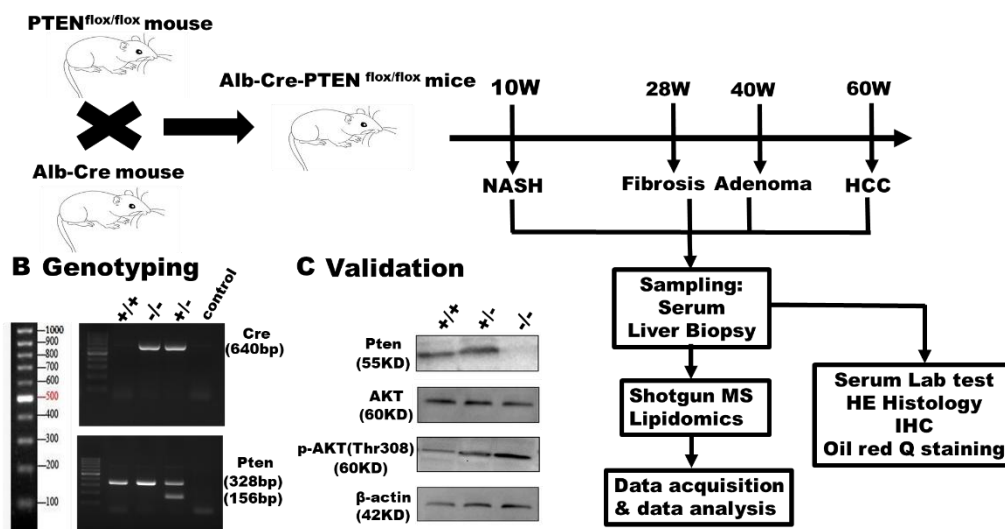
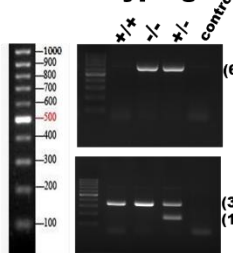


Supplementary material

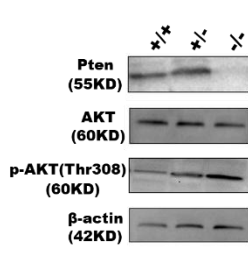
A Experimental Design



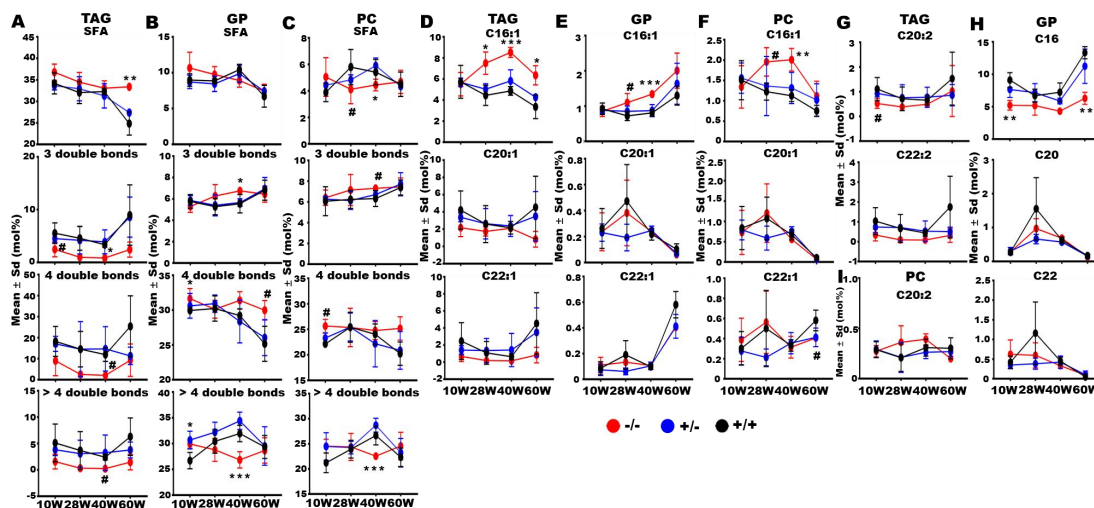
B Genotyping



C Validation

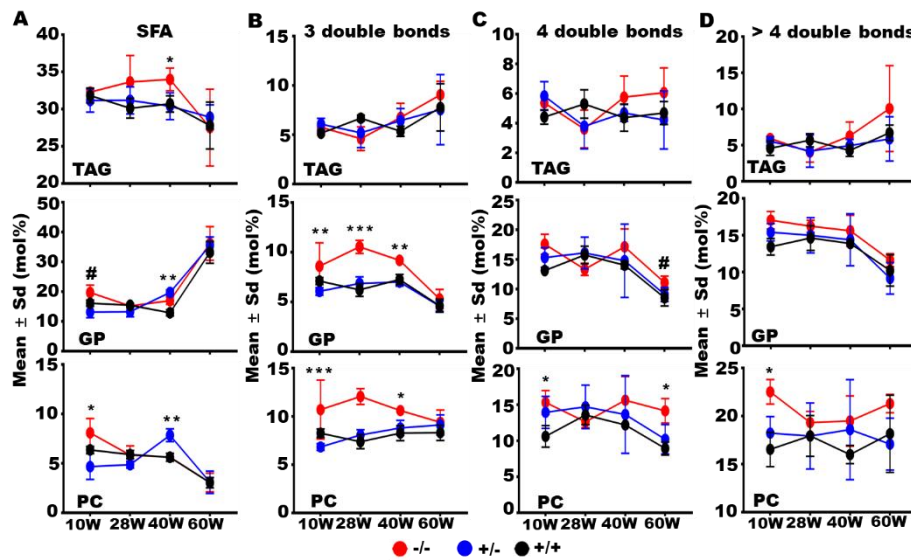


Supplementary Figure 1. (A) The overall workflow of the research and experimental design. (B) Genotypes of the *AlbCrePten* mice were analyzed and determined by PCR analysis at about day 10-12 (Supplementary Figure 1B). (C) The expressions of PTEN protein and the downstream effectors in PTEN signaling pathway (Supplementary Fig 1C).

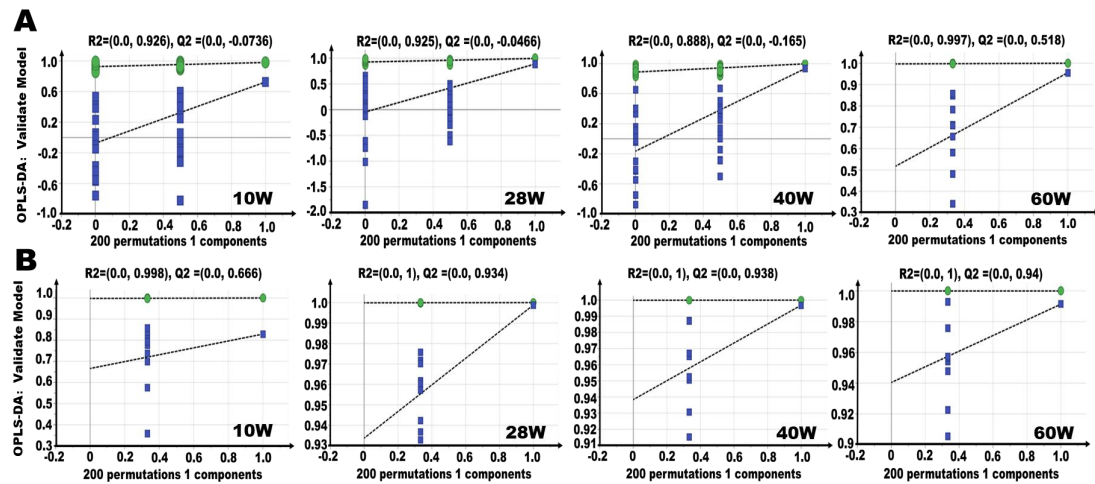


Supplementary Figure 2. Dynamic alterations in the fatty acid compositions of hepatic TAGs, GPs and PCs. (A) & (B) & (C). The Profiles of saturated fatty acids of TAGs (A), GPs (B) and PCs (C) among the different genotypes of the *AlbCrePten* mice at different time intervals (10weeks, 28weeks, 40 weeks, n=4; 60weeks, n=3). (D) - (F). Dynamic alterations of the C18:1, C20:1, C22:1 compositions of TAGs (D), GPs (E) and PCs (F) among the different genotypes of

the *AlbCrePten* mice. (G) Relative alterations of the C20:2 components of TAGs , PCs and the C22:2 components of GPs among the different genotypes of the *AlbCrePten* mice . (H) Dynamic alterations of the C16 , C20, C22 components of GPs among the different genotypes of the *AlbCrePten* mice. -/- represents *AlbCrePten*^{fox/fox} mice, +/- represents *AlbCrePten*^{fox/+} mice, +/+ represents *AlbCrePten*^{+/+} mice. * $P<0.05$, ** $P<0.01$, *** $P<0.001$; # represents $P<0.05$. (The statistical difference in profiles or dynamic alterations of the lipid compositions between the *AlbCrePten*^{fox/fox} mice and *AlbCrePten*^{+/+} mice).



Supplementary Figure 3. Dynamic alterations in the fatty acid compositions of serum TAGs (first row), GPs (second row), and PCs (third row). (A) Alterations of saturated fatty acids of TAGs , GPs and PCs among the three groups of different genotyping mice at different time intervals (10weeks , 28weeks , 40 weeks, 60weeks, n=3). (B) Alterations of 3 double bonds of TAGs , GPs and PCs among the three groups of the different genotyping *AlbCrePten* mice. (C) Alterations of 4 double bonds-of TAGs, GPs and PCs among the different genotyping *AlbCrePten* mice. (C) Dynamic alterations of over 4 double bonds of TAGs , GPs and PCs among the different genotyping *AlbCrePten* mice. -/- represents *AlbCrePten*^{fox/fox} mice, +/- represents *AlbCrePten*^{fox/+} mice, +/+ represents *AlbCrePten*^{+/+} mice. * $P<0.05$, ** $P<0.01$, *** $P<0.001$; # represents $P<0.05$. (The statistical difference in profiles or dynamic alterations of the lipid compositions between the *AlbCrePten*^{fox/fox} mice and *AlbCrePten*^{+/+} mice)



Supplementary Figure 4. The permutation test (200 times) of different genotyping mice. (A) The permutation test (200 times) of different genotyping mice in the liver tissue (10weeks, 28weeks, 40 weeks, n=4; 60weeks, n=3; respectively). (B) The permutation test (200 times) of different genotyping mice in the serum (10weeks, 28weeks, 40 weeks, 60weeks, n=3; respectively).