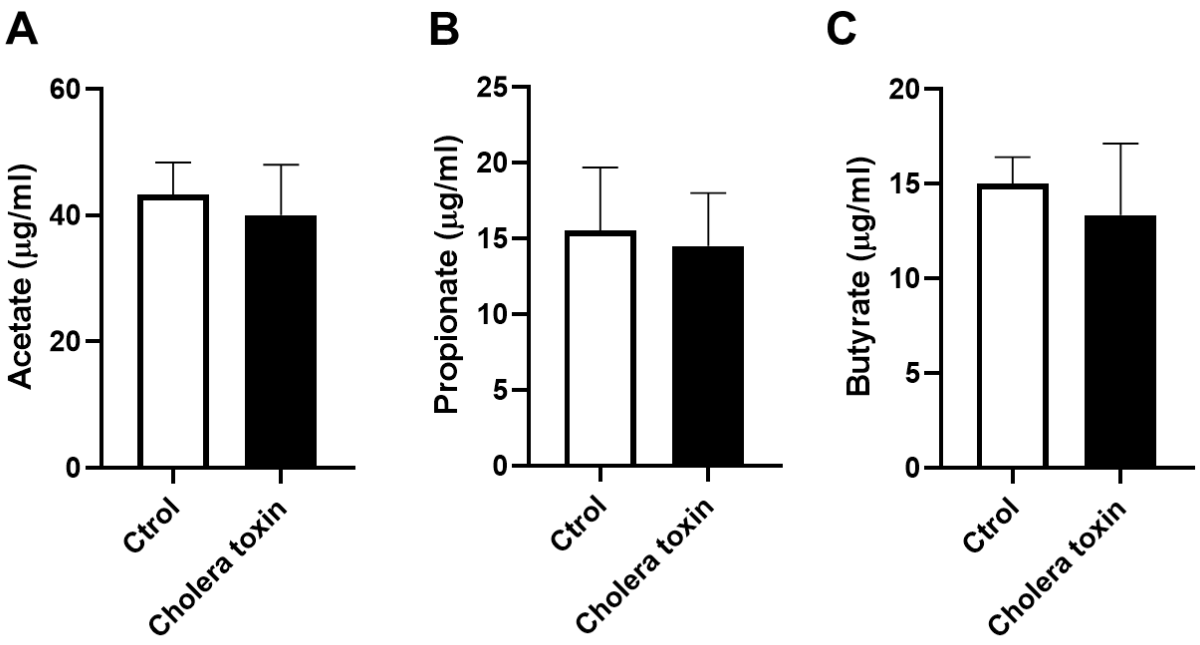
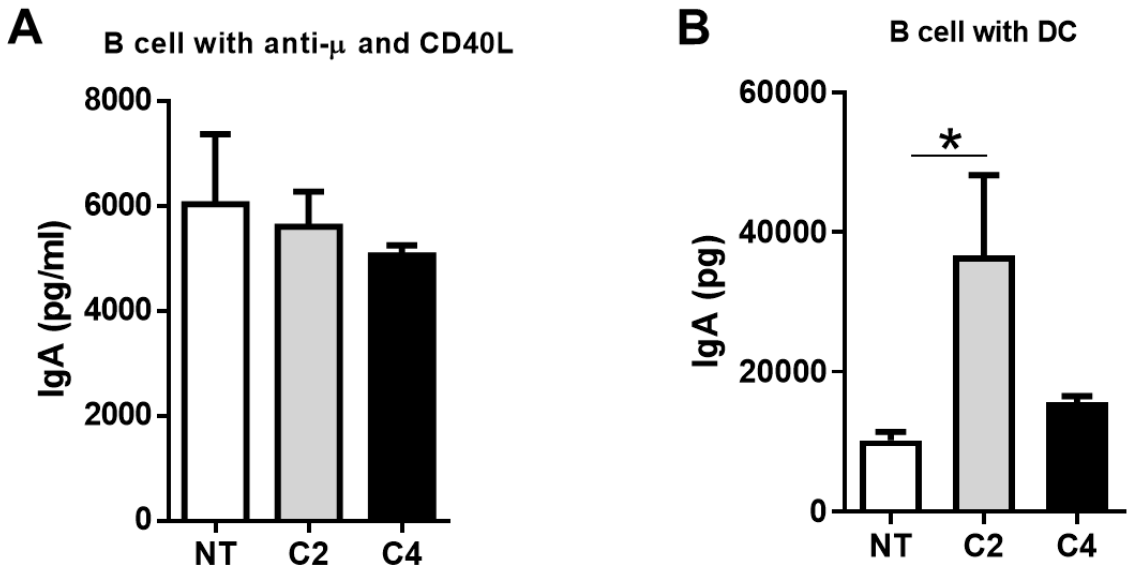
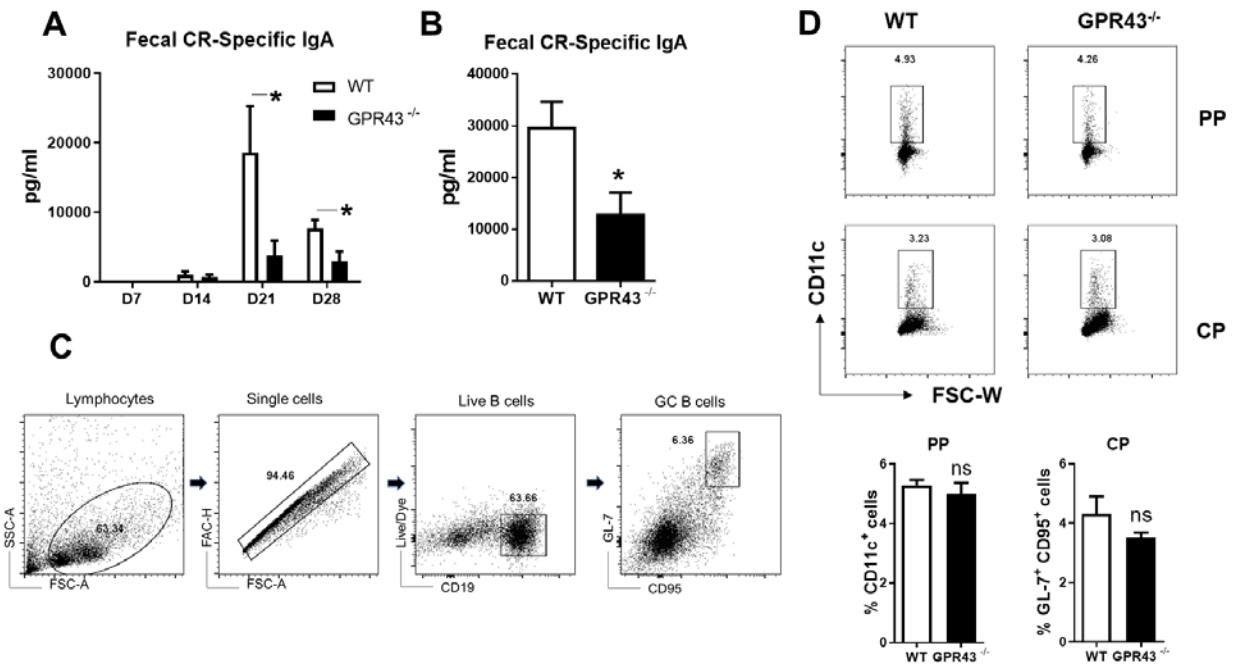


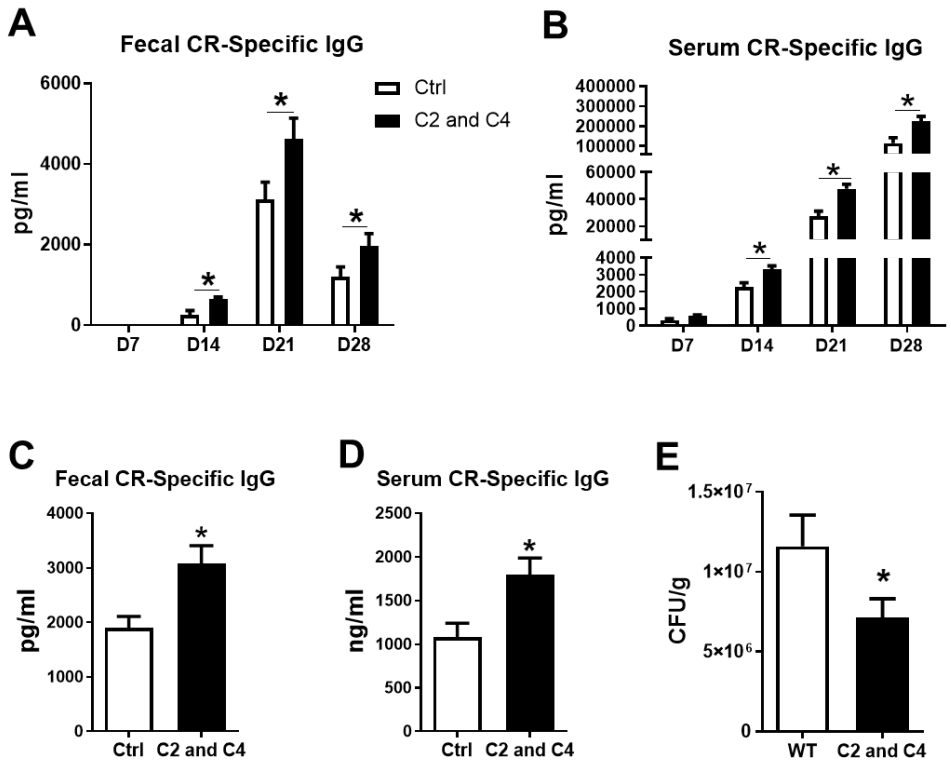
Supplementary Figure 1. CT do not promote SCFAs production in mice *in vivo*. Two groups (n= 4) of WT mice were administrated orally with 10 μg CT on day 0 by gavage, and feces samples were collected on day 14. Acetate (A), propionate (B), and butyrate (C) concentration in feces was measured by using a LC-MS based method.



Supplementary Figure 2. Acetate, but not butyrate, promotes B cell IgA production through DCs. (A) Splenic naïve IgD^+ B cells were cultured with 1 mM acetate (C2) or 0.5 mM butyrate (C4) in the presence of 5 μg/ml anti-μ plus 5 μg/ml CD40L, and IgA production in supernatants was determined after 5 days by ELISA. (B) Splenic naïve IgD^+ B cells were cultured with BMDCs in the presence of C2 or C4 for 5 days, and IgA levels in supernatants were analyzed by ELISA. One representative of three independent experiments was shown. The data were expressed as mean ± s.e.m. *$p < 0.05$.



Supplementary Figure 3. GPR43$^{-/-}$ mice are impaired to induce IgA responses against to C. *rodentium*. (A) Groups (n = 4-5) of WT and GPR43$^{-/-}$ mice were infected with *C. rodentium* at 1 × 10^7 CFU by gavage on day 0, and fecal pellets as well as serum samples were collected on day 7, 14, and 28 post infection. *C. rodentium*-specific IgA production in feces was determined by ELISA. (B) Mice were orally re-infected with C. *rodentium* at 5 × 10^9 CFU on day 28 post first infection, and specific IgA in feces was determined 7 days post re-infection by ELISA. (C) The strategy of gating GC B cells was shown. (D) Mice were sacrificed on day 10 post re-infection, and CD11c$^+$ cells in Peyer's patches (PP), and colonic patches (CP) were determined by flow cytometry. All of results are representative of three independent experiments. One representative of three independent experiments was shown. The data were expressed as mean ± s.e.m. *p < 0.05.



Supplementary Figure 4. Feeding acetate and butyrate promotes antibody responses to *Citrobactor rodentium*. Groups (n = 4-5) of WT mice were infected with *C. rodentium* at 1×10^7 CFU by gavage on day 0, and one group of mice were fed the mixture of acetate and butyrate in drinking water. Fecal pellets as well as serum samples were collected on day 7, 14, and 28 post infection. *C. rodentium*-specific IgG production in fecal (A) in serum (B) were analyzed by ELISA. Mice were orally re-infected with *C. rodentium* at 5×10^9 CFU on day 28 post first infection, and *C. rodentium*-specific IgG in feces and serum samples were also analyzed on day 7 post re-infection (C-D). The numbers of CFU in fecal pellets were determined 7 days post re-infection (C). One representative of two independent experiments is shown. The data were expressed as mean ± s.e.m. *$p < 0.05$.