# Diet-induced obesity aggravates preeclampsia-like phenotypes in ASB4-null mice

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## Background

- Obesity is a growing risk factor for preeclampsia.
- In the past three decades, the incidence of preeclampsia has significantly increased. The increase mirrors the increase in maternal obesity.
- The precise mechanism by which obesity influences preeclampsia is unclear. The effects of high fat diets on preeclampsia in animal studies are controversial.
- Ankiryn-repeat-and-SOCS-box-containing-protein 4 (ASB4) is necessary for embryo implantation in mice. ASB4-null female mice develop preeclampsia-like phenotypes during pregnancy.

## Objective

To measure effect of a high-fat diet induced obesity on preeclampsia-like phenotype in ASB4-null pregnant mice.

## Methods

**Mice:** ASB4-null females were assigned to either a high-fat diet (**HF**) or normal chow (**NC**) group at age of 3-4 weeks. At age of 8-9 weeks they were mated with ASB4-null males and the outcomes of pregnancy were determined at 18.5 day post coitus (dpc).
**Systolic blood pressure:** measured by tail-cuff.
**Urinary albumin:** measured by an ELISA kit.
**Kidney structure:** analyzed by electron microscope.
**Plasma lipid:** measured by a kit.

## Results

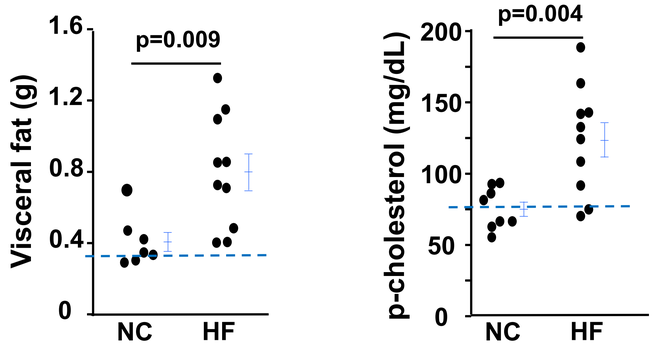


**Figure 1: HF increases maternal visceral fat and plasma lipid. The broken blue lines indicate normal values in wild type (WT) pregnant mice. n≥7**

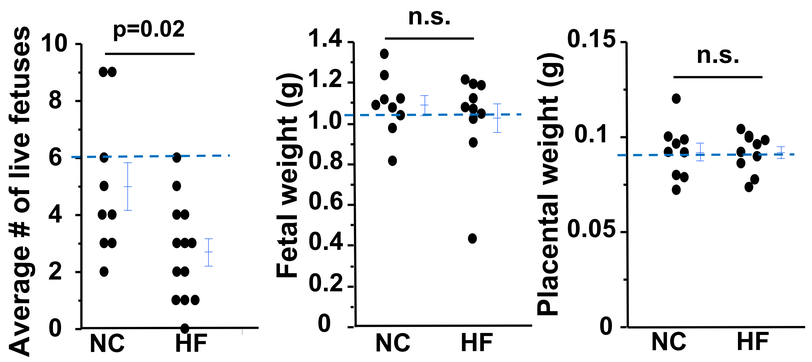


**Figure 2: HF-induced maternal obesity decreases fetal number, but does not alter fetal and placental weight. The broken blue lines indicate normal values in WT pregnant mice. n.s. not significant difference. n≥9**

## Results

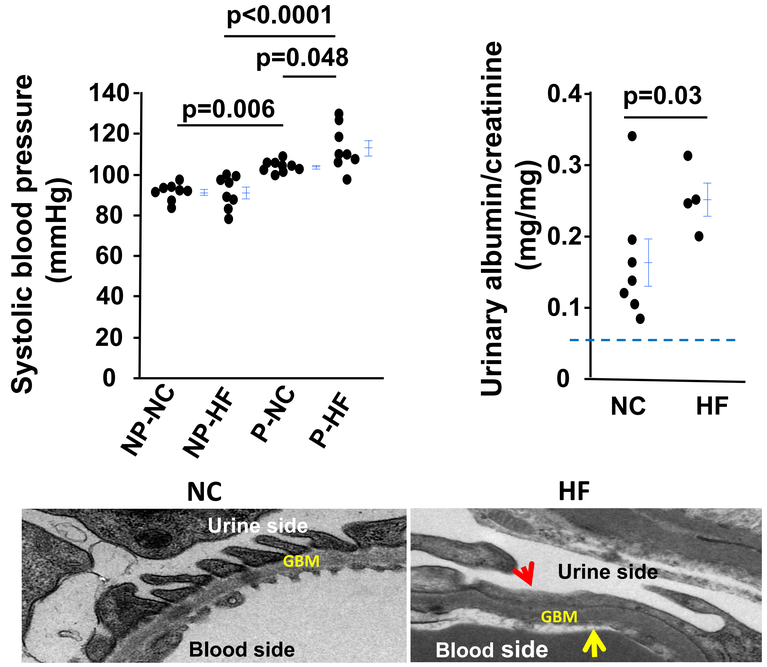


**Figure 3: HF-induced maternal obesity increases maternal blood pressure and urinary albumin to a greater extent, and impairs glomerular endothelial and epithelial cells (podocytes). NP: non-pregnant. P: pregnant. Red arrow: effacement of podocyte food process. Yellow arrow: loss of endothelial fenestrae. The broken blue lines indicate normal values in WT pregnant mice. GBM: Glomerular Basement Membrane**

## Conclusions

The impaired lipid metabolism may lead to the aggravated maternal and fetal phenotypes of preeclampsia in ASB4-null pregnant mice. Interrogation of maternal lipid metabolism in preeclampsia may reveal novel pathways to target for prevention.

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