



THE UNTOLD STORY OF THE GUT MICROBIOME

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by

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RESEARCH

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Table of Contents

Introduction	4
Chapter 1 – The Importance of the Gut Microbiome	5
Your Health Future —	7
Determined By Your Gut Microbiome	7
How the Microbiome Helps You Survive	8
Chapter 2 – What Happens When Your Gut Microbiome Isn’t Balanced	12
Weight Gain	14
Digestive Struggles	15
Allergies and Eczema	16
Chapter 3 – How to Balance Your Gut Microbiome	17
Eat a Diverse, Probiotic-Rich Diet	19
Probiotics	20
Breastfeeding for a Good Foundation	21
Conclusion	22
Resources	23

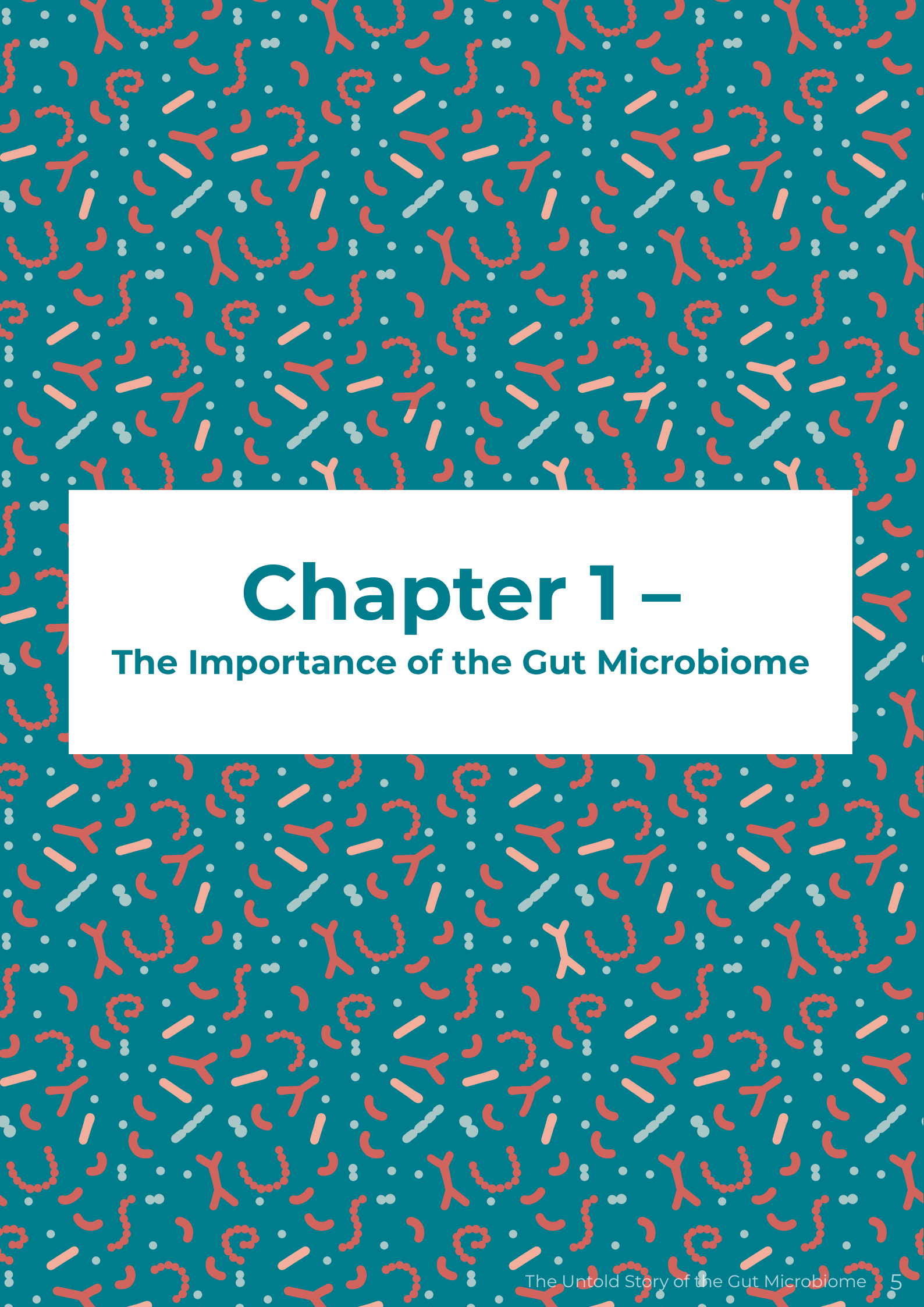
Introduction

Bacteria come in many forms, and most of these are crucial for health and nutrition. You don't want to get rid of all bacteria! In fact, you couldn't if you tried. Your body has trillions of them, and they all have crucial functions in keeping your body healthy, happy, and thriving.

The place where most of these bacteria live is in your gut, your digestive tract. Your digestive tract is the place where your immune system lays its foundation. Thus, a healthy gut microbiome means that you're more likely to fight off illnesses, prevent infections, and live at your fullest potential.

But how do you encourage a healthy gut microbiome? What does this mean in layman's terms and what types of lifestyle changes should you embrace? Are there supplements you can take to encourage thriving gut flora? What about foods to eat more of and ones to avoid? Here, you'll get all those answers and more.



The background of the entire page is a dense, repeating pattern of stylized microorganisms. These include various shapes such as Y-shaped bacteria, spiral-shaped bacteria, and small dots, all in shades of red, orange, and light blue against a teal background.

Chapter 1 –

The Importance of the Gut Microbiome

Your body has trillions of microorganisms, including bacteria, fungi, and viruses.¹ If this sounds frightening—particularly if you consider yourself a “germophobe”—know that this is good news. These microbes living in your digestive tract, bloodstream, and on your skin keep your body functioning the way it is supposed to. Think of them as tiny little workers, each doing a job that your body relies on each day to survive.

Your large and small intestine harbor varying amounts of bacteria, depending on the specialized site, with a smaller amount in the stomach itself. Altogether, the group of microorganisms called the “gut microbiome” are the catalyst for everything to do with your health.

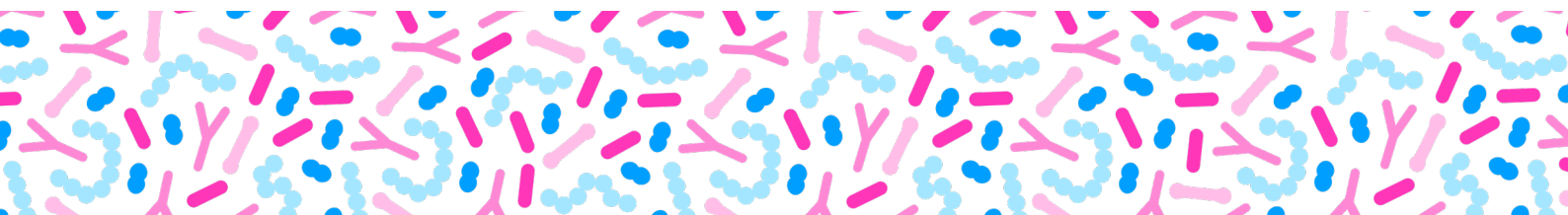


The saying is true—you are what you eat.

When you put good things into your gut, good comes out of it. When you put in toxic and chemical-laden processed foods, it's harder to stay healthy! There's a lot more to it than that, though, so let's get into the nitty-gritty details.

Scientists have studied the bacteria inside human digestive systems for decades. They've found that each human has more bacteria cells inside of them than they do human cells—40 trillion to be exact.² If you've never thought about yourself as a walking, talking, breathing bacteria house... think about it this way. All those bacteria inside of you weigh almost as much as your brain. There's an image that will stick with you for the rest of your life.

These 40 trillion microorganisms are made up of about 1,000 species of bacteria that all have specified roles. A few of these can make you sick if they're left to take over, but the majority are there to keep you healthy.³ **These bacteria can be thought of as an entire organ inside your body.**



Your Health Future — Determined By Your Gut Microbiome

This bacterial organ has been developing and strengthening itself from the moment you were born. In passing through the birth canal, a newborn infant picks up the beginning of its microbiome from its mother. Some evidence suggests that the gut microbiome even begins developing inside the womb, which is good news for babies who need to be born via cesarean section.⁴ However, the medical community now understands the health significance of a robust gut microbiome from birth. So, **when delivering babies via cesarean, doctors manually transfer microbiota from the mother to the baby's cheek with a vaginal swab.**

As babies grow, they come into contact with thousands of species of bacteria. Again, this is a good thing! **The more microbes a person is exposed to, the stronger and more capable their immune system is.** Many of these species come from the foods that a person eats, including breast milk in the early months of life.



How the Microbiome Helps You Survive

Your gut bacteria are responsible for several jobs, without which humans would not be able to live.

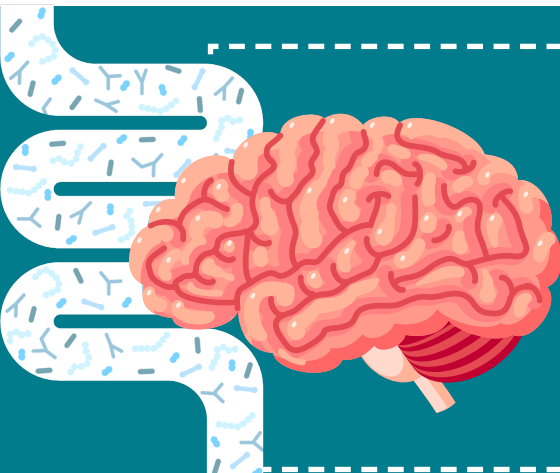
First off, the initial bacteria in a newborn's system are mostly **Bifidobacteria**. These work to digest the healthy sugars in breast milk, encouraging growth and development. These commensal microbes ferment fiber to produce short-chain fatty acids (SCFA). SCFAs provide the colon with energy, help repair the gut's lining, and support a healthy immune system. **Adequate amounts of fiber keep a person from developing diabetes, heart disease, cancer, and obesity.**⁵

The microbiome is responsible for metabolizing proteins, producing vitamins, and synthesizing amino acids. It also helps in the transformation of bile, which affects the absorption of nutrients and the detoxification of the body,⁶ and it's responsible for a complex system of carbohydrate metabolism, which gives the body energy.





The gut microbiome influences the overall immune system, as well. These microbes communicate with immune cells, affecting how the body responds to infectious bacterial strains and viruses. The intestinal cells tell the immune system how and when to avert threats, when to release protective compounds and make more white blood cells, and when to trigger an inflammatory response against a certain pathogen.⁷



Current research also shows that gut microbes also play an important role in the central nervous system, **meaning that it has a significant effect on brain function.**⁸

Particular strains of bacteria play a role in the production of neurotransmitters, such as serotonin and dopamine. Serotonin, a naturally made chemical that regulates emotions, is specifically made in the gut. **So, when your gut health is off it can mean that people are more likely to become depressed.** Studies show that people struggling with varying mental health disorders have unhealthy levels of gut bacteria present in their microbiomes.



Certain research also shows that the gut microbiome even affects your heart! Good bacteria help raise the levels of good cholesterol and triglycerides.⁹ Conversely, unhealthy bacteria encourage the growth of trimethylamine N-oxide (TMAO), which is closely linked to heart disease, including heart attacks and strokes. Interestingly, there is also a connection between gut bacteria and the red meat–heart health story. You’ve probably heard that too much red meat isn’t good for the heart. This might not be because of the red meat itself, though, but because an overabundance of certain strains convert compounds in red meat into TMAO.



Your gut microbiome also balances your blood sugar. In a study of infants who had a genetic predisposition to Type 1 diabetes, researchers found that just before diabetes developed, the gut biome diversity dropped significantly. In addition, the number of detrimental microorganisms also rose to unhealthy amounts. Other studies show that even people who consume the same diet can have varying blood sugars, possibly because of differing microbiomes.¹⁰

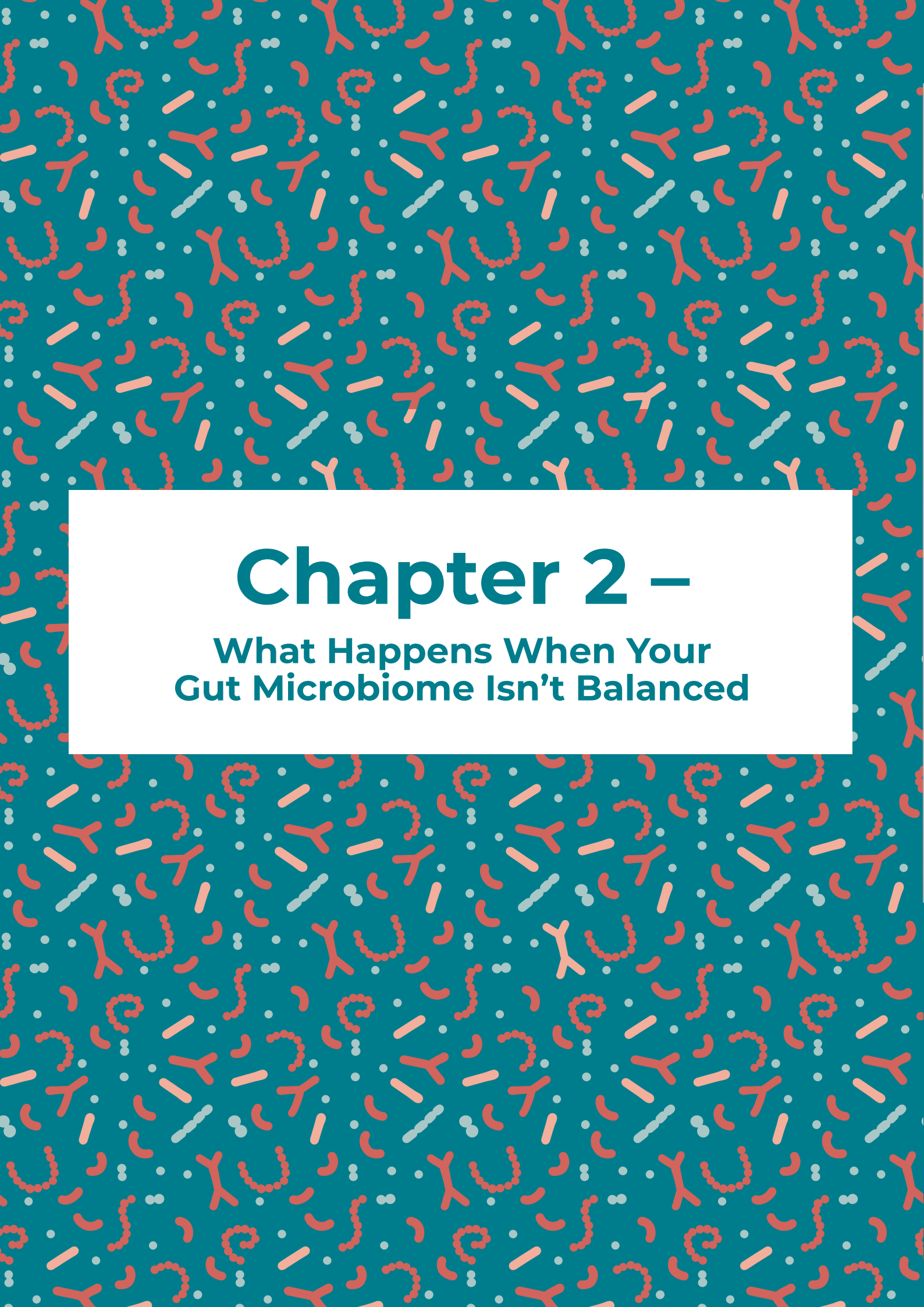
This research showing that two similar diets can still maintain varying levels of microorganisms begs the question: **“What else affects the gut microbiome?”**
The answer is: plenty.

Your skin plays a significant role in letting things into (and out of) your body. Anything that goes into your body through your skin enters your bloodstream and your microbiome as well. Therefore, environmental toxins, hygiene products, and cleaning solutions also affect your gut health.

Stress also plays a key role in microbiome health.¹¹ When people are highly stressed, it affects the composition of their gut microbiome, which then affects their hormone production and brain activity. Stressful situations lower the integrity of the gut and alter the production and secretion of microorganisms in the gut.

Everything is so closely connected, showing the importance of prioritizing a healthy gut microbiome.





Chapter 2 –

**What Happens When Your
Gut Microbiome Isn't Balanced**



Since we now know that gut flora is responsible for keeping things running smoothly, it stands to reason that **when it's imbalanced, it can have negative consequences.**

There are always healthy and unhealthy bacteria in anyone's body at any given time. Remember that one of the jobs of positive microbes is to keep the destructive ones at bay. **However, sometimes unhealthy microorganisms take over. When this happens, it's called gut dysbiosis.**¹³



Weight Gain

Gut dysbiosis has several effects, one of which is weight gain. Scientists confirmed this by studying sets of identical twins, in situations where one was healthy and one was significantly overweight. In the obese twin, the gut microbiome was severely off-kilter. This also shows that although the foundation for one's gut microbiome may begin at birth, it isn't genetically set. It changes as we grow, based on our diets and environment.

These gut microbes are powerfully strong, too. The scientists took some of the gut flora from the twins and transferred them to mice—the mice that received an obese participant's flora gained significant amounts of weight and the mice that received the leaner person's microbes stayed lean, even when they ate the same diet!¹⁴ **This shows that it can be difficult to alter a gut microbiome once it has taken hold.**



That's not the end of the story, though.

Probiotics are a healthy and effective way to enhance your gut microbiome and get things moving back in the direction that they need to go. They can help balance the bacteria in a person's gut and kickstart a weight loss and health journey.

Digestive Struggles

Gut dysbiosis can also lead to digestive issues, such as irritable bowel syndrome and inflammatory bowel disease. Even if you aren't diagnosed with a full-fledged disease, if you've often struggled with bloating, constipation, or bouts of abdominal pain, then it could be attributed to an imbalance in your gut microbiome.



Unhealthy microbes produce gas and hard-to-process chemicals which sit in your digestive tract and cause pain and discomfort.

But, adding good bacteria (often through probiotics and probiotic-rich foods) can turn this around.

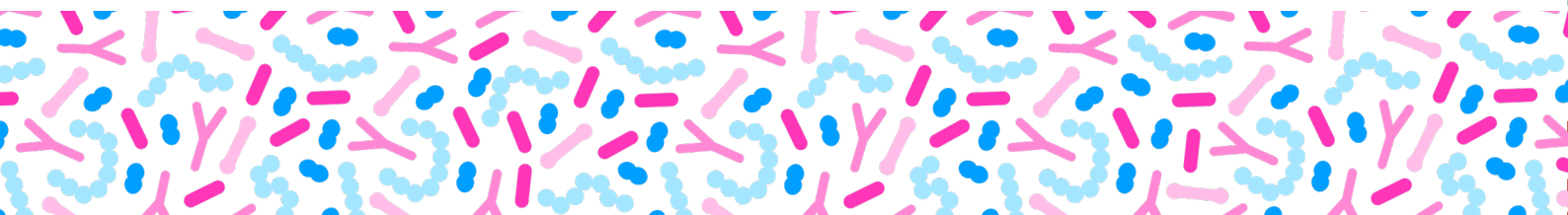


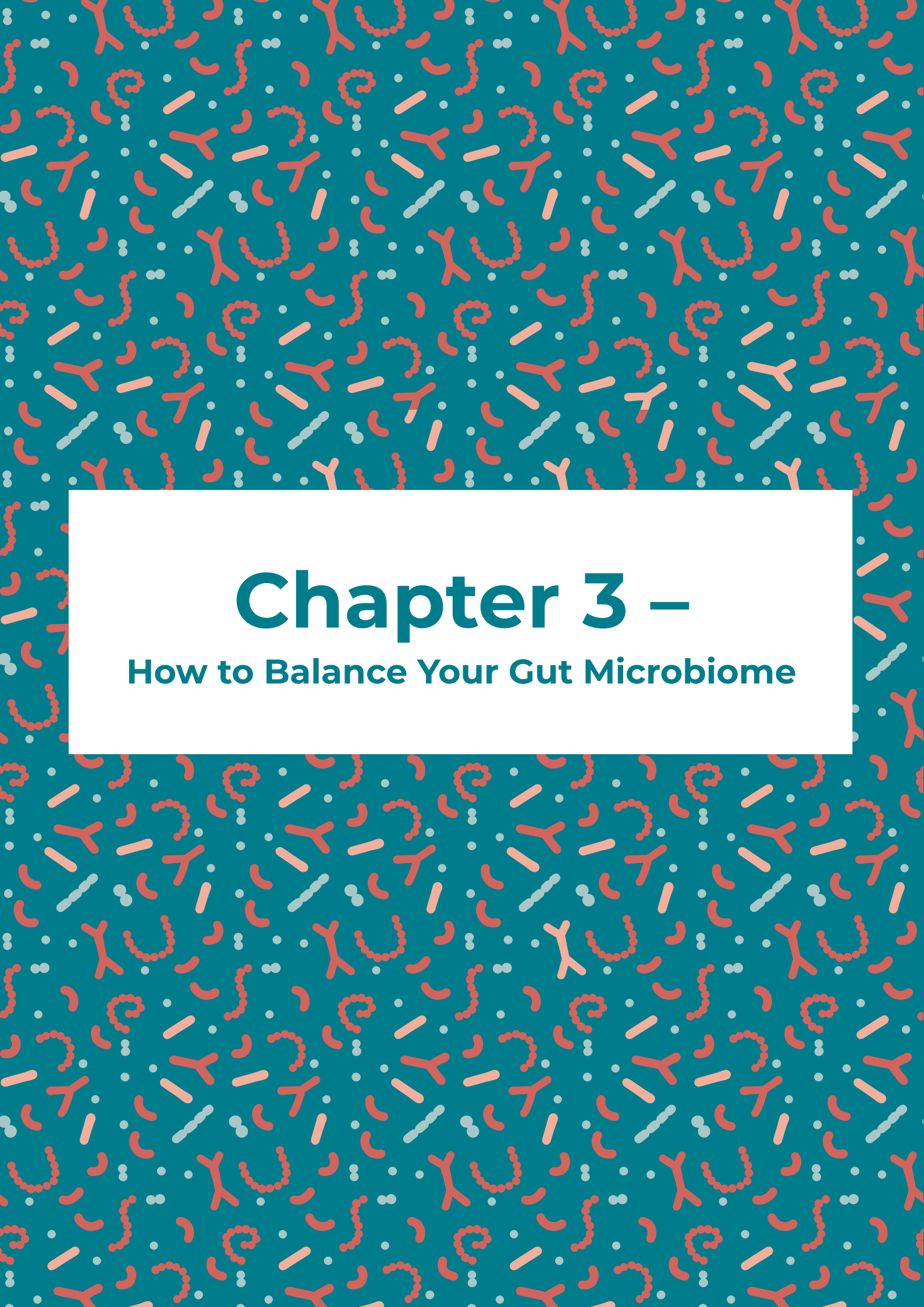
Allergies and Eczema

Allergies develop when the immune system responds disproportionately to non-harmful antigens.¹⁵ This is more likely to occur when people—specifically infants and young children—have higher levels of unhealthy gut bacteria and lower populations of diverse, healthy strains.



Many other “typical” diseases that people suffer from are also caused by an unhealthy gut microbiome. **These include eczema, asthma, and rhinitis.** Almost 20% of the population has developed these conditions in the past 50 years, which indicates that something in our modern environment or diet is responsible for these diseases. Often, these diseases begin with the development of eczema in the first two years of life, which develops into asthma, and then into rhinitis. The cause of this is often atopic sensitization,¹⁶ which is closely linked to cesarean birth and a mutation in a gene responsible for the immune-skin barrier. **Studies show that infants and young children who develop eczema and go on to develop asthma and rhinitis show significant levels of unhealthy gut bacteria and a low level of diversity in their microbiome.**



The background of the entire page is a dense, repeating pattern of stylized microorganisms. These include red Y-shaped structures, red and orange rod-like shapes, and blue and white circular clusters, all set against a teal background. A white rectangular box is centered on the page, containing the chapter title.

Chapter 3 –

How to Balance Your Gut Microbiome



All of this information might seem overwhelming. The good news is that **you have the power to take charge of your gut microbiome and get it in excellent working order!** There are many things you can add to your lifestyle (and plenty to remove) that will encourage a thriving gut microbiome, which in turn will create excellent overall health.



Eat a Diverse, Probiotic-Rich Diet

As we mentioned, the more strains of bacteria your body is introduced to, **the more diverse your gut microbiome becomes**. Thus, it can fight off more infectious and unhealthy strains.¹⁷

The foods that help encourage this diversity include:



Beans

Legumes

Fresh fruit and vegetables
(which offer plenty of fiber)

**Whole-grain
oats**

Fermented foods are also an important addition to a diet that promotes a healthy gut microbiome. These include:



Yogurt

Sauerkraut

Kefir

Prebiotic foods are an oft-ignored yet important part of keeping your gut microbiome diverse. Prebiotics work with probiotics to keep the system functioning at full capacity.



Artichokes

Asparagus

Apples

Bananas

Steel-cut oats

Certain studies show that a plant-based diet might help to reduce unhealthy levels of gut bacteria, such as E. coli. Reducing animal products might also help lower inflammation and cholesterol. **Foods that contain the compound polyphenol are found in several plant products.** Polyphenols break down in the gut microbiome to encourage healthy strains of bacterial growth.



Red wine



Green tea



Dark chocolate



Olive oil



Whole grains

Probiotics

A healthy microbiome is full of particular strains of bacteria. One of these is Bifidobacteria—yes, the one that your body has been making since you were born. Another is Lactobacilli, which is found in actively cultured yogurt. These strains help to seal the gaps between your intestinal cells and your bloodstream, preventing inflammatory disorders and chronic disease. They also help add healthy microbes back into the gut if they've been removed through antibiotics or other medications. Thus, make sure that antibiotics are only used when absolutely necessary.¹⁸



Breastfeeding for a Good Foundation

If you've struggled with creating a healthy gut microbiome, you can understand how significant it would be to give your child the best start possible. **Breastfeeding for at least six months** helps develop a diverse and strong gut microbiome and also protects the sensitive newborn gut from outside toxins and proteins that are not easily digested.



Conclusion



Your gut microbiome is, in theory, another organ that is crucial for both surviving and thriving. When it is full of healthy, diverse bacterial strains, all of your other bodily systems function at peak levels. On the other hand, when levels are off or unhealthy bacteria take over, it can create serious illness and disease.



You can take control of your gut microbiome

by eating a healthy diet full of pre- and probiotic-rich foods as well as eliminating other toxins from your diet and environment.

Your gut health has been developing since day one, so it might take some work to get it on track if you're experiencing struggle. However, the benefits are more than worth it.

Resources

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