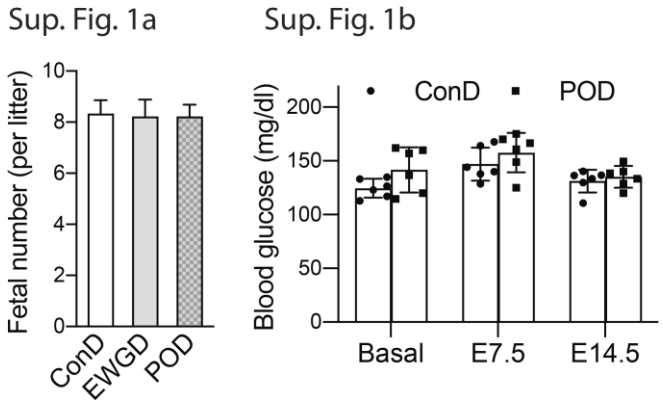
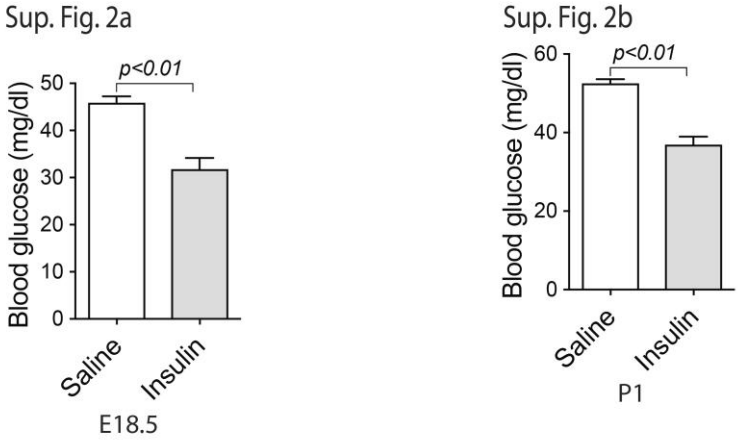
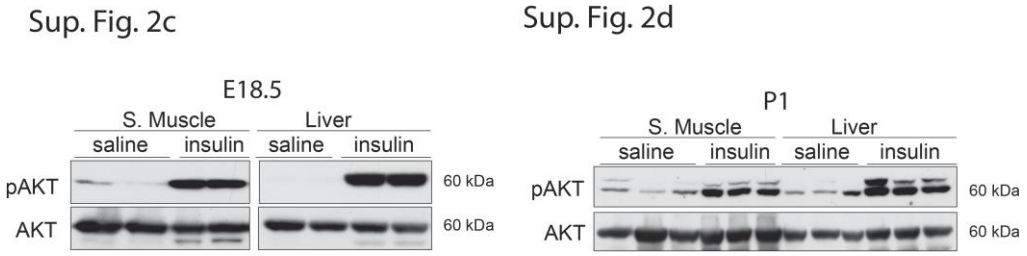
SUPPLEMENTARY DATA

Supplementary Figure S1. Maternal HF feeding did not alter litter size and prepregnant HF feeding did not increase maternal blood glucose during pregnancy. C57BL/6 female mice were fed with HF diet for 3 months, then switch back to chow for 2 months before pregnancy (POD) or only during pregnancy (EWGD). Fetal number were counted at E18.5, n=8 litters (a). Blood samples of POD and control dams (ConD) were collected at indicate gestational age and at fed state. n= 6 (b).



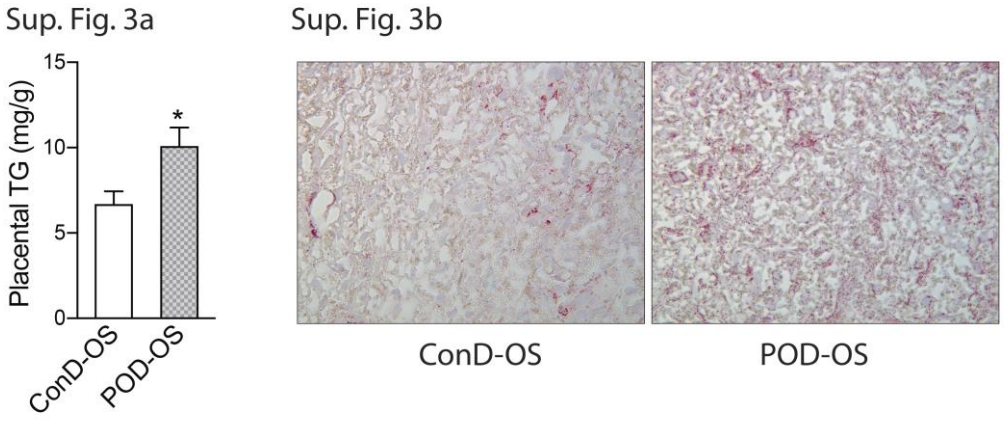
Supplementary Figure S2. Insulin stimulates glucose disposal and insulin signaling in mouse fetuses and neonates. To study the regulatory effect of insulin on glucose metabolism, insulin was injected (i.p) into placenta-attached fetuses (a&c) and P1 pups (b&d). A significant reduction in blood glucose was observed after 10 min treatment (a&b). A significant increase in phosphorylation of AKT protein was also detected in skeletal muscle and livers (c&d). n= 6.





SUPPLEMENTARY DATA

Supplementary Figure S3. Prepregnant HF feeding increases placenta TG accumulation. Maternal obesity was created by HF feeding 3 month before mating. Placentas were collected at E18.5. Placental TG were extracted and quantified (a, n=8). Lipid droplets were stained by oil red O (b). Increased lipid droplets (red dots) were observed in labyrinth layer (b, 20x).



Supplementary Figure S3. Prepregnant HF feeding increased maternal adiposity and blood insulin concentrations in *Atgl*$^{f/f}$;*Tpbpa-Cre*$^{+/-}$ female mice. Ten weeks old *Atgl*$^{f/f}$;*Tpbpa-Cre*$^{+/-}$ female mice were fed with HF (named as POD) or chow (ConD) for 3 month, then switched diet back to chow 2 months before mating and during pregnancy. Same as C57BL/6 mice (see detail in figure 1), maternal adiposity (a) and blood insulin (d) were significantly increased in PODs. A reduction in fetal body weights were observed in PODs at E18.5 (b). However, there was no significant changes in litter size (c), maternal blood glucose (e) and FFA (f) concentrations.