Introduction

Digestion, fiber(s), the gut microbiome, the fiber gap created by the modern food system, and the science behind one.bio and GoodVice products are complex, interrelated phenomena. This FAQ will help you build your understanding from the ground up.

1. The Fiber Gap, the Broken Fiber Supply System, Digestion, and Fiber's Journey Through the Gut

The modern food system is not designed to provide the fiber we need to generate a healthy gut microbiome that in turn supports holistic human health.

How much fiber do I actually need?

The USDA recommends women consume 25 grams of fiber daily and men 38 grams. More contemporary recommendations, based on an updated understanding of fiber, come to around 50 grams a day. However, our modern industrial food system produces numerous ultraprocessed foods (UPFs) that have been stripped of fiber to maximize convenience, profit, craveability, and shelf-life. A 2025 report showed that ultra-processed foods (UPFs) made up 55% of the' calories in Americans' diets. Added sugars – that is, fiberless sugars – make up 21.1% of the calories in those UPFs. As a result, the average person consumes only about 15 grams of fiber daily, and 95% of Americans fail to get enough of this essential nutrient daily. This massive "**fiber gap**" leaves your gut microbes starving.

What are the connections between the digestive process, fiber, and the microbiome?

Digestion is a multi-stage journey. It begins in the stomach and small intestine, where your body uses enzymes to break down proteins, fats, and simple sugars for energy. However, your body lacks the enzymes to break down **complex carbohydrates** (fiber).

These undigested fibers, or microbiota-accessible carbohydrates (**MACs**), travel into the **large intestine**, which is home to your **microbiome**–a massive population of microbes that has huge impacts on your health. These microbes can eat (ferment) the MACs your digestive enzymes cannot, producing beneficial biocompounds that promote human health as they dine and avoiding detrimental microbial behavior.

To have a healthy gut, you need fiber that survives human enzymes in the small intestine to reach the large intestine. The **one.bio 01** fiber is optimized to make it through the small intestine and feed the microbes throughout the large intestine.

Can't I get all my fiber from common foods?

We strongly support the goal of people getting the amount of fiber they need through common foods. However, it is extremely challenging:

- **Volume:** To get an extra 10g of high-quality fiber, you would need to eat roughly 3-4 medium apples, 3 cups of blueberries, or around 2 cups of cooked broccoli.
- **Calories:** Many high-fiber foods (like beans or whole grains) can come with significant calories and starch, and people may be worried about ingesting more carbs than they'd like.
- **Discomfort:** Some high-fiber foods can come with unpleasant gastrointestinal symptoms, such as bloating or gas.
- **Super-convenient foods often exclude fiber:** In nature, sugar almost always comes with a "fiber brake" – a whole apple may be sweet, but it's also full of fiber. But readily available and convenient ultra-processed foods (UPFs) have been stripped of fiber and packed with sugar, creating the health threat of "fiberless sugar." Without the fiber brake, sugar quickly hits your bloodstream, producing insulin spikes and while failing to feed the beneficial microbes in your gut. Diabetes, cardiovascular disease, and mental health issues can arise as a result. The one.bio 01 fiber acts as a "fiber brake," allowing you to restore that natural balance to modern meals without changing the tastes you love.

How does one.bio help overcome the fiber gap?

The fiber gap is rooted in multiple issues. For one, the modern food system strips fiber from whole foods to create ultraprocessed products that damage human health. Secondly, many of us live very busy lives that leave little time to research, acquire, and prepare the whole-food meals that meet our nutrition goals – despite one.bio's belief that an ideal solution would be for people to meet their fiber needs from common foods. Finally, taste, texture, and other organoleptic characteristics play a critical role in dietary decisions, and some people can struggle with the sensory experiences of some sources of fiber.

The one.bio platform meets these challenges and helps restore fiber to its rightful and essential role in helping us feel our best. One.bio discovers and delivers optimized fibers that make it easy and pleasurable to overcome the poor grocery store options, time constraints, and organoleptic preferences that can make it difficult to include adequate amounts of this essential nutrient in contemporary diets.

2. Diet-driven Chronic Illness

Starving our microbial allies in our guts of the fiber they need to thrive generates huge impacts on public health and economic activity, not to mention individual subjective experiences of life.

What happens to my health when my gut microbiome isn't properly fed with the right fiber in the right amounts?

Chronic diseases are now the leading cause of death and disability in the United States, and much of the blame can be laid on a food system that has prioritized convenience, cost, pleasure, craveability, shelf-life, and profit over taking care of human health by taking care of the gut microbiome. A starving gut microbiome is connected to systemic inflammation, which can trigger serious health problems. Chronic illnesses connected to poor fiber intake include heart disease, type 2 diabetes, and obesity.

Is it possible to lose our gut microbes permanently?

Research from Stanford University using mice has shown that a low-fiber diet reduces microbial diversity and can create a compounding loss of microbial diversity across generations. When a low-fiber diet was maintained over four generations, specific beneficial microbial species went extinct. Reintroducing a high-fiber diet to the fourth generation didn't revive the extinct species. If this research holds up to scrutiny, starving our gut microbiomes today could mean we eventually stop passing certain species – and all of their health-supporting capabilities – to our children.

What is the economic cost of poor nutrition and chronic illness?

Chronic diseases and mental health conditions, many of which are diet-driven, account for approximately 90% of the $4.9 trillion in annual healthcare spending in the United States. Poor nutrition alone contributes significantly to this burden, with direct medical costs for conditions like heart disease and diabetes estimated in the hundreds of billions. Beyond medical bills, the economy loses potential GDP through lost productivity and disability caused by preventable, diet-based illnesses.

3. Why It's Fiber(s), Not Fiber, and Why one.bio's Fiber Is Special

one.bio's groundbreaking research and Glycopedia makes it clear "fiber" is more than just one thing. It is fibers – many complex structures that support different gut microbes, which in turn support human health in distinct ways.

Can fiber really do more than just help with regularity?

The old idea that fiber is a "broom" to move waste through your system is true. But we now know it's also much more: Fibers in many ways act like a method to power up the natural microbial "pharmacists" in your gut who, when properly fed the fiber they crave, produce the "medicine" (metabolites such as short-chain fatty acids, or SCFAs) that positively affect your mood, energy, metabolism, and holistic health.

Is fiber just one thing?

"Fiber" is actually a catch-all term for a vast library of complex plant carbohydrates. We have created the world's first **Glycopedia** to map the specific and complex structures of these carbohydrates to understand exactly how they interact with gut microbes, which go on to produce metabolites (such as SCFAs) profoundly impacting your health. We have "fingerprinted" the molecular structures of thousands of fiber molecules found in more than 4,000 natural products with thousands more on the way. At the same time, we are mapping how these fibers nourish specific gut microbes and those microbes' production of metabolites (such as SCFAs) in response. Our end goal is to understand each fiber and its relationships with the microbiome well enough to identify the ***best*** fiber to support each person's unique gut microbiome and health goals. In some cases, we may discover that existing fiber sources on the market are indeed the best, and will help people incorporate them into their diet in the most effective ways. In other cases, we may use our proprietary **Glycopedia** to conclude that the best fiber source has not yet been made easily available to people, and will pursue their production.

In the future, obtaining personalized nutrition from your microbial gut "pharmacists" via personalized fiber is within reach. With these functional dietary fibers we identify and produce, we aim to help people clear their brain fog, stabilize their blood sugar, physically recover more quickly, or achieve any other goal they have for feeling their best.

Why is one.bio's 01 'invisible' fiber so special?

One.bio developed a patented method to gently "cut" long-chain plant fibers (polysaccharides) into short-chain versions (oligosaccharides) without compromising the fiber's bioactive functionality. This depolymerization technology allowed us to produce the **Glycopedia**. It also enables the production, at scale, of flavorless, scentless, colorless, gut-gentle, water-soluble, and fully bioactive fiber powders from any original plant source (which lacks many of these useful attributes in its original form). This allows our fiber to be easily integrated into foods and drinks that people love without modifying the organoleptic experience, earning it the "invisible" description. A 2025 clinical study of one.bio's first fiber, 01 oat fiber, demonstrated many positive outcomes: no increases in gastrointestinal symptoms and even decreases at certain doses, improved blood sugar levels, reduced blood sugar spikes, and improvements in some mental health measures. One.bio's 01 also has the distinction of reaching the gut microbes throughout the large intestine, providing the full-spectrum support that is essential to obtaining the full range of gut-mediated positive health impacts. The 01 fiber will be integrated with the GoodVice ready-to-drink nutritional beverages coming out in early 2026.

4. Deciphering Nutrition and Product Labels

Products and nutritional labels use many terms that can make it difficult to know what you're getting. One.bio is producing optimized prebiotics (what we call "functional fibers"), which should not be confused with postbiotics or probiotics.

What is the difference between prebiotics, probiotics, and postbiotics?

- **Probiotics:** These are the good microbes (found in yogurt or supplements, for example) you consume to populate your gut.
- **Prebiotics:** These are fibers, or "**microbe meals**." Fibers like **one.bio 01 oat fiber** are prebiotics. Eating them feeds and supports your existing good bacteria.
- **Postbiotics:** These are the "**microbe medicines**." When a probiotic (microbe) eats a prebiotic (fiber), it excretes a postbiotic (like short-chain fatty acids, or SCFAs). These are the molecules that enter your blood and help your health.

Carbohydrates, sugars, starches, fibers: What is the difference?

Sugars, starches, and fibers are all **carbohydrates**. They get their names from how they function in your body:

- **Sugars**: Simple, short chains (1-2 units) of carbs that your body absorbs quickly for an energy burst.
- **Starches**: Longer chains of glucose that are eventually broken down into sugar.
- **Fiber**: Complex structures that human enzymes cannot digest. They are "microbe meals" that travel to the large intestine.

What is resistant starch?

These terms describe the "chain length" and complexity of a carbohydrate:

- **Polysaccharides:** These are long, complex chains of carbohydrates such as starch, cellulose, and pectin that are often highly branched and lack a uniform structure. Many polysaccharides are indigestible -making them fiber- because humans cannot produce the required enzymes to break them down there is no universal enzyme to digest them.
- **Oligosaccharides:** These are shorter carbohydrate chains. **one.bio 01** is an oligosaccharide, making it more bioavailable and easier for your microbes to eat.

5. How Your Gut Microbiome Begins

Your gut microbiome is developed and defined during birth and infancy. Resetting it is not a realistic goal. Keeping it healthy is.

How is my gut microbiome established?

Your microbial foundation is mostly established during birth and infancy, as microbes colonize the "blank slate" of your body. Evolution encourages this: Human milk contains complex oligosaccharides designed to feed and establish early beneficial bacteria like Bifidobacterium.

Can I reset my microbiome with probiotics?

Resetting an adult microbiome to a blank slate is not fully understood or clearly achievable, though fecal transplants have begun to explore this possibility. And contrary to common understanding, probiotics are not permanent additions to a mature gut microbiome; they typically just pass through, providing benefits along the way. Given that probiotics have limited impact, it's more important to feed your core microbial residents with the right prebiotics, powering up their natural ability to help you feel your best.

6. The Battle Between the Good and Bad Microbes in Your Gut

Your gut is crowded with different species of microbes competing for survival. Feed the good guys so they can defeat the bad.

What is the difference between good and bad microbes?

These terms describe the "chain length" and complexity of a carbohydrate:

- **Good microbes (commensals):** These species thrive on complex fibers, or MACs. In return, they produce beneficial metabolites like short-chain fatty acids (SCFAs) that help bolster your gut lining, lower inflammation, and manage blood sugar levels.
- **Bad microbes (pathogens/opportunists):** These species often prefer simple sugars or proteins. When they grow too numerous, they can produce toxins that lead to systemic inflammation and disease.

How do good and bad microbes fight?

Good microbes win by occupying the space on your gut wall and eating the available fiber, leaving no room or food for harmful species to take root. Some beneficial microbes produce compounds to repel the bad guys.

What happens when the microbiome is starving?

When you don't eat enough MACs (the fibers human digestive enzymes cannot break down), you are cutting off the energy supply for your good microbes. What happens next isn't nice:

- **Cannibalism:** If your good microbes don't have fiber to eat, some microbes will start to eat the mucin layer, which is the protective slime coating that lines your intestines. As the mucus layer thins, bad microbes and toxins can get closer to your intestinal cells, leading to chronic inflammation.
- **Dysbiosis:** Eventually, the bad microbes can take over, pushing your gut into an imbalance called dysbiosis. This is associated with metabolic diseases, mental health challenges, and weakened immunity.

7. The Gut Microbiome Pharmacy (Metabolites such as SCFAs)

A gut microbiome fed with high-quality fiber creates biocompounds that help you feel good.

What are the short-chain fatty acids (SCFAs)?

When your microbes eat fiber, they produce many metabolites, with SCFAs being one of the most well known. There are three major SCFAs, and they are the postbiotics that profoundly influence your health:

- **Butyrate**: This helps prevent leaky gut and systemic inflammation. High levels of butyrate are known to reduce inflammation that generates the sensation of brain fog. Butyrate also supports the production brain-derived neurotrophic factor (BDNF), a protein that supports your neurons and encourages the growth of new ones. One.bio's first fiber, 01, is short-chain oat beta-glucan fiber that our proprietary Glycopedia shows to be not only one of the most potent stimulators of butyrate production but also extremely robust in its ability to enhance butyrate production in vastly different microbiomes - meaning it produces the highest amount of butyrate in the largest percentage of donors.
- **Propionate**: This helps manage cholesterol and make you feel full.
- **Acetate**: This supports muscle metabolism and appetite regulation.

How do SCFAs relate to GLP-1, help control blood sugar, and improve my mood?

When microbes produce SCFAs, they trigger receptors in your gut that release GLP-1 (glucagon-like peptide-1). This hormone, well-known through pharmaceuticals like Wegovy, helps manage insulin and appetite. While many foods, sugars, proteins, and fats can stimulate your body's production of GLP-1, fiber does so in a slower, steadier way because your gut microbiome is consuming the fiber over six to eight hours. The end result is a longer-lasting feeling of being full, which helps manage how much and how often you eat.

8. The Era of the Holobiont

As you begin to understand the complexity of the gut microbiome and its role in supporting human health, it becomes easier to understand a human being as a super-organism dependent upon symbiotic relationships to survive and thrive.

What are the key microbial species in the human gut?

There are thousands of species of gut microbes, and some of the most researched include:

- ***Bifidobacterium infantis***: The first colonizer of the guts of breast-fed infants specializes in eating specific milk sugars.
- ***Akkermansia muciniphila***: This lives in the mucus layer and helps regulate its thickness and strength.
- ***Faecalibacterium prausnitzii***: An important anti-flammatory species and one of the most abundant butyrate producers.
- ***Bacteroides***: These microbes, extremely proficient at eating plant fibers, are very common in the gut and serve as the primary fermenters – the microbes that break down the biggest chunks of fibers to produce beneficial compounds and smaller fiber pieces to nourish other microbes.

What is a holobiont?

You have as many microbial cells as human cells in your body, and your microbes carry more genes than your own. Our microbes perform essential metabolic tasks that we cannot. Our symbiotic relationship with microbes is so deep, it's not far-fetched to view humans as holobionts: super-organisms made of a host and its helpful microbes.

9. Reference Materials

Short Name	Summary	Full URL
Short-Chain Oat Fiber Improves Gastrointestinal Tolerance and Regulates Glucose Metabolism: A Two-Week Open-Label Study in Healthy Adults (one.bio team)	The clinical trial results support the potential of one.bio's short-chain oat fiber as a well-tolerated and functional source of fiber with benefits including glycemic control, digestive health and mental health.	https://www.clinicaltrials.gov/study/NCT06739941
A diverse set of solubilized natural fibers drives structure- dependent metabolism and modulation of the human gut microbiota (one.bio team)	The first systematic and comprehensive characterization of a diverse collection of naturally derived solubilized fibers and their impacts on the microbiota. The results expand the understanding of the beneficial effects of specific carbohydrate structures naturally found in the human diet, highlighting the potential for designing fiber-based health interventions.	https://journals.asm.org/doi/full/10.1128/mbio.00470-25
Highly Soluble β-Glucan Fiber Modulates Mechanisms of Blood Glucose Regulation and Intestinal Permeability (one.bio team)	β-glucans found in cereal grains have been previously demonstrated to improve blood glucose control; however, current understanding points to their high viscosity as the primary mechanism of action. This work presents a novel, highly soluble, low-viscosity β-glucan fiber (HS-BG fiber) and a preclinical dataset that demonstrates its impact on two mechanisms related to the prevention of hyperglycemia.	https://www.mdpi.com/2072-6643/16/14/2240
Function without Structures: The Need for In-Depth Analysis of Dietary Carbohydrates (one.bio co-founder)	To further understand carbohydrates' biological activities, new analytical tools are needed to understand the different classes of carbohydrates that range in size from monosaccharides to polysaccharides.	https://pubs.acs.org/doi/abs/10.1021/acs.jafc.9b00720
A nonenzymatic method for cleaving polysaccharides to yield oligosaccharides for structural analysis (one.bio co-founder)	Foundational research describing FITDOG oxidative chemistry for yielding oligosaccharides for structural analysis.	https://doi.org/10.1038/s41467-020-17778-1

9. Reference Materials, cont.

Short Name	Summary	Full URL
Development of an Extensive Linkage Library for Characterization of Carbohydrates (one.bio co-founder)	The extensive characterization of glycosidic linkages in carbohydrates remains a challenge because of the lack of known standards and limitations in current analytical techniques. This study encompasses the construction of an extensive glycosidic linkage library built from synthesized standards.	https://pubmed.ncbi.nlm.nih.gov/31525948/
Stanford: Low-Fiber Extinction	Study detailing how low-fiber diets cause irreversible depletion of gut bacteria over generations	https://med.stanford.edu/news/all-news/2016/01/low-fiber-diet-may-cause-irreversible-depletion-of-gut-bacteria.html
CDC: Chronic Disease Facts	Official data on the prevalence of chronic disease and its healthcare cost impact in the US.	https://www.cdc.gov/chronic-disease/data-research/facts-stats/index.html
AAF: Economic Costs of Nutrition	Research detailing the multi-billion dollar economic impact of poor nutrition on medical costs and productivity.	https://www.americanactionforum.org/research/the-economic-costs-of-poor-nutrition/
Digestive System (Cleveland Clinic)	A detailed breakdown of how human digestion works, from the stomach to the large intestine.	https://my.clevelandclinic.org/health/body/7041-digestive-system
Human Microbiome Project	A comprehensive resource describing the microbial communities that live in and on our bodies and the roles they play in human health and disease.	https://hmpdacc.org/hmp/
Fiber and Health Umbrella Review	Analysis linking fiber intake to reduced chronic disease outcomes.	https://pubmed.ncbi.nlm.nih.gov/29566200/
EPIC Study: Fiber and Cancer	Observational study documenting the protective role of fiber against colorectal cancer.	https://doi.org/10.1016/S0140-6736(03)13174-1

9. Reference Materials, cont.

Short Name	Summary	Full URL
Glycemic Load & Diabetes (JAMA)	Clinical evidence linking high fiber and low glycemic loads to reduced risk of type 2 diabetes.	https://pubmed.ncbi.nlm.nih.gov/9020271/
B. infantis Adaptations (PNAS)	Genetic mapping of how specific microbes evolved to consume milk oligosaccharides.	https://www.pnas.org/doi/10.1073/pnas.0809584105
Prebiotic Definition	Scientific review of the evolving definition of prebiotics toward targeted microbial fuel.	https://pubmed.ncbi.nlm.nih.gov/28611480/
Gut Microbe Specialization (JMB)	Research detailing how polysaccharide fine-structure impacts gut microbe physiology and evolution.	https://www.sciencedirect.com/science/article/abs/pii/S0022283614003386
US Macronutrient Trends (Nutrition)	Statistical review of American carbohydrate consumption (not MACs) and the rise of obesity.	https://pubmed.ncbi.nlm.nih.gov/25837220/