Cholesterol 7α-hydroxylase-deficient mice are protected from high fat/high cholesterol diet-induced metabolic disorders

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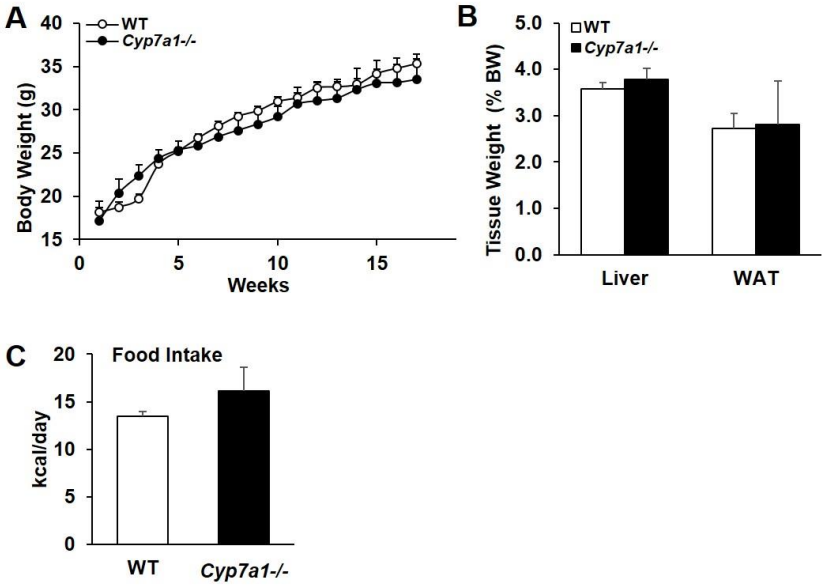
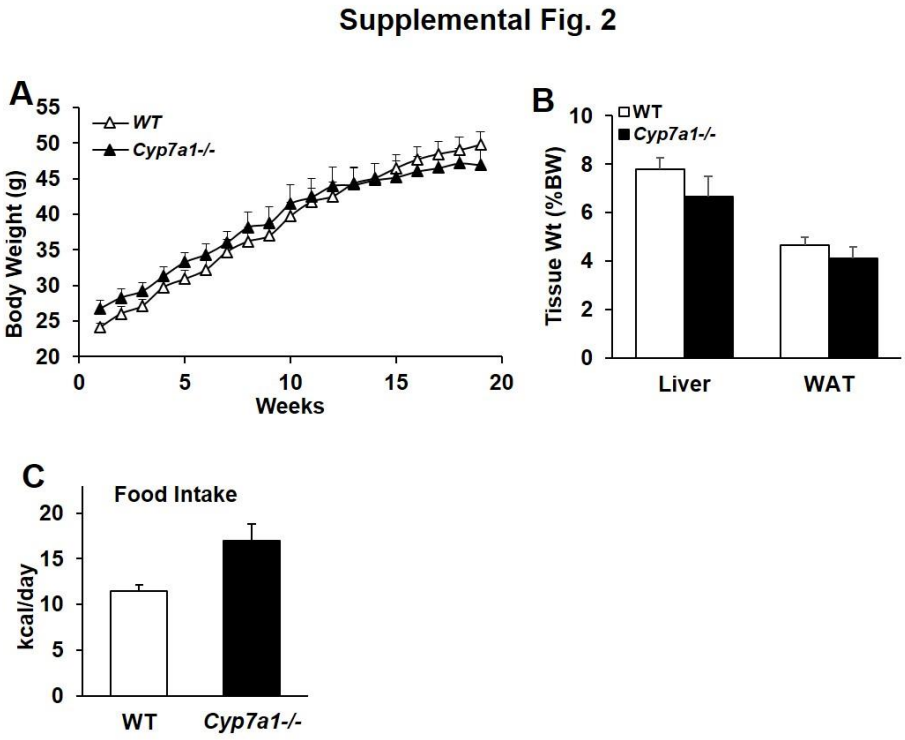
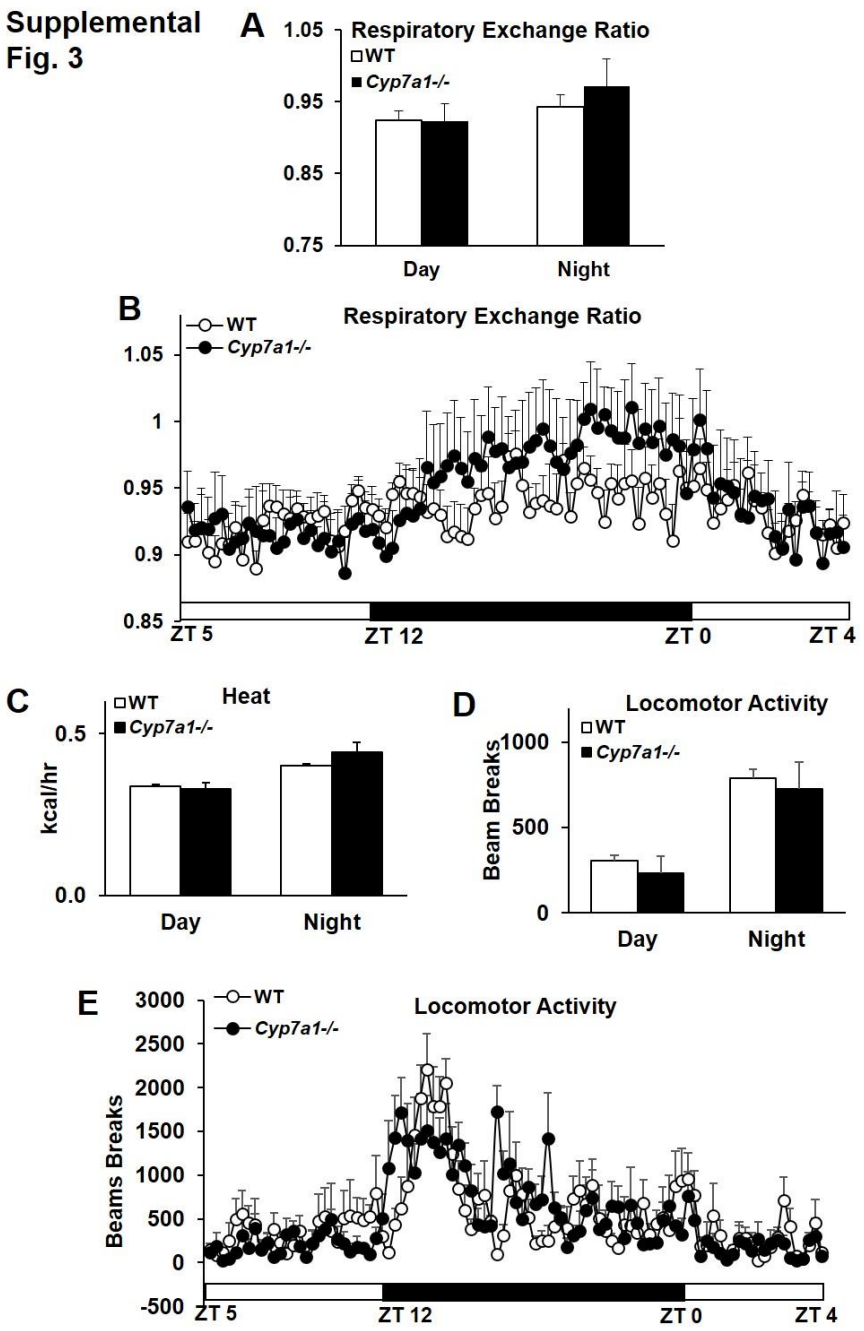
Supplemental Fig. 1



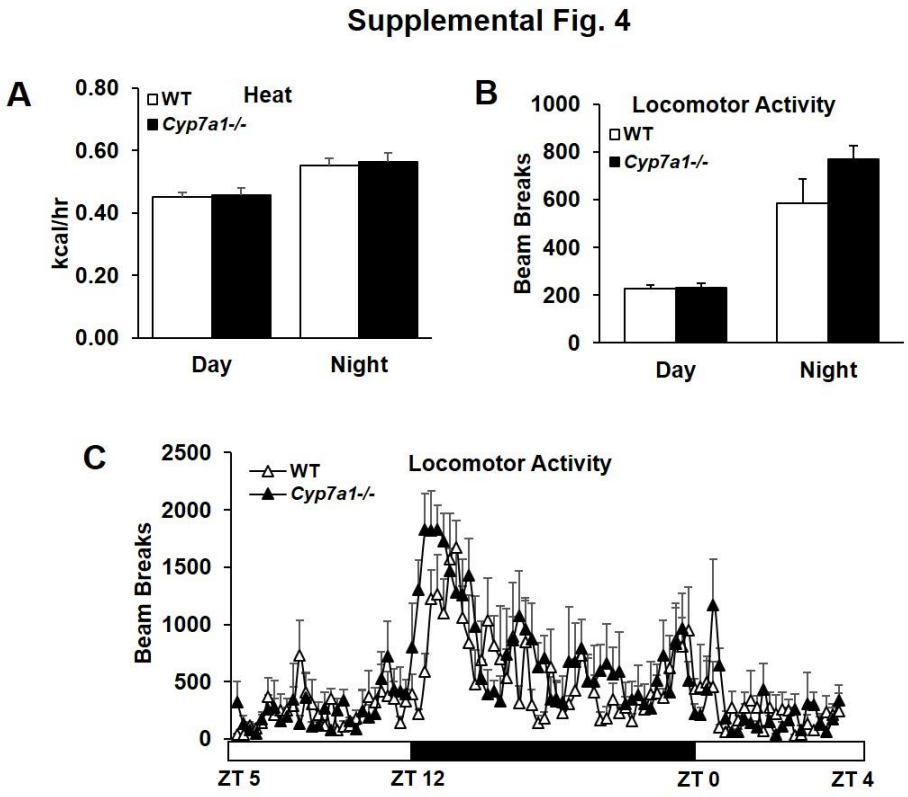
Supplemental Fig. 1. Physiological characteristics of *Cyp7a1*$^{-/-}$ mice maintained on chow diet. Male wild type and *Cyp7a1*$^{-/-}$ mice (n=5) were maintained on standard rodent chow diet until 23-26 weeks of age. **A.** Growth curve on chow diet, **B.** liver-to-body weight and white adipose-to-body weight ratios and **C.** daily average kcal intake were measured. White circle or bar (WT); black circle or bar (*Cyp7a1*$^{-/-}$), data were analyzed by Student's *t*-test and 1-way ANOVA.



Supplemental Fig. 2. Physiological characteristics of *Cyp7a1*$^{-/-}$ mice maintained on Western diet. Male wild type and *Cyp7a1*$^{-/-}$ mice (n=6) were maintained on high fat, high cholesterol Western diet for 18 weeks. **A.** Growth curve on Western diet, **B.** liver-to-body weight and white adipose-to-body weight ratios and **C.** daily average food intake were measured. White triangle or bar (WT), black triangle or bar (*Cyp7a1*$^{-/-}$), data were analyzed by Student's *t*-test and 1-way ANOVA, *indicates $p<0.05$.

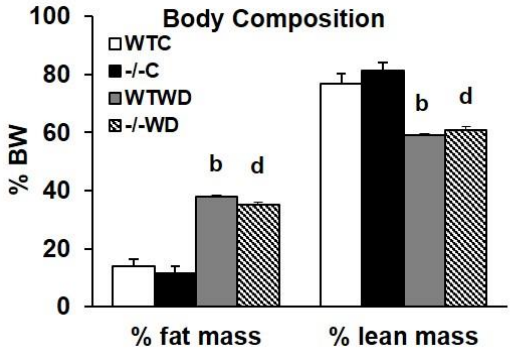


Supplemental Fig. 3. *Cyp7a1*$^{-/-}$ mice exhibit metabolic physiology similar to normal wild type mice. Male wild type and *Cyp7a1*$^{-/-}$ mice (n=5) were maintained on standard rodent chow diet until 23-26 weeks of age. **A.** and **B.** respiratory exchange ratio (RER), **C.** heat production and **D.** and **E.** locomotor activity did not differ by genotype. White circle or bar (WT); black circle or bar (*Cyp7a1*$^{-/-}$), data were analyzed by Student's *t*-test and 1-way ANOVA.

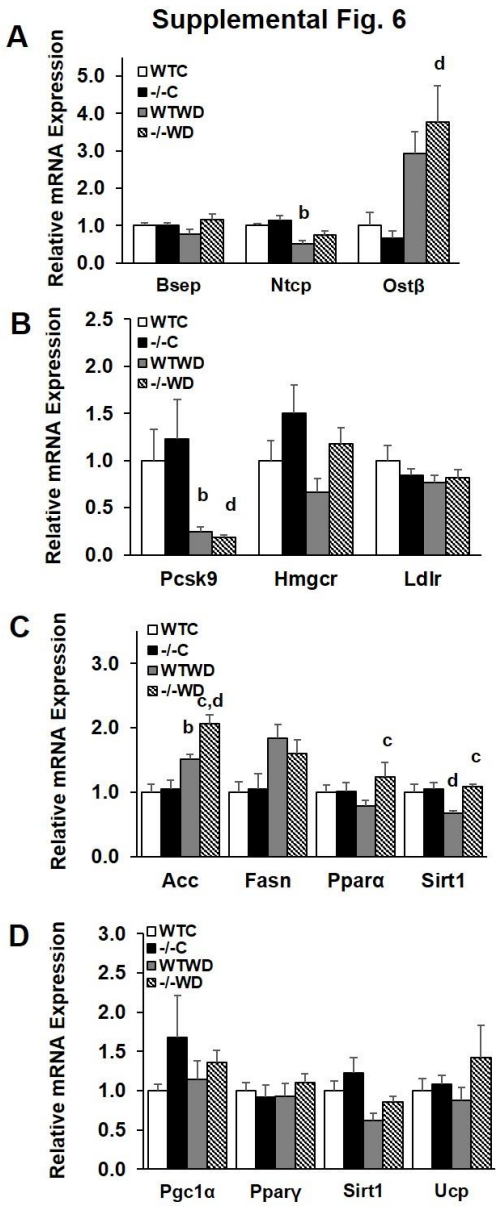


Supplemental Fig. 4. Increased RER is not due to energy production or locomotor activity in *Cyp7a1*$^{-/-}$ mice maintained on Western diet. Male wild type and *Cyp7a1*$^{-/-}$ mice (n=6) were maintained on high fat, high cholesterol Western diet for 18 weeks. **A.** heat production and **B.** and **C.** locomotor activity did not differ between genotype. White triangle or bar (WT); black triangle or bar (*Cyp7a1*$^{-/-}$), data were analyzed by Student's *t*-test and 1-way ANOVA.

Supplemental Fig. 5



Supplemental Fig. 5. *Cyp7a1*$^{-/-}$ mice have a similar body composition as wild type mice. Male wild type and *Cyp7a1*$^{-/-}$ mice were maintained on normal chow diet (n=5) or Western diet for 18 weeks (n=6). Mice were analyzed by EchoMRI to determine body composition (fat and lean mass normalized to body weight). WTC (WT chow), -/-C (*Cyp7a1*$^{-/-}$ chow), WTWD (WT Western diet), -/-WD (*Cyp7a1*$^{-/-}$ Western diet), data were analyzed by 1-way ANOVA followed by posthoc Bonferroni-Holm test where appropriate, "a" indicates genotype effect ($p<0.05$) within chow diet, "b" indicates diet effect ($p<0.05$) within WT genotype, "c" indicates genotype effect ($p<0.05$) within Western diet, "d" indicates diet effect ($p<0.05$) within *Cyp7a1*$^{-/-}$ genotype.



Supplemental Fig. 6. Gene expression in *Cyp7a1*$^{-/-}$ liver and brown adipose tissue. Male wild type and *Cyp7a1*$^{-/-}$ mice (n=5-6) were maintained on standard rodent chow diet or Western diet for 18 weeks. Relative mRNA expression of **A.** liver bile acid transport genes, **B.** liver cholesterol metabolism genes, **C.** liver lipid and energy metabolism genes and **D.** brown adipose metabolism genes. Data were analyzed by 1-way ANOVA followed by posthoc Bonferroni-Holm test where appropriate, "a" indicates genotype effect ($p<0.05$) within chow diet, "b" indicates diet effect ($p<0.05$) within WT genotype, "c" indicates genotype effect ($p<0.05$) within Western diet, "d" indicates diet effect ($p<0.05$) within *Cyp7a1*$^{-/-}$ genotype.