

Stress affects the balance of bacteria in the gut and immune response

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Stress can change the balance of bacteria that naturally live in the gut, according to research published this month in the journal *Brain, Behavior, and Immunity*.

"These bacteria affect immune function, and may help explain why stress dysregulates the immune response," said lead researcher Michael Bailey.

Exposure to stress led to changes in composition, diversity and number of gut microorganisms, according to scientists from The Ohio State University. The [bacterial communities](#) in the intestine became less diverse, and had greater numbers of potentially [harmful bacteria](#), such as *Clostridium*.

"These changes can have profound implications for physiological function", explained Dr Bailey. "When we reduced the number of bacteria in the intestines using antibiotics, we found that some of the effects of stress on the immune system were prevented", he added. "This suggests that not only does stress change the bacteria levels in the gut, but that these alterations can, in turn, impact our immunity."

"This is the first evidence that the gut microorganisms may play a role in innate immunological stress responses," said Monika Fleshner, Professor of Integrative Physiology at the University of Colorado, Boulder. "The study reveals the dynamic interactions between multiple physiological systems including the intestinal [microbiota](#) and the immune system."

Because [gut bacteria](#) have been linked to diseases like [inflammatory bowel disease](#), and even to asthma, a future goal of the study is to determine whether alterations of gut bacteria is the reason why these diseases tend to be worse during periods of pressure.

More information: Article: "Exposure to a social stressor alters the structure of the intestinal microbiota: Implications for stressor-induced immunomodulation" by Michael T. Bailey, Scot E. Dowd, Jeffrey D. Galley, Amy R. Hufnagle, Rebecca G. Allen and Mark Lytee; Commentary: "The gut microbiota: A new player in the innate immune stress response?" by Monika Fleshner.

The article appears in *Brain, Behavior, and Immunity*, Volume 25, Number 3 (March 2011)

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