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The Surprising Link Between Your Gut Fungi, Genetics, and Chronic Disease Risk

Analysis by Dr. Joseph Mercola | October 09, 2025

STORY AT-A-GLANCE

- Your genetics influence which fungi grow in your gut, and these fungi directly affect your risk for chronic conditions like heart disease
- Researchers discovered 148 genetic variants linked to nine groups of gut fungi, proving that your DNA helps shape your gut health
- Antibiotics kill bacteria but leave fungi untouched, allowing harmful fungal strains to overgrow and increase disease risk
- Two people eating the same foods can have very different health outcomes because genetic differences decide which fungi thrive in their gut
- Gut microbiome patterns, including fungi and bacteria, are strong predictors of cardiovascular disease risk, yet most clinics still ignore this critical factor

For years, doctors have focused on diet, lifestyle, and bacterial microbes in the gut as drivers of most chronic conditions like heart disease and diabetes. However, new science is pointing to another hidden factor — gut fungi.

There's emerging evidence showing that the fungi in your gut shape inflammation, immunity, and the way your body responds to long-term illness. Researchers also suggest that these overlooked organisms may be closely tied to your genetic makeup, raising new questions about how much control you actually have over chronic disease risk.

Fungi — The Hidden Players in Your Gut and Their Link to Disease

A recent study published in PLOS Biology investigated how human genes interact with gut fungi — also known as the mycobiome — and how this interaction is tied to chronic disease risk. The research team from Penn State's One Health Microbiome Center carried out what's called a genome-wide association study (GWAS), which scans the entire human genome to find genetic variants that are linked with specific traits — in this case, the types and amounts of fungi living in the gut.[1,2]

> *"This research is our first major step toward understanding the impacts of human genetic variation on a very understudied group of gut microorganisms — the mycobiome,"* study author Seth Bordenstein said.[3]

Their goal was to see whether certain genetic markers not only shaped fungal populations but also increased the likelihood of developing conditions like cardiovascular disease. According to study coauthor Emily Davenport:

> *"Gut fungi are greatly understudied compared to other gut microbes like bacteria and archaea. We know much less about what determines the fungi that reside in the gut, and whether they are important for human health."*[4]

- **The researchers looked at data from 125 individuals collected by the U.S. National Institutes of Health's Human Microbiome Project —** The researchers looked at stool and blood samples to see how everyday genetic differences and fungal patterns align with known disease risks. As explained by EurekAlert:

  > *"After identifying and characterizing fungi-associated genetic variants by which human genomic variation associates with variation in fungal communities, they tested whether relationships between genetic loci and gut fungi affect human disease risk."*[5]

- **What they uncovered was striking —** 148 genetic variants across seven chromosomes were strongly linked with nine distinct groups of fungi in the gut. Even more compelling, one of those fungi — Kazachstania, a type of yeast —

showed a direct connection with cardiovascular disease risk. This suggests that your genetic makeup influences which fungi take hold in your digestive system, and that combination could tilt the scale toward chronic illness.

- **While the study acknowledged the small sample size, the researchers validated their findings in larger groups —** These include UK and international cohorts studying coronary artery disease. This matters because it means the results aren't random chance; it shows that the genetic-fungal-disease link is real, measurable, and consistent across populations.

- **Those with unexplained chronic health struggles stand to benefit most from these findings —** If you have persistent fatigue, gut discomfort, or a family history of cardiovascular disease, understanding your genetic-fungal profile could reveal why the usual treatments haven't worked. It adds another layer to the puzzle — one that points to more precise solutions.

Fungi Are Not Just Passive Bystanders

For decades, conventional health advice has centered on good and bad bacteria in the gut and how food shapes them. But this research has changed that; it puts the spotlight on gut fungi instead and how they actively interact with your genes and influence disease development.

- **Biologically, the mechanism at play comes down to how fungi interact with the immune system and inflammation —** The study shows that certain fungi — like Kazachstania, for example — influence the chemical environment of the gut, which in turn affects how your body responds to stressors. When genes shape which fungi are allowed to thrive, they indirectly shape your immune balance.

- **Too much of the wrong fungi and your immune system shifts into a low-level inflammatory state —** This is a known driver of chronic conditions. It explains why standard bacterial probiotics don't always solve gut problems — because the fungal side of the microbiome has its own role in the equation.

- **The presence of certain gut fungi is not random —** Instead, it is guided by genetic instructions, like a code telling your body which fungal species to allow and which to suppress. This discovery explains why two people who eat the same foods might have very different health outcomes.

  If your genes encourage fungi linked to inflammation, you are more likely to struggle with chronic disease, while someone else with different genetics may not. This could explain why some people seem to develop chronic diseases despite making the same healthy choices as their peers.

- **This doesn't mean that diet isn't important, though —** The food you eat is still essential for optimal health; however, the evidence shows that even the best diet might not completely override genetic influences.

Antibiotics and Their Hidden Impact on Gut Fungi

Antibiotics, which work by eliminating infection-causing bacteria, have been touted to be "life-saving drugs" and are often recommended as part of many conventional health protocols. But, as I've discussed several times, they also come with a range of side effects. This featured research highlights a serious problem with antibiotics — and how they disrupt the delicate balance between bacteria and fungi in your gut.

- **While antibiotics kill bacteria, they do not eliminate fungi —** This allows pathogenic fungi to grow unchecked — while eliminating both good and bad bacteria. If your genes already encourage fungi associated with disease, antibiotics make things worse by tipping the balance further in favor of harmful species. As explained by Bordenstein:

  > *"Antibacterial treatments such as antibiotics will not only eliminate or reduce bacterial pathogens and their signaling molecules, but they can indirectly alter the abundance of fungi that co-occur with and depend on these bacteria and molecules."*[6]

- **Antibiotics substantially alter your microbial community's structure —** Your microbial network is made up of countless complex interactions among different bacterial species, like a dense, stable web. However, this was simplified after **antibiotic exposure**.

- **Fewer connections were seen after antibiotic use —** In an earlier animal study published in Microbiome, researchers found that when test subjects were given antibiotics, it led to fewer connections between bacterial species — meaning the microbial community became fragmented and fragile. This made the microbiome more vulnerable to future disruptions.[7]

Overall, the findings of the featured study show that ignoring your mycobiome could mean doctors are missing a whole dimension of what helps you heal — or what keeps you sick. Emily Van Syoc, a postdoctoral researcher and first author of the paper, commented:

> *"This research embarks on a first-in-kind journey to uncover the genetic underpinnings of the human gut mycobiome. In a small discovery GWAS cohort that was validated in two larger datasets, we find that gut fungi are associated with human genetic variants and, in turn, disease states.*
>
> *We are excited to continue pulling at this thread to unravel the forces that shape human gut fungi and contribute to health and disease."*

Your Gut Microbiome Can Predict Your Heart Disease Risk

Your gut microbiome is composed of trillions of bacteria, fungi, and other organisms living in your intestines. While you might immediately think that their sole function is to regulate your digestion, they actually do so much more than that — they affect your overall health and risk of diseases.

The featured study focuses on how a specific type of fungi influences your cardiovascular function — however, there's also research showing how an overall **imbalance in your gut microbiome could increase your risk for a heart attack**.

- **Your gut microbiome patterns can predict your risk for heart disease —** In a 2025 study published in the European Medical Journal, researchers looked at whether gut microbial patterns could be used to predict the risk of major adverse cardiovascular events (MACE) in people with coronary heart disease (CHD).[8,9]

- **The researchers analyzed data from 679 high-risk CHD patients —** The participants were all adults who had already experienced a coronary event at least six months prior to joining the study. The objective of the study was to find out which of these individuals were silently at risk of another heart attack, despite receiving conventional care.

- **10 bacteria strains were identified to have links to cardiac health —** They either increase the risk or provide protection. The researchers created a single algorithm by combining the presence or absence of these strains, developing what they called an intestinal microbiota-based risk score. It predicts which patients are most likely to suffer from MACE.

- **Patients who scored high on the microbiota-based risk model exhibited worse health metrics —** They had a greater incidence of diabetes, larger waistlines, higher blood pressure, and worse blood sugar control compared to those who hadn't experienced a recent event. These findings suggest that the gut microbiome not only reflects cardiovascular risk — it could be driving it as well.

- **CHD patients also exhibited signs of dysbiosis (gut imbalance) —** The study found that they had fewer unique bacterial species and a greater shift in microbial community makeup.

Most conventional clinics still ignore the link between your gut and heart disease, even though the evidence is clear. Doctors regularly check your blood pressure and cholesterol, yet they almost never look at your gut health. These two studies show why that can be a fatal oversight, as your gut patterns are just as important for predicting and preventing heart problems.

Practical Steps to Protect Your Gut Microbiome

Research shows that your genetics influence which fungi grow in your gut, and that antibiotics and poor gut balance make the situation worse. That means the real solution is not about covering up symptoms but about restoring balance in your microbiome and lowering inflammation at its source. Here is what I recommend you focus on right now:

1. **Shift away from inflammatory fats —** If you are still eating seed oils, processed foods, or restaurant fried foods, you are feeding chronic inflammation that worsens fungal imbalance. Replace those oils with stable animal fats like grass fed butter, ghee, or tallow. This shift takes stress off your gut lining and supports cellular energy production, which is the foundation for keeping your microbiome balanced.

2. **Use carbohydrates wisely to support cellular energy —** The right type of carbs feed your mitochondria, support your immune system, and prevents the type of reductive stress that fuels gut imbalance. I recommend bringing your daily intake up to at least 250 grams of clean carbohydrates like whole fruits, root vegetables, and properly prepared white rice.

3. **Rebuild your gut environment after antibiotics —** If you've recently taken antibiotics, your gut bacteria have been wiped out, leaving fungi room to grow unchecked. I recommend you slowly reintroduce foods rich in natural probiotics — like fermented vegetables. Supporting your gut environment this way helps restore balance and prevent harmful fungi from taking over.

4. **Reduce your antibiotic burden from hidden sources —** Consuming conventionally raised chicken and other meats means you are likely taking in low-dose antibiotics and residues without even realizing it. Switch to pasture-raised or grass fed animal proteins whenever possible. This limits your exposure to hidden antibiotics and lowers the risk of further disruption to your gut ecosystem.

5. **Strengthen your microbiome against fungal overgrowth —** If you notice you feel worse after processed sugars or packaged foods, that is a sign your fungi are thriving on the wrong fuel. Choose foods that are closer to their natural state, sip

juice with pulp instead of processed fruit drinks, and eat whole fruits daily. These simple changes feed beneficial bacteria and keep harmful fungi in check, supporting a healthier gut balance that lowers your chronic disease risk.

Frequently Asked Questions (FAQs) About Gut Fungi

Q: What did researchers recently discover about gut fungi?

A: Scientists uncovered that your genetic makeup plays a big role in determining which fungi live in your gut. They identified 148 genetic variants tied to nine distinct fungal groups, including one yeast linked directly to heart disease risk. This means your DNA not only shapes obvious traits like height or eye color but also silently influences your gut ecosystem in ways that affect your long-term health.

Q: Why are gut fungi important if doctors usually focus on bacteria?

A: For years, most research and medical care focused only on gut bacteria, but fungi are now proving to be just as influential. Certain fungi interact with your immune system and drive inflammation when they grow unchecked. This constant low-level inflammation is a key trigger for chronic conditions like heart disease, diabetes, and autoimmune disorders.

Q: How do antibiotics affect gut fungi?

A: Antibiotics are powerful at killing bacteria, but they do nothing to remove fungi. When bacteria are wiped out, fungi are left to grow without competition, which shifts the balance of your gut. If your genetics already lean toward fungi that increase disease risk, antibiotics make the problem worse by tipping the scales further in their favor.

Q: Can two people eating the same diet have different health outcomes?

A: Yes, because your genes act like a filter that decides which microbes thrive inside you. Even if you and a friend eat identical meals, your gut fungi may respond differently depending on your genetic code. If your DNA supports fungi linked to inflammation, you are more likely to face chronic health struggles, while the other person might stay well. This shows why one-size-fits-all diets often fail and why personalization is so important for real results.

Q: How does the gut microbiome connect to heart disease risk?

A: Recent studies show that the overall balance of microbes in your gut — both bacteria and fungi — is a strong predictor of heart disease risk. Researchers even developed microbiota-based risk scores that identified which patients were most likely to have another cardiac event.

Patients with higher risk scores had worse blood sugar control, larger waistlines, and more inflammation compared to others. This proves your gut health is not just about digestion — it plays a central role in predicting and preventing heart problems.

Sources and References

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