Supplemental figure legend

Figure S1. ETV5 regulates mTORC1 complex proteins. (A-B) Immunoblots and quantification of mTORC1 complex components in HepG2 cells transfected with siRNA against *ETV5* or scramble siRNA (A), or transiently transfected with pCMV-ETV5 or pCMV vector (B). Cells were treated with OA or BSA as indicated. GAPDH was served as the internal control. n=3. Data are represented as mean±SEM. *P < 0.05 defined by unpaired Student *t* test or one-way ANOVA test followed by Bonferroni post-test.

Figure S2. OA increases the protein stability of ETV5. (A-B) HEK 293T cells (A) or HepG2 cells (B) were transfected with pCMV-ETV5 for 24 hrs. Cells were then treated with CHX (CST, #2112, 50 mg/mL) for the indicated time and harvested for immunoblotting with ETV5. GAPDH was used as the loading control. n=3. Data are represented as mean±SEM.

Figure S3. Characterization of mice with viral-mediated ETV5 depletion. (A)

Body weight. (B) Liver to body weight ratio. (C) Epididymal white adipose tissue (EWAT) to body weight ratio. (D) Food intake. (E) Fasting blood glucose (BG) level. n=4 in each group. Data are mean \pm SEM. *P < 0.05 by unpaired Student's *t* test.

Figure S4. Characterization of ETV5-LKO mice. (A) Body weight. (B) Liver to body weight ratio. (C) Fasting blood glucose level. (D) Intraperitoneal glucose tolerance test and AUC analysis. (E) Insulin tolerance test and AUC analysis. (F) Representative H&E staining of EWAT and BAT tissue. (G) Serum adiponectin level. (H) Serum leptin level. n=4 in each group. Data are mean \pm SEM. *P < 0.05 by unpaired Student's *t* test.

Figure S5. Overexpression of ETV5 in HepG2 cells did not affect cellular TG level. (A) Oil red O staining of HepG2 cells transfected with pCMV-ETV5 or pCMV vector and treated with BSA or OA (200 μ M) for 24 hrs. (B) Cellular TG level. n=3. Data are mean \pm SEM. NS, non-significant by one-way ANOVA test followed by

Bonferroni post-test.

Figure S6. ETV5 enhances the PPRE transactivity by PPAR α agonist. (A) HEK293T cells were transfected with ETV5, PPAR α or PPAR γ together with pGL3-PPRE-luc vector as indicated. The relative luciferase activity was measured. (B-C) HEK293T cells were transfected with ETV5 or pCMV vector and treated with fibrates (B) or GW7647(C) for 24 hrs. The relative luciferase activity was measured. (n=5). Data are mean ± SEM. *P < 0.05, **P < 0.01, ***P < 0.001 by unpaired Student's *t* test or one-way ANOVA test followed by Bonferroni post-test.



Figure S1. ETV5 regulates mTORC1 complex proteins.



Figure S2. OA increased the protein stability of ETV5.



Figure S3. Characterization of mice with viral-mediated ETV5 depletion.



Figure S4. Characterization of ETV5 LKO mice.



Figure S5. Overexpression of ETV5 in HepG2 did not affect cellular TG level.



Figure S6. ETV5 enhances the PPRE transactivity by PPARα agonist.

| Gene | SPECIES | Forward | Reverse |
|--------|---------|--------------------------|-------------------------|
| ETV5 | Mouse | TCAGTCTGATAACTTGGTGCTTC | GGCTTCCTATCGTAGGCACAA |
| ACC | Mouse | GATGAACCATCTCCGTTGGC | GACCCAATTATGAATCGGGAGTG |
| ACTIN | Mouse | CTGAATGGCCCAGGTCTGA | CCCTGGCTGCCTCAACAC |
| ATGL | Mouse | AGACAGAGCTTTCTCCCAGTGAA | CCCCGTGAAGCCCAACT |
| LIPE | Mouse | ACGAGCCCTACCTCAAGAACTG | ATCTGGCACCCTCACTCCATAG |
| CPT1a | Mouse | CTCCGCCTGAGCCATGAAG | CACCAGTGATGATGCCATTCT |
| DGAT1 | Mouse | TCCGTCCAGGGTGGTAGTG | TGAACAAAGAATCTTGCAGACGA |
| DGAT2 | Mouse | GCGCTACTTCCGAGACTACTT | GGGCCTTATGCCAGGAAACT |
| FASN | Mouse | GGAGGTGGTGATAGCCGGTAT | TGGGTAATCCATAGAGCCCAG |
| GPAM | Mouse | TCCAGAAGGTGAAAAGGAAAGC | GGCAAAAGAGGATGAAGGTGAG |
| MCAD | Mouse | AGGGTTTAGTTTTGAGTTGACGG | CCCCGCTTTTGTCATATTCCG |
| VLCAD | Mouse | CTACTGTGCTTCAGGGACAAC | CAAAGGACTTCGATTCTGCCC |
| MGLL | Mouse | CGGACTTCCAAGTTTTTGTCAGA | GCAGCCACTAGGATGGAGATG |
| PGC1a | Mouse | TATGGAGTGACATAGAGTGTGCT | CCACTTCAATCCACCCAGAAAG |
| PPARg | Mouse | GCCCTTTGGTGACTTTATGGAG | GCAGCAGGTTGTCTTGGATG |
| SREBF1 | Mouse | TGACCCGGCTATTCCGTGA | CTGGGCTGAGCAATACAGTTC |
| SREBF2 | Mouse | GCAGCAACGGGACCATTCT | CCCCATGACTAAGTCCTTCAACT |
| ETV1 | Mouse | GCAAGTGCCTTACGTGGTCA | GCTTCAGCAAGCCATGTTTCTT |
| ETV4 | Mouse | CGGAGGATGAAAGGCGGATAC | TCTTGGAAGTGACTGAGGTCC |
| 36B4 | Mouse | AGATTCGGGATATGCTGTTGGC | TCGGGTCCTAGACCAGTGTTC |
| CRE | Mouse | ACCTGAAGATGTTCGCGATTATCT | ACCGTCAGTACGTGAGATATCTT |
| FLOX | Mouse | GTTTGGTGGTGGCTCTACTCTGT | CACTCCAACAACCAGCATCGTAC |
| ACAA1 | Human | GCGGTTCTCAAGGACGTGAAT | GTCTCCGGGATGTCACTCAGA |
| ACAA2 | Human | CTGCTCCGAGGTGTGTTTGTA | GGCAGCAAATTCAGACAAGTCA |
| ACOX1 | Human | ACTCGCAGCCAGCGTTATG | AGGGTCAGCGATGCCAAAC |
| ACSL1 | Human | CCATGAGCTGTTCCGGTATTT | CCGAAGCCCATAAGCGTGTT |
| SCP2 | Human | TACCCTGACTTGGCAGAAGAA | CTGGCGGGCCATAAACAAA |
| ACTIN | Human | TGACCCAGATCATGTTTGAGA | TACGGCCAGAGGCGTACAGC |

Supplementary Table 1. Primers used for real-time quantitative PCR.