Figure S1. NMR analysis of lipid extracts revealed similar incorporation of $[^{13}\text{C}]$ in normoxia (Nx) and hypoxia (Hx). Quantification of CH3-methyl lipids was calculated as: Peak area/number of cells $\times 10^3$. 
Supplementary Figure 2

**Figure S2.** Mass Spectrometry metabolic profiling of aqueous extracts revealed no differences in the percentage of $[^{13}\text{C}]$-labeled metabolites in normoxia (Nx) and hypoxia (Hx).
Figure S3. Glycogen content is dynamically regulated in human adipocytes. Fully differentiated SGBS and Lisa-2 adipocytes were cultured in the presence (ctrl) or in the absence of glucose (-Glc), following 24 hour-incubation with 20mM glucose and 10 nM ins (+Glc) for 24 hours, and glycogen content was determined.
**Figure S4. PTG overexpression does not impact mitochondria.** Differentiated SGBS cells were transduced with Ad-GFP or Ad-PTG and (A) Cell extracts were subjected to gene expression analysis with a range of metabolic markers (n=4). Data are expressed as mean ± SEM. *p< 0.05. (B) Lactate concentration was measured from the conditioned medium of SGBS infected cells (n=3). (C) High-resolution mitochondrial respirometry (n=8).
Figure S5. **PTG deletion alters inflammatory gene expression profile in adipose tissue.** Genes expression analysis of inflammatory markers from 12-weeks-old male control (n=3) and PTG-KO (n=3) mice. Data are expressed as mean± SEM. * p<0.05; ***p<0.001.
Supplementary Figure 6

Figure S6. Insulin sensitivity in lean patients is not associated with changes in glycogen-related gene expression. Representative immunoblotting of GBE1, PPP1R3E and GS protein in SAT from lean patients classified according to insulin resistance assessed by HOMA-IR. GAPDH was used as a loading control. Quantification is shown (n=3).
**Figure S7. PPP1R3E and PTG overexpression.** SGBS cells were transduced with Ad-GFP, Ad-3E or Ad-PTG, followed by incubated in medium with 25mM glucose for 24h. Western blot analysis on total cell extracts hybridized with antibodies against (A) PPP1R3E or (B) PTG. α-Actin was used as loading control. (C) Glycogen content was assessed from two experiments performed in triplicate. Mean±SEM. *p< 0.001; ** p< 0.0001.