

Some facts about ProBiotics and their ability to impact our minds and health.
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WE ARE MOSTLY BACTERIA

There are 100 trillion cells in your body, but 90% of the genetic material is not yours. It is from the bacteria, fungi, viruses and other microorganisms, i.e. your microflora. Gut microbes are big in the news lately, as researchers continue to discover the important roles these tiny organisms play in your overall health and well-being. We now know that your microflora influence your:

- [Genetic expression](#)
- Immune system
- Weight, and
- Risk of numerous chronic and acute diseases, from diabetes to cancer

Most recently, research has shown that a certain set of these microbes may actually influence the activity of genes in your brain – and the parts they play are not small parts. They may work to manipulate your behavior, and your memory as well.

[\(from Mercola.com\)](#)

90% OF SEROTONIN IS PRODUCED IN THE GUT

Approximately 90% of the [human body's](#) total serotonin is located in the [enterochromaffin cells](#) in the GI tract, where it is used to regulate intestinal movements. [7][8] The remainder is synthesized in [serotonergic neurons](#) of the Central Nervous System, where it has various functions. These include the regulation of [mood](#), appetite, and sleep. Serotonin also has some cognitive functions, including memory and learning. Modulation of serotonin at synapses is thought to be a major action of several classes of pharmacological antidepressants.

[\(from Wikipedia\)](#)

NEUROTRANSMITTERS THAT AFFECT MENTAL HEALTH AND MOOD, AND MEMORY ARE ALSO PRODUCED BY THE BACTERIA IN OUR GUT

Neurotransmitter chemicals help regulate moods and more. Various drugs ranging from pharmaceuticals that are used for depression and anxiety, to recreational drugs also work to influence these brain chemicals. The proper balance of neurotransmitters can be crucial to our sense of well being. It has been found that the bacteria in our gut and

probiotics also act on these, and also produce them too. Major Neurotransmitters include: Serotonin, Dopamine, GABA, Acetylcholine and Norepinephrine.

Neurochemicals are highly conserved in evolution - bacteria, plants, insects, and fish all produce forms of the neurochemicals called the [catecholamines](#). Thus it makes sense that bacteria in our gut can communicate directly with us, to some extent, the same "language" as our mammalian brains.

Lactobacillus and Bifidobacterium species are known to produce GABA. Escherichia, Bacillus, and Saccharomyces produce norepinephrine. Candida, Streptococcus, Escherichia, and Enterococcus produce [serotonin](#). Bacillus and Serratia produce [dopamine](#), and Lactobacillus species produce acetylcholine. That's pretty much the entire hit parade of major neurotransmitters...

The most interesting case here is [GABA](#), the major inhibitory neurotransmitter in the nervous system (it chills things out)--and there are whopping amounts made by the bacteria in fermented foods, and is also found in yogurt and typical probiotic capsules. GABA also turns out to be anti-inflammatory in the gut itself, decreasing the release of inflammatory cytokines. Thus there is a plausible mechanism by which certain probiotics could decrease inflammation and aid symptoms of conditions such as irritable bowel syndrome, and, considering the [vagus nerve](#) and all its tendrils in the gut, have direct communication via the neurotransmitter GABA to the brain.

(from [Psychology Today](#))

GUT BACTERIA MAY INFLUENCE OUR MIND IN A PARASITE-HOST TYPE OF RELATIONSHIP

Gut bacteria may manipulate what we eat in order to ensure for themselves the best environment. One of the major determining factors of our intestinal environment, of course, is the food we eat. Some gut bacteria prefer to consume fat, for example, while others prefer sugar. That's why the researchers have suggested that gut bacteria might seek to actively manipulate their environment for their own benefit. That, in turn, would mean manipulating our behavior by means of food cravings, food aversions or feelings of distress that are only satisfied by eating certain foods.

While it is unclear exactly what mechanisms bacteria would use to manipulate our behavior, there is strong theoretical support for just such a possibility. Research has confirmed a strong connection between the makeup of our gut flora and the functioning of the immune, nervous and endocrine (hormonal) systems. Some research has suggested that bacteria may release signaling molecules that affect the activity of the vagus nerve, which runs from the gut to the base of the brain.

"Microbes have the capacity to manipulate behavior and mood through altering the neural signals in the vagus nerve, changing taste receptors, producing toxins to make

us feel bad, and releasing chemical rewards to make us feel good,” senior author Athena Aktipis, PhD, said. ([The Epoch Times](#))

ALSO:

Dr. Kirsten Tillisch, a gastroenterologist at the University of California, Los Angeles, says more research needs to be done to understand exactly how the connection works, but she has no doubt the interaction between brain and gut is essential in forming our sense of self.

“Our Western approach to medicine really has taught people to think of our organs like parts in a car, instead of intrinsic parts of ourselves,” she says. “We sometimes forget that how we choose to live and what we put in our bodies changes who we are.”

A recent study led by Tillisch suggested that the kind of bacteria that inhabits our gut affects how our brains handle unpleasant situations.

(from [Spirituality and Health](#))

[VIDEO LINK: ELAINE HSAIO - BRAIN. HEART. GUT. WHAT REALLY DRIVES US?](#)

PROBIOTICS IMPROVE IMMUNITY AND REDUCE INFLAMMATION AND MAY PLAY A ROLE IN PREVENTING AUTOIMMUNE DISORDERS, DIABETES AND MUCH MORE

The bacteria that live in your intestines are a mixed blessing. Scientists have known for decades that this so-called microbiota helps us digest our food and crowds out infectious germs. The bugs have also been implicated in [allergies](#) and [obesity](#). Now, a new study adds one more potential malady to the list: rheumatoid arthritis.

“It’s been suspected for years and years, both in humans and in the animal model, that the development of autoimmune diseases like arthritis is dependent on the gut microbiota,” says immunologist Diane Mathis of Harvard Medical School in Boston. Now, she says, those suspicions are beginning to be confirmed in humans. “It’s a very striking finding.”

(from [wired.com](#))

more articles: [Heart Attack, Stroke, Diabetes Could Be Avoided Through a Healthy Gut Microbiome](#) [IBD News Today](#)

[Gut Microbes Linked to Rheumatoid Arthritis - National Institutes of Health](#)

The findings of the current study are not the first to suggest that probiotics have more than a local anti-inflammatory effect by modulating the flora. For example, *Lactobacillus casei* or *Lactobacillus bulgaricus* reduced the inflammatory response induced by coculture of bacteria with mucosal explants from Crohn's disease affected intestinal tissue. In this study, a significant reduction of proinflammatory cytokines such as TNF was noted.¹³ Such anti-inflammatory effect might even be systemic, as shown by the bacteria CpG DNA experiments discussed later. ([from BMJ](#))

PROBIOTICS AFFECT A RANGE OF CONDITIONS

"It's become more and more clear that these microbes can affect the immune system, even in diseases that are not in the gut," says Veena Taneja, an immunologist at the Mayo Clinic in Rochester, Minnesota.

"This is frontier stuff," says Scher, the director of the NYU's Microbiome Center for Rheumatology and Autoimmunity. "This is a shift in paradigm. By including the microbiome, we've added a new player to the game."

Scientists are especially intrigued by how these bacteria influence the immune system. In recent decades, the incidence of many autoimmune diseases has been increasing; many microbiome researchers argue that at least some of this rise is due to changes in our bacterial ecosystem. Altered diet, the explosion of antibiotic use, and decreasing contact with the microbe-packed natural world of animals and plants have all combined to transform the bacteria that call humans home. "Our microbiome has changed significantly over the past century, and especially over the past 50 years," says NYU microbiologist Martin Blaser, who puts much of the blame on widespread use of antibiotics. "We're losing microbes with each generation; they are going extinct. These changes have consequences."

([from the Atlantic.com](#))

IT'S NOT JUST PROBIOTICS, THE FOODS WE EAT AFFECT GUT BACTERIA

WHY DOES EATING ORGANIC (NON-GMO) MATTER?

"Here's the quick backstory: Since chemical companies invented genetically engineered seeds designed to withstand heavy sprayings of glyphosate (RoundUp), global use of Roundup and related weed killers has jumped to nearly 900 million pounds applied annually. Glyphosate is a systemic chemical, meaning once sprayed, it travels up inside of the plants that people and animals eat. As more farm fields converted to GMO crops, federal regulators quietly increased the levels of Roundup allowed in your food, something that could be particularly tragic for your gut.

But there's more to the glyphosate-gut conundrum "The most important piece of the story is the disruption of serotonin in the gut," says Seneff. She says glyphosate can disrupt the gut's ability to create tryptophan, the building block of serotonin, an important neurotransmitter linked to happiness and well-being. Low serotonin levels have been linked to suicide, depression, obsessive-compulsive disorder, and other ailments."

Citing recent studies, review coauthor Stephanie Seneff, PhD, senior research scientist at Massachusetts Institute of Technology's Computer Science and Artificial Intelligence Laboratory, explains how glyphosate acts as a potent bacteria-killer in the gut, wiping out delicate beneficial microflora that help protect us from disease.

Harmful pathogens like *Clostridium botulinum*, Salmonella, and E. coli are able to survive glyphosate in the gut, but the "good guys" in your digestive tract, protective microorganisms, bacillus and lactobacillus, for instance, are killed off.

Even the developer of Roundup—Monsanto—seems to know this. About 10 years ago, the company registered a patent for glyphosate's use as an antimicrobial agent.

Eating food laced with Roundup could be setting us up for some major health problems, some researchers suggest, citing that power to kill gut flora. "When you disturb something in nature, there aren't any voids," explains retired pathologist and veteran glyphosate researcher Don Huber, PhD, professor emeritus at Purdue University. "You take the good guys out and the bad guys rule. And that's what's happening."
(from [Rodale News](#))

BAD BACTERIA THRIVE ON SUGARS AND CARBS

Candida is the medical term for a microorganism found naturally in the body. The trouble starts when the candida begins multiplying out of control, causing a yeast infection that can be localized to certain parts of the body (commonly the gut, the mouth and the genitals) or the infection could cause systemic problems. This overgrowth and infection is known as Candidiasis, but is often referred to simply as "Candida."

The most common symptoms of Candida are sugar and carbohydrate cravings, fatigue after eating, recurring fungal infections, jock itch, vaginal infections, depression, mood swings and an overall "foggy" mental feeling. In chronic Candida cases, these symptoms can turn even more serious, such as acute kidney infections, insomnia, blurred vision, memory loss, extreme premenstrual syndrome (PMS) and increased food allergies.

There are many causes for candida overgrowth, but now this problem is being linked directly to the standard American diet—one that is high in carbohydrates. Candida feeds off sugar, and once eaten all carbohydrates—even whole grains—are eventually broken down into glucose, a simple sugar. Excess sugar in the body gives Candida a food source that allows it to grow by leaps and bounds—causing many of the undesirable symptoms previously mentioned. (from [Natural News](#))

more articles:

[CHOWING DOWN ON MEAT DAIRY ALTERS THE GUT BACTERIA A LOT, AND QUICKLY](#)

[VIDEO: SANJAY GUPTA: GUT BACTERIA MAY INFLUENCE OUR FOOD CHOICES](#)

ELIMINATING BAD BACTERIA IS ALSO KEY IN ALLOWING THE GOOD BACTERIA TO THRIVE

In addition to adding probiotics. Killing off pathogenic bacteria like Candida Albicans is key in transforming the gut microbiome. Some common antifungal foods include:

Garlic

Coconut Oil

Oregano Oil

Pau D'Arco Tea

Rutabaga

Brussels Sprouts

Pumpkin Seeds

Niacin - niacin can also positively affect serotonin levels

There are many more... just Google : **natural antifungal foods and herbs**

THE PATH TO CHANGE IS STEP BY STEP

The first reaction to change and healing is generally not the most pleasant, as the body cleanses the bad bacteria there can be a "healing crisis". In other words, it can get worse very briefly before it gets better. This can manifest physically and also in moods and mental health. Since we are community of trillions of cells, this change will take patience and discipline.

The medical term for healing crisis is the "Herxheimer Reaction." This occurs when the cells release toxins into circulation but the elimination organs (skin, lungs, liver, kidneys, bladder & GI tract) are not able to eliminate them quickly enough. The toxins remain in circulation and can affect the brain stem region leading to nausea, poor coordination, headaches, fatigue, malaise, fever, etc.

Another common cause of the healing crisis has to do with the dying off of certain pathogenic organisms in the body. These organisms can be Candida yeast infections, viruses and bacteria. Any sort of natural health program can cause a massive die-off of these organisms. This die-off releases stored endotoxins (within the microbes themselves) that circulate and again interfere with normalized function. The more pathogens in the body, the more endotoxins that will be released into the bloodstream.

(from [Natural News](#))

RESOURCES: FOR MORE INFO. ON ELIMINATING BAD BACTERIA AND REBUILDING GOOD BACTERIA

[BOOK: THE BODY ECOLOGY DIET by DONNA GATES](#)

[BOOK: AUTOIMMUNE - THE CAUSE AND THE CURE](#)

[BOOK: CULTURED FOOD LIFE: LEARN TO MAKE PROBIOTIC FOODS AT HOME](#)

SOURCES OF PROBIOTICS

Probiotic Capsules:

Here are some of the highest quality brands I have used. They are available at most health food stores. (Vitamin Shoppe, Whole Foods)

[Therelac](#)

[Natren](#)

Probiotic Foods:

Yogurt

Milk Kefir - [Get cultures here](#)

Kombucha

Water Kefir - [Get cultures here](#)

Kevita

Cultured Vegetables - SourKraut, Kimchi

Probiotic products to try. This is a brief list there are many more to choose from. Most of these are now widely available at various health food stores and some mainstream grocery stores.

Kevita

<http://kevita.com/>

Kombucha

<http://www.synergydrinks.com/>

So Delicious Coconut Yogurt

<http://sodeliciousdairyfree.com/products/cultured-coconut-milk>

Farmhouse Cultured Veggies

<http://farmhouseculture.com/>

[VIDEO: HOW TO MAKE MILK KEFIR](#)

[VIDEO: HOW TO MAKE WATER KEFIR](#)

[VIDEO: HOW TO MAKE CULTURED VEGETABLES](#)

This is a brief overview, and **barely the tip of the iceberg** and I hope it inspires you to pursue your own research, learning and experimentation. If you'd like to read about my personal journey and experience please visit: <http://sonicyogi.blogspot.com>

LINKS:

Here are some links to more info.

[The Neuroscience of the Gut: Scientific American](#)

[Microbes manipulate your mind | Mo Costandi | Science | guardian.co.uk](#)

[Gut bacteria may influence thoughts and behaviour – Neurophilosophy](#)

[That gut feeling](#)

[Early gut bacteria regulate happiness](#)

[Your Gut Flora Affects Your Physical and Mental Health](#)

[Candida Albicans](#)

[Chronic polysystemic candidiasis as a possible con... \[Bratisl Lek Listy. 2006\] - PubMed result](#)

[Dramatic improvement with Candida antifungal medication -](#)

<http://www.bmj.sk/2006/107067-01.pdf>

[Fungus causes most chronic sinusitis, researchers say - CNN](#)

[Health benefits of taking probiotics](#)

[The Emotional Side of Candida \(Fungal Overgrowth/Infection\) - Wellsphere](#)

[Changing gut bacteria through diet affects brain function, UCLA study shows / UCLA Newsroom](#)

[Gut feelings: the future of psychiatry may be inside your stomach | The Verge](#)

[Gut Bacteria May Be Implicated in Rheumatoid Arthritis - Wired Science](#)

[Mental disorders and the Candida connection - National Candida albicans |](#)

[Examiner.com](#)

[Genetic Secrets of Killer Fungus Found](#)

[Gut Bacteria Might Guide The Workings Of Our Minds : Shots - Health News : NPR](#)

[The human microbiome: Me, myself, us | The Economist](#)

[Modern medicine: Microbes maketh man | The Economist](#)

[Recycled plastic turned into 'nanofibers' to attack fungal infection - Medical News Today](#)

[Spaceflight has profound effects on fungal pathogen - Medical News Today](#)

[Gut instincts: The secrets of your second brain](#)

[Do Probiotics Help Anxiety? | Psychology Today](#)

[Gut Bacteria Might Guide The Workings Of Our Minds : Shots - Health News : NPR](#)

[Chowing Down On Meat, Dairy Alters Gut Bacteria A Lot, And Quickly : The Salt : NPR](#)

[Anxiety In Your Head Could Come From Your Gut - ABC News](#)

[Brain Gut Hormones](#)

[Living an Optimized Life - Brain gut DR](#)

[The Brain Gut Connection and the Role of Serotonin](#)

[The Neuroscience of the Gut - Scientific American](#)

[What Your Gut Bacteria Say About You](#)

[Interaction of serotonin with Candida... \[Int J Antimicrob Agents. 2005\] - PubMed - NCBI](#)

[Antifungal Activity against Candida Species of the Selective Serotonin-Reuptake Inhibitor, Sertraline](#)

[Groovy Probiotics | Psychology Today](#)

[Bacteria, gut organisms linked to health, autism, schizophrenia, depression, diabetes, allergies and obesity - Yahoo!7](#)

[The Second Brain: Gut Bacteria Control Human Behavior to Get the Best Nutrients](#)

[Will Stress Injure Your Gut? | Psychology Today](#)

[Gut Bacteria-sense of self](#)

[The Second Brain: Gut Bacteria Control Human Behavior to Get the Best Nutrients](#)

[Gastroenterology & Endoscopy News - Study Hints Gut Microbiome Plays A Role in Multiple Sclerosis](#)

[Heart Attack, Stroke, Diabetes Could Be Avoided Through a Healthy Gut Microbiome](#)

[IBD News Today](#)

[The Second Brain: Gut Bacteria Control Human Behavior to Get the Best Nutrients](#)

[Quick, inexpensive and a 90 percent cure rate - For Medical Professionals - Mayo Clinic](#)

[Gut Bacteria May Be Implicated in Rheumatoid Arthritis | WIRED](#)

[Gut microbiota, the pharmabiotics they produce and host health. - PubMed - NCBI](#)

[Bacterial neuroactive compounds produced by psychobiotics. - PubMed - NCBI](#)

[Joint Pain, From the Gut - The Atlantic](#)

[Yeast-devouring gut bacterium may provide new Crohn's treatments - Medical News Today](#)

[Crohn's Disease Marked by Dramatic Changes in Gut Bacteria | Science/AAAS | News](#)

[Mix Of Gut Microbes May Play Role In Crohn's Disease : Shots - Health News : NPR](#)

[Widely used food additives may disrupt gut bacteria and contribute to bowel disease:](#)

<http://www.sciencedaily.com/releases/2015/02/150225132105.htm>