**Supplementary Figure 1. Thymic development is aberrant in TCF-1 deficient mice**.
a, Total thymic cellularity is shown comparing wt littermate control mice to TCF-1$^{-/-}$ mice. Mice were 4-6 weeks of age. **b**, Representative flow plots and absolute numbers of ETPs (Lin$^-$Kit$^+$CD25$^-$), DN2 cells (Lin$^-$Kit$^+$CD25$^+$) and DN3 cells (Lin$^-$Kit$^-$CD25$^+$) are shown. Results represent 4 or more mice/group, +/- s.e.m. *p<0.05, **p<0.005 **c**, TCF-1$^{-/-}$ thymocytes exhibit a partial block at the immature single positive (ISP) CD8$^+$CD4$^-$CD3ε$^-$ stage of development.
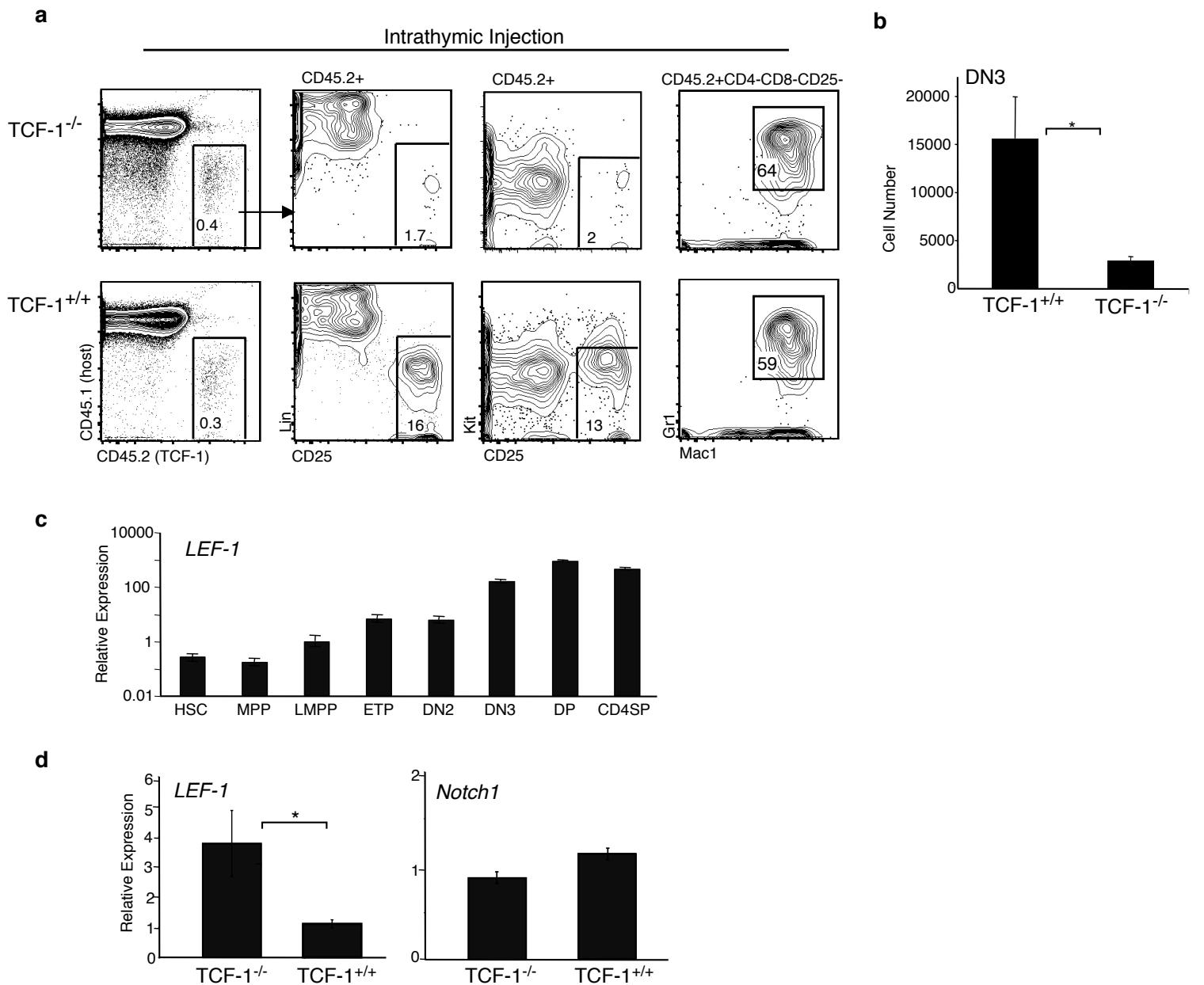
Supplementary Figure 2. In vivo development of TCF-1 deficient progenitors.
a, TCF-1$^{+/+}$ and TCF-1$^{-/-}$ Lin$^-$Sca-1$^+$Kit$^+$ (LSK) cells were isolated and intrathymically injected into sublethally irradiated recipients and analyzed 10 days later. Shown is a representative example of the thymus of mice that received TCF-1$^{+/+}$ or TCF-1$^{-/-}$ progenitors, analyzed for DN3 (Lin$^-$Kit$^-$CD25$^+$) and myeloid (Mac1$^+$Gr1$^+$) cells. **b,** Absolute cell number of DN3 cells, result represents 3-4 mice per group +/- s.e.m., *p<0.05. **c,** Relative expression of TCF-1 related family member, LEF-1 throughout T cell development. Results represent the relative gene expression compared to LMPP after normalizing to 18sRNA. Error bars are s.e.m. **d,** Relative gene expression of LEF-1 and Notch1 in TCF-1$^{+/+}$ and TCF-1$^{-/-}$ DN3 cells. Results represent averages of 2-4 mice per group, normalized to TCF-1$^{+/+}$ DN3 cells. Error bars are s.e.m., *p<0.05.
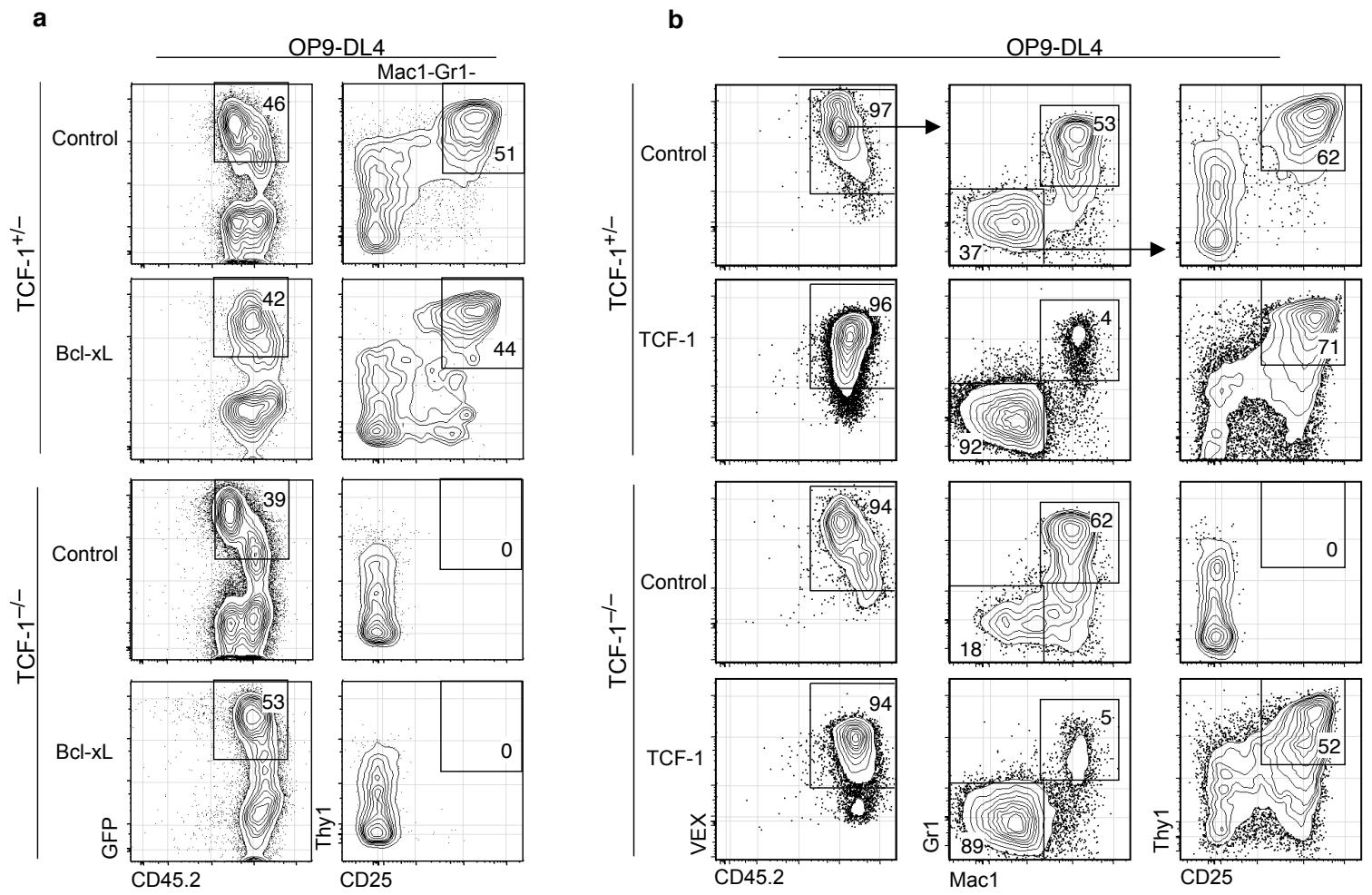
Supplementary Figure 3. TCF-1 but not Bcl-xL restores T cell development from TCF-1$^{-/-}$ progenitors in vitro.

a, LSK progenitors from TCF-1$^{-/-}$ or TCF-1$^{+/-}$ mice were transduced with MCSV-Bcl-xL (GFP) or empty vector MCSV-GFP (MigR1) virus. Cells were seeded on OP9-DL4 in equal cell number. In this experiment, transduced cells were not isolated by a second round of cell sorting. Bcl-xL-expressing TCF-1$^{-/-}$ progenitors failed to undertake T-lineage development, shown on day 10. Plots at right are gated to be Mac1-negative and Gr1-negative. **b,** LSK progenitors were isolated from TCF-1$^{-/-}$ or TCF-1$^{+/-}$ mice, transduced with MCSV-VEX-control virus or MSCV-TCF-1-VEX Transduced cells were isolated by a second round of cell sorting, and then seeded onto OP9-DL4 for 10 days to assess T cell development. Shown is the gating strategy whereby first GFP$^+$CD45$^+$ hematopoietic cells are gated and myeloid lineage cells are excluded. T-lineage development is shown by Thy1 versus CD25 expression. Results were consistent at earlier and later time points. Data are representative of at least 3 independent experiments.
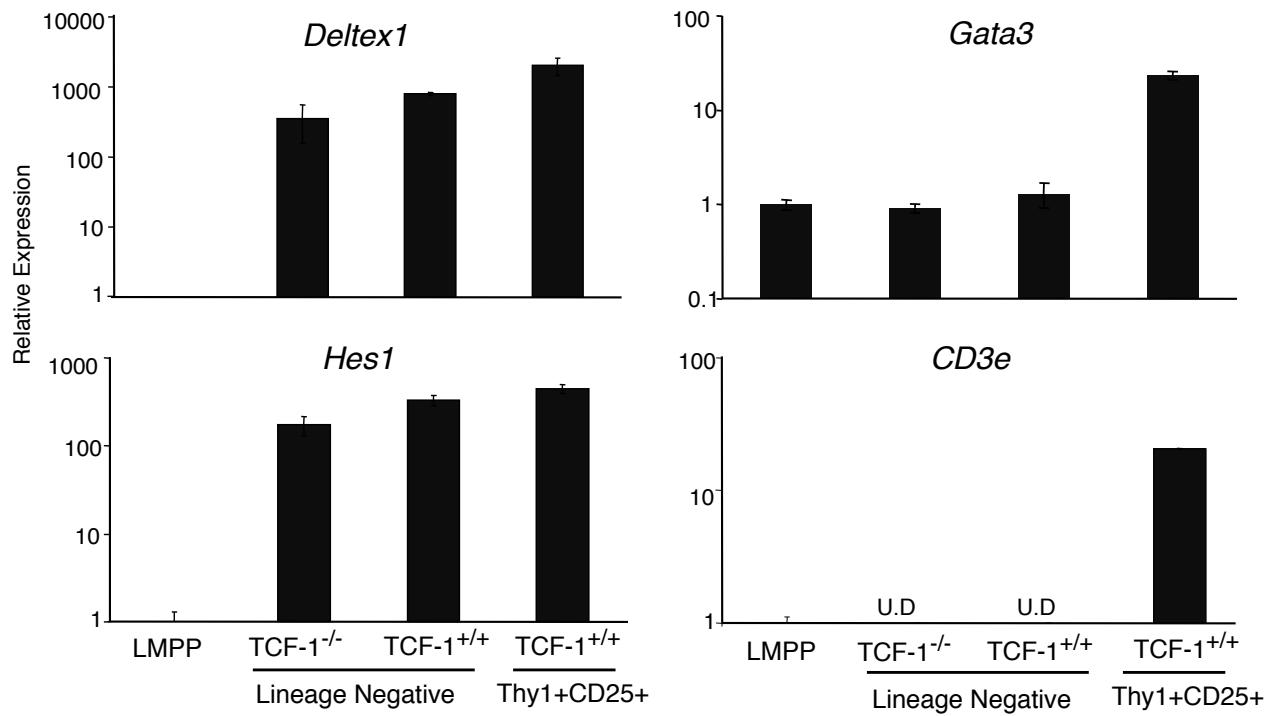
Supplementary Figure 4. TCF-1$^{-/-}$ progenitors upregulate Notch1 gene targets but fail to upregulate T cell-specific genes.

TCF-1$^{-/-}$ and TCF-1$^{+/+}$ LMPPs were isolated by cell sorting and seeded onto OP9-DL4 stroma. After five days of culture, lineage negative cells (Mac1$^-$Gr1$^-$CD25$^-$) and Thy1$^+$CD25$^+$ T lineage cells from TCF-1$^{+/+}$ cells were harvested for RNA and cDNA synthesis. QRT-PCR analysis was performed on Notch1 targets, *Deltex1* and *Hes1*, and T cell genes, *Gata3* and *CD3e*. Shown is the relative expression compared to LMPP after normalizing to 18sRNA. Error bars are s.e.m
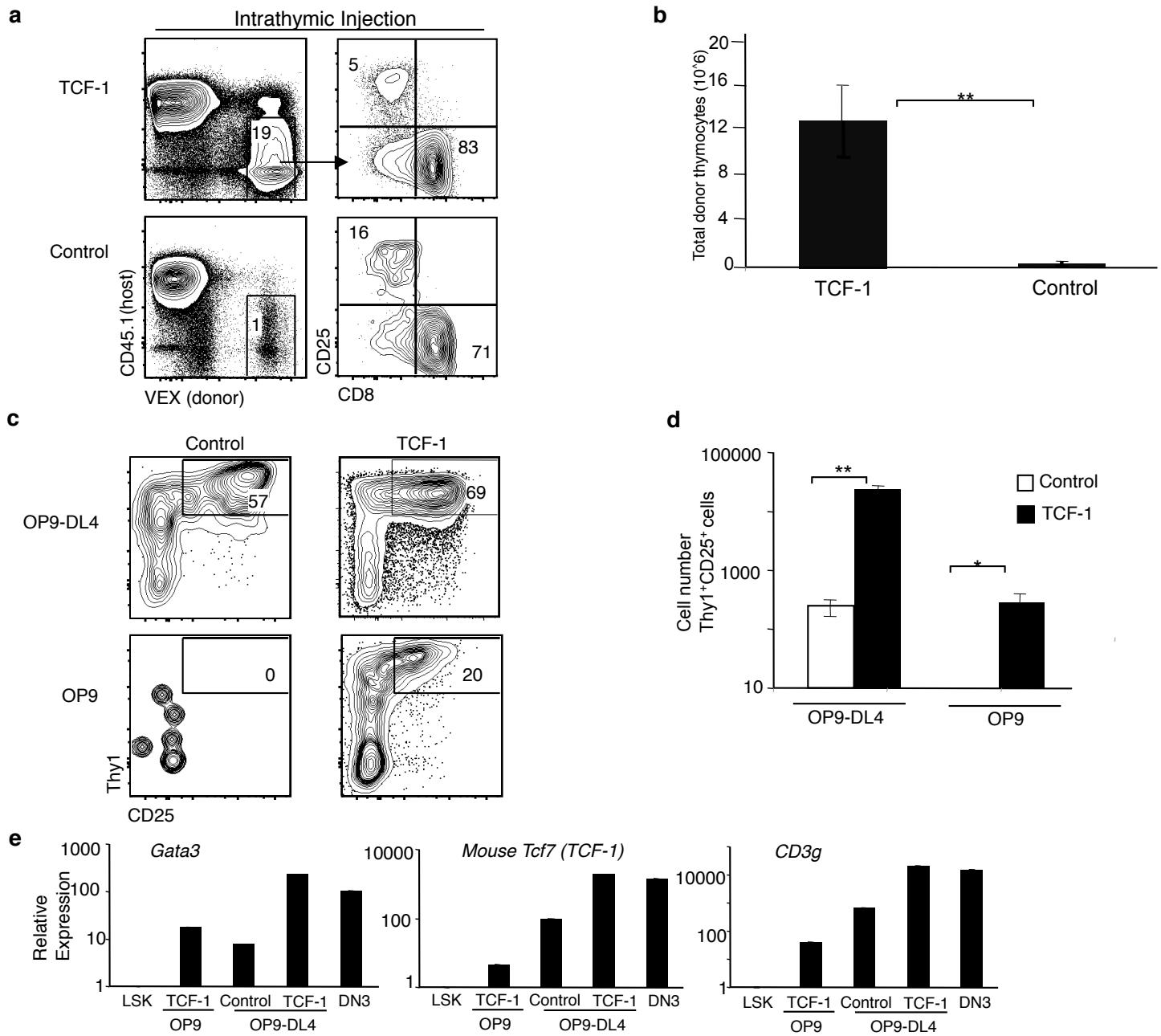
Supplemental Figure 5. TCF-1 and Notch1 signals are additive in vivo and in vitro.
a, TCF-1 or control expressing LSK progenitors were intrathymically injected into sublethally irradiated mice. Mice were analyzed on day 14 for thymic reconstitution (5 mice/group). **b**, Absolute numbers of door derived thymocytes, *******p*<0.005. **c,** Wt LSK progenitors were similarly isolated and transduced with MSCV-TCF-1-VEX or control vector. Transduced cells were isolated by cell sorting and equal numbers were seeded on OP9-DL4 and OP9. Development of Thy1+CD25+ cells is shown on day 12. **d**, Relative cellularity of cultures from day 12 analysis (4 wells/group), ******p*<0.05,*******p*<0.005. **e,** Expression of T lineage genes, from Thy1+CD25+ cells isolated from day 10 cultures. DN3 thymocytes are shown on the right for comparison. Results are relative to LSK after normalizing to GAPDH. All error bars, means +/- s.e.m.
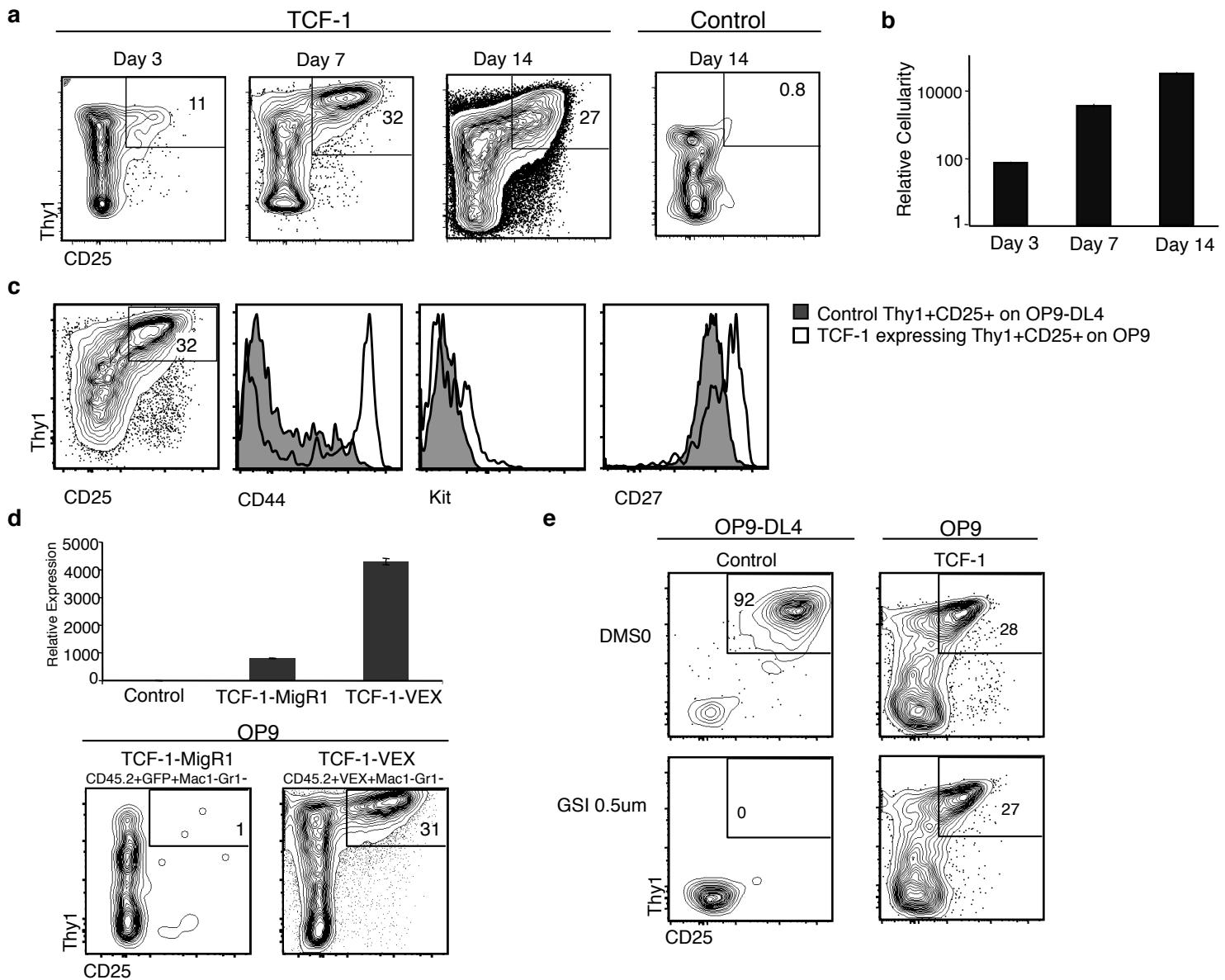
Supplemental Figure 6: Characterization of TCF-1-expressing Thy1⁺CD25⁺ cells.
a, Wt LMPPs were isolated and transduced with control MSCV-VEX or MSCV-TCF-1-VEX. Transduced cells were isolated by cell sorting, and seeded onto OP9 stroma. Plots are gated on VEX⁺CD45.2⁺Mac1⁻Gr1⁻ cells. No Thy1⁺CD25⁺ cells were observed from control-expressing cells at all timepoints examined. **b,** Relative cellularity of TCF-1-expressing Thy1⁺CD25⁺ cells cultured on OP9 stroma. **c,** Characterization of cell surface markers on TCF-1-expressing Thy1⁺CD25⁺ cells after two weeks in culture. **d,** Wt LSK progenitors were transduced with TCF-1 in the GFP (MigR1) or VEX retroviral constructs. Shown is the relative expression of human and mouse TCF-1 48 hours later, normalized to LSK progenitors transduced with empty vector control. Below, transduced progenitors were also seeded onto OP9 and shown is a day 7 analysis. E. TCF-1-expressing or control LSK progenitors were seeded in equal number in triplicate on OP9-DL4 or OP9 in the presence of 0.5 μm GSI or DMSO as control. Plots gated as described in (2a). Shown is day 12 analysis. All error bars, +/-s.e.m.

a

β-catnin[f/f]MxCre^{+/+}

β-catnin[f/f]MxCre^{-/-}

— 500 bp (floxed deleted)
— 324 bp (floxed)

b

OP9

ICAT
TCF-1

Mac1-CD19-

97

36

TCF-1

97

38

VEX

GFP

Thy1

CD25

c

Relative Luciferase Activity

1200

800

400

0

*

■ MigR1
□ ICAT

d

β-catenin

ICAT
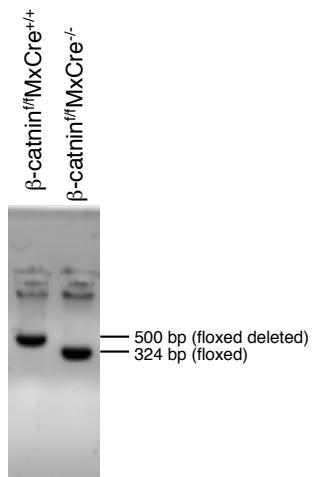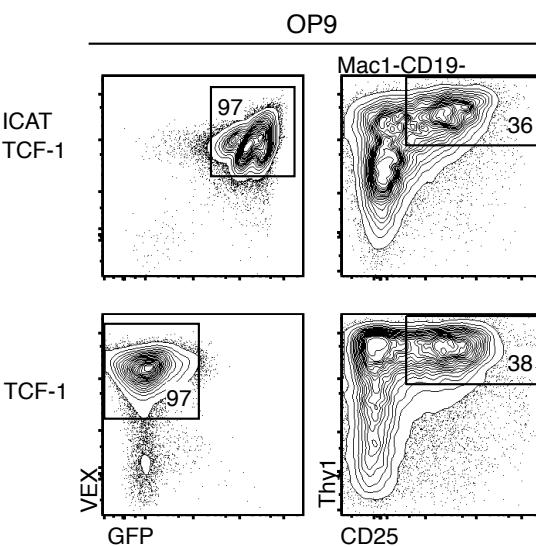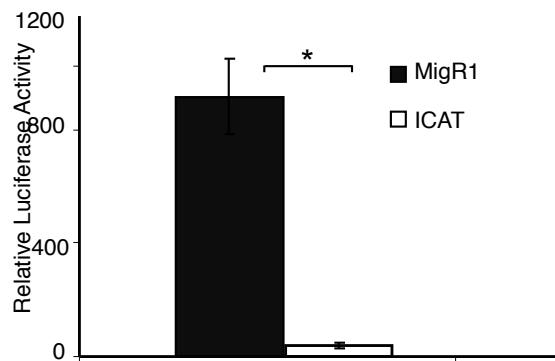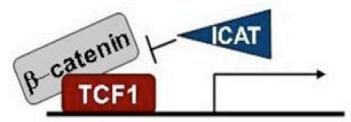
TCF1

Supplementary Figure 7. The development of TCF-1 expressing Thy1⁺CD25⁺ cells is independent of β-catenin.

a, Confirmation of β-catenin deletion by PCR of genomic DNA from β-catenin[f/f]MxCre^{+} and β-catenin[f/f]MxCre^{-} Thy1⁺CD25⁺ cells isolated by cell sorting from day 10 cultures, performed as previously described[31]. **b**, ICAT is a small molecule inhibitor of β-catenin that disrupts the ability of β-catenin to interact with TCF-1[36,17]. Wt LMPP progenitors were isolated and transduced with both MSCV-ICAT (GFP) and MSCV-TCF-1-VEX or MSCV-TCF-1-VEX alone. Transduced cells were isolated by a second round of cell sorting and seeded on OP9 stroma. Shown is a representative example of day 12 cultures. **c,** ICAT was functionally able to inhibit the β-catenin/TCF-1 mediated activation of the TCF-1 reporter, TOPFLASH, which contains a series of multimerized TCF-1/LEF1 binding sites[20]. 293T cells were co-transfected with the TOPFLASH reporter, β-catenin[ΔGSK], and TCF-1 and with either empty vector or MSCV-ICAT. Luciferase activity is shown relative to Renilla and normalized to an empty vector control.

Bars represent mean of triplicates +/- SD, *p=0.0003. Results are representative of 3 independent experiments. **d**, Schematic representation of ICAT-mediated inhibition of β-catenin-TCF-1 interactions.

a

OP9

Mac1-Gr1-

TCF-1 LK (Lin-Sca1-Kit+)

0

2

TCF-1 LSK (Lin-Sca1+Kit+)

Mac1

43

42

Gr1

Thy1

CD25

b

Mac1-Gr1-

TCF-1 HSC
(CD150+ Lin-Sca1+Kit+Flt3-)

SSC-A

98

Mac1/Gr1

Thy1

43

CD25
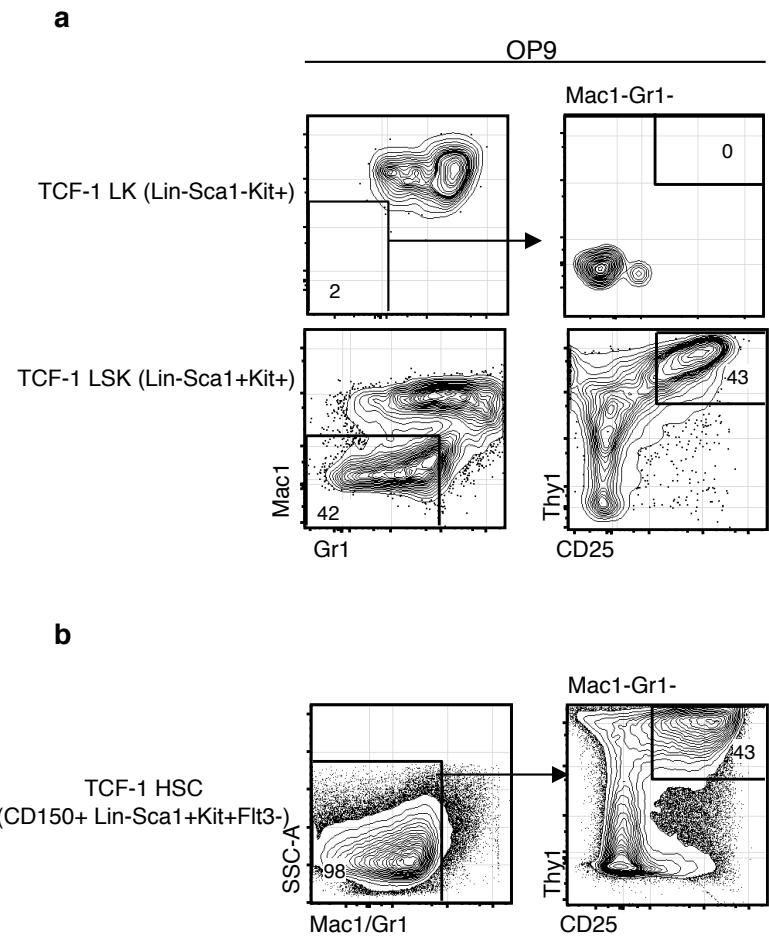
Supplementary Figure 8. Ectopic expression of TCF-1 is sufficient to give rise to T-lineage cells from CD150$^+$ HSCs but not from myelo-erythroid progenitors.
a, Lin$^-$Sca1$^-$Kit$^+$ (LK) myeloid progenitors or LSK progenitors from wt bone marrow were transduced with MSCV-TCF-1-VEX and seeded on OP9 for 10 days to assess the development of Thy1$^+$CD25$^+$ T-lineage cells. Plots are gated on VEX$^+$CD45.2$^+$ cells in culture. Thy1$^+$CD25$^+$ T-lineage cells are observed from LSK cultures whereas ectopic expression of TCF-1 in myeloid progenitors failed to upregulate surface expression of Thy1 and CD25. **b,** CD150$^+$Lin$^-$Sca1$^+$Kit$^+$Flt3$^-$ fetal liver HSCs were transduced with MSCV-TCF-1-VEX. VEX+ cells were isolated by cell sorting, then seeded on OP9 stromal cells. Shown is the development of Thy1$^+$CD25$^+$ T-lineage cells from day 14 cultures. Plots are gated on VEX$^+$CD45$^+$ hematopoietic cells.

Intravenous Transfer
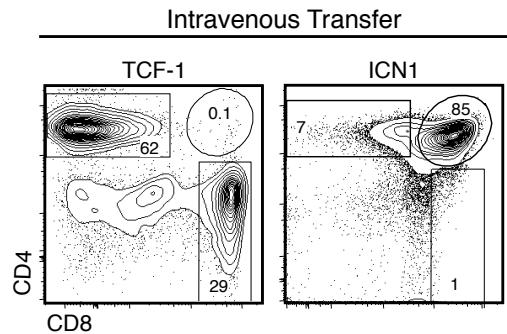
Supplementary Figure 9. Ectopic expression of TCF-1 in progenitors in vivo does not cause T-cell leukemia.

To determine whether ectopic expression of TCF-1 results in T-cell acute lymphoblastic leukemia (T-ALL) as observed with ectopic expression of Notch1 (ICN1), TCF-1 or ICN1-expressing LSK progenitors were intravenously transferred into lethally irradiated recipients. Mice were analyzed at various timepoints for the presence of T-ALL. A representative example at 8 weeks in spleen is shown. Plots are gated on donor derived CD45.2$^+$VEX$^+$ (TCF-1) or CD45.2$^+$GFP$^+$ (ICN1) splenocytes.

a Intrathymic Injection

Notch1^f/f MxCre+Rosa^YFP | CD45.2+YFP+

b OP9-DL1

Notch1^f/f MxCre+Rosa^YFP | CD45.2+YFP+ VEX+Mac1-Gr1-
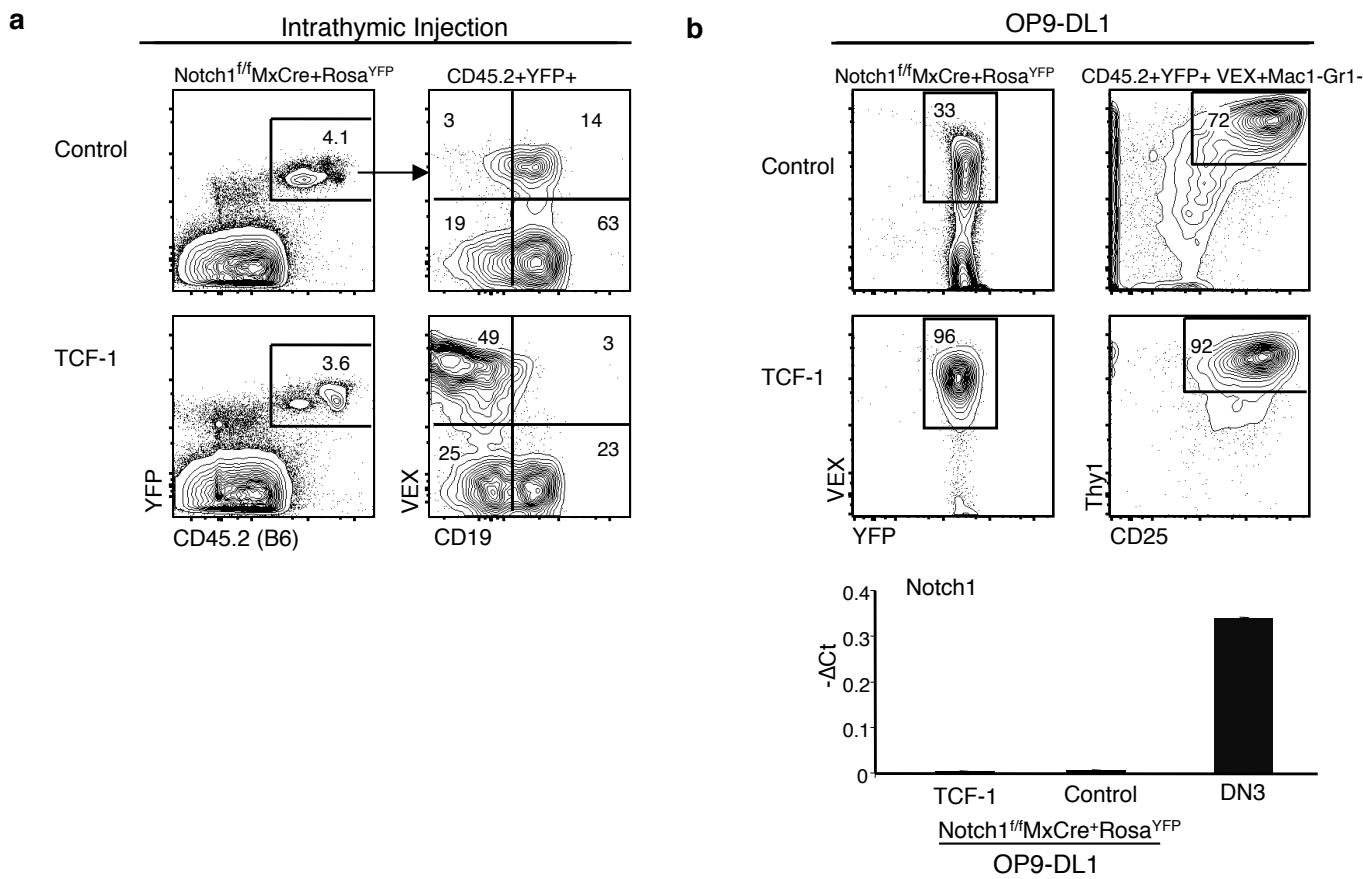
Supplementary Figure 10: B-cells expand in Notch1$^{f/f}$MxCre$^+$Rosa^{YFP} control-expressing cells in the thymus.

a, B-cell development was analyzed in the thymus after intrathymic injection of TCF-1 or control-expressing Notch1$^{f/f}$MxCre$^+$Rosa^{YFP} progenitors. Notch1 deletion results in the expansion of B-cells in the thymus from control-expressing progenitors[37]. Ectopic expression of TCF-1 inhibited the development of B-cells, and only the TCF-1 negative (VEX negative) donor cells developed into B-cells. These data are consistent with the in vitro data (Fig. 2b) and suggest that TCF-1 is able to inhibit B-cell development in vivo and in vitro. **b,** Confirmation of Notch1 deletion in Notch1$^{f/f}$MxCre$^+$Rosa^{YFP} progenitors. Deletion of Notch1 was first confirmed via genomic PCR[30]. For further confirmation, Notch1$^{f/f}$MxCre$^+$Rosa^{YFP} TCF-1 and VEX-expressing progenitors were seeded on OP9-DL1 stroma, which signals progenitors through Notch2 in addition through Notch1. Prior work has shown that Notch2 signaling is sufficient to induce T lineage commitment from Notch1$^{-/-}$ progenitors in vitro on OP9-DL1[38]. However, Notch2 does not drive T cell development in the thymus, likely because the relevant Notch ligands are not present[39]. This approach allowed us to obtain Thy1$^+$CD25$^+$ cells from both Notch1$^{f/f}$MxCre$^+$Rosa^{YFP} TCF-1 and control-expressing cells which were analyzed for Notch1 expression. Samples were normalized to GAPDH. Error bars are s.e.m.
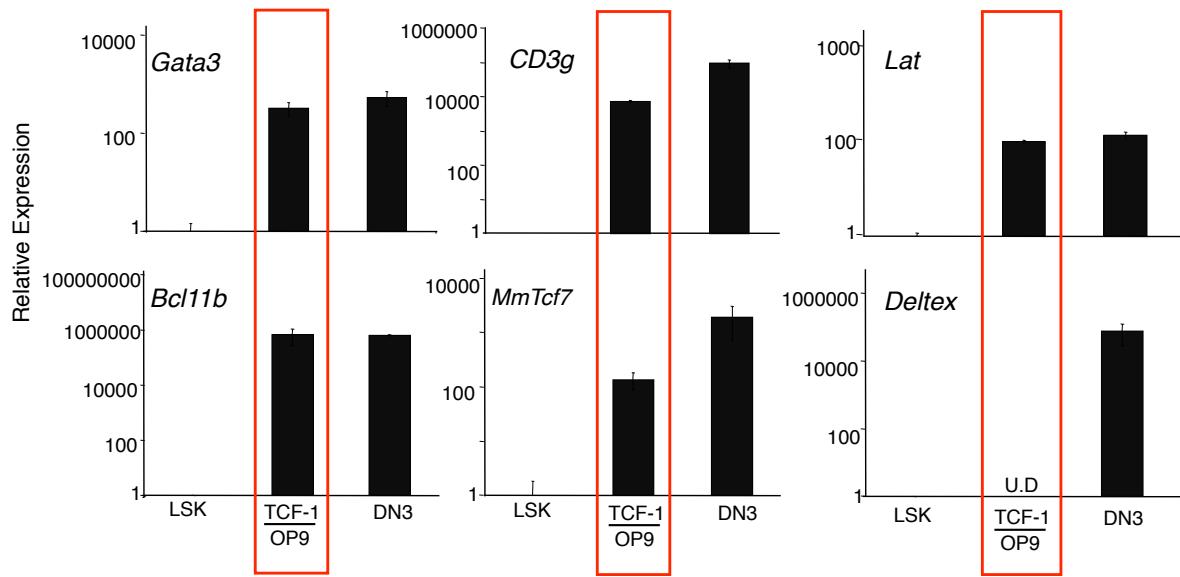
Supplemental Figure 11. TCF-1-expressing T-lineage cells from fetal liver progenitors express potential TCF-1 gene targets at comparable levels to DN3 thymocytes.

CCR9+Lin-Sca1+Kit+Flt3+ lymphoid progenitors from fetal liver were retrovirally transduced with MCSV-TCF-1-VEX for 48 hours in a cytokine cocktail containing IL3, IL6, and SCF. VEX-expressing cells were obtained by cell sorting and seeded onto OP9 stromal cells. TCF-1-expressing Thy1+CD25+ T-lineage cells were harvested from day 10 cultures. QRT-PCR analysis was performed on T-lineage genes shown in Figure 3b. Shown is the relative expression compared to LSK progenitors. Error bars are s.e.m.
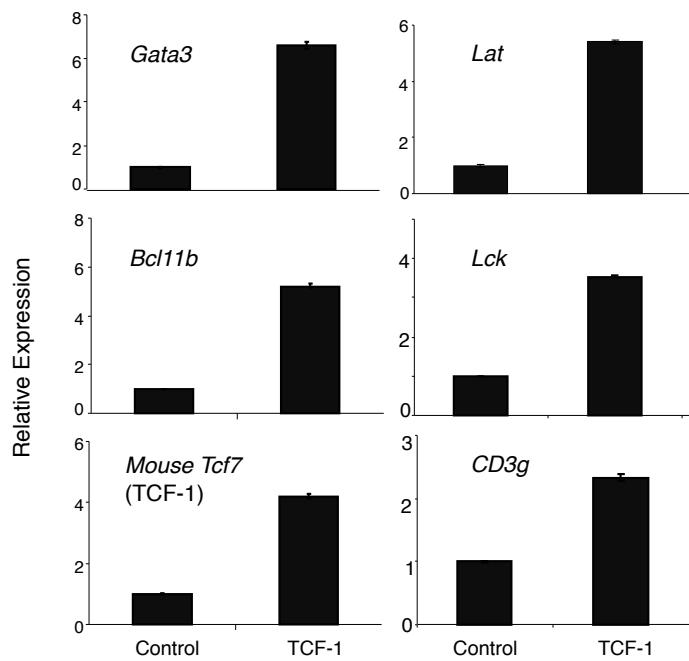
Supplementary Figure 12. TCF-1 gene targets are induced within 48 hours of retroviral transduction.
LSK progenitors from wt BM were transduced with MSCV-TCF-1-VEX or control virus, MSCV-VEX for 48 hours. Cells were harvested and cell sorted for VEX^{+} cells and RNA was made from equal numbers of control and TCF-1-expressing progenitors. QRT-PCR analysis was performed on potential TCF-1 gene targets. Shown is the relative expression of TCF-1 gene targets compared to control LSK after normalizing to 18sRNA. Error bars are s.e.m.

chr11:52,127,081-52,128,311

CSL

wt   cagcagcagacccgagacgtagta**ttcccacc**acacgccaccttcataaacgtgcg

mutant cagcagcagacccgagacgtagta**ggaaacaa**acacgccaccttcataaacgtgcg
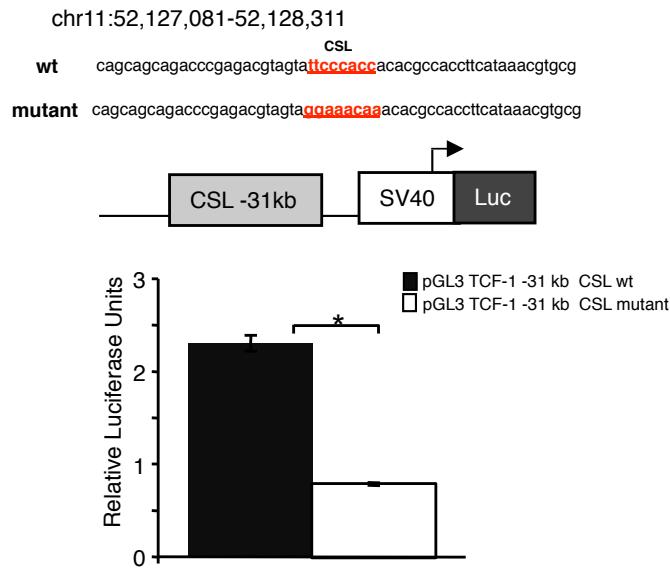
Supplementary Figure 13. -31kb CSL binding site upstream of TCF-1 is ICN1 responsive in a reporter assay.

The -28kb and -31kb CSL binding sites were cloned separately upstream into a pGL3 vector containing the SV40 promoter to determine if these CSL sites are responsive to activation by MSCV-ICN1. Consistent with the absence of Notch1 localization shown in the chromatin immunoprecipitation assays in Fig. 4b, we failed to detect activation of the -28kb construct and therefore focused on mutagenesis and analysis of the -31kb CSL binding site. Genomic coordinates represent the entire sequence cloned into the vector and below we show the mutagenesis of the CSL binding site. 293T cells were transiently co-transfected with the pGL3 SV40 promoter vector (200ng/well) containing the wildtype -31kb CSL binding site or a vector in which the CSL binding site was mutated and MSCV-ICN1 (100ng/well). Data were analyzed by comparing Luciferase activity to Renilla activity and adjusted to the fold increase over empty vector. Error bars are s.e.m., *p<0.0001.

Supplementary Table 1: The list of primers in this study

TCF-1 ChIP

qPCR primers	Primer Sequence (5` to 3`)
Cd3e-3`enhancer-Fwd	CGTTCATGTGCCTTGTGTGT
Cd3e-3`enhancer-Rev	TCATTGCAGTGCTTCCTGTT
CD3e-Negcontrol-Fwd	TCTCTTGACTTCTGGCAGAGC
CD3e-Negcontrol-Rev	GTGTGAGCCGAAAGAAAAGG
Axin2-3kb-Fwd	TTAAAGCGCCTCTGTGATTG
Axin2-3kb-Rev	CGCGAACGGCTGCTTATT
Tcf7-1.3kb-Fwd	TTTGTGAAGGAGGACACTGG
Tcf7-1.3kb-Rev	CTGAGCGCTGAGAAGCAAG
Tcf7-4kb-Fwd	AAATCATCCGACCGTTCTCA
Tcf7-4kb-Rev	AGGATCTCCCGGTTAGGAAA
Bcl11b-2kb-Fwd	GTCGTCCCCCTCCTCCAT
Bcl11b-2kb-Rev	ACTGCAGCCTGGCCTTGT
Gata3-1.7kb-Fwd	GGGAAAGCAAGCAGAGACCA
Gata3-1.7kb-Rev	TTGCCTCCGAACCAGCTTTC
CD25-6kb-Fwd	TTCAGAGCCCAGTGTAAGAGC
CD25-6kb-Rev	TGTCTATCAATGTCTTGAGAAGTCTAC

Notch1 ChIP

qPCR primers	Primer Sequence (5` to 3`)
Tcf7-CSL-28kb-Fwd	CATTTTGCATCTGGGCTACA
Tcf7-CSL-28kb-Rev	GGATGCCAGTCAAGGAAAAT
Tcf7-CSL-31kb-Fwd	CGAACCCCAGCAAGAAATAG
Tcf7-CSL-31kb-Rev	ACAAAGCGACCACAGCTTTT
Tcf7-CSL-negcontrol-Fwd	CCCCCTGCTCTCTCTGTATG
Tcf7-CSL-negcontrol-Rev	ATGAACACATTTGCCACAGC

Genotyping Primers

qPCR primers	Primer Sequence (5` to 3`)
Tcf7-exon7-Fwd	ACCTTTTCACCCCAGCTTTC
Tcf7-exon7-Rev	ATTCCCCTTCCTGTGTTGAG
Tcf7-Pn5B	CTAAAGCGCATGCTCCAGACT
Notch1f/f-Fwd	TGCCCTTTCCTTAAAAGTGG
Notch1f/f-Rev	GCCTACTCCGACACCCAATA
Beta catenin-Rm41-Fwd	AAGGTAGAGTGATGAAAGTTGTT
Beta catenin-Rm42-Rev	CACCATGTCCTCTGTCTATTC
Beta catenin-Rm43-Fwd	TACACTATTGAATCACAGGGACTT

RT-PCR primers (Unless stated here, all other genes were detected with Taqman probes)

qPCR primers	Primer Sequence (5` to 3`)
HuMmTcf7-Fwd	AGGAGATGAGAGCCAAGGTCATTG
HuMmTcf7-Rev	TTTTCCTCCTGTGGTGGATTCTTG
TCRg-V3-Fwd	TGCCTCTTGACATTTGGACA
TCRg-V3-Rev	GTTTCTGCCGGTACCAGTGT

Supplementary Table 2: Two fold gene lists from Figure 1e

Gene symbol	Tcf1^{+/+} lineage negative to Tcf1^{+/+} Thy1^{+} CD25^{+}		Tcf1^{-/-} lineage negative to Tcf1^{+/+} Thy1^{+} CD25^{+}	
	p-value	Fold change	p-value	Fold change
Il2ra	0.00150553	38.2994	0.000898665	77.6214
Cd3g	0.00396569	66.4554	0.00560987	55.2367
H19	0.00327325	20.9391	0.00413762	22.686
Thy1	0.00414442	13.4071	0.00553657	13.2003
Plxdc2	0.00396569	9.76399	0.00451203	12.5921
Fam20a	0.016421	11.7184	0.0205669	12.0765
Tcf7	0.00150553	7.24097	0.000898665	10.2718
Khdc1a	0.00153744	9.87848	0.00150467	8.80815
Akr1c12	0.00692664	8.66694	0.00902261	8.77418
Rag1	0.0177877	9.96093	0.0251491	8.76263
Gzma	0.00214639	9.44172	0.00286922	8.47202
Ppic	0.00711807	7.23659	0.00910223	7.36651
Esm1	0.00158583	6.55667	0.00150467	7.18497
Khdc1a	0.00379337	6.94018	0.00474476	7.03651
Cd3d	0.0370292	7.30749	0.049386	6.88053
A630038E17Rik	0.00388911	6.54783	0.00496816	6.49016
Khdc1b	0.00277886	6.09591	0.00297244	6.00702
Gzmb	0.00281801	5.01813	0.00297244	5.75194
Trat1	0.0260714	5.66658	0.0329648	5.59342
Tubb3	0.0280051	4.61485	0.0267732	5.52619
Cpa3	0.01983	5.22772	0.0236131	5.42861
Sytl3	0.00734747	4.96518	0.00868337	5.41409
Lat	0.00476035	4.87636	0.00611962	5.27951
Fam169b	0.00676086	6.05441	0.0104523	5.24574
Gm4827	0.0180913	4.82456	0.0212223	5.12475
Psg17	0.0112938	4.33281	0.0132658	4.62012
Akr1c13	0.00491926	4.83568	0.00726395	4.55175
Ctla4	0.027689	4.77573	0.0381514	4.48349
Cd160	0.0116884	3.28632	0.00902261	4.44302
Prkcq	0.00623994	5.44873	0.0107804	4.41367
Stk39	0.00911994	4.18337	0.0124078	4.01837
Txk	0.0313943	3.77677	0.0368402	3.91816
Tnfsf10	0.0110426	4.62601	0.0188152	3.91739
Muc13	0.00564899	4.34653	0.00938953	3.76571
Arpp21	0.0166545	3.82712	0.0221932	3.69017
Gimap1	0.0414729	3.43208	0.0464341	3.63799
Il17rb	0.0103649	3.66105	0.014305	3.54381
Sestd1	0.00357872	2.66189	0.00297244	3.41856
Naip3	0.00414442	2.47717	0.00323591	3.41332
Adamts3	0.00327172	3.70585	0.00455821	3.35704
Prkca	0.0708287	2.65884	0.0548791	3.30078
Slc22a3	0.00887696	3.57962	0.0139737	3.2395
Mpp4	0.0118514	3.06271	0.01401	3.23012
E030002O03Rik	0.0157658	3.47217	0.022654	3.22259
1190002H23Rik	0.0280304	2.95123	0.0288635	3.21376
Xrcc5	0.00327325	3.57666	0.00482782	3.16686
Gimap9	0.0143313	2.81319	0.0147111	3.14645
Adamts3	0.0286895	3.51919	0.0458602	3.11672

Gm6683	0.033189	2.86974	0.034934	3.11037
Cxcr5	0.00658826	3.61568	0.011346	3.09281
Tuba8	0.00533863	3.41419	0.00872093	3.09022
Armcx4	0.0223493	2.86027	0.0240721	3.07745
Gm13926	0.00449176	2.64616	0.00482782	3.03774
Vat1l	0.00673627	3.16111	0.00940567	3.02695
Gm5111	0.020359	3.29363	0.0300998	3.02269
Gata3	0.0142867	3.19352	0.0212866	2.96663
Dnahc8	0.00836105	2.92012	0.0106266	2.90265
F2r	0.0070842	2.8153	0.00902261	2.86991
Cpne2	0.0584699	2.71331	0.0659239	2.84636
Lif	0.00342238	3.12348	0.00503469	2.82309
Tcrg-V3	0.00524884	2.10355	0.00423568	2.8042
Ccr4	0.0354161	2.58561	0.0365452	2.79638
A130014H13Rik	0.254625	2.81579	0.294708	2.78153
Mfsd2	0.0114308	2.60983	0.0131137	2.75419
Adamts3	0.0134211	3.22685	0.0234355	2.75278
Clec4e	0.00741965	2.97519	0.0115854	2.72468
Ets1	0.0267514	2.44743	0.025733	2.71659
Nck2	0.00327172	2.67156	0.00401515	2.71337
Gimap5	0.0182623	2.46679	0.0189806	2.69739
Adamts3	0.00731341	2.58407	0.0087836	2.6929
Sytl2	0.0392283	2.66215	0.051259	2.6141
Pcdh7	0.00836105	2.97738	0.0147111	2.60968
B4galnt2	0.00396569	2.79732	0.00611962	2.60536
Ndrg2	0.0728253	2.89628	0.115783	2.58413
Kbtbd11	0.0381592	2.18011	0.029435	2.58053
4933415A04Rik	0.0114029	2.4141	0.0124078	2.57437
Itga2b	0.00521472	2.49107	0.00703707	2.51199
Ctla2b	0.0257271	2.78391	0.0419153	2.49884
Entpd5	0.0197741	2.62776	0.0284614	2.48441
Dnmt3b	0.0134196	2.62382	0.0198663	2.47969
Rasgrp1	0.0678147	2.55277	0.0907044	2.47948
Lrp12	0.00516306	2.75441	0.00893189	2.46335
Sstr2	0.0262152	2.88354	0.0483883	2.45579
AI847670	0.00265423	2.35071	0.00297244	2.42605
Irgm2	0.00317962	1.95232	0.00280101	2.42555
Tox	0.058171	2.10265	0.0482551	2.41917
Rag2	0.0391207	2.92586	0.079532	2.40243
Lgals9	0.011868	2.79428	0.0219571	2.3974
2900006K08Rik	0.0157658	2.15191	0.0152422	2.37182
Svil	0.00517266	2.31309	0.0067748	2.36873
A630091E08Rik	0.158758	2.14842	0.151965	2.36161
Aqp11	0.02278	2.56104	0.0361745	2.3554
D330050I23Rik	0.0142867	2.21636	0.0154339	2.35497
Zfp709	0.0538455	1.72646	0.0232888	2.35333
Fam40b	0.0980647	2.76191	0.17074	2.34587
Epcam	0.0104322	2.40526	0.0147111	2.33935
Tmtc2	0.142092	2.15574	0.140742	2.33416
Zbtb16	0.0330588	2.12605	0.0320952	2.30366
Fbp1	0.0656894	2.34537	0.0863605	2.29879
Lck	0.00613889	2.86126	0.014251	2.29094

Hcfc2	0.00357933	2.03369	0.00336175	2.29079
Irak3	0.0866219	2.24152	0.0998889	2.28957
AA467197	0.157634	2.16674	0.16704	2.27765
Dpp4	0.0236635	2.3103	0.0308824	2.26898
Camk2d	0.0718744	2.28018	0.0914124	2.26289
Enah	0.0483016	1.84885	0.030388	2.26198
Als2	0.0192058	2.02109	0.0182719	2.25324
2610020H08Rik	0.0286567	2.04326	0.0267671	2.24574
Rab44	0.00414442	2.28949	0.00629113	2.23835
Bcl2l1	0.0204906	2.39923	0.0311969	2.23477
Med12l	0.0070842	2.22363	0.0092128	2.21906
Adamts3	0.0187973	2.29468	0.0274993	2.16129
Dgke	0.0364036	2.07313	0.0395325	2.16084
Adamts9	0.028242	2.20452	0.0374741	2.16057
2610301F02Rik	0.112571	2.15109	0.136241	2.15538
4930520O04Rik	0.0439397	1.98364	0.0421967	2.15466
Fgf3	0.0145588	2.07387	0.017025	2.14453
Dnajc6	0.0100554	2.78272	0.0251668	2.13835
Slc15a1	0.128455	2.03351	0.135639	2.13781
Ctla2a	0.019125	2.26884	0.0287405	2.1331
Gpr56	0.034057	2.58752	0.0734582	2.12758
Hemgn	0.0714063	2.14923	0.0918059	2.1248
Cdkn1a	0.0198365	2.26372	0.0300998	2.11685
Kcnk5	0.0208959	2.32061	0.0358016	2.10256
Trim13	0.00996153	1.90049	0.00914343	2.10209
Nefh	0.0129427	2.14002	0.0180363	2.0975
Ddx3y	0.932978	-1.48423	0.87804	2.07215
Rnf125	0.135126	2.30298	0.210601	2.06975
Adamts3	0.00499847	2.18351	0.0081728	2.0505
Mycn	0.046907	2.12785	0.0675716	2.04715
Gm12250	0.0273164	1.90956	0.0268174	2.04609
Grit	0.0178533	1.81435	0.0149624	2.04329
Actr3b	0.0222144	2.06589	0.0289594	2.04064
Dnahc8	0.0260142	1.97839	0.0296096	2.0262
Inpp4b	0.0956938	1.95201	0.104327	2.02199
Hivep2	0.0341278	2.04691	0.0443725	2.01854
Pp11r	0.065397	2.37314	0.129275	2.01615
Plscr1	0.0343549	1.80927	0.0284614	2.01475
Gpr87	0.0749238	2.21012	0.123015	2.01048
Crip1	0.016421	2.07368	0.022654	2.01009
Asph	0.031506	1.79318	0.0258874	2.00913
Rag2	0.0564862	2.23905	0.0991575	2.00745
H2-Aa	0.002826	-41.3905	0.003236	-39.7481
Klrd1	0.001506	-52.231	0.001504	-37.8282
H2-Ab1	0.002348	-28.0605	0.002972	-26.724
Nucb2	0.00349	-30.1197	0.004828	-24.5633
Ifi205	0.002818	-22.919	0.003236	-22.0298
Mpeg1	0.002826	-22.1687	0.003444	-20.4156
Ctsh	0.002348	-23.8919	0.002972	-18.9326
Clec9a	0.003257	-23.2537	0.004427	-18.6304
Cybb	0.003272	-24.3794	0.004719	-17.5859
Rnd3	0.004428	-19.6849	0.006775	-17.0234

Plbd1	0.00257	-15.9281	0.002972	-15.5872
Hpgd	0.003966	-23.6862	0.006775	-15.2337
S100a8	0.010085	-23.1286	0.018594	-15.0802
Kynu	0.003889	-21.7687	0.006634	-14.211
Aif1	0.001586	-13.5258	0.001505	-14.0974
Cd74	0.003798	-16.2745	0.005366	-14.0784
Ctss	0.007947	-16.3186	0.011418	-14.0148
Flt3	0.002194	-16.0217	0.002972	-13.675
Map4k5	0.002654	-14.9674	0.002972	-13.5688
Klrk1	0.002961	-15.2532	0.004015	-12.9627
Ms4a4c	0.004144	-15.1293	0.006803	-11.8751
Dirc2	0.00188	-14.4243	0.002801	-11.2249
Siglech	0.003273	-16.2668	0.005327	-11.1681
Ms4a6c	0.006901	-11.6164	0.009431	-10.7671
Tlr11	0.006123	-11.868	0.009023	-10.4568
Csf1r	0.003273	-10.1809	0.004236	-10.2796
Rnase6	0.002348	-12.3544	0.002972	-10.0486
Lyz2	0.008695	-13.8618	0.016379	-9.34991
Itgax	0.001586	-9.73555	0.001505	-9.252
Slamf7	0.004144	-13.1945	0.007333	-9.21189
H2-Eb1	0.002667	-10.041	0.003136	-9.06281
S100a9	0.012709	-15.7637	0.027846	-8.62865
Kmo	0.005948	-9.26372	0.008683	-8.54477
Ms4a3	0.027071	-7.93667	0.031087	-8.4761
Gm6377	0.009665	-8.16887	0.011961	-8.45041
Ly86	0.002527	-9.60155	0.002972	-8.40732
Tcfec	0.005753	-8.26036	0.008005	-8.25132
Scpep1	0.002348	-10.1576	0.002972	-7.96684
Cd7	0.00188	-8.47416	0.002332	-7.92266
Entpd1	0.004094	-6.71077	0.004828	-7.70756
Irf8	0.005249	-8.08352	0.007433	-7.63953
Eltd1	0.011115	-5.48005	0.009669	-7.40738
Pyhin1	0.006588	-8.91346	0.010424	-7.33177
Lifr	0.002818	-11.8273	0.004745	-7.09463
AI607873	0.013148	-9.04695	0.022148	-6.97433
Crybg3	0.004021	-7.9902	0.006258	-6.83999
Samd9l	0.004144	-10.0786	0.008425	-6.83714
Pira2	0.003966	-9.5909	0.007037	-6.7716
Cd86	0.013801	-6.32439	0.016514	-6.72871
Lgmn	0.004144	-7.38008	0.006491	-6.54146
Fam129a	0.003273	-6.68795	0.004512	-6.49873
Bcl2a1a	0.005386	-6.42596	0.007264	-6.48643
Gm5431	0.018991	-7.96008	0.030043	-6.47408
Il1r1	0.063722	-5.09771	0.058309	-6.42722
Jhdm1d	0.007313	-7.21145	0.010992	-6.30218
Lrrk2	0.003273	-7.12596	0.004585	-6.26671
Plxnc1	0.001995	-7.41686	0.002801	-6.24836
5430435G22Rik	0.017315	-6.51657	0.022736	-6.23562
Gm11428	0.011908	-11.7381	0.030043	-6.16904
Ifitm6	0.016169	-6.81849	0.022865	-6.14944
Cd300a	0.001586	-6.25276	0.001638	-6.07857
Amica1	0.003949	-7.11374	0.006238	-5.93143

Pion	0.004633	-6.54705	0.007183	-5.86016
9930111J21Rik	0.002429	-6.21472	0.002972	-5.76522
Gm6455	0.004144	-3.60591	0.003236	-5.72349
Gm6455	0.004144	-3.57295	0.003236	-5.71638
Btla	0.004623	-7.48254	0.008553	-5.69722
Sp100	0.001995	-6.33755	0.002801	-5.68143
4930506M07Rik	0.01474	-5.72401	0.019619	-5.62395
H2-DMb2	0.022626	-5.96355	0.031141	-5.55406
Bcl2a1b	0.007668	-5.4494	0.009627	-5.50335
Bcl2a1d	0.00759	-5.43594	0.009578	-5.48019
Jhdm1d	0.003624	-6.34451	0.005361	-5.45747
Hpse	0.002638	-5.13568	0.002972	-5.42051
Csf2rb	0.007096	-5.33736	0.009143	-5.3632
Ccl3	0.007015	-4.49577	0.007269	-5.34796
Aim1	0.006665	-6.14882	0.010285	-5.32893
Klra17	0.016501	-10.1823	0.044835	-5.29643
Pgap1	0.014982	-7.12562	0.028302	-5.14817
Id2	0.004721	-5.1818	0.006634	-5.13053
Xcr1	0.015468	-4.93994	0.01905	-5.10176
Raet1b	0.018989	-4.99093	0.023883	-4.93076
Psap	0.002348	-4.85014	0.002972	-4.82013
Lrrc4c	0.10375	-4.2634	0.106739	-4.79562
Cd300c	0.005249	-6.54083	0.010244	-4.77182
Anpep	0.008097	-4.86297	0.010627	-4.73687
Rassf4	0.003795	-6.07205	0.006495	-4.64269
Mef2c	0.01385	-4.57354	0.017869	-4.59016
Pira11	0.00461	-6.28479	0.009143	-4.52067
Csf2rb2	0.004144	-5.41801	0.007037	-4.5027
Klri2	0.009475	-5.88818	0.018274	-4.49185
Ceacam1	0.009923	-5.61864	0.018255	-4.4546
Pgap1	0.021293	-6.95176	0.05078	-4.41707
Cadm1	0.003555	-5.85435	0.006258	-4.40299
9030625A04Rik	0.00912	-4.86379	0.013974	-4.38088
Sat1	0.004144	-4.66401	0.006258	-4.3161
9030420J04Rik	0.023273	-4.91678	0.036289	-4.30787
Fkbp1b	0.002828	-5.36518	0.004512	-4.30338
Cd36	0.015621	-3.73511	0.016031	-4.26973
Prdx4	0.007084	-4.92345	0.0113	-4.25865
Gpr137b-ps	0.007634	-4.83811	0.011982	-4.2494
Gm10759	0.018683	-4.48655	0.025562	-4.22185
Tet1	0.004149	-4.16724	0.005884	-4.22072
Speer1-ps1	0.014294	-2.74292	0.008474	-4.20164
Slfn8	0.003973	-5.5814	0.007333	-4.19543
Ccr2	0.004144	-5.06602	0.007264	-4.18888
Alpk1	0.003415	-4.61072	0.004828	-4.16975
Evi5	0.002826	-4.96494	0.004236	-4.16501
Cytip	0.003795	-4.22501	0.004828	-4.16107
Ahnak	0.003889	-5.18993	0.006634	-4.13408
Fam135a	0.005408	-4.48052	0.0086	-4.08134
Slc44a1	0.018991	-5.63539	0.038707	-4.07409
Anxa3	0.005339	-4.18007	0.007509	-4.06192
Naaa	0.008949	-4.70014	0.014711	-4.05911

Id3	0.00698	-4.57047	0.01078	-4.03959
Tlr3	0.018683	-3.91502	0.022466	-3.99285
Slfn5	0.00947	-4.86741	0.016914	-3.98925
Alcam	0.003272	-4.48287	0.004512	-3.9864
Cd33	0.008073	-3.17879	0.007267	-3.94696
Anxa5	0.003272	-4.33214	0.004512	-3.93169
Gatm	0.018989	-3.85265	0.023219	-3.90361
Gpr137b	0.007668	-4.70041	0.013688	-3.89535
Slc9a7	0.002755	-4.18056	0.003236	-3.85672
Rasgrp3	0.032319	-4.18157	0.046668	-3.85016
H2-Ob	0.006293	-3.44141	0.007037	-3.84337
Myo9a	0.139291	-4.04577	0.180805	-3.84335
Anxa1	0.011115	-4.58428	0.019526	-3.82873
Cd180	0.028562	-4.30343	0.043739	-3.82788
Adrbk2	0.014897	-3.84802	0.019709	-3.79256
Tifa	0.012033	-4.33731	0.019709	-3.77552
H2-DMa	0.017275	-3.58121	0.020358	-3.75258
Tgm3	0.069336	-3.13059	0.061569	-3.7483
Tet1	0.030063	-3.99019	0.041915	-3.73799
Pld4	0.028735	-4.57841	0.051049	-3.72409
Tlr7	0.021759	-4.83558	0.042331	-3.71692
Gm6455	0.038835	-2.39854	0.019619	-3.67454
Ccr5	0.005408	-4.46333	0.009669	-3.65801
Ccr5	0.005408	-4.46333	0.009669	-3.65801
Hpgds	0.028491	-3.71292	0.036845	-3.65347
Birc1f	0.01474	-4.14247	0.023222	-3.62773
Tet1	0.021306	-3.84263	0.029938	-3.60799
Tceal1	0.005163	-3.28661	0.006258	-3.59017
Fam49a	0.006468	-3.69231	0.009023	-3.57516
Xlr	0.080286	-3.16152	0.079532	-3.55693
Ifngr2	0.002348	-4.20284	0.00316	-3.5198
5031414D18Rik	0.002826	-4.21636	0.004468	-3.50595
Syne2	0.004144	-6.08624	0.012042	-3.49613
Ctnnd2	0.003951	-4.28368	0.006775	-3.49605
Il13ra1	0.011403	-5.56161	0.029875	-3.47974
Gm6455	0.031394	-2.33321	0.016851	-3.45197
Acvr2a	0.003272	-4.31328	0.004927	-3.44988
Atp1b1	0.002818	-5.09177	0.004927	-3.43851
Tagap	0.005249	-2.93661	0.005537	-3.42573
AI451617	0.011115	-3.67662	0.016651	-3.42395
Nrp1	0.008744	-4.1097	0.01571	-3.40887
Gm10825	0.020543	-3.5704	0.028211	-3.40475
Slc41a2	0.004144	-4.86748	0.009405	-3.40416
Clec4a2	0.031982	-4.34637	0.062522	-3.39819
Il6st	0.001506	-3.68424	0.000899	-3.39518
Lmo2	0.027071	-3.21103	0.030043	-3.38696
Itga1	0.010889	-4.01025	0.019274	-3.37381
Phactr2	0.017213	-3.40364	0.021957	-3.36736
Lrrc16a	0.006504	-3.99184	0.011352	-3.35025
Lilrb3	0.016499	-4.36833	0.032453	-3.34939
Zc3h12c	0.007387	-3.88449	0.012548	-3.3432
Slc8a1	0.003272	-3.29086	0.004015	-3.3374

Gm9766	0.008427	-3.20472	0.009969	-3.33057
Opn3	0.006934	-3.63795	0.010434	-3.32322
Myo9a	0.062801	-3.29837	0.078049	-3.31645
Lztfl1	0.042479	-3.86222	0.071952	-3.30559
Xkrx	0.014696	-4.38277	0.029777	-3.30067
Tgfbi	0.022368	-2.86061	0.021664	-3.27199
Phf11	0.028594	-2.97028	0.028959	-3.27024
Tlr1	0.017407	-3.4964	0.024549	-3.26533
Stom	0.015815	-3.496	0.022466	-3.26457
Pak1	0.041473	-3.29842	0.053075	-3.26436
Clec12a	0.003273	-3.63131	0.004828	-3.2635
Fmnl2	0.003273	-4.05057	0.005606	-3.24265
Sgpl1	0.003971	-3.67188	0.006414	-3.22554
Dusp22	0.004998	-3.91826	0.009209	-3.21719
Bst1	0.011846	-3.14712	0.014837	-3.20312
Runx2	0.003068	-3.78331	0.004558	-3.19681
Myadm	0.006468	-3.90471	0.011998	-3.19267
Gm7609	0.002491	-3.27171	0.002972	-3.184
Ccl9	0.010324	-3.39987	0.015179	-3.18364
LOC625360	0.008361	-3.45129	0.012733	-3.16206
Car2	0.077924	-2.52461	0.058104	-3.15914
Ly6c2	0.008718	-3.9723	0.017327	-3.15768
Fgl2	0.026519	-3.36967	0.038202	-3.13761
Plxnb2	0.008528	-3.5579	0.014305	-3.13566
Zeb2	0.013542	-3.50539	0.02159	-3.13535
Mllt4	0.017407	-2.29071	0.010424	-3.12985
Mctp2	0.003273	-3.83529	0.005508	-3.11978
Cds1	0.010831	-3.65376	0.019066	-3.1136
Gm6455	0.017048	-2.01477	0.007269	-3.1117
Ly6d	0.001506	-3.10426	0.001504	-3.10515
Bcl6	0.010464	-3.22686	0.014766	-3.09441
Sirpa	0.033089	-3.96265	0.066691	-3.09365
BC013712	0.003273	-3.3181	0.004512	-3.09339
Naip5	0.013421	-4.03539	0.027197	-3.09068
Samhd1	0.016217	-3.18557	0.022193	-3.0492
Myo9a	0.019857	-3.2777	0.028838	-3.04452
Bclp2	0.046465	-2.90529	0.054216	-3.01248
Ctnna1	0.003272	-3.45483	0.004719	-3.00523
Hck	0.002818	-3.39895	0.004138	-3.0042
Dock4	0.004519	-3.45042	0.007899	-3.0036
Hp	0.021168	-3.25391	0.03132	-3.00334
Rgs10	0.003889	-3.56927	0.006634	-2.99495
Tcf4	0.003272	-3.55898	0.004831	-2.99476
Myo9a	0.008073	-3.24377	0.012106	-2.98663
Sp140	0.026342	-3.85331	0.054713	-2.97868
Plekhm3	0.002044	-3.77711	0.002972	-2.96878
Pira3	0.008877	-4.11706	0.021065	-2.96824
Fam105a	0.004721	-3.10383	0.007037	-2.95853
6330407A03Rik	0.055182	-2.96797	0.071043	-2.94431
Lyn	0.002638	-3.10355	0.002972	-2.93362
Ccdc88a	0.014287	-3.48546	0.02506	-2.93298
Fgd4	0.012079	-3.33301	0.020595	-2.9283

EG665955	0.058056	-2.47279	0.048636	-2.91598
Pros1	0.028294	-4.08619	0.068644	-2.91514
B4galt6	0.022185	-2.72175	0.023963	-2.91456
Zfp36	0.003579	-2.95884	0.004745	-2.91152
A530040E14Rik	0.00461	-3.6706	0.00917	-2.90236
Myo1f	0.011115	-3.13927	0.017172	-2.89816
AY512938	0.017788	-3.22302	0.027365	-2.89768
Cd52	0.024431	-3.24056	0.039072	-2.88981
Tmem50b	0.007765	-2.83907	0.009572	-2.88194
Cox6a2	0.004633	-3.03853	0.007037	-2.87246
Rab32	0.018322	-3.12572	0.027051	-2.87243
Cc2d2a	0.154998	-1.51868	0.022881	-2.8705
A530040E14Rik	0.033637	-3.8476	0.075763	-2.86734
Grn	0.003949	-3.28353	0.006414	-2.84839
Cd34	0.024196	-2.34643	0.019619	-2.83928
Vwa5a	0.003966	-3.00488	0.00561	-2.8389
Adora3	0.005408	-3.06458	0.008683	-2.83289
Mef2a	0.003272	-2.8434	0.004015	-2.82994
Pip4k2a	0.004144	-2.75322	0.00561	-2.80284
Tet2	0.002818	-3.13212	0.004015	-2.80145
Syne2	0.00318	-4.7624	0.007509	-2.79447
Gpr183	0.012638	-3.10694	0.020617	-2.78912
Ccnd1	0.011431	-2.98879	0.017599	-2.78649
A530023O14Rik	0.004144	-2.66025	0.005327	-2.78599
Arid5b	0.003798	-3.00795	0.005537	-2.7735
Tmem224	0.008695	-3.1391	0.014711	-2.76846
Havcr2	0.007573	-3.115	0.012632	-2.76215
Gm2a	0.004878	-2.46587	0.005427	-2.74955
Pik3ap1	0.005256	-2.98508	0.008553	-2.74803
Pik3c2a	0.005288	-2.86522	0.008018	-2.74014
Unc93b1	0.003272	-2.78919	0.004202	-2.73784
Zc3h12c	0.005659	-3.11446	0.009669	-2.73353
Asah1	0.010589	-2.91182	0.015783	-2.73262
Gcnt2	0.007313	-2.50357	0.008087	-2.73227
Arhgef12	0.007511	-3.36202	0.015283	-2.71828
A030009H04Rik	0.002348	-2.90591	0.002972	-2.71553
Tceal8	0.012516	-2.71384	0.016359	-2.71046
Cst3	0.010432	-2.89285	0.01571	-2.70141
Lsp1	0.005063	-2.77221	0.007264	-2.69996
Mobkl2b	0.052746	-3.00921	0.085365	-2.69286
A530040E14Rik	0.037591	-3.69434	0.090663	-2.68538
Blnk	0.00947	-4.09852	0.027012	-2.68514
Ela2	0.034614	-2.71216	0.044142	-2.68383
Ggh	0.018991	-2.91635	0.028711	-2.6836
Itgb2	0.004898	-2.7059	0.006803	-2.67768
Sgms1	0.018991	-2.49076	0.020784	-2.67271
Klrb1f	0.004144	-3.4359	0.008683	-2.66765
Rgl1	0.003793	-3.15257	0.006343	-2.66556
Sp140	0.008695	-3.3056	0.01823	-2.65738
Ly6c1	0.02463	-3.45069	0.055021	-2.65431
Dnajb14	0.007313	-3.49144	0.017172	-2.64783
Dnase1l1	0.017407	-3.05358	0.029637	-2.64321

Ap1s2	0.022368	-2.98021	0.037326	-2.64315
Itgam	0.053551	-2.65347	0.068644	-2.64068
Eepd1	0.006015	-2.95588	0.010048	-2.62803
Fam55a	0.028005	-3.14465	0.052952	-2.62564
Gm9733	0.043995	-4.43351	0.147784	-2.62553
Skap2	0.005648	-2.77114	0.008683	-2.61226
Gsdmd	0.020507	-2.75432	0.02938	-2.60355
Cfp	0.012079	-2.86736	0.019709	-2.60201
Pln	0.052658	-2.25028	0.044502	-2.60068
Tmem176b	0.008075	-2.59973	0.010424	-2.58074
Hgf	0.034128	-2.02709	0.021664	-2.57983
Ppm1k	0.020359	-2.71912	0.028838	-2.57715
Trem3	0.035118	-2.63778	0.046668	-2.57626
Camsap1l1	0.003273	-2.69635	0.004585	-2.56938
Abcb1b	0.018894	-2.5155	0.022414	-2.5646
Zfp677	0.043542	-2.68382	0.062198	-2.56236
Nlrp3	0.007369	-2.50125	0.009098	-2.56223
Parp8	0.002146	-2.67684	0.002869	-2.56192
Slc46a3	0.035496	-2.91315	0.061829	-2.54691
Lpcat2	0.037338	-2.32991	0.036538	-2.54537
Camk1d	0.005688	-2.91954	0.010244	-2.53895
Txndc16	0.011506	-3.06007	0.022361	-2.53869
3830403N18Rik	0.154984	-2.65118	0.201976	-2.53622
Dennd5a	0.008115	-2.51281	0.010099	-2.53272
Sh2d1b1	0.064024	-2.81547	0.101747	-2.53172
Setbp1	0.00461	-3.77882	0.013712	-2.5238
Nek6	0.006468	-2.48693	0.008512	-2.51941
Ppp2r5c	0.061779	-2.91456	0.108266	-2.51186
Myo9a	0.110573	-2.64866	0.150197	-2.51017
Clec4a1	0.06775	-3.36155	0.152763	-2.5081
Il1r2	0.244902	-2.00491	0.174072	-2.50633
Ifi27l2a	0.017407	-3.13841	0.036418	-2.50223
Zeb2	0.004757	-3.03141	0.009405	-2.49526
Snx9	0.004144	-2.58277	0.006343	-2.4769
Hist1h2bc	0.031187	-3.15858	0.069659	-2.47272
Lpcat1	0.006665	-2.50679	0.009023	-2.46868
Lipa	0.022099	-2.55063	0.0301	-2.46375
Gramd3	0.012827	-2.37201	0.014934	-2.46355
Slc44a1	0.006468	-3.81219	0.021065	-2.46223
Pgcp	0.017048	-2.6951	0.026587	-2.46209
Rtn1	0.02295	-2.99996	0.046794	-2.45617
Gm14005	0.04514	-2.28062	0.046535	-2.45606
Net1	0.003579	-2.66986	0.005361	-2.44849
Pja1	0.003273	-2.48028	0.004512	-2.44563
5033414K04Rik	0.006137	-2.9068	0.011996	-2.44006
Tnni2	0.009664	-2.58137	0.014627	-2.43893
Ppp2r5c	0.01387	-2.93747	0.026773	-2.43783
Itgae	0.05613	-2.2474	0.056409	-2.43415
Atp7a	0.003966	-2.77382	0.006775	-2.426
Igsf6	0.021997	-2.72272	0.037235	-2.4258
Depdc7	0.059216	-2.76294	0.101546	-2.42324
Myo9a	0.021997	-2.70507	0.037401	-2.40888

Tiparp	0.00912	-2.57423	0.014305	-2.40506
Cd53	0.01089	-2.43294	0.014711	-2.39865
Spp1	0.039483	-2.33086	0.04573	-2.39663
Atp2b4	0.019125	-2.46361	0.026031	-2.39588
Ctnnd1	0.009821	-2.16542	0.009405	-2.39298
Plek	0.016683	-2.67307	0.027401	-2.38224
Chi3l3	0.123789	-2.86072	0.217586	-2.36477
Myo9a	0.189365	-2.32603	0.214975	-2.36398
Dhrs7	0.00872	-3.15425	0.021664	-2.36089
Myo9a	0.022796	-2.65759	0.039286	-2.35656
Tubb2a	0.011115	-2.55191	0.01823	-2.35428
Inpp4a	0.009413	-2.86136	0.019619	-2.35269
Hist2h2be	0.005659	-3.05376	0.014305	-2.34434
Lrrtm2	0.044764	-2.55489	0.071807	-2.34133
Rgs2	0.011115	-2.39068	0.015244	-2.34067
Snx24	0.023133	-2.57233	0.037798	-2.33393
Tubgcp5	0.008877	-3.1233	0.022321	-2.33153
Cask	0.010322	-2.66335	0.018981	-2.32927
4930420K17Rik	0.01913	-2.42247	0.027051	-2.31823
Hdac9	0.00533	-3.26373	0.015434	-2.31551
Hepacam2	0.047563	-3.30972	0.134464	-2.31478
Ctbs	0.027071	-2.54119	0.043739	-2.31153
Atg4c	0.045462	-2.18179	0.048371	-2.31084
Fam174a	0.003273	-2.63053	0.005327	-2.30382
Gm10708	0.043667	-2.28338	0.054002	-2.30173
Abcg3	0.05938	-1.84622	0.036395	-2.29012
Clec4b2	0.022196	-2.77147	0.046243	-2.28893
A930001N09Rik	0.013226	-2.3334	0.018274	-2.2868
Skil	0.011851	-2.52339	0.020025	-2.28676
Ttpa	0.173895	-1.88699	0.124154	-2.28297
Cd22	0.049466	-2.24046	0.060045	-2.27899
Raph1	0.008427	-3.56151	0.028773	-2.27842
9030617O03Rik	0.019587	-2.15544	0.021631	-2.27468
Stx7	0.002818	-2.55495	0.004236	-2.27019
Gapt	0.021997	-2.63517	0.041632	-2.26586
Mtm1	0.006345	-2.45248	0.010048	-2.26447
Eif2c4	0.005408	-2.64977	0.010452	-2.26326
Tbc1d9	0.024007	-2.20907	0.027921	-2.25719
Ly96	0.060142	-2.50422	0.099214	-2.25287
Itpr1	0.003415	-2.50152	0.005361	-2.25251
Lztfl1	0.011587	-2.42049	0.018594	-2.25239
Ap1s3	0.005473	-2.27241	0.007721	-2.25186
B3gnt5	0.043904	-2.19284	0.051774	-2.24496
Tifab	0.058976	-2.6749	0.115697	-2.2391
Bcl2a1c	0.014376	-2.3524	0.021247	-2.23816
Sorl1	0.008115	-2.51909	0.014711	-2.23397
Prtn3	0.027316	-2.31057	0.037857	-2.23026
3110043O21Rik	0.005648	-2.25119	0.007948	-2.23019
Cd44	0.012079	-2.13021	0.013967	-2.22992
Ero1lb	0.011057	-2.58214	0.02115	-2.22875
Met	0.02249	-2.46002	0.037514	-2.22869
Meis1	0.010601	-1.97629	0.00939	-2.22677

Pftk1	0.027728	-2.69696	0.058909	-2.22149
Sirpb1	0.049807	-2.93036	0.124209	-2.21679
A530032D15Rik	0.036256	-2.99687	0.096674	-2.21603
Zfp229	0.075248	-2.33888	0.107985	-2.21498
Myo9a	0.005913	-2.45424	0.010048	-2.2146
Il18rap	0.085214	-1.99604	0.076677	-2.21375
Trim30	0.013421	-2.29105	0.01928	-2.20982
Rufy1	0.008035	-2.41096	0.013262	-2.20692
Ncf1	0.031983	-2.37103	0.049469	-2.20084
Tcf7l2	0.011846	-1.91294	0.009583	-2.19763
Cd300lf	0.004144	-1.99508	0.004585	-2.19725
Xist	0.908466	1.94981	0.897825	-2.19583
Ly6a	0.043821	-2.58801	0.086908	-2.19326
Ciita	0.023059	-2.38695	0.037106	-2.19307
Lyst	0.004633	-2.48203	0.008616	-2.19231
Ctsb	0.003793	-2.51919	0.006343	-2.19175
Cx3cr1	0.0174	-2.25579	0.023436	-2.19122
Ccr9	0.039479	-3.4137	0.137524	-2.19115
Glipr1	0.021997	-2.22748	0.028838	-2.19046
Emb	0.011772	-2.2619	0.017025	-2.18863
Klf6	0.003889	-2.4037	0.006258	-2.1865
Nlrc4	0.024314	-2.52062	0.045557	-2.18521
Sgk3	0.007033	-2.32788	0.010755	-2.18504
Lair1	0.014287	-2.30315	0.021247	-2.18473
Cd8a	0.026014	-2.039	0.026156	-2.18454
Fam69a	0.009475	-2.49088	0.017869	-2.18309
Mfsd6	0.010863	-2.35776	0.01773	-2.1813
Ifnar2	0.00459	-2.31102	0.007264	-2.1733
Il1b	0.047125	-3.08025	0.13807	-2.17271
Ifi30	0.024431	-3.22531	0.082254	-2.1725
Tmeff1	0.02137	-2.48093	0.039533	-2.16843
Gm10033	0.040854	-1.81127	0.027051	-2.16672
H2-Oa	0.022514	-2.24172	0.03147	-2.1616
Ccdc90b	0.017393	-2.13781	0.021421	-2.16071
Ptk2	0.010085	-2.49756	0.019619	-2.16011
Tmem71	0.017407	-2.13219	0.021416	-2.15748
Epb4.1l3	0.040574	-1.7106	0.021772	-2.15587
Bcl11a	0.070838	-2.10622	0.082556	-2.154
B3gnt3	0.443073	-1.22087	0.043872	-2.15397
Capn2	0.005154	-2.72151	0.012106	-2.15209
Rgs18	0.074695	-2.16816	0.09473	-2.14997
6330442E10Rik	0.015531	-2.29422	0.023267	-2.14796
Sfpi1	0.056473	-2.08323	0.064902	-2.14643
Il18	0.013535	-2.58102	0.02759	-2.14359
Serpina12	0.182707	-1.53084	0.063726	-2.14222
9230105E10Rik	0.023629	-2.00682	0.024144	-2.13623
Hoxa5	0.005256	-2.1122	0.007037	-2.13616
Gng2	0.002818	-2.49495	0.004512	-2.13337
Cysltr1	0.039483	-2.59769	0.086043	-2.12983
St8sia4	0.004334	-2.51092	0.009	-2.12781
Ptprj	0.003422	-2.49265	0.006258	-2.12524
Ssh2	0.300707	-1.88875	0.26682	-2.12112

1700010I14Rik	0.024431	-2.09074	0.028864	-2.12096
Usp12	0.019242	-2.09373	0.023436	-2.11902
Tlr2	0.021706	-2.6856	0.053127	-2.11662
Cacna1e	0.021293	-2.45825	0.041632	-2.11519
Ms4a6d	0.023202	-2.52453	0.048522	-2.11423
Slc37a3	0.152733	-1.83765	0.120628	-2.11369
Emr1	0.057589	-2.83011	0.148945	-2.1133
Ncoa1	0.003793	-2.58723	0.007269	-2.11289
Kctd14	0.014828	-2.3192	0.024357	-2.11003
Ifi203	0.011794	-2.34477	0.020816	-2.1075
Alpk1	0.019857	-2.4115	0.037298	-2.10436
Mx2	0.016976	-2.68463	0.040958	-2.1033
Gm6455	0.375376	-1.39353	0.109488	-2.09854
Clec5a	0.060611	-2.16285	0.083815	-2.09812
Cd68	0.010891	-2.31654	0.019066	-2.09712
Evi2a	0.013963	-2.42595	0.026666	-2.09326
D1Ertd622e	0.005249	-2.29367	0.009023	-2.09211
Myo9a	0.024007	-2.50056	0.050685	-2.08875
Rbm47	0.013298	-2.33635	0.023123	-2.08807
Nostrin	0.021818	-2.80364	0.062387	-2.08626
Hmgn3	0.016421	-2.74047	0.043124	-2.08298
Nsmaf	0.007211	-2.38894	0.014305	-2.07672
Hexa	0.011826	-2.34523	0.021664	-2.07535
Ifi204	0.062104	-2.50479	0.130837	-2.06599
Srgap3	0.004023	-2.70757	0.009669	-2.06559
Lgals3	0.015468	-2.5131	0.033485	-2.06489
Ms4a4b	0.024123	-2.08866	0.031359	-2.05829
Prcp	0.026215	-2.1637	0.038861	-2.05037
Chd7	0.2629	-2.17545	0.334791	-2.05027
Kif1c	0.027071	-2.25257	0.045412	-2.05005
Clec4a3	0.050762	-3.40871	0.200589	-2.04829
Gm1966	0.014696	-2.34606	0.027197	-2.04804
Slc36a4	0.032181	-2.41381	0.066574	-2.046
Slc9a2	0.056999	-1.69922	0.035562	-2.04159
Tyrobp	0.039955	-2.07164	0.053127	-2.03537
Ssbp2	0.017549	-2.0847	0.023493	-2.03429
Thbs1	0.12524	-1.74414	0.090292	-2.03353
F13a1	0.121799	-2.48127	0.233422	-2.03318
Leprel1	0.055438	-2.3881	0.111057	-2.0314
Sirpb1	0.057325	-3.5485	0.23601	-2.03038
Malt1	0.004085	-2.23	0.006803	-2.0297
Tpd52	0.008073	-2.06385	0.01078	-2.02969
Cybasc3	0.013542	-2.21793	0.022361	-2.02935
Otud1	0.010123	-2.4137	0.021664	-2.02892
Bex6	0.024414	-2.12771	0.036045	-2.0278
Scp2	0.01931	-1.94898	0.021664	-2.02724
Arhgap17	0.003795	-2.27149	0.006343	-2.02578
Slc8a1	0.017788	-2.23679	0.02966	-2.02576
Dap	0.003972	-2.26617	0.007037	-2.02274
Fcgrt	0.018091	-2.21658	0.02966	-2.01907
Amica1	0.011826	-2.46832	0.026767	-2.01773
Ptafr	0.013181	-2.08675	0.019066	-2.01713

Abcg2	0.019679	-1.997	0.023883	-2.01678
Ext1	0.011019	-2.07243	0.015571	-2.01646
Cxcr6	0.053286	-1.97607	0.063195	-2.01568
Stambpl1	0.009739	-2.73376	0.028461	-2.00778
Gm16485	0.365729	-1.28935	0.065551	-2.00753
Nfam1	0.018599	-2.20361	0.030648	-2.00413
Rfx3	0.013148	-1.9598	0.01571	-2.00087
Gpr155	0.00636	-2.93233	0.022361	-2.00015

Supplementary Table 3
Genes greater than 2 fold in Tcf1-expressing Thy1+CD25+ cells compared to LMPP

	Tcf1-T #1	Tcf1-T #2	Control T
Il2ra	65.283	69.065	107.971
Vcan	32.204	34.1385	7.33422
H19	26.6931	36.2334	46.354
Rhoj	20.4504	24.5748	1.47782
Rtp4	19.983	15.7754	10.5209
Thy1	19.1157	21.1487	28.9079
Emr1	18.4886	23.2033	-1.30611
Rasgrp1	17.288	21.0993	35.2508
5830411N06Rik	17.0945	14.8446	6.68864
Oas2	15.9546	10.1037	2.81029
F13a1	14.9875	13.9541	-1.13182
Scd1	13.3469	13.6089	16.5024
Fam169b	12.4249	14.6434	22.8443
Timp3	11.6773	15.4166	12.8501
Psg17	11.6153	17.5169	24.1252
Akr1c12	11.1967	16.7621	21.473
Ms4a6b	10.9599	11.3238	12.1852
Naip3	10.4559	9.8625	10.3127
Ms4a4c	10.119	11.011	-1.34616
Airn	10.099	9.44785	4.62513
Papss2	9.99026	16.8368	2.25266
Tcrg-V3	9.95008	9.32138	9.62186
Txk	9.72213	12.9856	25.8943
Oasl2	9.68444	7.8505	5.1575
Thbs1	8.85777	8.554	5.83157
Enah	8.75945	10.0197	6.21857
Tgfbi	8.16825	8.80004	-1.42278
Itk	8.03243	8.88859	9.77184
Ms4a6d	8.0229	8.72292	-1.90007
Ddx58	7.74671	7.02716	5.30975
Ccdc109b	7.4994	10.3707	14.8351
Slfn5	7.27791	7.48454	4.17685
Il7r	7.13921	8.35661	4.74067
A630038E17Rik	6.66874	8.19594	12.5983
Fam40b	6.55424	9.42944	15.3104
Gprin3	6.48236	8.5229	9.9285
Cysltr1	6.3872	7.27103	5.97907
Nov	6.27173	8.65576	2.0479
AI607873	6.01243	6.62683	1.60898
Stxbp6	5.93694	7.98734	7.77169
Mmp8	5.90958	5.67496	-5.47615
Ceacam15	5.85764	10.7496	-1.00674
Trat1	5.79019	7.16032	45.4621
Clec4a3	5.77912	9.04737	-1.15204
EG634650	5.7681	7.19231	15.035
Mpa2l	5.70952	6.26533	12.9143
AB124611	5.70889	7.03539	5.17523
Vat1l	5.70762	8.65018	11.3038

A130014H13Rik	5.53268	3.79705	15.151
Oas1g	5.5151	4.54253	1.04017
Usp18	5.47096	4.68466	1.69098
Pde3b	5.40693	6.11325	4.54786
Mgl2	5.3162	4.80712	-3.38478
Mgst2	5.28637	4.77588	5.85711
Prkca	5.27485	6.76225	11.8579
Ms4a4b	5.26066	6.431	3.17501
Gata3	5.16616	6.5222	14.275
Clec4a1	5.12594	10.8144	-1.2246
Oas1b	5.06925	4.26269	3.61015
Akr1c13	5.06322	6.33518	9.96927
Ifit1	5.04806	3.76882	1.79015
Kbtbd11	4.88941	6.09583	17.9218
Ncam2	4.81527	7.48494	1.22177
Plxdc2	4.71542	6.03838	7.10578
Cpa3	4.66979	5.64662	9.22892
Dhx58	4.6221	4.28646	5.29429
Fam20a	4.60045	6.78821	45.7916
Pde2a	4.53628	5.81654	3.71881
Ccr4	4.45242	6.3647	12.6645
Nck2	4.41682	5.72714	12.637
Parp12	4.41	4.16855	2.97505
Nck2	4.39988	4.79517	8.8353
Gm13926	4.38441	4.56013	4.43228
Gm13926	4.38441	4.56013	4.43228
Xaf1	4.38393	3.75306	2.88889
Pdcd1	4.35563	4.85336	1.64898
P2ry10	4.28736	5.5601	9.69578
Tgtp	4.24791	4.10055	7.70997
Xkrx	4.23521	6.84851	1.87873
Sla2	4.16	5.33141	4.87248
Pyhin1	4.14375	5.40158	2.09191
Rasgrp3	4.11607	5.63549	-1.48819
Irf7	4.1122	3.81988	2.57636
Gvin1	4.04883	3.69569	2.93201
Ifi27l1	4.02135	4.29508	2.12873
Tlr8	4.01948	4.06954	-1.09962
E030037K03Rik	4.01243	4.70614	2.03655
Ifi44	3.99436	5.28932	1.85409
Ms4a6c	3.98165	3.48087	-3.4711
I830127L07Rik	3.96439	4.2602	-5.01406
Igf2r	3.95289	4.54002	3.28247
Bcl11b	3.94668	4.51171	7.26869
Slamf1	3.94361	5.72016	3.58777
Tnfrsf9	3.92113	5.93165	2.38741
Tgtp	3.85268	3.71398	7.12675
Lyz2	3.81845	5.09709	-3.87077
H19	3.79615	6.03294	6.5614
Tgfbr3	3.7951	4.01881	4.23876
Mov10	3.76182	3.89481	3.57263
Epsti1	3.72237	4.45143	6.12516

Bgn	3.71557	6.10564	1.66414
Grap2	3.60224	4.1206	7.7657
Ctla4	3.59217	4.71656	33.6475
Ppargc1a	3.57943	5.21428	1.19033
Il17rb	3.57519	4.0946	15.4532
Tcn2	3.56495	3.78647	2.19513
Mfsd2	3.56058	3.95492	6.47424
Socs2	3.55823	4.06481	2.62153
Gzmb	3.54473	5.80707	5.24799
Ly6a	3.49779	2.95369	2.35028
Gbp4	3.48065	4.38875	10.0336
Ccl22	3.47788	6.83311	-3.08197
Gpr114	3.47442	4.36041	6.46593
Ets1	3.47434	4.27679	10.2491
Trim30	3.47329	3.04261	2.36157
Sirpb1	3.46106	4.85559	-1.08533
Gp49a	3.38967	4.18117	2.78646
Actr3b	3.33796	5.28524	9.94183
Ccl5	3.33718	5.65498	1.14175
Ap1s2	3.30202	4.2101	-1.74432
Rnf213	3.29799	2.71438	1.52682
Prnp	3.26849	4.40002	1.89597
Saa3	3.26098	7.01476	-1.42893
Igf2	3.25689	5.38964	14.5674
Samd9l	3.24364	3.32221	1.09309
Cd163l1	3.24084	3.28679	13.255
Isg20	3.20624	3.63903	3.56453
Cxcr5	3.18765	5.42269	14.1785
Map3k8	3.17208	3.86416	5.03393
Sipa1l1	3.16333	3.45906	2.24457
Ifi27l2a	3.15138	2.92347	1.06244
Ms4a4a	3.1312	4.6821	-1.22057
Ifi204	3.11573	3.03863	6.70827
Ffar2	3.11187	3.94009	1.17369
Zfp760	3.10535	4.35887	1.54049
Mgl1	3.0904	3.26787	-1.98664
Fscn1	3.07048	6.3335	-1.05035
C1qtnf1	3.06806	4.06009	6.67316
Ddx60	3.00533	2.61646	1.23348
Igf1	3.00293	5.05656	-1.09199
Airn	2.97875	3.0849	1.96509
Stk39	2.97435	3.61323	5.80791
Lilrb4	2.97183	3.23498	2.32116
Gm4951	2.96681	2.20468	2.06748
Fbxo30	2.9611	3.57463	4.66243
Gm10838	2.9528	2.76561	5.61497
Ptpn1	2.94113	3.25663	2.10102
Fyb	2.93241	3.5767	6.14446
Gm6683	2.9301	4.00034	15.949
Ppargc1a	2.92024	4.33806	1.12951
Fut8	2.91025	3.10799	3.0106
Socs2	2.89024	3.34723	2.50197

Rras2	2.88416	3.33484	6.58337
Snora61	2.86469	2.21891	2.39015
Il2rb	2.85424	4.08673	1.75382
Lef1	2.8473	3.95988	12.6548
Ift80	2.82519	3.54569	7.14108
Rsad2	2.82318	2.32366	1.61626
Gpnmb	2.80933	4.98071	1.03801
Abcg1	2.8084	3.28497	3.74347
Hp	2.80199	3.22152	-3.51563
Kit	2.7985	3.00238	3.27225
AI451617	2.78435	3.08162	2.40068
Tcf7	2.76786	3.47102	16.934
Cd247	2.75498	3.61144	8.94038
Sema7a	2.75301	4.40564	8.09443
Oas3	2.74795	2.65328	1.25662
Tubb3	2.74722	3.56189	4.01315
Rnu3b1	2.74663	2.26233	2.2555
Pira2	2.73934	4.0392	-2.35096
Tmem108	2.73377	3.4361	-1.16962
Itgb5	2.72127	3.25222	-2.24297
Cacnb3	2.71432	5.20222	1.8061
Tmem35	2.70166	2.61846	1.05481
Parp14	2.6887	2.73201	2.72297
Adamts9	2.67264	3.71014	13.4575
Lck	2.66596	2.83004	5.43781
Oas1a	2.6582	2.52359	-1.05972
Tmtc2	2.65428	4.29331	7.83087
Fn1	2.64929	5.28611	1.07509
3110052M02Rik	2.64285	2.88044	2.16974
Ppt1	2.63909	2.84207	3.36621
Ar	2.63865	4.66322	3.20608
Pld4	2.63526	3.07256	7.88576
Gcom1	2.63394	3.72412	6.0015
Bst1	2.62962	3.8517	1.81948
Gas7	2.62897	3.27434	1.24217
Tcra	2.6242	3.38281	3.15337
Tcra	2.6242	3.38281	3.15337
Slc22a23	2.62391	3.74705	2.56557
Herc5	2.61287	2.75003	2.13316
Rab44	2.61058	2.39395	1.54914
Prkch	2.60943	3.12968	6.14559
9630013D21Rik	2.60389	4.21738	1.99186
Gm4955	2.60258	2.51047	1.8414
Aqp11	2.58628	3.11332	9.35194
Pla2g7	2.58404	4.15871	-1.16994
Selp	2.58041	2.84628	-1.01285
Cd2	2.57458	3.20197	5.49688
Nrp2	2.5712	3.40144	-1.0752
7120432I05Rik	2.56355	2.89074	1.0967
Ifit3	2.56258	2.39942	1.32021
Lilrb3	2.55935	3.09303	-1.33757
Lgals3bp	2.5498	2.3828	1.56294

Tnfrsf18	2.54568	4.73889	3.61427
Olfr524	2.53591	2.63958	5.35004
Ahcyl2	2.52784	2.98385	4.08997
Osm	2.51484	2.5997	2.71027
Gldc	2.51126	3.97302	1.32391
Sytl2	2.49191	3.47124	6.99711
Tmem178	2.48354	2.80547	-2.78067
Flrt3	2.48016	2.63212	-1.22686
Tcra	2.47569	2.93211	2.46402
Fndc1	2.47204	3.45732	1.24433
Dgka	2.4714	3.42695	8.15334
F630111L10Rik	2.46806	3.03509	1.19158
Dusp1	2.46585	3.67892	2.53725
Trf	2.45923	3.11267	1.95677
Podxl	2.45798	3.39572	5.5446
Socs3	2.45633	3.04242	3.22108
Adamts9	2.44378	3.96151	15.3594
Pld3	2.44099	2.98473	2.23635
Cd300ld	2.43881	5.21666	-1.12773
Ms4a7	2.43369	2.7474	1.01425
Cd80	2.4207	4.97268	-3.1212
Rps12	2.41628	2.84166	2.89344
Ptplad2	2.41459	3.15027	1.04208
OTTMUSG00000003606	2.41141	2.78801	-1.1132
Cmpk2	2.40968	2.30472	1.51885
Wdr78	2.39407	2.41427	3.14536
Inpp4b	2.3933	3.56508	3.73708
Clec2d	2.37606	2.50288	2.91928
Cytip	2.36658	2.83377	1.54369
Bhlhe40	2.36473	3.48673	1.96818
Gbp2	2.3644	3.4062	4.17193
Cybb	2.36245	3.1716	-7.68031
Tspan7	2.35642	3.5855	-1.1462
Armcx4	2.35547	2.62818	2.49059
Ctla2b	2.35316	2.40732	2.60199
Lat	2.34741	2.52008	8.6574
Ccr7	2.34565	3.83561	1.47222
Cdkn2c	2.32916	3.04303	1.91609
Cyp11a1	2.3286	2.53459	-1.84663
Lrp1	2.32827	2.94168	-1.41066
Fcgr2b	2.32765	2.46847	-3.25898
Zbp1	2.32529	2.6347	2.37828
Cd33	2.31992	2.4125	-2.13977
Glp1r	2.31349	7.83457	26.2717
9430008C03Rik	2.30257	2.21707	1.532
OTTMUSG00000003606	2.30169	2.68281	-1.13555
Slfn2	2.28765	2.78406	2.02867
Lrrc6	2.28496	2.65869	-1.21047
Tnfsf11	2.28488	2.8348	5.08707
Slc15a1	2.28364	2.64683	5.29893
Ctla2a	2.28118	3.4063	2.9915
Rnf217	2.26141	2.68136	-1.61253

Vegfa	2.25941	2.61397	1.62898
Ikzf2	2.2581	2.68489	3.14991
C1qb	2.23631	3.05801	-1.80513
Skap1	2.23626	2.51664	3.07894
Gab2	2.23244	2.48448	2.16734
Sdc1	2.22611	2.10609	-1.13056
Nrg1	2.22557	2.93118	1.10937
Igfbp4	2.22126	2.40642	1.97153
Sirpb1	2.20868	2.70303	-1.23064
Ttc39c	2.19483	2.70732	-1.28485
Phf11	2.19255	2.23748	1.54078
Nr4a3	2.1913	4.38594	1.06497
EG435337	2.17965	2.41573	1.08976
Cd200r1	2.171	2.60659	1.09681
Chdh	2.16753	2.527	4.46084
Raver2	2.166	2.73904	1.39596
Arhgap26	2.16389	2.46685	3.29386
Pira11	2.15813	2.96505	-1.91786
Mpp1	2.1544	2.58734	4.8107
Adamts9	2.15162	3.13847	11.6705
Cd80	2.14416	4.31747	-1.38559
Sirpb1	2.1317	2.39163	-1.22972
Itgb2	2.12998	2.62116	1.9461
Sytl3	2.12972	3.23218	17.3119
Dpysl2	2.12362	2.19926	2.29924
Padi2	2.12247	2.91839	1.89634
Pigz	2.11978	2.34099	1.27114
Angptl2	2.11703	2.37334	3.28362
Tmem120b	2.11675	2.84665	1.97575
Mmp19	2.113	2.79529	-1.62937
Soat1	2.10884	2.0523	2.26021
Hif1a	2.10412	2.08257	1.04897
Tlr1	2.10145	2.683	1.6812
Rps6ka2	2.09612	2.23815	-1.00769
Irf9	2.09586	2.02256	1.66026
Hsd11b1	2.09524	2.62652	4.81936
Gzmc	2.09142	4.35551	1.22175
Neto2	2.07912	3.01635	1.20022
Ppic	2.07751	2.25499	2.10069
Mx2	2.07659	2.07788	1.14853
Tns1	2.07556	2.63221	1.86787
Dab2	2.06941	2.60387	-3.26226
Grn	2.06936	2.14488	1.2533
Il12rb2	2.06759	2.91462	1.20628
Pml	2.06701	2.18501	2.59997
Il1b	2.06505	3.34646	1.03578
Maoa	2.06461	2.72903	1.34207
1190002H23Rik	2.05259	2.41921	2.8719
Sell	2.04893	2.17914	2.43976
Pgm2	2.04813	2.36044	2.18478
5830443L24Rik	2.04654	2.25619	4.31877
Casp4	2.04181	2.16169	1.81916

Tgfb2	2.03685	3.12251	3.60665
Itgb3	2.03575	2.39126	4.97243
Atp11a	2.03244	2.37311	-2.22166
Mgst1	2.02468	2.48631	-1.50273
Utrn	2.024	2.56757	4.71905
Socs1	2.02063	2.44114	2.86879
Fam102a	2.0188	2.58775	2.8841
Adamts17	2.01348	2.5051	1.9104
Slc9a9	2.00397	2.38152	4.25096
Sfrp2	2.00114	2.61137	1.75852
Eltd1	-22.9764	-16.549	-27.7951
Gem	-15.8696	-10.7717	-18.5536
Car2	-15.0698	-10.2726	-5.41411
Il1r1	-13.8649	-8.83852	-20.5475
Ngp	-12.8117	-13.7897	-14.044
Scin	-10.0228	-5.21038	1.11904
9030619P08Rik	-9.62608	-9.73486	-5.19994
Angpt1	-9.25465	-7.59781	1.06172
Havcr2	-8.77255	-4.81726	-4.07701
Spint1	-8.12629	-7.07769	-8.73565
Kmo	-7.93663	-6.59275	-11.8556
Ccnd1	-7.25722	-5.93082	-8.62119
Ctr9	-6.99367	-5.43232	-6.96698
Mn1	-6.84299	-5.85423	-6.00663
Nrp1	-6.54266	-6.87954	1.02283
Ela2	-6.50869	-5.10979	-18.2404
Gca	-6.50228	-4.68177	-6.97906
P2rx3	-6.44161	-5.80453	-7.99622
Slc7a3	-6.41689	-4.86898	-3.62658
B3gnt5	-6.37376	-5.20535	-3.29899
Ly86	-6.25905	-3.76832	-14.6865
Gcet2	-6.17736	-6.12654	-7.36081
Mctp2	-5.99947	-5.83867	-1.40131
Ica1	-5.97299	-4.87768	-12.9424
Cd79b	-5.8064	-4.72267	-1.81491
Gm10759	-5.7678	-5.50624	-7.12133
Tmem119	-5.5754	-5.23616	-6.18145
Mcpt8	-5.33034	-4.58927	-1.38813
Cd96	-5.2597	-3.51257	-9.94218
Dusp6	-5.25522	-5.09607	-2.04294
Gatm	-5.24027	-3.92614	-18.1972
Chad	-5.23925	-5.30178	-2.5267
Slco3a1	-5.1331	-4.46489	-1.26163
Vldlr	-4.92129	-5.04334	-5.55231
Stau2	-4.68021	-3.89139	-4.08542
Gapt	-4.6628	-4.18121	-21.1742
Ociad2	-4.59669	-3.87991	-4.53921
Lmo2	-4.59667	-4.0181	-8.87691
Irf8	-4.56299	-4.37611	-6.5712
Itih5	-4.4706	-3.2061	1.53524
Lax1	-4.41638	-4.38696	1.01314
Gcnt2	-4.24673	-3.66277	-6.19734

Il18rap	-4.23046	-3.31314	-2.11952
Ctse	-4.15264	-2.08912	2.05945
Etv5	-4.13064	-2.9047	-1.53263
Bex6	-4.11078	-2.20867	-4.64853
Tnfrsf13c	-4.08414	-3.72487	-4.12606
As3mt	-4.00989	-4.10349	-4.18491
Rgs1	-3.9685	-2.07056	-1.84249
Cdh17	-3.94059	-4.27798	-4.10438
Gjb3	-3.85075	-3.68143	-3.36635
Mtss1	-3.84501	-2.60776	-1.80942
Dhrs3	-3.84111	-3.8264	-1.80464
Dmxl2	-3.80244	-3.19718	-5.15479
Ctnnd2	-3.78921	-3.11959	-4.7023
Clnk	-3.77363	-2.92093	-4.16011
Enam	-3.75929	-4.48151	-4.34622
Abcb1b	-3.74209	-3.5026	-6.68359
Gimap6	-3.73666	-2.62114	2.08393
Ccdc135	-3.69517	-3.30903	1.48684
Etv5	-3.68619	-3.35519	-1.65464
Mef2c	-3.63747	-3.69193	-16.2543
Rnase6	-3.6311	-2.74826	-3.38474
Endod1	-3.59897	-3.17572	-1.78752
Eng	-3.57927	-3.14449	-2.76293
Cd28	-3.56383	-2.31162	-1.36665
Reep6	-3.56251	-3.18968	-3.47988
Aldh1l2	-3.52068	-2.96543	-6.16953
Arap2	-3.49241	-2.04032	-1.0922
Cth	-3.47918	-3.87157	-5.64442
Gm14005	-3.45878	-2.90911	-4.9562
Tbxas1	-3.45635	-3.64561	-3.59535
Ptgs1	-3.45524	-2.81384	-3.3679
Hpgds	-3.4465	-2.7336	-2.45812
Rnf141	-3.36482	-2.50775	-3.86436
Il1rl2	-3.35409	-3.24307	-1.79612
Freq	-3.30662	-2.21751	-4.70611
St3gal5	-3.29532	-2.42743	-2.33915
Cd300c	-3.28524	-2.88462	-3.80494
Nos1ap	-3.25637	-3.19264	-5.29064
Car1	-3.24057	-3.46657	-3.79614
Rnf141	-3.22314	-3.08287	-4.44614
Adamts3	-3.19572	-2.33098	2.39393
Alcam	-3.18341	-2.30849	-3.53906
Trem3	-3.18303	-2.65477	-9.50105
Ttpa	-3.15576	-2.52688	-2.82279
Khdrbs3	-3.15538	-2.66313	-3.79078
Eomes	-3.15433	-2.84249	-3.99287
Wwc2	-3.14986	-2.51645	-2.65519
Elovl7	-3.13961	-3.99645	-3.44777
Tnfrsf10b	-3.13611	-2.55724	-3.1209
Rhobtb3	-3.13066	-2.5144	-2.66067
Map4k5	-3.12595	-2.33849	-7.26474
AI747699	-3.11626	-2.30268	-4.16657

Hpse	-3.09239	-3.05895	-2.65227
Ppp2r5c	-3.07913	-2.66575	-2.94178
Fmnl2	-3.06013	-2.5278	2.64353
Slc25a12	-3.05852	-2.17354	-1.79452
Ttpa	-3.05655	-3.10218	-2.4944
Hist2h3c2	-3.05006	-2.89553	-1.79297
Cd180	-3.04738	-2.21009	-9.70304
Gcnt1	-3.04326	-2.36856	-3.81737
Pycr1	-3.01456	-2.62363	-3.76388
Lat2	-3.01065	-2.71517	-1.90048
Ncf1	-3.00679	-2.39271	-7.82036
Zfp111	-3.00597	-2.5174	-4.11965
EG668725	-2.99877	-2.203	-3.8484
Bcl11a	-2.99062	-2.57149	-5.3496
Slc14a1	-2.98672	-2.23222	2.36665
Slc7a11	-2.97918	-2.85393	-4.09816
Ptger3	-2.93257	-3.28815	-2.56727
Hlf	-2.91404	-3.06227	-3.58412
Fmnl3	-2.90735	-2.17705	1.09454
Adamts3	-2.89844	-2.14201	1.76601
Ptp4a3	-2.89151	-2.75511	-1.6058
Cd5	-2.87597	-2.68734	-1.39686
Frmd4b	-2.83584	-2.2674	-2.61887
Mpeg1	-2.83262	-2.47305	-27.948
Itga1	-2.82851	-2.3219	-4.84402
Rnf122	-2.80054	-2.28414	-1.73359
Cybasc3	-2.79134	-2.46935	-2.30818
Ly6d	-2.78845	-2.30935	4.8948
Slc9a7	-2.77314	-2.05624	-2.09647
Tifab	-2.77047	-2.22333	-8.31701
Gfi1b	-2.75987	-2.35573	-3.12904
Prkce	-2.75687	-2.83787	-1.87411
Phlda3	-2.74183	-2.20357	-2.66038
Stap1	-2.74157	-2.46326	-1.4477
Adc	-2.72688	-2.25207	-2.6314
Ppp2r5c	-2.71959	-2.59887	-2.62668
Myl4	-2.71132	-2.74636	1.40395
	-2.70973	-2.64579	-2.16378
Cldn12	-2.70709	-2.51881	-2.23591
Il21r	-2.69951	-2.30324	-2.13947
Chn2	-2.68912	-2.63876	-1.27931
Atp2b4	-2.68845	-2.03103	-1.93488
Gtlf3a	-2.68504	-2.05468	-2.62224
AY512938	-2.67329	-2.00539	-3.8029
Tet1	-2.66904	-2.0499	-3.74064
Slc2a3	-2.66753	-2.22851	-1.78188
Mpp6	-2.66092	-2.42796	-3.20545
Il12a	-2.65931	-2.35042	-8.06814
Cd244	-2.64061	-2.08854	-1.83998
Slc1a4	-2.62903	-2.25252	-2.89647
Tpcn1	-2.62521	-2.04259	-1.00642
4632434I11Rik	-2.59648	-2.28398	-3.99785

Sdr39u1	-2.58194	-2.00131	-1.69182
Nucb2	-2.57662	-2.28293	-3.04431
Hbb-b1	-2.5602	-2.11759	1.5637
Spns2	-2.55629	-2.4746	-1.26595
Rasgrp2	-2.54754	-2.19521	1.06949
Mansc1	-2.54631	-2.37535	-2.33869
Afap1l1	-2.52469	-2.15397	-1.56508
Sypl	-2.51859	-2.3583	-1.31649
Ear2	-2.49569	-2.92504	-4.44764
Xlr	-2.49399	-2.07904	1.36081
Pla2g4a	-2.46737	-2.33143	-3.0182
6330442E10Rik	-2.45528	-2.20305	-1.83388
Tox3	-2.4548	-2.18716	-1.32199
Tmem74	-2.45469	-2.23676	-2.35782
Abcg2	-2.44694	-2.16996	-2.1362
Adamts3	-2.39972	-2.17619	1.88526
Mtap7d3	-2.39671	-2.38899	-3.38981
Dtx4	-2.39635	-2.09732	-2.66278
Tbxa2r	-2.38262	-2.61988	1.65776
Rnf144b	-2.3769	-2.19418	-1.89628
Lphn2	-2.36277	-2.13425	-2.07239
Gm14636	-2.35898	-2.44458	-2.33529
Agpat2	-2.34989	-2.03637	-1.42651
2210411K11Rik	-2.33616	-2.10374	-2.66884
Egfl7	-2.32044	-2.34124	-2.56469
Cox6a2	-2.31998	-2.60142	-7.51448
Gstm5	-2.30962	-2.45977	-2.75549
Chac1	-2.30493	-2.24616	-2.58985
Bmyc	-2.30408	-2.03438	-3.63447
Slc6a9	-2.29084	-2.20089	-1.59005
Ermp1	-2.27769	-2.24468	-2.18041
Dmxl2	-2.26424	-2.14848	-2.55669
Msrb3	-2.2464	-2.24847	-2.72517
Dlk1	-2.23043	-2.27512	-1.6005
Jam2	-2.22996	-2.12628	-2.27274
Aqp9	-2.22371	-2.00845	-2.6499
Fam69a	-2.20936	-2.00531	-1.70138
Pecr	-2.20797	-2.02732	-2.1963
Igj	-2.19769	-2.35483	-1.22972
Tspan6	-2.19192	-2.1279	-2.56323
Stc2	-2.18712	-2.14602	-1.81667
Gm4989	-2.18422	-2.26545	-1.34541
Asns	-2.17183	-2.18641	-3.47034
Coq3	-2.13843	-2.06335	-2.365
Ctsg	-2.12152	-2.4833	-3.10383
Ifrd1	-2.10407	-2.04786	-2.13253
Cops4	-2.08808	-2.02481	-2.03318
Rhobtb1	-2.05878	-2.00695	-1.9559
Mc5r	-2.02504	-2.13656	-1.71937
Rab38	-2.00869	-2.32875	-1.67399
Mina	-2.00379	-2.07873	-2.65885