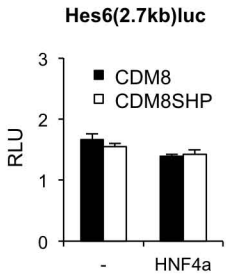
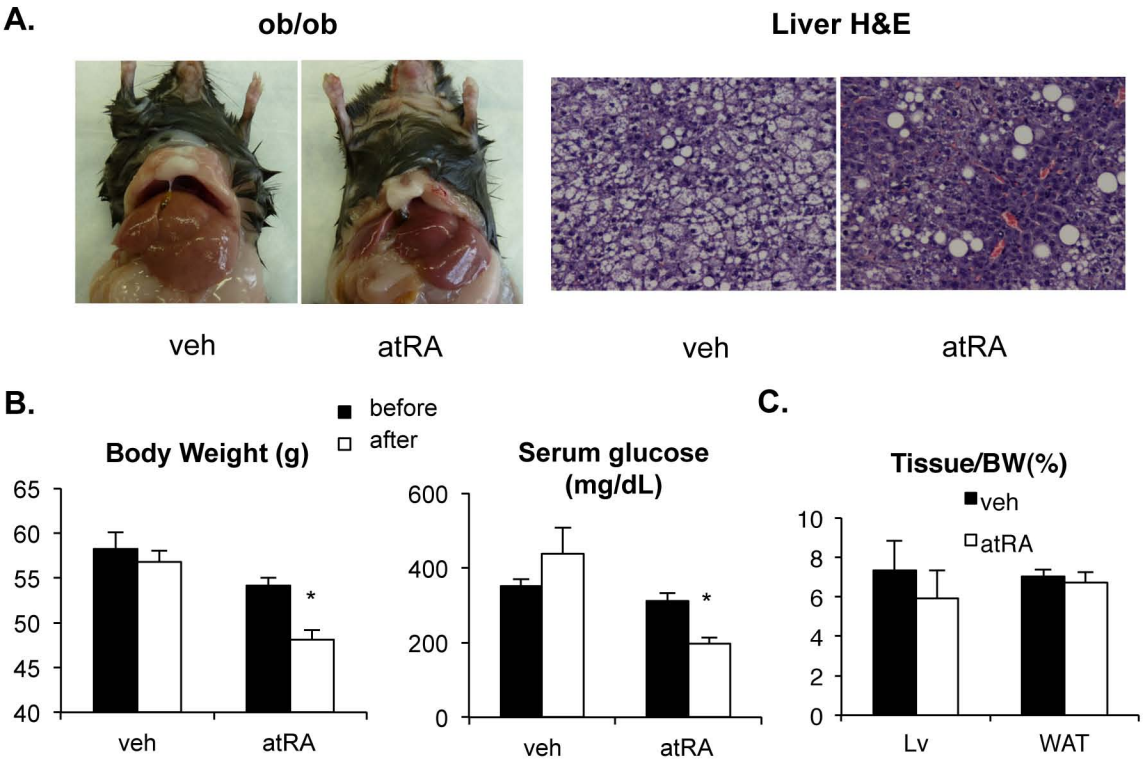
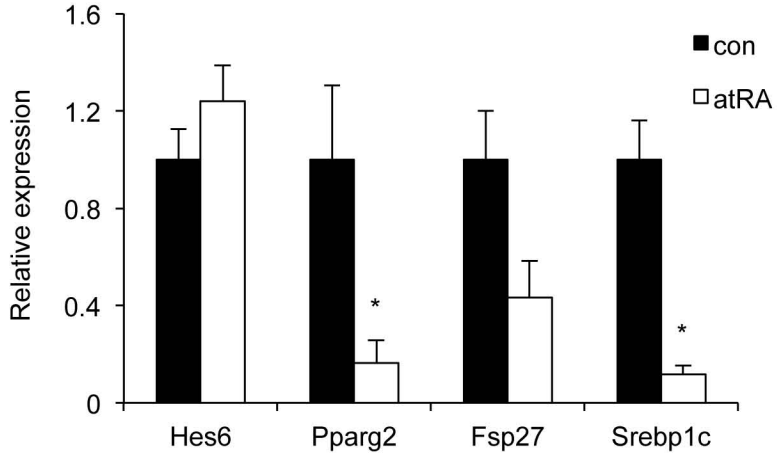


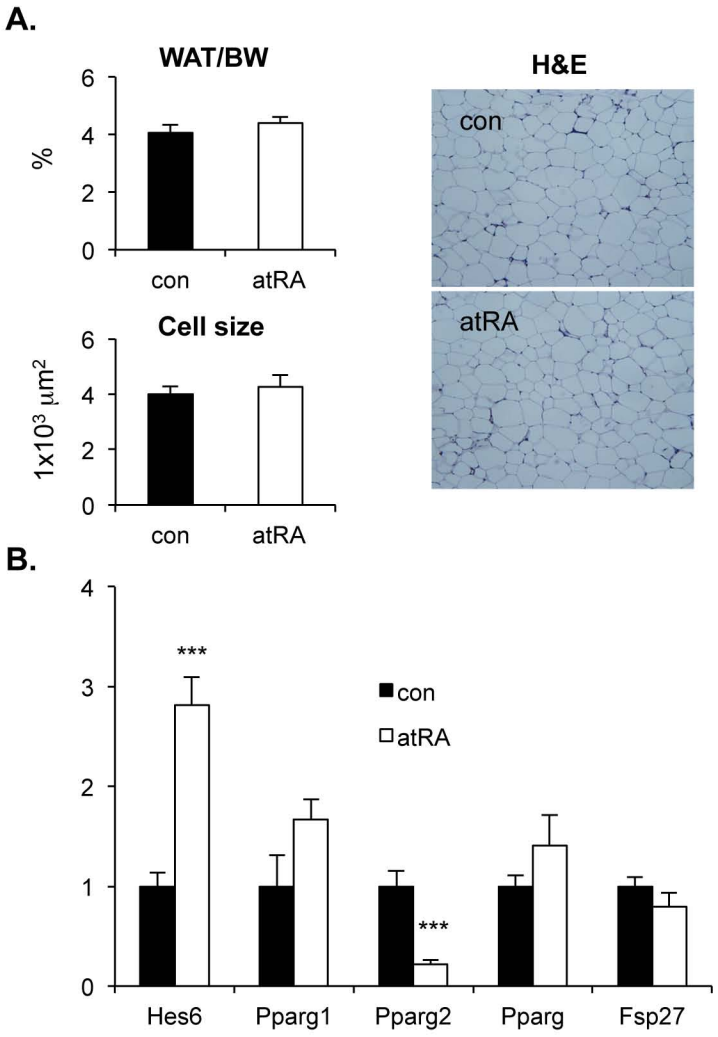
Supplemental Fig. 1. Hes6 promoter activity. Transient transfection assays were performed in Hela cells to determine 2.7kb mouse Hes6 promoter driven luciferase activity along with cotransfection of mammalian expression plasmids containing indicated transcription factor genes. The results are means of triplicates with standard deviation.



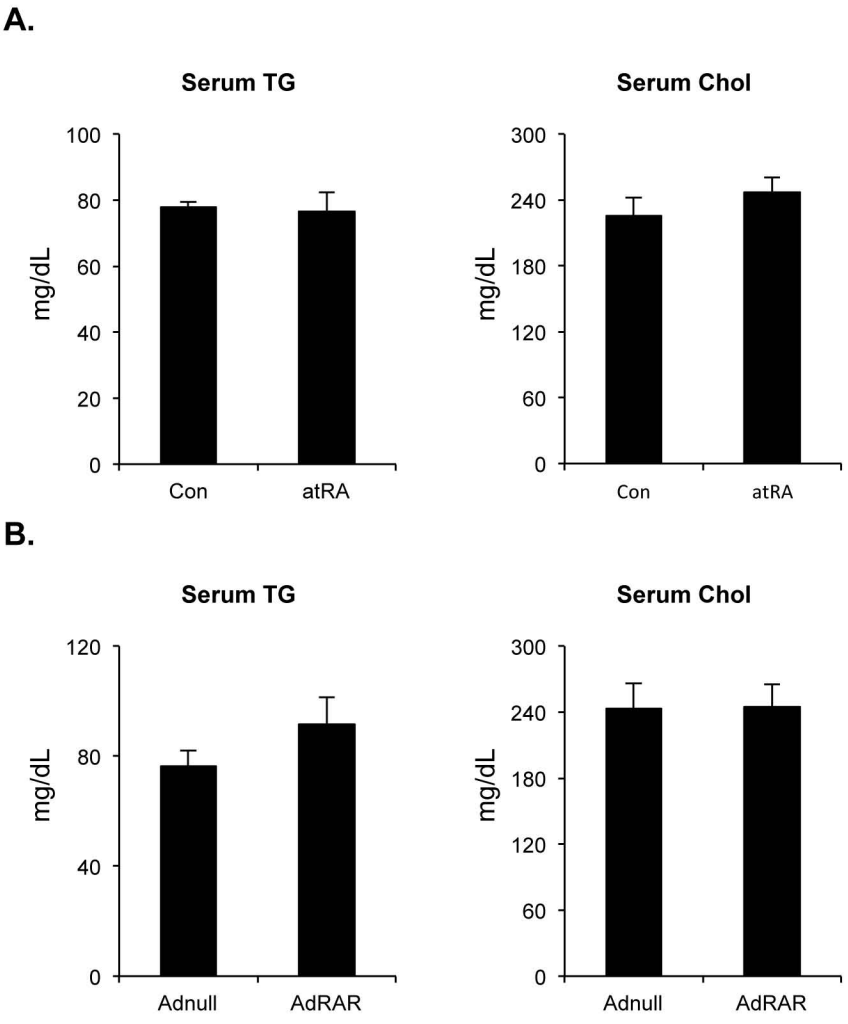
Supplemental Fig. 2. Effect of atRA in ob/ob mice. (A) ob/ob mice were orally administered corn oil containing vehicle or atRA (15mg/kg/day) for 5 days. Representative livers of these animals and their H&E staining sections are shown. (B) Body weights (left) and levels of non-fasting serum glucose (right) before and after atRA intervention on the ob/ob mice are presented as mean ± SEM (n=3). *, $p < 0.05$ vs. before (paired t-test). (C) Weight percentage of the livers (Lv) or epididymal fat (WAT) to body weight are shown.



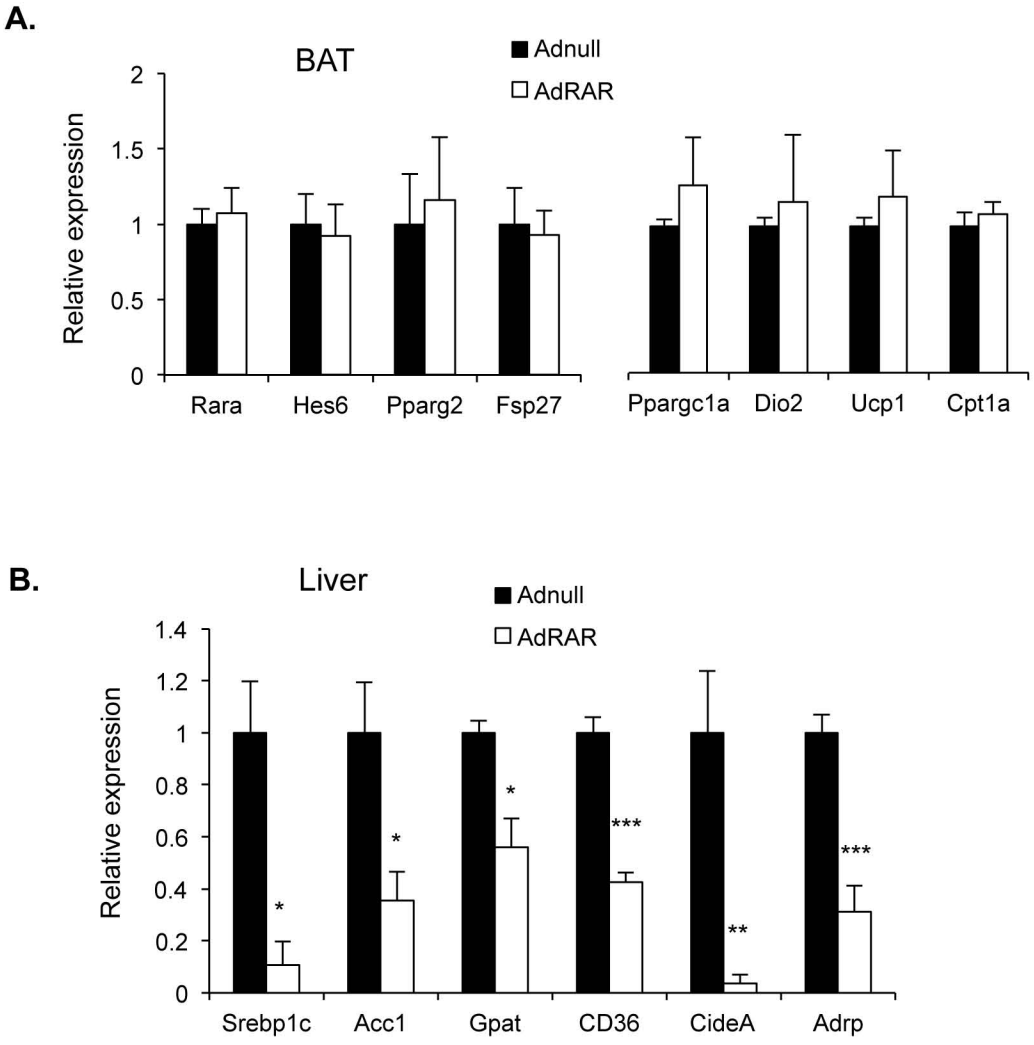
Supplemental Fig. 3. Effect of 7 day atRA treatment on the expression of genes in the liver of WestD-fed mice. Real-time PCR was performed to quantify the expression levels of genes for the proposed transcriptional cascade in the livers from vehicle or atRA treated mice described in Fig. 3. *; $p < 0.05$, n=5



Supplemental Fig. 4. Effect of atRA on white adipose tissues of WestD-fed mice. (A) Epididymal fat pads were isolated from the atRA or vehicle-treated mice described in Fig. 3. Their weight to body weight ratio and average of cell size were shown at left panel. The average cell size was calculated from images (100X) of H&E stained tissue sections (right panel) using OseteoMeasure software (OsteoMetrics). (B) Total RNAs isolated from the white adipose tissues were processed for real-time PCR analysis to measure mRNA levels of genes in the proposed transcriptional cascade. ***; $p < 0.005$



Supplemental Fig. 5. Serum lipid profiles of atRA-treated or RAR-overexpressed mice. Serum samples were collected from mice treated with atRA as described in Fig. 3 (A) or injected with AdRAR as described in Fig. 5 (B). Their triglyceride and cholesterol concentrations were measured and plotted as means ± SEM. None of the results are statistically different between groups.



Supplemental Fig. 6. Effect of AdRAR infection on the expression of genes in the liver and brown adipose tissue of WestD-fed mice. Real-time PCR was performed to quantify the expression levels of genes for the proposed transcriptional cascade (left) and energy expenditure (right) in brown adipose tissues (A) and lipogenic genes in the livers (B) and from the Adnull or AdRAR-infected mice described in Fig. 5. *; $p < 0.05$, **; $p < 0.01$, ***; $p < 0.005$.