

# Bacteria do not colonize the gut before birth, says collaborative study

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First author and PhD student Katherine Kennedy (left) and PhD student Patrycja Jazwiec. Credit: McMaster University

It is well known that each person's gut bacteria is vital for digestion and overall health, but when does that gut microbiome start?

New research led by scientists from McMaster University and Charité-Universitätsmedizin Berlin in Germany has found it happens during and after [birth](#), and not before.

McMaster researchers Deborah Sloboda and Katherine Kennedy examined prenatal stool (meconium) samples collected from 20 babies during breech Cesarean delivery.

"The key takeaway from our study is we are not colonized before birth. Rather, our relationship with our [gut bacteria](#) emerges after birth and during infancy," said Kennedy, first author of the study and a Ph.D. student, whose findings are published in *Nature Microbiology*.

Recent studies have sparked controversy by claiming that we are colonized by gut [bacteria](#) before birth. But, Kennedy said, studies such as these have been criticized for the ways they control for contamination.

"By including only breech cesarean deliveries in healthy pregnant women we were able to avoid the transmission of bacteria that occurs naturally during a vaginal birth," said Thorsten Braun, co-senior author and lead obstetric consultant and deputy director of the Department of Experimental Obstetrics at Charité-Universitätsmedizin Berlin.

Kennedy said recent data suggest that a person's relationship with their own gut bacteria is most important in [early life](#), during critical stages of immunological and physiological development.

Sloboda, co-senior author, agrees.

"The fact that colonization of infants' guts occurs during and after their births means that not only is it vulnerable to early [environmental influences](#), but could also offers a window of potential intervention," said Sloboda, professor of biochemistry and [biomedical sciences](#) at

McMaster, and the Canada Research Chair in perinatal programming.

"While many of the exact mechanisms surrounding gut bacteria and their role in our early development is unclear, discovering when and how we are colonized is a key first step."

**More information:** Katherine M. Kennedy et al. Fetal meconium does not have a detectable microbiota before birth, *Nature Microbiology* (2021). [DOI: 10.1038/s41564-021-00904-0](https://doi.org/10.1038/s41564-021-00904-0)

Provided by McMaster University

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