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Turns Out Bacteria in Your Gut Divides People into Three Groups

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Every human being serves as a home to thousands of different species of microbes. But scientists are now reporting that there are just three distinct microbial ecosystems in the guts of people they have studied.

The three "enterotypes" showed no particular link to ethnic background, sex, weight, health or age. One possibility is that the intestines of infants are simply randomly colonized by different pioneering species of microbes, which alter the gut so that only certain species can follow them.



The New York Times reports:

"Whatever the cause of the different enterotypes, they may end up having discrete effects on people's health. Gut microbes aid in food digestion and synthesize vitamins ... Enterotype 1 produces more enzymes for making vitamin B7 (also known as biotin), for example, and Enterotype 2 more enzymes for vitamin B1 (thiamine)."

Sources:

- » [New York Times April 20, 2011](#)
- » [Medical News Today April 21, 2011](#)
- » [Medical News Today April 21, 2011](#)
- » [Nature April 20, 2011 \[Epub ahead of print\]](#)

Dr. Mercola's Comments:

This is an interesting finding to say the least, particularly in light of how nutritional typing is increasingly used by physicians who practice "individualized medicine." For example, a customized meal plan based on the patient's nutritional type is the cornerstone of [Dr. Nicholas Gonzalez' highly successful non-traditional cancer treatment](#).

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I believe eating according to your nutritional type is so essential for optimizing your health that I now offer the [entire online nutritional typing test for free \(http://products.mercola.com/nutritional-typing/\)](http://products.mercola.com/nutritional-typing/). We've charged thousands of people \$29 for this test in the past, but decided this was too important and therefore made a mission decision to offer this to everyone for free. So if you have not yet taken it I would encourage you to do so.

Please remember that it is not at test that will tell you the perfect foods to eat but more of a process to help you learn and discover the foods that will make you thrive and move toward optimal health based on your specific biochemistry and genetics. It will teach you, over the course of several months, how to determine the best foods for you.

In this study, which supports nutritional typing, lead researcher Peer Bork suggests that one of the "obvious" potential benefits of his finding is that doctors may someday be able to tailor diets or drug prescriptions based on their gastrointestinal enterotype.

Considering that the process for determining your nutritional type is currently heavily dependent on listening to your body and tracking how different foods make you feel, both physically and psychologically, it's exciting to see the potential for using gut flora analysis as an aid.

Another exciting avenue is using gene typing. Dr. Stanislaw Burzynski and his son, Dr. Gregory Burzynski, already [employ gene-target therapies in the treatment of cancer](#), and their approach also includes customized diets, tailored to the patient's genetic makeup.



Three Types of Human Gut Ecosystems Discovered

When you consider that your intestines contain about 100 trillion bacteria, it may seem surprising that people would fall into one of just three distinct types of bacterial ecosystems—each composed of a different balance of various bacteria species. But it makes sense when viewed as part and parcel of your nutritional type.

As of yet, we don't know which enterotype might correspond to which nutritional type, but I believe we will in time.

Remember, your body responds uniquely to food -- **your fuel** -- based on your genetics, biochemical makeup, family history, and your own interaction with your environment. Nutritional typing also divides people up into three groups:

1. **Carb types** normally feel best when the majority, about 60 percent, of their food is vegetable carbohydrate, along with about 25 percent protein and 15 percent fat, but this type may need as little as 10 percent fat and as high as 80 percent carb in exceptional times.

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2. **Protein types** do better on low-carbohydrate, high-protein and high-fat diets. A typical ratio might be 40 percent protein and 30 percent each of fats and carbohydrates, but the amounts could easily shift to 50 percent fats and as little as 10 percent carbohydrates depending on individual genetic requirements.
3. **Mixed** are between the carb and protein types.

Since gut microbes aid in food digestion and absorption of nutrients, and help synthesize vitamins by creating specific enzymes, it actually makes perfect sense that different nutritional types might have the specialized gut flora required to optimize the utilization of their ideal dietary fuel...

The Powerful Connection between Your Gut and Brain

Most people fail to realize that your gut is quite *literally* your second brain, and in addition to digesting your food actually has the ability to significantly influence your:

- Mind
- Mood
- Behavior



It's not a widely understood or emphasized fact, but studies have repeatedly shown that a healthy gut reinforces a positive outlook and behavior, while depression and a variety of behavioral problems have been linked to an imbalance or lack of gut bacteria.

For example, a recent animal [study published in the journal *Neurogastroenterology & Motility*](#), found that mice lacking gut bacteria behave differently from normal mice, engaging in what would be referred to as "high-risk behavior." This altered behavior was accompanied by neurochemical changes in the mouse brain.

According to the authors, microbiota (your gut flora) plays a role in the *communication* between your gut and your brain, and:

"Acquisition of intestinal microbiota in the immediate postnatal period has a defining impact on the development and function of the gastrointestinal, immune, neuroendocrine and metabolic systems. For example, the presence of gut microbiota regulates the set point for hypothalamic-pituitary-adrenal (HPA) axis activity."

So, not only does this finding dovetail nicely with the theory that your gut flora may be a factor of your nutritional type, but it also helps explain how your diet and gut flora can impact your mental health, for better or worse.

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Remember, your diet is largely responsible for your gut health, and when you feed your body the fuel it's designed for, your gut flora will be able to maintain optimal balance, which then supports optimal physical *and* mental health.

The intrinsic connection between your gut and your brain becomes easier to understand once you know that your brain and gut are actually created out of the same type of tissue. During fetal development, one part turns into your central nervous system while the other develops into your enteric nervous system. These two systems are connected via the vagus nerve; the tenth cranial nerve that runs from your brain stem down to your abdomen. This is what connects your two brains together.

Your gut and brain actually work in tandem, each influencing the other.

This is why your intestinal health can have such a profound influence on your mental health, and vice versa. For an interesting and well-written layman's explanation of the gut/brain connection, read through [Sandra Blakeslee's 1996 New York Times article Complex and Hidden Brain in Gut Makes Stomachaches and Butterflies](#).

Now, even more interesting is the fact that certain neurotransmitters, such as serotonin, can also be found in your gut—in fact, the greatest concentration of serotonin, which is involved in mood control, depression and aggression, is found *in your intestines*, not your brain! Your bowels also contain some 100 million neurons—more than in either your spinal cord or your peripheral nervous system.



An excellent article by Adam Hadhazy, [published in Scientific American](#) last year, explains the intrinsic connection between your gut and your psychological well-being.

Hadhazy writes:

*"The system is way too complicated to have evolved only to make sure things move out of your colon," says [Emeran Mayer](#), professor of physiology, psychiatry and biobehavioral sciences at the David Geffen School of Medicine at the University of California, Los Angeles (U.C.L.A.). For example, scientists were shocked to learn that about 90 percent of the fibers in the primary visceral nerve, the vagus, carry information **from the gut to the brain and not the other way around...***

The second brain informs our state of mind in other more obscure ways, as well. "A big part of our emotions are probably influenced by the nerves in our gut," Mayer says...

Given the two brains' commonalities, depression treatments that target the mind can unintentionally impact the gut. The enteric nervous system uses more than 30 neurotransmitters, just like the brain, and in fact 95 percent of the body's serotonin is found in the bowels. Because antidepressant medications called selective serotonin reuptake inhibitors (SSRIs) increase serotonin levels, it's little wonder that meds meant to cause chemical changes in the mind often provoke GI issues as a side effect."

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All of that said, it makes perfect sense to nourish your gut flora to achieve optimal serotonin function, as it can clearly have a profound impact on your mood, psychological health, and behavior.

Gut Problems Also Linked to Brain Disorders

There's also no shortage of evidence of gastrointestinal involvement in a variety of neurological diseases, including autism, so in this way some forms of vaccine damage may also be explained.

Dr. Andrew Wakefield is just one of many who have investigated the connection between developmental disorders and bowel disease. He has published about 130-140 peer-reviewed papers looking at the mechanism and cause of inflammatory bowel disease, and has extensively investigated the brain-bowel connection in the context of children with developmental disorders such as autism.

For example, gluten intolerance is a frequent feature of autism, and many autistic children will improve when following a strict gluten-free diet. Many autistic children also tend to improve when given probiotics, either in the form of fermented foods or probiotic supplements.

A large number of replication studies have also been performed around the world, confirming the curious link between brain disorders such as autism and gastrointestinal dysfunction.

[According to Michael Gershon](#), chairman of the Department of Anatomy and Cell Biology at New York–Presbyterian Hospital/Columbia University Medical Center; a neurogastroenterology expert and author of *The Second Brain*, the same genes that make synapses form in your brain are also involved in the formation of synapses in your gut. Hence, if these genes are affected in autism, it could help explain both the GI abnormalities suffered by so many kids with autism, as well as the elevated levels of gut-produced serotonin in their blood.

How to Optimize the Bacteria in Your Gut

Fortunately, regardless of your type, optimizing your gut flora (the balance between "good" and "bad" bacteria in your gut) is relatively easy.

First, the MOST important step is to **avoid consuming sugar and processed foods**. The sugars actually serve as fuel for the growth of pathogenic anaerobic bacteria, fungi and yeast, and competitively inhibit your good bacteria, tending to crowd them out of their appropriate niche. These pathogenic bacteria, fungi and yeast then produce metabolic waste products that will cause your health to deteriorate.



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When you eat a healthy diet, based on your nutritional type that is low in sugars and processed foods, it automatically causes the beneficial bacteria in your gut to flourish. This is one of the many reasons why I highly recommend [reducing, with the plan of eliminating, sugars and most grains from your diet.](#)

Yet, even with an extremely low-sugar diet, there are other factors that influence your microflora, so you'll also want to avoid some of the factors that destroy healthy bacteria, such as:

- [Antibiotics](#)
- Chlorinated water
- Antibacterial soap
- Agricultural chemicals
- Pollution

Considering the many toxins that surround most of us on a daily basis, it's generally a wise choice to "reseed" your body with good bacteria from time to time by taking a high-quality probiotic supplement or eating traditionally [fermented foods](#). Healthy choices include:

- Lassi (an Indian yoghurt drink, traditionally enjoyed before dinner)
- Fermented milk, such as [kefir](#)
- Various pickled fermentations of cabbage, turnips, eggplant, cucumbers, onions, squash and carrots
- [Natto](#) (fermented soy)

If you were to eat a diet rich in fermented foods that have NOT been pasteurized (as pasteurization kills the naturally occurring probiotics), then you would likely enjoy great digestive health without any additional supplementation.

However, if you simply do not like any of these types of fermented foods, your next best option is to use a high quality probiotic supplement.

Make sure to talk to your WellnessOne Practitioner about what probiotics are available in the office and some steps you can take to make sure that you have healthy guts.



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