

GUT HEALTH & YOUR CRAVINGS



— KELSEY ALE, NTP & EMILY BYK —

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GUT HEALTH & CRAVINGS

Everyone gets food cravings. Quite often, when we reach for sugary or fatty snacks, we blame a lack of self-control. But your cravings are also influenced by a source you may never have considered.

Living in the intestinal tract of every healthy human are about 100 trillion microorganisms, known collectively as the *gut microbiome*.

Your microscopic roommates have a significant effect on your health. Different species and strains exert different actions, most of them beneficial to us. But they *are* organisms, and they need to live, too. If your interests are not aligned with their interests, they must look out for their own survival. They might induce cravings for foods that help them or harm their competitors. They may release chemical signals that induce dysphoria – i.e., make us feel bad – until we eat a food that enhances their health.

“Bacteria within the gut are manipulative,” said Carlo Maley, PhD, biologist and director of the UCSF Center for Evolution and Cancer. “There is a diversity of interests represented in the microbiome, some aligned with our own dietary goals, and others not.”

HOW IS GUT HEALTH RELATED TO CRAVINGS?

Let’s define gut health as an optimal population of different species and strains of microorganisms in our GI tract.

If the balance is right, they deliver benefits that keep us operating perfectly. A few examples:

- They offer protection. The presence of helpful bacteria prevents invasive harmful bacteria from colonizing.
- Gut bacteria create Vitamin K. Our bodies need it to form blood clots, and we would be at dire risk for bleeding without it. Adults can get it from food sources. Infants cannot, and they are born with sterile GI tracts. Fortunately, bacteria begin colonizing immediately after birth, and Vitamin K production begins.
- The microbiome also produces neurotransmitters that are exactly like the ones made by our own bodies. A healthy gut makes half of our dopamine and 90% of our serotonin we need.

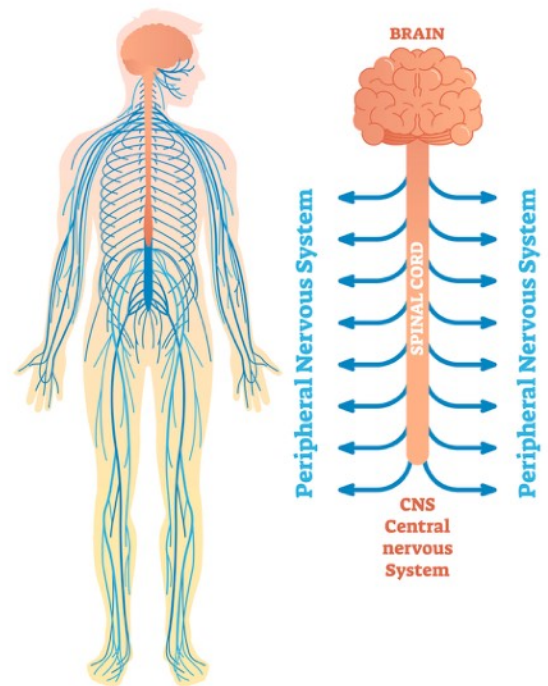
When the microbiome is stressed, however, its residents can manipulate their environment - in other words, you - to their own benefit.

HOW DO THE MICROORGANISMS DO IT?

Taking Over Your Communication Channels

The *vagus nerve* is a central line of communication that runs from your brain to your tailbone. It has branches reaching out to most of your organ systems along the way. 80% of its function is *afferent*, meaning that it picks up signals and reports them back to the brain.

It appears that input picked up by the vagus nerve contributes to eating behavior. Many people who have sustained an injury to it have greatly decreased appetites. It's not carrying the "I'm hungry" message to the brain.



The brain listens to whichever signal is the loudest. One study considered healthy animals who had eaten well and were completely satiated. They were given norepinephrine, a hormone that stimulates the brain and body. Though they were full, they started eating again. The chemical message to the brain overwrote the actual state of affairs in the body.

The microbiota, clever manufacturers that they are, can hijack this communication system. They can produce neurochemicals that travel up the vagus nerve and tell the brain that you're hungry. They have taken over the airwaves and are broadcasting a message for their own benefit.

CHANGING YOUR TASTE

Many gut microorganisms like sugar. Specifically, glucose. They have been shown to influence our tastes to ensure a steady supply.

- In one study, protein-deprived fruit flies were given a choice of two foods: one rich in protein, one sugary. Initially, they went for the protein drink. After specific bacteria (*Acetobacter* and *Lactobacillus*) were introduced to their GI tracts, they choose the sugar that the bacteria wanted over the protein that they, the hosts, needed.

- Research shows that mice who have all microbiota removed, known as germ free mice, have different taste receptors for sugar on their tongues than typical mice.
- We've seen it in humans, too. One study found different bacterial populations in the microbiome of people who crave chocolate and people who do not.
- People report dramatic changes in taste receptors after gastric bypass surgery, which greatly changes their gut microbiota.



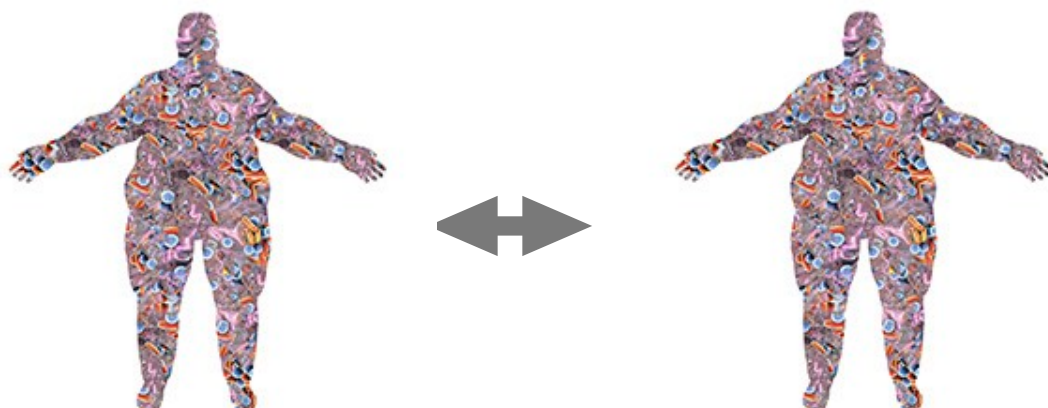
So the microbiome can direct our taste to their favorite foods, which can lead to actual changes to the structure of the tongue.

ENCOURAGING YOU TO EAT MORE

Our microbiota can affect the amount of food we take in, contributing to fluctuations in weight.

- One study showed that mice who had a genetic inclination toward obesity, but a germ free gut, remained lean. But when gut bacteria were introduced – some from typical mice, some from obese humans – they promptly gained weight.
- People who spend a lot of time in proximity to each other tend to develop a similar microbiome composition. One study showed that a person's chance of becoming obese increased by 57% if someone close to them became obese.

In other words – through an increasingly shared gut climate, obesity could be contagious!



HOW YOUR MICROBIOME CAN HELP YOU

Are you starting to think differently about self-control?

When the microbiota are well balanced, we have a wonderful symbiotic relationship. When they are thrown out of balance, it's you versus them.

A diverse population means that they will spend most of their effort competing with each other. If you host fewer species with much larger populations, they may band together and start competing against you.

Lower diversity has been associated with harmful eating behaviors. In fact, obese people have fewer species in their microbiota than thin people.

Your best bet is to work with them instead of against them.

The easiest way to do this is to add probiotics to your diet.

Probiotics contain viable beneficial microorganisms that survive the digestion process. They arrive to your intestines, intact and ready to colonize.

These can occur naturally in foods, or packaged as supplements.

- Good food sources include anything naturally fermented or containing live cultures: yogurt, kefir, kombucha, and sauerkraut are examples. Also look for processed foods that are supplemented with probiotics.
- Supplements are often in capsule form for daily use. There are a wide number of different ones on the market. Each is formulated differently, so research which works best for you.

Try rebalancing the organisms of your own microbiome, and see what happens. You may notice a distinct change in cravings and even waist size.

“Self-control” won't be as much of an issue after you taken control of your microbiome.