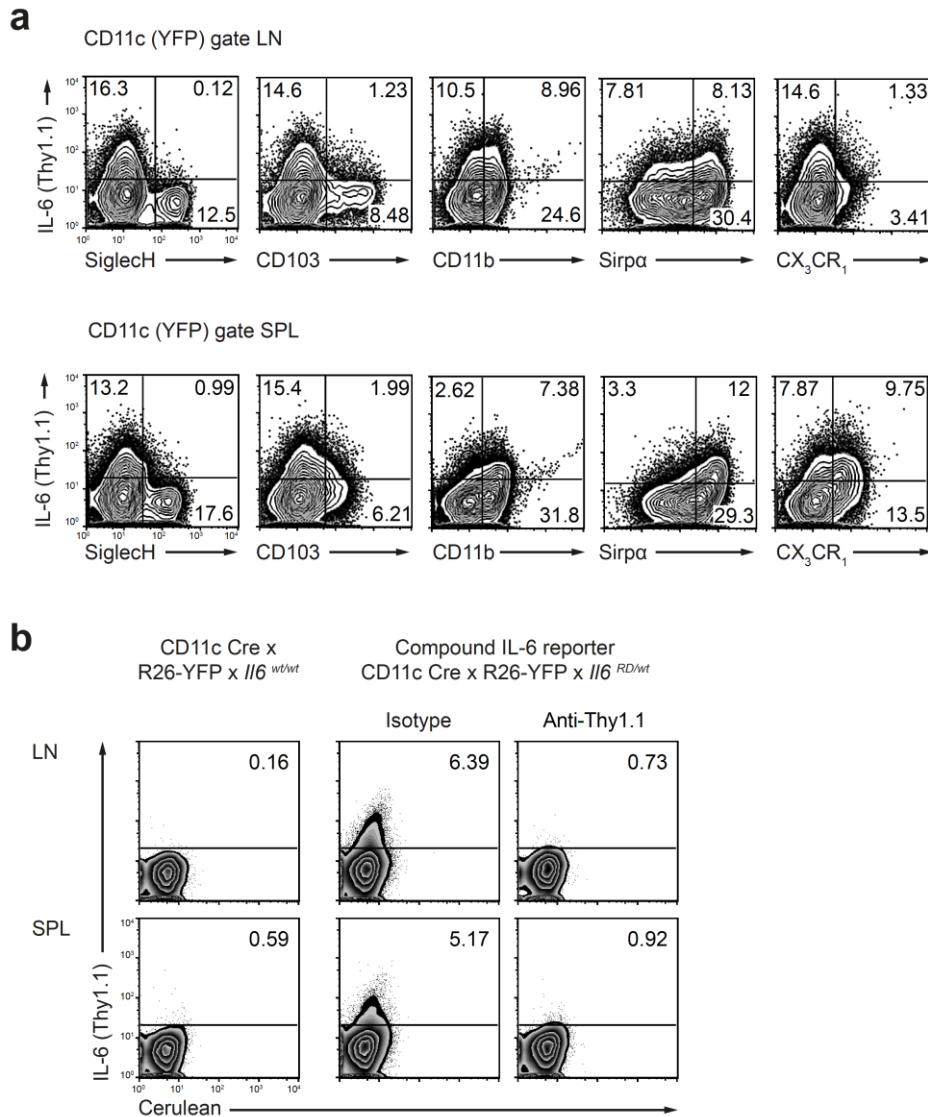


**Supplementary Figure 1**

#### IL-6 reporter mice.

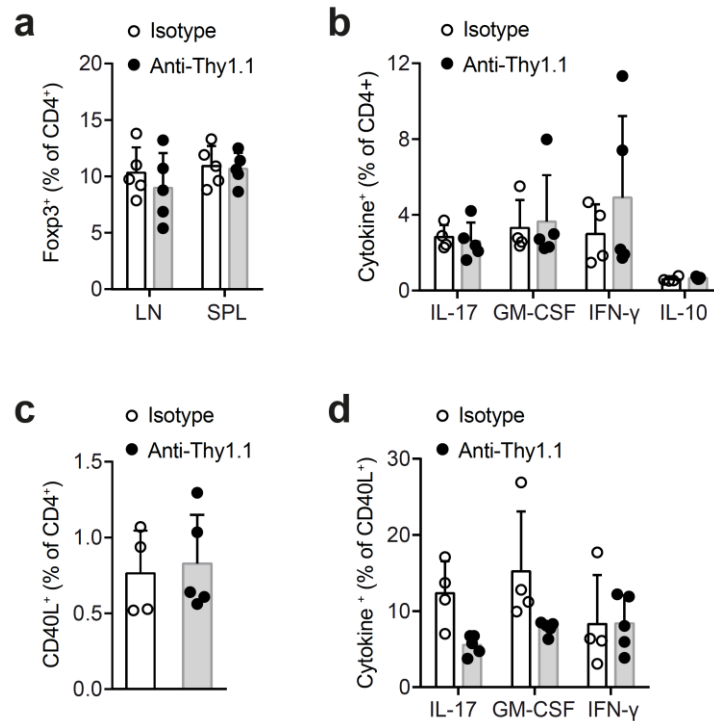
(a) Targeted *Il6* locus. The reporter cassette including a floxed stop cassette was introduced into exon 2 of the *Il6* locus. Since the locus is disrupted by this knock-in construct, IL-6 reporter mice were bred heterozygously and compared with *Il6*<sup>+/-</sup> mice since *Il6* produces a gene dose effect (data not shown). (b) Bone marrow derived dendritic cells (BMDCs) were prepared from CMV-Cre x *Il6*<sup>RD/wt</sup> mice and stimulated *in vitro* with CpG. Cerulean was expressed in the cytoplasm (left) and Thy1.1 at the cell surface (middle, merge right) as expected. Confocal microphotographs, Scale bar 10  $\mu$ m. (c) *Il6*<sup>RD/wt</sup> control BMDCs or BMDCs prepared from IL-6 reporter mice (CMV-Cre x *Il6*<sup>RD/wt</sup>) were stimulated with LPS followed by flow cytometric assessment of Thy1.1 expression. (d-f) Correlation of Thy1.1 expression and IL-6 expression in BMDCs. BMDCs were prepared from different mouse strains as indicated and stimulated with LPS followed by analysis of Thy1.1 expression (d) and IL-6 production as measured by ELISA (e). (f) Co-expression of IL-6 and Thy1.1. Control BMDCs (*Il6*<sup>RD/wt</sup>) and IL-6 reporter BMDCs (CD11c-Cre x *Il6*<sup>RD/wt</sup>) were stimulated with CpG for 6 h in the presence of Brefeldin A for the last 2 h followed by combined surface staining for Thy1.1 and intracellular staining for IL-6.



**Supplementary Figure 2**

**Characterization *in vivo* of DCs expressing IL-6 (Thy1.1).**

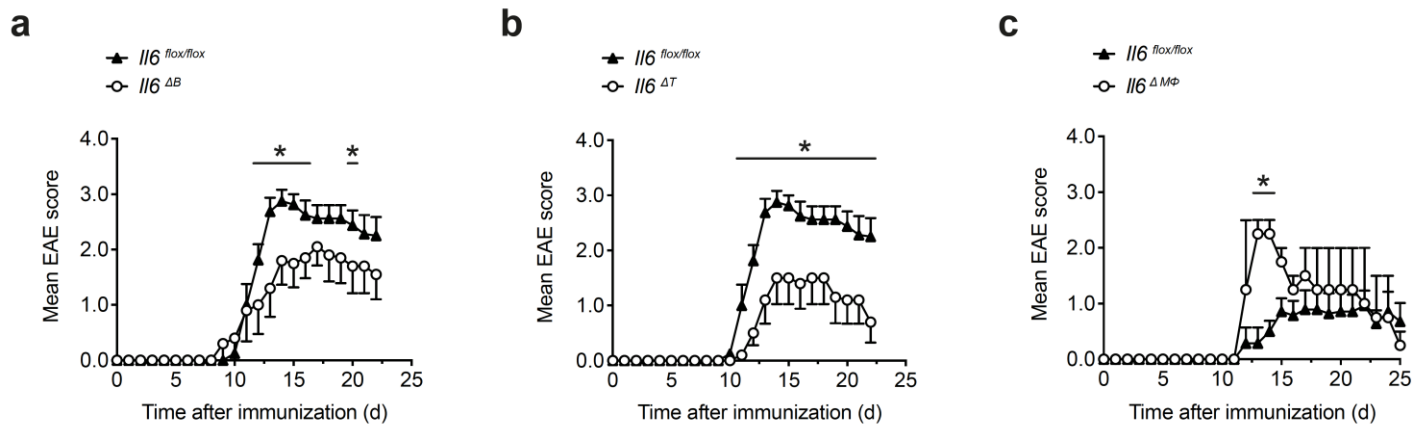
(a) *Il6*<sup>RD/wt</sup> mice were crossed to CD11c-Cre and R26-*Stop*<sup>flox/flox</sup>-YFP mice to generate compound heterozygous mice with DC conditional expression of an IL-6 reporter allele and YFP. In order to visualize large amounts of IL-6 producing DCs *ex vivo*, we injected Flt3L producing melanoma cells s.c. to expand DCs *in vivo* and 6 days later, treated the animals with LPS (3 mg/kg LPS [E. coli 0111:B4]) i.p. to stimulate IL-6 production. Two days after LPS injection, lymph nodes (LN) and spleen (SPL) were prepared and stained for Thy1.1 to visualize IL-6<sup>+</sup> DCs by flow cytometry directly *ex vivo*. In order to analyze whether Thy1.1 (IL-6)<sup>+</sup> DCs segregate into a specific DC subset, the indicated surface molecules were co-stained. (b) IL-6 Reporter mice allow for IL-6 conditional deletion of DCs *in vivo*. CD11c-Cre x *Il6*<sup>RD/wt</sup> x R26-*Stop*<sup>flox/flox</sup>-YFP mice were treated with Flt3L producing melanoma cells and LPS. The mice were then assigned to treatment with either Isotype (mouse IgG2a, C1.18.4) or anti-Thy1.1 (19E12) antibody treatment in order to deplete IL-6<sup>+</sup> DCs. One day later, lymph nodes (LN) and spleen (SPL) were prepared and stained for Thy1.1 (OX-7) to visualize IL-6<sup>+</sup> DCs by flow cytometry directly *ex vivo*. CD11c-Cre x R26-*Stop*<sup>flox/flox</sup>-YFP x *Il6*<sup>wt/wt</sup> mice, which were treated identically as the DC conditional IL-6 reporter mice, are shown as a "negative" staining control for Thy1.1 (left).



**Supplementary Figure 3**

***In vivo* priming of T cell responses in the absence of IL-6-producing DCs.**

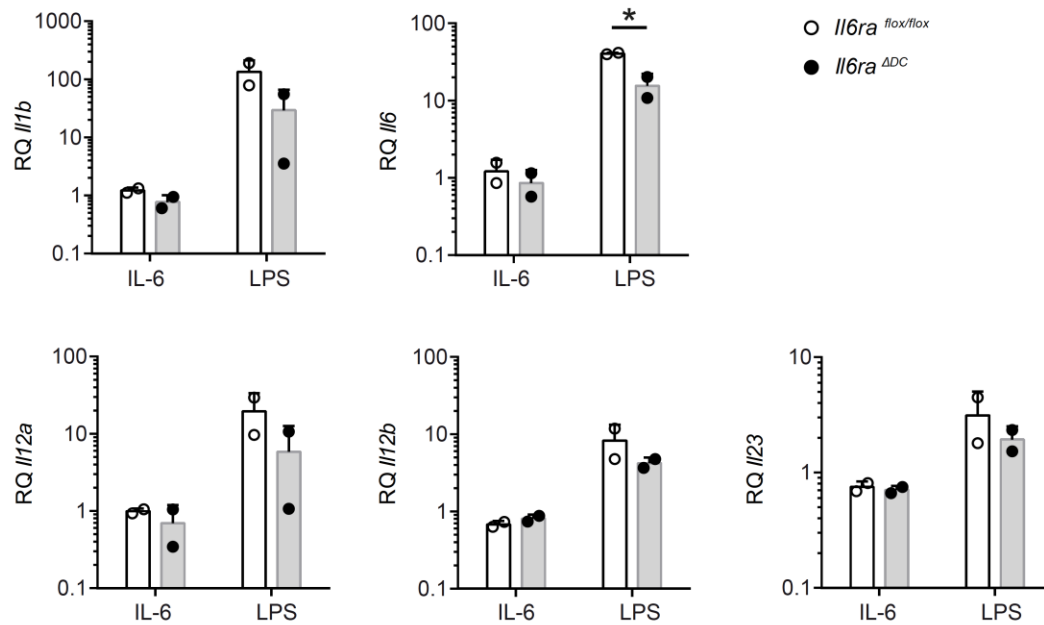
DC conditional IL-6 reporter mice (CD11c-Cre x *Il6*<sup>RD/wt</sup>) were immunized with MOG(35-55) in CFA followed by control treatment (mouse IgG2a isotype) or anti-Thy1.1 (19E12) to deplete IL-6 (Thy1.1)<sup>+</sup> DCs. Antibody treatment was performed by i.p. injection of 200 µg antibody every other day starting on day 1 after immunization. On day 7 after immunization, draining lymph nodes (LN) and spleen (SPL) were prepared and stained for Fcγ3 to quantify the fraction of Tregs in the CD4<sup>+</sup> T cell compartment (**a**). (**b**) Subsequent to PMA/ionomycin restimulation, LN CD4<sup>+</sup> T cells were stained intracellularly for IL-17, GM-CSF, IFN-γ, and IL-10. (**c**, **d**) Antigen specific T cell responses were assessed by intracellular staining of CD40L (CD154) and cytokines in splenic CD4<sup>+</sup> T cells of control-treated or IL-6<sup>+</sup> DC-depleted mice after recall with MOG(35-55). Mean + SD (n=5 mice per genotype).



**Supplementary Figure 4**

**Ablation of *Il6* in B cells, T cells or macrophages does not result in resistance to MOG(35–55)-induced EAE.**

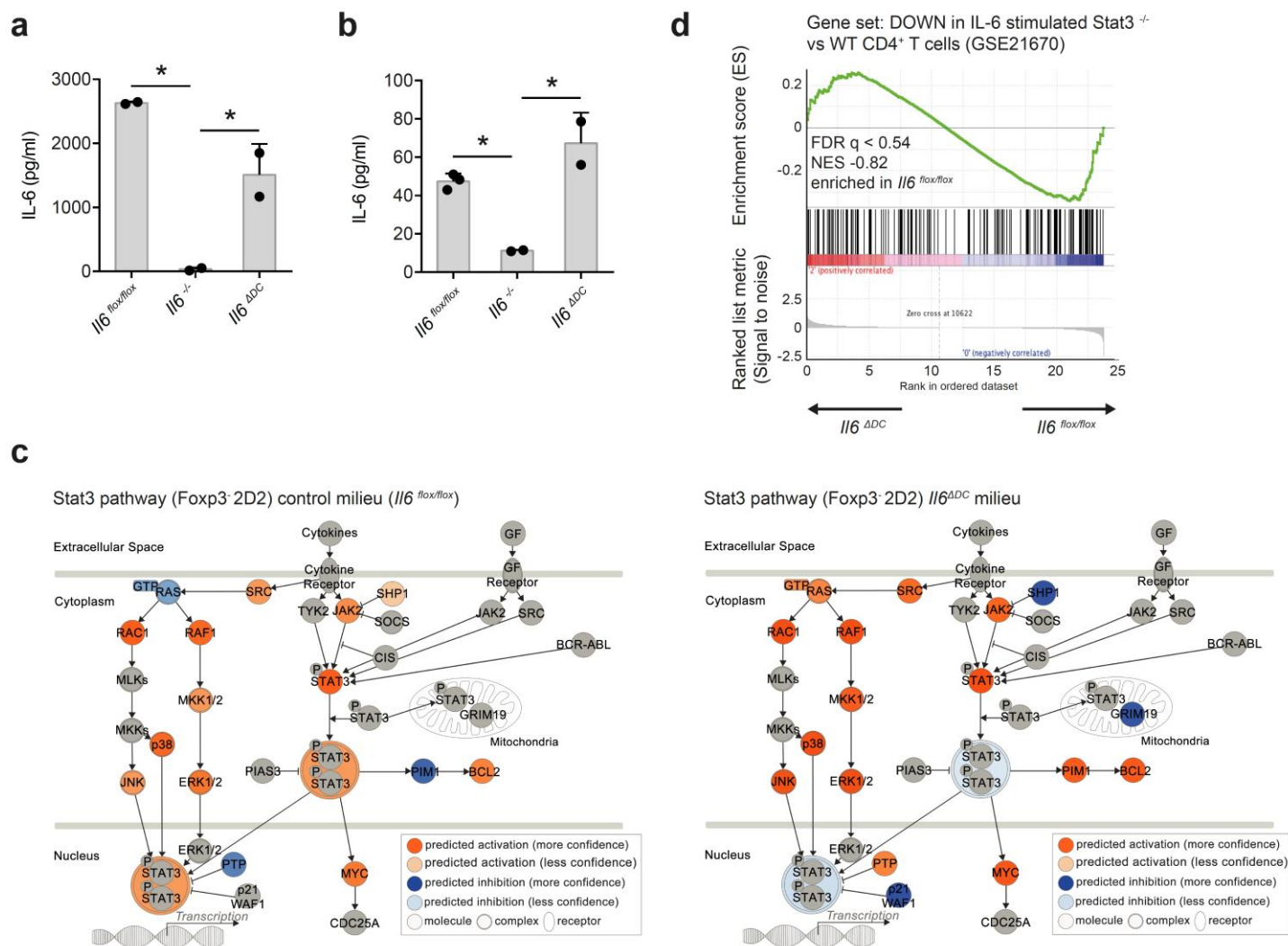
Course of MOG(35-55) induced EAE in mouse strains with conditional ablation of *Il6* in B cells (CD19-Cre x  $Il6^{flox/flox}$ ,  $Il6^{\Delta B}$ ) (a), T cells (CD4-Cre x  $Il6^{flox/flox}$ ,  $Il6^{\Delta T}$ ) (b), and LysM<sup>+</sup> myeloid cells (LysM-Cre x  $Il6^{flox/flox}$ ,  $Il6^{\Delta M\Phi}$ ) (c). Mice were subcutaneously immunized with MOG(35-55) in CFA and i.v. injected with pertussis toxin on days 0 and 2. Mean clinical EAE score and SEM,  $n \geq 4$  per group. \* $P < 0.05$ , ANOVA plus Fisher's LSD test for individual days.



**Supplementary Figure 5**

***Il6ra*<sup>-/-</sup> BMDCs are not deficient in the production of pro-inflammatory cytokines in response to stimulation with LPS.**

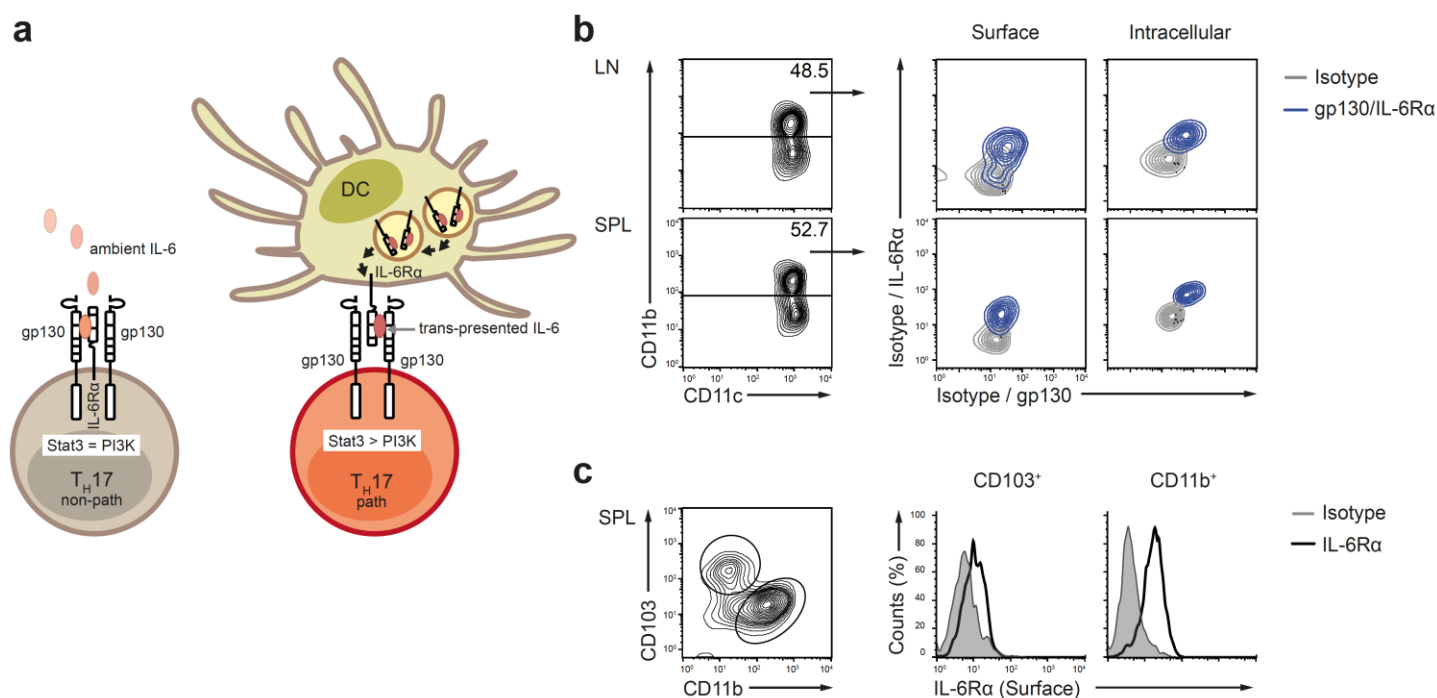
Control *Il6ra*<sup>flox/flox</sup> or IL-6Rα deficient BMDCs (*Il6ra*<sup>ΔDC</sup>) were stimulated over night with either IL-6 or LPS followed by analysis of *Il1b*, *Il6*, *Il12a*, *Il12b*, and *Il23* mRNA production by quantitative RT PCR. Mean + SD of technical replicates. One out of two independent experiments. \*P<0.05, ANOVA plus Sidak's multiple comparisons test.



**Supplementary Figure 6**

### DC-derived IL-6 is required for robust activation of STAT3 in T cells.

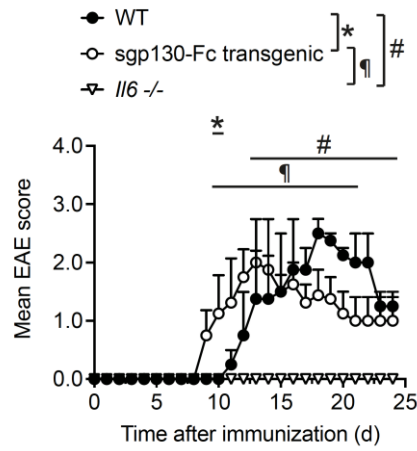
(a, b) Subcutaneous immunization with a peptide antigen in CFA induces similar amounts of serum IL-6 in control mice (*I/6*<sup>flox/flox</sup>) and *I/6*<sup>ΔDC</sup> mice. Control animals (*I/6*<sup>flox/flox</sup>), *I/6*<sup>-/-</sup> mice, and *I/6*<sup>ΔDC</sup> mice were either injected with LPS (a) to induce systemic IL-6 or immunized subcutaneously with MOG(35-55) in CFA (b). Serum samples were collected 5 h after LPS injection or 1 day after subcutaneous immunization for the assessment of IL-6 by ELISA (n=3, SD, \*P<0.04, One-way-ANOVA plus Tukey's multiple comparisons test). (c, d) RNA Seq analysis was performed in 2D2 T cells re-isolated from draining lymph nodes of control hosts (*I/6*<sup>flox/flox</sup>) or *I/6*<sup>ΔDC</sup> hosts after immunization with cognate MOG peptide. (c) Ingenuity pathway analysis was performed to evaluate the strength of STAT3 pathway activation in control primed (left panel) or *I/6*<sup>ΔDC</sup> primed (right panel) 2D2 effector T cells. (d) Notably, in contrast to T cells primed in a control milieu, *I/6*<sup>ΔDC</sup> primed T cells exhibited a weakened "STAT3" signature when their RNA profile was directly tested for the enrichment of STAT3 dependent genes by GSEA (see also Supplementary Tables).



**Supplementary Figure 7**

**IL-6 cluster signaling and surface and intracellular expression of IL-6R $\alpha$  and gp130 by CD11b $^{+}$  DCs.**

(a) Scheme of IL-6 cluster signaling. IL-6 is loaded onto the IL-6R $\alpha$  in intracellular compartments of DCs and is brought to the cell membrane as an IL-6-IL-6R $\alpha$  complex. During a cognate interaction between DCs and T cells, DCs present IL-6 via their IL-6R $\alpha$  *in trans* to T cells. Trans-presentation of IL-6 leads to the engagement of gp130 on the T cell side (IL-6 cluster signaling) and induces a pathogenic phenotype in sensitized T cells. (b) CD11b $^{+}$  DCs express IL-6R $\alpha$  on their cell surface. WT mice were immunized with MOG(35-55) in CFA and on day 7 after immunization, cells from draining lymph nodes (LN) and spleen (SPL) were analyzed by flow cytometry. (b) IL-6R $\alpha$  and gp130 expression was assessed in CD11c $^{+}$ MHC class II $^{+}$ CD11b $^{+}$  cDC2 either by surface staining (left column) or by intracellular staining (right column). Grey: isotype. Blue overlay: IL-6R $\alpha$  or gp130, respectively. (c) Surface expression of IL-6R $\alpha$  was assessed on splenic cDC1 cells (CD103 $^{+}$ ) or CD11b $^{+}$  DCs isolated from immunized mice on day 7 after immunization.

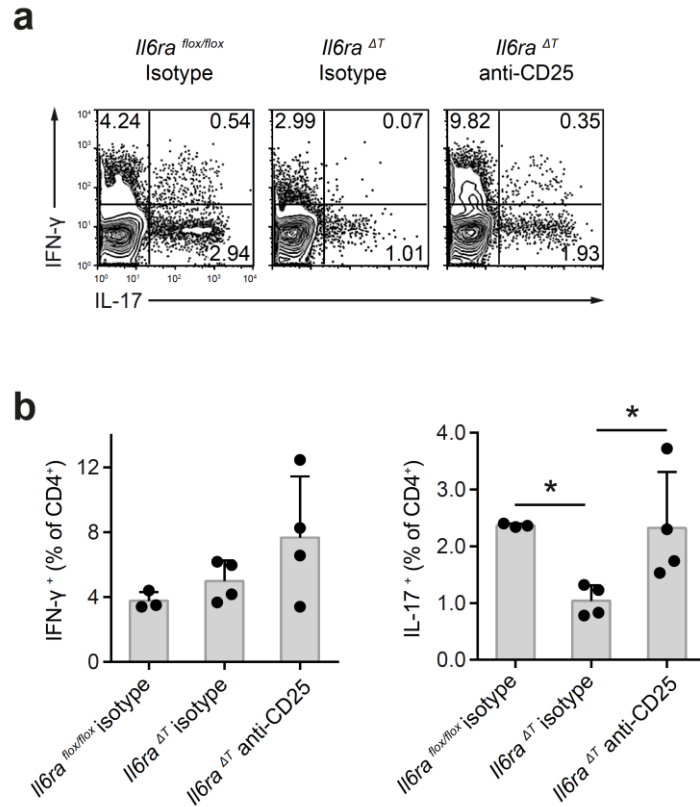


### Supplementary Figure 8

#### IL-6 trans-signaling by the soluble IL-6–IL-6R $\alpha$ complex is irrelevant during MOG(35–55)-induced EAE.

WT mice, opt\_sgp130-Fc transgenic mice, and *Il6*<sup>-/-</sup> mice were immunized with MOG(35–55) in CFA. Opt\_sgp130-Fc transgenic mice produce large amounts of sgp130, which blocks endogenous IL-6 trans-signaling *in vivo*. Mean EAE scores + SEM, \**P*<0.04, ANOVA plus Tukey post test.

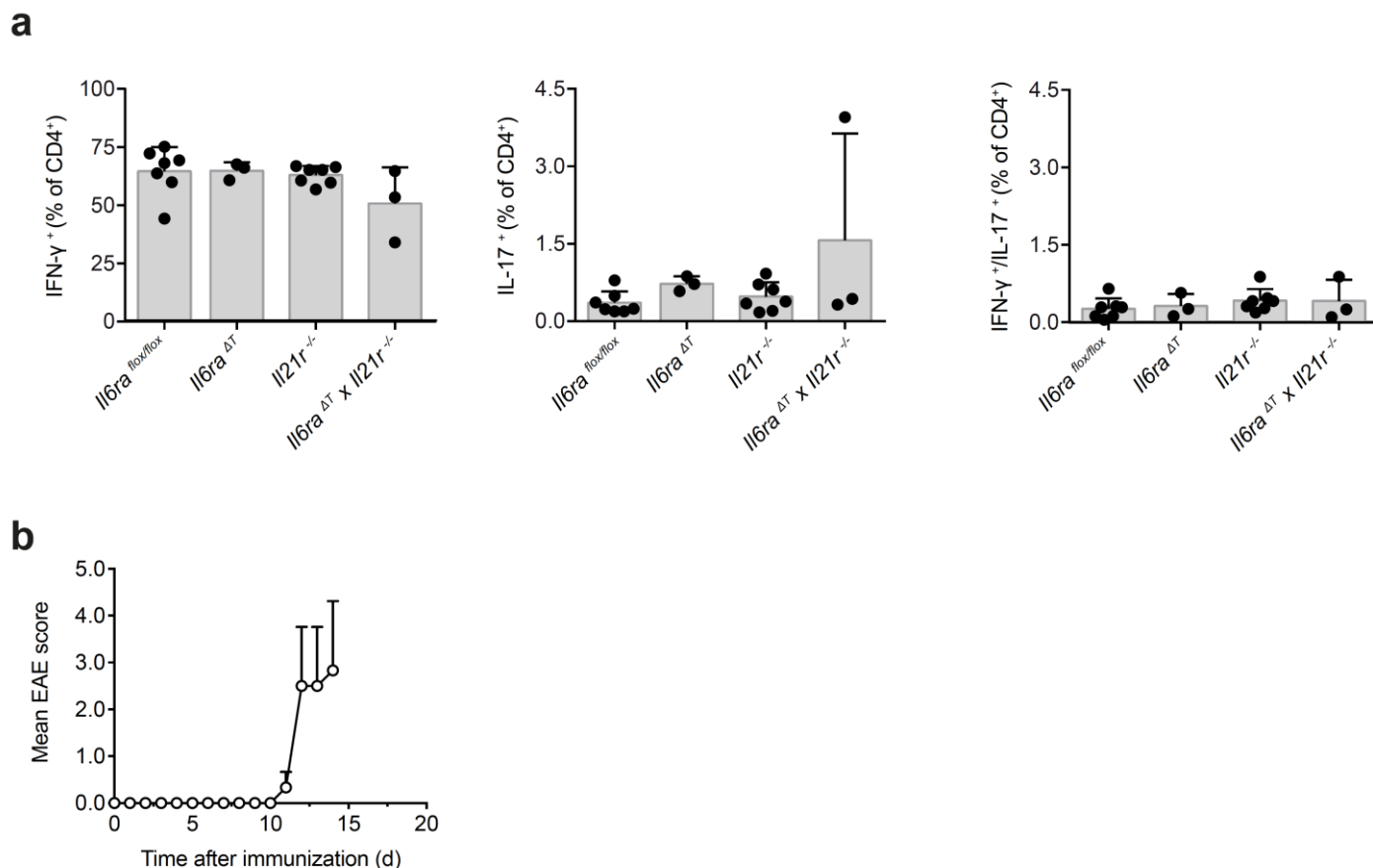




**Supplementary Figure 9**

**IL-6R $\alpha$ -deficient T cells differentiate into pathogenic T<sub>H</sub>17 cells.**

*Il6ra*<sup>flox/flox</sup> control mice and Treg sufficient or deficient (anti-CD25 treated) *Il6ra*<sup>ΔT</sup> animals were immunized with MOG(35-55) in CFA. After priming of antigen specific T cells *in vivo*, the cytokine response was assessed in CD4<sup>+</sup> T cells isolated from the spleen on day 10 after immunization after short term *ex vivo* restimulation with PMA/ionomycin and intracellular cytokine staining. **(a)** Representative cytograms of the CD4<sup>+</sup> T cell gate. **(b)** Frequency of IFN- $\gamma$  producing CD4<sup>+</sup> T cells (left) and IL-17 producing CD4<sup>+</sup> T cells (right); n=3 (Ctrl), n=4 (isotype treated *Il6ra*<sup>ΔT</sup>) and n=4 (anti-CD25 treated *Il6ra*<sup>ΔT</sup>). ANOVA, Fisher's LSD post-test, \*P<0.03.



**Supplementary Figure 10**

**IL-6 cluster signaling is sufficient to induce pathogenic T<sub>H</sub>17 cells in the simultaneous absence of classic IL-6 signaling and the IL-21-mediated alternative pathway for the induction of T<sub>H</sub>17 cells.**

Naive CD4<sup>+</sup> T cells were purified from *Il6ra*<sup>flox/flox</sup> control mice, *Il6ra*<sup>ΔT</sup> mice, *Il21r*<sup>-/-</sup> mice, or *Il6ra*<sup>ΔT</sup> x *Il21r*<sup>-/-</sup> mice and transferred into *Rag1*<sup>-/-</sup> host animals followed by immunization with MOG(35-55) in CFA. **(a)** Intracellular cytokine staining of T cells re-isolated from the spleen on day 14 after immunization and subjected to *ex vivo* stimulation with PMA/ionomycin. **(b)** Clinical course of EAE in *Rag1*<sup>-/-</sup> recipients of T cells deficient in both IL-6R $\alpha$  and IL-21R. Mean clinical score + SEM, n=3.

**Supplementary Table 1**

**Differentially expressed genes in Foxp3<sup>+</sup> 2D2 indicator T cells re-isolated from draining lymph nodes after priming (day 7) in *Il6<sup>flox/flox</sup>* (control) hosts or global *Il6<sup>-/-</sup>* host mice.**

The cDNA library was prepared according to a “not so random priming” protocol. RNA Seq was performed according to a 100 base single read protocol with  $20 \times 10^6$  reads per sample.

**Supplementary Table 1**

	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj
Coro2a	41.09379591	-1.974229751	0.345810714	-5.708989553	1.14E-08	8.55E-06
Ly6c2	58.1798293	-1.605767354	0.363472142	-4.417855366	9.97E-06	0.00121212
Oas2	97.88082994	-1.491378761	0.184905621	-8.065621552	7.29E-16	7.00E-12
Cpd	28.59796683	-1.45941277	0.335869257	-4.34518116	1.39E-05	0.00157268
Il18rap	81.66568121	-1.440957795	0.322697219	-4.465355483	7.99E-06	0.001094589
Ifit3	79.0871399	-1.398780739	0.252179736	-5.546761047	2.91E-08	1.69E-05
Rora	79.21312165	-1.365192792	0.306111978	-4.459782336	8.20E-06	0.001094589
Ifng	20.14568621	-1.294543379	0.36549599	-3.541881214	0.000397284	0.016811953
Il18r1	143.0100222	-1.272715985	0.310920203	-4.093384641	4.25E-05	0.003403099
Rsad2	73.60162231	-1.258764673	0.264679162	-4.755813278	1.98E-06	0.000395545
Tbx21	45.02712594	-1.245263204	0.338305162	-3.680887385	0.000232424	0.011641708
Sdc3	24.99970983	-1.183508702	0.330650024	-3.579339536	0.000344464	0.015178524
Ctsw	31.60942497	-1.182895898	0.341183518	-3.467037048	0.000526229	0.020548615
Cd86	20.59044235	-1.179643804	0.339023736	-3.479531608	0.000502291	0.019939158
Crmp1	49.5785402	-1.173065612	0.304012685	-3.858607447	0.000114035	0.006761849
Myo1f	183.5500988	-1.170321599	0.284311528	-4.116335375	3.85E-05	0.003160489
Dock5	76.46496337	-1.14788549	0.234362595	-4.897903987	9.69E-07	0.000258466
B3gnt5	21.75518305	-1.147496575	0.353482994	-3.246256803	0.001169333	0.035434112
Dgkh	32.7597235	-1.139834392	0.273735405	-4.164000608	3.13E-05	0.002718866
Syt12	146.8773738	-1.13295712	0.185629896	-6.103311734	1.04E-09	1.25E-06
Osbpl3	80.86769382	-1.130148603	0.302562891	-3.735251865	0.000187527	0.010063622
Cenpf	395.9088717	-1.09291446	0.299870672	-3.644619376	0.000267788	0.012656274
Kif2c	120.7356667	-1.084346289	0.24563354	-4.414487897	1.01E-05	0.001215752
Espl1	213.60905	-1.076518296	0.262702709	-4.097857617	4.17E-05	0.003390372
Usp18	95.77512899	-1.071373101	0.21230518	-5.046382285	4.50E-07	0.000135161
Asap2	18.26046513	-1.066076329	0.305256103	-3.492399714	0.000478701	0.019321029
Wdfy4	32.40731446	-1.055467652	0.304897554	-3.461712422	0.00053675	0.020863739
Cdca3	168.5708068	-1.052119479	0.215194154	-4.889163852	1.01E-06	0.000262906
Cacna1i	24.41052872	-1.047545243	0.287832344	-3.639428523	0.000273244	0.012680095
Ifit1	252.5239302	-1.042401746	0.223926965	-4.655097017	3.24E-06	0.00057999
Sapcd2	44.96589317	-1.041365152	0.285925528	-3.642085265	0.000270438	0.012656274
Ggt1	65.21435014	-1.040494228	0.30639237	-3.395953454	0.0006839	0.024386632
Atp8b4	190.1136166	-1.038495762	0.254958348	-4.073197727	4.64E-05	0.003651227
Mx2	32.994896	-1.037997062	0.255119431	-4.068671121	4.73E-05	0.003692611
Mx1	87.87216153	-1.031810545	0.194722818	-5.298868192	1.17E-07	5.09E-05
Myo5a	114.5658273	-1.027422265	0.206747432	-4.96945599	6.71E-07	0.000195441
Ska3	56.61437619	-1.022790699	0.305840356	-3.344197971	0.000825208	0.027911798
I830012O16Rik	26.21428716	-1.018367312	0.282547704	-3.604231419	0.000313078	0.014053399
Aspm	392.7901592	-1.013593102	0.251501983	-4.030159485	5.57E-05	0.003966141
Cit	254.7027081	-1.010333026	0.225097379	-4.48842644	7.18E-06	0.001044306
Depdc1b	60.3106289	-1.00418232	0.317591828	-3.161864485	0.001567625	0.043344001
Gpsm2	74.44222664	-1.002311459	0.234293405	-4.278018242	1.89E-05	0.001946559
Mki67	4365.57728	-1.001670594	0.223766503	-4.476409928	7.59E-06	0.001088326

Gm14446	104.9677791	-1.001513224	0.263565798	-3.799860346	0.000144778	0.008229196
1700025G04Rik	33.40726437	-0.997288177	0.243467169	-4.096191609	4.20E-05	0.003390372
Plk1	179.3514015	-0.973258626	0.312952078	-3.109928628	0.001871326	0.047935875
Hist1h3i	136.5846228	-0.971224317	0.217249912	-4.470539512	7.80E-06	0.001094589
Mastl	57.12492115	-0.96933526	0.30802237	-3.146963837	0.001649754	0.04464094
Cdca8	187.5127326	-0.967287518	0.186488395	-5.186851008	2.14E-07	8.93E-05
Hist1h3f	505.4267403	-0.963838023	0.294644729	-3.271187054	0.00107097	0.033401761
Anln	110.621535	-0.94982366	0.265004152	-3.584184064	0.000338134	0.014987925
Endod1	126.0875267	-0.948184748	0.234723434	-4.0395828	5.35E-05	0.003906384
Arsb	73.68495532	-0.944711551	0.305146615	-3.095926693	0.001961989	0.048879147
Hist1h3a	598.2631751	-0.940638988	0.269023364	-3.496495519	0.000471412	0.019188083
Slfn3	59.99790606	-0.93281559	0.276360593	-3.37535674	0.000737201	0.02556516
Arhgap19	182.2154804	-0.929230978	0.255192261	-3.641297645	0.000271267	0.012656274
Kif4	219.6306403	-0.923672579	0.285781878	-3.232089405	0.001228886	0.036703134
Ccnb1	137.8143245	-0.921877759	0.293129977	-3.144945357	0.001661179	0.044698266
Kif14	178.6856973	-0.919422817	0.262851904	-3.497873908	0.000468983	0.01917042
Cdk1	172.1368787	-0.908902399	0.27712619	-3.279741974	0.001039021	0.03275101
Cenpe	502.2244688	-0.906668628	0.263735427	-3.437796121	0.000586469	0.021943499
Cmpk2	90.5203843	-0.904989535	0.176219045	-5.13559438	2.81E-07	0.000101841
Sep 11	451.1268969	-0.904004497	0.185215806	-4.880817214	1.06E-06	0.000267065
Hmmr	234.2776797	-0.90110499	0.271367759	-3.320604456	0.000898227	0.029753008
Aurka	91.73421051	-0.90041677	0.275937191	-3.26312218	0.00110192	0.034255805
Top2a	2114.257327	-0.895149348	0.271475391	-3.297349873	0.000976018	0.031567786
Cenpi	54.63392424	-0.894152188	0.272763799	-3.278118986	0.001045013	0.03275101
Kif11	593.3311384	-0.893526302	0.288800694	-3.093920208	0.001975306	0.049030465
Bub1	131.2828462	-0.893099491	0.287802402	-3.103168995	0.001914603	0.048526845
Foxm1	251.2712696	-0.88981407	0.237257469	-3.750415418	0.000176542	0.009527309
Rtp4	203.3333926	-0.884745483	0.23585483	-3.75122902	0.00017597	0.009527309
Melk	97.71638436	-0.88364074	0.182694597	-4.836709752	1.32E-06	0.000317012
Kif18b	162.4983677	-0.882104615	0.281593549	-3.132545536	0.001732975	0.045690671
Hist1h1b	415.3028503	-0.881610206	0.272795926	-3.231757231	0.001230315	0.036703134
Ddx60	132.0067378	-0.87838201	0.170190104	-5.161181456	2.45E-07	9.43E-05
Ncapg	250.8240333	-0.869032584	0.266871924	-3.256365714	0.001128483	0.034744254
Tacc3	294.6711415	-0.85881999	0.272582208	-3.150682487	0.001628895	0.044201022
Gpr55	50.56541308	-0.849983648	0.269114206	-3.158449569	0.001586107	0.043407831
Spag5	204.9728686	-0.845205786	0.24458865	-3.455621458	0.000549026	0.021095766
Ttn	64.97522841	-0.844905369	0.236768749	-3.568483484	0.000359053	0.015556559
Gbp7	670.331953	-0.842981413	0.199110619	-4.233734077	2.30E-05	0.002186009
Racgap1	380.062155	-0.841068002	0.207903388	-4.045475219	5.22E-05	0.003858441
Cdc20	149.880122	-0.838601348	0.218826368	-3.832268282	0.000126967	0.007378384
Bub1b	323.2875842	-0.836218836	0.258475011	-3.235201859	0.001215568	0.03648982
Rad51ap1	57.46781384	-0.83585738	0.240500535	-3.475490724	0.00050992	0.020074951
Gbp10	64.9755317	-0.835499492	0.264326043	-3.160867091	0.001573003	0.043344001
Rap1gap2	149.3121581	-0.834273443	0.206164865	-4.046632507	5.20E-05	0.003858441
Kif18a	71.78467837	-0.833473811	0.267231641	-3.118918887	0.001815159	0.046725298
Cdca2	130.6959396	-0.819529247	0.226038842	-3.625612475	0.000288277	0.013124136

Tpx2	435.5736016	-0.809516596	0.249278957	-3.247432538	0.001164513	0.035399711
Crybg3	46.73606102	-0.80291737	0.258276626	-3.108749646	0.001878808	0.047999559
Phf11c	76.05290523	-0.798956423	0.197258857	-4.05029429	5.12E-05	0.003858441
Spdl1	77.7215467	-0.79594	0.248416945	-3.204048746	0.001355095	0.039565488
Kif20b	245.9741172	-0.79281791	0.22785288	-3.479516734	0.000502319	0.019939158
Mybl2	74.7795021	-0.786892312	0.247474597	-3.179689234	0.001474331	0.041900653
9930111J21Rik1	120.7032166	-0.78122658	0.182265668	-4.286197118	1.82E-05	0.001939961
Vim	3450.65694	-0.778212038	0.19196016	-4.054028905	5.03E-05	0.003838054
Pglyrp1	67.37912722	-0.7731176	0.182368271	-4.239320784	2.24E-05	0.002175391
Fbln1	44.98793986	-0.757532962	0.234023218	-3.236999175	0.001207938	0.036374447
Sorl1	281.8840233	-0.752910655	0.192912748	-3.902855899	9.51E-05	0.00592979
E2f8	226.6561092	-0.745007708	0.231164775	-3.222842703	0.001269252	0.037515193
Dpp4	226.2845026	-0.732618331	0.217720877	-3.364942958	0.000765595	0.026171901
Ticrr	160.4266448	-0.73227619	0.210044299	-3.486294057	0.000489762	0.019684757
Ncapg2	350.1747456	-0.731564134	0.228437391	-3.202471054	0.00136254	0.039662299
Cep55	191.0191194	-0.727337621	0.213602589	-3.405097412	0.000661405	0.023795701
Pik3r5	319.9765204	-0.721380526	0.196066101	-3.679272048	0.000233901	0.011641708
Gbp6	267.9295725	-0.720973331	0.196882022	-3.661956154	0.000250297	0.012143183
Nlrc5	1229.319525	-0.716642686	0.167605699	-4.275765633	1.90E-05	0.001946559
Lmnbl1	1084.794164	-0.715366561	0.177762285	-4.024287616	5.71E-05	0.004007037
Chtf18	78.55893851	-0.699569314	0.18060772	-3.873418675	0.000107319	0.006483701
Gbp3	101.393884	-0.687197684	0.199024892	-3.452822795	0.000554753	0.021146668
Qpct	81.00059929	-0.687195472	0.18757127	-3.663649934	0.000248647	0.012130982
Slc4a7	199.4693706	-0.684430678	0.163405003	-4.188554001	2.81E-05	0.002521182
Gm12250	190.694381	-0.681068534	0.209395348	-3.252548539	0.001143751	0.034990026
Slfn5	917.7922773	-0.679550025	0.096846041	-7.016807443	2.27E-12	5.45E-09
Ifih1	286.9101011	-0.676549383	0.171625732	-3.942004351	8.08E-05	0.005244585
Pydc4	228.0374888	-0.673523221	0.171969007	-3.916538398	8.98E-05	0.005714585
Samd9l	590.2602349	-0.673454835	0.122339759	-5.504791253	3.70E-08	1.97E-05
Tubb4b	431.880092	-0.660474956	0.211438909	-3.123715301	0.001785832	0.046616028
Rrm1	689.9074291	-0.657971383	0.207593069	-3.169524812	0.001526884	0.042726229
Tyms	223.8859353	-0.647483683	0.206215668	-3.139837484	0.001690416	0.045177507
Macf1	4370.86376	-0.646914353	0.126048061	-5.132283276	2.86E-07	0.000101841
Plec	3494.142119	-0.639507645	0.125023222	-5.115110885	3.14E-07	0.000107572
Dhx58	141.3524572	-0.634784896	0.148303509	-4.280309346	1.87E-05	0.001946559
D830031N03Rik	88.25949045	-0.633572822	0.172816023	-3.666169451	0.000246211	0.012128723
Arhgap21	108.02649	-0.628901155	0.155110423	-4.054538327	5.02E-05	0.003838054
H2-T24	239.1855592	-0.623860597	0.122960038	-5.073685784	3.90E-07	0.000120906
Dync2h1	70.55340921	-0.612462029	0.195406573	-3.134295936	0.00172267	0.045586695
Ubr4	2008.275052	-0.60589682	0.097723673	-6.200102796	5.64E-10	7.74E-07
Bcl2	258.7224148	-0.597777038	0.187180401	-3.193587767	0.001405166	0.040269732
Rcn1	108.1868401	-0.594086088	0.175399709	-3.387041475	0.000706507	0.024859732
Paqr4	114.2343343	-0.59398845	0.180705185	-3.287058154	0.001012399	0.032219765
Helz2	1460.293818	-0.584968859	0.083361701	-7.017237552	2.26E-12	5.45E-09
Ncapd2	946.5966358	-0.583752737	0.138462056	-4.215976236	2.49E-05	0.002297127
Samhd1	1642.449369	-0.579141095	0.096367149	-6.009735718	1.86E-09	1.98E-06

Atp10a	482.5316049	-0.578443768	0.120422484	-4.80345322	1.56E-06	0.000343453
Esyt1	2182.65701	-0.577658221	0.163582763	-3.531290269	0.000413538	0.017422995
Ahnak	4969.024796	-0.573229299	0.14722673	-3.893513749	9.88E-05	0.006045209
Cbx5	876.4270924	-0.572683379	0.179739833	-3.186179536	0.001441651	0.041093471
Flna	6846.760879	-0.570551859	0.140051973	-4.07385805	4.62E-05	0.003651227
Oas3	956.3245428	-0.568124731	0.143686673	-3.95391387	7.69E-05	0.005089274
S100a4	353.0322446	-0.558565411	0.17177949	-3.251642029	0.001147404	0.034990368
Tagln2	975.0617381	-0.550575372	0.146446797	-3.759558997	0.000170213	0.009343242
Fam111a	432.089732	-0.546893859	0.128437544	-4.258052911	2.06E-05	0.002021329
Flnb	501.5354332	-0.544107482	0.146074993	-3.724850302	0.000195431	0.01042951
Trim30a	815.470536	-0.534690215	0.146184468	-3.657640398	0.000254548	0.012287369
Mdn1	1004.913003	-0.5319375	0.117642365	-4.521649143	6.14E-06	0.000920971
Ifi27l2a	1466.182702	-0.531196002	0.1714024	-3.099116484	0.001940987	0.048729064
Cpt1a	527.2350224	-0.531143014	0.134103759	-3.960686978	7.47E-05	0.005020273
Shmt1	83.72355469	-0.531058519	0.167628095	-3.168075855	0.001534515	0.042726229
Kmt2a	2376.402326	-0.526580729	0.076835059	-6.853391325	7.21E-12	1.18E-08
Cad	429.676928	-0.524262723	0.134400428	-3.900751894	9.59E-05	0.005942977
Cdc25b	1413.96044	-0.52250352	0.14960174	-3.49262996	0.000478289	0.019321029
Igtp	593.830952	-0.521116365	0.13620791	-3.825889143	0.000130301	0.007495034
Prkd3	595.5608644	-0.515863077	0.114737069	-4.496045431	6.92E-06	0.001023097
Mov10	330.0187461	-0.511772571	0.115014218	-4.449646126	8.60E-06	0.001116527
Pfas	280.8366278	-0.502979642	0.121264414	-4.147792641	3.36E-05	0.002853715
Irf7	355.3976671	-0.501081583	0.152159051	-3.29314346	0.000990739	0.031829564
Smg1	2378.130903	-0.496535728	0.097228537	-5.106892943	3.27E-07	0.000108481
Cdt1	174.5201447	-0.496354075	0.160341566	-3.095604506	0.001964121	0.048879147
Gm4759	554.5807067	-0.493394319	0.136430315	-3.61645664	0.000298663	0.013469295
Herc1	1215.843185	-0.493216201	0.107522693	-4.587089351	4.49E-06	0.000731795
Ifi203	960.6868626	-0.488929953	0.068142579	-7.175101981	7.23E-13	3.47E-09
Capn2	768.1612669	-0.487913086	0.131923108	-3.698465661	0.000216907	0.011176711
Pml	660.5196734	-0.481579913	0.086893571	-5.542181161	2.99E-08	1.69E-05
Vps13d	878.1432864	-0.48135324	0.132086501	-3.644227354	0.000268196	0.012656274
Herc6	240.3444327	-0.481113436	0.135408981	-3.553039342	0.000380808	0.016193527
Huwe1	2701.709865	-0.475707316	0.097118784	-4.898200899	9.67E-07	0.000258466
A430078G23Rik	247.5792641	-0.474942972	0.13690899	-3.469041541	0.000522319	0.020479156
Parp14	1448.550731	-0.473983306	0.127723451	-3.711012373	0.000206432	0.010777097
Dync1h1	2008.450056	-0.473422493	0.110973629	-4.266081017	1.99E-05	0.001970087
Atad5	241.0059794	-0.472679757	0.129305841	-3.655517432	0.000256664	0.012327561
Usp31	181.460648	-0.4705887	0.133417395	-3.527191483	0.000419993	0.017617694
Ddx58	487.2811237	-0.467333507	0.083954388	-5.566516736	2.60E-08	1.66E-05
Epsti1	861.958146	-0.463163381	0.131761831	-3.515155934	0.000439496	0.018223586
Anxa2	970.1052302	-0.461832624	0.10373858	-4.451888814	8.51E-06	0.001116527
Irgm1	476.7457498	-0.454112198	0.103534439	-4.386097999	1.15E-05	0.001335606
Smchd1	1293.25525	-0.451516313	0.123246913	-3.663510122	0.000248782	0.012130982
Ago2	1228.011464	-0.450476545	0.08469508	-5.318804194	1.04E-07	4.78E-05
Cep350	1291.432119	-0.450107111	0.101629164	-4.428916795	9.47E-06	0.001181507
Trim25	609.1347189	-0.443060319	0.092911999	-4.768601733	1.86E-06	0.000379149

Hivep3	168.7875969	-0.442653814	0.143231282	-3.090482807	0.001998314	0.049346534
Birc6	3131.787302	-0.43658279	0.101764462	-4.290130174	1.79E-05	0.001927335
Epb4.1l2	323.7629615	-0.434919913	0.111190491	-3.911484795	9.17E-05	0.005759232
Mcm5	766.1419465	-0.425961862	0.112354862	-3.791218769	0.00014991	0.008470787
Trrap	1269.663832	-0.422432038	0.086849205	-4.863971272	1.15E-06	0.000283386
Kmt2d	3573.020943	-0.42000903	0.097428573	-4.310943075	1.63E-05	0.001774487
Arhgef18	675.3454425	-0.419606619	0.131245974	-3.197100872	0.001388164	0.040126129
Akap11	534.0655978	-0.418234848	0.094507724	-4.425403856	9.63E-06	0.001185504
Dnmt1	1777.937348	-0.413592812	0.107555556	-3.84538757	0.000120362	0.007093238
Dnah8	809.2317115	-0.413544004	0.128167511	-3.226589961	0.001252748	0.037141671
Rangap1	805.4082493	-0.412854078	0.12226304	-3.376769286	0.000733425	0.025526393
Tmem109	207.5338154	-0.407312412	0.122292574	-3.330638979	0.000866469	0.028900351
Mycbp2	2117.616529	-0.405664249	0.079818381	-5.082341228	3.73E-07	0.000119374
Pcnt	781.4326935	-0.404803313	0.084302363	-4.801802706	1.57E-06	0.000343453
Tmpo	1368.796223	-0.403710658	0.125588158	-3.214559914	0.001306446	0.038261356
Rexo2	318.3435923	-0.403579327	0.117404393	-3.437514711	0.000587079	0.021943499
Fryl	1380.793522	-0.402037451	0.083900807	-4.791818615	1.65E-06	0.000348945
Gm15800	761.9662756	-0.401783249	0.101270956	-3.967408473	7.27E-05	0.004915187
Ccdc88c	1381.636559	-0.398751319	0.087944948	-4.53410147	5.78E-06	0.00089629
Sptbn1	3227.706016	-0.395314481	0.072471171	-5.454782566	4.90E-08	2.48E-05
Pag1	1335.07452	-0.394326107	0.106576392	-3.699938609	0.000215652	0.011176711
Kmt2c	1286.408984	-0.392321822	0.083382092	-4.705108865	2.54E-06	0.000483058
Anxa6	3235.081078	-0.390122821	0.109484107	-3.563282674	0.000366246	0.015776495
Herc2	1074.058682	-0.390026786	0.088632806	-4.400478836	1.08E-05	0.001280945
Sptan1	2007.677142	-0.388148402	0.084435229	-4.596995921	4.29E-06	0.000709893
Ankrd52	735.2404787	-0.384272615	0.098174637	-3.914174019	9.07E-05	0.005732899
Trem12	350.6804377	-0.38188742	0.117671891	-3.245358048	0.00117303	0.035434369
Morc3	539.5283492	-0.376792694	0.083167353	-4.530536071	5.88E-06	0.000897082
Mcm4	806.2522875	-0.376598058	0.103961793	-3.622465975	0.000291808	0.013222199
Gm1966	1374.870975	-0.370337444	0.089888337	-4.11997214	3.79E-05	0.003137835
Odf2	497.3352065	-0.364232393	0.107297393	-3.394606191	0.000687274	0.024386632
Gart	406.6003629	-0.363578273	0.111466891	-3.261760248	0.001107227	0.034309764
Hsph1	526.8634481	-0.362288176	0.099688885	-3.634188273	0.000278857	0.012816756
Htt	723.0386358	-0.362257515	0.089707043	-4.038228272	5.39E-05	0.003906384
Ttll12	276.5960923	-0.359287928	0.114212605	-3.145781741	0.001656436	0.044695846
Usp24	773.908626	-0.354469562	0.087839268	-4.035433933	5.45E-05	0.003907024
Ddx39	447.0403176	-0.353488449	0.114156628	-3.096521459	0.001958057	0.048879147
Efr3a	821.5172961	-0.353226502	0.080414879	-4.392551562	1.12E-05	0.001312368
Heatr1	602.831822	-0.348326997	0.074740535	-4.660483076	3.15E-06	0.00057999
Hcfc1	2169.057124	-0.344449998	0.08066756	-4.269993997	1.95E-05	0.001956004
Ranbp2	1853.781798	-0.343460036	0.108397495	-3.168523749	0.001532152	0.042726229
Ascc3	583.0925179	-0.338523213	0.08950653	-3.782106305	0.000155507	0.008735669
Ep400	1584.046933	-0.337814866	0.10185402	-3.316657171	0.000911013	0.0299312
Snx27	319.8234855	-0.335443528	0.101413603	-3.307677837	0.00094073	0.030632707
Prrc2b	2636.556024	-0.334157266	0.06458309	-5.174067455	2.29E-07	9.17E-05
Rictor	536.8880918	-0.333600819	0.102487559	-3.25503721	0.001133775	0.034795667



Stat1	2629.035965	-0.332004316	0.078554349	-4.226428232	2.37E-05	0.002214322
Zbp1	694.6297274	-0.328031504	0.104102102	-3.151055527	0.001626816	0.044201022
Ankrd17	1519.188666	-0.327857126	0.066574922	-4.924634005	8.45E-07	0.000238789
Prrc2c	5116.249371	-0.326461958	0.099187209	-3.291371553	0.000997001	0.031923983
Cnot1	2324.337953	-0.325490138	0.06007781	-5.417809619	6.03E-08	2.90E-05
Kpnb1	2078.351583	-0.321289043	0.077012775	-4.171892799	3.02E-05	0.002686832
Setx	1995.585581	-0.321273985	0.08115428	-3.958805167	7.53E-05	0.005024849
Ep300	1556.218138	-0.32112232	0.05498908	-5.839747107	5.23E-09	4.57E-06
Setd8	447.5056699	-0.320957717	0.083774093	-3.831228806	0.000127505	0.007378384
Kcnab2	1158.280434	-0.320922128	0.092140722	-3.48295651	0.000495909	0.019848754
Nup214	651.7263646	-0.320073078	0.080379961	-3.982000929	6.83E-05	0.004655675
Pds5b	603.1446491	-0.315567554	0.077833954	-4.054368772	5.03E-05	0.003838054
Atp2b1	545.416454	-0.313616524	0.081188544	-3.862817453	0.000112087	0.006687612
Prkdc	486.4476767	-0.311060659	0.090561072	-3.434816436	0.000592955	0.022054451
Tpm4	1450.970941	-0.310687623	0.082633778	-3.759813862	0.00017004	0.009343242
Nup210	3337.954537	-0.306583898	0.098876081	-3.100688208	0.001930715	0.048729064
Nfya	433.4844389	-0.303982011	0.082208798	-3.697682224	0.000217577	0.011176711
Vps13c	461.6179454	-0.301371296	0.085901095	-3.508352201	0.000450892	0.018509682
Hspa8	7012.286074	-0.298970151	0.094053839	-3.178712883	0.001479305	0.041918018
Akap13	4056.607759	-0.297961104	0.081948639	-3.6359494	0.000276959	0.012790698
Znfx1	631.0576582	-0.297537492	0.090777277	-3.277664875	0.001046696	0.03275101
Lnpep	1499.78724	-0.292349814	0.092146084	-3.172677574	0.001510402	0.042548146
Vprbp	495.1923739	-0.292203336	0.090844962	-3.216505686	0.00129762	0.038119065
Acsl5	854.7161593	-0.290950505	0.084500312	-3.443188519	0.000574898	0.021695597
Dock10	2134.05704	-0.290629176	0.077473646	-3.751329542	0.000175899	0.009527309
Pprc1	377.7787545	-0.286868968	0.091592474	-3.132014615	0.001736112	0.045690671
Zzef1	868.3251748	-0.285585887	0.077665493	-3.677127053	0.000235876	0.011679488
Tnrc6b	1253.744502	-0.285006307	0.091399055	-3.118263185	0.001819203	0.046725298
Arid2	635.5464217	-0.28475913	0.080793498	-3.524530271	0.000424234	0.017718239
Ahctf1	771.9268365	-0.284609471	0.070981271	-4.009641765	6.08E-05	0.00423297
Setd1b	859.261766	-0.275038557	0.074611554	-3.686273007	0.000227562	0.011505067
Jmjd1c	1063.029609	-0.272836759	0.080882627	-3.373243049	0.000742883	0.025669563
Ankrd44	2062.061146	-0.271603942	0.056276492	-4.826241476	1.39E-06	0.00032598
Trap1	504.3135199	-0.27138302	0.080577591	-3.367971369	0.000757235	0.026071668
Usp34	1727.091186	-0.264701358	0.061324327	-4.31641687	1.59E-05	0.001750968
Elf4	1790.227324	-0.259254484	0.061897059	-4.188478214	2.81E-05	0.002521182
Adar	1105.565043	-0.258940857	0.083776295	-3.090860672	0.001995773	0.049346534
Snrnp200	1870.041492	-0.258814101	0.072834662	-3.553446877	0.000380218	0.016193527
Prpf8	3233.217127	-0.257273319	0.082046894	-3.135686271	0.001714525	0.045543159
Chd8	1298.236674	-0.248653095	0.07456497	-3.334717321	0.000853862	0.028587352
Dnajc13	766.0620372	-0.245927335	0.078838279	-3.119389935	0.00181226	0.046725298
Iqgap1	3263.356929	-0.242457772	0.064375447	-3.766308165	0.000165679	0.009252995
Ppp1r12a	1158.440449	-0.241918124	0.070905258	-3.411850295	0.000645235	0.023388629
Aqr	764.4595697	-0.234368056	0.06672316	-3.512544342	0.000443838	0.018298314
Dock2	4061.889843	-0.227192629	0.053692537	-4.231363287	2.32E-05	0.002187523
Mtpn	1103.989836	-0.214141307	0.06531199	-3.278744194	0.001042701	0.03275101

Son	4300.029269	-0.16884679	0.050634238	-3.334636759	0.000854109	0.028587352
Pdcd6ip	1415.996865	-0.168050876	0.05384208	-3.121180999	0.001801273	0.046725298
Sf3b1	3698.697944	-0.166412601	0.052394953	-3.176118897	0.001492598	0.042170273
Msn	7711.093963	-0.161280827	0.051711461	-3.118860406	0.00181552	0.046725298
Mlec	2535.467551	-0.160208482	0.050121602	-3.196395872	0.00139156	0.040126129
Ndfip1	991.4501823	0.215379503	0.066691305	3.229498993	0.001240073	0.0368797
Tmem173	997.217391	0.217057739	0.070045088	3.098828831	0.001942872	0.048729064
Ppp2r1a	1017.179855	0.225590965	0.071147174	3.170764954	0.001520381	0.042704037
Galnt2	641.0609947	0.233887029	0.075363206	3.103464438	0.001912692	0.048526845
R3hdm4	638.0534398	0.249161321	0.071635084	3.478202417	0.000504789	0.019954729
Rpl18	1844.763737	0.257316497	0.065546192	3.925727612	8.65E-05	0.005537408
Laptm5	10698.18228	0.260470351	0.07853476	3.316625046	0.000911118	0.0299312
Shisa5	7097.683421	0.270495315	0.057516437	4.702921982	2.56E-06	0.000483058
Tpt1	10024.54051	0.271134513	0.068598882	3.952462581	7.74E-05	0.005089274
Prr13	900.3647018	0.271160277	0.079192665	3.42405797	0.000616935	0.022619365
Sla	1461.033537	0.273708932	0.079906242	3.425376109	0.000613949	0.022596141
Cd82	2780.402501	0.27522106	0.059652835	4.613712962	3.96E-06	0.000690826
Trp53inp1	1639.195118	0.286756807	0.071028097	4.037230608	5.41E-05	0.003906384
Cdk2ap2	464.2587525	0.288451333	0.084980513	3.394323258	0.000687984	0.024386632
Lime1	849.5616635	0.290928347	0.068123706	4.270588969	1.95E-05	0.001956004
Pnrc2	554.3682775	0.292500762	0.080248987	3.644915317	0.00026748	0.012656274
Mob3a	850.0641912	0.30824423	0.097554598	3.1597099	0.001579263	0.043344001
Bsc12	375.2325606	0.312622037	0.098915871	3.160484106	0.001575072	0.043344001
Pigs	371.2314194	0.327547767	0.094675707	3.459681221	0.000540815	0.020863739
Pld3	381.9073173	0.332464243	0.092931558	3.57751717	0.000346873	0.015214914
Rps3	4294.898474	0.337044324	0.076093409	4.429349787	9.45E-06	0.001181507
Use1	366.4268839	0.337544533	0.104783821	3.221342092	0.001275918	0.037596514
Anxa11	676.7524598	0.341666504	0.102858042	3.321728639	0.000894617	0.029735939
Itm2c	686.3591858	0.342258387	0.104127835	3.286905827	0.001012947	0.032219765
Gpr146	290.2361366	0.345606883	0.111371676	3.103184707	0.001914501	0.048526845
Gcnt1	517.0424375	0.350055948	0.084088586	4.162942478	3.14E-05	0.002718866
Ctsb	1258.945127	0.352416217	0.087105956	4.045833754	5.21E-05	0.003858441
Gpr174	465.9868351	0.358050785	0.086106964	4.1582094	3.21E-05	0.002751021
Rps8	2515.38353	0.360467985	0.087052738	4.140800104	3.46E-05	0.002890959
Rpl12	3506.954656	0.361305247	0.113159274	3.192891163	0.00140856	0.040269732
Adk	418.2950621	0.369730487	0.11927875	3.099717985	0.00193705	0.048729064
Rnf19a	1303.711898	0.378441402	0.109925629	3.442703988	0.000575929	0.021695597
Ankrd46	265.1831228	0.39090953	0.113440863	3.445932261	0.000569093	0.021607539
Lbh	1853.464507	0.402719937	0.100021166	4.026347163	5.67E-05	0.004001325
Rps19	1864.714846	0.409238454	0.114189895	3.583841221	0.000338578	0.014987925
Rfxank	164.2331777	0.41403429	0.121695847	3.402205573	0.000668443	0.023959205
Sdf4	1278.157283	0.41976152	0.114079393	3.67955605	0.00023364	0.011641708
Gpr171	481.1049206	0.421349428	0.115718476	3.641159499	0.000271413	0.012656274
Sgsh	489.1996438	0.424316901	0.125368936	3.384545756	0.000712961	0.024904388
Tnfaip8	549.1759306	0.427724142	0.109956339	3.889945289	0.000100267	0.006095969
Lpxn	410.241393	0.431734262	0.122834143	3.514774071	0.000440128	0.018223586

Cd53	4879.500817	0.434429802	0.101437151	4.282748479	1.85E-05	0.001946559
Tnfrsf18	458.9737049	0.437025912	0.132237685	3.304851496	0.000950267	0.030838744
Rps18	2699.240805	0.438749431	0.09834941	4.461129241	8.15E-06	0.001094589
Ndufa7	186.1956841	0.456487951	0.128482579	3.552917103	0.000380985	0.016193527
Ugcg	1973.812309	0.460434758	0.129040456	3.568142676	0.000359521	0.015556559
Cd8b1	150.08476	0.460533432	0.128196094	3.592413905	0.000327629	0.014638155
Cyb5	377.6390049	0.465331227	0.138284669	3.365023987	0.00076537	0.026171901
Spint2	278.8725534	0.478517591	0.139345054	3.434047921	0.000594639	0.022054451
Podnl1	432.5419767	0.494762104	0.136255736	3.631128624	0.000282184	0.012907925
Slc11a2	380.1361812	0.495058301	0.134026016	3.693747782	0.000220973	0.011282586
Rab19	220.799365	0.500913583	0.12945242	3.869480245	0.000109068	0.006548147
Rps15a	2368.65758	0.506702972	0.149676408	3.385322914	0.000710946	0.024904388
Fam117b	953.4216162	0.509366937	0.110709852	4.600917889	4.21E-06	0.000708878
Ubash3b	208.0066112	0.509649851	0.130714712	3.898947909	9.66E-05	0.005949042
Ypel3	377.697223	0.513715374	0.151443085	3.392134898	0.000693503	0.02449187
Ndufa6	357.623744	0.513873751	0.14981965	3.429948947	0.000603695	0.022304202
Cox14	132.6427645	0.517145954	0.14977059	3.452920599	0.000554552	0.021146668
Naga	211.0069886	0.517547402	0.163590233	3.163681541	0.001557872	0.043251198
Hcst	249.7999359	0.524304664	0.125879557	4.165129563	3.11E-05	0.002718866
Rpl27	1110.090092	0.526315162	0.131425095	4.004677823	6.21E-05	0.004261089
Adcy6	196.2566613	0.530725583	0.138506857	3.831763968	0.000127228	0.007378384
Ptms	285.2742959	0.549440176	0.114714798	4.789619007	1.67E-06	0.000348945
Mturn	100.8242172	0.549521861	0.176189742	3.118920854	0.001815147	0.046725298
Pdcd1lg2	166.8380345	0.550746997	0.172342944	3.195645759	0.001395183	0.040126129
Rps29	2746.811572	0.559007404	0.178740198	3.127485647	0.001763084	0.046273737
Eya2	127.5889591	0.567474222	0.180760374	3.139372921	0.001693098	0.045177507
Rpl14-ps1	115.3790254	0.581079974	0.167942156	3.460000676	0.000540174	0.020863739
H1f0	458.1859034	0.589092183	0.134856358	4.368293728	1.25E-05	0.001431992
Ncoa7	2186.269476	0.595221244	0.150891892	3.944686739	7.99E-05	0.005221506
Rps14	2326.075389	0.60334418	0.131006924	4.605437347	4.12E-06	0.000706041
Igsf23	103.2711724	0.603926493	0.183326391	3.294269243	0.000986779	0.031808731
Abcb9	469.8688151	0.605756827	0.177299407	3.416575595	0.000634141	0.023161803
Ebi3	219.4232203	0.60867722	0.194758141	3.12529796	0.00177625	0.046492266
Casp6	89.85168351	0.612955244	0.164974617	3.715451839	0.000202841	0.010705987
9030617O03Rik	108.9174216	0.613089443	0.183283928	3.345025661	0.00082275	0.027911798
Rgs10	776.6711684	0.615308973	0.161610705	3.807352817	0.000140462	0.008031433
I730030J21Rik	153.904721	0.618491073	0.18517072	3.340112701	0.000837444	0.02822627
Cd83	531.6699298	0.622550977	0.167537934	3.715880714	0.000202497	0.010705987
Slc41a3	92.68148549	0.651076243	0.165608661	3.93141421	8.44E-05	0.005444322
Nudt22	48.10408055	0.671409923	0.209890459	3.198858713	0.001379728	0.040041281
Smco4	360.1767086	0.679129382	0.199109726	3.410829766	0.000647655	0.023388629
Ikzf3	523.9650573	0.683360772	0.115007196	5.94189579	2.82E-09	2.71E-06
H2-DMa	193.4946995	0.686253947	0.218515126	3.14053292	0.001686408	0.045177507
Oaz2	53.2502492	0.69681406	0.207219289	3.362689176	0.000771872	0.026292923
Tmem9	48.2637663	0.703503924	0.212150391	3.316062351	0.000912955	0.0299312
Gsn	454.9558265	0.711480975	0.16975443	4.191236571	2.77E-05	0.002521182

A630023P12Rik	66.54331962	0.74407996	0.224455078	3.315050692	0.000916265	0.029937559
Tnfrsf9	176.5329502	0.745555797	0.158153472	4.714128539	2.43E-06	0.000475884
Il1r1	252.9412693	0.802926228	0.216348681	3.711260111	0.00020623	0.010777097
Meis3	72.65282241	0.828103376	0.182174158	4.545668734	5.48E-06	0.000862353
Ramp3	66.85434079	0.846725084	0.204471707	4.141037889	3.46E-05	0.002890959
Dnase2a	45.12719234	0.847482901	0.259940136	3.260300297	0.001112943	0.034375986
Marcks	192.011118	0.849895598	0.185834489	4.573400793	4.80E-06	0.000768273
Tmie	92.46586154	0.85581429	0.192646299	4.442412312	8.90E-06	0.001139347
Epas1	2265.90211	0.89435214	0.27239945	3.283237689	0.001026221	0.032534254
Il4	340.6820129	0.898276573	0.251548023	3.57099437	0.000355629	0.015528035
Wls	60.90907158	0.898524501	0.212202011	4.23428834	2.29E-05	0.002186009
1700056E22Rik	22.30473731	0.907105129	0.287561956	3.15446849	0.001607907	0.043879428
Tha1	47.59319394	0.952512195	0.220299902	4.323706855	1.53E-05	0.001713768
6430562O15Rik	78.07659996	0.964543046	0.261210876	3.692583792	0.000221987	0.011282586
9330020H09Rik	26.71058128	0.971917154	0.284585473	3.415202973	0.000637345	0.023190667
D630039A03Rik	54.47344548	0.991864538	0.222147107	4.464899634	8.01E-06	0.001094589
Socs3	176.1911475	1.026626861	0.213804508	4.801708214	1.57E-06	0.000343453
Abat	21.32064566	1.059416302	0.337890282	3.135385532	0.001716284	0.045543159
Egln3	200.9130934	1.063044055	0.155178556	6.850457181	7.36E-12	1.18E-08
Nipal1	106.9426594	1.116450403	0.239906286	4.653693827	3.26E-06	0.00057999
Mapk13	30.3638121	1.122267099	0.280014035	4.007895892	6.13E-05	0.004233697
Adora3	30.15522114	1.220000334	0.324267746	3.762324032	0.000168342	0.009343242
Asb2	184.393992	1.361784663	0.240171002	5.67006279	1.43E-08	9.79E-06
Lag3	82.14168911	1.578222395	0.27659013	5.705996801	1.16E-08	8.55E-06

**Supplementary Table 2****Gene set enrichment analysis. Core enriched genes in *Il6*<sup>ΔDC</sup> primed 2D2 effector T cells.**

The expression profiles (RNA Seq) of antigen specific effector T cells (2D2) primed in an *Il6*<sup>flax/flax</sup> control environment vs an *Il6*<sup>ΔDC</sup> environment were assessed for the enrichment of genes differentially up-regulated in a global *Il6*<sup>-/-</sup> environment. Core enriched genes of that gene set in *Il6*<sup>ΔDC</sup> primed T cells. Analysis was performed with GSEA software v2.2.1 provided by the Broad Institute, Cambridge, USA.

**Supplementary Table 2**

NAME	PROBE	GENE SYMBOL	RANK IN GENE LIST	RANK METRIC SCORE	RUNNING ES	CORE ENRICHMENT
row_0	Ceacam1	CEACAM1	640	0.429431	-0.007172	Yes
row_1	Mtus1	MTUS1	733	0.402096	0.007549	Yes
row_2	Cxcr2	CXCR2	1016	0.329007	0.010859	Yes
row_3	Cfb	CFB	1062	0.320306	0.023781	Yes
row_4	Il13ra1	IL13RA1	1345	0.272946	0.024496	Yes
row_5	Ccnd1	CCND1	1403	0.266827	0.034436	Yes
row_6	Csf2rb	CSF2RB	1452	0.259797	0.044431	Yes
row_7	I830012O16Rik	I830012O16RIK	1466	0.257489	0.055799	Yes
row_8	Mx2	MX2	1496	0.254231	0.066339	Yes
row_9	Rsad2	RSAD2	1656	0.233189	0.070412	Yes
row_10	Sapcd2	SAPCD2	1708	0.227618	0.078791	Yes
row_11	Ccdc18	CCDC18	1741	0.223338	0.087775	Yes
row_12	Cacna1e	CACNA1E	1854	0.209995	0.092760	Yes
row_13	Arhgap33	ARHGAP33	1985	0.197580	0.096411	Yes
row_14	Il1b	IL1B	2004	0.194920	0.104671	Yes
row_15	Ifit3	IFIT3	2145	0.182009	0.107178	Yes
row_16	Wnt10a	WNT10A	2181	0.179277	0.113996	Yes
row_17	Coro2a	CORO2A	2227	0.175869	0.120234	Yes
row_18	Slfn4	SLFN4	2335	0.168600	0.123515	Yes
row_19	Ifng	IFNG	2395	0.163738	0.128600	Yes
row_20	Cd86	CD86	2406	0.162796	0.135711	Yes
row_21	Oas2	OAS2	2495	0.157384	0.139276	Yes
row_22	Alcam	ALCAM	2542	0.153688	0.144445	Yes
row_23	Espl1	ESPL1	2597	0.149471	0.149081	Yes
row_24	C1qa	C1QA	2600	0.149135	0.155898	Yes
row_25	Dgkh	DGKH	2604	0.148759	0.162656	Yes
row_26	Ska3	SKA3	2614	0.148361	0.169142	Yes
row_27	Iqgap3	IQGAP3	2785	0.138480	0.168367	Yes
row_28	Gpsm2	GPSM2	2831	0.136783	0.172796	Yes
row_29	Asap2	ASAP2	2930	0.131200	0.174726	Yes
row_30	Tjp2	TJP2	2989	0.127042	0.178155	Yes
row_31	Mx1	MX1	3001	0.126223	0.183532	Yes
row_32	Mmp8	MMP8	3002	0.126164	0.189371	Yes
row_33	B3gnt5	B3GNT5	3011	0.125823	0.194856	Yes
row_34	Gas2l3	GAS2L3	3102	0.121595	0.196680	Yes
row_35	2610318N02Rik	2610318N02RIK	3119	0.120252	0.201569	Yes
row_36	Oasl2	OASL2	3136	0.119152	0.206407	Yes
row_37	Dync2h1	DYNC2H1	3160	0.117641	0.210880	Yes
row_38	Kif2c	KIF2C	3168	0.116815	0.215990	Yes
row_39	Hip1	HIP1	3170	0.116576	0.221343	Yes
row_40	Depdc1a	DEPDC1A	3284	0.111141	0.221712	Yes
row_41	Hist1h2an	HIST1H2AN	3435	0.105267	0.220244	Yes
row_42	Anln	ANLN	3455	0.104373	0.224272	Yes
row_43	Myof	MYOF	3468	0.103502	0.228555	Yes
row_44	2410089E03Rik	2410089E03RIK	3489	0.102098	0.232435	Yes
row_45	Stil	STIL	3516	0.100612	0.235993	Yes
row_46	Amica1	AMICA1	3520	0.100296	0.240508	Yes
row_47	Qpct	QPCT	3531	0.099905	0.244709	Yes
row_48	Osbpl3	OSBPL3	3549	0.098859	0.248565	Yes

row_49	Hist1h3a	HIST1H3A	3557	0.098414	0.252824	Yes
row_50	Usp18	USP18	3575	0.097315	0.256610	Yes
row_51	Pik3ap1	PIK3AP1	3581	0.096943	0.260885	Yes
row_52	Prr11	PRR11	3671	0.093014	0.261429	Yes
row_53	Gpr65	GPR65	3680	0.092433	0.265368	Yes
row_54	Slfn3	SLFN3	3681	0.092425	0.269646	Yes
row_55	Eri2	ERI2	3724	0.090648	0.272066	Yes
row_56	Ifit1	IFIT1	3786	0.089588	0.273635	Yes
row_57	Ccnb1	CCNB1	3905	0.084680	0.272567	Yes
row_58	Nhsl2	NHSL2	3955	0.083478	0.274360	Yes
row_59	Ddx60	DDX60	3990	0.082263	0.276730	Yes
row_60	D830031N03Rik	D830031N03RIK	4015	0.081437	0.279485	Yes
row_61	Plk1	PLK1	4044	0.080950	0.282048	Yes
row_62	Rad54l	RAD54L	4061	0.079976	0.285073	Yes
row_63	Aurka	AURKA	4125	0.077670	0.286005	Yes
row_64	2610020H08Rik	2610020H08RIK	4148	0.076792	0.288630	Yes
row_65	Ticrr	TICRR	4151	0.076687	0.292094	Yes
row_66	Rad51ap1	RAD51AP1	4195	0.075453	0.293769	Yes
row_67	Hmmr	HMMR	4212	0.074884	0.296559	Yes
row_68	Pfas	PFAS	4224	0.074515	0.299542	Yes
row_69	Ttn	TTN	4235	0.074209	0.302554	Yes
row_70	Aurkb	AURKB	4248	0.073675	0.305457	Yes
row_71	Rassf4	RASSF4	4250	0.073437	0.308813	Yes
row_72	Foxm1	FOX M1	4251	0.073436	0.312212	Yes
row_73	Kifc5b	KIFC5B	4256	0.073252	0.315433	Yes
row_74	Cdca8	CDCA8	4271	0.072701	0.318206	Yes
row_75	Oas1a	OAS1A	4294	0.072330	0.320624	Yes
row_76	Ncapg	NCAPG	4315	0.071305	0.323079	Yes
row_77	Cenpf	CENPF	4317	0.071285	0.326336	Yes
row_78	Melk	MELK	4325	0.071182	0.329334	Yes
row_79	Hsh2d	HSH2D	4361	0.070015	0.331095	Yes
row_80	Kif4	KIF4	4366	0.069816	0.334157	Yes
row_81	Ect2	ECT2	4518	0.068318	0.330938	Yes
row_82	Depdc1b	DEPDC1B	4616	0.065670	0.329878	Yes
row_83	Usp31	USP31	4623	0.065400	0.332651	Yes
row_84	Cpd	CPD	4625	0.065372	0.335634	Yes
row_85	Mdn1	MDN1	4632	0.065299	0.338403	Yes
row_86	Cit	CIT	4633	0.065263	0.341423	Yes
row_87	Cdc20	CDC20	4640	0.064957	0.344176	Yes
row_88	Zbed6	ZBED6	4641	0.064953	0.347182	Yes
row_89	Pydc4	PYDC4	4700	0.063994	0.347693	Yes
row_90	Atr	ATR	4708	0.063827	0.350351	Yes
row_91	Ctps	CTPS	4727	0.063295	0.352520	Yes
row_92	Casc5	CASC5	4733	0.062931	0.355221	Yes
row_93	9930111J21Rik1	9930111J21RIK1	4785	0.061771	0.355924	Yes
row_94	Tacc3	TACC3	4787	0.061675	0.358736	Yes
row_95	Chtf18	CHTF18	4794	0.061443	0.361327	Yes
row_96	Aspm	ASPM	4801	0.061281	0.363909	Yes
row_97	Tnks	TNKS	4802	0.061261	0.366744	Yes
row_98	Bub1	BUB1	4837	0.060572	0.368111	Yes
row_99	Gm15800	GM15800	4862	0.059947	0.369871	Yes
row_100	Clspn	CLSPN	4864	0.059934	0.372602	Yes
row_101	Macf1	MACF1	4865	0.059922	0.375376	Yes

row_102	Brca1	BRCA1	4869	0.059813	0.378017	Yes
row_103	Cenpe	CENPE	4885	0.059585	0.380141	Yes
row_104	Rtp4	RTP4	4933	0.058652	0.380869	Yes
row_105	Ubr4	UBR4	4950	0.058459	0.382898	Yes
row_106	Gm4759	GM4759	4953	0.058320	0.385513	Yes
row_107	Ctsw	CTSW	4964	0.058184	0.387783	Yes
row_108	Hivep3	HIVEP3	4977	0.057950	0.389958	Yes
row_109	Kifc1	KIFC1	4996	0.057580	0.391862	Yes
row_110	Dhx58	DHX58	5002	0.057358	0.394306	Yes
row_111	Vps13d	VPS13D	5004	0.057289	0.396915	Yes
row_112	Fn1	FN1	5089	0.055289	0.395924	Yes
row_113	Pkd1	PKD1	5103	0.054916	0.397916	Yes
row_114	Trrap	TRRAP	5117	0.054566	0.399892	Yes
row_115	Dock5	DOCK5	5180	0.053063	0.399727	Yes
row_116	Kif18b	KIF18B	5189	0.052711	0.401829	Yes
row_117	Samd9l	SAMD9L	5199	0.052544	0.403880	Yes
row_118	Cobll1	COBLL1	5203	0.052435	0.406180	Yes
row_119	Cad	CAD	5229	0.051891	0.407525	Yes
row_120	Helz2	HELZ2	5233	0.051803	0.409796	Yes
row_121	Slc20a1	SLC20A1	5235	0.051693	0.412146	Yes
row_122	Kif20b	KIF20B	5275	0.051033	0.412860	Yes
row_123	Mybl2	MYBL2	5278	0.050966	0.415134	Yes
row_124	Ahnak	AHNAK	5286	0.050678	0.417184	Yes
row_125	Herc1	HERC1	5321	0.049923	0.418057	Yes
row_126	Kmt2a	KMT2A	5324	0.049867	0.420281	Yes
row_127	Cdca2	CDCA2	5328	0.049733	0.422456	Yes
row_128	Spdl1	SPDL1	5329	0.049669	0.424754	Yes
row_129	Smg1	SMG1	5330	0.049660	0.427053	Yes
row_130	Herc6	HERC6	5331	0.049658	0.429351	Yes
row_131	Htt	HTT	5355	0.049108	0.430652	Yes
row_132	Cpt1a	CPT1A	5372	0.048899	0.432238	Yes
row_133	Kif11	KIF11	5386	0.048684	0.433942	Yes
row_134	Huwe1	HUWE1	5388	0.048656	0.436152	Yes
row_135	Mycbp2	MYCBP2	5401	0.048588	0.437893	Yes
row_136	Sacs	SACS	5426	0.048150	0.439108	Yes
row_137	Nlrc5	NLRC5	5478	0.047187	0.439136	Yes
row_138	Diap3	DIAP3	5507	0.046613	0.440110	Yes
row_139	Rora	RORA	5517	0.046375	0.441876	Yes
row_140	Ifih1	IFIH1	5521	0.046255	0.443890	Yes
row_141	Myo5a	MYO5A	5540	0.045952	0.445256	Yes
row_142	Atp2b4	ATP2B4	5542	0.045916	0.447339	Yes
row_143	Phf11c	PHF11C	5570	0.045457	0.448302	Yes
row_144	Spag5	SPAG5	5591	0.045309	0.449553	Yes
row_145	Dync1h1	DYNC1H1	5619	0.044796	0.450485	Yes
row_146	Endod1	ENDOD1	5620	0.044795	0.452559	Yes
row_147	Oas1b	OAS1B	5630	0.044538	0.454240	Yes
row_148	Mki67	MKI67	5652	0.044397	0.455407	Yes
row_149	A430078G23Rik	A430078G23RIK	5694	0.044271	0.455723	Yes
row_150	Flnb	FLNB	5719	0.044101	0.456750	Yes
row_151	Brip1	BRIP1	5723	0.044004	0.458660	Yes
row_152	Slfn8	SLFN8	5745	0.043662	0.459793	Yes
row_153	Trim30a	TRIM30A	5749	0.043584	0.461683	Yes
row_154	Cep350	CEP350	5752	0.043543	0.463614	Yes



row_155	Itgam	ITGAM	5753	0.043521	0.465628 Yes
row_156	Cdca3	CDCA3	5759	0.043412	0.467426 Yes
row_157	Oasl1	OASL1	5763	0.043341	0.469305 Yes
row_158	E2f8	E2F8	5806	0.042724	0.469507 Yes
row_159	Dnah8	DNAH8	5852	0.041807	0.469540 Yes
row_160	Irf7	IRF7	5886	0.041398	0.470062 Yes
row_161	Slfn5	SLFN5	5906	0.041103	0.471161 Yes
row_162	Kmt2d	KMT2D	5908	0.041063	0.473019 Yes
row_163	Kif20a	KIF20A	5930	0.040685	0.474015 Yes
row_164	Heatr1	HEATR1	5936	0.040611	0.475683 Yes
row_165	Chd9	CHD9	5950	0.040436	0.477005 Yes
row_166	Ncapd2	NCAPD2	5987	0.039829	0.477327 Yes
row_167	Cdk1	CDK1	6004	0.039593	0.478483 Yes
row_168	Cenpo	CENPO	6036	0.039111	0.478983 Yes
row_169	Rap1gap2	RAP1GAP2	6086	0.038333	0.478687 Yes
row_170	Vps13c	VPS13C	6102	0.037999	0.479811 Yes
row_171	Fbln1	FBLN1	6141	0.037617	0.479946 Yes
row_172	Atp10a	ATP10A	6145	0.037598	0.481560 Yes
row_173	Prc1	PRC1	6151	0.037536	0.483086 Yes
row_174	Racgap1	RACGAP1	6168	0.037267	0.484134 Yes
row_175	Piezo1	PIEZO1	6173	0.037046	0.485680 Yes
row_176	Hist1h3f	HIST1H3F	6202	0.036559	0.486188 Yes
row_177	Abl2	ABL2	6230	0.036166	0.486721 Yes
row_178	Prkd3	PRKD3	6240	0.035854	0.488000 Yes
row_179	Kmt2c	KMT2C	6264	0.035548	0.488673 Yes
row_180	Ly6c2	LY6C2	6267	0.035462	0.490230 Yes
row_181	Chd8	CHD8	6352	0.034930	0.488297 Yes
row_182	Herc2	HERC2	6358	0.034878	0.489700 Yes
row_183	Pglyrp1	PGLYRP1	6365	0.034763	0.491055 Yes
row_184	Birc6	BIRC6	6393	0.034589	0.491515 Yes
row_185	Pml	PML	6418	0.034160	0.492082 Yes
row_186	Ipo4	IPO4	6435	0.033865	0.492973 Yes
row_187	Ncapg2	NCAPG2	6665	0.032874	0.484817 Yes
row_188	Ccnb2	CCNB2	6666	0.032870	0.486338 Yes
row_189	Pmf1	PMF1	6699	0.032268	0.486479 Yes
row_190	Usp24	USP24	6704	0.032191	0.487800 Yes
row_191	Usp48	USP48	6705	0.032165	0.489288 Yes
row_192	Atad2	ATAD2	6708	0.032119	0.490690 Yes
row_193	Pkd1l3	PKD1L3	6709	0.032104	0.492176 Yes
row_194	Oas3	OAS3	6711	0.032097	0.493619 Yes
row_195	Morc3	MORC3	6722	0.031886	0.494672 Yes
row_196	Pcnt	PCNT	6741	0.031651	0.495376 Yes
row_197	Atad5	ATAD5	6745	0.031615	0.496713 Yes
row_198	Usp34	USP34	6767	0.031221	0.497270 Yes
row_199	Rif1	RIF1	6773	0.031141	0.498500 Yes
row_200	Znfx1	ZNFX1	6778	0.031073	0.499769 Yes
row_201	Lair1	LAIR1	6785	0.030957	0.500948 Yes
row_202	Hist1h3i	HIST1H3I	6839	0.030407	0.500116 Yes
row_203	Dlgap5	DLGAP5	6842	0.030334	0.501435 Yes
row_204	Nudt4	NUDT4	6850	0.030160	0.502535 Yes
row_205	Zzef1	ZZEF1	6897	0.029491	0.501956 Yes
row_206	Atp2a2	ATP2A2	6910	0.029291	0.502805 Yes
row_207	Emilin2	EMILIN2	6938	0.028791	0.502996 Yes

row_208	Il18rap	IL18RAP	6939	0.028783	0.504328	Yes
row_209	Nup214	NUP214	7002	0.027872	0.502998	Yes
row_210	Plec	PLEC	7013	0.027768	0.503861	Yes
row_211	Tpx2	TPX2	7049	0.027379	0.503649	Yes
row_212	Pop1	POP1	7059	0.027280	0.504531	Yes

**Supplementary Table 3**

**Gene set enrichment analysis. Core enriched genes in *Il6<sup>flox/flox</sup>* (control) primed 2D2 effector T cells.**

The expression profiles (RNA Seq) of antigen specific effector T cells (2D2) primed in an *Il6<sup>flox/flox</sup>* control environment vs an *Il6<sup>ΔDC</sup>* environment were assessed for the enrichment of genes differentially down-regulated in an *Il6<sup>-/-</sup>* environment. Core enriched genes of that gene set in control primed T cells. Analysis was performed with GSEA software v2.2.1 provided by the Broad Institute, Cambridge, USA.

**Supplementary Table 3**

NAME	PROBE	GENE SYMBOL	RANK IN GENE LIST	RANK METRIC SCORE	RUNNING ES	CORE ENRICHMENT
row_71	Rhbdd2	RHBDD2	16525	-0.020296	-0.522171	Yes
row_72	Satb1	SATB1	16604	-0.021015	-0.522047	Yes
row_73	Rps15a	RPS15A	16612	-0.021074	-0.518942	Yes
row_74	Ncoa7	NCOA7	16630	-0.021225	-0.516231	Yes
row_75	Fam117b	FAM117B	16644	-0.021295	-0.513342	Yes
row_76	Abhd4	ABHD4	16662	-0.021363	-0.510608	Yes
row_77	Gsn	GSN	16693	-0.021629	-0.508376	Yes
row_78	Ppapdc2	PPAPDC2	16702	-0.021702	-0.505212	Yes
row_79	Cxcr5	CXCR5	16799	-0.022538	-0.505595	Yes
row_80	Jtb	JTB	16868	-0.023201	-0.504700	Yes
row_81	Ypel3	YPEL3	16934	-0.023732	-0.503594	Yes
row_82	Rps8	RPS8	16937	-0.023751	-0.499848	Yes
row_83	0610031J06Rik	0610031J06RIK	16949	-0.023870	-0.496460	Yes
row_84	Cd82	CD82	17167	-0.024737	-0.501552	Yes
row_85	Gpr146	GPR146	17199	-0.025047	-0.498811	Yes
row_86	Tnfrsf18	TNFRSF18	17245	-0.025535	-0.496577	Yes
row_87	Gpr171	GPR171	17275	-0.025880	-0.493618	Yes
row_88	Ptms	PTMS	17276	-0.025883	-0.489445	Yes
row_89	H2-DMA	H2-DMA	17283	-0.025953	-0.485511	Yes
row_90	Rps3	RPS3	17316	-0.026265	-0.482615	Yes
row_91	Rps18	RPS18	17359	-0.026715	-0.480065	Yes
row_92	Rasgrp4	RASGRP4	17360	-0.026721	-0.475757	Yes
row_93	Rps9	RPS9	17501	-0.026858	-0.477285	Yes
row_94	Ndufa7	NDUFA7	17536	-0.027195	-0.474323	Yes
row_95	Adck2	ADCK2	17612	-0.027956	-0.472954	Yes
row_96	Bambi-ps1	BAMBI-PS1	17617	-0.028024	-0.468603	Yes
row_97	Atp5l	ATP5L	17639	-0.028218	-0.464932	Yes
row_98	Gm2a	GM2A	17643	-0.028269	-0.460499	Yes
row_99	Dedd2	DEDD2	17695	-0.028851	-0.457982	Yes
row_100	Ypel5	YPEL5	17738	-0.029534	-0.454977	Yes
row_101	Rps14	RPS14	17776	-0.029951	-0.451696	Yes
row_102	Tnfrsf9	TNFRSF9	17789	-0.030053	-0.447353	Yes
row_103	Rapsn	RAPSN	17794	-0.030108	-0.442666	Yes
row_104	Gimap6	GIMAP6	17886	-0.031010	-0.441474	Yes
row_105	Rgs10	RGS10	17900	-0.031181	-0.436990	Yes
row_106	Tnfrsf4	TNFRSF4	17923	-0.031466	-0.432838	Yes
row_107	Cdkn1b	CDKN1B	17962	-0.032053	-0.429260	Yes
row_108	Tmem59	TMEM59	18025	-0.032992	-0.426535	Yes
row_109	Sepp1	SEPP1	18386	-0.034968	-0.435962	Yes
row_110	Rpl18	RPL18	18400	-0.035115	-0.430845	Yes
row_111	Gm10560	GM10560	18418	-0.035406	-0.425847	Yes
row_112	Ergic3	ERGIC3	18487	-0.036290	-0.422842	Yes
row_113	Smco4	SMCO4	18494	-0.036344	-0.417233	Yes
row_114	Use1	USE1	18596	-0.037696	-0.415381	Yes
row_115	Tcaim	TCAIM	18599	-0.037800	-0.409370	Yes
row_116	Zfand3	ZFAND3	18618	-0.038141	-0.403974	Yes
row_117	Arl5c	ARL5C	18622	-0.038198	-0.397940	Yes
row_118	Gpsm3	GPSM3	18624	-0.038206	-0.391822	Yes
row_119	Ndufa6	NDUFA6	18658	-0.038879	-0.386934	Yes

row_120	Isoc2b	ISOC2B	18683	-0.039304	-0.381601 Yes
row_121	Tmem9	TMEM9	18704	-0.039794	-0.376022 Yes
row_122	Ramp3	RAMP3	18741	-0.040326	-0.371026 Yes
row_123	Rps19	RPS19	18798	-0.041547	-0.366671 Yes
row_124	Nudt22	NUDT22	18887	-0.042885	-0.363439 Yes
row_125	Marcks	MARCKS	19122	-0.045941	-0.365824 Yes
row_126	9030617O03Rik	9030617O03RIK	19132	-0.046123	-0.358764 Yes
row_127	9330020H09Rik	9330020H09RIK	19133	-0.046133	-0.351325 Yes
row_128	Cyb5	CYB5	19234	-0.048395	-0.347707 Yes
row_129	Slc41a3	SLC41A3	19314	-0.049770	-0.342988 Yes
row_130	Rab33b	RAB33B	19387	-0.051223	-0.337742 Yes
row_131	Casp6	CASP6	19411	-0.051660	-0.330375 Yes
row_132	Asb2	ASB2	19417	-0.051855	-0.322223 Yes
row_133	Tha1	THA1	19446	-0.052608	-0.314912 Yes
row_134	Gatsl3	GATSL3	19539	-0.055289	-0.309848 Yes
row_135	Tmem42	TMEM42	19613	-0.057166	-0.303685 Yes
row_136	Wls	WLS	19705	-0.059751	-0.297859 Yes
row_137	Bckdha	BCKDHA	19710	-0.059825	-0.288381 Yes
row_138	Nipal1	NIPAL1	19715	-0.060065	-0.278863 Yes
row_139	Hcst	HCST	19737	-0.060485	-0.269989 Yes
row_140	Tmie	TMIE	19954	-0.065887	-0.268405 Yes
row_141	Socs3	SOCS3	20054	-0.067938	-0.261594 Yes
row_142	Igsf23	IGSF23	20095	-0.069312	-0.252092 Yes
row_143	Fam210b	FAM210B	20159	-0.071209	-0.243247 Yes
row_144	Cd8b1	CD8B1	20239	-0.073876	-0.234641 Yes
row_145	5430417L22Rik	5430417L22RIK	20243	-0.074029	-0.222830 Yes
row_146	6430562O15Rik	6430562O15RIK	20252	-0.074237	-0.211195 Yes
row_147	Leng9	LENG9	20326	-0.076111	-0.201978 Yes
row_148	Pim2	PIM2	20358	-0.077264	-0.190817 Yes
row_149	D830046C22Rik	D830046C22RIK	20399	-0.078854	-0.179777 Yes
row_150	Mpg	MPG	20438	-0.080643	-0.168365 Yes
row_151	Trappc6a	TRAPPC6A	20553	-0.084217	-0.159556 Yes
row_152	Sbk2	SBK2	20697	-0.089797	-0.151062 Yes
row_153	D630039A03Rik	D630039A03RIK	20711	-0.090766	-0.136971 Yes
row_154	Aldoc	ALDOC	20770	-0.092894	-0.124420 Yes
row_155	Jdp2	JDP2	20912	-0.098107	-0.114502 Yes
row_156	Rab26os	RAB26OS	20959	-0.101564	-0.100051 Yes
row_157	Egln3	EGLN3	21027	-0.106210	-0.085729 Yes
row_158	Arhgef5	ARHGEF5	21113	-0.111999	-0.071228 Yes
row_159	Tm2d3	TM2D3	21192	-0.116361	-0.055730 Yes
row_160	Igf2bp2	IGF2BP2	21260	-0.121444	-0.038952 Yes
row_161	Adora3	ADORA3	21268	-0.121788	-0.019608 Yes
row_162	Gm9895	GM9895	21292	-0.123223	-0.000702 Yes
row_163	Map1lc3a	MAP1LC3A	21299	-0.123508	0.018961 Yes
row_164	Oaz2	OAZ2	21516	-0.138739	0.032292 Yes
row_165	Al854703	Al854703	21655	-0.149172	0.050569 Yes
row_166	Nfasc	NFASC	22985	-0.310592	0.045030 Yes

**Supplementary Table 4**

**Gene set enrichment analysis. Core enrichment of the Stat3 signature in *Il6<sup>fllox/fllox</sup>* (control) primed 2D2 effector T cells.**

The expression profiles (RNA Seq) of antigen specific effector T cells (2D2) primed in an *Il6<sup>fllox/fllox</sup>* control environment vs an *Il6<sup>ΔDC</sup>* environment were assessed for the enrichment of Stat3 signature genes. Core enriched genes of that gene set in control primed T cells. Analysis was performed with GSEA software v2.2.1 provided by the Broad Institute, Cambridge, USA.

Supplementary Table 4

NAME	PROBE	GENE SYMBOL	GENE_TITLE	RANK IN GENE LIST	RANK METRIC SCORE	RUNNING ES	CORE ENRICHMENT
row_145	SCARF1	SCARF1	scavenger receptor class F, member 1	20977	-0.121393	-0.337553	Yes
row_146	LYSMD1	LYSMD1	LysM, putative peptidoglycan-binding, domain containing 1	21082	-0.125743	-0.337018	Yes
row_147	FAM110B	null	null	21118	-0.127738	-0.333475	Yes
row_148	NFE2	NFE2	nuclear factor (erythroid-derived 2), 45kDa	21162	-0.132303	-0.330091	Yes
row_149	NBEA	NBEA	neurobeachin	21268	-0.141885	-0.328963	Yes
row_150	HOXB5	HOXB5	homeobox B5	21330	-0.147088	-0.325761	Yes
row_151	ADAM22	ADAM22	ADAM metalloproteinase domain 22	21338	-0.147300	-0.320258	Yes
row_152	PLSCR4	PLSCR4	phospholipid scramblase 4	21793	-0.185391	-0.332237	Yes
row_153	DEPTOR	null	null	21865	-0.191214	-0.327723	Yes
row_154	MPZL1	MPZL1	myelin protein zero-like 1	21872	-0.192041	-0.320416	Yes
row_155	SLC16A9	SLC16A9	solute carrier family 16, member 9 (monocarboxylic acid transporter 9)	21933	-0.198989	-0.315128	Yes
row_156	MYCT1	MYCT1	myc target 1	21949	-0.201676	-0.307824	Yes
row_157	PALLD	PALLD	palladin, cytoskeletal associated protein	22069	-0.212623	-0.304505	Yes
row_158	TGM2	TGM2	transglutaminase 2 (C polypeptide, protein-glutamine-gamma-glutamyltransferase)	22084	-0.214586	-0.296649	Yes
row_159	RND2	RND2	Rho family GTPase 2	22107	-0.218453	-0.288982	Yes
row_160	PBX1	PBX1	pre-B-cell leukemia transcription factor 1	22254	-0.236844	-0.285855	Yes
row_161	CPNE8	CPNE8	copine VIII	22312	-0.245258	-0.278618	Yes
row_162	GHR	GHR	growth hormone receptor	22325	-0.248167	-0.269356	Yes
row_163	TTL7	TTL7	tubulin tyrosine ligase-like family, member 7	22337	-0.250673	-0.259952	Yes
row_164	RASSF6	RASSF6	Ras association (RalGDS/AF-6) domain family 6	22341	-0.251769	-0.250166	Yes
row_165	CPA3	CPA3	carboxypeptidase A3 (mast cell)	22453	-0.272366	-0.244155	Yes
row_166	MYCN	MYCN	v-myc myelocytomatosis viral related oncogene, neuroblastoma derived (avian)	22511	-0.284290	-0.235381	Yes
row_167	SPIN4	null	null	22575	-0.293415	-0.226502	Yes
row_168	GULP1	GULP1	GULP, engulfment adaptor PTB domain containing 1	22636	-0.302397	-0.217143	Yes
row_169	UPP1	UPP1	uridine phosphorylase 1	22668	-0.309679	-0.206265	Yes
row_170	CADM1	null	null	22750	-0.323547	-0.196965	Yes
row_171	UBE2E2	UBE2E2	ubiquitin-conjugating enzyme E2E 2 (UBC4/5 homolog, yeast)	22804	-0.332345	-0.186129	Yes
row_172	ZFP2	ZFP2	zinc finger protein 2 homolog (mouse)	22817	-0.335075	-0.173444	Yes
row_173	MYOM1	MYOM1	myomesin 1 (skelemin) 185kDa	22853	-0.344985	-0.161346	Yes
row_174	MMRN1	MMRN1	multimerin 1	22863	-0.347998	-0.148025	Yes
row_175	FHL1	FHL1	four and a half LIM domains 1	22874	-0.351493	-0.134609	Yes
row_176	TEK	TEK	TEK tyrosine kinase, endothelial (venous malformations, multiple cutaneous and mucosal)	22901	-0.357859	-0.121622	Yes
row_177	BGN	BGN	biglycan	22910	-0.361577	-0.107724	Yes
row_178	PKIA	PKIA	protein kinase (cAMP-dependent, catalytic) inhibitor alpha	23159	-0.439891	-0.100934	Yes
row_179	PABPC4L	PABPC4L	poly(A) binding protein, cytoplasmic 4-like	23238	-0.474253	-0.085572	Yes
row_180	MAMDC2	MAMDC2	MAM domain containing 2	23249	-0.480763	-0.067065	Yes
row_181	PTPLAD2	PTPLAD2	protein tyrosine phosphatase-like A domain containing 2	23437	-0.584523	-0.051990	Yes
row_182	SGCE	SGCE	sarcoglycan, epsilon	23460	-0.601615	-0.029234	Yes
row_183	TMEM40	TMEM40	transmembrane protein 40	23688	-1.034674	0.001868	Yes