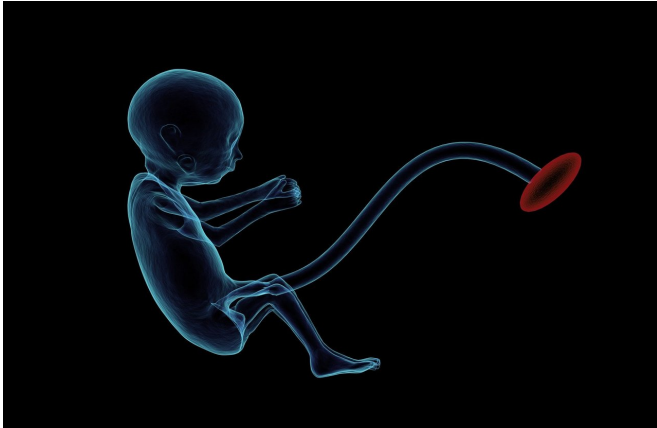


Even the fetus has gut bacteria, study shows

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A study in humans and mice demonstrated that a fetus has its own microbiome, or communities of bacteria living in the gut, which are known to play important roles in the immune system and metabolism. Researchers also confirmed that the fetal microbiome is transmitted from the mother. These findings open the door to potential interventions during pregnancy to stimulate the fetal microbiome when a premature birth is expected, to help the baby grow faster and be better equipped to tolerate early life infection risk. The study was published in the journal *JCI Insight*.

"Our study provides strong proof that a complex microbiome is transmitted from the mother to the fetus," says senior author Patrick Seed, MD, Ph.D., Associate Chief Research Officer of Basic Sciences at Stanley Manne Children's Research Institute at Ann & Robert H. Lurie Children's Hospital of Chicago, and Research Professor of Pediatrics, Microbiology and Immunology at Northwestern University Feinberg School of Medicine. "Unlike other studies relying only on next generation DNA sequencing, we validated our sequencing results with microscopy and culture

techniques, to resolve a decades long controversy about the existence of a fetal microbiome. Now we can pursue ways to boost the development of fetal [immune system](#) and metabolism by stimulating mom's microbiome. Our findings point to many promising opportunities for much earlier intervention to prevent future disease."

The human microbiome is estimated to consist of over a trillion bacteria in a single person, with 10 times the number of microbial cells to every human cell. Research has established that specific microbiome characteristics play causal roles in obesity, allergy, asthma, diabetes, autoimmune disease, depression and a variety of cancers.

"Establishing a dynamic [microbiome](#) in the fetus leads us to suspect that controlled exposure to microbes trains the developing immune system and metabolism," says Dr. Seed. "We need more research to better understand the mechanisms involved and how we can intervene to improve children's health at the start of life and beyond."

More information: Noelle Younge et al, Fetal exposure to the maternal microbiota in humans and mice, *JCI Insight* (2019). [DOI: 10.1172/jci.insight.127806](#)

Provided by Ann & Robert H. Lurie Children's Hospital of Chicago

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