

Maternal microbes mediate diet-derived damage

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New research in *The Journal of Physiology* has found, using a mouse model, that microbes in the maternal intestine may contribute to impairment of the gut barrier during pregnancy.

Scientists previously thought the changes in maternal metabolism that

happen during [pregnancy](#) were due entirely to pregnancy hormones. We now believe that changes in the [microbes](#) that live in the maternal gut may contribute to these metabolic changes. If they do, then this provides us with a therapeutic opportunity to modify this microbial community during pregnancy to improve maternal and offspring health.

The gut acts as a barrier preventing microbes and other intestinal contents from entering the bloodstream, but in pregnant mice more molecules were able to cross this barrier. This loss of barrier was even greater when pregnant mice were fed a [high-fat diet](#), resulting in increased inflammatory markers in maternal circulation.

These changes in the mother may be impacting the development of the placenta, as placental oxygen levels were decreased by maternal high-fat diet. Changes in the placenta could contribute to altered [fetal development](#) which was what the authors found in the fetal intestines. Impaired fetal intestinal development could lead to altered intestinal function after birth and ultimately impact the baby's metabolism.

Researchers discovered these changes by feeding their female mice a diet high in fat for 6 weeks before and throughout pregnancy. They then studied how the intestinal community of microbes changed. They tested the maternal intestinal barrier by measuring how much of a large molecule was able to cross the from the maternal intestine into the bloodstream and then looked at how the placenta and fetus developed.

Deborah Sloboda, senior author on the study, said:

"We are currently investigating when these changes in maternal [barrier](#) function occur and how they interact with the microbes in the intestines to influence the metabolism of the mom and development of the baby."

More information: Wajiha Gohir et al, High-fat diet intake modulates

maternal intestinal adaptations to pregnancy, and results in placental hypoxia and altered fetal gut barrier proteins and immune markers, *The Journal of Physiology* (2019). [DOI: 10.1113/JP277353](https://doi.org/10.1113/JP277353)

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