

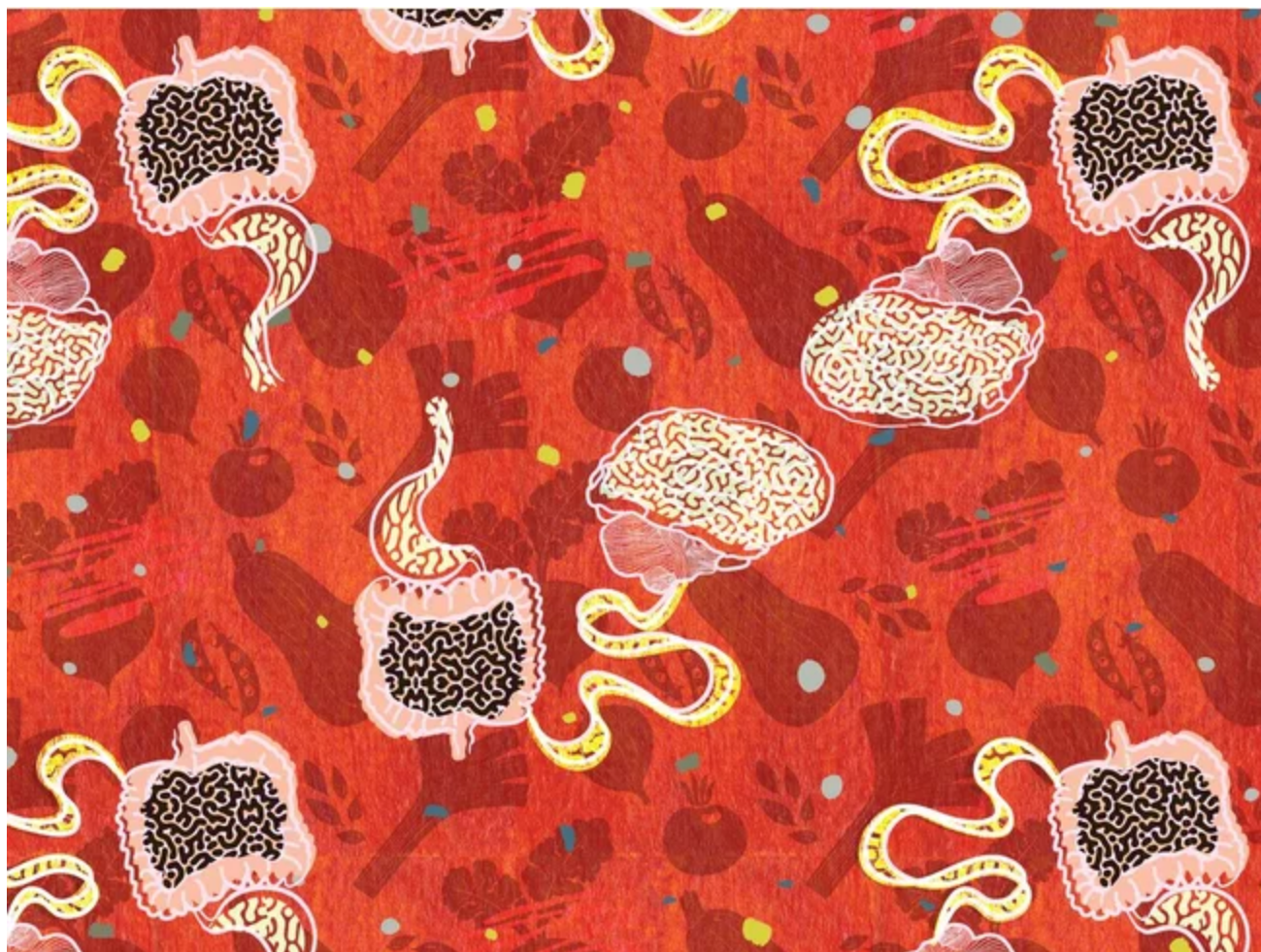
Why Your Body's Gut-Brain Connection Can Affect Your Mental Health

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Since May is Mental Health Awareness Month, we wanted to know: What if your gut microbiome could help you better control your brain?

By Christabel Lobo

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Credit: Christabel Lobo

Research has shown us that a sedentary lifestyle, stress, and low levels nutrients like vitamin D can all play a significant role in affecting your mental health. Learning how to identify, manage, and sometimes medicate what triggers you have all been key to helping improve your mental wellbeing.

But what if another method of treatment already exists within you—your gut microbiome?

What Exactly is the Gut Microbiome?

Our gut microbiomes are composed of approximately 100 trillion microorganisms that exist in our gastrointestinal tracts, [Dr. Robin Rose](#) explains. "This plethora of bacteria, viruses, fungi, protozoa, and archaea are responsible for influencing metabolism, nutrition, physiology, immune function, and mental health." A board-certified gastroenterologist and internist, Rose is also the founder of [Terrain Health](#), a Connecticut-based functional medicine practice focused on the treatment of health conditions rooted in gut-brain axis dysfunction.

Rose believes that working to restore the health of your gut first is an integral part of addressing mood disorders and neurodegenerative disease. "There's a direct correlation between your mental health and the species that inhabit your gut microbiome," Rose explains. When gut function is compromised, so is the synthesis of several key substances including mood-affecting neurochemicals like GABA, dopamine, and serotonin."

While the exact interactions of the gut-brain axis are still being elucidated in an emerging field of study known as nutritional psychiatry, studies show that imbalances in the ratio of so-called "good bacteria" to "bad bacteria" have been associated with mood disorders including anxiety and depression, explains Whitney English, MS, RDN, CPT, of [Plant-Based Juniors](#). "Our guts and brains are constantly in communication with each other via neurotransmitters and compounds produced by the microbiome," English says. "When we don't have enough 'good guys,' important messages related to energy regulation and proper immune functioning can end up getting lost in translation!"

The Wonderful World of Nutritional Psychiatry

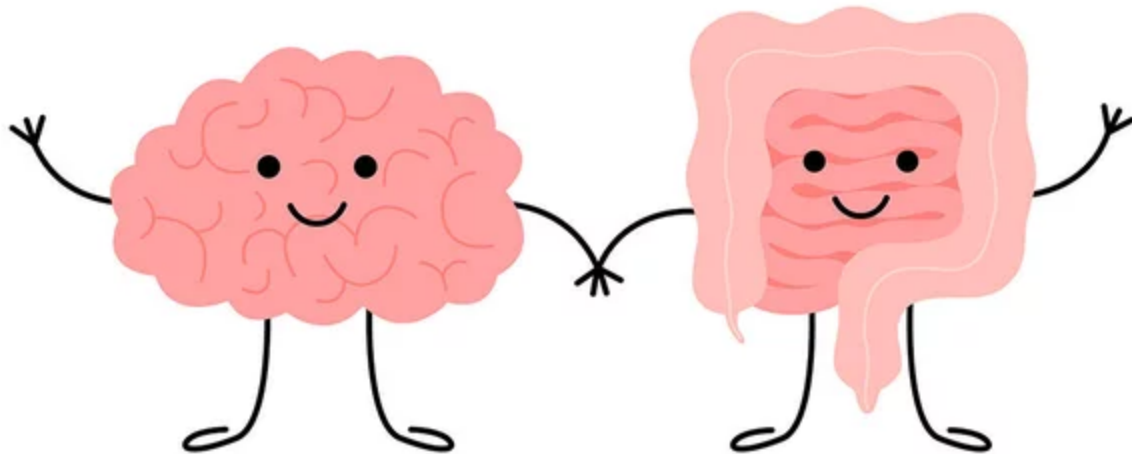
Exploring the role the gut-brain axis plays on mental health, nutritional psychiatry reveals that what we eat has a major impact on not just our digestive and physical health but our emotions and mood as well. "Nutritional psychiatry is really an additional tool in the toolkit for those with mental health issues," explains [Dr. Uma Naidoo](#). "It can be used alongside medications or any other form of treatment that someone may be taking."

A Harvard- trained psychiatrist, nutritionist, and the author of *[This is Your Brain on Food](#)*, Naidoo is the founder and director of the country's first nutritional psychiatry program at Massachusetts General Hospital in Boston. A pioneer in this nascent field, she is also a faculty member at [Harvard Medical School](#) and serves as a culinary instructor at the [Cambridge School of Culinary Arts](#).

Seamlessly integrating her decades' worth of experience in the fields of clinical psychiatry, nutrition, and cooking have allowed Naidoo to connect the dots between our guts and our brains. And, as it turns out, a meaningful connection does exist—what we eat does, in fact,

impact how we feel.

The Gut-Brain Axis is a Highway



Credit: Getty

"Many people might roll their eyes when you talk about the gut-brain connection because the gut and brain are not close by in the body," Naidoo says. "But when you break it down, the gut and brain arise from the exact same cells in the human embryo." In her book, *This is Your Brain on Food*, Naidoo explains things further—these cells divide to form different organs throughout the body, the gut and brain included.

The gut's enteric nervous system forms in a similar manner. Neural crest cells—the same cells responsible for the body's central nervous system—migrate down the embryo to the developing gut, resulting in the formation of the body's largest collection of nerve cells. These 100 to 500 million neurons, Naidoo explains, control everything from digestion and inflammation to immune response and regulation of fluid within the gut. They're also the main reason why the gut is often referred to as the body's "second brain."

The gut and brain also remain connected anatomically by the vagus nerve, according to both Naidoo and [recent research](#). Originating in the brain stem, the vagus nerve passes all the way from our brains through our necks, past our thoraxes down to our abdomen. "I like to call it a two-way superhighway because it works 24/7/365, allowing for chemical messaging to occur between these two organs," Naidoo says.

Loneliness and the Gut Microbiome

According to [Dr. Tanya Nguyen](#), a clinical neuropsychologist and assistant professor of psychiatry at UC San Diego, our gut microbiomes are established at birth and develop rapidly in the years that follow. An expert in the fields of microbiome and healthy aging, Nguyen explains that environmental factors such as diet, use of antibiotics, exposure to infections, and geography all play a role in determining which specific microbes get to colonize the developing gut.

Her research focuses on the symbiotic relationship between our gut microbiomes and our brains, including the role of the gut-brain axis on our emotional states, as well as acceleration of mental illness and healthy aging. In fact, a growing body of [research](#) in the field of nutritional psychiatry shows a direct correlation between food and mood.

"The microbes in our gut can produce specific metabolites that are either beneficial or harmful to our bodies," Nguyen says. The digestion of fibrous foods—such as vegetables and grains—by intestinal bacteria, for example, results in the production of metabolites known as short-chain fatty acids (SCFAs). Nguyen explains that these metabolites are believed to mediate the gut-brain axis crosstalk and may also be involved in critical phases of neurodegenerative disorders like Alzheimer's and Parkinson's.

Nguyen's latest study (published in *Frontiers in Psychiatry* this March) combines the two, showing that gut health directly impacts our feelings of loneliness and wisdom—and vice versa. But as she explains of the cross-sectional study that only studied people at a single time point, "We do not fully know the directionality of this relationship."

Regardless of which comes first, a biological connection exists between the two, leaving the possibility for novel therapeutic approaches that involve [food and diet](#) wide open.

Eating to Improve Your Mood

When it comes to eating to diversify our gut microbiotas, English recommends foods [high in fiber](#). "Fiber is the fuel that powers our gut microbiome and supports bacterial diversity," English says. "Fiber-rich foods include whole grains, legumes, nuts, seeds, and fruits and vegetables."



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As per the 2015-2020 Dietary Guidelines for Americans, women under 50 should consume at least 25 grams of fiber per day. Men under 50 should aim for 31 grams of fiber per day. However, most Americans fall short—in fact, according to survey results from What We Eat in America, the country's fiber intake for the last decade averages just 16 grams per day.

"A low-fiber diet may contribute to mood disorders by reducing the number of beneficial bacteria in the gut," English explains. This results in a reduction of SCFAs, which "have been shown to modulate our response to a psychological stressors." A decrease in the production of SCFAs, however, leads to just the opposite—an increase in anxiety and unregulated release of the body's stress hormone, cortisol.

English also suggests adding fermented foods such as yogurt, kimchi, miso, kefir, and pickled vegetables to your diet. "Known as probiotics, these foods contain live microorganisms that help popular the gut with beneficial bacteria," English says. "Though firm data in humans is lacking, some studies have shown improvements in mood outcomes after the consumption of fermented foods."

Following an all-encompassing diet that's rich in whole, fresh, local, and seasonal foods—like the Mediterranean diet—seems to be the general consensus in working to keep your gut microbiome healthy. "Consuming foods that help to diversify and restore your existing gut microbiome have shown to convey a range of important health benefits, including inflammation in the gut and helping improve symptoms of depression and anxiety," explains Susan Greeley, chef-instructor and RDN at the Institute of Culinary Education.

Offering a good balance of the polyunsaturated omega-3 and omega-6 fats, as well as monounsaturated fats, fiber, and a wide variety of phytonutrients, Greeley says that the Mediterranean diet can help in supporting a healthy gut microbiome, reducing inflammation and improving your overall health and mental wellbeing.

Though the gut-brain axis may be an incredibly intricate and complicated system, Naidoo wants people to understand that nutritional psychiatry is not an all-or-nothing response. "It's not medications *or* nutrition," Naidoo explains. "It's about a combined holistic integrated approach that helps you eat in a healthier way that benefits your mental system."
