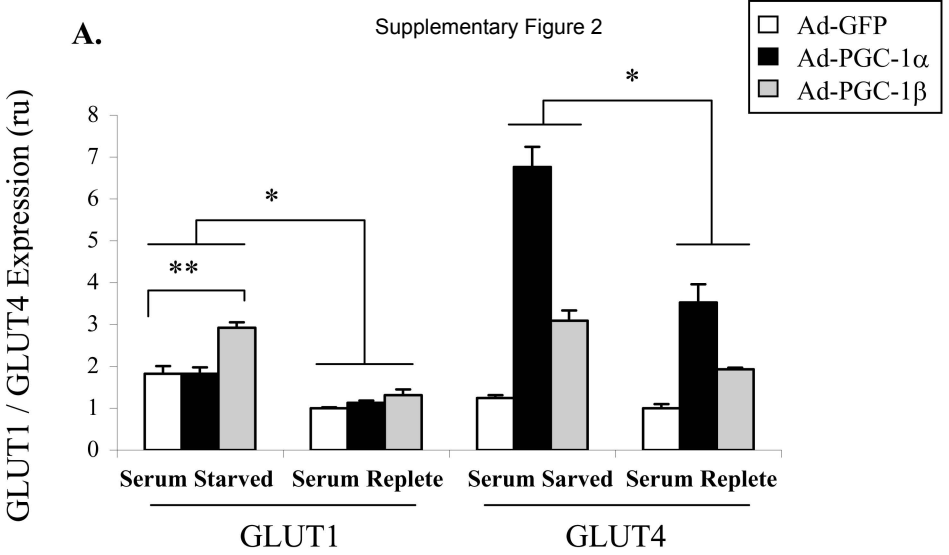
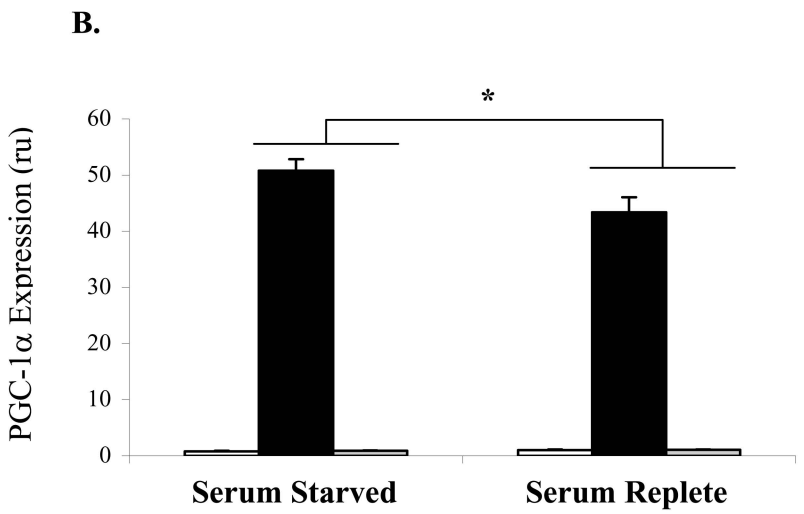
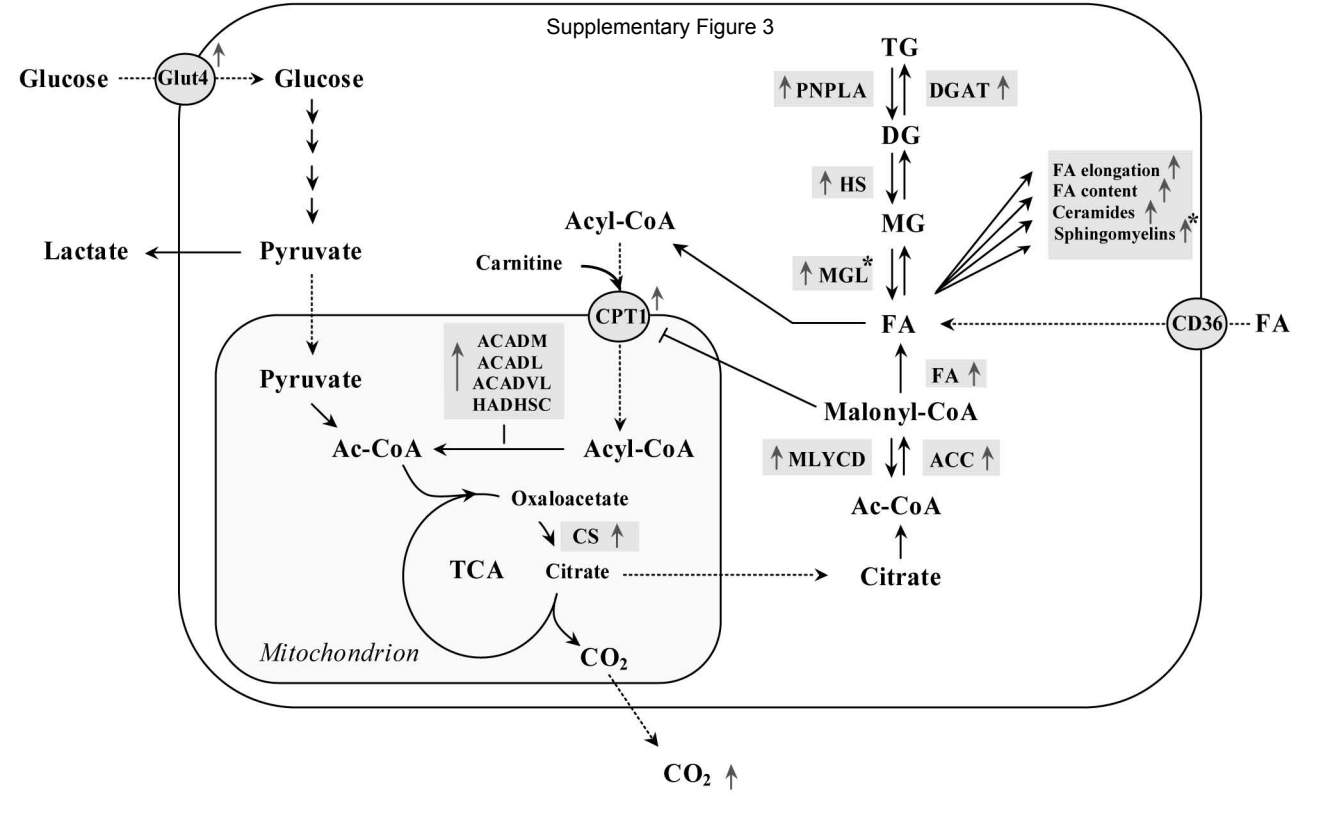
A
Supplementary Figure 1
Ad-GFP
Ad-PGC-1α
Ad-PGC-1β
Mouse quadriceps muscle
Expression (ru)
30
25
20
15
10
5
0
*
*
*
*
*
*
PGC-1α
PGC-1β
B
GFP
PGC-1α
PGC-1β
WB: PGC-1α

Supplementary Figure 2




Supplementary Figure 3
Glucose
Glut4
Glucose
Lactate
Pyruvate
Pyruvate
Ac-CoA
Acyl-CoA
ACADM
ACADL
ACADVL
HADHSC
Carnitine
CPT1
Acyl-CoA
Oxaloacetate
CS
TCA
Citrate
Mitochondrion
CO2
CO2
TG
PNPLA
DGAT
DG
HS
MG
MGL*
FA elongation
FA content
Ceramides
Sphingomyelins*
FA
CD36
FA
FA
Malonyl-CoA
MLYCD
ACC
Ac-CoA
Citrate

Supplementary Table 1

| Target mRNA | Forward oligo (5' ---> 3') | Reverse oligo (5' ---> 3') |
|---|---|---|
| PGC-1α | GTCAACAGCAAAAGCCACAA | TCTGGGGTCAGAGGAAGAGA |
| PGC-1β | GTCCCTGGCTGACATTCACT | GCACGGATCTCATGGTCTCT |
| FAS | GGCTCTATGGATTACCCAAGG | CCAGTGTTCGTTCCTGGGGA |
| NR4A1 | CGCTGTGCAGTCTGTGGT | GCAGATGTACTTGGCGCTTT |
| NRF1 | GCAGCACCTTTGGAGAATG | CCCGACCTGTGGAATACTTG |
| CS | GTGTCTTGGCTCTCACGAGAATGG | TCAATGGCTCCGATACTGCTGC |
| ESRRα | GGAGGACGGCAGAAGTACAAA | GCGACACCAGAGCGTTCAC |
| CD36 | GCAAAGAAGGAAAGCCTGTG | TCACCAATGGTCCCAGTCTC |
| TLR4 | TCCCTGCATAGAGGTAGTTC | GTAAGCCATGCCATGCCT |
| DGAT1 | CATGAAGCCCTTCAAGGATA | GGAACGCTCACTAGGTACTCA |
| SCD1 | ACACCTGCCTCTTCGGGA | AAGCACATCAGCAGGAGGC |
| CPT1b | GTGCTCAAGTCATGGTGGGCAA | TGCTCTCTGAGAGGTGCTGTAGCAA |
| ACADM | TGGAGACATTGCCAATCAGC | ACCATAGAGCTGAAGACAGG |
| TBP | ACCCTTCACCAATGACTCCTATG | TGACTGCAGCAAATCGCTTGG |
| HADHSC | AGACATCCTGGCAAAATCCAA | CCACAAACTCATCTCCAGCCTTA |
| PNPLA2 | TGAGCTCATCCAGGCCAA | CCTGAGGGCAGATGTCACTC |
| LIPE | ATGTCACGCTACACAAAGGC | TTCAAATTCAGCCCCACG |
| MGLL | TGCCATCTCCATCCTAGT | GGTCAGAGTTGTACAGGTCA |
| NDUFS1 | TTGGGAACAACAGGAAGAGG | TTCCCACTGCATCCATTACA |
| NDUFA5 | GCGGAGCCAGATGTTAAAAA | CCATCCACCATCTGACACTG |
| SDHB | CTGGTGGAACGGAGACAAGT | GTTAAGCCAATGCTCGCTTC |
| UQCR | GGGGTGACCCTGAGTATTGA | ATGTAAGGCACCCAGTCCAG |
| UQCRC2 | TCCAACAACTTGGGAACCTC | GGTGCTGTGGTGACATTGAG |
| COX5B | CAGAAGGGACTGGACCCATA | ATAACACAGGGGCTCAGTGG |
| COX7C | AGAACTTCCAGCAGCGACAT | TAAAGAAAGGTGCGGCAAAC |
| CYC1 | GCTACCCATGGTCTCATCGT | CATCATCATTAGGGCCATCC |
| CYCS | GCCCGGAACGAATTAAAAAT | CCAGGTGATGCCTTTGTTCT |
| ATP5K | CGGTTCAGGTCTCTCCACTC | TGACGCCTCACTTGAGAATG |
| UCP2 | TGCACTCCTGTGTTCTCCTG | GAGTTCTGGAGGCTGCTTTG |
| UCP1 | TTGCCTGGCAGATATCATCA | TGCATTCTGACCTTCACGAC |
| IDH2 | GGCTGTCAAGTGTGCCACAAT | TCGTTCCGTTAGGGCTCTTC |

| Gene Symbol | Offical Name | Supplementary Table 2 |
|---|---|---|
| Ppargc1a (PGC-1α) | peroxisome proliferative activated receptor, gamma, coactivator 1 alpha | |
| Ppargc1b (PGC-1β) | peroxisome proliferative activated receptor, gamma, coactivator 1, beta | |
| **Lipid metabolism** | | |
| Acaca (ACC1) | acetyl-Coenzyme A carboxylase alpha | |
| Acacb (ACC2) | acetyl-Coenzyme A carboxylase beta | |
| Fasn | fatty acid synthase | |
| Cs | citrate synthase | |
| Scd1 | stearoyl-Coenzyme A desaturase 1 | |
| Dgat1 | diacylglycerol O-acyltransferase 1 | |
| Cd36 | CD36 antigen | |
| Tlr4 | toll-like receptor 4 | |
| Cpt1b | carnitine palmitoyltransferase 1b, muscle | |
| Hadhsc | L-3-hydroxyacyl-Coenzyme A dehydrogenase, short chain | |
| Acadm | acyl-Coenzyme A dehydrogenase, medium chain | |
| Acadl | acyl-Coenzyme A dehydrogenase, long-chain | |
| Acadvl | acyl-Coenzyme A dehydrogenase, very long chain | |
| Acox1 | acyl-Coenzyme A oxidase 1, palmitoyl | |
| Pnpla2 | patatin-like phospholipase domain containing 2 | |
| Lipe | lipase, hormone sensitive | |
| Mgll | monoglyceride lipase | |
| Mlycd | malonyl-CoA decarboxylase | |
| **Glucose metabolism** | | |
| Slc2a1 (Glut1) | solute carrier family 2 (facilitated glucose transporter), member 1 | |
| Slc2a4 (Glut4) | solute carrier family 2 (facilitated glucose transporter), member 4 | |
| **Transcription factors** | | |
| Nr4a1 | nuclear receptor subfamily 4, group A, member 1 | |
| Esrra | estrogen related receptor, alpha | |
| Nrf1 | nuclear respiratory factor 1 | |
| Tfam | transcription factor A, mitochondrial | |
| Foxo1 | forkhead box O1 | |
| **Nuclear-encoded mitochondrial genes** | | |
| Ndufs1 | NADH dehydrogenase (ubiquinone) Fe-S protein 1 | |
| Ndufa5 | NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 5 | |
| Sdhb | succinate dehydrogenase complex, subunit B, iron sulfur (Ip) | |
| Uqcr | ubiquinol-cytochrome c reductase (6.4kD) subunit | |
| Uqcrc2 | ubiquinol cytochrome c reductase core protein 2 | |
| Cox5b | cytochrome c oxidase, subunit Vb | |
| Cox7c | cytochrome c oxidase, subunit VIIc | |
| Cyc1 | cytochrome c-1 | |
| Cycs | cytochrome c, somatic | |
| Atp5k | ATP synthase, H+ transporting, mitochondrial F1F0 complex, subunit e | |
| Atp5j2 | ATP synthase, H+ transporting, mitochondrial F0 complex, subunit f, | |
| Ucp2 | uncoupling protein 2 (mitochondrial, proton carrier) | |

Suppl. Table 3

| Target mRNA | Adenovirus used for infection | | |
|---|---|---|---|
| | GFP | PGC-1α | PGC1β |
| PGC-1α | 1.0 ± 0.1 | 115.7 ± 13.3 * | 0.7 ± 0.1 |
| PGC-1β | 1.0 ± 0.5 | 6.7 ± 2.9 | 46.5 ± 12.4 * |
| **Lipid metabolism** | | | |
| ACC1 | 1.0 ± 0.1 | 1.3 ± 0.0 * | 1.4 ± 0.1 * |
| ACC2 | 1.0 ± 0.1 | 6.0 ± 0.5 * | 2.3 ± 0.2 * |
| Fasn | 1.0 ± 0.1 | 1.5 ± 0.1 * | 1.6 ± 0.1 * |
| Cs | 1.0 ± 0.1 | 3.1 ± 0.1 * | 1.9 ± 0.1 * |
| Scd1 | 1.0 ± 0.0 | 0.9 ± 0.1 | 0.7 ± 0.1 |
| Dgat1 | 1.0 ± 0.1 | 2.7 ± 0.5 * | 1.4 ± 0.1 |
| Cd36 | 1.0 ± 0.1 | 1.4 ± 0.1 * | 0.5 ± 0.1 * |
| Tlr4 | 1.0 ± 0.0 | 0.9 ± 0.1 | 0.8 ± 0.0 * |
| Cpt1b | 1.0 ± 0.1 | 13.1 ± 1.2 * | 4.6 ± 0.5 * |
| Hadhsc | 1.0 ± 0.1 | 1.5 ± 0.2 * | 1.0 ± 0.1 |
| Acadm | 1.0 ± 0.0 | 3.1 ± 0.5 * | 1.6 ± 0.1 |
| Acadl | 1.0 ± 0.1 | 1.7 ± 0.1 * | 1.4 ± 0.1 * |
| Acadvl | 1.0 ± 0.1 | 2.1 ± 0.1 * | 1.6 ± 0.1 * |
| Acox1 | 1.0 ± 0.1 | 0.8 ± 0.1 * | 0.8 ± 0.0 * |
| Pnpla2 | 1.0 ± 0.2 | 1.7 ± 0.2 * | 1.5 ± 0.2 |
| Lipe | 1.0 ± 0.2 | 1.5 ± 0.2 | 1.5 ± 0.3 |
| Mgll | 1.0 ± 0.1 | 1.0 ± 0.1 | 1.4 ± 0.2 * |
| Mlycd | 1.0 ± 0.1 | 1.5 ± 0.1 * | 1.1 ± 0.1 |
| **Glucose metabolism** | | | |
| Glut1 | 1.0 ± 0.0 | 1.1 ± 0.1 | 1.3 ± 0.1 * |
| Glut4 | 1.0 ± 0.1 | 3.5 ± 0.4 * | 1.9 ± 0.0 * |
| **Transcription factors** | | | |
| Nr4a1 | 1.0 ± 0.1 | 0.9 ± 0.1 | 0.9 ± 0.0 |
| Esrra | 1.0 ± 0.0 | 5.3 ± 1.0 * | 2.2 ± 0.1 |
| Nrf1 | 1.0 ± 0.0 | 1.1 ± 0.1 | 1.1 ± 0.1 |
| Tfam | 1.0 ± 0.1 | 1.8 ± 0.2 * | 1.6 ± 0.1 * |
| Foxo1 | 1.0 ± 0.0 | 1.1 ± 0.0 * | 1.1 ± 0.0 * |
| **Nuclear-encoded mitochondrial genes** | | | |
| Ndufs1 | 1.0 ± 0.1 | 2.2 ± 0.2 * | 1.8 ± 0.1 * |
| Ndufa5 | 1.0 ± 0.1 | 2.3 ± 0.2 * | 2.0 ± 0.2 * |
| Sdhb | 1.0 ± 0.1 | 2.8 ± 0.2 * | 2.7 ± 0.1 * |
| Uqcr | 1.0 ± 0.1 | 1.2 ± 0.1 * | 1.2 ± 0.1 |
| Uqcrc2 | 1.0 ± 0.1 | 2.7 ± 0.1 * | 2.6 ± 0.2 * |
| Cox5b | 1.0 ± 0.1 | 3.0 ± 0.4 * | 2.5 ± 0.2 * |
| Cox7c | 1.0 ± 0.1 | 1.8 ± 0.2 * | 1.4 ± 0.2 |
| Cyc1 | 1.0 ± 0.1 | 2.0 ± 0.1 * | 1.6 ± 0.1 * |
| Cycs | 1.0 ± 0.2 | 2.2 ± 0.1 * | 1.9 ± 0.1 * |
| Atp5k | 1.0 ± 0.1 | 1.2 ± 0.1 | 0.8 ± 0.1 |
| Atp5j2 | 1.0 ± 0.2 | 1.7 ± 0.1 * | 1.4 ± 0.1 * |
| Ucp2 | 1.0 ± 0.1 | 0.8 ± 0.0 * | 1.0 ± 0.0 |