

# Can changes in the brain affect your microbiome?

October 29 2015, by Ellen Goldbaum

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The microbiome in your gut can affect your brain: More and more data have recently shown that. But can it go the other way? Can brain changes affect your gut microbiome? And if so, do these changes affect your health and well-being?

A University at Buffalo researcher is leading a pilot study to answer that question. The goal is to determine whether behavioral self-management of a painful and common gastrointestinal disorder may lead to fundamental changes in the gut microbiome, the digestive system's bacterial ecosystem.

The study is being conducted with a subset of patients enrolled in a large, National Institutes of Health-funded study being led by Jeffrey Lackner, PsyD, professor in the Department of Medicine in the Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo and director of the Behavioral Medicine Clinic. That multicenter study focuses on whether a specific, non-drug treatment—a cognitive behavior therapy program—can relieve the often-debilitating symptoms of [irritable bowel syndrome](#) (IBS) for which there is no satisfactory medical treatment.

Lackner has teamed with Kirsten Tillisch, MD, associate professor, and Emeran A. Mayer, MD, PhD, of the Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress at the University of California, Los Angeles, to explore some of the implications of that study. The goal of the [pilot study](#) is to determine if the behavioral

strategies that IBS patients use to reduce their gastrointestinal (GI) symptoms also lead to changes in the microbial composition in the gut.

"We know that the [gut microbiome](#) can influence neural development, [brain](#) chemistry, mood, pain perception and how the stress system responds," said Lackner.

"Our research has shown that manipulation of the gut microbiota with probiotics can change the way our brain responds to the environment," explained Tillisch. "Because the brain-gut-microbiota connection is a two-way street, we believe that central or brain-directed treatments like [cognitive behavior](#) therapy may reduce GI symptoms by altering the [gut microbiota](#). This really has game-changing implications for how we understand the brain and its impact on the gut and vice versa."

The two-year study, funded by UB's Office of the Vice President for Research and Economic Development, will involve 30 Western New York patients enrolled in the IBS Outcome Study. That study, known as the IBSOS, is funded by the National Institute of Diabetes and Digestive and Kidney Diseases of the NIH.

Participants in the study will collect stool samples at home before and after treatment, as well as track their GI symptoms and well-being throughout their participation in the study.

"This is a unique opportunity to identify the physical basis for why behavioral treatments for IBS work," said Lackner. "It can really help us unravel some of the mystery underlying brain-[gut](#) interactions as they relate to a major health problem like IBS. We believe that this research may lead to more focused and effective treatments for IBS and other medical disorders for which there is no satisfactory medical cure."

Provided by University at Buffalo

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