

## INTRODUCTION

# The Mystery of the Immune System, Our Body's Greatest Defense Mechanism

The year 2020 was a year we'll never forget, for so many reasons. For me, an immunologist and integrative and functional medicine expert, 2020 will always be the year when everyone started talking about the immune system. Terminology like “cytokines,” “antigens,” and “herd immunity” became common-place lingo in socially distanced backyard gatherings.

Before COVID-19 hit, most of us probably didn't give our immune system a second thought, except maybe to figure that it helped us get over the common cold and back to work a little bit quicker; but all of a sudden, we started to look at it as a lifesaving mechanism in our body—a matter of life or death. And tragically, for many people throughout the course of the COVID-19 pandemic, the robustness of their immune system has been the determining factor between the two.

I wouldn't wish the year 2020 on anyone. But I can't help but

feel that one positive that emerged was that we all started giving some respect and attention to the role our immune system plays in our lives. It is, after all, our body's greatest defense mechanism. It's what keeps you and me alive every day, no questions asked. But unfortunately, our immune system has long been taken for granted, ignored, and even abused.

Think about it: Every year we get screening tests for all kinds of things. We receive colonoscopies and mammograms to rule out cancer; we have cholesterol and blood pressure checks to analyze our cardiovascular health; some of us even get tested for nutrient deficiencies and have blood analyses for our liver and kidneys. But no one goes to their doctor and gets an immune system checkup. Just asking for that would likely generate a confused look and some head-scratching from your doctor.

Why is that? The immune system is clearly important—why don't we think about its general health and maintenance?

Part of the problem is that the human immune system is an enigma to much of the medical community, save for specialists and researchers. Quite honestly, I understand why. It's an incredibly complex system made up of innumerable cells, receptors, and chemical messengers that all seem to have intimidating names composed of perplexing numbers, letters, and symbols.

Not to mention, most doctors aren't taught that much about the immune system in medical school. Personally, I took a single immunology course in my second year of medical school and memorized enough facts to pass my exams. Had I not decided later to become an immunologist, I would have relegated most of that knowledge to the cobwebbed recesses of my brain, filed alongside the exact sequence of development of the fetal heart and the complex organic chemistry reactions I memorized (and then promptly forgot).

Another hurdle to understanding the immune system is the

massive amount of new research that has emerged in the past few decades. The field of immunology is evolving at a furious pace, constantly changing what we understand on a day-to-day basis. For a relatively young science—with origins in discoveries by the Russian scientist Élie Metchnikoff in 1883—the sheer volume of new information to keep up with is daunting for most doctors.

This truth was apparent in the way we scrambled as a society—rather, as a planet—to understand the SARS-CoV-2 virus and arm our immune systems to protect us from it. We all wondered what we should do to safeguard ourselves from infection with the virus. We donned masks, bought gallons of hand sanitizer, and socially distanced to the point of shutting down businesses, canceling holidays, and working from home for more than a year. We researched online whether certain supplements and dubious cures might protect us, and stayed glued to the news about the worldwide race for a vaccine. We heard about underlying conditions being a risk factor for bad outcomes and worried whether we were one of the vulnerable ones. We wanted to “boost” our immune systems but then learned that most people dying from COVID-19 suffered an *overactive* immune response called a cytokine storm. It’s confusing, isn’t it? So many questions and so few answers. It was enough to make us feel scared, overwhelmed, and as if our world was totally ill-equipped to handle an invisible microbe that spread like wildfire.

The fact is that supporting the immune system in the right way at the right time takes a little finesse. This is especially true when there’s a novel threat, such as SARS-CoV-2. After all, there’s no one reliable screening exam for our intricate and mysterious immune system. As you will discover in this book, our immune system is located in every nook and cranny of our body. It’s a moving target and has no real boundaries or specified organs where it can be completely isolated and measured. You can’t scan

it with an X-ray, biopsy it, or determine its strength or weakness with a single test.

And even though we've been able to quickly develop effective vaccines for COVID-19, our immune systems will continue to face different challenges, such as new emerging viruses, throughout our entire lives! That's not where the threat to our immune system ends—not even close. Because even though we commonly associate the immune system with fighting off bacteria and viruses, the truth is that our immune system does way more than that. Its behavior—good or bad—influences or causes almost every disease known to humanity. The immune system is intricately involved in microbe-related illnesses like the common cold and flu, yes, but it is also a huge factor in heart disease, lung disease, diabetes, Alzheimer's, and cancer, which are the leading causes of death worldwide.

There is no other system in the body this elaborate and far-reaching. Essentially, the integrity of our immune system is the holy grail for the best quality of life. At the end of the day, its health determines whether we get sick and die of disease or enjoy hardy longevity.

When I started my career as an allergist and immunologist in private practice, I dutifully tried my best to tame the immune system. This was what I was trained to do. On a daily basis I treated eczema, hives, asthma, sinusitis, and occasionally a complicated immune disorder or deficiency. The treatments were standard—allergy shots, steroid injections, creams, allergy medications, asthma inhalers, and antibiotics. Most of the time, these methods helped for a while. But patients who'd left with a stack of prescriptions almost always came back in three to four months. As the years went on, I noticed that my patients were collecting new diagnoses, were getting sicker, and were ultimately taking too many medications, many of which were prescribed to help with side effects from other medications they were taking. Many com-

plained of experiencing new food allergies as adults, autoimmune diseases, irritable bowel issues, rashes, chronic sinusitis, and joint pain. I began to get referrals from specialty doctors in gastroenterology, rheumatology, and dermatology, all stumped as to what to do next with their patients. (Allergists are often the doctors who get the complicated cases that no one else knows what to do with.) The problem was, despite years of conventional training in internal medicine, allergy, and immunology, I was baffled myself. But I had a hunch that all these new health issues were connected in some way.

So I just started asking questions. I inquired about my patients' nutrition, their stress levels, their daily routines, their emotions, their habits, and their sleep. Many of them didn't sleep well, had insomnia, or worked the night shift. Some had nutrient-poor fast-food diets and had been on multiple antibiotics and other prescription drugs in the past year. Others were depressed and stressed out or felt trapped in their relationships or unfulfilled in their jobs.

At this point, I was no expert in "integrative immunology," which I define as melding the hard laboratory science of immunology with the understanding of the factors that influence health, such as nutrition, stress, the mind-body relationship, environment factors, and spirituality, among others. I could clearly see that my patients' immune systems were suffering because of their lifestyles and behaviors. They were also getting the standard laundry list of diseases like high blood pressure, heart disease, and diabetes, which I knew had a strong immune component. I had no idea what to do to stop it besides writing more and more prescriptions. I needed a better toolkit.

I spent the next few years creating my own set of tools. I decided to complete an integrative medicine fellowship through the Dr. Weil Integrative Medicine program in Tucson to learn the

benefits of various interventions like herbal medicine, nutrition, and repairing the mind-body connection. I attended functional medicine conferences, where I learned to focus not on naming diseases and covering up symptoms with medications but on searching for the root cause of disease using in-depth testing and evaluation, and then guiding patients through lifestyle changes to help heal themselves. I spent multiple weekends and vacations at these conferences all over the United States, digging into the science of what *really determines* whether we're sick or well, and I eventually got certified in functional medicine. I finally realized I couldn't integrate what I had learned into my current work situation, so I jumped ship from my job and embarked on my own, creating the Moday Center, a functional medicine practice in Philadelphia.

Since then I've worked with thousands of patients to reverse their health issues, including autoimmune disease symptoms, allergies, infections, and chronic diseases. Using tried-and-true protocols from my experience, I've helped them get off medications and feel better just by improving their environment, nutrition, microbiome health, sleep, and stress levels. I've helped patients reverse preexisting conditions and increase their resistance to viruses during the pandemic. I stocked my own unique toolkit, and I've put it to great use.

This book is that toolkit, distilled to a form that can be used by anyone, anywhere. In the following pages, you'll find a big chunk of the knowledge I've gained over the years, in a form that should be most useful to you. I've focused on what you *really need to know* about your intricate immune system and the practices that will help you become healthier and feel better. Because that's always the ultimate goal, right?

Over the past few years, I've read all the available advice for boosting immune health given by other health professionals—at

conferences, on social media, and on medical websites—and realized it was all the same. As someone who has studied the immune system for decades, I can say with total certainty that this is not the right approach. Your immune system is not linear, and many things can go wrong to bring on disease; it's not as simple as just “boosting” immunity. You can develop chronic inflammation, autoimmune disease, and even issues like allergies, which are due to already-overzealous immune activity that would *not* benefit from an immune system “boost.”

So what is the right approach? By helping hundreds of patients, I've learned that biochemical imbalances at the cellular level determine how the immune system goes awry and what symptoms we experience. During my years of research, I noticed several patterns emerging among my patients—and these became the blueprints for what I call the four Immunotypes: Smoldering, Misguided, Hyperactive, and Weak. In order to heal your out-of-balance immune system, you need to understand your specific Immunotype and then use specifically targeted lifestyle interventions and treatments to get yourself back on track.

That's why much of this book is centered around the four Immunotypes. We begin with the modern immune system crisis and an introduction to some of the underlying mechanisms that are fundamental to immune health. Then we'll be going back to class for a bit of Immunology 101. To understand your Immunotype, you have to speak a little of the language. Don't worry! It will be fun, and you can impress your friends at the next dinner party. After we've got the basics down, it's all about the four Immunotypes. I designed a self-assessment quiz to help you identify your unique Immunotype or Immunotypes (you can be more than one!) and present real-life case studies that help explain what's going on in the body for each. I'll explain how factors like sleep, stress, gut health, exposure to toxins, and nutrition affect

your immune health and lead to imbalances. With this information and the knowledge of your specific type, you'll be able to craft your own Immune Restoration Plan that fits not only your Immunotype but also your lifestyle and preferences. The Immune Restoration Plan is the part of the book where we leave the classroom behind, roll up our sleeves, take action, and start restoring immune harmony.

If you follow the Immune Restoration Plan, you will squelch unwanted inflammation and redirect your immune efforts away from your own cells and harmless allergens and toward legitimate foes. You will build up your immune fortitude against novel viruses and bacteria and become a powerful fighter of cancerous cells. The ultimate goal with this book is to feel good and have confidence in your body. Because when your immune system is balanced, you feel fantastic! You rarely get sick, and if you do, you heal quickly. You're free of pesky allergies and don't suffer from autoimmune issues. You aren't battling diabetes, obesity, or heart disease, or dealing with other chronic inflammation. Your immune system has resilience, and as a result, so do you.

So, whether you want to fend off chronic disease, get your autoimmune symptoms under better control, or free yourself from annoying seasonal allergies or constant colds or sinus infections, this book will provide you with your own toolkit to do just that.

Time and time again, I have seen the human body's miraculous ability to heal. And I know that you can experience this, too. Your immune system wants to protect you, but as you'll learn in this book, it can do its job only with your support.

What do you say? Are you ready to become your own immune system expert? Turn the page to get started.