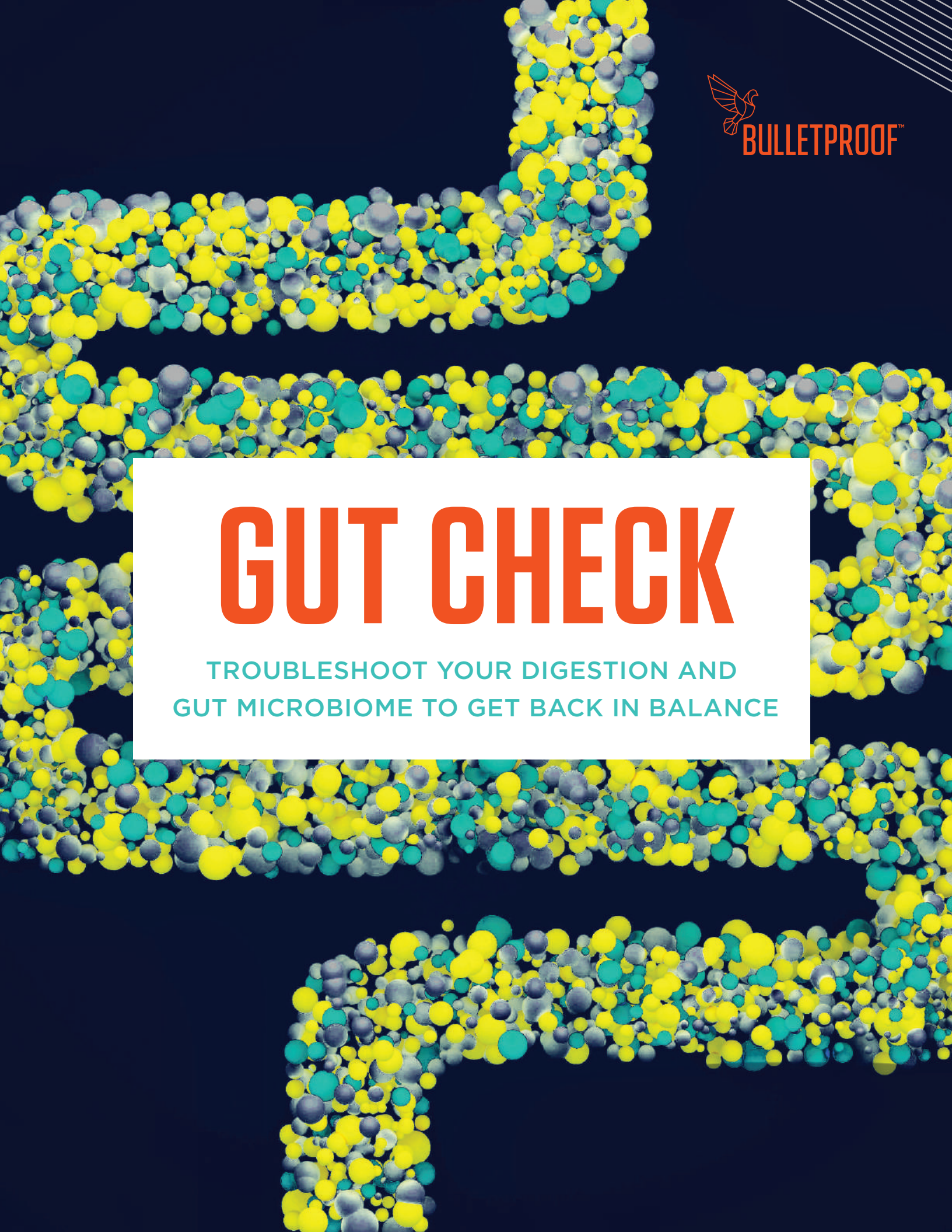

GUT CHECK

TROUBLESHOOT YOUR DIGESTION AND GUT MICROBIOME TO GET BACK IN BALANCE

TAKE THIS QUIZ

TO GET TO THE BELLY OF YOUR DIGESTIVE PROBLEMS

WHAT IS YOUR MICROBIOME

Flora, friendly bacteria, microcolonies, microbiome — they all refer to the same thing. Your body houses trillions of microscopic organisms — bacteria, viruses, fungi, and other microbes — in every part of your body. Chances are, you've heard about the microbiome in your gut and digestive system, but microorganisms are everywhere — your skin, your eyes, in your mouth, in your ears.

Feeling itchy yet?

Before you bathe in bleach, a little reassurance. You're not dirty, and these organisms aren't dirty. You have friendly microbes that help you stay healthy, and harmful ones that make you sick and weak. Certain species serve you well to a point, but overgrowth spells disaster. The key is to keep them all in balance to stay in tip-top shape.

Why is your body riddled with microbes?

They're in it for the food. If you eat what friendly organisms like, they'll help your immune system fight invaders, make B vitamins and vitamin K[Ref] for your cells, and produce chemicals for your brain that keep you feeling happy.

The ideal gut microbiome

If you eat what unfriendly bacteria like, you end up with inflammation and disease. If you eat what friendly bacteria like and encourage a diverse array of strains, you'll have a strong immune system, you'll get maximum nutrition out of your food, you'll have level moods, and your energy will shoot through the roof.

The key is to set out the buffet table for the ones you want to stick around, and dry up the food source of the bugs you don't want, or the ones that tend to take over.

Sure, there are thousands of species of bacteria, and it would be impossible to keep track of what all of your microscopic guests like and dislike. Here's an easy cheat: friendly bacteria and organisms are health nuts. If it's good for you, the good guys gobble it up. They love vegetables, especially those high in fiber and polyphenols — compounds that both feed your cells and combat cell damage. More on how to feed them, coming up.

THE THREE MAIN MICROBIOME DISRUPTORS

SLOW DIGESTION

Slow digestion means that the transit time between eating and excreting takes too long. When your food sits in your intestines, bad bacteria and fungi have ample opportunity to get busy — literally. They eat and reproduce, resulting in imbalanced colonies in your gut.

Certain species damage your gut lining when they take over. Strains like candida albicans, a yeast, drill holes in your intestinal membrane, which allows undigested food particles to cross into your bloodstream. These wayward food particles burden the liver and compound the toxicity problem.

Think of the liver as a water filter. If you pour dirty water into a filter at a good pace, the top of the funnel won't overflow. When the the filter fills up faster than it passes through the filter, you get overflow. When the liver is overloaded, it can't neutralize all toxins, and toxic substances go back into the bloodstream. Toxins circulating in your body have a detrimental effect on your microbiome — they wipe out your microbial diversity and allow a few select strains to take over.

There are two main reasons why you may have slow digestion.

SLOW DIGESTION

NOT ENOUGH STOMACH ACID

Under ideal conditions, digestion goes like this: you chew and swallow your food, which breaks it down into smaller bits. Food travels into your stomach where it does three main things:

1. Chemical breakdown.
Gastric juices — a mix of hydrochloric acid and enzymes — break proteins down into amino acids (protein building blocks) that your body can absorb.

2. Antibacterial action.
Gastric juices kill bacteria from your food.

3. Mechanical breakdown.
Your stomach muscles (the smooth muscle you can't feel underneath your abs) contract and relax vigorously to churn your food, mechanically breaking it down into a smooth pulp called chyme.

When you don't have the right balance of stomach acid, things can go wrong. A portion of your proteins pass through unchanged, so your body can't use them. Harmful bacteria, like Helicobacter pylori (H. pylori, a major source of digestive problems like ulcers and microbiome imbalances) pass into your intestines to reproduce and potentially take over. Mechanical breakdown doesn't work well when there isn't enough acid to weaken chemical bonds, so food passes into the intestines in larger clumps than your body can use.

SYMPTOMS OF LOW STOMACH ACID

Symptoms vary. Low stomach acid causes any combination of these symptoms:

- Belching during or after meals
- Feeling a lump in your throat
- Bitter taste in the back of your mouth
- Swallowing problems
- Dry cough
- Regurgitation of food
- Bloating
- Stomach ulcers
- Constipation (pooping less than once a day)
- SIBO (small intestinal bacterial overgrowth) diagnosis

SLOW DIGESTION

HOW TO TEST YOURSELF FOR LOW STOMACH ACID

You can't diagnose yourself with low stomach acid. You need to see a doctor for 100% certainty. Be ready to be persistent with your doctor, though. Symptoms of low stomach acid look the same as symptoms of too much stomach acid, and the most common treatment for these symptoms is a prescription for proton pump inhibitors (PPIs), or acid blockers. That will make your problems worse.

Use this self-test as a starting point. Do this first thing in the morning, before eating or drinking anything. Get a timer ready, and here's what to do:

- Mix ¼ teaspoon of baking soda in 4 oz of water
- Drink it all and immediately start the clock
- See how much time passes until you burp
- Stop timing after five minutes

If you have enough stomach acid, you'll likely burp within two to three minutes. If you went past that without burping, it's time to open up the conversation with your doctor or nutritionist about low stomach acid. Don't let your doc go on symptoms only. Ask or a stomach acid test involving an electronic pill that detects stomach acidity.The test removes stomach contents with a gastric tube, then analyses the sample for acidity.

WHAT TO DO ABOUT LOW STOMACH ACID

Apple cider vinegar. Taking a shot of apple cider vinegar before meals provides loads of benefits aside from helping your food break down. **Here's everything you need to know.**

Betaine hydrochloride (Betaine HCl). Betaine HCl is a plant-derived source of hydrochloric acid. **This article** can help you figure out if you need it, how to zero in on your dose as well as who shouldn't supplement with betaine HCl.

SLOW DIGESTION

LAZY BOWEL/SLOW MOTILITY

Your digestive system is essentially a long twisty-turny tube. Involuntary muscles start at your throat and continue all the way to your...exit. When these muscles sense food, they start moving in waves to push your food, whatever state it's in, to the next phase of digestion. This movement is called motility, and when it slows down in the lower intestines, it's known as lazy bowel.

Motility slows down in the intestines for these reasons:

- Digestive disorders
- History of eating disorder
- Drug use
- Anesthesia
- Overuse of laxatives
- Not enough fiber
- Low stomach acid

The last one is worth paying attention to because it can cause problems in itself. When acid is the cause of upper digestive problems and also the root of lower digestive problems, you're up against a double whammy. Your intestines look for acid as it's signal that food has arrived, and it's time to move it on down. No acid means reduced movement.

WHAT TO DO ABOUT LOW INTESTINAL MOTILITY

You could have any combination of reasons why your bowels went lazy on you. Here's what to do:

- Address the things on the list of causes above
- Read the section on stomach acid, and get that under control
- Avoid anti-nutrients. Anti-nutrients like phytic acid and oxalates are compounds in food that cause inflammation and bind nutrients so your body can't use them. A good balance of minerals like magnesium and potassium are crucial to keep you regular. **More on anti-nutrients here.**
- Add prebiotic fiber. Put down your grandma's orange-flavored psyllium fiber drink mix. Commercial fiber supplements are too irritating and can cause further damage to an already irritated gut. You want fiber from real vegetables and prebiotic resistant starches.

RESISTANT STARCH:
A BIODIVERSITY PARTY IN YOUR GUT

Like the name implies, resistant starch is resistant to digestion. Your stomach acid and digestive enzymes won't break it down, and it'll travel through your gut unchanged — that is, unless something eats it along the way.

Resistant starch is friendly bacteria's favorite food. Your good bacteria feed on resistant starch, which makes them produce crucial nutrients like butyrate, a short-chain fatty acid that strengthens your brain and gut, in return. When you feed your good bacteria well, they love you back with protection against colon cancer, increased immunity, improved sleep, and better insulin sensitivity.

WHERE TO GET RESISTANT STARCH:

- **Raw potato starch.**
  Don't heat it. Blend it into a smoothie or mix it into spreads as a thickener.
  Start slow, with one teaspoon a day, then increase as your digestive system adjusts.

- **Cooked and cooled white rice.**
  Sushi? Yes, please!

- **Green bananas and raw plantains.**
  Again, add to smoothies or sprinkle green banana flour or raw plaintain flour on spreads.
  You can also use them as a flour sub for baked treats.

You can read more about how resistant starch and gut bacteria vibe together here.

Bulletproof InnerFuel is an easy-to-use prebiotic powder that nourishes good gut bacteria, supports healthy digestion and boosts your immune system. It's a plant-based blend of clinically-backed prebiotics, and it contains zero net carbs and zero sugar. Even better? InnerFuel is flavorless, so you can easily mix 1-2 scoops into your favorite beverage (like Bulletproof Coffee every morning).

CHRONIC STRESS

Stress is a necessary evil that keeps us safe. Historically, the stress response would spring into action and get us ready to ward off physical dangers, like a hungry pack of wolves.

In modern society, the stress response is the same but the dangers are different. Your stress response triggers with the same intensity as it would if you ran from a predator, except the "threat" isn't deadly.

Getting a big medical bill or gearing up for a big presentation at work isn't the same as getting eaten, but your body's physical response is the same. Your body revs up your fight-or-flight engine, but you have nowhere to go. While we're rolling with the engine analogy, what happens when you step on the gas and stay in park? You blow your engine.

Short bouts of stress here and there change your gut flora to a small degree, and you can recover from that. Chronic stress can be totally destructive and cause major microbiome imbalances.

You knew that was coming — stress messes with the way your whole body works. How it affects your microbiome could have a lot to do with overall body changes.

In one study, college students had evidence of lower bacterial activity for certain bacteria strains during final exam week[Ref] and as a result, an increased vulnerability to illnesses, including the common cold and foodborne illness. In another study, prenatal stress altered the gut flora babies[Ref] and in animals,[Ref] even into the adult years.[Ref]

The worst part is, it's a self-perpetuating cycle. Your stress levels determine whether or not your gut microbiome thrives. In turn, your gut microbiome helps regulate your stress response through the gut-brain axis, the pathway that the brain and gut use to keep in communication.[Ref] When there's a break in the cycle, neither your stress response nor your gut biodiversity is healthy.

Your brain depends on your gut bacteria for certain nutrients and even neurotransmitters, or chemical messengers. Your gut is responsible for making most of your serotonin,[Ref] a vital neurotransmitter that regulates things like sleep, mood, appetite, and even bone density. Serotonin is a major player in the regulation of your stress response,[Ref] so it's crucial that your gut bacteria are producing the right amounts of quality serotonin.

CHRONIC STRESS

HOW TO STRESS LESS FOR A STRONG GUT

It doesn't matter that protecting your family from predators isn't part of your day-to-day anymore. Modern life is stressful, and you'll feel an incredible shift in your overall brain power, outlook, and health when you get a handle on everyday stressors. Here's what you can do right now:

- **Start a gratitude practice.**
  Gratitude literally rewires your brain and trains your mind to look for the positive in everything. **Read this to get started.**

- **Meditate.**
  Meditation has a calming effect in the moment, and also makes you more resilient to stress in the long term, even when you're not meditating. That's because it thickens the prefrontal cortex, the part of your brain responsible for decision-making, social interactions, and personality. **Head on over here** to get started and **download this bundle of free guided meditations**.

- **Forgive yourself.**
  Everyone has a past, everyone has negativity surrounding certain situations, and everyone has limiting beliefs. You'll find that you're much lighter if you deal with the tough stuff. Whether it's a matter of simple exercises or a tough course of therapy, you'll be glad you worked through it. **You can start here.**

MICROBIOME SHOCK

Every bite of food you eat, habit you create (or break) — really, everything you do makes a subtle change to your gut microbiome. Taking a shot of apple cider vinegar will give the good bugs boost, while a sugary dessert or a **bad night's sleep** will set you back a notch.

Some things make a dramatic change in your flora in a short amount of time. The most common ones are antibiotics, heavy drinking, and environmental toxins.

ANTIBIOTICS

Antibiotics, medicines that kill bacteria, have changed the course of infection treatment and have prevented countless deaths and disabilities. As a society, we're fortunate to have antibiotics available when we need them. Problem is, doctors prescribe them for minor infections that the body can clear on its own. Or, the doctor prescribes an antibiotic for a virus knowing full well it won't work, because the patient insists on leaving with a script.

Occasional use when it's absolutely necessary is fine, but frequent use comes at a cost to your health. Scientists haven't discovered highly specific search-and-destroy antibiotics that target only the strain of bacteria that's making you sick, so even one dose can wipe out strains that you want to keep around. Just one course can kill off entire colonies that are there to help you.

You're especially susceptible to microbiome shock if you're an antibiotics frequent flyer, if you're taking a longer course of antibiotics, or if you're taking a stronger antibiotic either at home or in the hospital.

HOW TO AVOID MICROBIOME SHOCK FROM ANTIBIOTIC USE:

Before taking antibiotics

Ask your doctor if antibiotics are the only way. At times, you can use a targeted antibiotic like creams or drops right on the infection site, instead of shocking your whole system with pills. Some questions to ask:

- For an eye or ear infection: *Can we opt for drops instead of pills?*
- For a skin infection: *Will a topical antibiotic work?*
- *What happens if we wait to see if my body clears it on its own?*
- *Are there any other options?*

The key is to ask lots of questions and have an informed discussion with your doctor.

DURING AND AFTER YOUR ANTIBIOTICS COURSE

Follow the diet and supplement suggestions in **this article** to give your gut flora a fighting chance while taking antibiotics, and rebuild strong colonies when you've finished your medicine. With responsible use and extra care, you can get the benefit of antibiotics without ruining your gut.

MICROBIOME SHOCK

ALCOHOL

If you do it right, you can enjoy a few drinks without screwing up your gut flora. One or two **green-zone** adult drinks like low-toxin red wine and tk will make subtle changes in your microflora that you can easily recover from. Too much alcohol, the wrong type of alcohol (an example here), and consuming alcohol more than once or twice a week will cause microbiome shock.

To illustrate how this works, let's peek into the beer and wine fermentation process itself. Producers add yeasts (or encourage naturally-occurring yeasts) to a fruit or grain mash. The yeast will feast on sugars and reproduce, leaving behind alcohol as a by-product.

The thing is, alcohol kills microorganisms. That's why nurses swab your skin with an alcohol wipe before poking you with a needle. Beer and wine stop fermenting when the balance tips, and there's enough alcohol to kill the yeasts and other active fungi and bacteria.

Strong alcohol, or too much alcohol in a short period of time — think a night of shots — will kill off enough of your intestinal allies that it will take time and TLC to rebuild your flora. Frequent alcohol use, even if you're drinking weaker alcohol, will chip away at your microbiome and disrupt your balance over time.

What's worse, alcohol contributes to gut-damaging digestion troubles discussed above: specifically, low stomach acid and slow intestinal motility.[Ref] So, you end up with a vicious cycle that inhibits your friendly flora and allows harmful species to thrive.

MICROBIOME SHOCK

ENVIRONMENTAL TOXINS

Humans have been dealing with toxins since the dawn of time. That's why you have a liver, kidneys, lymph nodes, sweat, and all of your other detox mechanisms.

Living in a society with cars, factories, big agriculture, and other parts of industrialized society comes with all kinds of assaults on your system that your great-great-great-grandparents never had to deal with.

Your built-in detox systems will deal with a lot of it. As with everything, there's a tipping point, and your liver, kidneys, and other detox systems can go into overload when they're tasked with more than they can handle. When things go back into your bloodstream for several more trips around the circulation loop, you run into trouble.

You could fill a phonebook with environmental toxins you come into contact with in a typical day. Here are a few of the more common ones that researchers have shown will mess with gut bacteria:

- Personal care products, pollutants, cosmetics, and toxins you come into contact with every day have a disruptive effect on the your bacterial colonies.[Ref]
- Scientists demonstrated that drinking chlorinated water wipes out certain species of Enterobacteriaceae, and a reduced presence of these contributes to colon tumors in animals.[Ref]
- A small study showed that human-equivalent doses of glyphosate, the active ingredient in commercial and household herbicides, changed gut flora in animal models, especially when the animal was younger in age.[Ref]
- Glyphosate altered digestive bacteria of bees enough to affect their health and effectiveness as hive workers.[Ref]
- Repeated sprays with glyphosate disturbed the microbiome of soil,[Ref] which changed the surface bacteria of the vegetables produced (meaning, less friendly bacteria for us), plus reduced ability of the soil to stand up to erosion and other environmental stressors
- Glyphosate killed off beneficial species of bacteria in the digestive tracts of poultry[Ref]
- Certain food additives like carrageenan cause inflammation in the colon, and the change in environment alters the profile of bacteria and fungi[Ref] opening you up to inflammatory bowel disease

HOW TO KEEP TOXINS AWAY FROM YOUR GUT

It's inevitable — a certain number of toxins will reach your lower digestive tract. And that's partially a good thing, because certain species of your gut bacteria help you get rid of toxins like mercury by gobbling them up.[Ref1][Ref2]

The best way to deal with toxins in your microbiome is to:
1. Reduce your overall exposure, and
2. Detox your body regularly

To reduce your exposure:

- Switch to organic, low-inflammation foods. It doesn't have to be all-or-none. You can swap foods out gradually. **Here's a roadmap** to help you stock your fridge.

- Check your home for environmental toxins **like mold.**

- Swap out your personal care products with **low-toxin versions**. Again, you don't need to throw all your products out at once. You can swap things out as you run out.

- Opt for lower toxin cleaning products and **items around the house.**

- Get yourself a **high-quality water filter.**

These steps aren't going to rid you of every single toxic compound you'll encounter in your life, but they will knock out the ones you're exposed to over and over.

When you're ready to do a detox, here are **eight detox methods that work.** Pick a few to start with and add others as they fit into your life.

There's a good chance you're dealing with some degree of all three categories. Overall, if you're aware of your inputs — food, environment, behavior and others — you'll have a sense of what your microbiome is up against.

Don't focus on perfection — aim to be better than you were yesterday. It's cliche, but it's a marathon, not a sprint. Before you bathe in bleach, a little reassurance. You're not dirty, and these organisms aren't dirty.

You have friendly microbes that help you stay healthy, and harmful ones that make you sick and weak. Certain species serve you well to a point, but overgrowth spells disaster. The key is to keep them all in balance to stay in tip-top shape.