Appendix: Supplementary information

Figure S1. Effects of butter-derived R-TFA on hepatic differentially expressed lipid metabolites levels in C57BL/6J mice.

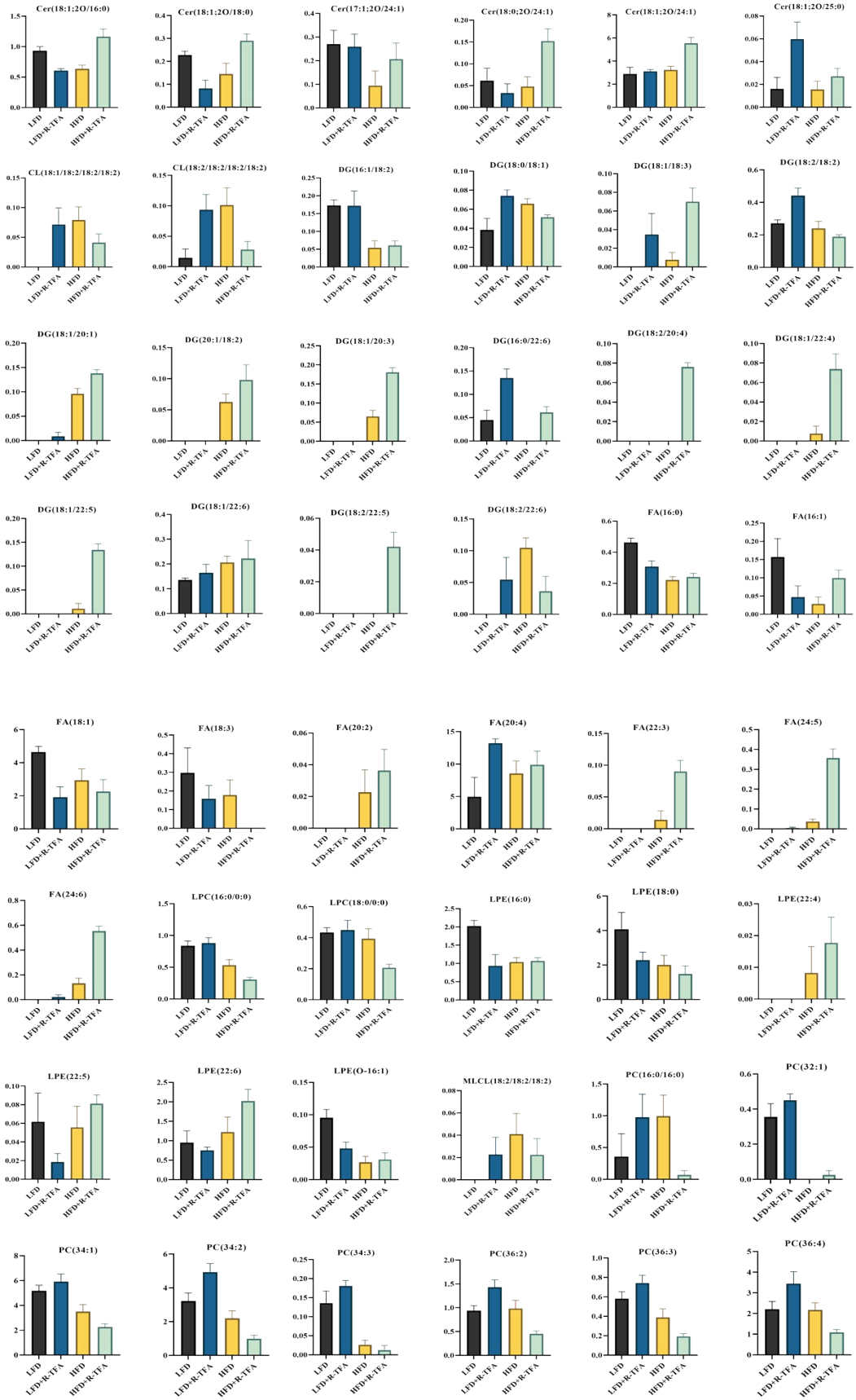
Figure S2. Hepatic transcriptomics PCA plot, PLS-DA plot and OPLS-DA plot in C57BL/6J mice.

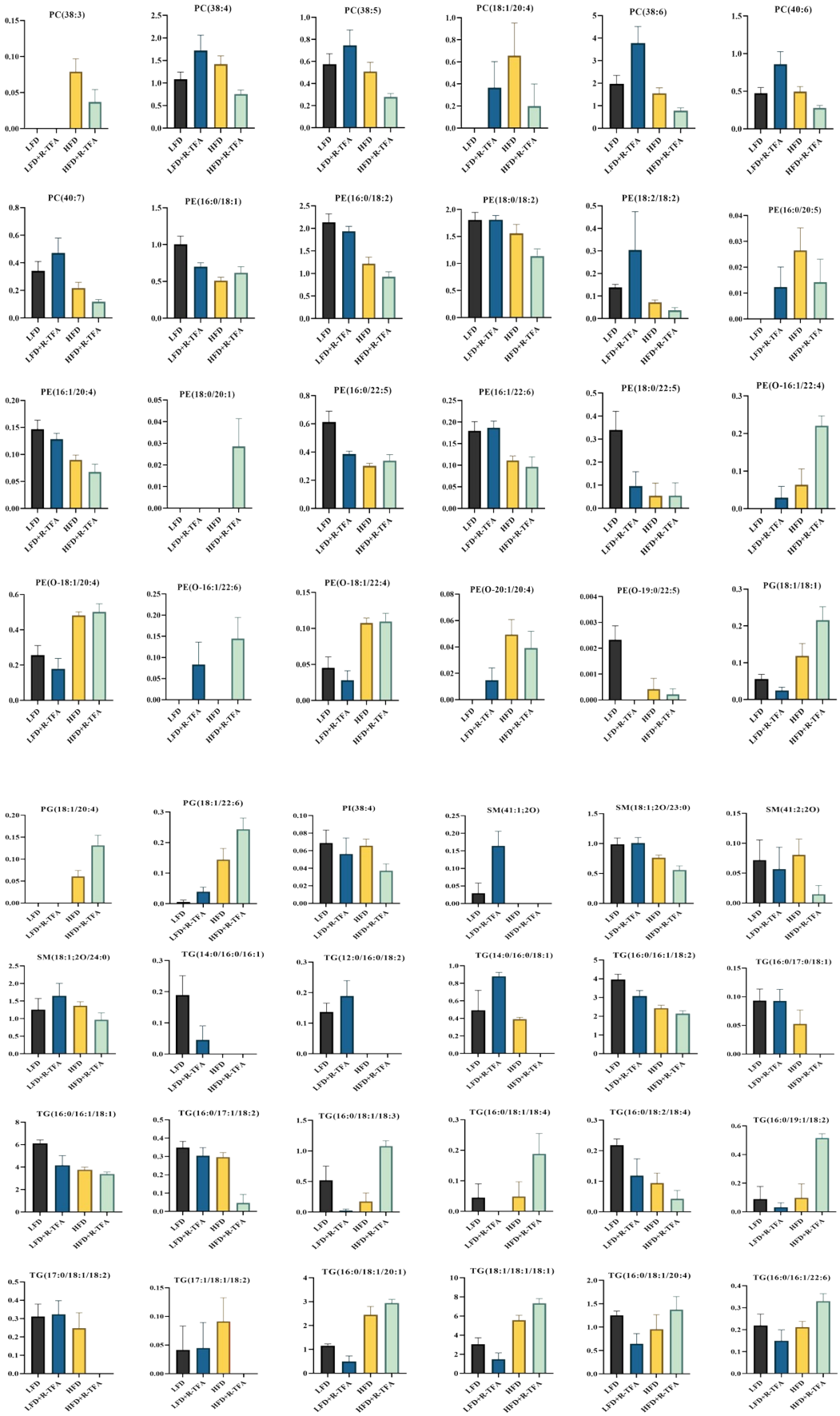
Figure S3. Alteration of genes related to glycerophospholipid metabolism.

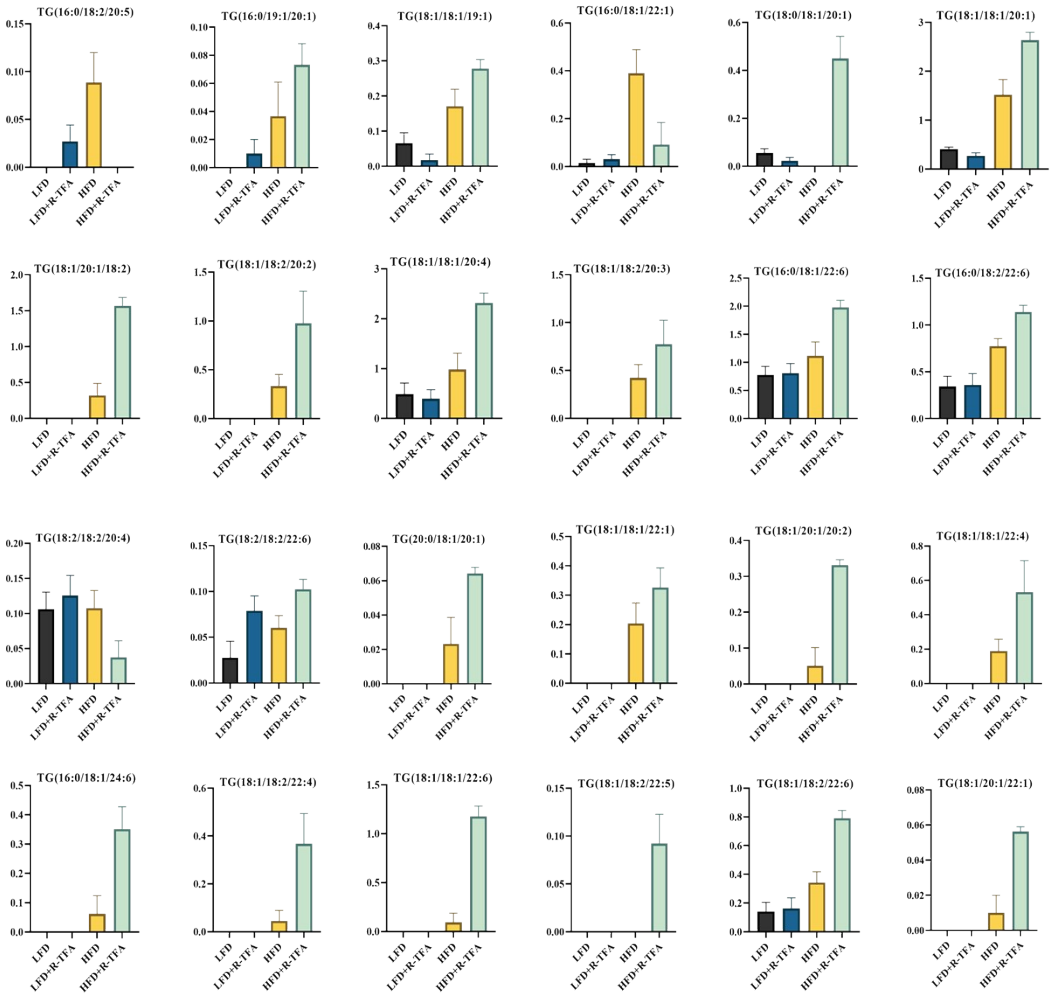
Figure S4. Alteration of genes related to glycerolipid metabolism.

Figure S5. Alteration of genes related to glycosylphosphatidylinositol (GPI)-anchor biosynthesis.

Supplementary Figure. S1

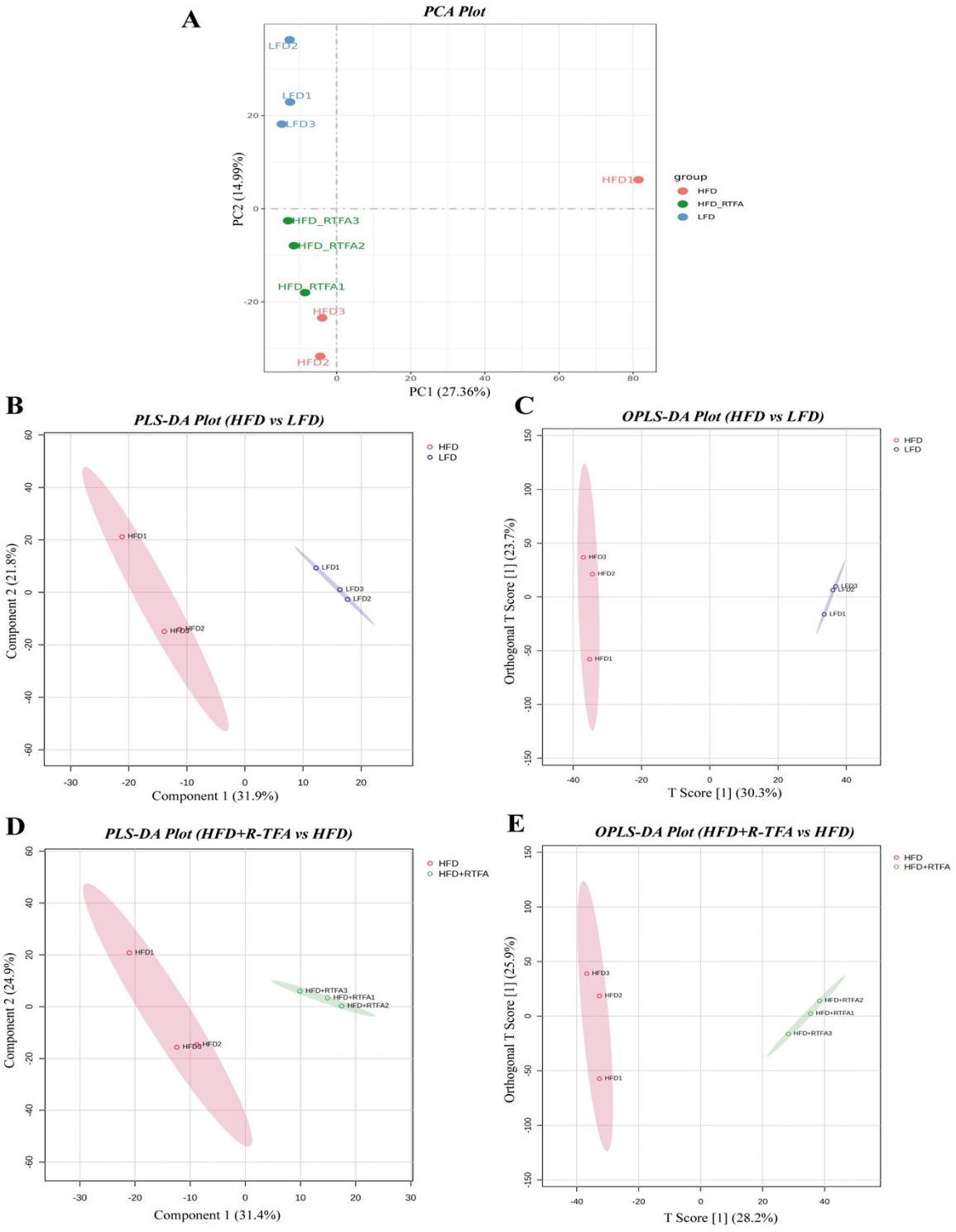



PC(38:3)
PC(38:4)
PC(38:5)
PC(18:1/20:4)
PC(38:6)
PC(40:6)
PC(40:7)
PE(16:0/18:1)
PE(16:0/18:2)
PE(18:0/18:2)
PE(18:2/18:2)
PE(16:0/20:5)
PE(16:1/20:4)
PE(18:0/20:1)
PE(16:0/22:5)
PE(16:1/22:6)
PE(18:0/22:5)
PE(O-16:1/22:4)
PE(O-18:1/20:4)
PE(O-16:1/22:6)
PE(O-18:1/22:4)
PE(O-20:1/20:4)
PE(O-19:0/22:5)
PG(18:1/18:1)
PG(18:1/20:4)
PG(18:1/22:6)
PI(38:4)
SM(41:1;2O)
SM(18:1;2O/23:0)
SM(41:2;2O)
SM(18:1;2O/24:0)
TG(14:0/16:0/16:1)
TG(12:0/16:0/18:2)
TG(14:0/16:0/18:1)
TG(16:0/16:1/18:2)
TG(16:0/17:0/18:1)
TG(16:0/16:1/18:1)
TG(16:0/17:1/18:2)
TG(16:0/18:1/18:3)
TG(16:0/18:1/18:4)
TG(16:0/18:2/18:4)
TG(16:0/19:1/18:2)
TG(17:0/18:1/18:2)
TG(17:1/18:1/18:2)
TG(16:0/18:1/20:1)
TG(18:1/18:1/18:1)
TG(16:0/18:1/20:4)
TG(16:0/16:1/22:6)
LFD
LFD+R-TFA
HFD
HFD+R-TFA



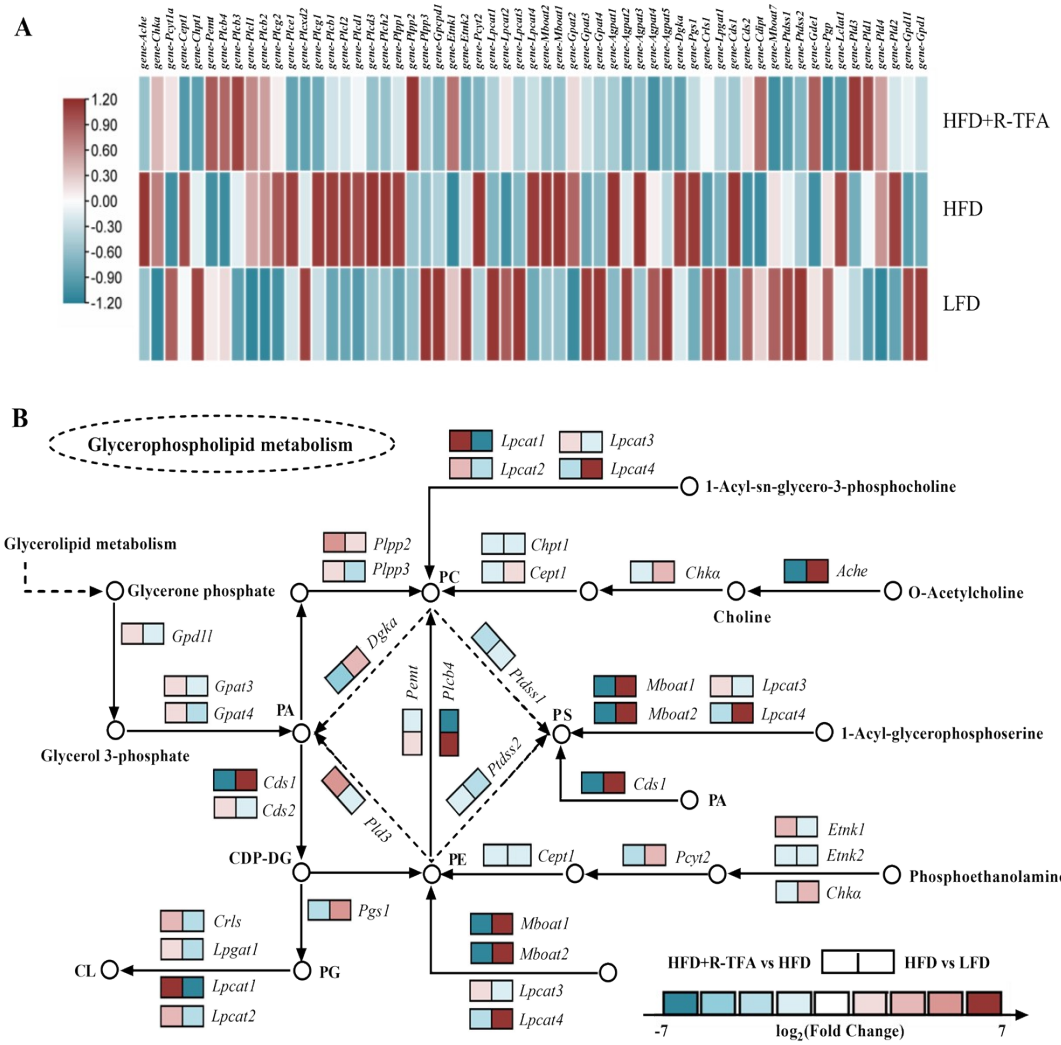
Supplementary Figure. S1 Effects of butter-derived R-TFA on the level of hepatic differentially expressed lipid metabolites in C57BL/6J mice. CL, cardiolipin; MLCL, monolysocardiolipin; Cer, ceramide; FA, fatty acid; SM, sphingomyelin; DG, diglyceride; PC, phosphatidylcholine; PE, phosphatidylethanolamine; LPE, lysophosphatidylethanolamine; DG, diglyceride; TG, triglyceride; OxPE, oxidize phosphatidylethanolamine; PG, Phosphatidylglycerol; PI, Phosphatidylinositol; LFD: low-fat diet group. LFD + R-TFA: low-fat diet with butter-derived R-TFA accounting for 1.3% of total forage energy group. HFD: high-fat diet group. HFD + R-TFA: high-fat diet with butter-derived R-TFA accounting for 1.3% of total forage energy group.

Supplementary Figure. S2



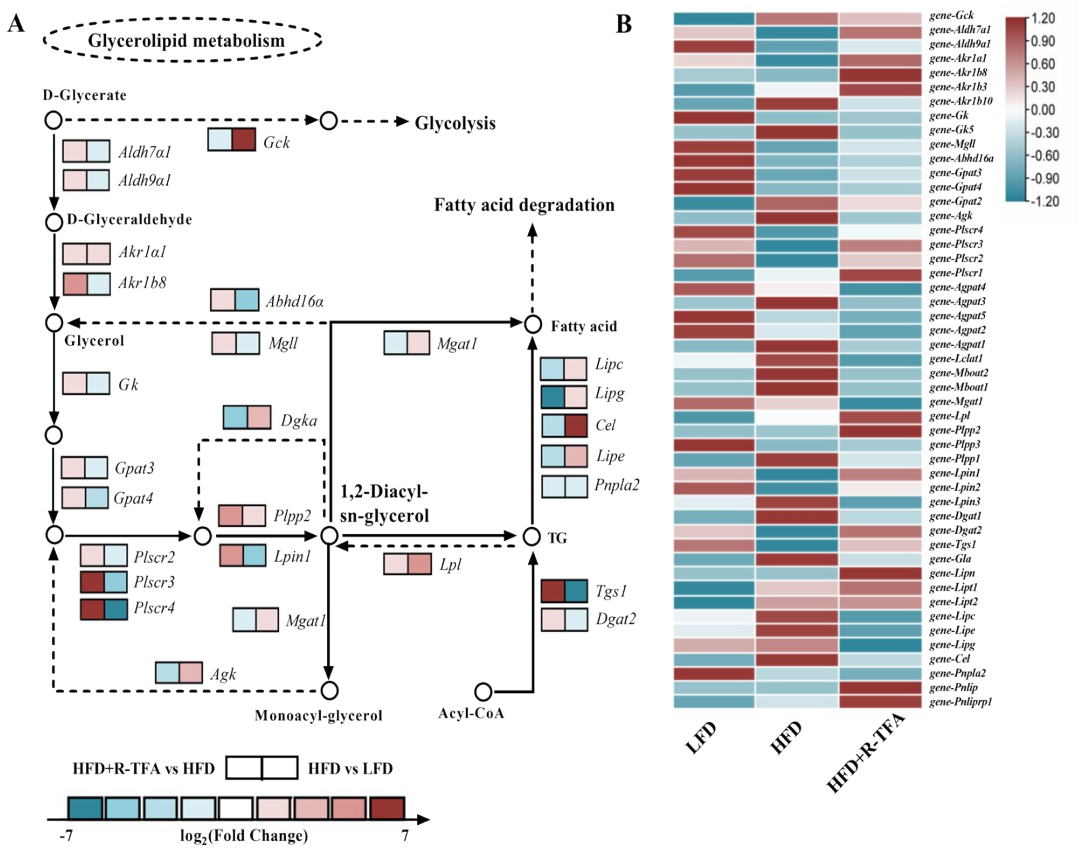
Supplementary Figure. S2 Effect of butter-derived R-TFA on hepatic gene profiles in C57BL/6J mice. (A) PCA plot of the three groups C57BL/6J mice (n = 3). (B, C) PLS-DA and OPLS-DA plot in HFD versus LFD. (D, E) PLS-DA and OPLS-DA plot in HFD + R-TFA versus HFD.

Supplementary Figure. S3



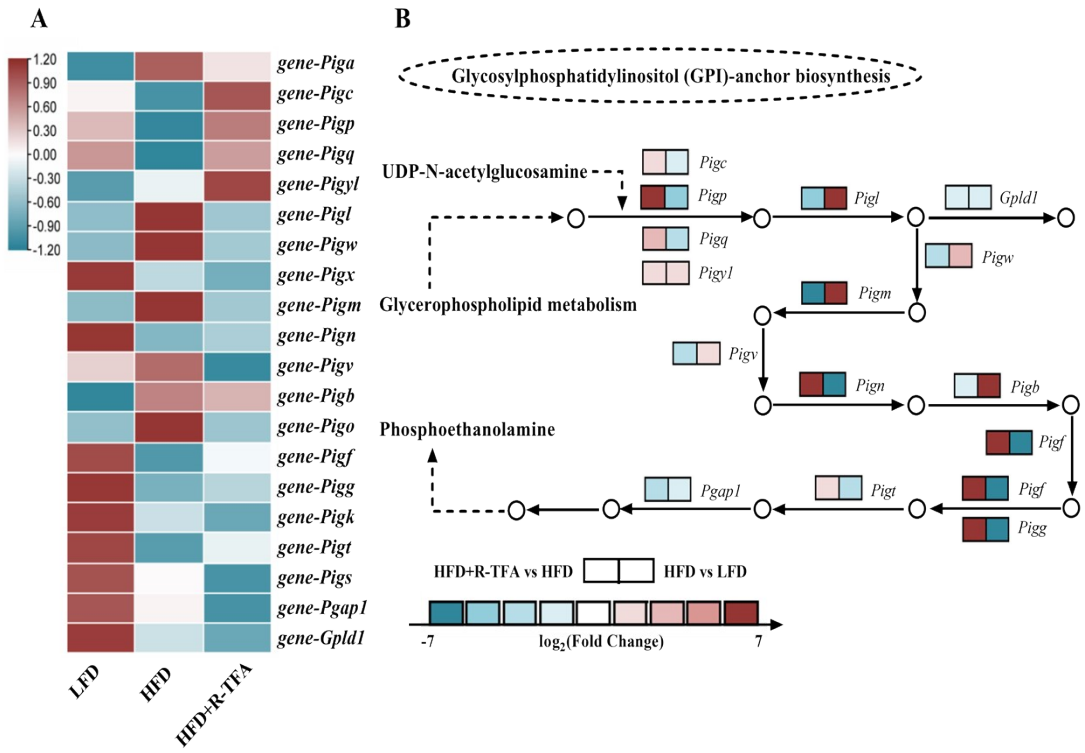
Supplementary Figure. S3 Alteration of genes related to glycerophospholipid metabolism. Heatmap (A) and pathway map (B) of genes in the glycerophospholipid metabolic pathway in C57BL/6J mice. Genes name were in italics and lipids name were in normal font. The rectangles in the pathway represented the gene FC value of HFD + R-TFA versus HFD (left) and HFD versus LFD (right) respectively. LFD: low-fat diet group. HFD: high-fat diet group. HFD + R-TFA: high-fat diet with butter-derived R-TFA accounting for 1.3% of total forage energy group.

Supplementary Figure. S4



Supplementary Figure. S4 Alteration of genes related to glycerolipid metabolism. Heatmap (B) and pathway map (A) of genes in the glycerolipid metabolic pathway in C57BL/6J mice. Genes name were in italics and lipids name were in normal font. The rectangles in the pathway represented the gene FC value of HFD + R-TFA versus HFD (left) and HFD versus LFD (right) respectively. LFD: low-fat diet group. HFD: high-fat diet group. HFD + R-TFA: high-fat diet with butter-derived R-TFA accounting for 1.3% of total forage energy group.

Supplementary Figure. S5



Supplementary Figure. S5 Alteration of genes related to glycosylphosphatidylinositol (GPI)-anchor biosynthesis. Heatmap (B) and pathway map (A) of genes in the GPI biosynthesis pathway in C57BL/6J mice. Genes name were in italics and lipids name were in normal font. The rectangles in the pathway represented the gene FC value of HFD + R-TFA versus HFD (left) and HFD versus LFD (right) respectively. LFD: low-fat diet group. HFD: high-fat diet group. HFD + R-TFA: high-fat diet with butter-derived R-TFA accounting for 1.3% of total forage energy group.