

Figure S1. Expression profiles of fibrosis, glycolysis, glycogenolysis, lipogenesis, and lipid degradation related genes in WT and *Phkb*^{-/-} mice. Quantification of hepatic mRNA related to (A) Glycolysis (*Gapdh*, *Pfk1*, and *Gys2*) and (B) Glycogenolysis (*Agl*, *Pygl*, and *Gaa*). WT (0 hr, n=5, 2 hr, n=7, and 6 hr, n=5) and *Phkb*^{-/-} (0 hr, n=11, 2 hr, n=6, and 6 hr, n=5) mice. (C) Lipogenesis (genes (*Acc1*, *Acly*, *Adrp*, *Dgat2*, and *Fasn*) and lipid degradation related genes (*Acadl*, *Acadvl*, *Acox1*, *Cyp4a10*, and *Cyp4a14*), (D) Transcriptional regulator and transporters in WT (n=7) and *Phkb*^{-/-} (n=7) mice. (E) signaling pathways of fibrosis (*Tgf-β*, *Smad7*, and *Cebp-β*). (F) profibrotic (*Agt* and *Fn1*) and inflammation related genes (*Mcp-1* and *Itgb5*). WT (0 hr, n=5, 2 hr, n=7, and 6 hr, n=6) and *Phkb*^{-/-} (0 hr, n=10, 2 hr, n=6, and 6 hr, n=6) mice. Abbreviations: *TGFβ*, Transforming growth factor beta; *Smad7*, Mothers Against Decapentaplegic Homolog 7, *Cebpb*, CCAAT/Enhancer-Binding Protein Beta; *Agt*, Angiotensinogen; *Fn1*, Fibronectin 1; *Il-6*, Interleukin-6; *Mcp-1*, Monocyte chemoattractant protein 1; *Itgb1*, Integrin Subunit Beta 1 *Gapdh*: Glyceraldehyde-3-Phosphate Dehydrogenase; *Pfk1*, Phosphofructokinase, muscle; *Gys2*, Glycogen Synthase 2; *Agl*, Amylo-Alpha-1, 6-Glucosidase, 4-Alpha-Glucanotransferase (Glycogen Debranching Enzyme); *Pygl*, Glycogen Phosphorylase L; *Gaa*, Alpha Glucosidase; *ACC1*, Acetyl-CoA Carboxylase Alpha; *Acly*, ATP Citrate Lyase; *ADRP*, Adipose Differentiation-Related Protein; *DGAT2*, Diacylglycerol O-Acyltransferase 2; *FASN*, Fatty Acid Synthase; *ACADL*, Acyl-CoA Dehydrogenase Long Chain; *ACADVL*, Acyl-CoA Dehydrogenase Very Long Chain; *ACOX1*, Acyl-CoA Oxidase 1; *CYP4a10*, Cytochrome P450 Family 4 Subfamily A Polypeptide 10; *CYP4a14*, Cytochrome P450 Family 4 Subfamily A Polypeptide 14; *PPARG*, Peroxisome Proliferator Activated Receptor Gamma; *SREBP-1*, Sterol Regulatory Element-Binding Protein 1; *PPARα*, Peroxisome Proliferator Activated Receptor Alpha; *GYK*, Glycerol Kinase; *CPT1a*, Carnitine Palmitoyltransferase 1A; *HMGCS2*, 3-Hydroxy-3-Methylglutaryl-CoA Synthase 2

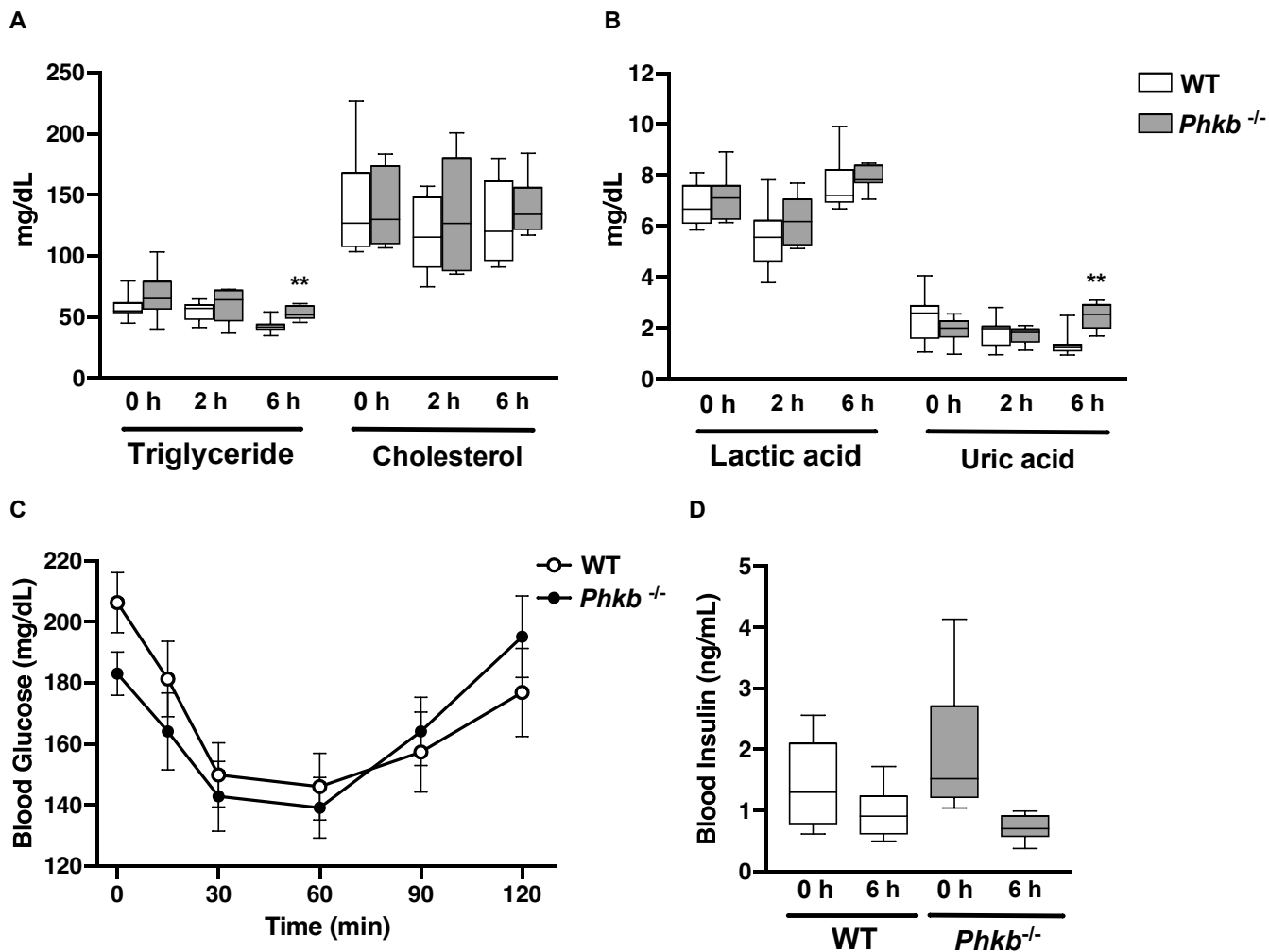


Figure S2. Blood metabolite concentration and insulin. The box-and-whisker plots showing serum **(A)** triglycerides and cholesterol. **(B)** lactic acid and uric acid. WT (0 hr, n=9, 2 hr, n=9, and 6 hr, n=9) and *Phkb*^{-/-} (0 hr, n=9, 2 hr, n=6, and 6 hr, n=7) mice for plot (A) and (B). **(C)** Insulin tolerance profiles of WT (n=8) and *Phkb*^{-/-} mice (n=8) treated with 0.5 IU/kg of insulin. **(D)** Non fasted and 6 hours fasted blood insulin levels in WT (0 hr, n=9 and 6 hr, n=9) and *Phkb*^{-/-} (0 hr, n=9 and 6 hr, n=7) mice. ***P* < 0.01.

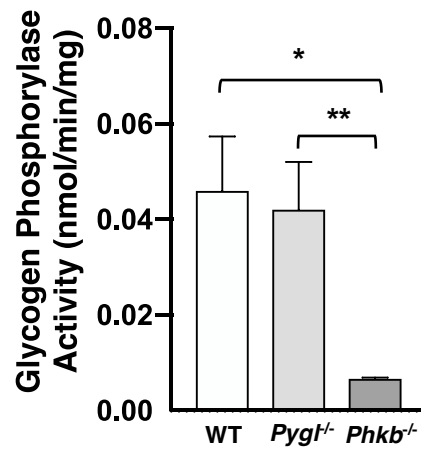


Figure S3. Enzymatic activity of glycogen phosphorylase (PYGL) in wild-type (n=4; WT, white bar), *Pygl*^{-/-} (n=3, light grey bar) and *Phkb*^{-/-} (n=4, grey bar) mice.

Table S1. PrimePCR qPCR Assay probes

| Name | Unique Assay ID | Supplier |
|---|------------------------|----------------------|
| Mouse ribosomal protein mL19 (Rpl19) | qMmuCEP0042442 | Bio-Rad Laboratories |
| Liver glycogen phosphorylase (Pygl) | qMmuCIP0033749 | Bio-Rad Laboratories |
| Connective tissue growth factor (Ctgf) | qMmuCEP0053713 | Bio-Rad Laboratories |
| Interleukin-6 (IL-6) | qMmuCID0005613 | Bio-Rad Laboratories |
| Chemokine ligand 5 (Ccl5; RANTES) | qMmuCID0021047 | Bio-Rad Laboratories |
| Collagen type 1 alpha 1 (Col1a1) | qMmuCEP0052648 | Bio-Rad Laboratories |
| Phosphorylase Kinase Beta (Phkb) | qMmuCED0049220 | Bio-Rad Laboratories |
| Monocyte chemoattractant protein 1 (Mcp-1) | qMmuCED0048300 | Bio-Rad Laboratories |
| Transforming growth factor b1 (Tgf- β 1) | qMmuCID0017320 | Bio-Rad Laboratories |
| Tumor necrosis factor alpha (Tnf- α) | qMmuCED0004141 | Bio-Rad Laboratories |
| Fibronectin 1 (Fn1) | qMmuCID00019534 | Bio-Rad Laboratories |
| Mouse Glucose-6-Phosphatase (mG6pc) | qMmuCID0018783 | Bio-Rad Laboratories |
| Fructose-Bisphosphatase 1 (Fbp1) | qMmuCED0051060 | Bio-Rad Laboratories |
| Aldolase, Fructose-Bisphosphate B (Aldob) | qMmuCED0039716 | Bio-Rad Laboratories |
| Mothers Against Decapentaplegic Homolog 7 (Smad7) | qMmuCED0046593 | Bio-Rad Laboratories |
| CCAAT/Enhancer-Binding Protein Beta (Cebpb) | qMmuCED0050360 | Bio-Rad Laboratories |
| Angiotensinogen (Agt) | qMmuCID0019397 | Bio-Rad Laboratories |
| Integrin Subunit Beta 1 (Itgb5) | qMmuCED0045777 | Bio-Rad Laboratories |
| Glyceraldehyde-3-Phosphate Dehydrogenase (Gapdh) | qMmuCED0027497 | Bio-Rad Laboratories |
| Phosphofructokinase, muscle (Pfk1) | qMmuCID0018472 | Bio-Rad Laboratories |
| Glycogen Synthase 2 (Gys2) | qMmuCED0047720 | Bio-Rad Laboratories |
| Glycogen Debranching Enzyme (Agl) | qMmuCID0005882 | Bio-Rad Laboratories |
| Alpha Glucosidase (Gaa) | qMmuCED0046677 | Bio-Rad Laboratories |
| Acetyl-CoA Carboxylase Alpha (Acc1) | qMmuCID0006041 | Bio-Rad Laboratories |
| ATP Citrate Lyase (Acly) | qMmuCED0044791 | Bio-Rad Laboratories |
| Adipose Differentiation-Related Protein (ADRP) | qMmuCID0016776 | Bio-Rad Laboratories |
| Diacylglycerol O-Acyltransferase 2 (DGAT2) | qMmuCID0012338 | Bio-Rad Laboratories |
| Fatty Acid Synthase (FASN) | qMmuCED0045676 | Bio-Rad Laboratories |
| Acyl-CoA Dehydrogenase Long Chain (ACADL) | qMmuCID0018569 | Bio-Rad Laboratories |
| Acyl-CoA Dehydrogenase Very Long Chain (ACADVL) | qMmuCED0004059 | Bio-Rad Laboratories |
| Acyl-CoA Oxidase 1 (ACOX1) | qMmuCID0016828 | Bio-Rad Laboratories |
| Cytochrome P450 Family 4 Subfamily A Polypeptide 10 (CYP4a10) | qMmuCED0025157 | Bio-Rad Laboratories |
| Cytochrome P450 Family 4 Subfamily A Polypeptide 14 (CYP4a14) | qMmuCID0013174 | Bio-Rad Laboratories |
| Peroxisome Proliferator Activated Receptor Gamma (PPARG) | qMmuCID0018821 | Bio-Rad Laboratories |
| Sterol Regulatory Element-Binding Protein 1 (SREBP-1c) | qMmuCID0009315 | Bio-Rad Laboratories |

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| Peroxisome Proliferator Activated Receptor Alpha (PPAR α) | qMmuCED0046526 | Bio-Rad Laboratories |
| Glycerol Kinase (GYK) | qMmuCID0040086 | Bio-Rad Laboratories |
| Carnitine Palmitoyltransferase 1A (CPT1a) | qMmuCED0045595 | Bio-Rad Laboratories |
| 3-Hydroxy-3-Methylglutaryl-CoA Synthase 2 (HMGCS2) | qMmuCID0016594 | Bio-Rad Laboratories |
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