.00208712	-1.01889
8430410A17RIK	0.0225786	-1.01891
ADCY6	0.0392831	-1.01893
TOMM34	0.0709075	-1.019
1110008L16RIK	0.0415121	-1.01903
IGFBP6	5.23E-05	-1.01911
ALDH16A1	0.0790339	-1.01911
RPS4Y2	0.0044031	-1.0192
MXD4	0.0661213	-1.01923
RAB1B	0.00653641	-1.01926
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FLAD1	0.0269929	-1.01934
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2810001G20RIK	0.0333915	-1.01952
ST3GAL3	0.0187859	-1.01955
RTN4	0.0677145	-1.01956
PPA2	0.0648272	-1.0196
WDR22	0.0179103	-1.01961
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FAM100B	0.00647803	-1.01976
INTS7	0.0280151	-1.01984
FADS2	0.0290938	-1.01984
KATNA1	0.0225958	-1.01985
DNAHC11	0.0161966	-1.01986
CCDC132	0.0363193	-1.01986
TPM3	0.0376479	-1.01986
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PLA1A	0.0370953	-1.01999
ZMYM3	0.0804524	-1.02
NUDT22	0.0823062	-1.02
OLFM1	0.0023292	-1.02001
NR1H2	0.049974	-1.02007
DHX35	0.0216284	-1.02009
AMN	0.0601942	-1.0201
ABCC5	0.0295591	-1.02012
APLP1	0.0265708	-1.02016
LOC383308	0.0083704	-1.02023
8430432M10RIK	0.00869848	-1.02024
CYHR1	0.0373519	-1.02027
FUK	0.0172164	-1.0203
PHC1	0.0345955	-1.0203
HECTD3	0.0188571	-1.02033
A2LD1	0.0541718	-1.02037
AK2	0.0666729	-1.02038
VAV2	0.0214161	-1.02045
PRSS12	0.0368346	-1.02049
SEPHS1	0.0440424	-1.02052
TGFB1	0.0054419	-1.02058
PLTP	0.016675	-1.02062
FZD2	0.0416737	-1.02064
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CKLF	0.0173995	-1.02072
CENTG3	0.0426932	-1.02086
SCG3	0.0126211	-1.02088
DUSP19	0.0355715	-1.02089
TIMM44	0.0590023	-1.02091
EML3	0.0327602	-1.021
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COL1A2	0.0549995	-1.0211
RHEBL1	0.026088	-1.02115
GM1673	0.00200172	-1.0212
PPIH	0.0225958	-1.02127
HMCN1	0.00839389	-1.02131



TSPAN6	0.00566074	-1.02142
MX1	0.00955435	-1.02149
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FNBP1	0.0601251	-1.02165
GM106	0.0126363	-1.02166
ACPL2	0.0240197	-1.02168
BAHCC1	0.0616923	-1.02168
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BBS9	0.0296938	-1.02196
LOC385632	0.0295377	-1.022
HDDC2	0.0263664	-1.02203
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GAS8	0.0169205	-1.02213
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CHPT1	0.0314133	-1.02222
SNX12	0.00774983	-1.02232
ASCC1	0.0227499	-1.02232
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COG1	0.0271128	-1.02235
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PRR12	0.0810204	-1.02241
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TBCD	0.0293814	-1.02244
PRKCA	0.0223863	-1.0226
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CDK9	0.0342479	-1.02275
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HEPH	0.03273	-1.0228
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IL17RC	0.0566609	-1.0231
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SURF1	0.0179154	-1.02377

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PPFIBP2	0.0538631	-1.02383
BICC1	0.0240798	-1.02388
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ATP6V1G1	0.0296359	-1.024
CREB3L4	0.0717111	-1.024
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CTNBL1	0.0617633	-1.02403
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OASL1	0.00406919	-1.02418
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ABCA7	0.0526738	-1.02451
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SCRIB	0.0196628	-1.02525
FMNL3	0.0666773	-1.02525
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PPIL3	0.0494528	-1.0254
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PLCD1	0.0534646	-1.0257
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CTSF	0.00435732	-1.02576
TBC1D25	0.0318869	-1.02599
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ATP5E	0.0599656	-1.02604
MBTPS1	0.0329938	-1.02608
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ADAMTS7	0.0508918	-1.02624
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SNURF	0.025807	-1.0265
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CEP164	0.00430198	-1.02663
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LOC380706	0.0542997	-1.02682
DGUOK	0.0575985	-1.02685
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CTBP2	0.0440784	-1.02746
LOC639086	0.023032	-1.02758
HDAC6	0.0249422	-1.0276
HDC	0.0302342	-1.02761
NDUFB10	0.0594969	-1.02762
CENPT	0.0270181	-1.02763
FBXL20	0.0350956	-1.02768
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PRKAG1	0.0033944	-1.0281
PTGIS	0.0082062	-1.02822
CCDC5	0.0184293	-1.0283
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VPS26B	0.0656348	-1.02836
CADPS2	0.00704653	-1.02846
FCGR4	0.0435917	-1.02866
GMCL1	0.051655	-1.02872
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CASZ1	0.0131219	-1.02885
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SEPT9	0.0377271	-1.0289
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SMPDL3A	0.0655732	-1.02893
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ATF3	0.0232068	-1.02899
TNFSF12-TNFSF13	0.00602897	-1.02904
FLII	0.00330068	-1.02905
MPI	0.081723	-1.02905
TRIM26	0.0321285	-1.02909

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LOC329575	0.0829585	-1.02921
MAX	0.0673307	-1.02933
BRD9	0.0756251	-1.02935
MYG1	0.00576531	-1.02939
SEC14L1	0.0141715	-1.02946
CAV2	0.028176	-1.02946
RABEP2	0.0821091	-1.02953
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LYNX1	0.00714412	-1.02961
CCRK	0.0622536	-1.02966
MYCBPAP	0.00173758	-1.02971
2310079N02RIK	0.0218586	-1.02977
PADI1	0.0831618	-1.0299
AA536749	0.0330949	-1.02993
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LGSN	0.00942537	-1.02998
PFKM	0.0236621	-1.03012
NR2F6	0.0664703	-1.03015
LSR	0.0027173	-1.03016
ANG	0.0449049	-1.03016
TXLNA	0.0746073	-1.03023
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MCCC1	0.0700127	-1.03043
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DEXI	0.0748524	-1.0305
SIN3B	0.0619192	-1.0307
BC051227	0.0392786	-1.03071
PALM	0.0123886	-1.03074
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GM684	0.00323392	-1.03078
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1600016N20RIK	0.076047	-1.03091
CCNDBP1	0.0139241	-1.031
SMOC1	0.00872926	-1.03102
LOC230896	0.0117198	-1.03109
1190005F20RIK	0.015015	-1.03116
TSPYL3	0.000966025	-1.0312
RMND1	0.061021	-1.03122
NME7	0.0624147	-1.03142
ATP1B1	0.0397456	-1.03144
ESRRA	0.0249476	-1.03149
RFTN2	0.0387162	-1.0315
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PI16	0.0715417	-1.03157
LOC383706	0.0525698	-1.03159
COL1A1	0.00793719	-1.03167
CH25H	0.0822669	-1.03177
GOLGA7	0.0179303	-1.0318
HPCAL1	0.032204	-1.03185
ACADS	0.0688272	-1.03186
MXRA8	0.0102819	-1.03188
RNASEH2A	0.0233461	-1.03188

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LOC674706	0.0728427	-1.03226
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NTNG1	0.0781099	-1.03228
MRPL27	0.00123343	-1.03235
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MRPL4	0.0169447	-1.03265
FHOD1	0.0189383	-1.03265
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HOMER2	0.0573289	-1.03273
GPX7	0.00256887	-1.03279
WBP1	0.00493846	-1.03288
PTMS	0.0684174	-1.03293
MAPRE2	0.0371923	-1.03298
TST	0.00884068	-1.03313
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SSH3	0.0485161	-1.0333
CTXN1	0.00131473	-1.03332
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CRYL1	0.0514845	-1.03338
UBE2Q1	0.0717682	-1.03341
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MEN1	0.0245823	-1.03358
ORAI1	0.0829096	-1.03377
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CPXM1	0.0458631	-1.03407
UBXN6	0.0217666	-1.03412
IAH1	0.00202541	-1.03417
LOC100045019	0.0790236	-1.0343
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LAD1	0.00789714	-1.03444
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LOC217602	0.0764588	-1.03462
MANBA	0.0501192	-1.03485
OLFML3	0.0111416	-1.03489
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BLMH	0.0456187	-1.03494
PPT1	0.0016431	-1.03519
OPLAH	0.0200742	-1.03521
PCBD2	0.0111907	-1.03534
MARCH2	0.0781715	-1.03554
H2-T10	0.000912068	-1.03555
ATP13A2	0.0513016	-1.03564
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AP2A2	0.0364197	-1.0358
CCDC80	0.016842	-1.03584
AUP1	0.0431825	-1.03585
SNN	0.00151066	-1.03592
RAB4A	0.0130303	-1.03594
MLP	0.0152525	-1.03602

RNF4	0.0849241	-1.03603
DOCK6	0.0127812	-1.03606
STRN4	0.0357056	-1.03608
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ENTPD2	0.0190361	-1.03626
IFI35	0.038908	-1.03627
MCM4	0.08131	-1.03633
B4GALT1	0.0190671	-1.03634
GM561	0.061687	-1.03634
SLC39A4	0.0828091	-1.03636
NUB1	0.0309688	-1.03637
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MLKL	0.0268911	-1.0364
SHD	0.0141424	-1.03642
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1200016B10RIK	0.00477529	-1.03665
LOC100043919	0.0335792	-1.03666
B3GNT1	0.0687679	-1.03668
LOC383125	0.0587046	-1.03669
D12ERTD553E	0.0117687	-1.0367
ZFP672	0.0118153	-1.0367
CLCA3	0.00376904	-1.03673
LETMD1	0.00533903	-1.03677
PIN4	0.00398112	-1.03677
MAPK8IP1	0.0219324	-1.03683
ERCC2	0.00133606	-1.03685
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LOC669658	0.012754	-1.03693
INSL6	0.01011	-1.03695
RCE1	0.0127496	-1.03704
MED25	0.0511166	-1.03706
CHURC1	0.0135835	-1.03724
WNK2	0.00162923	-1.03727
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LMAN2L	0.015774	-1.03763
USP3	0.0138451	-1.03765
LGALS4	0.0359426	-1.03768
SMARCC2	0.0628575	-1.03769
CTSA	0.0694735	-1.03779
TMEM41A	0.0195747	-1.0378
DPT	0.0178893	-1.0379
PEX5	0.0809533	-1.0379
LOC383775	0.0148689	-1.03799
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DYNC2LI1	0.0507559	-1.03818
CBX6	0.0799539	-1.03818
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4930455C21RIK	0.0129266	-1.03832
IFI30	0.0620912	-1.03834
GPT1	0.00823698	-1.03841
ANKRD50	0.0624217	-1.03841

EFNA4	0.000294684	-1.03848
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PRKAR2B	0.0844562	-1.03857
PRDX3	0.060224	-1.03858
STX1A	0.0346222	-1.03866
TMEM19	0.00798294	-1.03872
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MRPL9	0.0127516	-1.03898
LOC100046039	0.04268	-1.03898
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PROM2	0.0149958	-1.03918
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SCNN1B	0.0226792	-1.03951
CAPSL	0.0284158	-1.03956
INTS10	0.0744602	-1.03966
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F8A	0.0175435	-1.03974
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STAP2	0.0179647	-1.03993
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STAT1	0.0316277	-1.03997
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LSM3	0.0245307	-1.04011
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LOC627317	0.0225909	-1.04055
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DLL1	0.0204336	-1.04089
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SLC44A1	0.0375569	-1.04109
LOC667269	0.0108941	-1.04112
GTPBP3	0.016267	-1.04137
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ALDH3A2	0.0773993	-1.04149
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RGS16	0.0445082	-1.04185
IGBP1	0.0483142	-1.04193

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ZFP523	0.0395109	-1.04198
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SMPDL3B	0.0191986	-1.04217
CLIP2	0.0393517	-1.0422
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CDKN1C	0.0389144	-1.04266
RELL1	0.0731685	-1.04267
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FBLN2	0.0378878	-1.04287
PYGO2	0.0318337	-1.04289
NAV1	0.0479408	-1.04298
MAEA	0.0197133	-1.04299
GTF3A	0.0120076	-1.04301
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CCND3	0.0575981	-1.04413
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SMARCA1	0.0743466	-1.04419
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LOC667776	0.0284065	-1.04498
LOC100043822	0.0261008	-1.04527
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ARF5	0.0452054	-1.0455
EPS15	0.0566656	-1.04551
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RASGRP4	0.0486662	-1.04553
SSBP4	0.0506778	-1.04557
SIRT3	0.0114705	-1.04558
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KCNMB1	0.0272232	-1.04609
LOC545208	0.0281361	-1.04628
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CDK2	0.00813795	-1.04637
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LONP2	0.0435231	-1.04861
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DLK2	0.0462941	-1.04888
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YIPF1	0.0524456	-1.05049
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PGCP	0.034285	-1.05146
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COL6A3	0.00757365	-1.05176
HTATIP2	0.0420955	-1.05179
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MTVR2	0.0510435	-1.05507
GSTP2	0.0668905	-1.0551
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ARPC1A	0.0695778	-1.05569
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SOSTDC1	0.0847459	-1.05826
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LOC100045280	0.00455432	-1.05867
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MAPBPIP-PENDING	0.0294346	-1.05936
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ALG14	0.0336551	-1.05939
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PRKACA	0.0139169	-1.06027
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COPS5	0.0451265	-1.06045
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ELOF1	0.071232	-1.06076
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MMP15	0.063826	-1.06086
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SPNA2	0.0121456	-1.06111
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SIDT2	0.0158187	-1.06201
TCN2	0.0541166	-1.06229
BIK	0.023377	-1.06283
IGFALS	0.0624434	-1.06283
PACS1	0.078018	-1.06289
SMARCA2	0.0423969	-1.06293
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EPS8	0.0231065	-1.06313
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STX4A	0.00197006	-1.06334
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HSPE1	0.00715351	-1.06444
CPT2	0.03199	-1.06444
MANBAL	0.0565236	-1.06454
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SEPP1	0.0548988	-1.06461
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MFAP2	0.0234605	-1.0649
RIT1	0.0742751	-1.06494
PKP3	0.0195939	-1.06498
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TRIP6	0.0104478	-1.06515
YKT6	0.0773385	-1.06532
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POLRMT	0.0750481	-1.06597
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ATP5F1	0.0656277	-1.0664
QARS	0.0699193	-1.06692
H6PD	0.00493822	-1.06702
ARD1	0.0169456	-1.06706
MYO18A	0.0475863	-1.06736
CNN2	0.0131633	-1.06741
SEPN1	0.0417144	-1.06749
IRF3	0.0655778	-1.06752
PSME2	0.00890873	-1.06765
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SCT	0.0420544	-1.06859
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CXCL10	0.00432227	-1.06902
M6PRBP1	0.0732857	-1.06922
TRAPPC1	0.00307137	-1.06926
LLGL2	0.0639525	-1.06947
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TCIRG1	0.0444776	-1.06965
2200001I15RIK	0.0783613	-1.06988
X99384	0.0107314	-1.07024
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OAS1G	0.0162609	-1.07118
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MITD1	0.0394327	-1.07128

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ASS1	0.0357133	-1.07148
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PDGFRA	0.0430158	-1.0722
ZNRD1	0.0338263	-1.07234
TRIM41	0.0261969	-1.07267
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ACAA2	0.00551335	-1.07429
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CDK4	0.0687895	-1.07613
PKIA	0.0423574	-1.07634
CLTA	0.0332571	-1.07636
PRSS8	0.0810448	-1.07639
SLC9A3R1	0.0127529	-1.07646
RHOC	0.0280767	-1.07647
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SUMO3	0.064907	-1.07677
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CD200	0.0072231	-1.07935
HECA	0.0569194	-1.07941
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SSNA1	0.0130108	-1.0802
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TMC4	0.0163646	-1.08099
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APOA1BP	0.0393521	-1.08128
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DLG3	0.0666692	-1.08158
MOCOS	0.0534107	-1.08163
2310005E10RIK	0.0381636	-1.08164
DHRS1	0.0605554	-1.08174
CIB1	0.0436549	-1.08179
B230333E16RIK	0.0210666	-1.08186
OCIAD1	0.0840389	-1.08193
SUPT3H	0.0780429	-1.08216
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LOC627985	0.0707973	-1.08546
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MED24	0.040117	-1.08774
LOC244710	0.0579216	-1.08813
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COMMD4	0.0617669	-1.08859
CXCL12	0.0465719	-1.08915
LOC100047936	0.0314133	-1.08962
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STARD10	0.0378592	-1.09132
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RFC2	0.0190047	-1.09556
CBR1	0.00592977	-1.09576
HMGCS2	0.00539633	-1.09592
TSEN34	0.0500029	-1.09623
MIC2L1	0.0363868	-1.09633
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RELN	0.0230936	-1.09845
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SORL1	0.0343138	-1.10002
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MAPK13	0.0617044	-1.10158
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FOXA3	0.0659524	-1.10264
GNAI2	0.0669723	-1.10286
FBXW17	0.0179358	-1.10405
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AP3D1	0.0231829	-1.10468
FKBP8	0.0484059	-1.10584
DPP7	0.00484009	-1.10596
INMT	0.0547995	-1.10625
LY6C1	0.0377136	-1.10679
AQP9	0.0225693	-1.1068
CTNNAL1	0.00877335	-1.10739
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ACPP	0.0207487	-1.10904
COL6A1	0.0661426	-1.10937
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DGAT2	0.0607384	-1.10973
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RNASEK	0.0527943	-1.11004
FLOT2	0.0550118	-1.11005
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SAMD14	0.00135816	-1.11298
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DNAJC7	0.0662377	-1.11788



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LOC100048554	0.00613143	-1.11936
LOC280205	0.0518419	-1.11972
NIPSNAP1	0.00444099	-1.11977
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SKAP2	0.00532268	-1.12035
IRF1	0.0496625	-1.12065
LOC100046802	0.0587386	-1.12088
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GFPT2	0.00961725	-1.12238
LOC100047173	0.0530092	-1.12244
TMEM43	0.0187514	-1.1229
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LOC381302	0.0195186	-1.12535
GLRX1	0.0161024	-1.12562
VCAM1	0.0510336	-1.12644
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RARRES2	0.0306901	-1.12698
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GLRX	0.00568145	-1.13335
GSTM2	0.00623464	-1.13351
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CAPZB	0.00648403	-1.13458
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COMMD3	0.0663292	-1.13572
MRPL23	0.00653314	-1.13597

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TMEM205	0.0096554	-1.13813
CHIC2	0.0131036	-1.13843
LOC547343	0.00197303	-1.1386
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NDUFS8	0.0327416	-1.13964
IIGP2	0.0068677	-1.14126
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LOC100044395	0.0659433	-1.14188
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LAMP2	0.0234253	-1.14857
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PHPT1	0.0418963	-1.15263
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CENPB	0.0800408	-1.1724
SERINC2	0.0345528	-1.17301
LOC331102	0.0490741	-1.17306
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TIAM1	0.0527706	-1.17478
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CCL2	0.0198386	-1.1861
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MRPL36	0.0742614	-1.18635
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VAMP8	0.0285137	-1.18821
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CLK1	0.0671439	-1.19154
PRLR	0.0608918	-1.19182
LOC675440	0.0393034	-1.19197
TOMM7	0.00105916	-1.19317
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LOC667370	0.0153214	-1.1938
IGSF3	0.0392683	-1.19427
LOC654426	0.061597	-1.19447
CLIP4	0.0263048	-1.1972
ARF6	0.0383362	-1.19924

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LOC100048346	0.0140855	-1.20039
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ANAPC13	0.010397	-1.20267
FOXA1	0.0296852	-1.20443
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PSMB10	0.00127331	-1.22267
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FCGRT	0.00997364	-1.22506
USP18	0.0375372	-1.22623
TMEM9	0.00785682	-1.22625
CYB5	0.0311028	-1.22806
ACADM	0.0390717	-1.23001
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LOC100048480	0.000268215	-1.2379
LOC433546	0.0444005	-1.23961
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ATP5O	0.0116971	-1.24938
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CTDSP2	0.00588642	-1.25604
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ATP5J	0.0143117	-1.25939
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INPPL1	0.0276659	-1.26374
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DDR1	0.00834908	-1.26558
FLOT1	0.0540598	-1.26597
H2-K1	0.00746332	-1.26723
IL11RA1	0.006229	-1.26793
GBP3	0.043107	-1.26895
C4A	0.0636906	-1.26949
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TSTA3	0.021261	-1.27091
TEAD2	0.00776337	-1.27371
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SMARCD2	0.0335042	-1.27431
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TIMP2	0.0472278	-1.2762
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MIDN	0.000893845	-1.28549
COL4A5	0.0748639	-1.28572
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LOC381629	0.0337509	-1.29087
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RSAD2	0.0331913	-1.29986
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LGALS9	0.0612261	-1.32206
PCBP2	0.0293559	-1.32225
LOC100047261	0.0235023	-1.33035
NDUFA6	0.0220081	-1.33091
1810027O10RIK	0.00897693	-1.33209
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NDUFA3	0.0449241	-1.33291
RABAC1	0.0680262	-1.33299
LGMN	0.00747109	-1.33334
PON2	0.00797611	-1.33368
TAGLN2	0.0442164	-1.33815
COL7A1	0.029011	-1.3395
PTN	0.0537753	-1.33954
OXCT1	0.0472923	-1.34007
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CAR13	0.0190889	-1.34746
NDFIP1	0.0233183	-1.34759
SUMO2	0.0241531	-1.35198
CMC1	0.0409094	-1.35272
LOC225134	0.0351167	-1.35382
MTDNA_ND2	0.0243839	-1.35928
PLAU	0.0589671	-1.36366
LOC654467	0.0160456	-1.3649
TAP2	0.0576183	-1.365
TSC22D1	0.0260176	-1.36563
NGFRAP1	0.0673414	-1.36846
PRICKLE3	0.0162682	-1.36862

OASL2	0.0461749	-1.37466
SPINT1	0.0660841	-1.37568
SERPING1	0.0353255	-1.37837
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DCAKD	0.0109582	-1.38065
LOC225058	0.0188108	-1.38294
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PSENEEN	0.0387218	-1.384
GPX4	0.00483176	-1.38416
ST5	0.0325158	-1.39379
LOC100038882	0.0776974	-1.39642
AXUD1	0.0645014	-1.40396
DCN	0.0342003	-1.40499
PRDX2	0.0182122	-1.40545
AQP5	0.00636805	-1.40842
PFN1	0.0439231	-1.41145
TAX1BP3	0.00169694	-1.41448
RRAS	0.0472675	-1.41476
MARCKS	0.0176637	-1.41551
ECH1	0.0276857	-1.4164
FAM115C	0.0483145	-1.41672
SAMD9L	0.0152371	-1.42435
UROD	0.0347168	-1.425
CCL7	0.0147045	-1.4348
ATP6V0E	0.0121068	-1.44387
TSPAN14	0.0576748	-1.4447
EG637748	0.0636178	-1.44605
TCEB2	0.0837233	-1.44688
MIA1	0.00601607	-1.4469
COX6C	0.0482849	-1.45012
EG433229	0.00693763	-1.45073
CALM3	0.0728138	-1.45106
RPS5	0.0311413	-1.45794
LOC219145	0.00905749	-1.46519
H2-Q5	0.0201235	-1.4705
COL4A2	0.0456583	-1.47077
CAPNS1	0.0388305	-1.47333
LOC234987	0.0071998	-1.48031
1110012O05RIK	0.0280001	-1.48047
PHLDA1	0.0498439	-1.48175
TRIM29	0.0572838	-1.48262
RPL7A	0.0340699	-1.48431
FGG	0.00232677	-1.48734
GSTK1	0.0534019	-1.4958
PSME1	0.00114146	-1.49673
MTCH1	0.0306631	-1.49798
HN1	0.0215761	-1.50468
SSPN	0.0505455	-1.50861
LOC433749	0.000396743	-1.50877
LOC100039346	0.0552927	-1.51054
SOCS3	0.083512	-1.51462
MTDNA_ND5	0.00488188	-1.52769
RNPEPL1	0.0406538	-1.53433
EG666609	0.00355329	-1.53884
SPARC	0.0533067	-1.54976
LGALS3BP	0.0207588	-1.55198
LOC100048508	0.00615294	-1.55201
MYL9	0.0828757	-1.55522

	100041294	0.0189152	-1.56368
PIGX		0.0399191	-1.57031
LOC383712		0.0586596	-1.57465
EG667728		0.0499133	-1.57535
LDB1		0.0170134	-1.58321
ATOX1		0.014638	-1.58382
KRTCAP3		0.00484767	-1.59428
1110020P15RIK		0.0715319	-1.60151
EG237361		0.0129798	-1.60914
LOC665250		0.0601179	-1.6205
TIMP1		0.0246485	-1.62551
NDUFA13		0.0166957	-1.62743
PSAP		0.072197	-1.6279
APOC1		0.0330317	-1.62894
S100A6		0.0812432	-1.63097
RNASE4		0.0841745	-1.63501
LOC386067		0.0567363	-1.65199
ZFP36		0.0382521	-1.65226
DYNLL1		0.0229352	-1.66433
TSPO		0.0037096	-1.68162
LOC624662		0.0155131	-1.68561
IFIT3		0.0198449	-1.6904
CASP1		0.0829533	-1.69887
GRN		0.000353254	-1.70265
MYEOV2		0.00770659	-1.70375
ATP5J2		0.057218	-1.72347
COL9A2		0.0262752	-1.72387
RPS13		0.0108973	-1.73005
0610010I05RIK		0.00995472	-1.73384
BAG3		0.0337712	-1.73756
PLEKHB1		0.0845155	-1.73871
RNF213		0.0305429	-1.75166
LOC100045312		0.00129705	-1.76173
GAS6		0.0624218	-1.77857
EG620119		0.0322686	-1.78283
RPL27A		0.0300022	-1.7907
MMP3		0.0265405	-1.80737
EG269105		0.0602691	-1.81525
EG668850		0.0337526	-1.85327
LOC100044475		0.0128254	-1.86092
LOC100048613		0.0460621	-1.87333
COX6B1		0.0658161	-1.87602
D12ERTD647E		0.0299185	-1.88051
RPL10A		0.0654611	-1.90091
ANGPTL4		0.0648228	-1.91847
CLEC2D		0.0379417	-1.93778
LOC100045005		0.00196382	-1.94889
CST3		0.00130249	-1.95805
LOC237512		0.0591774	-1.96464
LOC433476		0.00470297	-1.98832
HIGD2A		0.0607301	-1.99145
LOC674135		0.000364794	-2.01049
CTSB		0.0290082	-2.04768
LOC381283		0.0415287	-2.0546
ITM2B		0.0327632	-2.05836
2010107E04RIK		0.00546093	-2.08265
VPS28		0.0725108	-2.18414
RPS19		0.0397315	-2.21839

PDLIM4	0.0144563	-2.22723
RPL18	0.0270854	-2.22809
APOE	0.066748	-2.24312
SPON2	0.0132116	-2.24932
EG630499	0.0151032	-2.26741
PFDN5	0.0103387	-2.32661
LOC635470	0.0455297	-2.33451
C3	0.023809	-2.33602
LGALS7	0.0259242	-2.36141
CRIP2	0.0316501	-2.36397
H2-T23	0.0122109	-2.36504
SCD1	0.038903	-2.41067
RPL31	0.0428006	-2.42236
LOC665032	0.0103116	-2.46543
H2-D1	0.00415143	-2.47236
ITGB4	0.0261876	-2.4749
IFITM1	0.0842733	-2.55243
LOC238836	0.0300136	-2.55943
LOC241621	0.00565573	-2.62223
TBCA	0.0660328	-2.65695
ATPIF1	0.0499801	-2.66791
GPX1	0.00374564	-2.69731
RPL24	0.000415249	-2.7076
PDLIM3	0.0347059	-2.71978
COX4I1	0.0265473	-2.74614
LOC270037	0.0299004	-2.7748
IFI27	0.0227096	-2.83048
LOC433745	0.00331762	-2.84877
LOC100048187	0.0129402	-2.92384
RPS10	0.00177301	-2.93887
MMP2	0.0388902	-3.04815
MGP	0.0130788	-3.14252
LOC100043192	0.025485	-3.16167
LOC546015	0.0488696	-3.29373
LOC100048037	0.0256761	-3.34347
RPS15	0.0135807	-3.42544
RBP1	0.0156459	-3.43482
MYLK	0.0734257	-3.49748
LOC668573	0.0443162	-3.50959
LOC100041864	0.067768	-3.55743
LOC100047615	0.00607289	-3.58906
EG666577	0.0409299	-3.67377
EG268795	0.0044941	-3.84391
EG432721	0.00280287	-3.84829
LOC100043209	0.0182627	-4.3151
RPL26	0.0209261	-4.31568
LOC272681	0.00487239	-4.34074
TMEM176B	0.0517817	-4.41236
RPS9	0.0067595	-4.41978
UQCRH	0.0130412	-4.42582
LY6E	0.0257215	-4.76094
LOC382885	0.01698	-5.70528
B2M	0.0149109	-5.92886
LOC623568	0.0841065	-6.22119
RPL18A	0.0470338	-6.25387
LOC381999	0.0619129	-6.49551
FXVD3	0.0545115	-7.10046
RPL35	0.0331646	-7.41324



RPL27	0.0273655	-8.09888
COL16A1	0.0359733	-8.26647
AGRN	0.0682321	-9.2063
S100A11	0.0114578	-9.48566
LY6A	0.0240223	-9.77615
LOC100047998	0.0187009	-9.97774
EG626175	0.028917	-10.0387
TRF	0.0616034	-12.3116
RPS7	0.0555259	-13.662
EG432681	0.0590724	-14.7484
RPS21	0.00932409	-16.7402
MYL6	0.0268189	-17.2723
IFITM3	0.0157297	-39.5663

Supplementary Table 2. List of genotyping primers.		
Long range PCR primers	Primer sequence (5' – 3')	Size (bp)
Bcl11a-5'-Fwd	GAGACAAGAACAGGTGCAAGAGTGGATT	6,435
Bcl11a-5'-Rev	CAAGGAAACCCTGGACTACTGCGCCCTA	
Bcl11a-3'-Fwd	GAAAGAACCAGCTGGGGCTCGACTAGAG	3,446
Bcl11a-3'-Rev	CAGCGAGGTCCCCTTTCTCACTAAAAAT	
Genotyping PCR primers	Primer sequence (5' – 3')	Size (bp)
Bcl11a-lacZ-Fwd	GCTTGCTTTGGAATATGAATGTTTG	
Bcl11a-lacZ-Rev1	CATATATGGGGTTTATGGAGTAACC	363 (Wt); 437 (Mut)
Bcl11a-lacZ-Rev2	CAAGGAAACCCTGGACTACTGCGCCCTA	
Bcl11a-cko-Fwd	TAGCTCCTGCTAGCCAGGTTTCTT	377 (Wt);
Bcl11a-cko-Rev	CGAGGCTTGCAGAAACAGAAAGAT	470 (Cko)
Bcl11a-cko-Del	CTCGAAGGGAGGTTTCGGTATTGTG	700 (Del)
Rosa26-ERT-Cre-Fwd	TGTGGACAGAGGAGCCATAAC	
Rosa26-ERT-Cre-Rev1	CATCACTCGTTGCATCGACC	500 (Wt); 300 (Mut)
Rosa26-ERT-Cre-Rev2	AAGACCCAACCAACAGCAG	
p53 exon10 Del- Rev	GAAGACAGAAAAGGGGAGGG	600 when deleted
p53 exon1 cko-Fwd	CACAAAACAGGTTAAACCCAG	300 (Wt); 400 (cko)
p53 exon1 cko-Rev	AGCACATAGGAGGCAGAGAC	

Supplementary Table2. List of primers used for qRT-PCR analysis.	
RT-PCR primers	Primer Sequence (5'-3')
Bcl11a-Fwd	TGGTATCCCTTCAGGACTAGGT
Bcl11a-Rev	TCCAAGTGATGTCTCGGTGGT
Cyclophilin A-Fwd	CCTTGGGCCGCGTCTCCTT
Cyclophilin A-Rev	CACCCTGGCACATGAATGGTG