

Infant antibiotic exposure can affect future immune responses toward allergies

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Exposure to antibiotics in utero and infancy can lead to an irreversible loss of regulatory T-cells in the colon—a valuable component of the immune system's response toward allergens in later life—after only six

months, a Rutgers researcher found.

The study was published in the journal *mBio*.

It is already known that the use of antibiotics early in life disrupts the [intestinal microbiota](#)—the trillions of beneficial microorganisms that live in and on our bodies—that play a crucial role in the healthy maturation of the immune system and the prevention of diseases, such as obesity and inflammatory bowel disease. However, less is known about how disruption of the microbiota, which produce short chain fatty acids that regulate T-cells, effects T-cells in the colon.

The study, based on a [mouse model](#), looked at fetal and newborn exposure to [antibiotics](#) through the mother in the weeks immediately preceding and after birth, the time when microbial communities assemble and are prone to disruptions, to investigate how this reduction in beneficial bacteria affects neonatal immune system development. These effects were specific to the colon and not observed in the lungs, upper gastrointestinal tract or spleen.

"By studying the exposure to newborns through lactating mothers, we see how the offspring acquire their mothers' antibiotic-impacted microbiota, which compromises their ability to generate a pool of CD41 T cells in the [colon](#), resulting in long-term damage," said co-author Martin Blaser, director of the Center for Advanced Biotechnology and Medicine at Rutgers. "The consequences persist into adulthood, compromising the body's ability to turn off allergic responses."

More information: Xiaozhou Zhang et al, An Antibiotic-Impacted Microbiota Compromises the Development of Colonic Regulatory T Cells and Predisposes to Dysregulated Immune Responses, *mBio* (2021). [DOI: 10.1128/mBio.03335-20](https://doi.org/10.1128/mBio.03335-20)

Provided by Rutgers University

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