SUPPLEMENTARY DATA AND LEGENDS

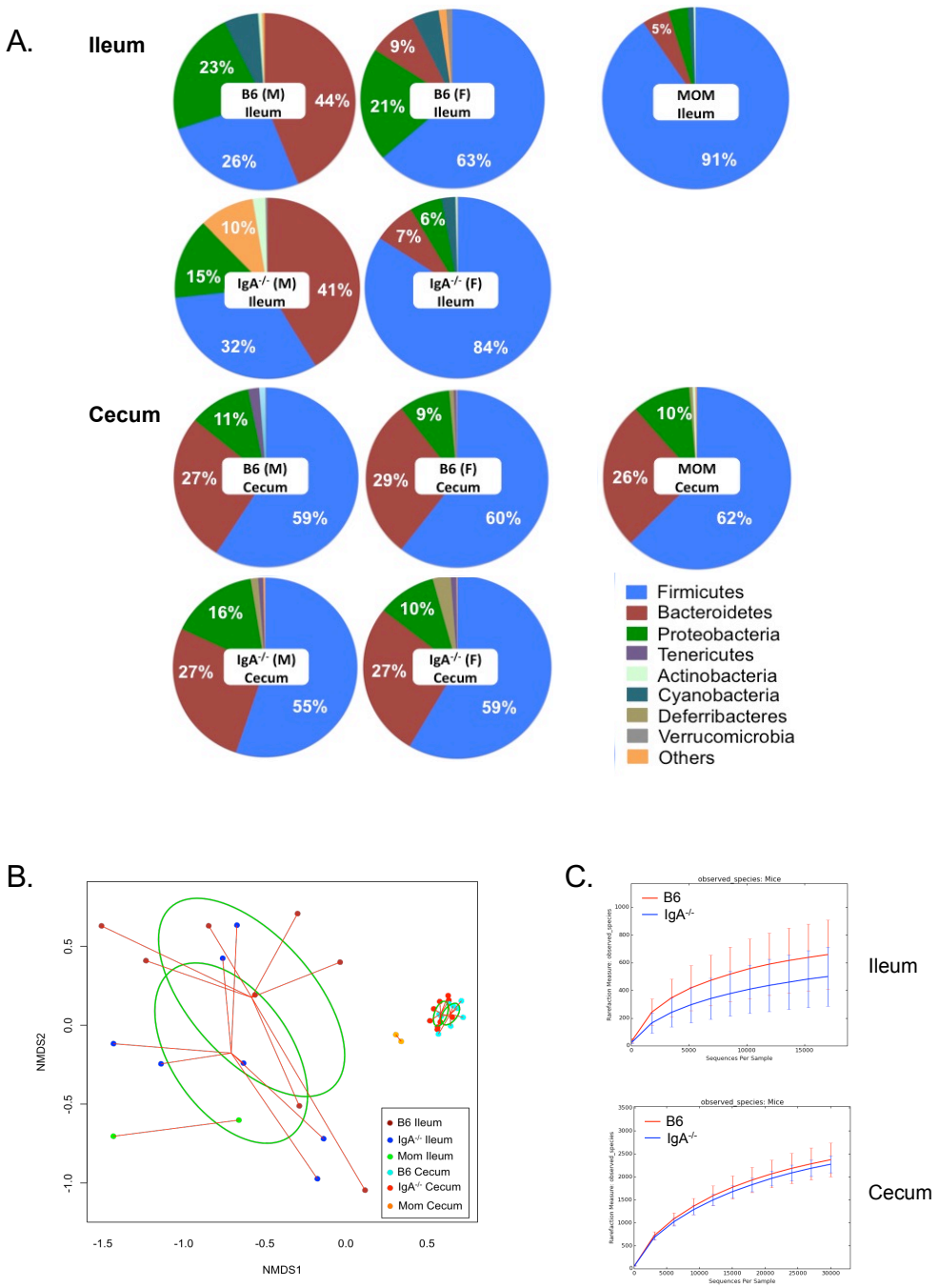

Figure S1. IgA$^{-/-}$ and WT littermates share similar intestinal microbiota. (A) Ileal and cecal contents were collected from adult IgA$^{-/-}$ and WT littermates (including 5 male and 4 female mice each group), as well as from 2 IgA$^{-/-}$ mothers of the parent strain. Bacterial genomic DNA was extracted for 16s rDNA microbiome sequencing. Pie chart shows percent of total bacteria at the phylum level. **(B)** Principal coordinate analysis shows ileal and cecal bacterial composition of IgA$^{-/-}$ and WT littermates and their IgA$^{-/-}$ mothers. Each dot represents an individual mouse. **(C)** Combined diversity of ileal and cecal contents of IgA$^{-/-}$ and WT littermates.

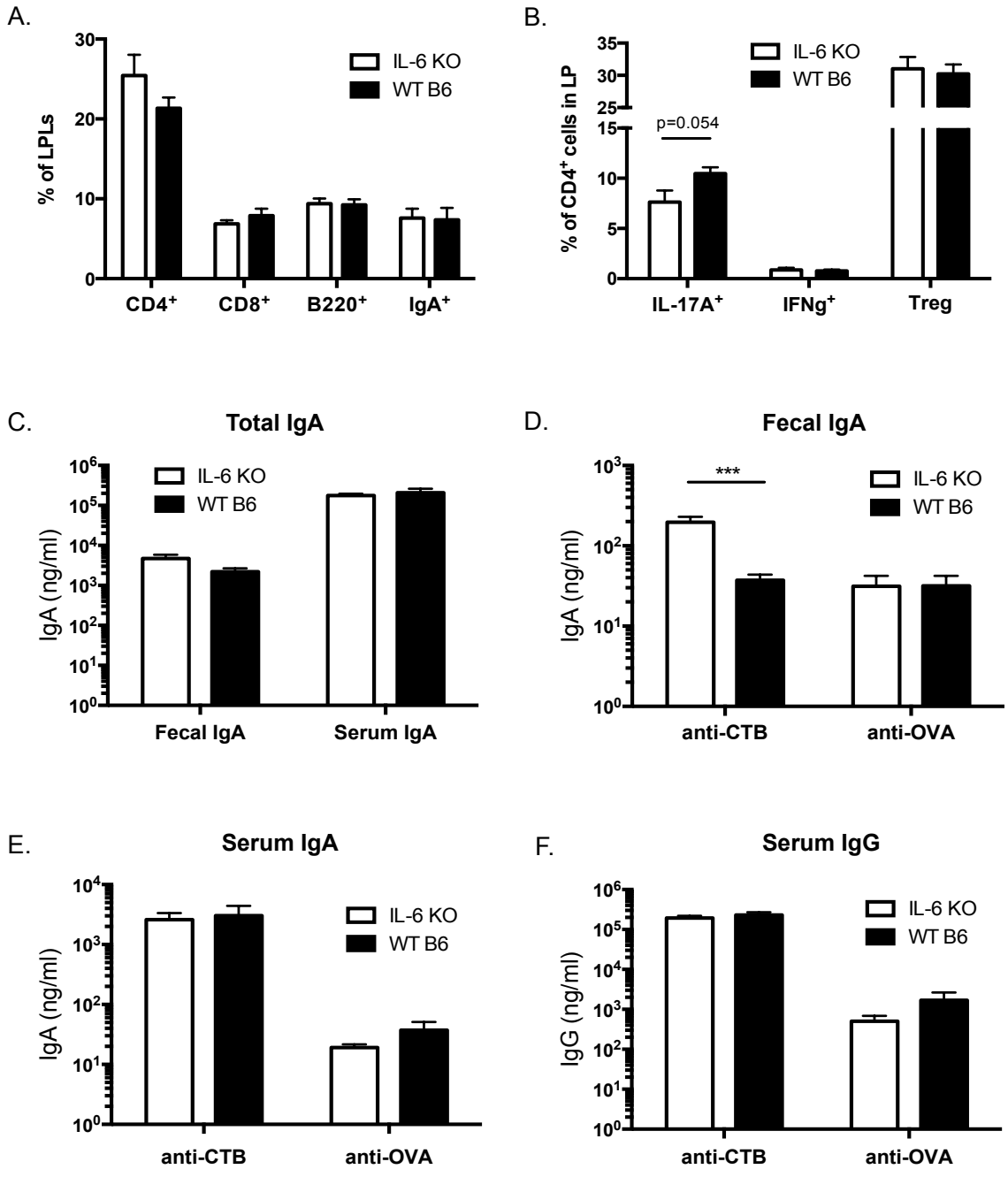

Figure S2. IL-6 does not play a significant role in CT-induced immune responses. 8-12-week-old IL-6$^{-/-}$ and WT littermates were immunized intragastrically with 10μg CT and 1mg OVA in 500μl 0.2M sodium bicarbonate on days 0, 7, and 14, LPLs were isolated when mice were sacrificed on day 28. Representative plots in **(A and B)** show the percentage of different cell subsets in the siLPLs. **(C-F)** Total and antigen-specific IgA and IgG responses in stool pellets and sera were measured with ELISA.

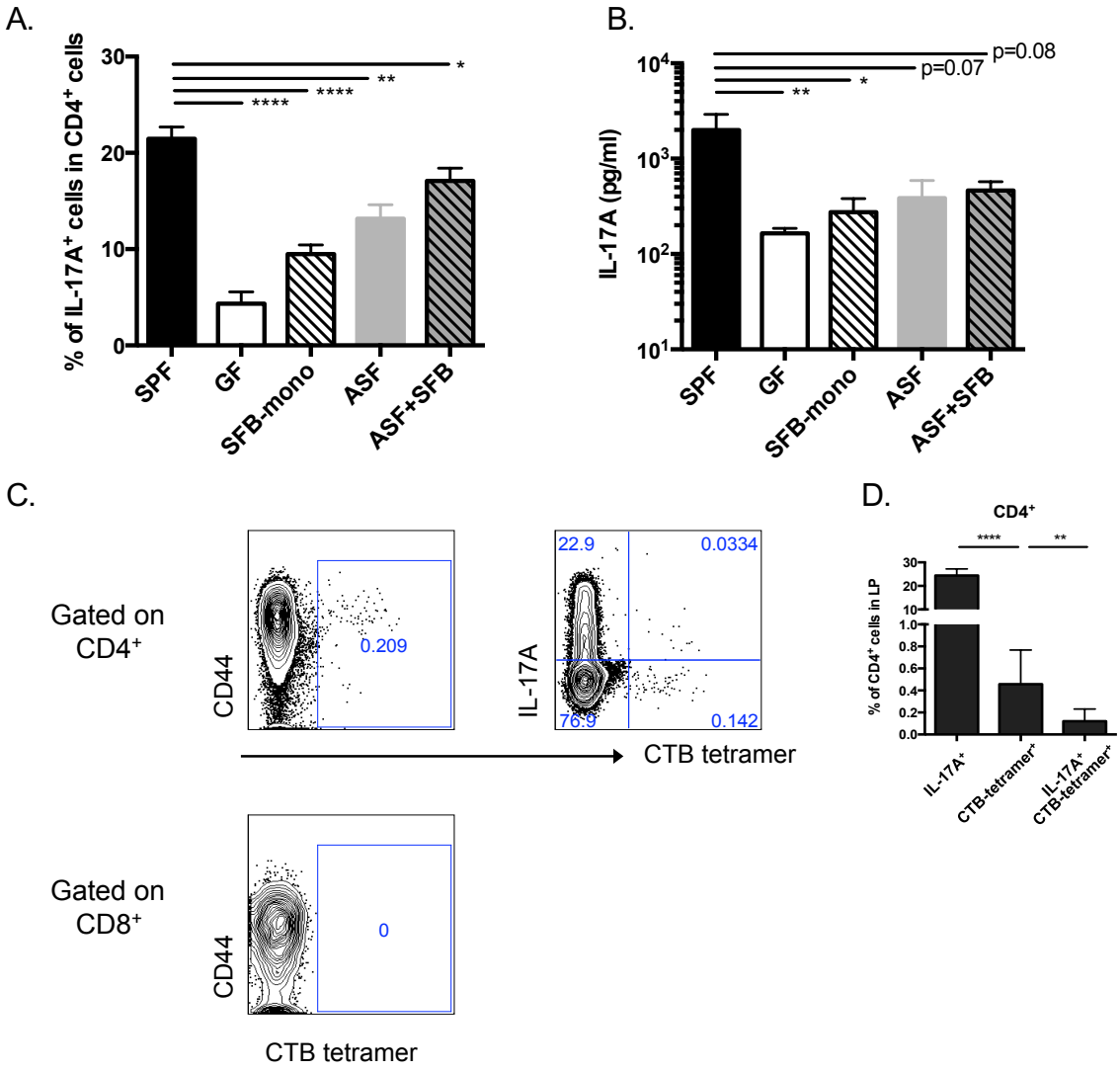

Figure S3. Host intestinal Th17 response to CT immunization is dependent on microbiota diversity and the majority of CT-induced Th17 cells are not CTB-specific. SPF, GF, ASF, and SFB colonized GF and ASF WT mice were immunized intragastrically with 10μg CT in 500μl 0.2M sodium bicarbonate on days 0, 7, and 14, siLPLs were isolated when mice were sacrificed on day 28. Combined data of IL-17A expression in $CD4^+$ LPLs in the small intestine is shown in **(A)**. **(B)** APCs were isolated from naïve C57BL/6 mouse spleen and either pulsed with 50μg CTB for 4 hours or directly co-cultured in the presence of 1μg CTB peptide with siLPLs isolated from immunized mice for 5 days. IL-17A level in the culture supernatants was measured with ELISA. **(C)** $IgA^{-/-}$ mice were immunized intragastrically with CT and OVA. Upon sacrifice, siLPLs were isolated and fluorescently stained with a MHC class II tetramer. FACS plots show CTB tetramer positive populations among activated and/or IL-17A producing cells in $CD4^+$ and $CD8^+$ T cells, respectively. Compared to naïve $IgA^{-/-}$ mice (data not shown), the absolute number of CTB-tetramer positive cells in the small intestinal lamina proria alone was increased by 40-fold from ~100 to ~4000 per mouse. Aggregated percentages of different populations are shown in **(D)**.

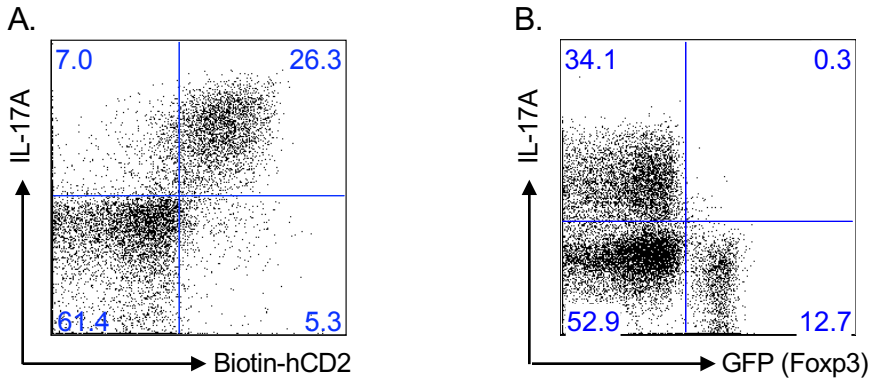

Figure S4. IL-17A producing cells co-express hCD2 but not Foxp3. (A) C57BL/6.IL-17A^{hCD2} mice were immunized intragastrically with CT. Upon sacrifice, siLPLs were isolated and restimulated with PMA and ionomycin in the absence of Golgi stop. FACS plot shows co-expression of cell surface hCD2 on IL-17A producing cells. **(B)** siLPLs isolated from 9-month-old IgA$^{-/-}$.10BiT.Foxp3^{gfp} mice were restimulated with PMA and ionomycin with Golgi stop for 3.5 hours. FACS plot shows co-expression of GFP (Foxp3) on IL-17A producing cells.