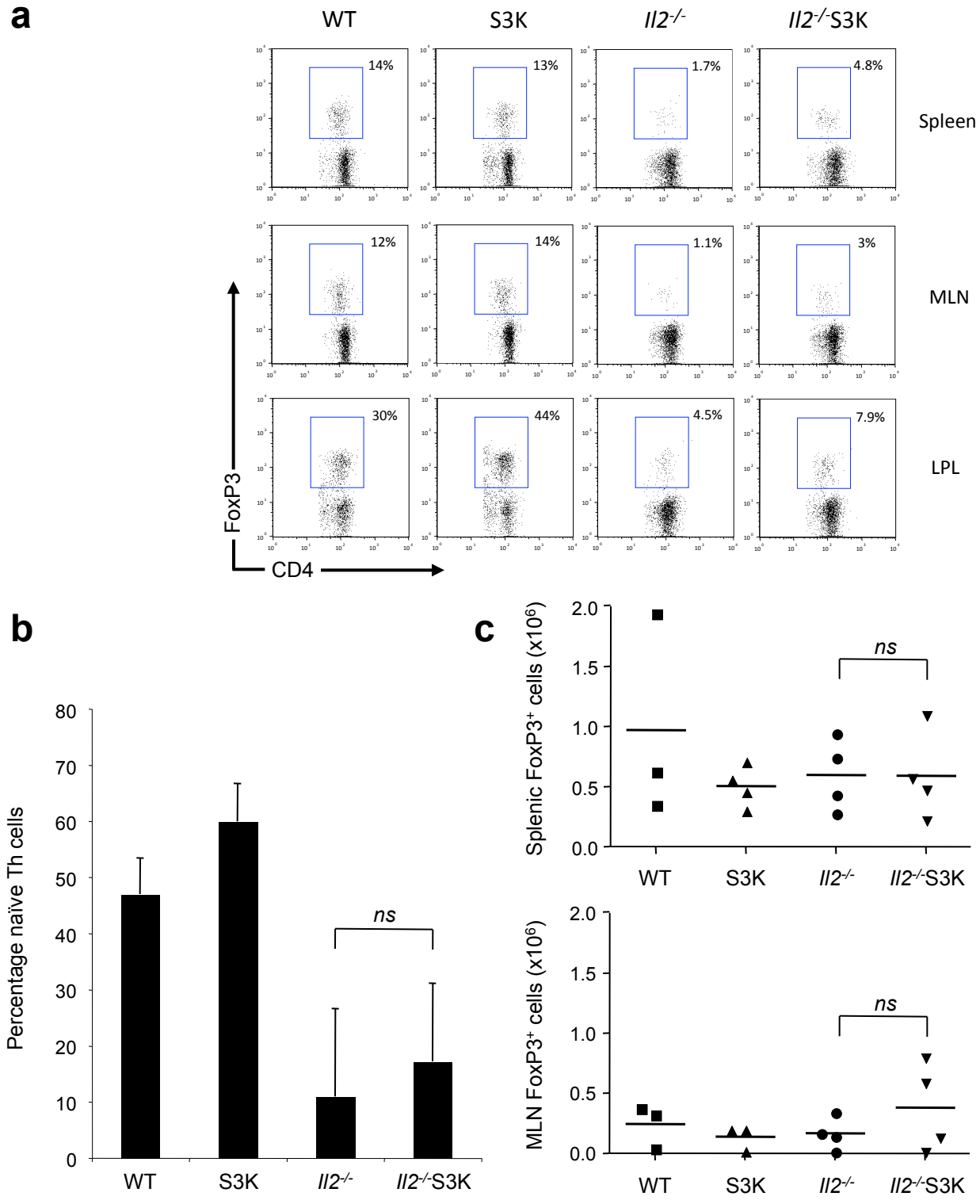
Supplementary Table 1

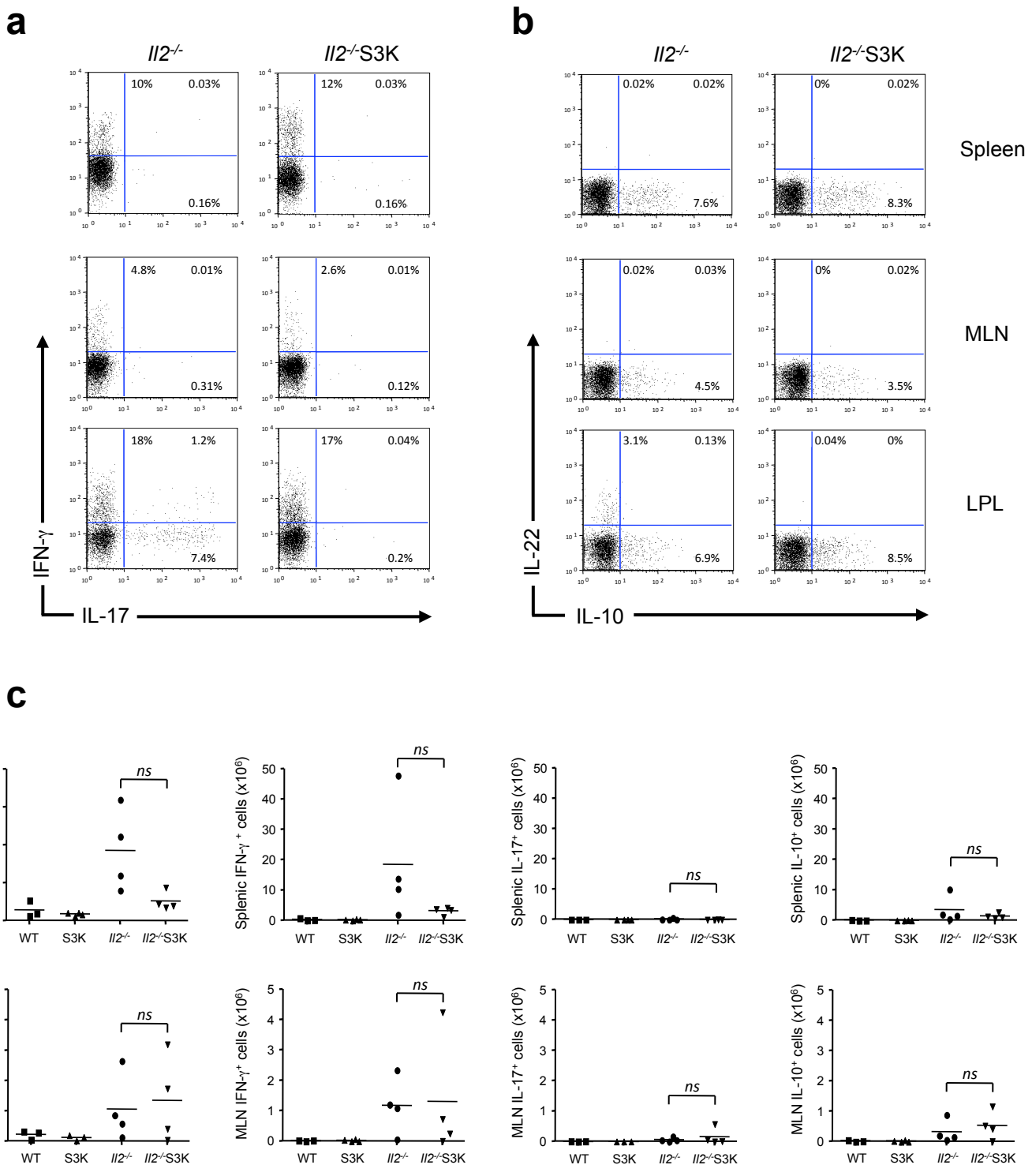
Primer1 s	CAGGTATTATTCTCAGGGCTTTGG
Primer1 as	TGGCAATGGTGTCTTTTCTTTG
Probe 1	ACTGGCAAAGAGGATAT
Primer2 s	CACCTCACACGAGGCACAAG
Primer2 as	ATGTTTGCGCGTCCTGATC
Probe 2	CACCCAGCACCAGC
Primer3 s	GGATTAAGGGCACACGTGTTG
Primer3 as	TTTCCCCACTCTGTCTTTCCA
Probe 3	TGGCCCAATGTTTATT
Primer4 s	TCATCGGCTCCCACACAGA
Primer4 as	GGCAGTACCGAAGCTGTTTCA
Probe 4	CATGCCGCACTCAA
Primer5 s	CCCACAAAGCAACACTCTTGTC
Primer5 as	ACTGCATGACCCGAAAGCA
Probe 5	TGCTCTGCGTGTGGGT
Primer6 s	GCATCGCATCTTTCAAACCA
Primer6 as	TTAGGATAAGCGCCCAGTGAAT
Probe 6	TGGGACCAGGGCGT
Primer s for NcoR2 CHIP	CAGACTCCAAGCACATCATG
Primer as for NcoR2 CHIP	GACTGACCTACATTGTGGGC

Sequences of primers used in chromatin immunoprecipitation assay spanning across the *il17a-f* locus



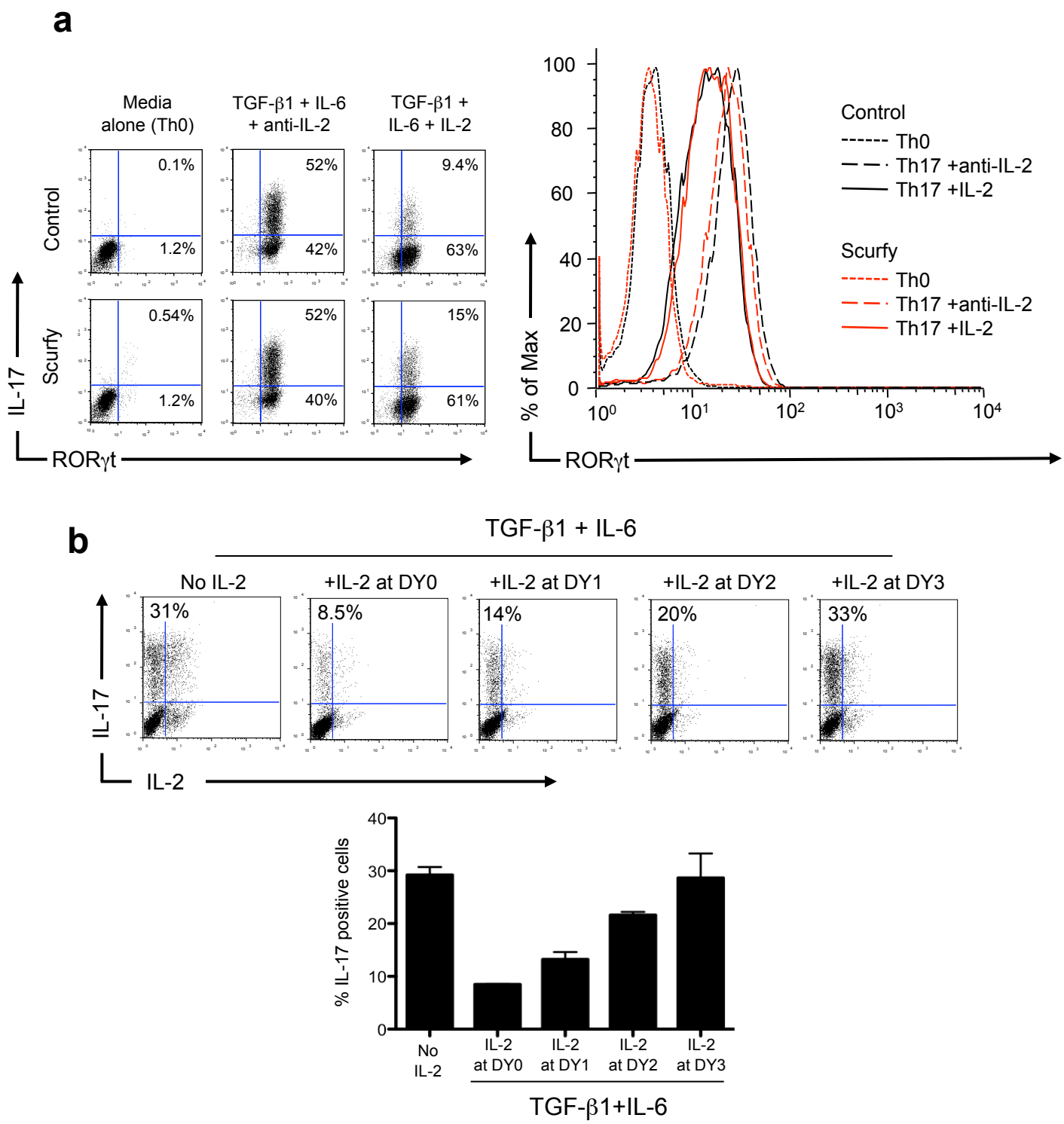
Absence of Stat3 in T cells does not rescue the Treg deficiency associated with IL-2 deficiency.
(a) CD4⁺ T cells were isolated from spleen, mesenteric lymph nodes (MLN) and colonic lamina propria (LPL) of *Stat3$^{fl/fl}$* (WT), *CD4-Cre;Stat3$^{fl/fl}$* (S3K), *Il2$^{-/-}$*, *CD4-Cre;Stat3$^{fl/fl}$;Il2$^{-/-}$* (*Il2$^{-/-}$*S3K) mice aged for three months. FOXP3 expression was determined by intracellular staining. Flow cytometry dot plots from a single representative experiment are shown. **(b)** Reduction in proportions of naïve (CD4⁺CD62L⁺CD44⁻) T cells in *Il2$^{-/-}$*S3K mice. Naïve CD4⁺ T cells from spleens from WT, S3K, *Il2$^{-/-}$, and Il2$^{-/-}$*S3K mice were determined by flow cytometry. Data are representative of three experiments. **(c)** Absolute numbers of FOXP3⁺ CD4⁺ T cells in the spleen and MLN in millions of cells. Statistical analysis represents paired t tests (*ns* - not significant).

Supplementary Figure 1



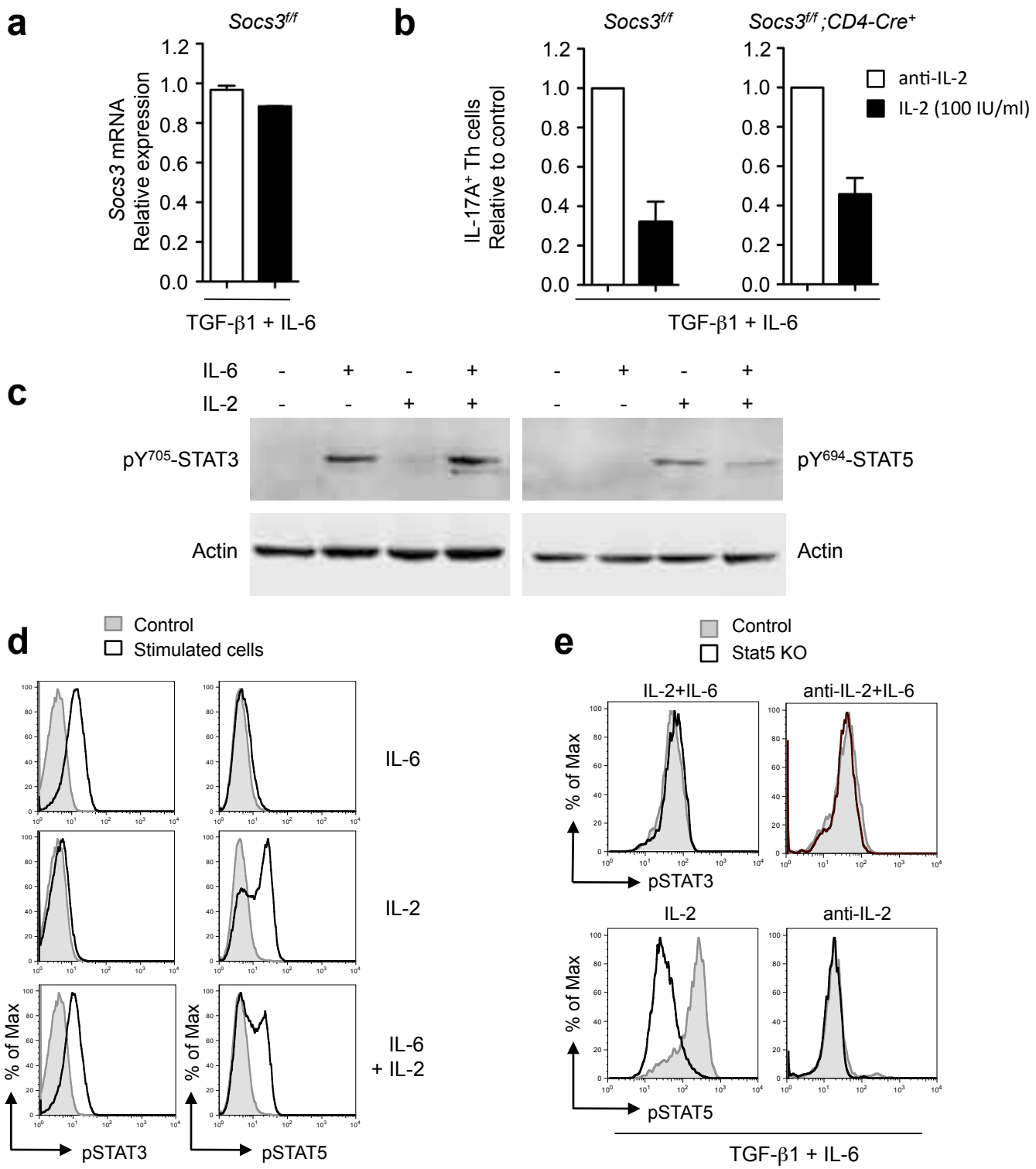
Deletion of Stat3 abrogates IL-17 and IL-22 production in LPL cells.
CD4⁺ T cells were isolated from spleen, mesenteric lymph nodes (MLN) and colonic lamina propria (LPL) of *Stat3$^{fl/fl}$;Il2$^{-/-}$* (*Il2$^{-/-}$*) and *CD4-Cre;Stat3$^{fl/fl}$;Il2$^{-/-}$* (*Il2$^{-/-}$*S3K) mice aged three months. IFN-γ and IL-17 expression **(a)** or IL-22 and IL-10 expression **(b)** were determined by intracellular staining, flow cytometry dot plots from a single representative experiment are shown. **(c)** Total numbers of CD4⁺ cells, CD4⁺IFN-γ⁺ cells, CD4⁺IL-17⁺ cells and CD4⁺IL-10⁺ cells from spleen and MLN from *Stat3$^{fl/fl}$* (WT), *CD4-Cre;Stat3$^{fl/fl}$* (S3K), *Il2$^{-/-}$* and *Il2$^{-/-}$*S3K mice are illustrated. Statistical analysis represents paired t tests (*ns* - not significant).

Supplementary Figure 2



Effect of IL-2 on RORγt expression is unaffected by the presence or absence of FoxP3.
(a) CD4⁺ T cells from *Rag1*$^{-/-}$*;OT2* and *Foxp3*^{sf}*;Rag1*$^{-/-}$*;OT2* were stimulated in media alone (Th0) or with TGF-β1 and IL-6 (Th17) with anti-mIL-2 and hIL-2. RORγt expression was determined by ICS. **(b)** Naïve CD4⁺ T cells were stimulated in the presence of TGF-β1 and IL-6 for 4 days with different IL-2 incubation time before harvesting. IL-17A-producing cells were detected by ICS. Data are representative of two independent experiments.

Supplementary Figure 3



Socs3 does not mediate the inhibitory effect of IL-2 on IL-17A production.
Naïve CD4+ T cells from C57BL/6 mice were cultured in the presence of TGF-β1, IL-6, anti-IFN–γ, anti-IL-4 with the addition of anti-mIL-2 or hIL-2 for 3 days and *Socs3* mRNA were determined by real-time PCR **(a)**. Naïve CD4+ T cells from *Socs3*$^{fl/fl}$ and *CD4-Cre;Socs3*$^{fl/fl}$ were cultured in the presence of TGF-β1, IL-6, anti-IFN–γ, anti-IL-4 with addition of anti-mIL-2 or hIL-2 (100 IU/ml) for 3 days and IL-17A expression was determined by ICS; histograms represent data from three independent experiments **(b)**. CD4+ T lymphoblasts from C57BL/6 mice were washed and cultured with serum-free medium for 2 hours followed stimulation with IL-6, IL-2 or IL-2 followed by IL-6. Phosphorylation of STAT3 and STAT5 was determined by immunoblotting **(c)** and phospho-flow cytometry **(d)**. Naïve CD4+ T cells isolated from *Stat5*$^{fl/fl}$ and *CD4-Cre;Stat5*$^{fl/fl}$ were antigen receptor stimulated in the presence of TGF-β1, IL-6, anti-IFN–γ, anti-IL-4 for 3 days. Cells were washed and cultured with serum-free medium for 2 hours. Subsequently, cells were treated with IL-6 together with either hIL-2 (100 IU/ml) or anti-mIL-2 and analysed for phospho-STAT3 (upper panels) or simply hIL-2 or anti-IL-2 alone and analysed for phospho-STAT5 (lower panels). Phosphorylation of STAT3 and STAT5 was determined by flow cytometry after 30 minutes **(e)**.

Supplementary Figure 4