

 GUT MICROBIOTA

The gut microbiota is profoundly altered over the course of pregnancy

A study published in *Cell* has demonstrated that the gut microbiota undergoes marked changes between the first (T1) and third (T3) trimesters of pregnancy.

Koren *et al.* obtained diet information, clinical data and stool samples (during T1 and T3) from 91 pregnant women. Culture-independent techniques were then used to characterize the gut microbiota. The results showed that during T1 the composition of the gut microbiota was similar to that of healthy nonpregnant women and men. However, by T3, an increase in the levels of Proteobacteria and Actinobacteria was observed, along with a general reduction in bacterial diversity. Interestingly, inter-individual diversity increased, but these changes did not seem to be associated with the diet or health of the individual women. Stool samples were also obtained from the women's infants; these demonstrated that the children's microbiotas were most similar to their mothers' T1 microbiotas.

The team took their research a step further by transferring microbiota samples from the pregnant women into germ-free mice. In particular, T3 microbiota samples were shown to induce reduced insulin sensitivity, inflammation and weight gain in the mice. These findings show that metabolic changes during pregnancy are similar to those described for the metabolic syndrome. However, in contrast to the long-term detrimental effects associated with the metabolic syndrome, these changes might be beneficial in pregnancy, supporting growth of the fetus and preparing the body for lactation.

Koren and colleagues hypothesize that during pregnancy, host–microbial interactions are manipulated to induce these beneficial metabolic changes.

Isobel Franks

Original article Koren, O. *et al.* Host remodeling of the gut microbiome and metabolic changes during pregnancy. *Cell* 150, 470–480 (2012)