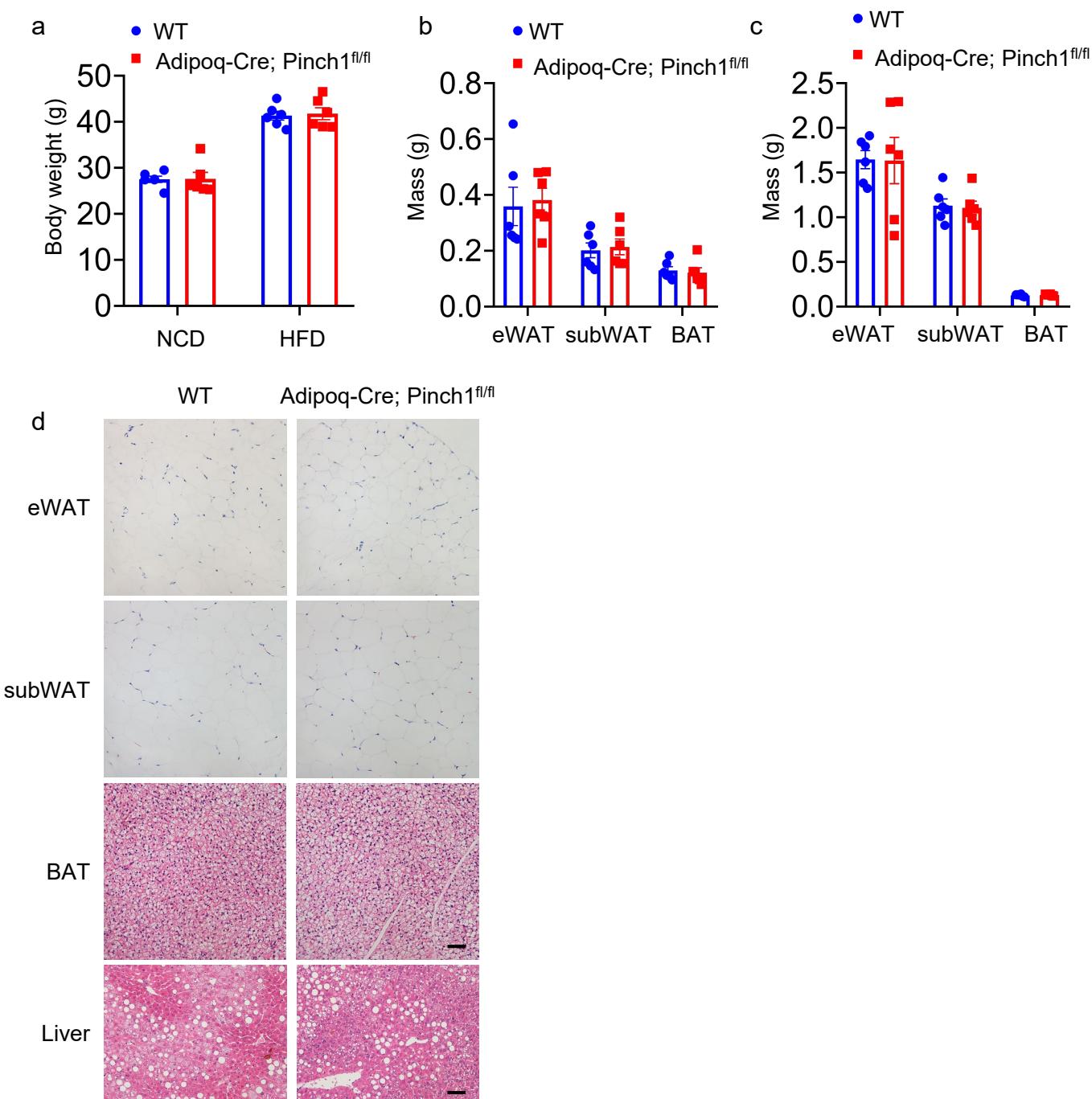
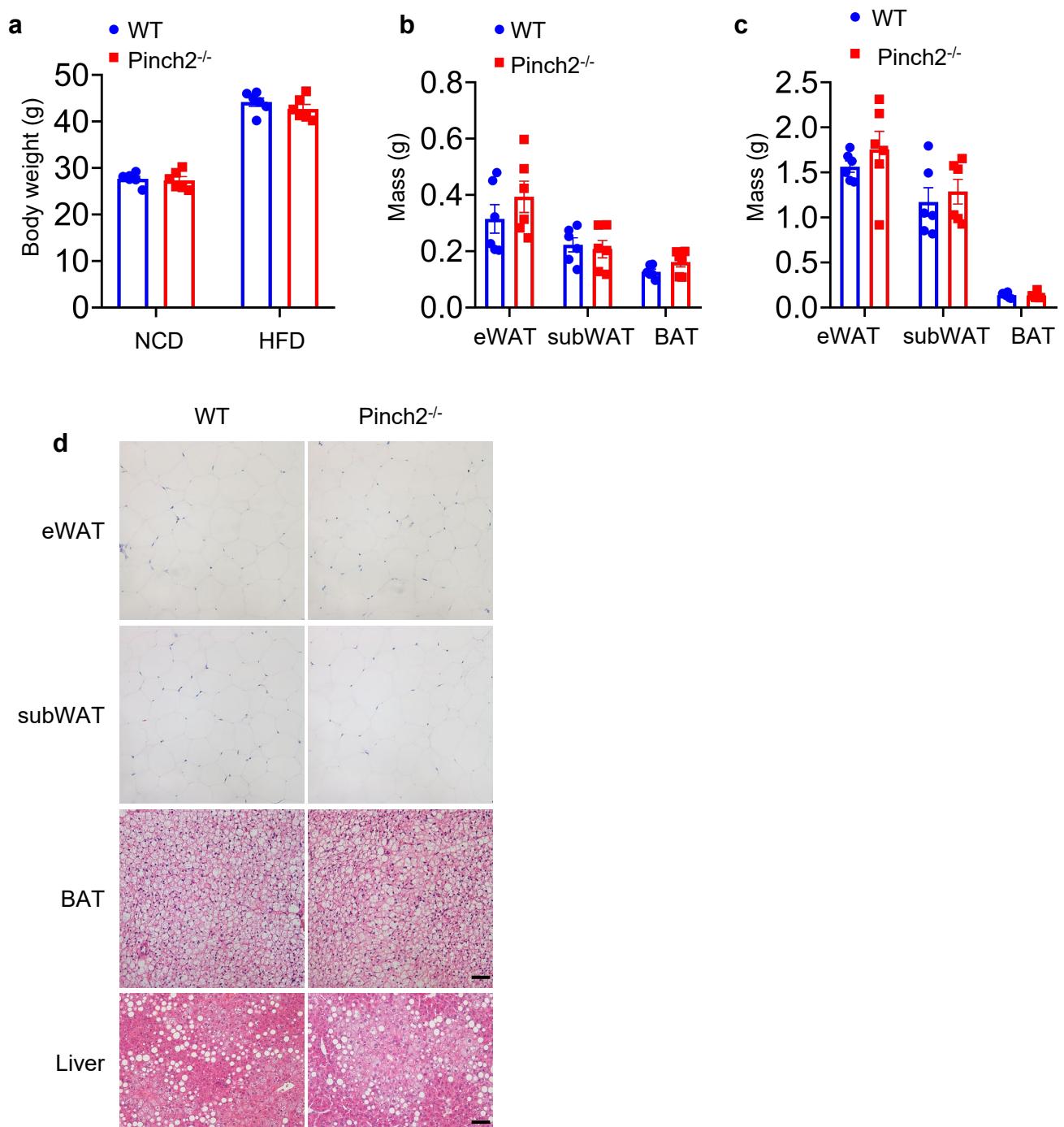


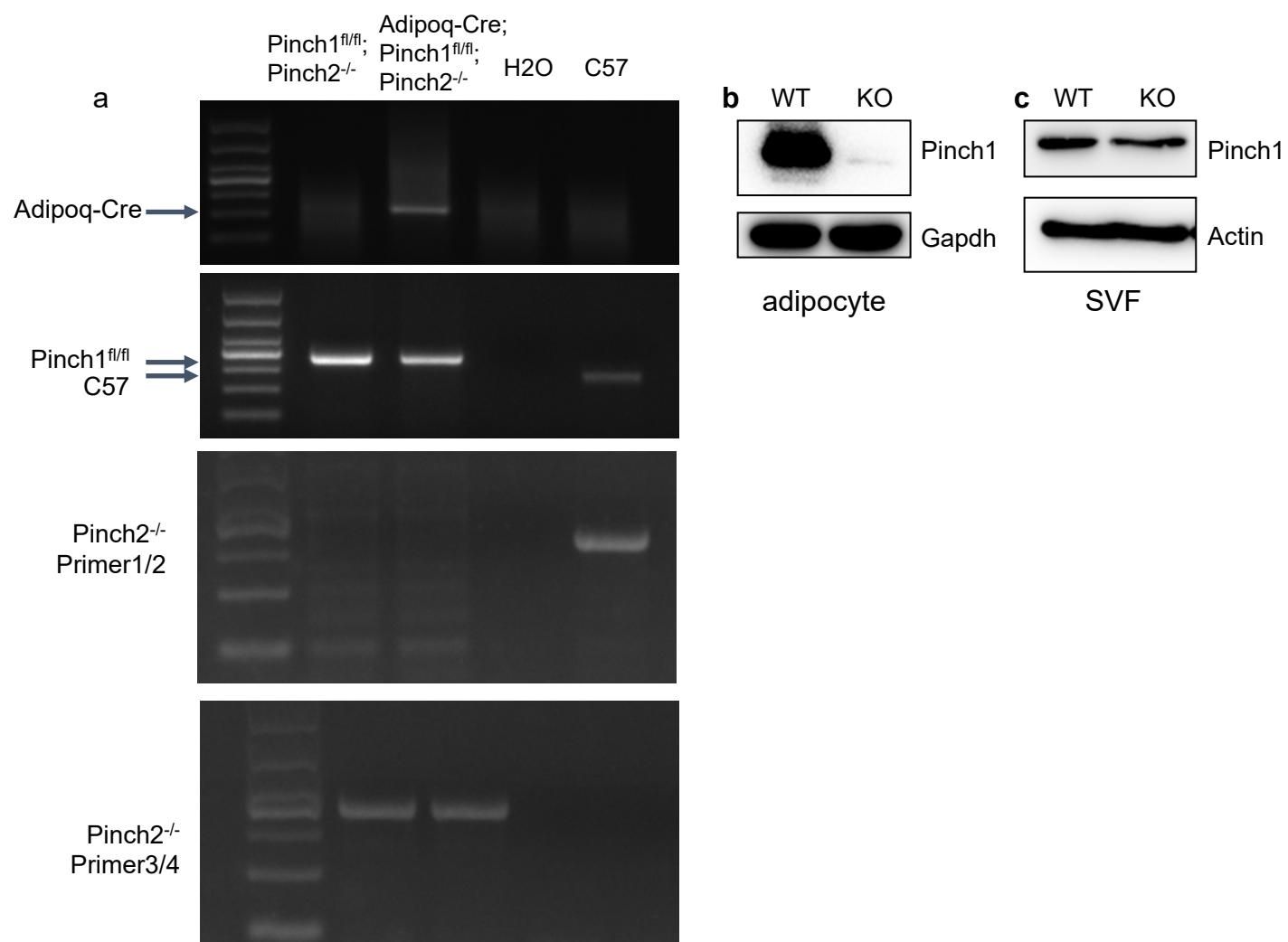
Figure s1



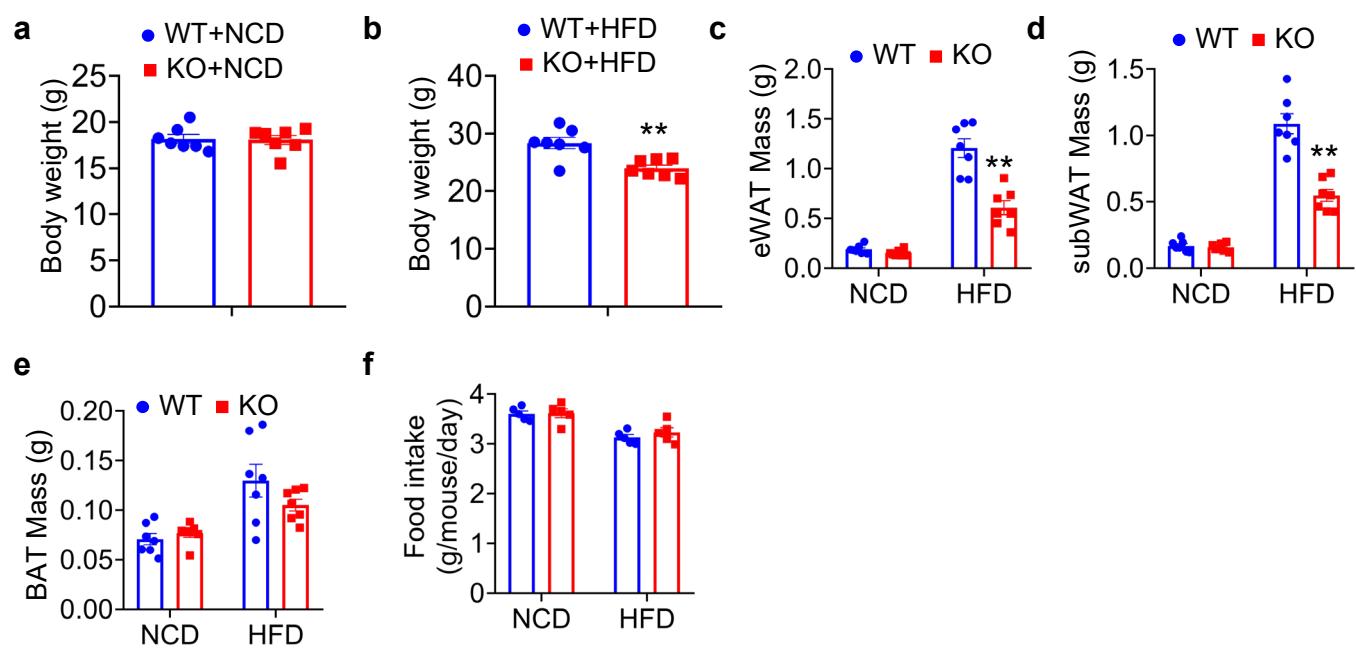
Supplementary Figure 1. Effects of Pinch1 deletion in adipocytes on body weight, fat mass, fat and liver histology in mice. (a) Body weight in control mice and *Adipoq-Cre; Pinch1^{fl/fl}* mice fed on NCD and HFD for 12 weeks. (b) eWAT, subWAT and BAT weight in control and *Adipoq-Cre; Pinch1^{fl/fl}* male mice fed on NCD for 12 weeks. $N = 6$. (c) eWAT, subWAT and BAT weight in control and *Adipoq-Cre; Pinch1^{fl/fl}* male mice fed on HFD for 12 weeks. $N = 6$. (d) H&E staining of eWAT, subWAT and BAT sections from control and *Adipoq-Cre; Pinch1^{fl/fl}* mice under HFD condition for 12-weeks. Scale bar: 50 μ m. Data are mean \pm SEM.



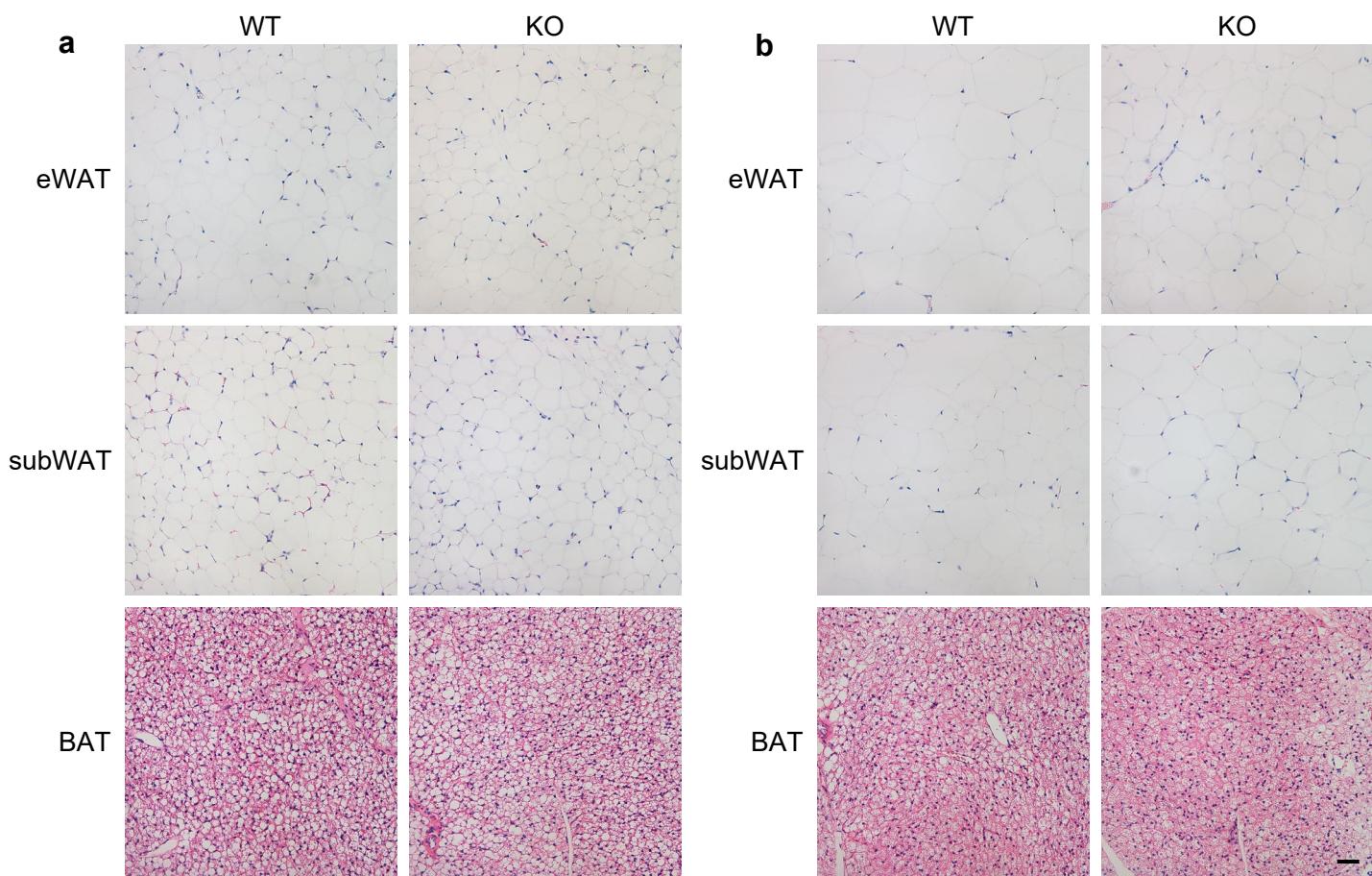
Supplementary Figure 2. Global knockout of Pinch2 has no effects on body weight and fat mass under NCD and HFD feeding. (a) Body weight in control and Pinch2 KO male mice under NCD and HFD for 12 weeks. (b) eWAT, subWAT and BAT weight in control and Pinch2 KO male mice under NCD for 12 weeks. (c) eWAT, subWAT and BAT weight in control and Pinch2 KO male mice under HFD for 12 weeks. $N = 6$. (d) H&E staining of eWAT, subWAT and BAT sections from control and Pinch2 KO mice under HFD condition. Scale bar: 50 μ m. Data are mean \pm SEM.



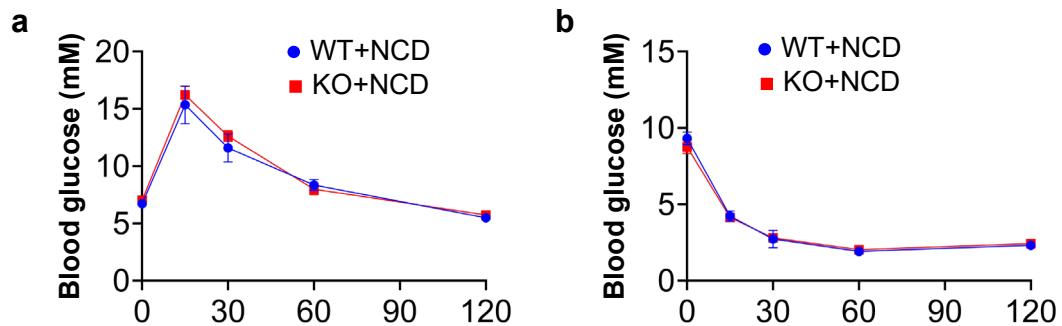
Supplementary Figure 3. Pinch1 deletion in adipocytes in mice. (a) PCR genotyping. **(b, c)** Representative western blotting images of Pinch1 protein expression in adipocytes **(b)** and SVF **(c)** isolated from fat pads.



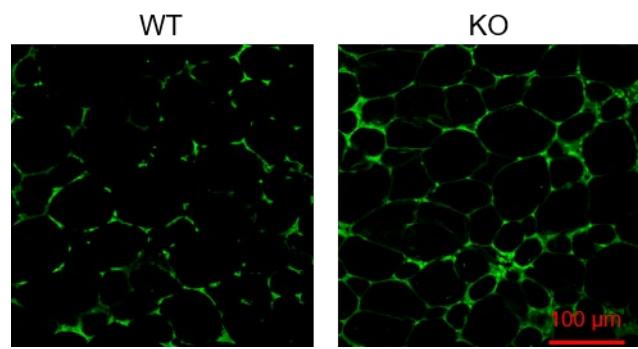
Supplementary Figure 4. Pinch deletion in adipocytes results in adipose tissue expansion defect in female mice. (a) Body weight in control and KO female mice under NCD for 12 weeks. (b) Body weight in control and KO female mice under HFD for 12 weeks. (c-f) eWAT, subWAT, BAT and food intake in control and KO female mice under NCD and HFD condition for 12 weeks. $N = 7$. Data are mean \pm SEM. * $P < 0.05$ and ** $P < 0.01$ by Student's t test.



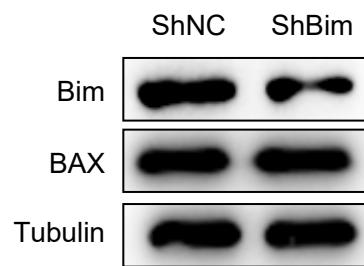
Supplementary Figure 5. Effect of Pinch deletion in adipocytes on fat histology in female mice. (a,b) H&E staining of eWAT, subWAT and BAT sections from control and KO female mice under NCD (a) and HFD (b) conditions. Scale bar: 50 μ m.



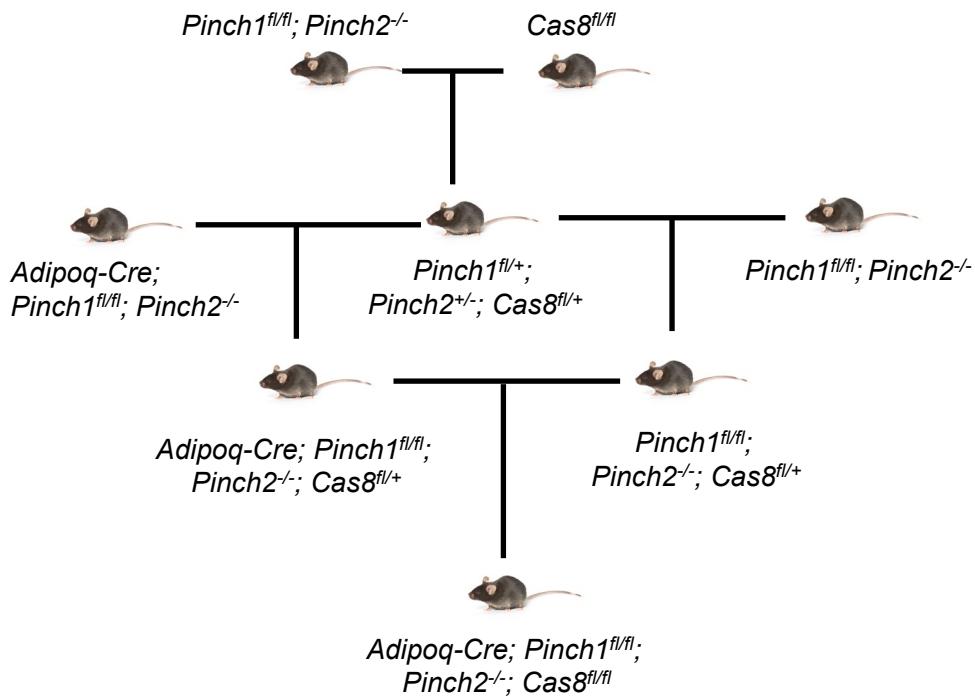
Supplementary Figure 6. Effects of Pinch deletion in adipocytes on glucose metabolism in female mice fed on NCD. (a,b) Glucose tolerance test (a) and insulin tolerance test (b) in control and KO female mice fed an NCD. $N = 7$.



Supplementary Figure 7. Pinch deletion increases adipocyte proliferation. Ki67 staining of eWAT from control and KO mice under HFD conditions, Scale bar: 100 μm .



Supplementary Figure 8. Western blotting. Adipocytes were treated with control shRNA (shNC) or Bim shRNA (sh-Bim), followed by western blotting for expression of Bim, Bax and tubulin proteins.



Supplementary Figure 9. Mouse breeding. Breeding strategy to generate the Adipoq-Cre; Pinch1^{fl/fl}; Pinch2^{-/-}; Cas8^{fl/fl} mice.

Supplementary Table 1. Antibody information

Name	Supplier	Cat no.
Pinch1	Abcam	ab108609
Gapdh	ZSGB-BIO	TA-08
Cleaved caspase8	Cell Signaling technology	4790s
Cleaved caspase3	abcam	ab2302
Parp	Cell Signaling technology	9548
Perilipin-1	Cell Signaling technology	3470
Rip3	Cell Signaling technology	95702
Tubulin	Cell Signaling technology	2128
Bim	Cell Signaling technology	2933
Actin	ZSGB-BIO	TA-09
Pinch2	Abcam	ab173008
Bax	Cell Signaling technology	2772
Bcl2	Cell Signaling technology	3498

Supplementary Table 2. Primer information for mouse

Gene	Forward	Reverse
Fas	GCGATGAAGAGCATGGTTAG	GGCTCAAGGGTCCATGTT
Srebp1c	GGAGCCATGGATTGCACATT	GGCCCAGGAAGTCACTGT
Acc	GCGGCTACAGGGACTATACTG	CGGAAGTAAGAGCTACTAGCGG
Atgl	CCAAGGGTGCGCTATGT	TTGGGTTGGTCAGTAGGC
Hsl	TGCCCAAGGATTGGATGGTT	GTGAGAACGCTGAGGCTTG
Pinch1	GCCCTCAAATCGACTGCTG	GCACTGAGCACATACGAAGC
Tnfa	CCACGTCGTAGCAAACCACC	GATAGCAAATCGGCTGACGG
Mcp1	CACTCACCTGCTGCTACTCA	GCTTGGTGACAAAAACTACAGC
Il-6	CTCATTCTGCTCTGGAGCCC	CAACTGGATGGAAGTCTCTTG
Il10	GGCGCTGTCATCGATTCTC	ATGGCCTGTAGACACCTTGG
Il1rn	AACGGAATGACAGCAGCACA	ATCCCAGATTCTGAAGGCTTGC
F4/80	CACAGTACGATGTGGGCTT	ACTGAGTTAGGACCACAAGGTG
Il-1b	TGCCACCTTTGACAGTGATG	AAGGTCCACGGAAAGACAC
Cd68	ACTTCGGGCCATGTTCTCTT	GGGGCTGGTAGGTTGATTGT
Bim	TTGGATTACACACCACCTCG	CGGGATTACCTTGCAGTTCT
Bcl2l2	CTGACCCGGCTCCACTCTA	GATGGCAGCTCTAGGACCC
Cd36	GCAGTGATTGACTTGTGGC	TTTCAGAAGGCAGTACACAGAAG
Bcl2	GACTGAGTACCTGAACCGGC	AGTTCCACAAAGGCATCCCAG
Bax	TGGAGCTGCAGAGGATGATT	TCTTGGATCCAGACAAGCAGC
Gapdh	TTTCTTCTGCCTGGGAGA	AGTTCCGCACATTCAATTAGG

Supplementary Table 2. Primer information for human

Gene	Forward	Reverse
Pinch1	AGCAGCCCTTAACACTGTCC	GGCGTTGCCATGTTGAATT
Gapdh	TCGGAGTCAACGGATTGGT	TTCCCGTTCTCAGCCTTGAC