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TABLES

Supplemental Table 1 – List of 2,878 genes identified to be significantly changed in at least one of the four comparisons: Chow vs. WD, Chow vs. EV, Chow vs. Tg6F, and EV vs. Tg6F. Please see PDF containing this list.

Supplemental Table 2 – List of 198 genes whose expression changed significantly between EV and Tg6F fed mice. Please see the PDF containing this list.

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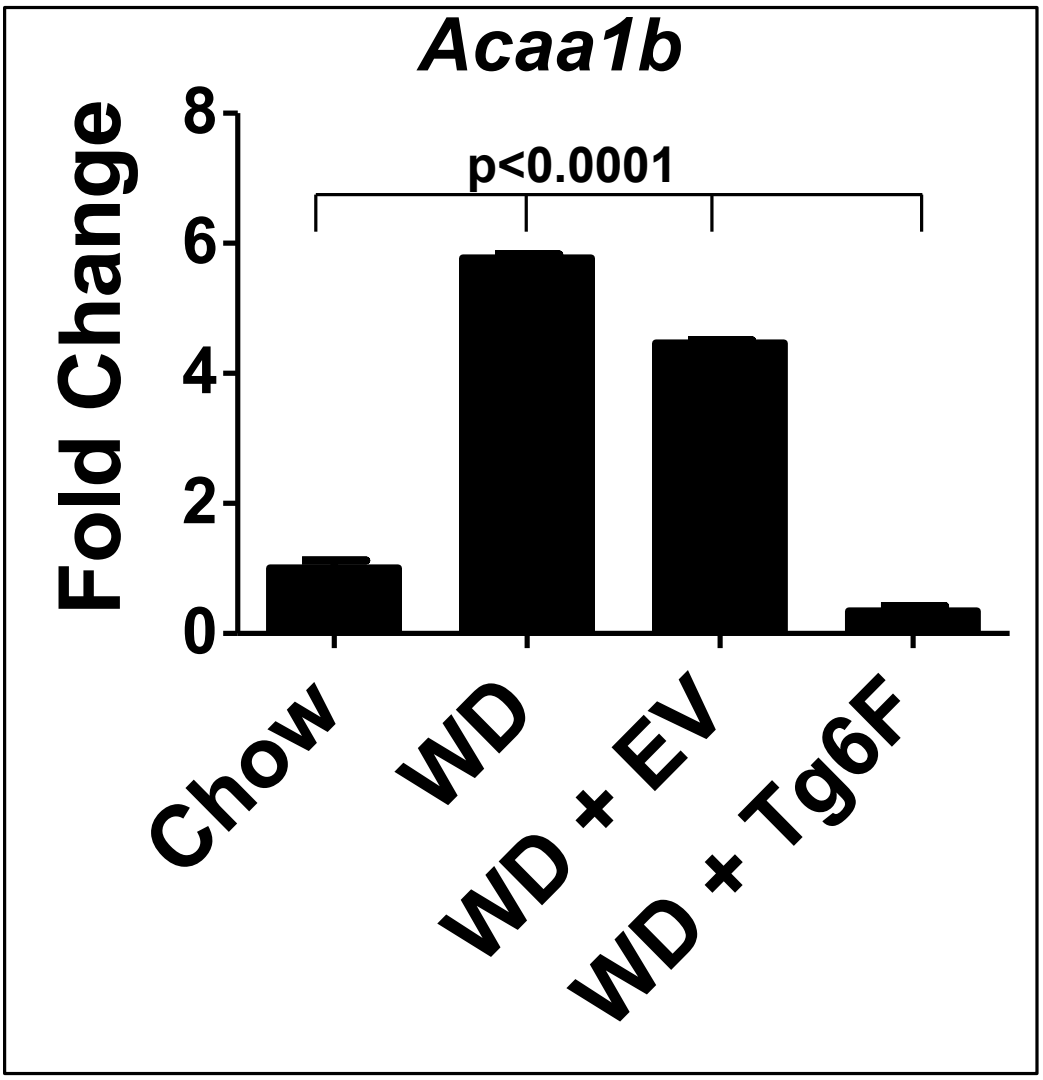
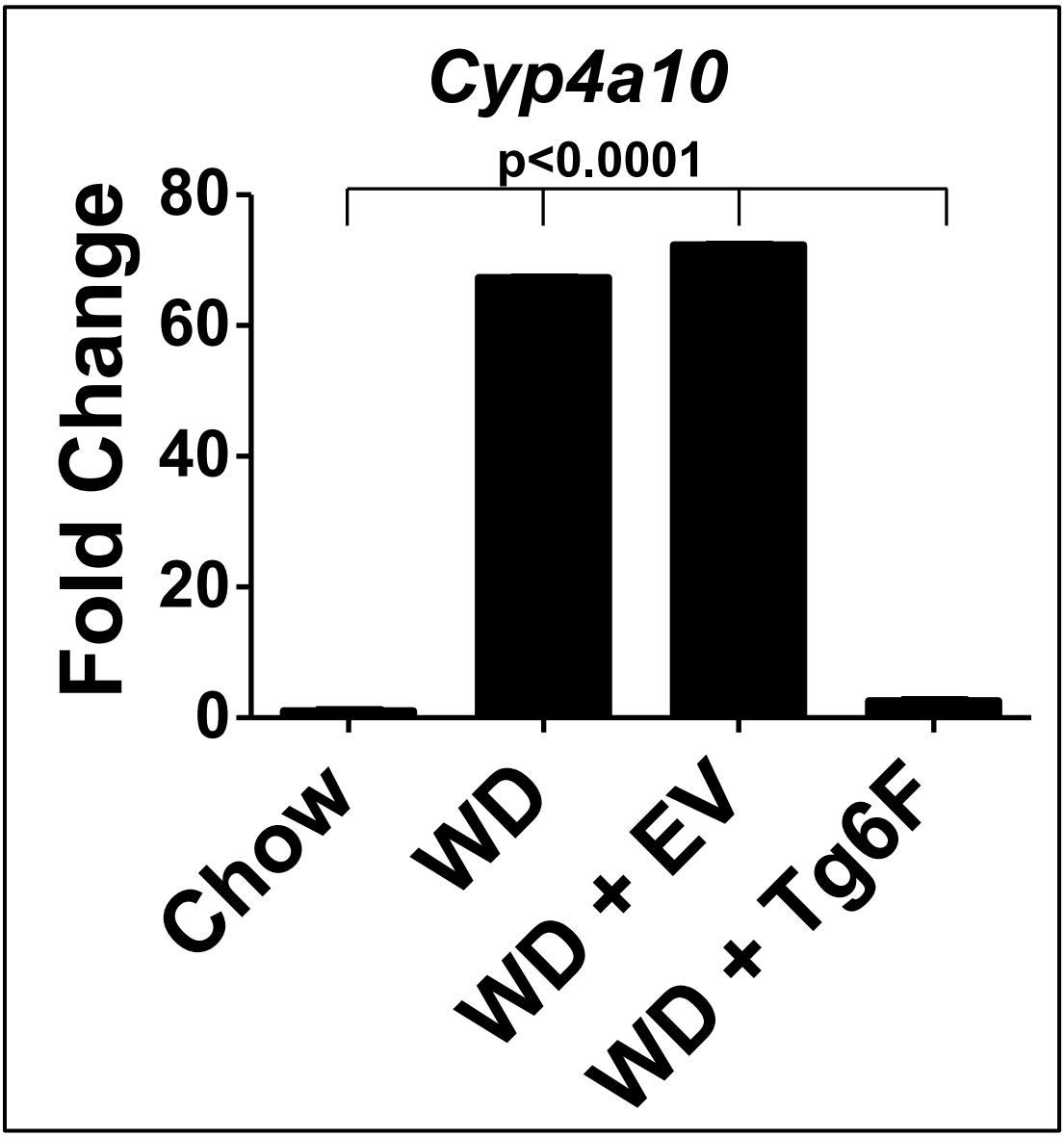
FIGURES

Supplemental Figures 1 A – E. **RT-qPCR confirms microarray analysis.** The RNA isolated from the jejunum of the mice described in Figure 3 was analyzed by RT-qPCR for some of the genes in Tables 2 and 4 whose expression was i) significantly changed by WD compared to chow, and ii) changed by Tg6F in a direction that was opposite to the WD-induced change. Panels A – D show genes whose expression was *increased* by WD and prevented by adding Tg6F to WD. Panel E shows a gene whose expression was *decreased* by WD and prevented by adding Tg6F to WD. Data shown are Mean ± SD.

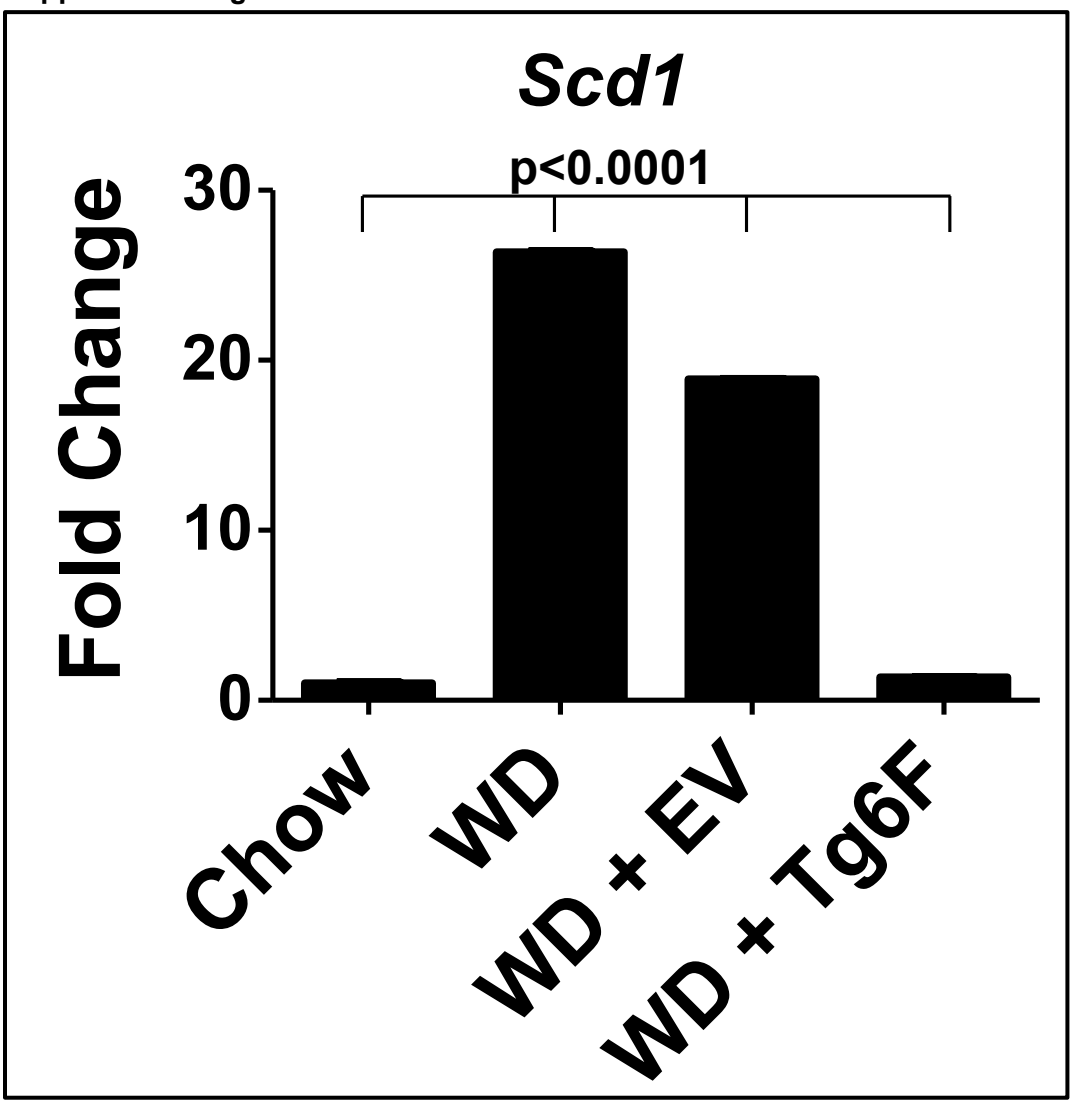
Supplemental Figure 1A.



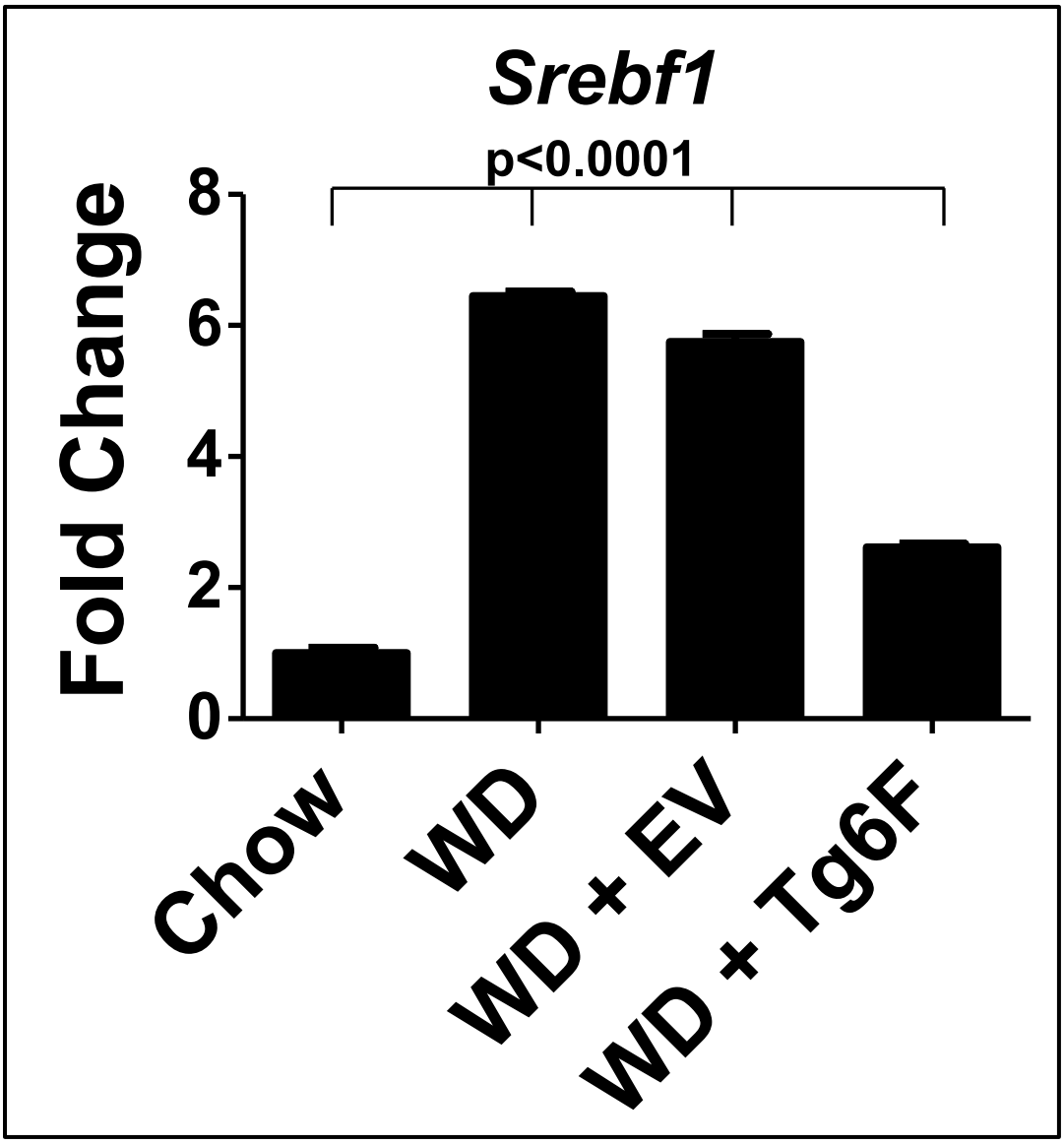
Supplemental Figure 1B.



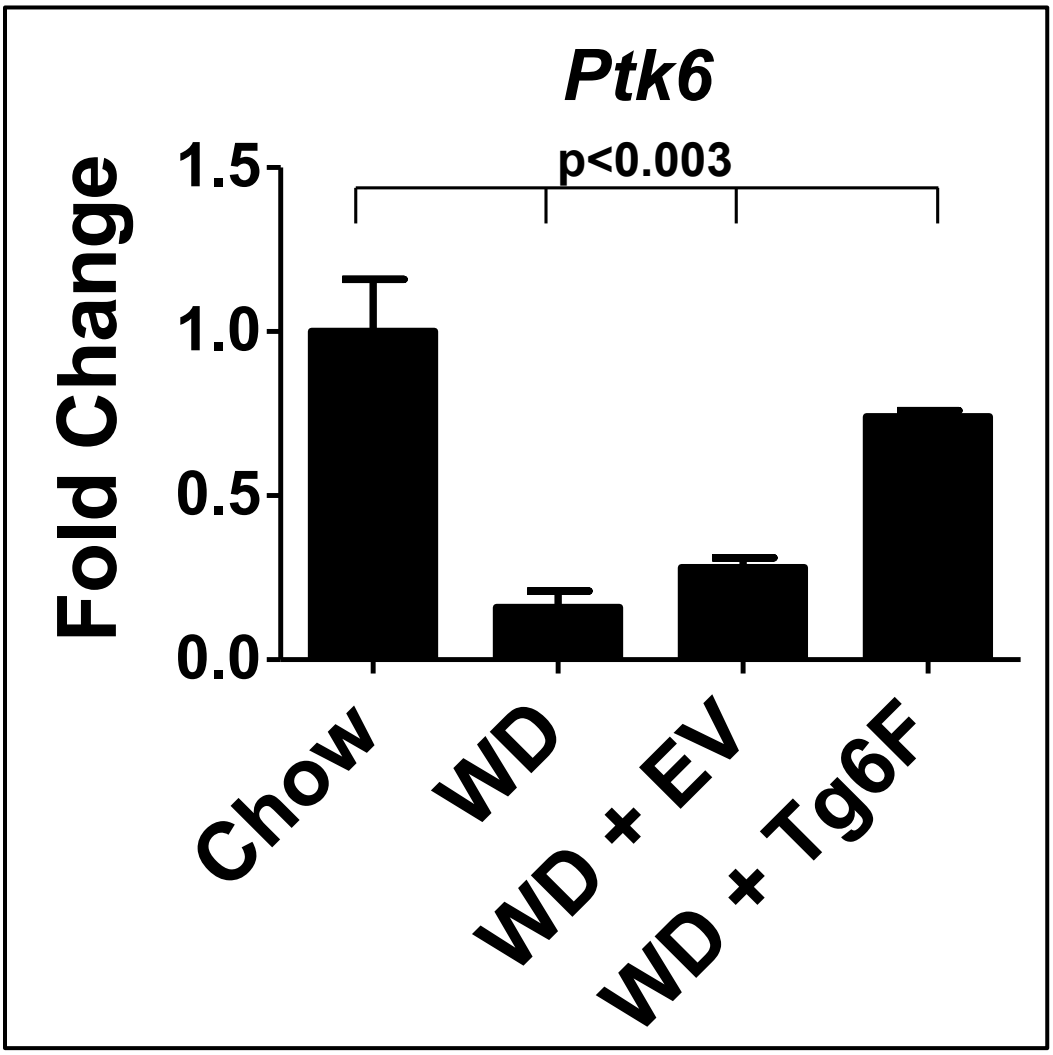
Supplemental Figure 1C.



Supplemental Figure 1D.

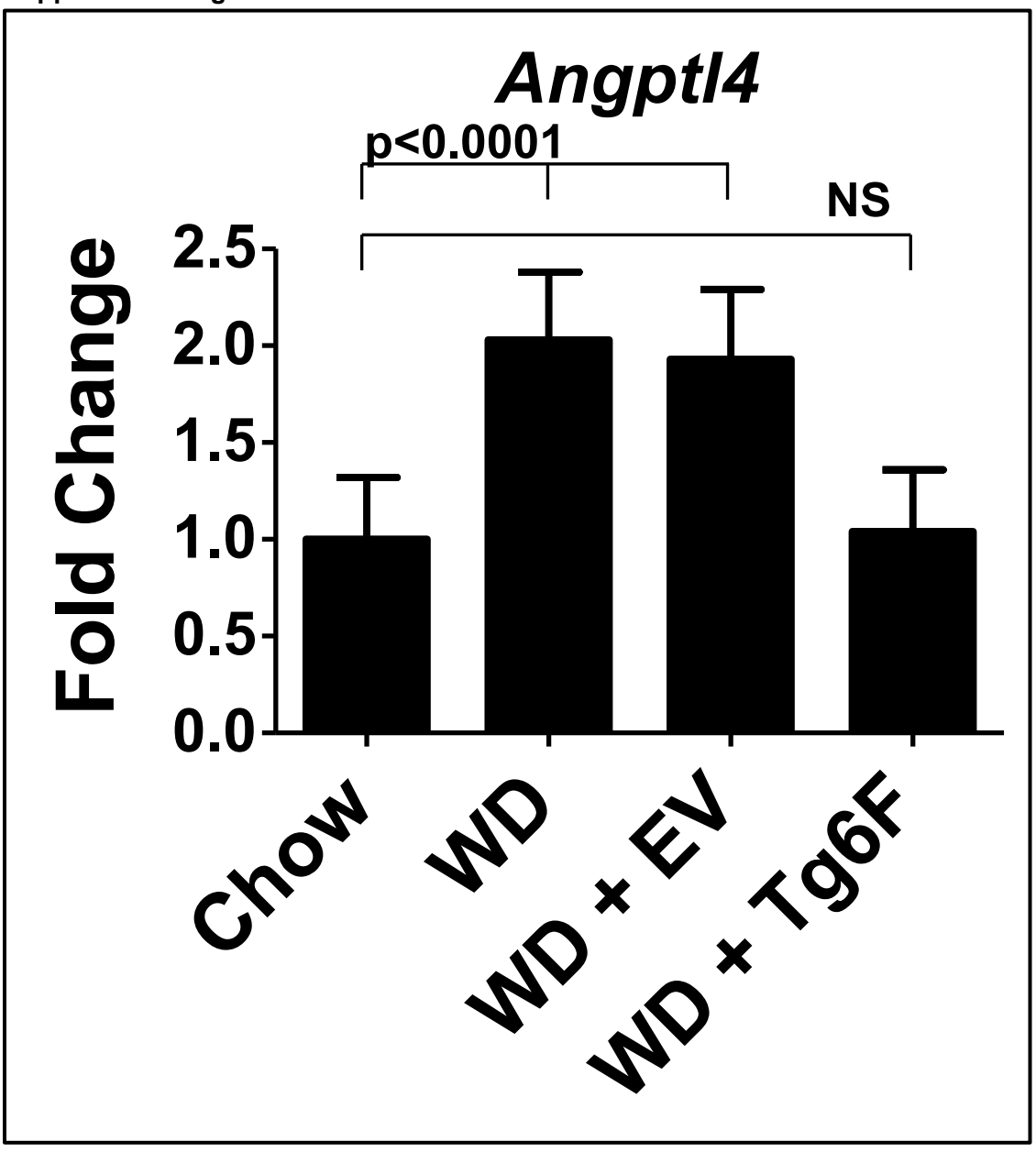


Supplemental Figure 1E.

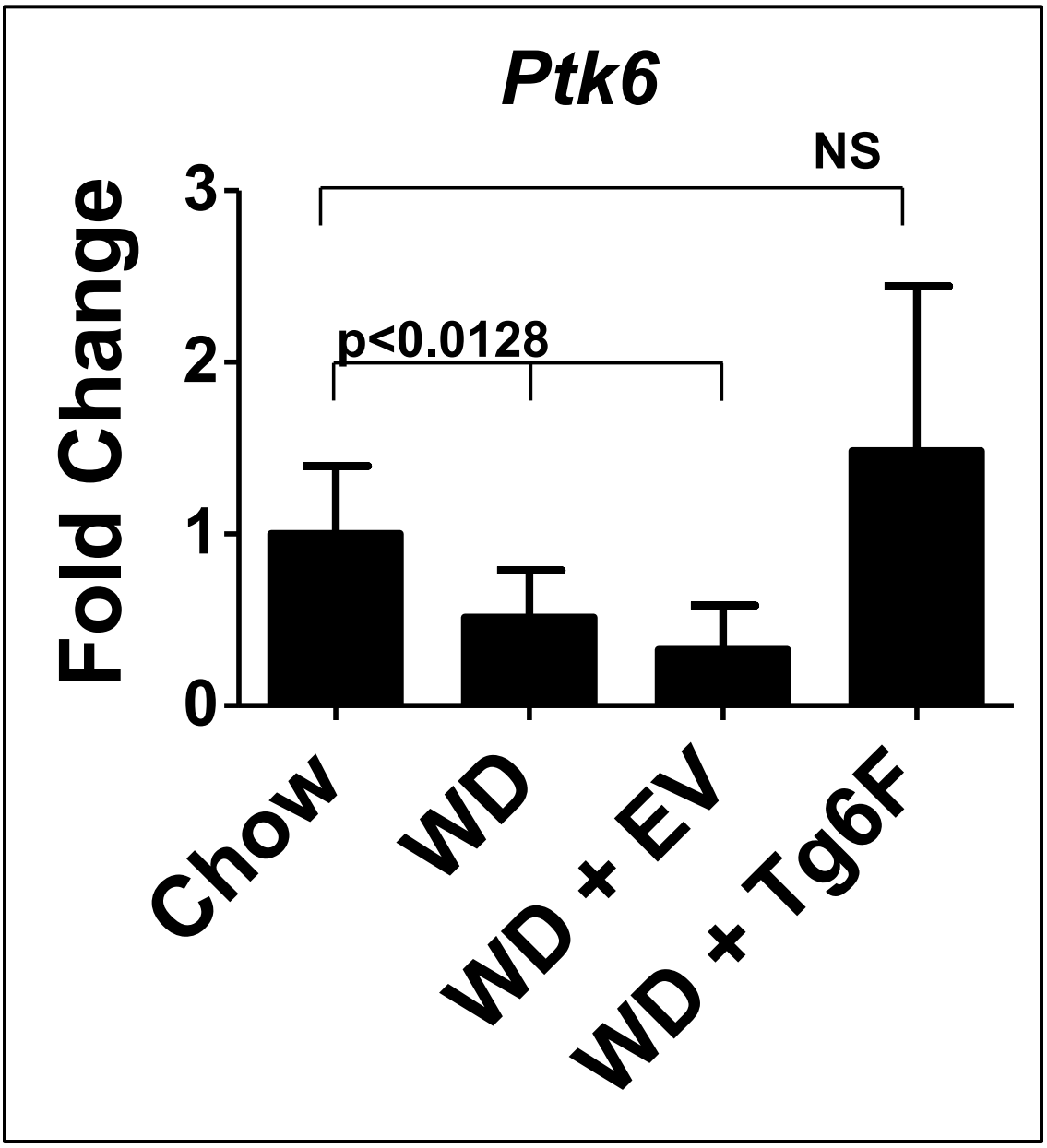


Supplemental Figures 2 A and B. Changes in gene expression in the duodenum after feeding WD and WD + Tg6F are similar to those seen in the jejunum. Female LDLR$^{-/-}$ mice 7 – 8 months of age (n = 8 per group) were fed chow or Western diet (WD) or WD + 2.2% by weight ground freeze-dried, empty vector tomatoes (EV) or WD + 2.2% by weight ground freeze-dried, Tg6F. After 3 weeks the small intestine was harvested from each mouse, RNA was isolated from the duodenum and analyzed by RT-qPCR as described in Materials and Methods. Data shown are Mean ± SD.

Supplemental Figure 2A.



Supplemental Figure 2B.



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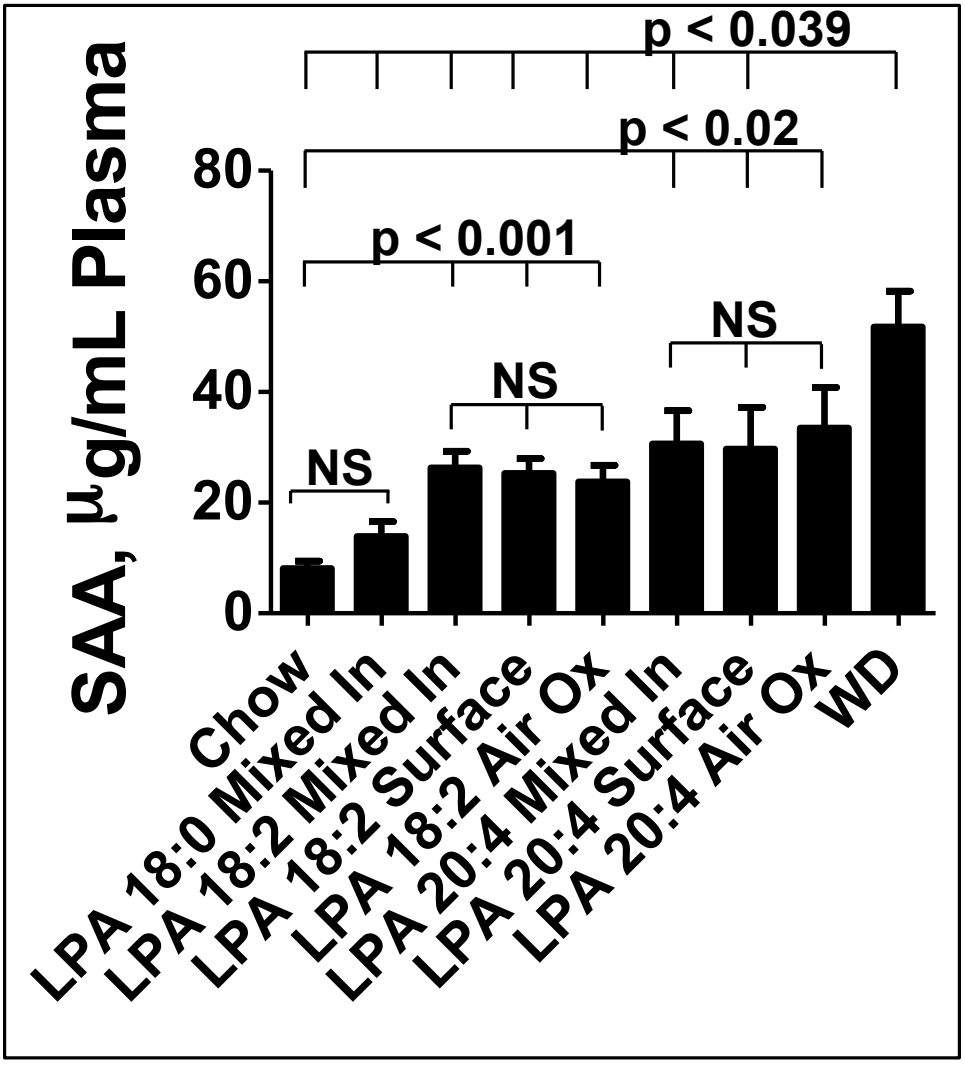
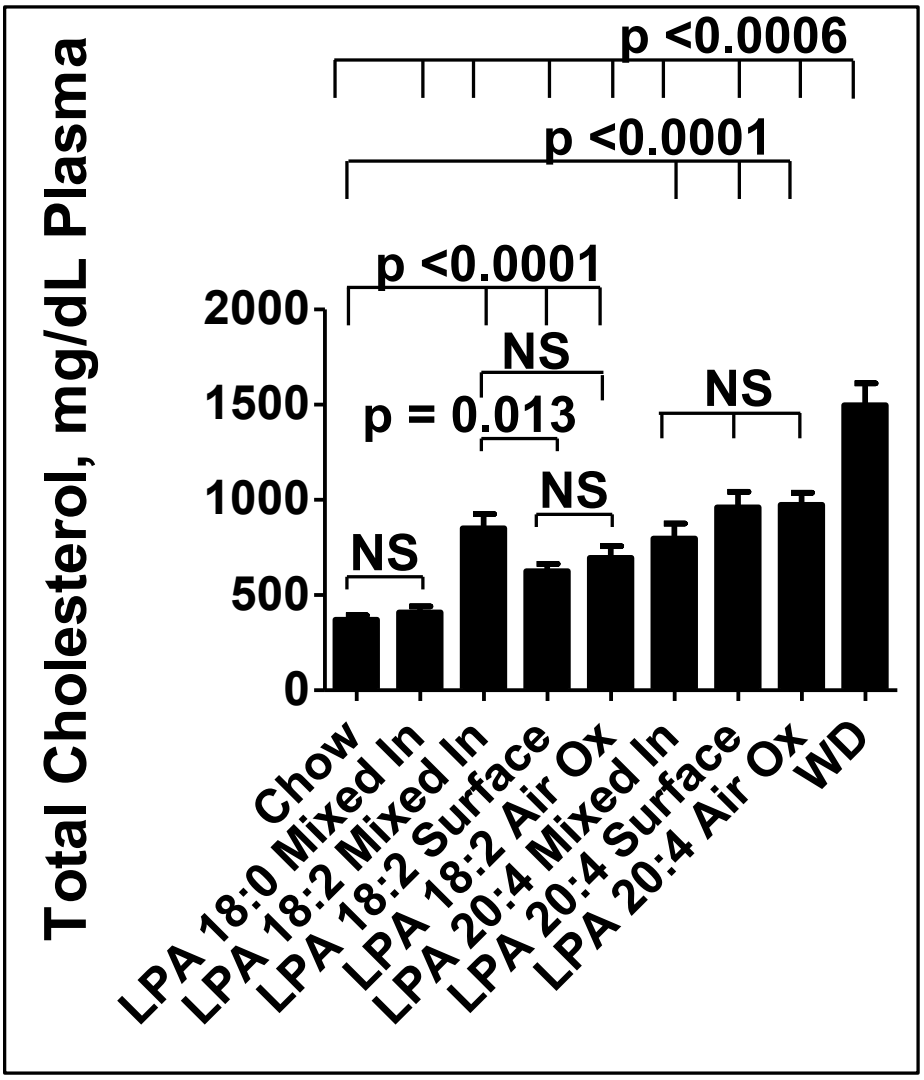
Supplemental Figures 3A – D. Addition of unsaturated lysophophatidic acid (LPA) to mouse chow by mixing into the chow, or adding to the surface of the chow, or air oxidizing prior to mixing into chow produces similar results in LDLR$^{-/-}$ mice. Female LDLR$^{-/-}$ mice age 6 – 9 months (n = 20 per group) were fed mouse chow (Chow) or Western diet (WD) or chow supplemented with 1μg LPA (18:0 or 18:2 or 20:4) per gram chow mixed into the chow (Mixed In), or added to the surface of the chow each night just before the mice were allowed to eat (Surface), or air oxidized prior to mixing into chow (Air Ox) as described in Materials and Methods. Each night the mice were given 16 grams of chow for each cage of 4 mice. The mice ate all of the diet each night. After 3 weeks, plasma levels of serum amyloid A (SAA) from 10 randomly chosen mice from each group (panel A), plasma total cholesterol from all 20 mice in each group (panel B), plasma triglycerides from all 20 mice in each group (panel C), and plasma HDL-cholesterol from 10 randomly chosen mice from each group (panel D) were determined as described in Materials and Methods. Data are Mean ± SEM.

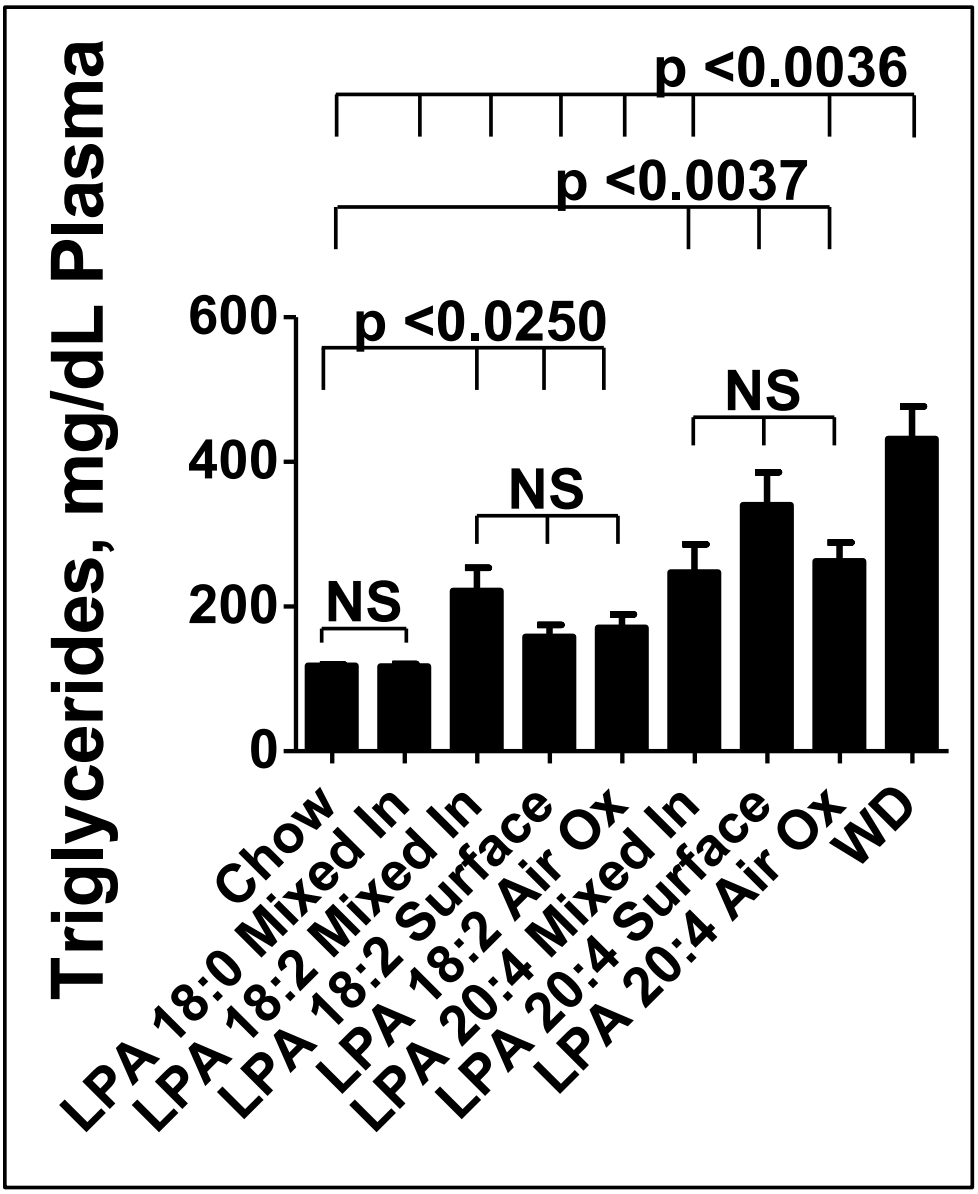
Supplemental Figure 3A.



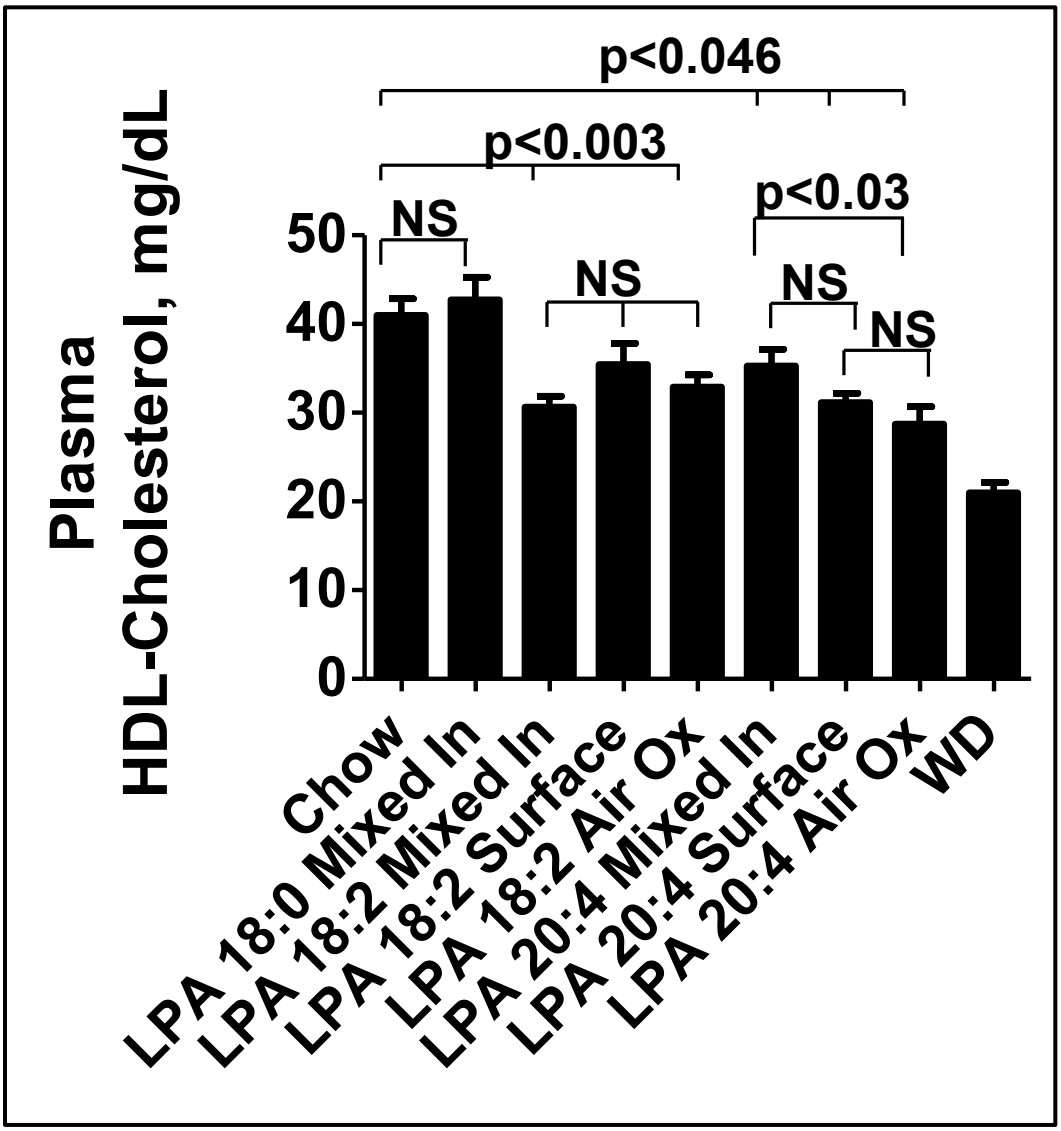
Supplemental Figure 3B.



Supplemental Figure 3C.



Supplemental Figure 3D.



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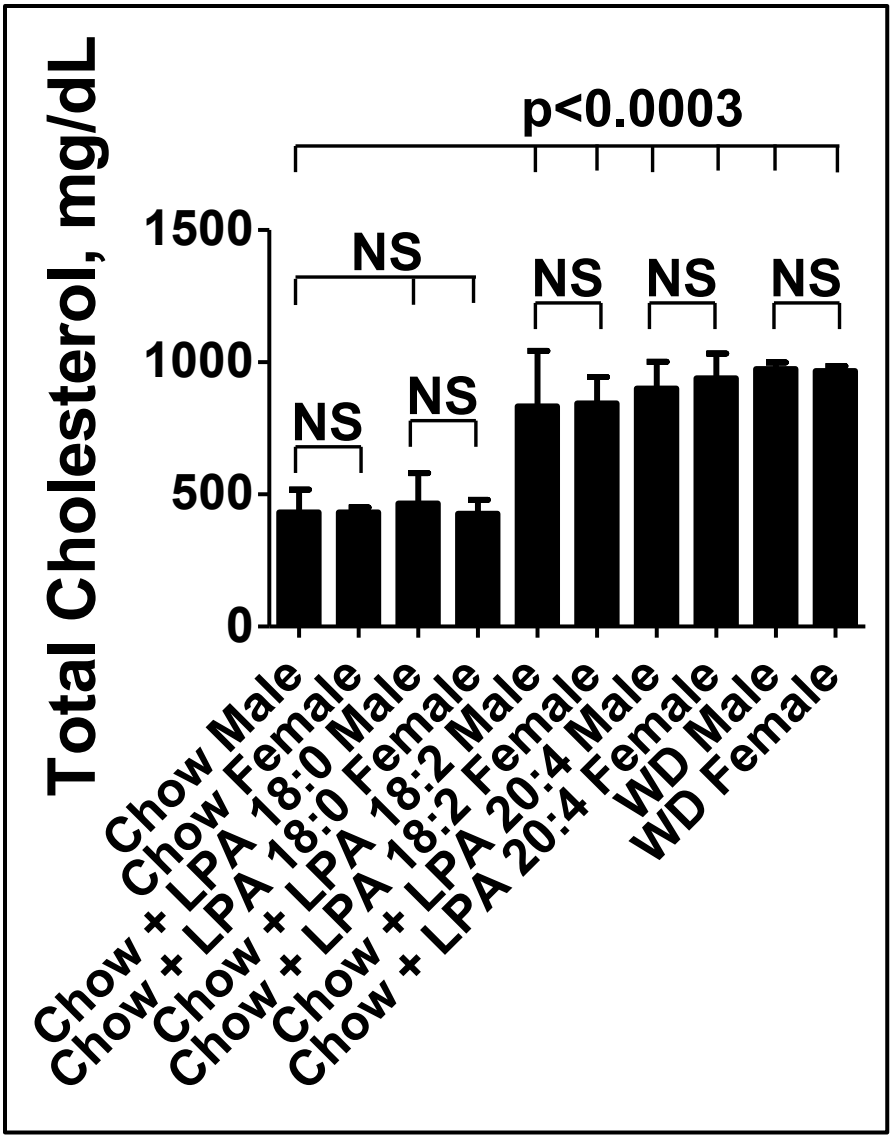
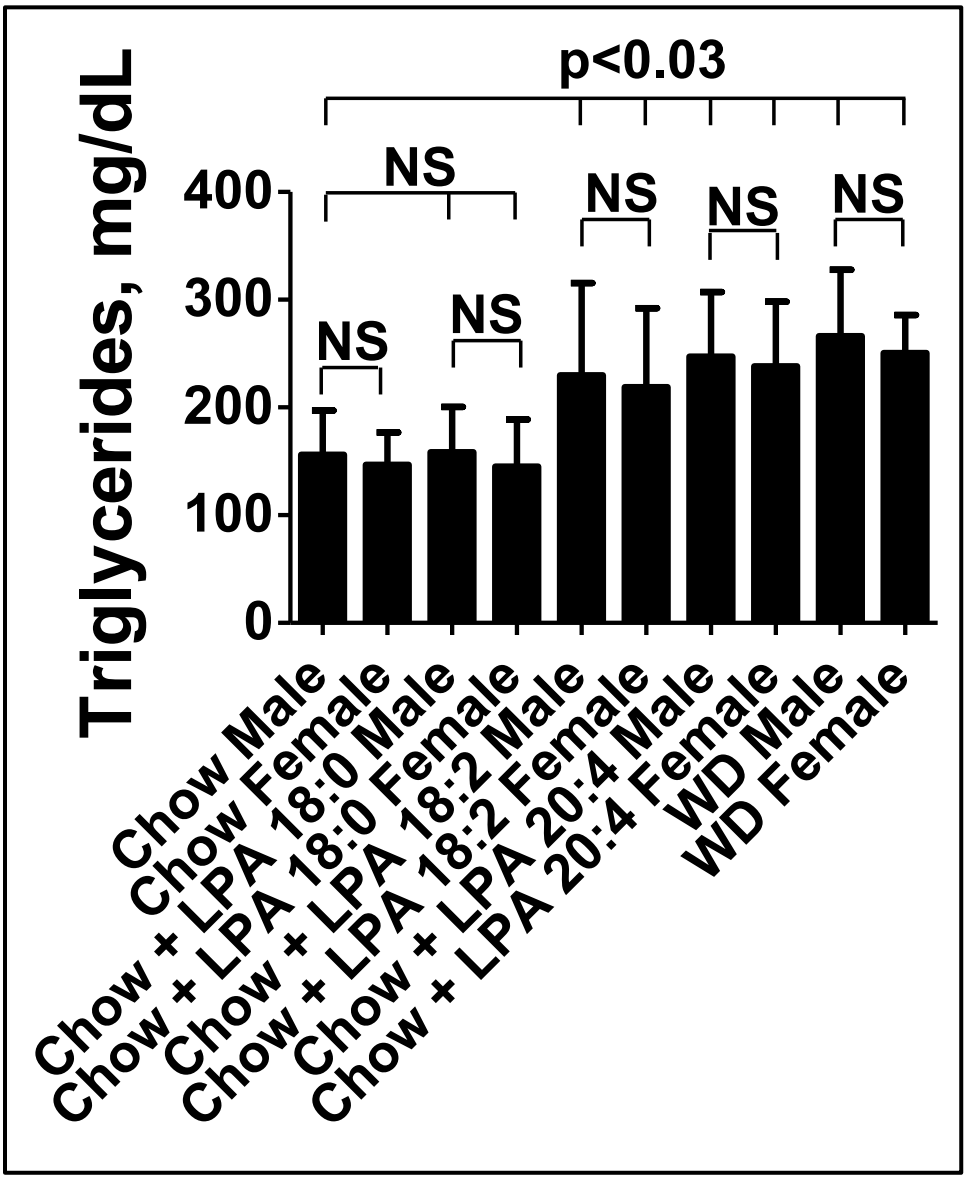
Supplemental Figures 4A – C. Addition of unsaturated lysophophatidic acid (LPA) to mouse chow produces similar changes in male and female LDLR$^{-/-}$ mice. Male or female LDLR$^{-/-}$ mice age 6 – 8 months (n = 6 - 10 per group) were fed mouse chow (Chow) or Western diet (WD) or chow supplemented with 4 μg of PA or LPA (18:0 or 18:2 or 20:4) per gram chow. Each night the mice were given 16 grams of chow for each cage of 4 mice. The mice ate all of the diet each night. After 2 weeks, plasma levels of total cholesterol (panel A), plasma triglycerides (panel B), and plasma HDL-cholesterol (panel (C) were determined as described in Materials and Methods. Data are Mean ± SD. NS = not significant.

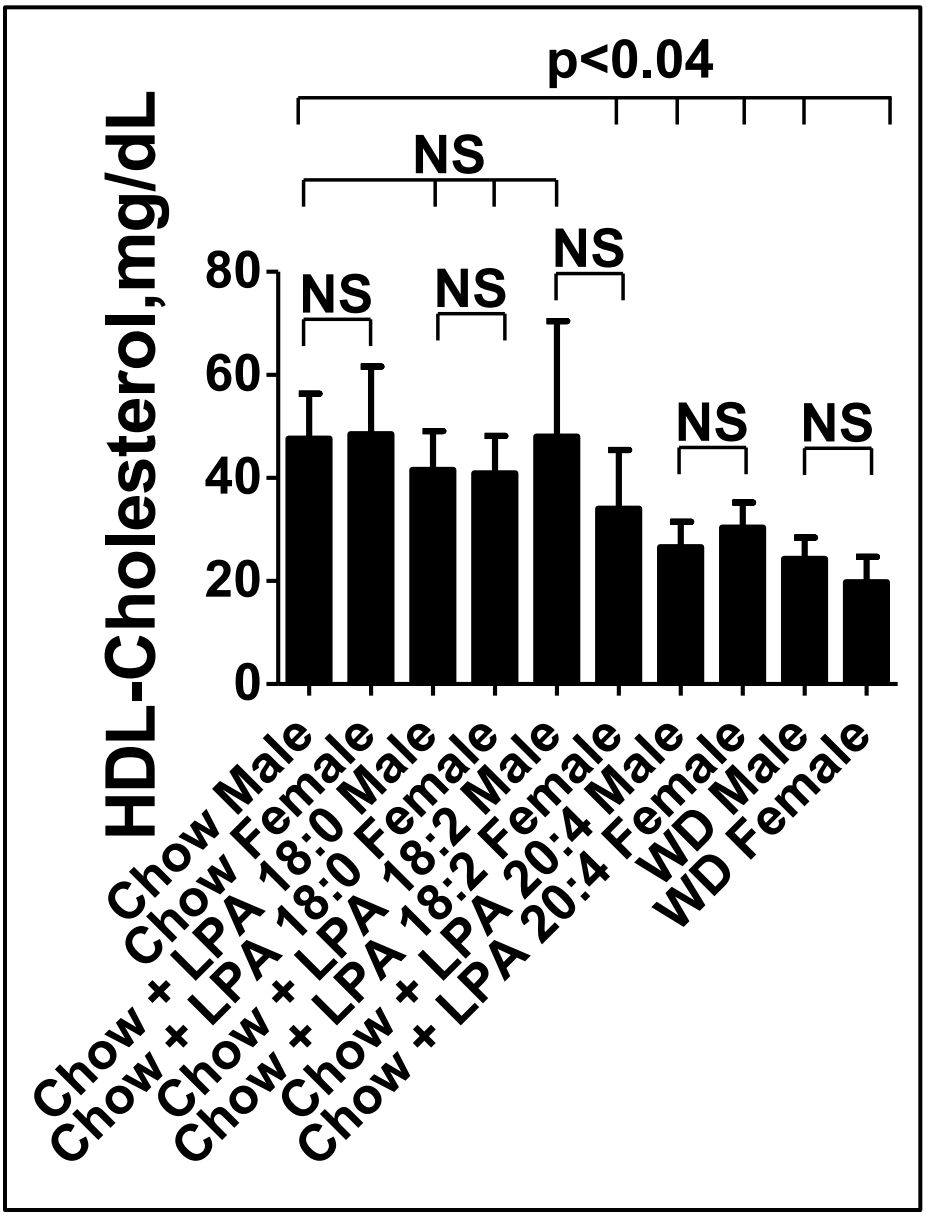
Supplemental Figure 4A.



Supplemental Figure 4B.

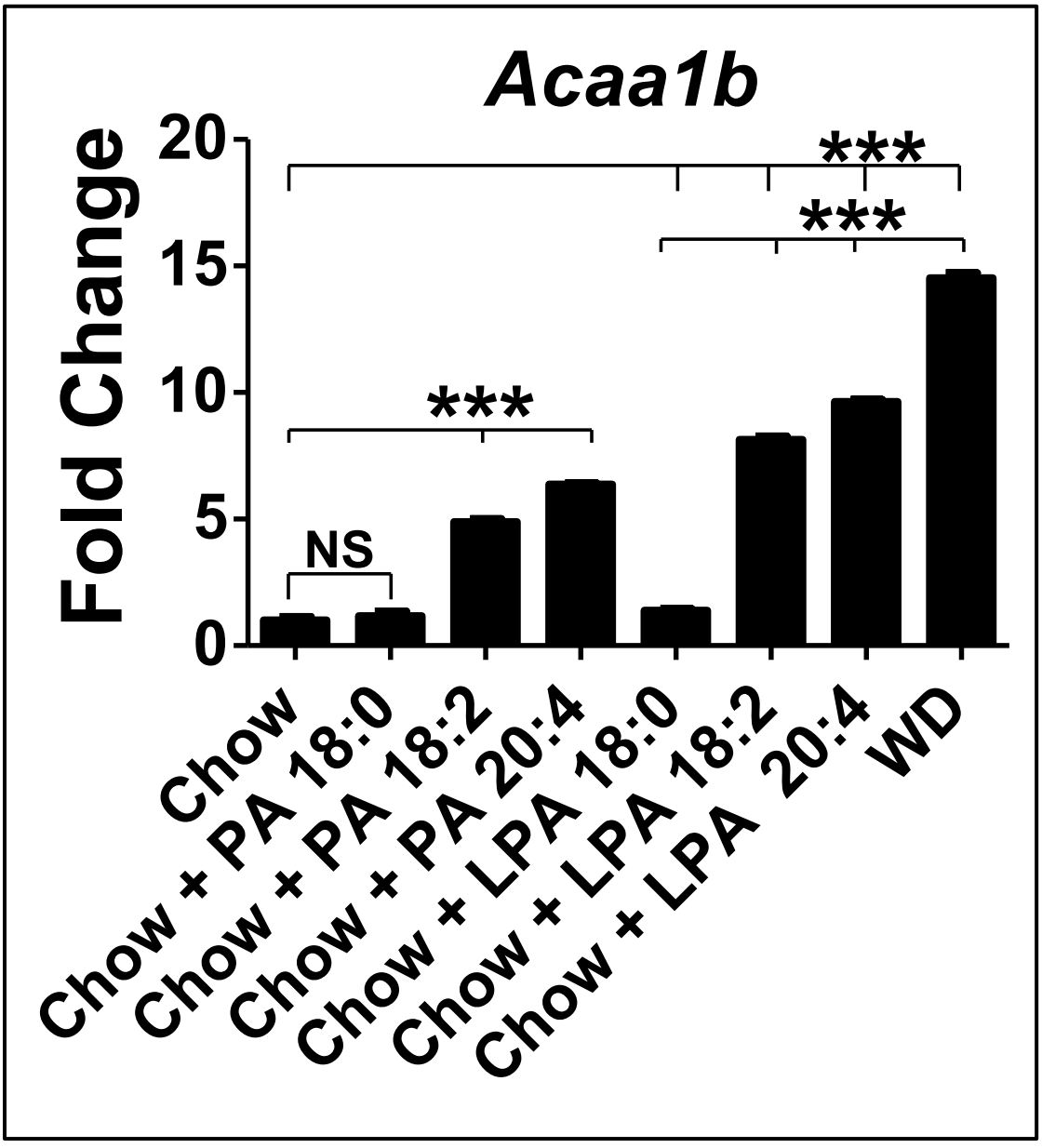


Supplemental Figure 4C.

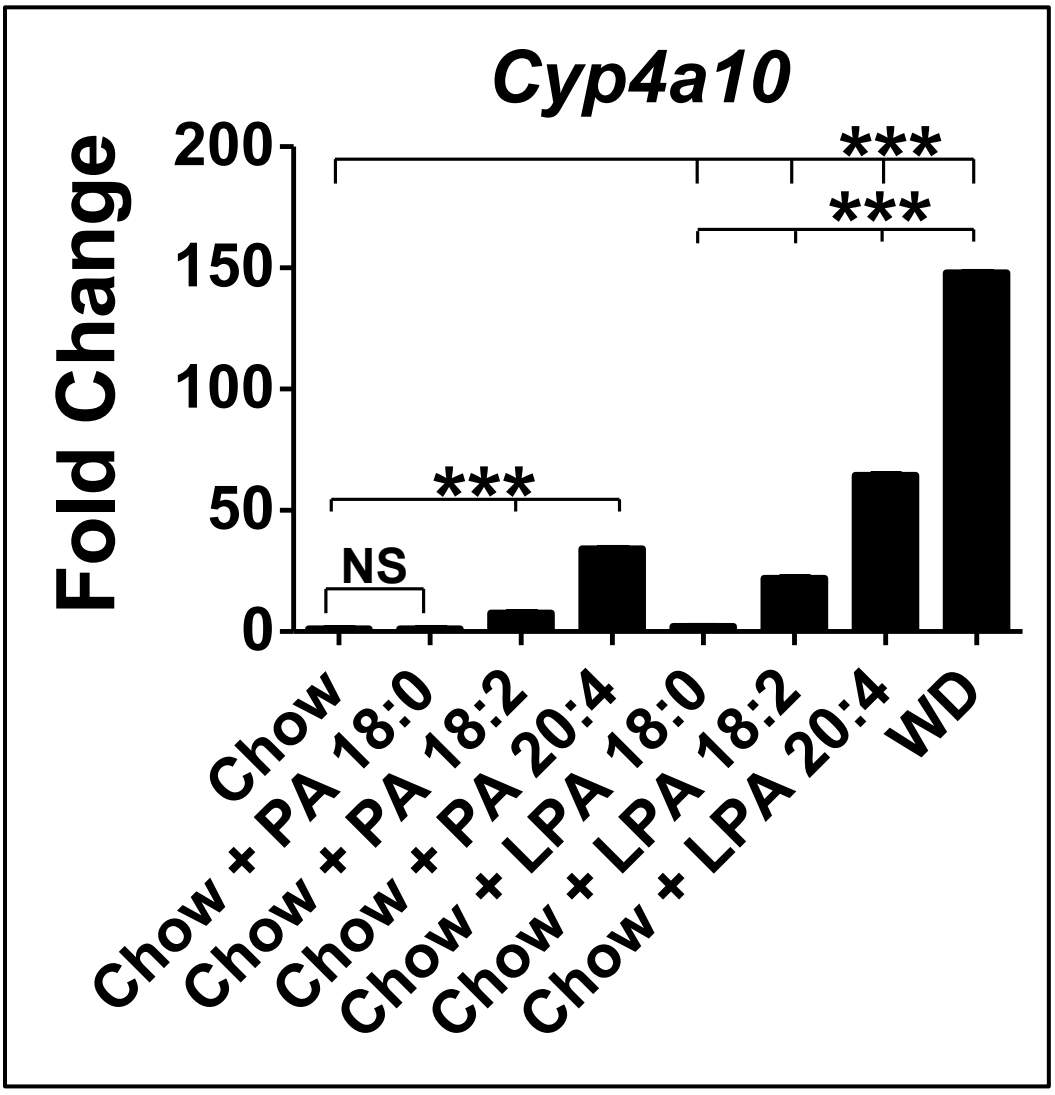


Supplemental Figures 5A – E. Addition of unsaturated phosphatidic acid (PA) or unsaturated lysophophatidic acid (LPA) to mouse chow produces changes in gene expression in the small intestine similar to that seen after feeding WD in LDLR$^{-/-}$ mice. The RNA isolated from the jejunum of the mice described in Figure 8 was analyzed by RT-qPCR as described in Materials and Methods. The data shown are Mean ± SD. *p<0.05; **p<0.01; ***p≤0.001; NS = not significant.

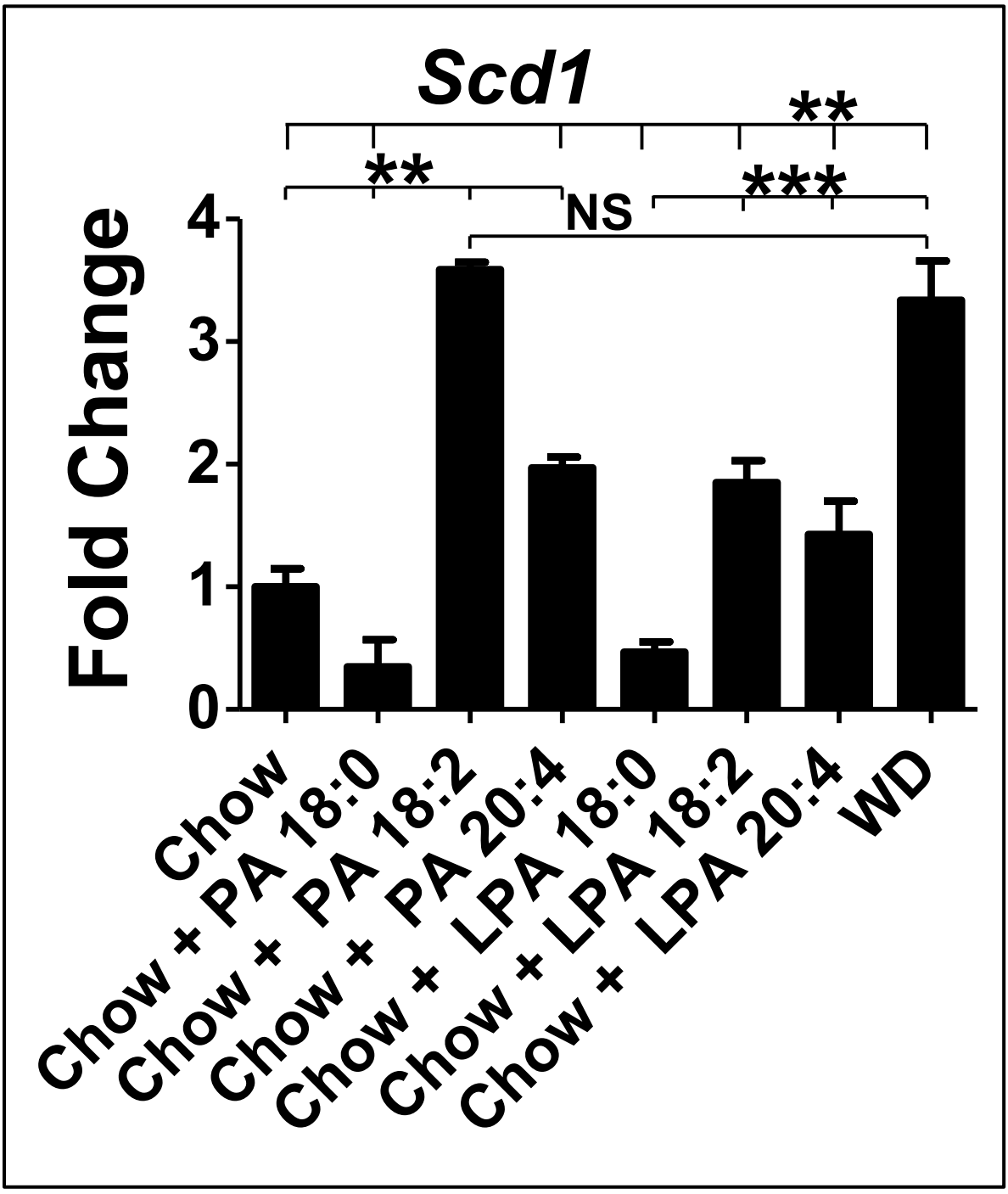
Supplemental Figure 5A.



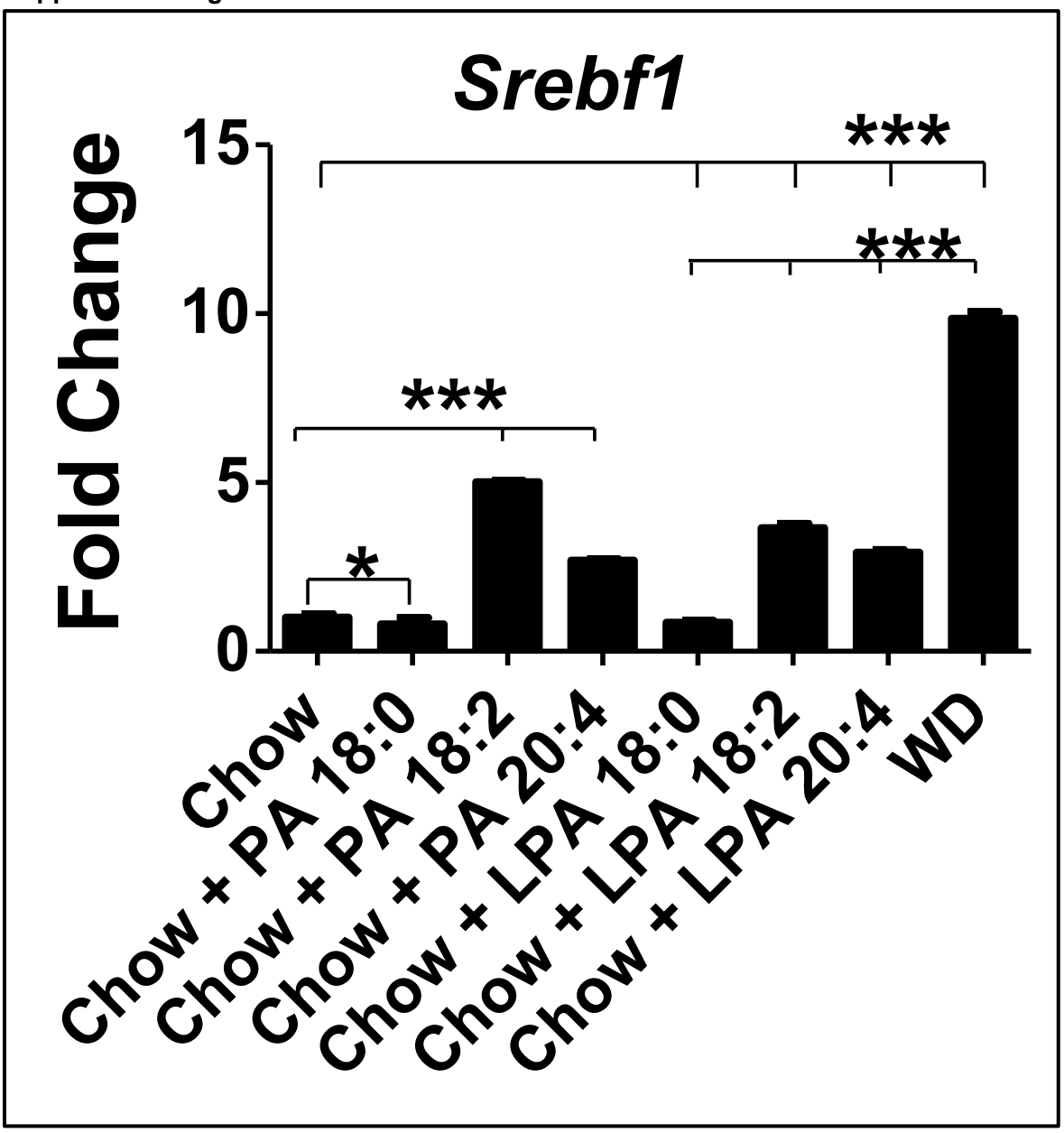
Supplemental Figure 5B.



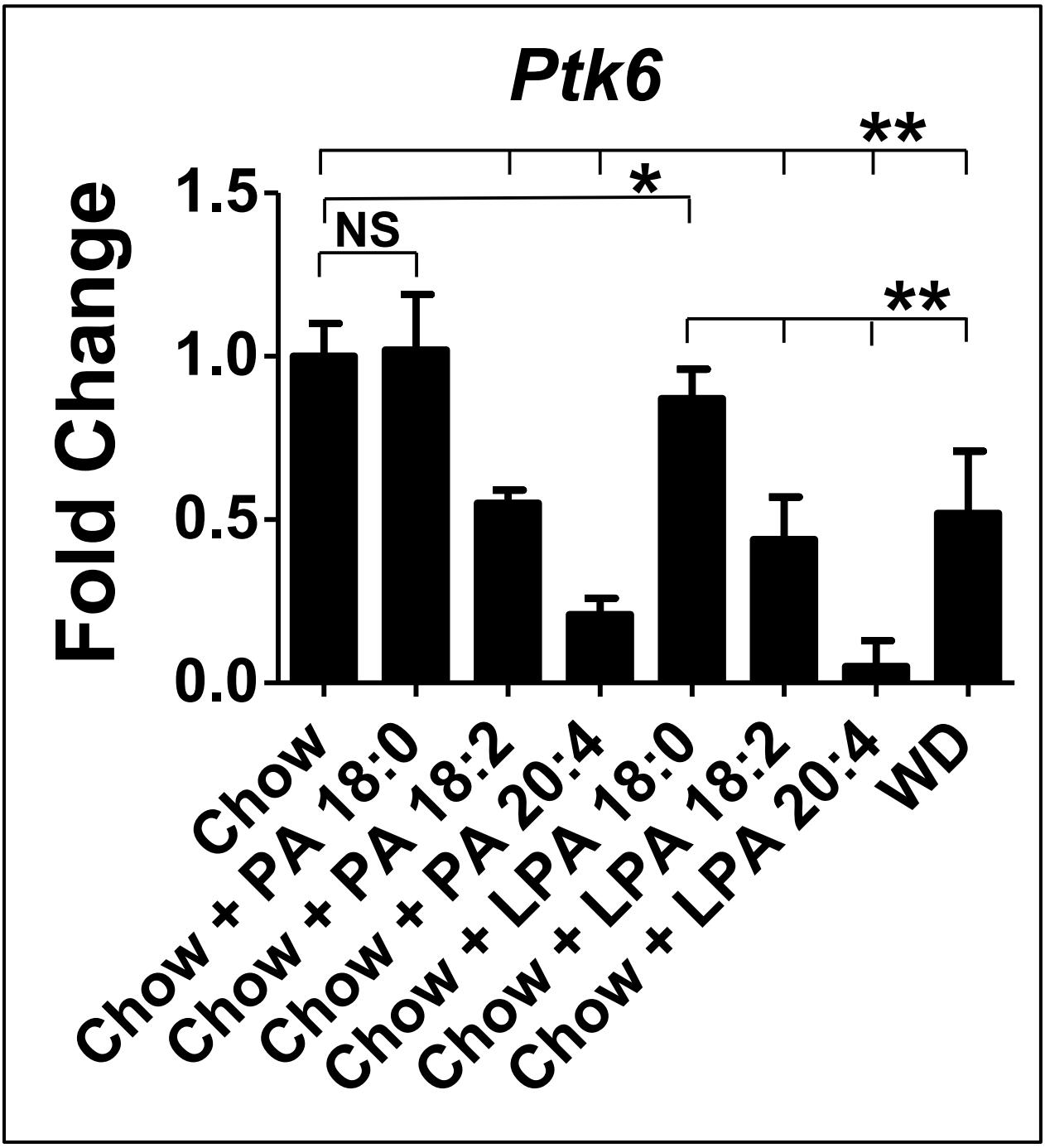
Supplemental Figure 5C.



Supplemental Figure 5D.

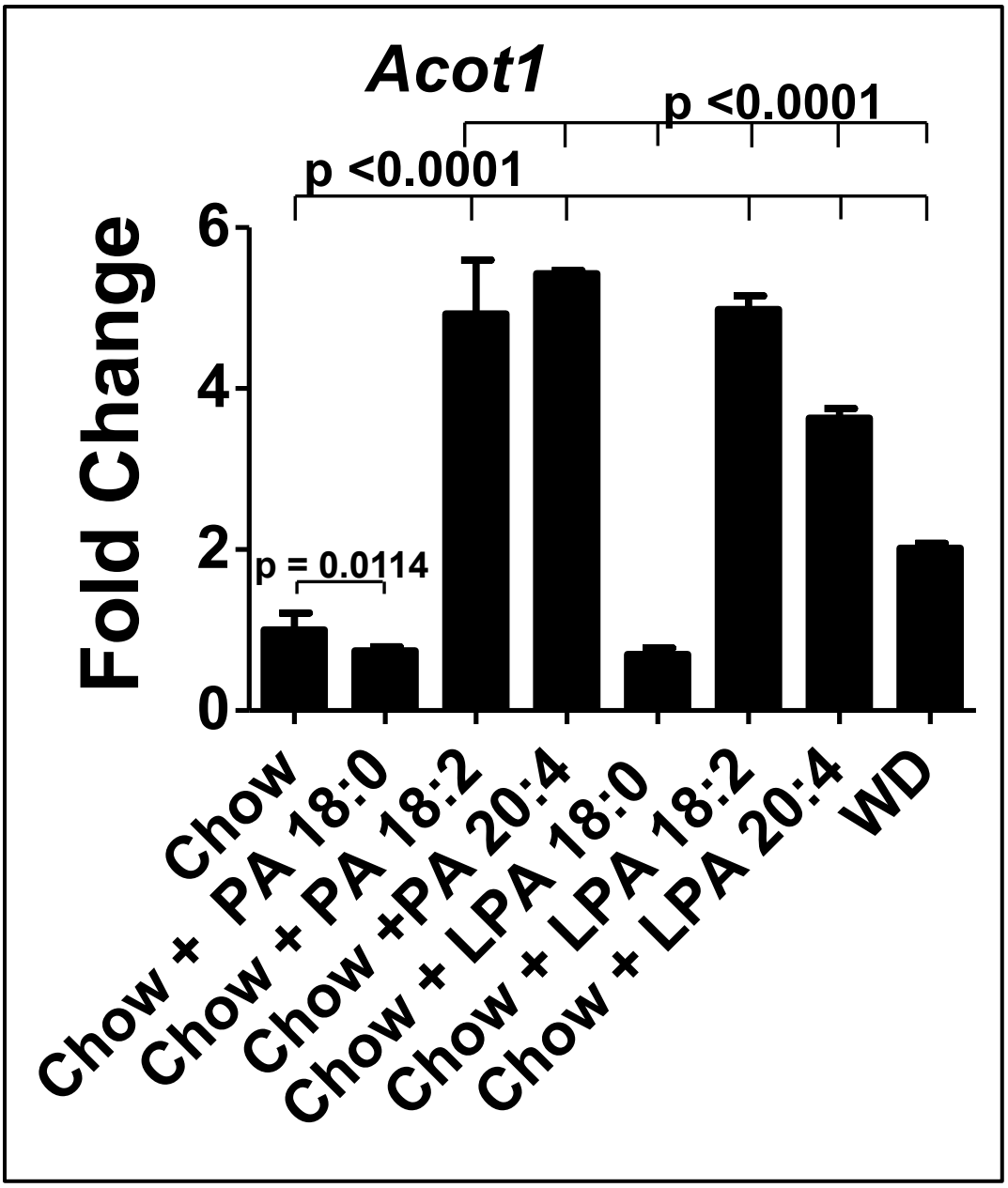


Supplemental Figure 5E.

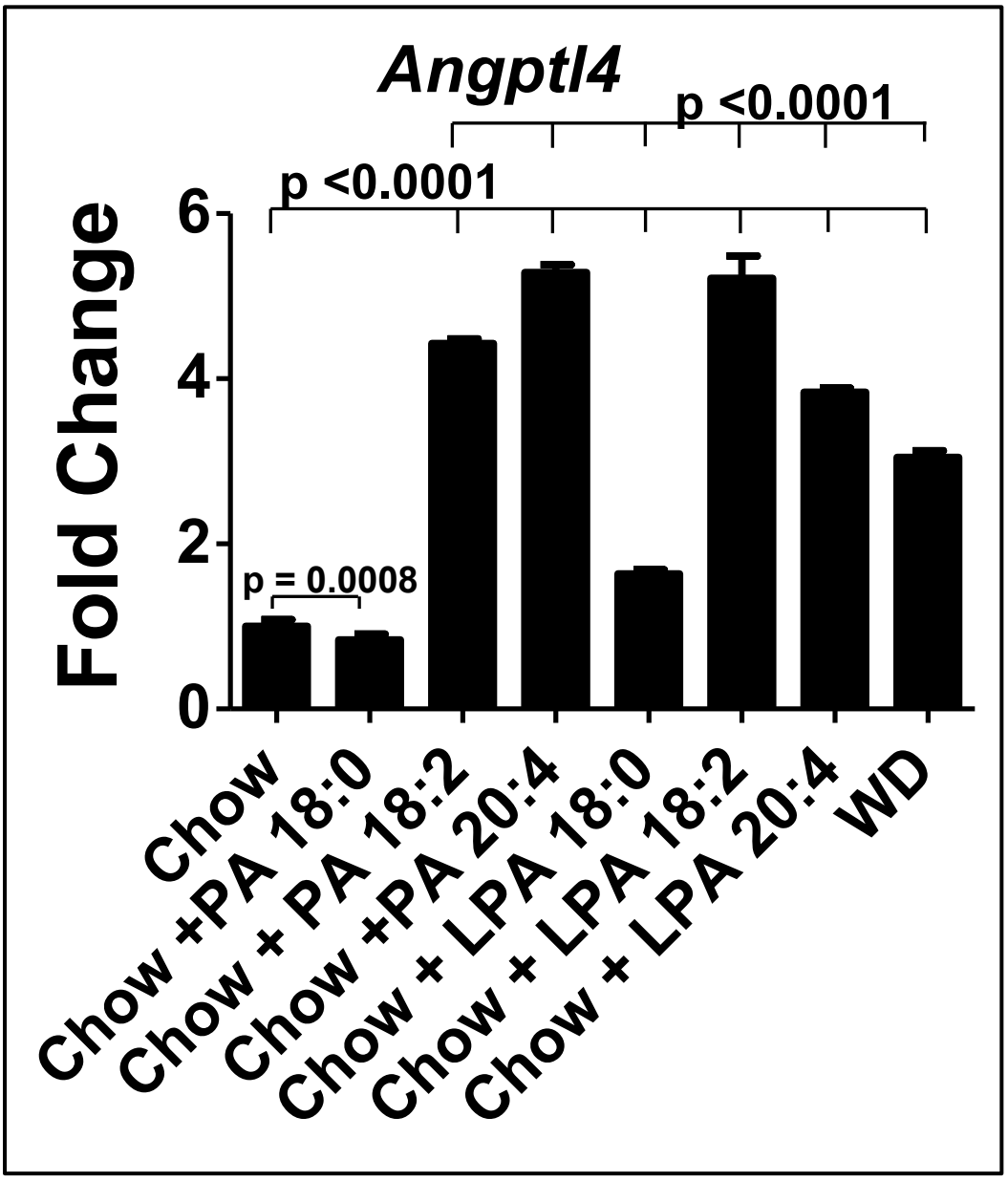


Supplemental Figures 6A and B. Addition of unsaturated phosphatidic acid (PA) or unsaturated lysophophatidic acid (LPA) to mouse chow produces changes in gene expression in the duodenum similar to that seen in the jejunum. RNA was isolated from the duodenum of the mice described in Figure 8 and was analyzed by RT-qPCR as described in Materials and Methods. The data shown are Mean ± SD.

Supplemental Figure 6A.



Supplemental Figure 6B.



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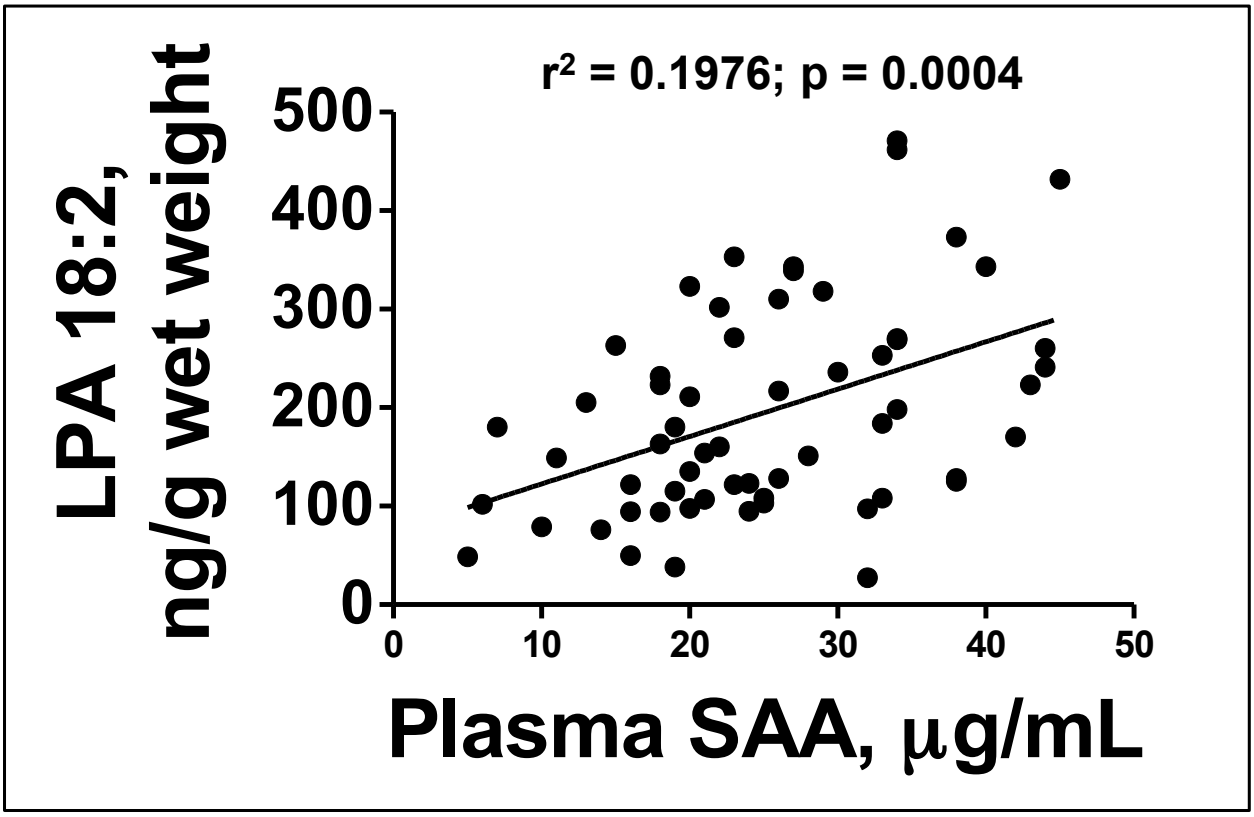
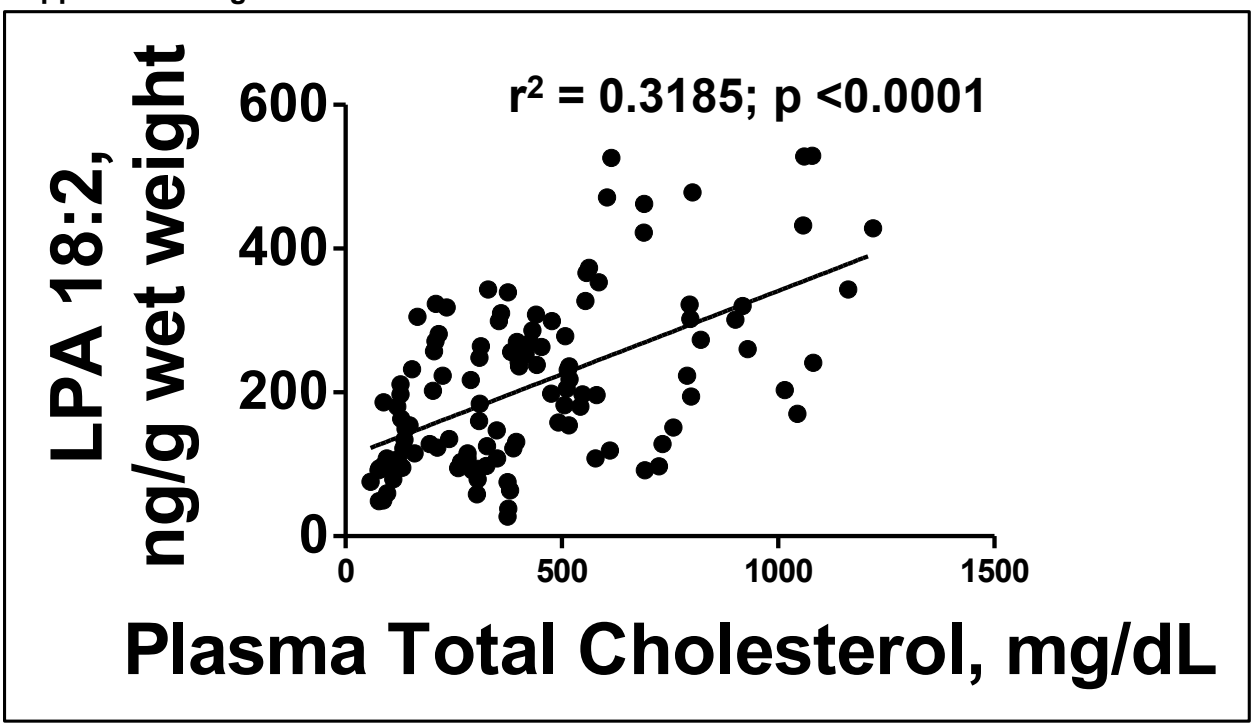
Supplemental Figures 7A - C. LPA 18:2 levels in the duodenum correlate with levels of plasma serum amyloid A (SAA), plasma total cholesterol and plasma triglycerides. Data from the mice described in Figure 12 were analyzed by linear regression as described in Materials and Methods to determine the correlation of the tissue levels of LPA 18:2 in the duodenum with plasma SAA (Panel A), plasma total cholesterol (Panel B) and plasma triglycerides (Panel C). LPA = lysophosphatidic acid.

Supplemental Figure 7A.



Supplemental Figure 7B.



Supplemental Figure 7C.