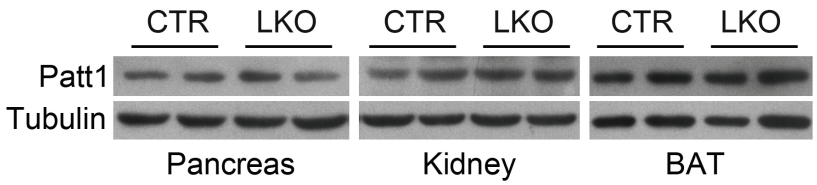
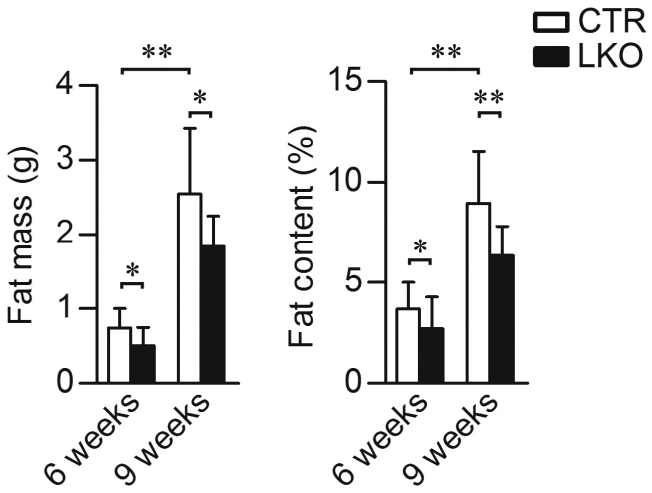
Supplemental information

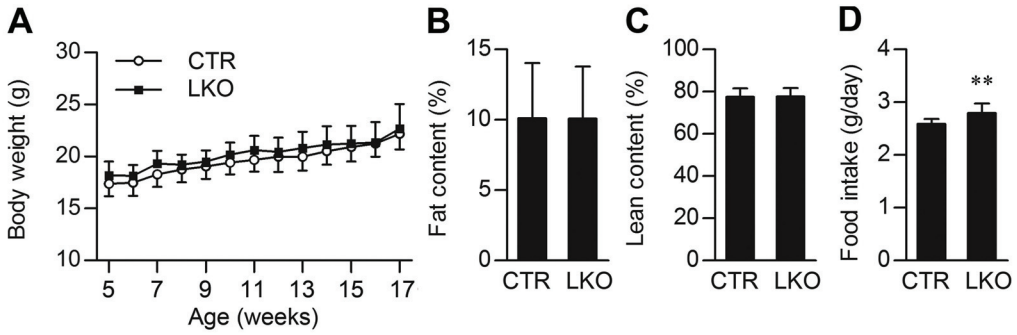
Supplementary figures



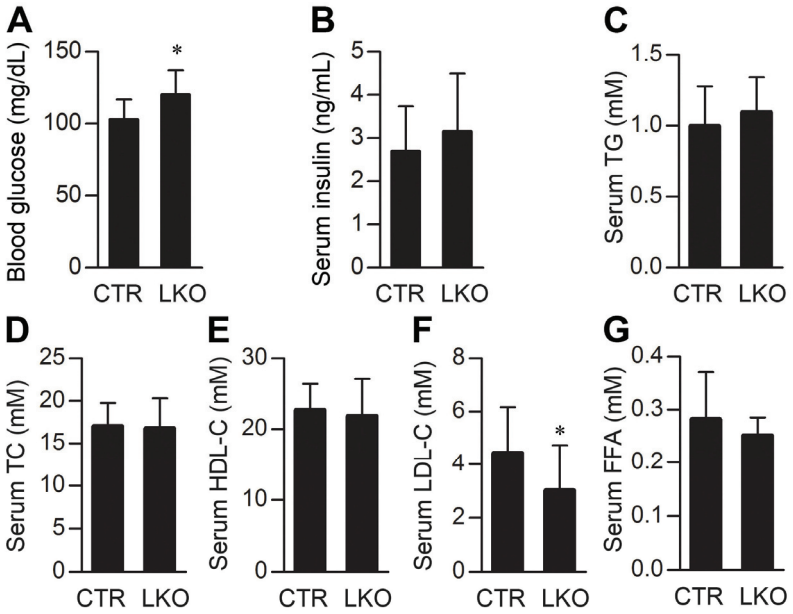
Supplementary Fig. S1. Patt1 protein levels remain unchanged in pancreas, kidney and brown adipose tissue (BAT) of Patt1 LKO mice. Expression of Patt1 was measured by immunoblot, and tubulin was measured as a loading control.



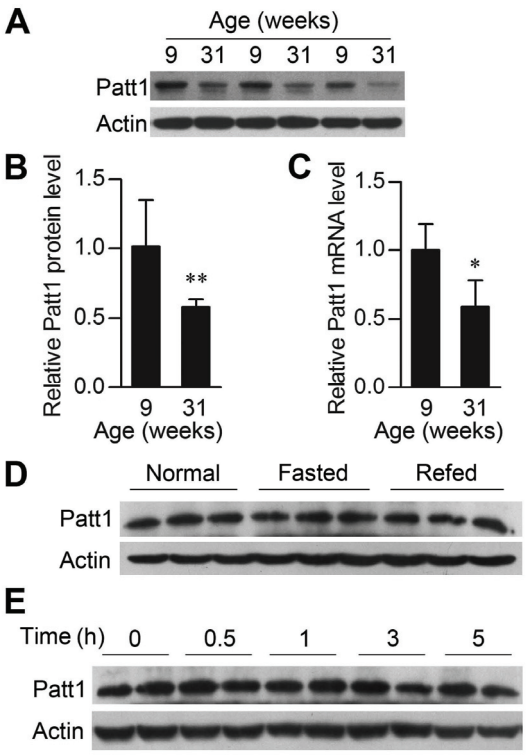
Supplementary Fig. S2. Male Patt1 LKO mice showed decreased fat mass and fat content at the age of 6 and 9 weeks. n = 8-12/group, *p< 0.05, **p < 0.01.



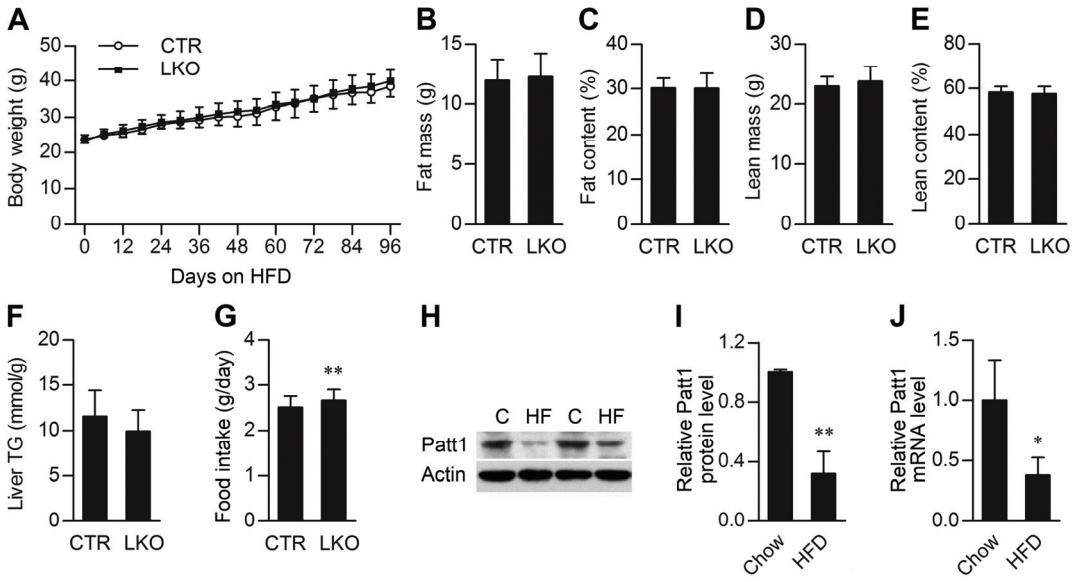
Supplementary Fig. S3. (A) Female Patt1 LKO mice exhibited similar body weight as their littermate controls. **(B and C)** Female Patt1 LKO mice at the age of 20 weeks exhibited similar fat content and lean content as their littermate controls. **(D)** Food intake of the female Patt1 LKO mice was slightly increased when monitored at the age of 15 to 17 weeks. n = 6-9/group, **p < 0.01.



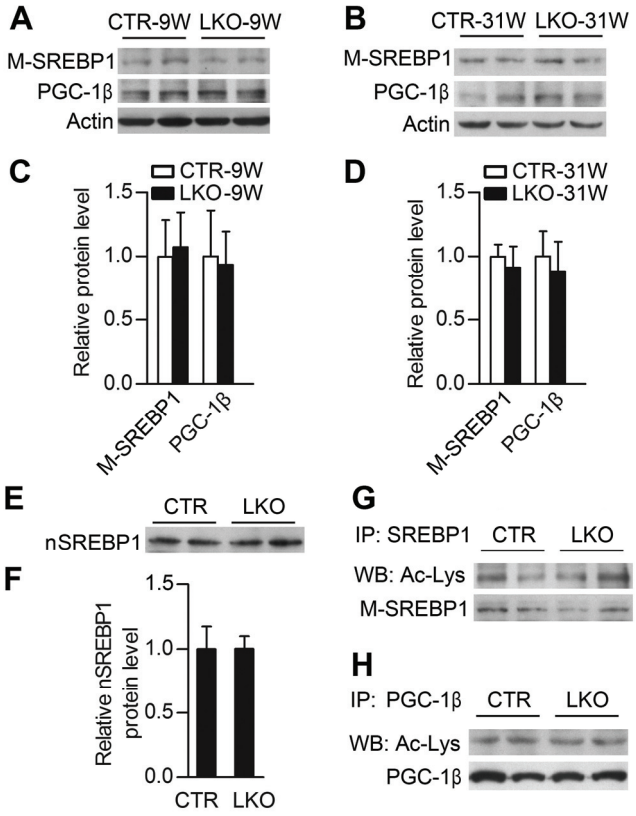
Supplementary Fig. S4. (A) Blood glucose was increased in 15-week-old male Patt1 LKO mice fasted for 14 h. **(B-G)** Serum insulin, triglyceride (TG), total cholesterol (TC), HDL-cholesterol (HDL-C) and free fatty acid (FFA) remained unchanged, while LDL-cholesterol (LDL-C) was attenuated in 31-week-old male Patt1 LKO mice fasted for 6 h. n = 10-12/group, *$p < 0.05$.



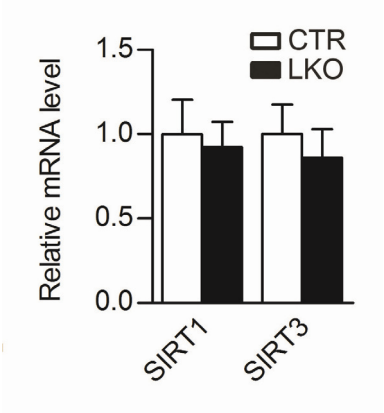
Supplementary Fig. S5. (A) Hepatic Patt1 protein level was downregulated in 31-week-old male mice compared with that in 9-week-old male mice. **(B)** Quantification of the Patt1 protein level in **(A)**. n = 6/group, **p < 0.01. **(C)** Hepatic Patt1 mRNA level was also downregulated in 31-week-old male mice. n = 6/group, *p < 0.05. **(D)** Hepatic Patt1 protein level remained unchanged in 9-week-old male mice fasted for 24 h, or fasted for 24 h and then refed for 24 h. n = 3. **(E)** Primary mouse hepatocytes treated with 100 nM insulin for the indicated times had similar Patt1 protein level.



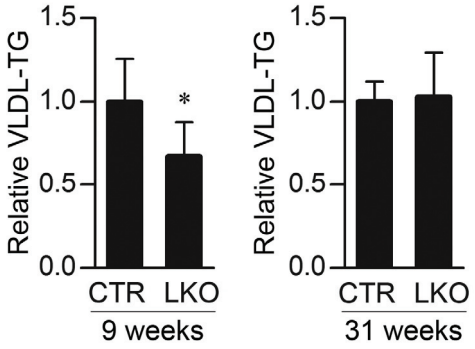
Supplementary Fig. S6. (A-F) After fed HFD for 14 weeks, body weight, fat mass, fat content, lean mass, lean content and liver triglyceride were similar between the 22-week-old male Patt1 LKO mice and their littermate controls. n = 12/group. **(G)** Food intake was increased in male Patt1 LKO mice fed HFD when monitored at the age of 15-17 weeks. n = 12/group, **p < 0.01. **(H)** Hepatic Patt1 protein level was dramatically decreased in the 22-week-old mice fed HFD (HF) for 14 weeks compared with that in mice fed chow (C). **(I)** Quantification of the Patt1 protein level in **(H)**. n = 6/group, **p < 0.01. **(J)** Hepatic Patt1 mRNA level was also significantly downregulated in the 22-week-old mice fed HFD for 14 weeks. n = 6/group, *p< 0.05.



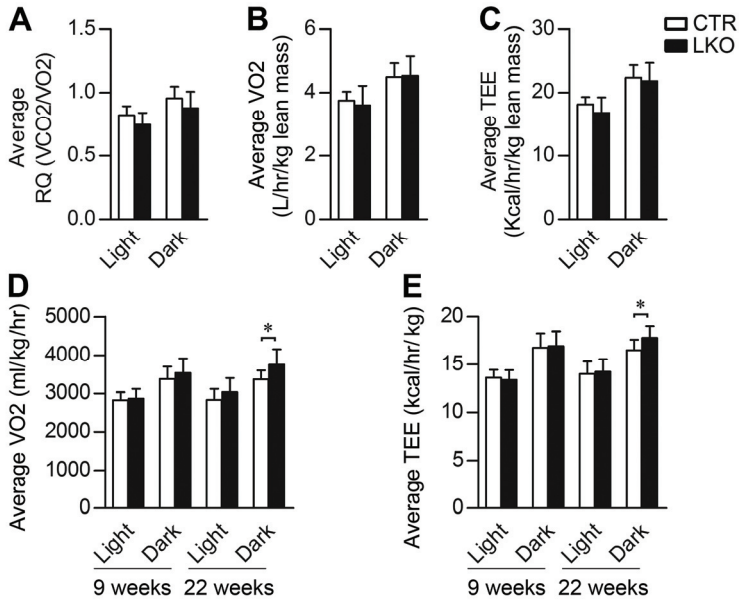
Supplementary Fig. S7. (A and B) Mature SREBP1 (M-SREBP1) and PGC-1β protein levels remained unchanged in the liver of male Patt1 LKO mice at the age of 9 or 31 weeks. **(C and D)** Quantification of the indicated protein levels in **(A and B)**. n = 3. **(E)** Nuclear SREBP1 (nSREBP1) was not affected by hepatic Patt1 knockout. Liver nuclear extracts with equal amount of total protein from 15-week-old male Patt1 LKO mice and the littermate controls were subjected to immunoblot analysis. **(F)** Quantification of the nuclear SREBP1 protein levels in **(E)**. n = 3. **(G and H)** Acetylation of mature SREBP1 and PGC-1β was similar between male Patt1 LKO mice and the littermate controls. Liver lysates from 9-week-old male Patt1 LKO mice and the littermate controls were immunoprecipitated with the indicated antibodies and then measured by western blot.



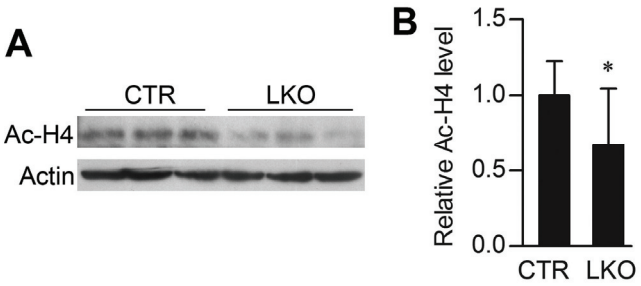
Supplementary Fig. S8. SIRT1 and SIRT3 mRNA levels were unchanged in 9-week-old male Patt1 LKO mice compared with those in littermate controls. n = 6/group.



Supplementary Fig. S9. Serum triglyceride in VLDL (VLDL-TG) was significantly downregulated in 9-week-old but not 31-week-old male Patt1 LKO mice. n = 6-8/group, *$p < 0.05$.



Supplementary Fig. S10. (A-C) 9-week-old male Patt1 LKO mice showed similar respiratory quotient (RQ), oxygen consumption (VO2) and total energy expenditure (TEE) when measured by a comprehensive laboratory animal monitoring system. n = 6-8/group. **(D-E)** Oxygen consumption and total energy expenditure normalized to body weight during the dark phase were increased in 22-week-old but not 9-week-old male Patt1 LKO mice when compared with littermate controls. n = 6-10/group, *p < 0.05.



Supplementary Fig. S11. (A) Acetylated of histone H4 (Ac-H4) was decreased in 31-week-old male Patt1 LKO mice when measured by immunoblot. **(B)** Quantification of the acetylated histone H4 in **(A)**. n = 9, *p < 0.05.

Supplemental Table 1

Primers used in real-time PCR.

Gene	Forward primer	Reverse primer
CD36	5’-ATGGGCTGTGATCGGAACTG-3’	5’-GTCTTCCCAATAAGCATGTCTCC-3’
FATP	5’-CACGATCCCGTGCATCTTCC-3’	5’-AGCATTGGAGTAGGTGTCCAG-3’
PPARα	5’-GAGAAGTTGCAGGAGGGGATTGTG-3’	5’-AAGACTACCTGCTACCGAAATGGG-3’
PPARγ	5’-GTGCCAGTTTCGATCCGTAGA-3’	5’-GGCCAGCATCGTGTAGATGA-3’
C/EBPα	5’-GAACAGCAACGAGTACCGGGTA-3’	5’-GCCATGGCCTTGACCAAGGAG-3’
LXRα	5’- GCAGGACCAGCTCCAAGTAG-3’	5’- GGCTCACCAGCTTCATTAGC-3’
SREBP1C	5’- GGAGCCATGGATTGCACATT -3’	5’-GGAAGTCACTGTCTTGGTTGTTGA -3’
ACL	5’-TGGATGCCACAGCTGACTAC-3’	5’-GGTTCAGCAAGGTCAGCTTC-3’
ACC1	5’-TGAATCTCACGCGCCTACTATG-3’	5’-ATGACCCTGTTGCCTCCAAAC-3’
FAS	5’-AAGTTGCCCGAGTCAGAGAA-3’	5’-CGTCGAACTTGGAGAGATCC-3’
ELOVL6	5’-GAAAAGCAGTTCAACGAGAACG-3’	5’-AGATGCCGACCACCAAAGATA-3’
SCD1	5’-TTCTTGCGATACACTCTGGTGC-3’	5’-CGGGATTGAATGTTCTTGTCGT-3’
GPAT	5’-ACAGTTGGCACAATAGACGTTT-3’	5’-CCTTCCATTTCAGTGTTGCAGA-3’
DGAT1	5’-TGTTCAGCTCAGACAGTGGTT-3’	5’-CCACCAGGATGCCATACTTGAT-3’
DGAT2	5’-GCGCTACTTCCGAGACTACTT-3’	5’-GGGCCTTATGCCAGGAAACT-3’
Patt1	5’-TGCAGACGATGTATGAGCAA-3’	5’-CACATCAAACCGGAAGTGAG-3’
SIRT1	5’-GCCAGAGTCCAAGTTTAGAAGA-3’	5’-CCATCAGTCCCAAATCCAG-3’
SIRT3	5’-TCTATACACAGAACATCGACGGG-3’	5’-AGACCGTGCATGTAGCTGTTA-3’
Actin	5’-GGCTGTATTCCCCTCCATCG-3’	5’-CCAGTTGGTAACAATGCCATGT-3’