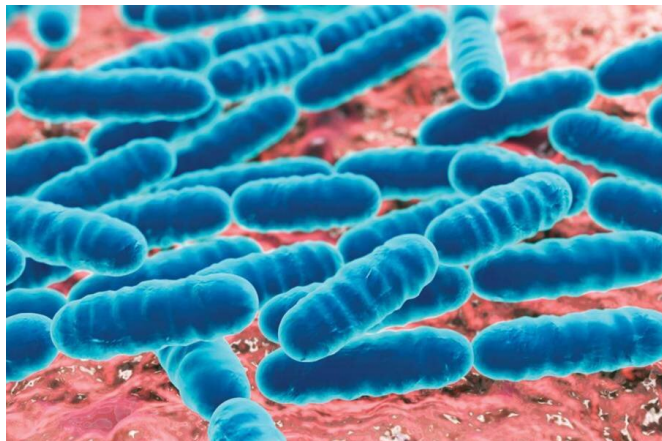


A mother's microbes may be a signifier of her child's future health, researchers say

20 August 2019, by Michael Eisenstein



Credit: Johns Hopkins University

You might have been born with your mother's eyes, but you also got many of her microorganisms. And that might be a good thing, according to Noel Mueller an assistant professor in the Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health.

"You're essentially free of [microbes](#) in the intrauterine environment, and then your first microbial exposure happens at birth," Mueller explains. "Those microbes teach your [immune system](#) and body what's friend and what's foe and participate in metabolism and generation of nutrients."

These microbes form a vibrant intestinal community known as the gut microbiome. Mueller believes that early imbalances in the composition of this ecosystem could have serious health consequences as we age.

In a December study published in *Nutrients*, Mueller and colleagues found that a less diverse gut microbiome was associated with adult obesity and hypertension. They linked this risk to poor

absorption of short-chain fatty acids—beneficial byproducts from microbial digestion of the fiber we consume. Patients with unhealthy microbiomes tended to excrete these molecules in their stool rather than retain them.

Mueller is now exploring how the [gut microbiome's](#) health effects are shaped at birth. "We've done numerous observational studies looking at vaginally delivered and C-section–delivered babies and found consistent differences in certain species of bacteria ... and their metabolic function," he says. His team further found that children born by C-section, and thus not exposed to microbes in the [birth canal](#), face roughly 50% greater risk of childhood obesity.

Although intriguing, these observations do not prove causality. Mueller is therefore embarking on a randomized controlled trial of women who have given birth via C-section to see whether these infants benefit from postnatal exposure to their mothers' microbes. "We're interested in determining whether the bacteria they would otherwise share with their babies naturally could help to reduce this excess weight gain," he says.

More information: Jacobo de la Cuesta-Zuluaga et al. Higher Fecal Short-Chain Fatty Acid Levels Are Associated with Gut Microbiome Dysbiosis, Obesity, Hypertension and Cardiometabolic Disease Risk Factors, *Nutrients* (2018). [DOI: 10.3390/nu11010051](https://doi.org/10.3390/nu11010051)

Provided by Johns Hopkins University

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