SUPPLEMENTAL INFORMATION

Fig S1 (related to Fig. 3): Clonotype^{+}-Treg-cell dynamics with prolonged HFD feeding. Same as Fig. 3 panels B, C and E, F except after 8 weeks of HFD feeding ($n \geq 3$, biological replicates).

Fig S2 (related to Fig. 5): Effect of pro-inflammatory cytokines on Treg cells and ILC2s of standard mice.

(A-C) 8-week-old B6 mice were injected with the indicated cytokines twice in a week ($n = 3$, biological replicates).

(A) Numbers of splenic Treg cells. PBS, phosphate-buffered saline.

(B) Numbers of splenic ILC2s.

(C) Numbers of VAT ILC2s.

(D) Volcano plot comparing transcriptomes of VAT-Treg cells treated with IL-33 in the presence or absence of IFNα *in vitro* for 3 days. The 16w HFD up- or down- signatures are transcripts that were upregulated or downregulated more than 2-fold in VAT Tregs from mice fed 16 weeks on HFD vs. NCD and are highlighted in red and blue, respectively. Figures at the top indicate the number of genes up- (red) or down- (blue) regulated by one or the other population.

(E) Expression of *Icos* in VAT-Treg cells treated with IL-33 with or without IFNα. ($n = 2$ or 3, biological replicates).

(F&G) 8-week-old *PPARγ-Tdt Foxp3-GFP* mice were injected with two doses of PBS or IFNα in a week. ($n = 3$, biological replicates).

(F) Frequencies of PPARγ^+ cells in Tregs from spleen and VAT.

(G) MFI of PPARγ in PPARγ^+ Treg cells from spleen and VAT.

*P < 0.05, **P < 0.01, ***P < 0.001 by 2-way ANOVA (A, B, C, F, G) or a Chi-square test (D).

Fig S3 (related to Fig. 6): CRISPR/Cas9-mediated ablation of IFNAR1 in Treg cells

(A) Frequencies (left) and numbers (right) of CD11c^{hi} inflammatory macrophages in mice treated with anti-IFNAR1 mAb or IgG mAb. (n ≥ 4, biological replicates).

(B) Experimental set-up.

(C) Representative plots showing the efficiency of retroviral transduction (left) and IFNAR1 ablation (right) (n = 5, biological replicates). Numbers in the plots indicate frequencies of cells in the gate (left) or mean florescence intensity (MFI) of IFNAR1 staining (right).

(D) Treg cells were isolated and stimulated as in (Fig 6K), and were transduced with retrovirus expressing non-targeting *Ctl*-Sg together with RFP or *Ifnar1*-Sg together with GFP. The transduced RFP$^+$ and GFP$^+$ cells were mixed at a 1:1 ratio, and the mixture was transferred into 12-week-old CD45.1$^+$CD45.2$^+$ *Cas9*$^{KI/WT}$ mice subsequently fed with HFD for 8 weeks. The distribution of RFP$^+$ (*Ctl*-Sg) and GFP$^+$ (*Ifnar1*-Sg) cells among donor-derived Treg cells is shown (n = 6, biological replicates). Left: representative flow-cytometric dot-plots of RFP$^+$ or GFP$^+$ cells. Numbers in the plots indicate the frequencies of RFP$^+$ or GFP$^+$ cells among donor derived Treg cells.

Summary plots show data pooled from two independent experiments. Mean ±SD.

* P < 0.05 by unpaired Student's t-test (A) or paired Student's t-test (D).

Fig S4 (related to Fig. 7): Anti-PDCA1 Ab treatment in HFD-fed mice increased VAT Tregs and improved insulin sensitivity.

12-week-old vTreg53 TCR-tg *PPARγ-tdT Foxp3-GFP* mice were fed on HFD and injected with anti-PDCA1 or isotype control Ab (IgG) *i.p.* twice a week for 8 weeks (n = 4, biological replicates).

(A) RT-qPCR quantification of *Ifna* transcript levels from whole VAT tissue of anti-PDCA1- or IgG-treated mice.

(B) Frequencies (left) and numbers (center and right) of clonotype$^+$ splenic and VAT-Treg cells.

(C) Frequencies of PPARγ(tdT)$^+$ Treg cells (left) and MFI of PPARγ(tdT) in only the PPARγ(tdT)$^+$ cells (right).

(D) Body weight.

(E) VAT weight.

(F) ITT. normalized blood-glucose over time (left); area over the curve (AOC) (right).

*P < 0.05, **P < 0.01, by unpaired Student's t-test (A, B right, F right) or 2-way ANOVA (B left, C, F left).

Fig. S1 (Related to Fig 3)

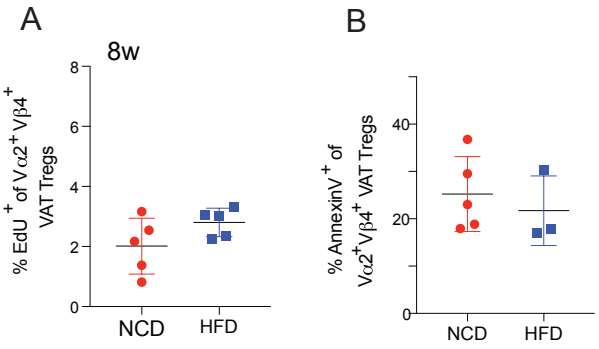


Fig. S2 (Related to Fig 5)

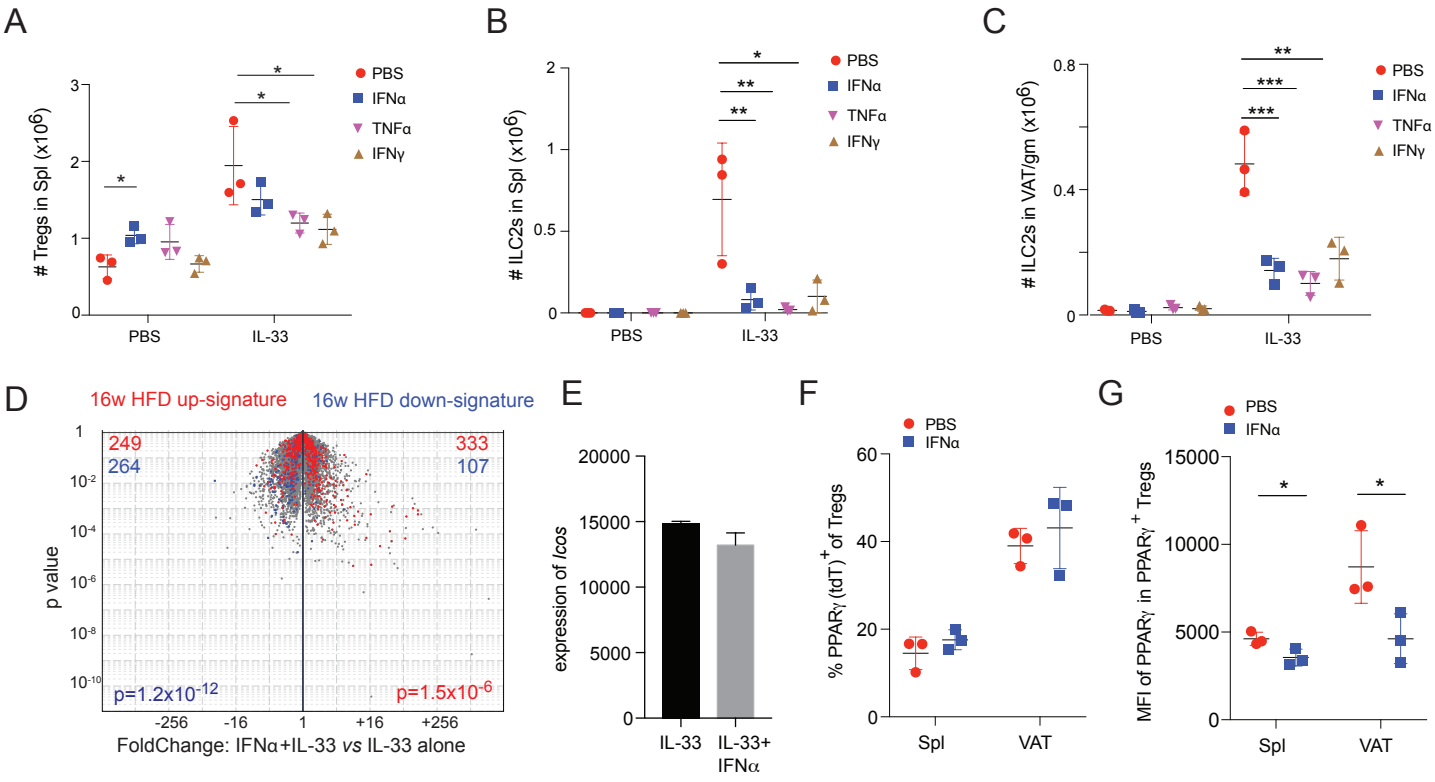
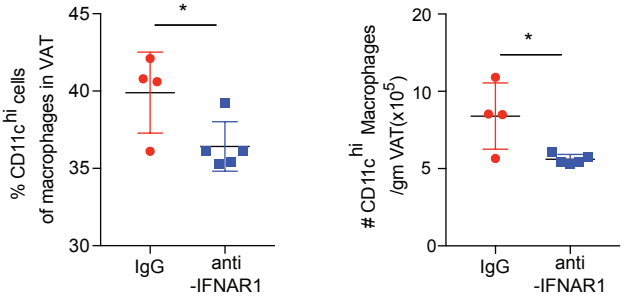


Fig. S3 (Related to Fig. 6)

A



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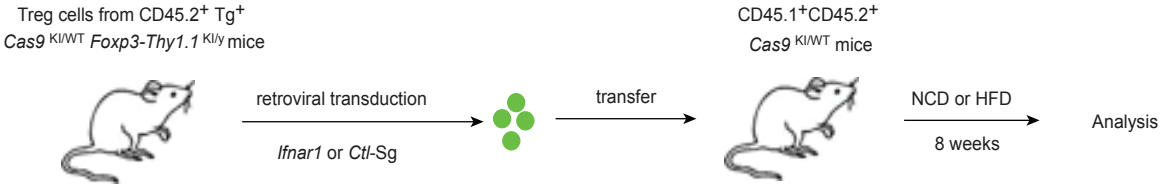

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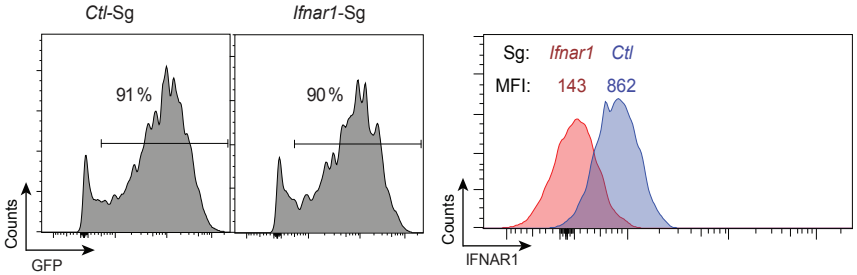

D

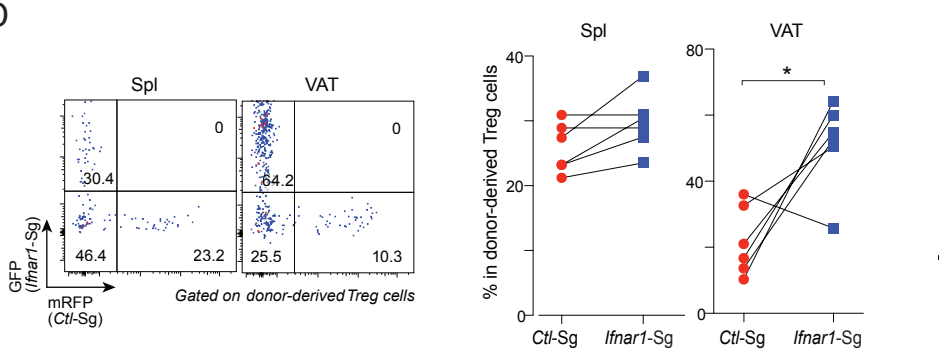

Fig. S4 (Related to Fig. 7)