

New report links early life antibiotic use to inflammatory gut diseases in adulthood

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A new research report in the *Journal of Leukocyte Biology* involving mice shows that antibiotic use very early in life that alters the normal development/growth of gut bacteria, may contribute to the development of inflammatory bowel disease, and potentially other inflammatory diseases like asthma and multiple sclerosis. This study adds more evidence to suggest that altering gut flora may be a viable treatment strategy for some inflammatory diseases.

"Our study demonstrates that [gut bacteria](#) in early life do affect disease development in adulthood, but this response can be changed," said Colby Zaph, Head, Laboratory of Mucosal Immunity and Inflammation, Department of Biochemistry and Molecular Biology, School of Biomedical Sciences at Monash University, Australia. "This has important ramifications for the use of pre- and probiotics, the administration of antibiotics to neonates, and our understanding of how gut bacteria play a critical role in influencing the development of [inflammatory diseases](#) such as IBD."

In this study, Zaph and colleagues used two groups of mice. The first group included pregnant females treated with broad spectrum antibiotics during pregnancy and pups treated with [broad spectrum antibiotics](#) for the first 3 weeks of life. The second group was a control group that consisted of untreated pregnant mothers and pups. The pups in the treated group were weaned at 3 weeks of age and antibiotic treatment was stopped at the same time. These pups had reduced levels of gut bacteria and were allowed to age normally. At 8 weeks of age, immune

cells (CD4 T cells) from both the treated and untreated pups were examined for their ability to induce irritable bowel disease in other mice. The immune cells from antibiotic-treated mice induced a more rapid and more severe disease than those from the untreated mice.

"Our intestinal commensal bacteria are now understood to have a major role in shaping immune health and disease, but the details for this process remain poorly understood," said John Wherry, Ph.D., Deputy Editor of the *Journal of Leukocyte Biology*. "These new studies provide an important clue as to how the early signals from our gut bacteria shape key [immune cells](#) and how these neonatal events can shape disease potential later in life."

More information: Sebastian Scheer et al, Early-life antibiotic treatment enhances the pathogenicity of CD4T cells during intestinal inflammation, *Journal of Leukocyte Biology* (2017). [DOI: 10.1189/jlb.3MA0716-334RR](#)

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