

'Knowing it in your gut' is real

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A lot of chatter goes on inside each one of us and not all of it happens between our ears.

Researchers at McMaster University discovered that the "cross-talk" between bacteria in our gut and our [brain](#) plays an important role in the development of psychiatric illness, intestinal diseases and probably other health problems as well including obesity.

"The wave of the future is full of opportunity as we think about how [microbiota](#) or bacteria influence the brain and how the bi-directional communication of the body and the brain influence [metabolic disorders](#), such as obesity and diabetes," says Jane Foster, associate professor in the Department of Psychiatry and Behavioural Neurosciences of the Michael G. DeGroote School of Medicine.

Using germ-free mice, Foster's research shows [gut bacteria](#) influences how the brain is wired for learning and memory. The research paper has been published in the March issue of the science journal *Neurogastroenterology and Motility*.

The study's results show that genes linked to learning and memory are altered in germ-free mice and, in particular, they are altered in one of the key [brain regions](#) for learning and memory – the hippocampus.

"The take-home message is that gut bacteria influences anxiety-like behavior through alterations in the way the brain is wired," said Foster.

Foster's laboratory is located in the Brain-Body Institute, a joint research initiative of McMaster University and St. Joseph's Healthcare in Hamilton. The institute was created to advance understanding of the relationship between the brain, nervous system and bodily disorders.

"We have a hypothesis in my lab that the state of your immune system and your gut bacteria – which are in constant communication – influences your personality," Foster said.

She said psychiatrists, in particular, are interested in her research because of the problems of side effects with current drug therapy.

"The idea behind this research is to see if it's possible to develop new therapies which could target the body, free of complications related to getting into the brain," Foster said. "We need novel targets that take a different approach than what is currently on the market for [psychiatric illness](#). Those targets could be the immune system, your gut function...we could even use the body to screen patients to say what drugs might work better in their brain."

Provided by McMaster University

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