THE MODEL HEALTH SHOW

EPISODE 701

The Microbiome-Immune System Connection & The Truth About Ultra-Processed Foods

With Guest Dr. Will Bulsiewicz

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SHAWN STEVENSON: Welcome to The Model Health Show. This is fitness and nutrition expert, Shawn Stevenson, and I'm so grateful for you tuning in with me today. Hippocrates stated that all disease begins in the gut. Often considered to be the father of modern medicine, that's a pretty lofty statement to say that all diseases begin in the gut. Now, this is speaking to obviously an intimate connection between gut health and the health of the rest of our body, but what about things like mental health and the function of our brains? Could our gut be responsible for them too? Well, a paper recently published in the journal, Brain, titled, "'All disease begins in the gut': Was Hippocrates, right?" sought to examine this connection. And although gut problems are not solely responsible for brain-related dysfunction, the data found again and again and again that the health of the human gut and human brain are deeply connected. Being that our gut is influencing so much about our health, I wanted to put together a master class with one of the premier experts in gut health.

Yes, he's an award-winning gastroenterologist, New York Times best-selling author, but most importantly, he's somebody that's taken it upon himself to get his education expanded beyond his conventional education that was lacking something so mighty and so important, informing and protecting our gut health that he's now become an expert on, and I'm talking about the relationship between our gut and our food. And so, on this very special episode, you're going to get a compilation of powerful conversations, the juiciest parts, the juiciest bits of my conversations with New York Times best-selling author, Dr. Will Bulsiewicz.

Now, we're going to cover a wide range of topics, again, really looking at the health of our microbiome, our gut health, and the interactions with food. And I think this is going to be absolutely mind-blowing, and this is something to share with friends and family. It's so concentrated in the most important, most vital information about gut health that you're going to want to share this. And this is because a study published in the journal, Gastroenterology, determined that approximately 70 million Americans are suffering with digestive issues. This is a huge chunk of our population. And now this data by the way, this was compiled over a decade ago back in 2012. So, the question for you is, do you think that things have gotten better, or have they gotten severely worse? And you already know the answer to that.

In 2009, there were actually over 245,000 deaths from digestive diseases, and the economic consequences of these issues is nearly $150 billion dating back again well over a decade ago in 2004, getting close to 20 years ago. And that number has skyrocketed the economic impact and also the number of people suffering. So, this is something we need some education on, and that's exactly what I have for you today. And now that more people are getting focused on improving their gut health, we have this tendency to go for the things that are hot, the

things that are hot and bothered out here in nutrition. So, something like kombucha, for example. Kombucha has been around a very, very long time. It's got these active probiotic compounds and it's being studied; there are many studies that are examining kombucha. However, if we're just basing this on published data, science-backed data, we're not seeing notable significant improvements in the microbiome makeup from kombucha alone. Now, could this be... Obviously, we need the prebiotic substrates for the different strains to be able to populate. But could there be something else, another drink, that has more science affirming its effectiveness?

And again, not to rain on the parade of kombucha, of having a nice kombucha r3 out here. There's kombucha, there's kefirs, there are so many different wonderful things that have been utilized for a long time. But is there something that is absolutely science-backed and has that long history of use that can be even more beneficial to the microbiome? Well, there is one beverage that stands head and shoulders above the rest. And this was featured recently in a study published in the peer-reviewed journal, Nature Communications, and it uncovered that there is a unique compound called theabrownin found in the traditional fermented tea called pu-erh that has some remarkable effects on our microbiome. The researchers found that theabrownin positively alters our gut microbiota and directly reduces excessive liver fat, specifically something called lipogenesis resulting in the liver so the more creation of fat. Also, another study published in the journal of Agriculture and Food Chemistry found that pu-erh can actually reverse gut dysbiosis by dramatically reducing ratios of potentially harmful bacteria and increasing ratios of beneficial bacteria.

Now, this tea is obviously really remarkable, but as with everything, the quality and sourcing matters immensely. Part of the reason that pu-erh is so remarkable is this concentration of polyphenols that feed our microbiota. And the one pu-erh that I drink that is even more concentrated in these polyphenols because it's wild harvested, it's using a patented cold extraction technology to maintain these bioactive compounds and it's absolutely packed with antioxidants and phytonutrients, and I'm talking about the teas from Pique Life. Go to piquelife.com/model, and you're going to get up to 15% off free shipping and other bonuses like free tea samples along with their new pu-erh tea bundles. So that's P-I-Q-U-E-L-I-F-E.com/model for up to 15% off. You can get the opportunity for free shipping, you get other bonuses like free tea samples, again, along with some of their new pu-erh tea bundles. Definitely check them out. This is the only pu-erh that I recommend. It's triple toxin screened for one of the highest levels of purity. Go to piquelife.com/model. And now, let's get to the Apple Podcasts review of the week.

ITUNES REVIEW: Another five-star review titled, "A Great Show" by Andyo1997. "I recently discovered this podcast, and I'm forever thankful that I did. It has quickly become one of my absolute favorites. Shawn is incredibly knowledgeable, and every episode is packed with

helpful tips and advice on how to improve your overall health and well-being. I highly recommend the show to anyone interested in living a healthier lifestyle."

SHAWN STEVENSON: Awesome. Thank you so much for sharing your voice over on Apple Podcasts, I truly do appreciate that. And without further ado, let's get to this powerful compilation with Dr. Will Bulsiewicz. Will Bulsiewicz, MD is a New York Times best-selling author, and he's also an award-winning gastroenterologist, gut health expert, and author of more than 20 published studies in the top American gastroenterology journals. Now in this first segment, he's going to be talking about how bacteria make up so much of the human organism and how the war against bacteria began with good intentions but went way too far. He's going to cover the truth about preservatives. He's going to talk about an ancient category of microbes that live in and on our bodies that science is still trying to understand. What our poop can actually tell us about our health, and so much more. Check out this first segment from the incredible Dr. Will Bulsiewicz.

DR. WILL BULSIEWICZ: The vast majority of these bacteria that live inside of us, they're actually our friends. And we talk about evolution. We rose and we fell together, right? So, when we live, they live. And because of that, we grew to really trust these microbes with specific jobs that we can talk about more in a moment. But bacteria like, yeah, there's E. Coli, Shigella, Salmonella, but there's also a whole bunch of good guys in there. And the good guys outnumber the bad guys, and that's the way that we want it to be 'cause the good guys can keep the bad guys in check, and that's a body in balance.

SHAWN STEVENSON: I think it was really impressed upon us when the germ theory of disease hit, and it's just like these things that we can't see are all bad, and we need to kill all of them.

DR. WILL BULSIEWICZ: Right.

SHAWN STEVENSON: Yeah, and so then we get to practices today where it's just really about targeting and killing stuff haphazardly when we can also be damaging our healthy bacteria too.

DR. WILL BULSIEWICZ: Thank you. This is actually a huge and very important point. So, there's a historical context to this. You and I are both in our 40s. I'm turning into my dad. I'm becoming a history nerd. Right now, I'm reading a book about the Civil War. In the Civil War, people weren't just dying from gunshot wounds. They're getting gunshot wounds and then infections, and that's what they would die from. Like Stonewall Jackson, that's what he died from; he died from an infection. But we didn't understand that. We didn't know. But a lot of the soldiers when they would get hit, they would say, "Don't take me to the hospital." Because all they knew was that going to the hospital meant you were more likely to get sick and then die. And so, they

didn't understand it. At that time, they really thought that there was the theory, the prevailing theory... Again, this is less than 200 years ago, was something that's quite fascinating called miasma M-I-A-S-M-A. And I don't even know how to describe this other than it's almost a supernatural thing. It's like, "Ooh," you walk by a swamp at night and it's dark out and there's this mist and there's a smell, and you're like, "Dang, man. That's not good over there, is it?" That's what miasma was. There's these weird pictures that you can Google on the Internet...

SHAWN STEVENSON: Bad air.

DR. WILL BULSIEWICZ: Bad air.

SHAWN STEVENSON: That's back in the days of Uhtred of Babenberg and bad air is killing people, yeah.

DR. WILL BULSIEWICZ: Right. But it's right around that time that Louis Pasteur is in France, and he's starting to study, and he discovers this concept of these microbes. And it was actually through fermentation that he was studying. And this transforms our understanding of human health. And all of a sudden, the light bulb goes off and it comes into clarity, and we realize, the top causes of death in 1900 were all infections. Heart disease was not one of the top three causes of death. The top three were all infections. And the most radical, most important events to take place in the history of human medicine was the discovery of penicillin. World War II, we discover a way to stop these infections in their tracks using a pill. Can you imagine how seductive that would be to a doctor in 1945? And so now we start doubling, tripling, quadrupling down. And by the way, this is an explanation for modern healthcare too, not just the vilification of these microbes. But this is how we got to empower the pharmaceutical industry so much, is that we started doubling, tripling, quadrupling down on this idea that pills can fix our problems. And we lost track of the basics like, what do you eat? Are you exercising?

SHAWN STEVENSON: The environment.

DR. WILL BULSIEWICZ: Did you get a good night's rest? What's your environment? How about stress? How are you feeling? So, we completely lost sight of that, and we built our healthcare system around pills and procedures because it was so seductive, and we empowered those industries and now it's hard to take that back.

SHAWN STEVENSON: And a war on bacteria.

DR. WILL BULSIEWICZ: And we had a war on bacteria, and a war in bacteria to the point that if you look with the development of new antibiotics that was taking place in the '40s, '50s, and '60s, they actually... There was someone who was the Secretary of Health in the United States

who said, "The war on bacteria is over." Well, that was a pretty shortsighted comment, and it goes to show you how little we know in an individual moment how we can think we're so right, but yet we're actually wrong. Because the war on bacteria actually was going to go on in perpetuity. These bacteria will always be there. And so, we started looking for ways to basically destroy them. And this is more than medicine. This is our food supply. This is our water. And I'm not going so far as to say, "This is an environment in our home. This is what we put on our skin when we shower." I'm not going so far as to say that these things are bad. Again, I don't want to go back to a time where my life expectancy is cut short by infections. But there is such a thing as a pendulum, and the pendulum can swing too far, and that's what has happened. And yes, there is the overutilization of antibiotics. And people at home need to know that antibiotics aren't just targeting the bad guys, antibiotics are dropping bombs. They're dropping bombs in the gut microbiome, and they're just decimating it.

And it's hard for us to recover after that 'cause basically we've destroyed part of our gut. But even going beyond the antibiotics, think about our food supply. So, food is meant to have a life cycle. This is the way that it works. If we call it a plant, that plant starts off as a seed and it germinates and it sprouts and it rises up from the soil and it grows towards the sun and it matures, and eventually it reaches a point of maturity that a guy like you and I might come along and be like, "Oh, look at that tasty cabbage. I think I want to eat that." But if we don't, it continues to mature to a point that it no longer is edible, it starts to break down, it decomposes, we've missed our window of opportunity to eat it. We may call it rotten, that's kind of a derogatory term. We don't have to call it that, because what's happening is, this is the life cycle of food, and it's decomposing and it's going to turn back into soil, and that soil is going to enrich the next generation of seeds that are ready to sprout and grow.

This is the circle of life. Food is meant to decompose. So, what are we talking about with something that sits on the shelf for two years and it's exactly the same as the day that you produced it? What's the deal with that? Well, here's the issue. Preservatives, we call them preservatives and I would call them antimicrobials. Because it's the microbes that are part of this life cycle, and they break down the food. So how is it that you can have cold cuts that sit in that refrigerator for a year, and you cut off a couple of slices every couple of days? And how is it that you can have crackers that sit in that bag and they're just as fresh and tasty like two years ago?

SHAWN STEVENSON: Not to mention a Twinkie that can last 100 years. Oh me, we haven't even experimented to find out yet, but it's incredibly abnormal.

DR. WILL BULSIEWICZ: And how about those experiments where someone grabs a McDonald's burger and...

SHAWN STEVENSON: Oh, the fries. What about the fries? Growing up, there was three kids, so we would randomly find a French fry in a couch cushion or somewhere in the car from... And it looks like the day that it was bought, and it could have been there for a year, who knows? That's crazy man, crazy.

DR. WILL BULSIEWICZ: Right. But there's a reason why this is happening, is that we have retarded the microbes, right? We're disrupting that normal life cycle, and the way that you disrupt it is by basically keeping the microbes away. So, then what happens when you take that and put it into your body? And the problem is we don't know, and I'm not here to... First of all, I'm not here to pretend that I don't eat processed foods. I do. I do my best to reduce them. But I am here to talk to the American public where the average American's diet is 60% ultra-processed foods. And look at the health problems that we have in this country, where we are the biggest spenders per capita on healthcare in the world, by far.

SHAWN STEVENSON: By far.

DR. WILL BULSIEWICZ: By far, literally number two is less than half of the United States. And yet if you look at our life expectancy, as rich as we are and as much money as we spend on healthcare, we're number 43 in the world in life expectancy. Countries like Costa Rica, which are Third World countries, and they spend 10% of what we do in healthcare per person, they're living as long as we are. Crazy.

SHAWN STEVENSON: Yeah, something's not adding up.

DR. WILL BULSIEWICZ: Something's not adding up. And this is the point going back to what you were kind of getting at which is that there's good microbes, there's bad microbes, but many of the things that we are choosing in our society, they're just smashing both of them and that's not a good thing. And so yeah, so bacteria that's number one.

SHAWN STEVENSON: Yeah. And by the way, I just love that you mentioned that pendulum as well, because we're not here to vilify either side. If you think about the context of one of the issues today that actually kills a lot of people still, as of this recording, unfortunately, is water. Drinking water that's contaminated with nefarious organisms. So, we have that as an occurrence. And then on the other hand, we have utilizing a very strong antibiotic in the form of chlorine in amounts that might be unsafe for your microbiome as a way to "clean the water." So, I don't want, of course, to drink contaminated water that can make you sick, but at the other side, I don't want you drinking something that can also make you sick, but it might have more of a long-term drip effect to use upon with the water of damaging you. So where is that graceful spot in the middle where we have a respect for the structure of water itself, the state of... Because even as I'm talking about this, I'm thinking about humans evolved, drinking water

that was alive, that would have exposure to what will probably be more beneficial microbes, but they were coming from springs. Humans would set up civilization, spots, tribes where the water was coming out.

DR. WILL BULSIEWICZ: Sure.

SHAWN STEVENSON: And today...

DR. WILL BULSIEWICZ: That's why we feel so much more comfortable. And this is innate in us. We can't change this, but this is why we feel so much more comfortable living close to water.

SHAWN STEVENSON: Yeah, to survive, you survive. But today of course, we could basically get water anywhere delivered or we'll drill down into an aquifer or whatever the case might be. We've got all of these wonderful inventions to clean water, which is great. So again, it's that pendulum. We've got everything on the spectrum is an option, but at the end of the day, we have to come with a place of balance, and then this again, this is what I really love about your work is taking all these things into consideration, not vilifying any of it, and like let's find a place to bring everybody together. And so, we got bacteria and then the next one would be...

DR. WILL BULSIEWICZ: So, the next one would be the yeast, so the fungi. People have heard of Candida. Candida lives inside of all of us, it's there. Now, Candida can get out of balance, get out of control in a person who has a damaged gut, but when our gut is imbalanced, again, the good guys suppress the bad guys, and so we don't need to worry about that in the vast majority of cases. So that would be the Candida. Now the third one, I think are my favorite, it's the archaea. Now the archaea, they're not bacteria. They're not fungi. They're somewhere in-between. And the earliest life that we're aware of on Mother Earth are archaea. We believe that they are the first thing that showed up about four and a half billion years ago. Again, humans, three million years. Four and a half billion years ago, that's more than a thousand times more history than us humans, and that actually predates oxygen by billions of years.

SHAWN STEVENSON: Wow. Wow.

DR. WILL BULSIEWICZ: Which is crazy. They were there when there's no oxygen, so I can assure you that no matter what happens to us humans, I'm pretty sure the archaea will be around.

SHAWN STEVENSON: Facts.

DR. WILL BULSIEWICZ: They're very resilient. And you will find them in some interesting places. You could find them inside of a volcano, you can find them in the bottom like miles deep in the ocean in rift vent, and they're potentially inside your colon right now, hanging out.

SHAWN STEVENSON: Wow.

DR. WILL BULSIEWICZ: And they're very interesting creatures. They're gas-producing. So, some people who have archaea would experience gas and bloating. Now, this is not to vilify them, because the flip side is that we also have evidence that suggest the archaea protects us from heart disease. So, you could create plans to attack archaea because you have gas and bloating, but could that be a mistake, because would you then increase your risk of the number one cause of death in the United States, heart disease? These are questions that we have to grapple with. But at the end of day, I tend to believe, and I think it comes back to the important point that you made, Shawn, is that I tend to believe that the solution is not destruction. The solution is building up. Let's be builders. Let's not be wrecking balls. Let's be builders. Let's make something. And that's what my approach to gut health is all about.

Now the last two, number four are the parasites. There are many types of parasites actually. Some of them are actually good for us. Some of them are actually great for our metabolism, believe it or not, like blastocysts hominis. We actually have research, there's a company that I'm involved with called Zoe. We're a personalized nutrition company, and we do microbiome, continuous glucose monitor, lipids, and people enter into an app what they're eating. And thousands and thousands, we have 10,000 people now who have done this. They all do these tests, and then we can put it into super computers, and they can run complex algorithms and identify personalized trends of how to optimize our metabolic health, to control our blood sugar, to control our lipids, to reduce our risk of heart disease, and to help us lose weight if we need to do that. It's pretty cool stuff. Anyway, one of the things that we found is that these blastocysts, it's a parasite. It's actually great for our metabolism, and I am a proud blastocysts donor. I know from my testing guy I got a buddy downstairs, a blastocyst who is my buddy taking care of me.

SHAWN STEVENSON: That's something I would have never thought you would say today.

DR. WILL BULSIEWICZ: One of the challenges that we have is that there is no one-size-fits-all, that we are unique individuals, that speaking again to the gut microbiome, there are eight billion people on this planet, and there is no other Shawn Stevenson when it comes to the gut microbiome. It's a fingerprint, even better than a fingerprint, and it is completely uniquely yours. Now, let's pretend that you have an identical twin who grew up in the same place as you. You would only share about 35% of the same microbes. And let's pretend that the identical twin literally lives at home with you and eats the same food that you do.

SHAWN STEVENSON: Can he be an evil twin?

DR. WILL BULSIEWICZ: He's an evil twin. So, this lucky gentleman who gets to hang out with you all day, who also is evil, we can feed you guys the exact same food, you would still have different responses, right? And what do we do when we have a clinical trial... Which we all love, we all love these clinical trials, but there's a problem. Because at the end of the day, you are not average, I am not average, and neither are the people listening to us right now. And I'm not saying that in an inspirational way, although I do like that inspirational element, but I'm saying more like, you can't expect that you're always going to fall into the average of what everyone gets. You're going to have your own response to everything.

And so, when we do a clinical trial, let's pretend, Shawn, for a moment that we're comparing plant-based to keto. And I'm not trying to pick any fights with anyone who's watching the show. I'm all about inclusion, and I want people to feel very comfortable with me. But let's pretend that we do plant-based versus keto, and the goal is weight loss. And in this trial, we go, "Oh, okay, on plant-based diet, the average person lost four pounds, and on the ketogenic diet, they lost three pounds." So, we're going to make the plant-based diet the winner. We declare this the winner. Okay, what do you say to the person who gained five pounds on a plant-based diet? Are they supposed to feel good about the fact that the average person lost four pounds on a plant-based diet and then gained five? What do you say to the person who lost 20 pounds on the ketogenic diet? Is it not good for them? So, there's this personalized element to it, and it comes back to the gut microbiome.

And I'm excited about the future of personalized nutrition because this is how we move beyond averages and tap into our unique biology to ultimately figure out how to use this information. There is so much information in our poop, okay? To put this into context, you asked me in the beginning, what do people need to know in terms of cells and stuff like this? All right. Literally, you are less than 50% human, and if we only look at the cells that I consider to be from biology class, true cells, like they have a nucleus and endoplasmic reticulum and Golgi complex. We look at that, you are 10% human. 90% of your cells are coming from these microbes. And if we look at you from a genetic code perspective, the human genetic code is shockingly simple, and it makes up a very, very small part of our actual information. Less than 1%. 99.5% of our genetic code comes from these microbes, so the amount of information that exists in a bowel movement... I mean, look, you're just going to turn and flush it down the toilet, but pay it some respect, right?

Because it was, Shawn, it was to the point that there's so much information that the computers of the '90s could not handle this amount of information, and it took us until 2005 or 2006 to have computers and laboratory techniques that allowed us to understand the gut microbiome. That's when we started to break through on this stuff for the first time, and all of that has to do with the overwhelming amount of information where 99.5% of our genetic code can be identified in a bowel movement. So, it's just insane, and it really makes you come at this with

humility. Because 20 years ago, we're just flushing the toilet, get that crap out of here, and now scientists are fighting over fecaliths. It's like a Jurassic Park thing where they tapped into the amber and they get the mosquito DNA, now scientists are fighting over caveman poop and who gets to have ownership of the information that exists in caveman poop.

Right? They are fighting over it.

SHAWN STEVENSON: Fighting over.

DR. WILL BULSIEWICZ: Oh dude, I'm telling you this stuff is worth like millions of dollars. If you step in a caveman poop, save it because it is worth a lot of money.

SHAWN STEVENSON: Dang, oh my God, that's crazy. So powerful. Since we're on the topic of poop though, let's stay here for a moment.

DR. WILL BULSIEWICZ: Let's go.

SHAWN STEVENSON: What kind of information can our poop tell us about our health?

DR. WILL BULSIEWICZ: This is such an important topic because we have stigmatized talking about poop. And that's an unfortunate thing because to me, this tells us just as much about your health as your blood pressure, your heart rate, your ability to run a mile. This tells me just as much information. Because if we're saying that gut health is so important... And again, I'm here telling you, that these 38 trillion microbes are critically important for digestion, our immune system, our metabolism, our hormones, our brain and mood, and our genetic expression. So, if it's that important, what is our window into understanding this? And it's literally the bowel movement that you just dropped in the toilet.

And so, what can we learn from this? Well, here's where I would start. Your body thrives on rhythm. It's like your heart. Like, dude, you're a good athlete, man. All right? I'm quite sure that you could give me a decent time in running a mile, and I know you can lift some heavy weight. But if I flip your heart into abnormal heart rhythm, I can assure you, you won't be able to walk up a flight of stairs. That's how much your heart requires rhythm. So, what happens when our gut is out rhythm? We suffer. A gut that's in rhythm is just effortless. You are enjoying your food, you're having good, regular, complete, and dare I say it 'cause it's real, satisfying bowel movements, right? They feel good. And you whip that door open, and you walk out in slow motion, and the entire world knows, "Dang, man, that dude must have dropped some bombs in there."

SHAWN STEVENSON: I'm a visual person. I'm picturing the whole thing.

DR. WILL BULSIEWICZ: Doves flying, right? Doves flying in slow motion and it's just like, "Yo, Dr. B is in the house right now." So anyway, but in all seriousness, the flip side, and these are the people that I have taken care of my entire career, these are people who are suffering and they're suffering from a loss of rhythm of their gut. Their gut is out of rhythm. How does that manifest? Well now, this is not just effortless, this is a struggle. Eating food is a struggle. They suffer with symptoms, gas, bloating, discomfort, cramping, diarrhea, constipation. Their bowel movements are a struggle. They're not rhythmic. They're not effortless. In fact, they can be very challenging, very difficult, require great effort. Be uncomfortable, not be satisfying, feel incomplete. And these are the experiences... For the people who are at home, if this is resonating with you, I'm talking to you right now. This is what you can experience in a bowel movement in the bathroom behind a closed door. That's an insight that your gut is not where it needs to be. And we need to get it back on track, get you back to those effortless bowel movements, get you back to those satisfying bowel movements. So, I really think that this is an important thing to look at.

Now, one of the biggest misconceptions that is just flat out dead wrong, is that people think that it's all about how often you go. Does that matter? Yes, it does, but that's not the only thing. You can only take so much from that. Let me put it this way. If you tell me, "Hey doc, it's been seven days since I've had a bowel movement." Okay, you're constipated. I know what the problem is. I don't need any more information. But you could poop every day and be constipated. You can poop five times a day and be constipated. You could be literally having explosive watery diarrhea and be constipated. So, we walk through these for a moment because I think this is important.

There is an epidemic of constipation out there. And these people, when we describe the constipated person so that the people at home can see if this sort of resonates or fits with them 'cause they're wondering what's going on with their body, the constipated person suffers number one, with gas and bloating. They all have gas and bloating. It is the number one symptom in constipation. And they may have discomfort and that discomfort could be any of a number of places. It could be lower, but it could be upper abdominal pain. It could be right across the top. It could be around your belly button. It could radiate to your back. It could feel like your gallbladder. It's in a number of different places. You get nausea in many cases, like a mild nausea. You are not really throwing up. You lose your appetite, like food is not appealing to you anymore. Fatigue, like tons of fatigue. This is a common symptom of constipation.

So, if this is you like gas, bloating, and some of this other stuff, you got to listen up because you could be pooping every day and still be constipated. And this person, when they go, I will say to them, "Okay, cool, so you're pooping every day, but do you really feel like you completely emptied your bottom when you go?" "Dr. B, oh my gosh, you're right." They feel like it's not

complete. Or take the person who has four bowel movements a day. They go, "Doc, I'm not constipated. I'm having four bowel movements a day. Come on, man. I'm not paying you money for this." Hold on. When you go, is it like you're straining to just have a little chicken nugget? And they go, "Yeah, it's just like... Oh, it's like a little thing. It's not very satisfying, and then I have to go again 30 minutes later." You are not completely evacuating. And when you are not completely evacuating, you are backing up. And when you back up and that compound interest starts to add up, you might drop 70% of it out, but 30% is sticking. That 30% after a couple of days is going to add up and affect you, and that's how you manifest the symptoms of constipation.

Now, the last thing I want to talk about real quick 'cause I think this is very important, is that there are people who have diarrhea, and these people typically they suffer with chronic constipation. They're like, "Yeah, I've always had constipation. Then all of a sudden, boom, I had diarrhea one day, and now I'm having diarrhea, I'm going watery bowel movements eight times a day. What's going on there?" So, what's happening is they have a column of solid stool that is backing up and it's impacted and it's not moving, and the only thing they can get through the cracks and the crevices is the liquid. So, the liquid comes down to the bottom, and our rectum is not designed to hold liquid, so you feel urgency and you rush to the restroom, and you have a loose watery bowel movement. And you go to your doctor, and you say to your doctor, "I'm having watery stool." And they say, "Take Imodium." And it slows down, as an anti-diarrheal. And it slows you down and actually your problem gets worse. This is a person who has what we call overflow diarrhea. I've seen it a bazillion times. These people are so frustrated because nothing is working to fix their diarrhea, and the solution is paradoxical. You got to run it out. You actually have to make yourself poop more like drinking a bottle of magnesium citrate to get a couple of good healthy evacuations and get your body back on track.

So, going back to the question, Shawn, there's so much information that we can gather from our poop, from the rhythm, how often we go, from the experience like how satisfying, is it a complete evacuation, and from the appearance of the bowel movement. Is it sausage-shaped? Is it soft but formed? Or is it a pile of mush? Or on the flip side, is it hard and with cracks and crevices? And that's a constipation bowel movement. So, all this information is stuff that I'm trying to integrate, and all of it has given me a window into what's going on with my patient's gut.

SHAWN STEVENSON: This is so powerful, so powerful. And just to be able to turn around and have a peek at what you're producing can provide you with so much information about what your body needs. That's... Yeah.

DR. WILL BULSIEWICZ: Take a peek. Take a peek of that little poop.

SHAWN STEVENSON: The power of poop. That's powerful. So, we've got bacteria, we've got fungi, we've got archaea, we've got parasites.

DR. WILL BULSIEWICZ: And last but not least are the viruses. So now the viruses actually are not technically alive. Many people don't realize that, but viruses are... They can be pieces of RNA or DNA, but they're not cellular. They don't require energy. They just infect our own cells. In this case though, the viruses are actually a very healthy component of maintaining the balance of our gut. There's something that y'all are going to hear about more in the next couple of years called bacteriophages. And these bacteriophages are viruses that help to shape the gut microbiome. And I'm starting to see now for the first time that this is starting to get into the supplement industry, that people are selling products that... They'll sell bacteriophages. Now, this is not me endorsing this approach yet. I will celebrate when we have good studies that show us that it's a good approach. But until we know more, I feel like we always should be a little bit cautious when we do...

SHAWN STEVENSON: So, you're talking about essentially bacteria that are infected by viruses?

DR. WILL BULSIEWICZ: Yeah, well, so these phages, these bacteriophages, they're viruses that will actually take out, they will suppress microbes, reduce them, or allow them to become more powerful. So, it's not necessarily infecting and getting into the virus, but it's more just like shaping... It's like two hands shaping a piece of clay, right? So, the clay's there, that's the microbiome, all these different microbes, these four different types. And now here's these two hands coming from the outside and shaping it and molding it.

SHAWN STEVENSON: All right, I hope that you're enjoying this conversation. We've got so much more in store for you, but I want to mention something. One of the most impactful things that's influencing the health of our microbiome is something that a lot of people are sleeping on, or rather should I say, not sleeping on. And it's the impact that sleep has on our microbiome. Research published in the journal, Cell, details how abnormal sleep patterns can rapidly lead to unfavorable changes in our microbiome. In the study, researchers analyzed fecal samples from people before, during, and after bouts of jet lag from a 10-hour flight spanning multiple time zones. They found that the jet lagged participants showed an increase in a type of bacteria known to be more prevalent in people with obesity and diabetes. This negative shifting of their microbiota took place, again, in a very short amount of time to a profile that is more indicative of having insulin resistance, type 2 diabetes and obesity. But the levels of these microbes dropped back to normal once the travelers got back on a regular sleep schedule. The researchers discovered that your circadian timing system influences your bacteria balance. Common experiences like jet lag were enough to create bacterial dysbiosis in the gut, which in turn leads to metabolic disorders.

Now here's the thing. There's this new phenomenon called "social jet lag" that millions of people are partaking in, oftentimes unconsciously, they're not even aware that they're doing this, just about every day, if not every weekend. So, it's creating essentially social jet lag. You're not hopping on a plane and going across the world, but you're changing your brain and your body's syncing up, how it's syncing up with the 24-hour solar day; how it's syncing up with all of life on planet earth, how it's syncing up with the solar system by constantly jumping back and forth on our sleep schedule. Now, this social jet lag is throwing off and creating more dysbiosis in the gut. And to specifically quote those scientists, they said, "Disruption of the circadian clock in the host alters the rhythms and composition of the microbial community, leading to obesity and metabolic problems." So, we want to give more attention and appreciate our sleep quality. It really does matter for every facet of our health. And if Hippocrates was right, that disease begins in the gut, we want to take care of our sleep quality. Well, I'm a big fan and advocate of creating a wonderful sleep environment, someplace that you go, that you feel more peace, relaxation, and it's not disrupting your sleep quality.

A randomized controlled trial found that mental alertness during the next day improved by upwards of 20% and 94% of people slept better and preferred sleeping on Ettitude organic bamboo lyocell sheets. They're free from harmful chemicals, irritants, allergens, and hypoallergenic. And they're also antimicrobial, self-deodorizing; they support thermoregulation; they're breathable, moisture-wicking; they're just the best. This is truly luxurious, delicious sleep. And right now, you get 15% off your first purchase of their organic bamboo lyocell sheets exclusively here with the Model Health Show. Go to ettitude.com/model, that's E-T-T-I-T-U-D-E.com/model. Use the code model15 at checkout. You're going to get 15% off. Now also, they have a 30-night sleep trial. So, you can sleep on them, think on them, dream on them. If you don't absolutely love them, you could send them back for a full refund, so you've got nothing to lose and only better sleep to gain. Go to ettitude.com/model. Use the code model15 for 15% off.

Now in our next segment here with Dr. Will Bulsiewicz, this is another conversation, and we talked about the surprising truth about food and nutrition education in the field of gastroenterology. We talked about how food stacks up against drugs simply based on volume, how our microbes make us so unique compared to other humans, the deep connection between the microbiome and our immune system and much more. Check out this next segment from Dr. Will Bulsiewicz.

DR. WILL BULSIEWICZ: If you look at how much nutritional education our doctors get, it's completely inadequate. So, for me, I finished my training in 2014, and you would have to go back to 2003. I was a medical student, and I had two weeks, two weeks of actual nutrition class. And this nutrition class, Shawn, it was not like, "Hey, how do you talk to your patient about a

healthy diet? How do you talk to your patient so that they can change their diet to lose weight? What are the advantages and disadvantages of the paleo or the keto or the vegan diet?" That's not what we were talking about. This was like, "Hey, what are the symptoms if someone has this rare B6 deficiency that you literally will not see in your entire career?" Right? So that's worthless. That's worthless 'cause that's not practical nutrition. We need practical nutrition so that a doctor or any healthcare provider, frankly, can have a real conversation that is well-informed and comes from a background of education. And if you never get that, you're never going to be able to have that conversation and make it a smart one.

And that's the reality of our Western healthcare system. So, I came up through this system, and along the way, there was a time where I actually... Like I said, I'm a nerd. I actually considered myself to be a cancer epidemiologist. And I had worked at Northwestern to get a master's degree in clinical investigation. I actually did that at night. I would be on call in the intensive care unit, sitting in class, and then running back to the ICU to see my patient. And I did that in Chicago, and then I went to the University of North Carolina, and I studied at the School of Public Health there, which basically the UNC School of Public Health, for those of you who aren't familiar with our public health education, is consistently one of the top three. Basically, it's Harvard, Hopkins, and UNC are always the top three schools of public health. And so, I studied there, and I was a cancer epidemiologist, and then I fell in love with taking care of patients. That was my main thing. I needed to be with real people in a room and trying to help them. But what was interesting for me was that I could take these techniques that I learned, these powerful techniques, understanding clinical research, and apply it to taking a second look at the research that exists with regards to nutrition.

And I had never seen this research before. I opened it up, I'm like, "There's got to be five studies, maybe 10." No, wait a minute. There are literally thousands, thousands of studies, high-quality studies defining for us a path towards optimal health where you can accomplish your health goals by changing the way that you eat, by changing your lifestyle. And the science is there, it's just the science is not being delivered to your doctor. And so, I had to actually self-learn, and I became kind of obsessed with this. And this was, again, going back to 2013, 2014, I started basically spending my nights just digging into research studies, sitting there flipping through them, taking notes on my laptop. And that's the world that we live in, is the doctor has to... If they want to be a nutrition expert, they can't just be a doctor, they have to be a doctor who's willing to go beyond their full-time job as a medical doctor to also learn about nutrition, which is crazy. Most people don't have the desire to do that.

SHAWN STEVENSON: Because of course, conventional medicine, and medication, all of these things have their place. Everything is a viable tool. But if you look at the sheer amount of what

a medication could do versus the pounds of food that we eat, can you talk a little bit about that?

DR. WILL BULSIEWICZ: I find it ridiculous. Honestly, it's absurd. If you take a moment and you zoom out, let's look at the big picture, you guys. I'm talking to everyone who's sitting at home listening to us right now. And just think about the fact that you could take pills, okay, that are on the order of milligrams, and that's your medication. And you think that that is going to overpower the pounds and pounds of food that you eat per day? The average American eats about three pounds of food per day. If you want to keep the math super simple, let's call it a thousand pounds of food per year. And if we're living to about 80 years, that means that during our lifetime, each one of us is eating 40 tons, 80,000 pounds of food, right? Are we going to overpower the 80,000 pounds of food and the effect that that has on our body, on our health, with a couple milligrams of medicine? No. You can put your finger in a hole, you can create a patch, but you're not fixing the problem until you fix your diet and get your lifestyle right. That's the reality.

SHAWN STEVENSON: Yeah, definitely, definitely. So, I'm curious too, if you could share how much was known about the microbiome, the microbiota, when you started medical school versus where we are today. It's been a massive transformation in this time span.

DR. WILL BULSIEWICZ: Explosion, explosion of research. This is the hottest, hottest ticket in all of science right now, and it's blowing up everywhere you look. And then the pace is accelerating and hard, frankly, for people to keep up with, which is, Shawn, is one of the issues in trying to disseminate this information to people, is that you actually have to put in the time to pay attention to everything that's coming out. It's a lot. You go back to 2006, I graduated medical school from Georgetown in 2006. We knew nothing. We thought at that time that there were literally a couple hundred species that could live within the human and be a part of your microbiome. We thought there were like literally a couple hundred species. And the reason why is we didn't really have the ability to test for them, because most of these species, which are like bacteria, they won't grow on a culture plate, which is what we've always used to study bacteria, it's culture plates. So, if the bacteria won't grow, then how are you supposed to study them? And it was around 2006, the year that I graduated medical school. And I'd already, by the way, decided at that point that I wanted to be a gastroenterologist. I wasn't thinking about this. I was thinking about more like, "Hey, I think poop is cool," right?

So, I'll just be honest. I'll just be honest. I think poop is cool, and we could talk more about that. But anyway, it was around 2006 that they had this laboratory breakthrough, that for the first time allowed scientists to get at the microbiome and actually study it. And what they discovered was that, oh my gosh, this is insane. There are literally thousands and thousands of different species inside every single, like basically across the globe, thousands, and thousands

of different species. And each one of us has our own unique signature, our own unique fingerprint that is made up of somewhere between hundreds and potentially over a thousand different species and microbes. Shawn, there's no one on the planet that has a microbiome like you. We could basically assign a fingerprint, a signature to your microbiome. There's no one on the planet that has one like me, and that includes my kids, that includes my parents. And so, it's kind of interesting to consider that we are...

To pivot towards a slightly different topic, you, and I, if we look at our human genetic code, you and I are 99.9% the same. Clearly, we're not the same person. We look different, we have different interests. We're not exactly the same. We would get along very well, but we are 99.9% the same in terms of our human genetic code. But Shawn, we may be a hundred percent different in terms of our microbes. And so, there's this huge variability, and what this gets to is a really important topic in the year 2020, which is bio-individuality. Bio-individuality. And this is the expression of that bio-individuality, which is that we all know, I will be the first to admit, there is no diet that I can say that will apply to every single human being. There are rules of engagement, there are rules of biology, but you, me, and the people who are listening to us right now are all unique, have unique needs, have a unique microbiome. And because of that, your optimal diet is going to be slightly different. And that's the challenge that we face these days is trying to figure that out.

SHAWN STEVENSON: Yeah, this is one of the first things when we talked before and why I want to have you on is because of your awareness of that fact. And one of those results is a silent epidemic that a lot of people aren't talking about. You actually published a study on this in one of the most prestigious journals, Gastroenterology, and you asserted that at least 70 million Americans are suffering with digestive issues now. And this is just what we can put our finger on. It's probably different levels to that, many millions more, and this is an epidemic that's not being talked about. Why is that? Why are we not talking about this? And do you think that people just kind of accept that this is normal when it's far from that?

DR. WILL BULSIEWICZ: I think part of the reason why we're ignoring this epidemic is because if we look at the list of our top killers, look, we all know heart disease, cancer, right? Stroke, COPD, diabetes, chronic kidney disease. I just named six of the top 10 causes of death. And they are all, by the way, diet- and lifestyle-related. So, we fixate on these top causes of death. We ignore the things that affect our quality of life like our digestive issues. But here's the rub. When you damage the gut, you manifest digestive issues first. But heart disease, cancer, stroke, diabetes, COPD, asthma, chronic kidney disease, Shawn, every single one of those things that I just mentioned has been connected back to the health of our microbiome. So, the warning shot for these bigger issues that can come later, the warning shot is when you manifest the digestive issues, and it's your body telling you that your gut microbiome is not in a happy place, and it needs to be fixed.

SHAWN STEVENSON: Immune health is such an important topic today. This is like the most important topic, however still not really getting the appropriate amount of attention, but our immunity is what is going to defend us from infectious diseases. It's how your body is designed to work. We have the innate immune system, we have the adaptive immune system, but that immune health is directly connected to our gut health. So, can you talk about that connection? Why does our gut health have such a strong influence on our immune health?

DR. WILL BULSIEWICZ: Okay. So, you set that up very well, because basically there is a direct line between the food that you eat and the status of your microbiome. The number one influence on your microbiome is actually your dietary choices. And I actually find that, by the way, to be empowering, because what that means is you're not born with something that you can't change. You have the ability to make your gut microbiome whatever you want it to be, you just have to choose the right stuff to get it there. And so, there's this direct line between the food that you eat and your microbiome, and then when we zoom in, imagine that we're going in and looking under the microscope, and what you would see inside the colon is that there would be this flourishing community of these microbes, again, the bacteria, the fungi, the archaea, they're all hanging out. And there is this paper-thin barrier called the epithelial layer.

This paper-thin barrier is there. It is so thin that it is less than the size of a fraction of a human hair, and it's not visible to the naked eye. And on the other side of that paper-thin barrier exists 70% of the immune system, which actually makes sense because the immune system is meant to defend. And where, if you were a general, where would you set up your defenses? You would set it up in the place where you are the most vulnerable. Where are we the most vulnerable? Where are we interacting with the outside world? It's there, it's there in the gut. And so, you find 70% of the immune system there separated by just this single layer of cells. They are literally microns away from each other and they're communicating. So, although they are separate, there is a constant crosstalk. And I described it in my book, and you know this, Shawn, 'cause you read the book, that it's like I got my house and my neighbor over there has their house. And we got this little dinky fence that separates our house. And when this pandemic is over, I'm going to have a big party, he's going to have a big party.

And let's not pretend that those two parties are totally separate, right? Even though there's a fence that separates them. We got our energy, they got their energy, we're feeding off each other, we're talking to each other, we're sharing stuff, right? And that's the way that it works inside of our gut, is that you literally cannot separate, you literally cannot separate these gut microbes from your immune system. When I was researching my book, I looked into the connection between the gut and the immune system. And what I found is that all allergic diseases, all autoimmune diseases where they have studied the health of the gut microbiome,

they have discovered in all cases that there is damage to the gut microbiome in people who manifest allergic and autoimmune diseases.

The point being, Shawn, that I am of the belief at this point that if you want a healthy immune system, you have to have a healthy gut. And that is the path. And so, if the path to a healthy immune system is through the gut, well, I just told you before that there's a direct line between the food that you eat and the makeup of your microbiome. So, let's talk about and let's focus on our diet because that is what is going to change your immune system.

SHAWN STEVENSON: All right, I hope that you're enjoying this powerful compilation of conversations that I had with Dr Will Bulsiewicz. He's a good friend and somebody that I've many conversations behind the scenes on. He's truly, he's a real one. Will is about that life. And I'm very grateful to be able to share his wisdom. And again, this is an episode to share with your friends and family because it's so power punch, it's so heavy hitting on the biggest topics related to gut health that I believe that every single person should know. And we've got one final segment for you. And in this segment, he's going to talk about why we need to focus on feeding our microbes. It's not just, again, haphazardly taking probiotics or even fermented different beverages and things like that. We need to actually proactively feed the microbes so that they can proliferate and stay in the position that we want them to be in. Also, we're going to cover why the average person is eating so much ultra-processed food. Why is this happening? Why has this become normalized? Also, he's going to cover the loopholes in the food system that allows so many dangerous chemicals to be added to our food supply and much more. Check out this final segment from the amazing Dr Will Bulsiewicz.

DR. WILL BULSIEWICZ: We need to feed the probiotic healthy microbes inside of us. We need to make sure that they are getting fed. And we live in a society, Shawn, where the average man is consuming 18 grams of fiber per day when we should be getting 38. The average woman is consuming 15 grams of fiber when she should be getting 25. This is our most pressing nutritional deficiency right now. And fiber is the fuel for these microbes. This is what they want, this is what they thrive on, this is what they use to produce the short-chain fatty acids that we were talking about. So, I think it's important to start with this as a point of reference. And the reason that I'm pointing this out is that me personally, I'm about trying to encourage people to run to the foods that heal. I don't want to create demons; I don't want to create monsters. I do want to be honest. I do want to be honest and tell you which foods can be problematic. We're not going to pretend that every single food is just the same. They're not. That's ridiculous.

But I also want to create an environment where it's about positivity. It's about like basically having a mindset where you gravitate towards those foods that heal. And to me that means focusing on eating a wide variety of plants. The exact same thing that you said in your book,

eating a broad diversity. When you eat a broad diversity of plants, you get all the different colors, you get all the different forms of fiber and all the good microbes they all get to eat. That's what we want. So flip side, what are the things that I'm just kind of like, "Okay. In moderation there's a place," right? Let's not be like too hard on ourselves. There's no such thing as a perfect diet. But like, what are the things that I kind of pump the brakes on? I would seriously start with ultra-processed foods, clearly. And part of that is this is 60% of the American diet.

SHAWN STEVENSON: That's insane. That's insane. And I get put my hand up because that was me as well.

DR. WILL BULSIEWICZ: Yeah, that was me too. There I was in my early 30s, here I am 10 years later. But there I was in my early 30s, 50 pounds overweight, and it's because I was opting for convenience because convenience was what I felt I needed at that point in my life 'cause I was working so hard. So, these foods are convenient and that's part of the reason why they're popular. They're also hyperpalatable. You consume them and you want more. They don't make you feel well.

SHAWN STEVENSON: And they're cheap. For you convenience, for me it was cost and taste. So that hyperpalatability and the fact that they're so cheap.

DR. WILL BULSIEWICZ: This is part of the issue. This is part of the issue, is that our food system, we subsidize these foods, and we make the ultra-processed foods inexpensive. And then people of lower socioeconomic status are choosing what they can afford. And guess what? If it tastes good, of course that's what I'm going to do. It's less expensive and it tastes good. And we end up in a situation where these people unfortunately pay the price later on with their health, which is not fair. And so, with regards to ultra-processed foods and the gut microbiome specifically, if we zoom in and we look at what's happening, what we discover is that first of all, there are 10,000 additives in our food supply. The FDA has a special loophole called the GRAS, "Generally Recognized as Safe," that allows them to approve these food chemicals without human studies.

SHAWN STEVENSON: Right.

DR. WILL BULSIEWICZ: And even the ones that do have human studies, it's like, "Let's give 20 people this for 10 days. Cool, they're still alive. We don't need to do anymore. We've done our work here. Proven safety." It's like, hold on. What happens when people are eating 60% of their diet from this stuff day over day, year over year, decade over decade? And we destroy our gut microbiome 'cause while... I'm not here to say that every single food additive is inherently bad. That would be ridiculous. But we don't know. And there are 10,000 of them, and some of them

are proven to be bad, things like carboxymethyl cellulose, which if you start picking up the packages in your supermarket, you're going to see this word "carboxymethyl cellulose," major disruptor of your gut. Polysorbate 80 is another example. And Shawn, who's going to pay for the research to study these additives? The food industry is not. Why would they undermine their own business? And we've already approved them, they're already in the food supply, and it's really hard to walk it back. And even when you find evidence that makes guys like you and I disturbed, the FDA doesn't step in and intervene.

So, the point from my perspective is not to be like fearmongering. The point from my perspective is to be honest and say that I am concerned that ultra-processed foods are unhealthy and disruptive to our gut microbiome. And for that reason, I'm of the belief that at a minimum we should be reducing our consumption. And in a perfect world, and by the way, I'm not perfect, but we should be striving to reduce them as much as possible, ideally to none, to be totally honest with you. So, I would start with ultra-processed foods. Anything you want to add to that, Shawn.

SHAWN STEVENSON: Of course. Listen, this one here, if we just address this one thing, we're going to have a revolution with our health. Period. And this doesn't mean you can't have a donut or whatever. It's just like making that a smaller percentage of your diet. And you just said another reason why. These things, 10,000 approved additives for food, newly invented chemical compilations, and getting this loophole for them to be in our system, in our food system, this GRAS system, this "Generally Regarded as Safe," and understanding... It is, first of all, it's incredibly difficult for data to be done, for studies to be done, for funding to be given, to prove that they're bad for us, right? That's the burden is on us to try to prove that they're bad for us instead of it coming into the situation where they're proving that they're good for us. That should have been done in the first place, proving, having clear evidence that these things are not harmful to humans and/or good for us, but at least not harmful to us. But that's not being done.

And so, we are truly a social experiment when we're interacting with these processed foods. We have no idea what this is doing to our microbes, what it's doing to our thyroid, what it's doing to our meniscus in our knee. We don't have any idea the impact these things are having for the most part. Again, in recent years, we've had enough, some researchers taking the time scrounging around to get a few dollars of funding to find out, like you mentioned, polysorbate 80 for example, or these various food dyes, one of these red food dyes, have these clear implications with contributions to ADHD in children. This takes all of this work. But again, but then we think about how many years have people been consuming this stuff? How many people have been harmed? And so that's going to lead me into asking you about another one. And I'm just going to pitch it out there to you. What about pesticides, rodenticides?

DR. WILL BULSIEWICZ: We in the United States have very open policies when it comes to the spraying of our food with herbicides. And one specifically that I'm concerned about is glyphosate, which is the active ingredient that you will find in Roundup, being sprayed by the millions of kilograms in the United States and the millions of kilograms in Canada. These are practices that are actually being made illegal in Europe as we speak. Germany, for example, by 2023, will not allow this at all. Yet in our food supply, this is being done to many different types of foods. A few of the common ones, soy, corn, and we have to be very cautious with our whole grains. Now, one of the important points is that if you can purchase organic, then organic is by definition not sprayed with glyphosate. They're not allowed to do that. But let me just like kind of talk about wheat for a moment, Shawn.

So, I think many people who know me or have read my book know that I have a unique position when it comes to wheat. I'm not trying to be unique. I'm just telling everyone what I see when I look at the science, which is that I think that we've gone a little too far in terms of vilifying gluten, to be honest with you. Now, gluten in a person who has celiac disease is clearly a problem. But is it really so bad for me to eat a slice of like a really nice sourdough bread? Am I really causing harm to myself in doing that? Do I think that sourdough bread should be the backbone of our diet? Absolutely not. But I also don't believe that we're causing any harm at all. I think that the fiber and the prebiotic compounds in that slice of sourdough outweigh any concerns that exist with gluten. But this is the important point that I want to make, which is that do I feel that there are problems with wheat? Yes. Do I feel that there are some justifiable problems with whole grains? Yes. I just think that we are reacting to what we see occurring to some people when they consume these foods or how we personally feel when we consume these foods.

And I think there's something going on there. And the point from my perspective is I think it's actually this. I think it's that we're spraying our wheat with glyphosate, which is a desiccant used to dry out the wheat, that accelerates our process. When you harvest the wheat, you spray it with the glyphosate, it dries off faster and you move on. And I'm concerned that this is actually the cause of the problems that exist with these types of foods, when you have wheat that is not organic is being sprayed with glyphosate. When you have whole grains that are not organic, they're being sprayed with glyphosate, and this causes issues and is disruptive to our gut microbiome. The research is emerging, Shawn. The first study that came out looked at the microbiome of bees, like honeybees. But we have new studies in humans that are suggesting to us that glyphosate does indeed cause harm to the microbes in our gut. And so, for that reason, from my perspective, I buy organic whenever possible. And I'm happy to talk more about some of the approaches that I take to make it more cost-friendly, but the point being that that's part of the reason why I do it.

SHAWN STEVENSON: So good. Again, this is a new phenomenon. Glyphosate is a new thing in human consumption, of course, but it's been going on for years now, but it's just a tiny sentence in the evolution of humans to have exposure to something like this. And so, we know that there's going to be some implications with damaging our microbiome, which again, at least in this cascade of other problems. And so, folks, to be mindful of that. And also, as you know, I wrote about this in Eat Smarter too. I had a little subsection that was titled, "When it comes to bread, there's two sides to every slice." And looking at the pros and cons, because we're not here to villainize things, even with both of us we're like... Even with these hyperpalatable processed foods like, listen, you're not going to die. It's okay, but we need to put this in a proper perspective because we know what that does.

But another one of these that I've been mentioning this whenever I get the opportunity and just being able to talk with you is definitely a good time, but chlorpyrifos is another pesticide widely used for many, many years, and it's been in and out of litigation. Right now, it's caught up in red tape because it was going to be banned here because of the well-noted damage that it's been doing to the female reproductive cycle, and causing deformities in children, miscarriages in pregnant workers who were exposed to chlorpyrifos. But most notably, there's a peer-reviewed study that we'll put for everybody in the show notes. There's a peer-reviewed study indicating that chlorpyrifos literally disrupts our microbial gene expression. So not only... Now, we're talking about our human genes, but being able... Our trillions of bacteria that we have, they have their own genes as well. And if we're going gene for gene, 99% of genes we carry is microbial, and this stuff has been found to cause disruption to the expression of our microbes' genes.

What does that do to our expression? And so, taking this into consideration, and first of all, why was it put into circulation in the first place? And now that we have this data, why is this still going on? And the bottom line is, and we talked about this before we even got started, the bottom line is these organizations are making money from it. They found these systems; they've been able to penny-pinch and find a way to provide these foods for themselves the production cost as low as possible and make the greatest return on these things. And these processed food companies, their goal is not to give you great health. That's not what they're setting out to do. They're there to move products.

DR. WILL BULSIEWICZ: Right. That's what the CEO is judged on. The CEO of these companies is going to be judged on dollars and cents. They're trying to make as much as possible. And when you can create an arrangement that allows for mass distribution of your products, it's all about scale. It's all about scale. So, if you can create more scale for your product by having mainstream use of genetically modified seeds or the use of this in the food industry on wheat, then that's how you get rich.

SHAWN STEVENSON: Issues like Crohn's, issues like colitis. Number one, have you seen those firsthand? You're there doing this work, seen these issues increase in recent years, and what are some of the underlying causes that are the contributing factors to the increased incidents of these issues that folks might not realize?

DR. WILL BULSIEWICZ: So, Crohn's disease and ulcerative colitis, and I think this, in a way, almost opens up into a larger conversation about autoimmune-type issues or what I would describe as chronic, inflammatory conditions. So, Crohn's disease and ulcerative colitis are things that I treat in my clinic routinely. I see patients every single week that have these conditions. I just want to describe briefly what they are for people who may be at home wondering about this. We describe these two conditions, Crohn's disease and ulcerative colitis, as inflammatory bowel diseases. Inflammatory bowel diseases. And the reason that they exist is that our immune system actually goes on the attack, but it's not actually attacking us, which is kind of interesting, Shawn. So, a lot of people believe that these are autoimmune issues. Believe it or not, they're not actually autoimmune. They're actually attacking our microbiome, which technically is not part of us, but it kind of is. And the fallout is that this war that takes place where our immune system is going to war against our gut microbiome, well, there's going to be some fallout. The fallout is inflammation that exists, like literally exists within your digestive system as ulceration, bleeding, redness. And I see it during a colonoscopy.

And these two types, ulcerative colitis... Ulcerative colitis by definition is only in the colon. So, during colonoscopy, you will see it there. Whereas Crohn's disease is a little bit different. And Crohn's disease can be different for different people because it can involve anywhere from the lips all the way down to the bottom, but it's again, an inflammatory condition motivated by the immune system attacking the microbiome. These things are massively on the rise, Shawn. Massively on the rise. And they're not the only ones. There are many others. I see way more celiac disease today than I used to. There's a new condition called "microscopic colitis" that literally basically didn't exist when you and I were kids, and now I'm diagnosing it literally every week. So, things are definitely changing. And they actually have some data out of Minnesota where they looked at a community where it's a community that didn't really move around much, and they tracked them from the 1940s moving forward. What they discovered is that from the 1940s up to the late 1980s, early 1990s, they had more than a ten-fold increase in these conditions during that period of time. So, 50 years, 10-fold increase.

And we're seeing the same thing happen actually in Third World countries as they industrialize. So, places like Brazil, China, they never had these issues until now. As they have industrialized, they've started to see the emergence of these inflammatory bowel diseases, Crohn's disease, or ulcerative colitis. Where does it come from? Clearly, it is not exclusively genetics, because when you see diseases emerge this rapidly, half of the century, that's not changes in our genetic code. Our code doesn't change that quickly. That is not evolution. Something has

changed in our environment, and these are environmental influences. Is there a genetic element? Of course, there is a genetic element. There are people who have families where there are multiple family members that have these conditions. So, there's part of it is genetics, but this is not purely explained by genetics, and it's not so simple as, "Hey, check a gene and see if it's there, and that will tell you whether or not this person is going to develop Crohn's disease or ulcerative colitis." That doesn't exist. So, it's an environmental thing.

But what is it? What is it in our environment? Well, look, I kind of have already alluded to this, which is that the immune system is attacking your microbiome. So, this is a change in the microbiome. So, let's think about the things that can leave an imprint or cause a change to the gut microbiome. And the number one thing is food. The number one thing is food, and then we can go beyond food... I'll come back to food in a moment, but we can go beyond food and look at other things that exist within our lifestyle. These conditions we see more frequently in people who live in cities, urban environments. We see these conditions more frequently in people who come from a very sterile environment, very sterile background. So, what I'm talking about is people that did not have pets when they were kids, people that did not have siblings when they were kids. So, if you had brothers and sisters, if you had pets as a kid, you are actually less likely to be diagnosed with these conditions.

Think about the world that we live in, Shawn. The things that we put on our body when we take a shower, the things that we swallow that are in our food system that you and I have already talked about, and I'll talk more about that in a moment. Think about the water supply and how that's changed. Think about how much our life is different today compared to the life that our great-grandparents lived 100 years ago. We hop in our car, drive where we need to go. We consume this hyper-sterile food. We don't come into contact with animals, we spend little time outdoors, we do not exercise, we watch television, or we check our phones all day. Times have changed a lot, and this is probably part of the explanation.

When a person is diagnosed with ulcerative colitis or Crohn's disease, I want them to know that you didn't do something wrong. You, by living in the United States, are at increased risk of being diagnosed with these conditions. And you can do everything right, and it could still happen. Now, with that being said, there are definitely some dietary elements that we believe are a part of the story. It's a little bit tough, Shawn, because we're talking about conditions that, ulcerative colitis Claris and Crohn's disease, between one in 5000 and one in 10,000 people per year will be diagnosed with one of these conditions. One in 5000 to one in 10,000. That not a ton of people being diagnosed every year. It's a lot more than it used to be. But because it's such a rare condition, it makes it a little bit hard to study. 'Cause a lot of times the studies that we will do, you're not going to do a randomized, controlled dietary study to see who gets Crohn's disease. You would need a million people to do that. That's impossible.

So, most of the studies that we have, we have to be very cautious in the way that we interpret them. And the reason why is because a person gets diagnosed with Crohn's disease, and then we ask them, "So what were you? And there could be a bias that comes from that, like, "I just got diagnosed with this condition, so I'm going to say that this is what I was eating, because I'm worried that that's what caused it." So nonetheless, here's what we do see. Multiple studies have consistently shown that dietary fiber is protective, and the mechanism makes sense. Dietary fiber comes into contact with gut microbes that produce short-chain fatty acids. Short-chain fatty acids are anti-inflammatory. So that part I believe, and I feel that we can lean into that with confidence. More recently, there was a study that came out suggesting that ultra-processed foods are substantially increasing our risk of developing inflammatory bowel diseases. Here we go again. And specifically in that study that you were talking about, polysorbate 80.

SHAWN STEVENSON: Wow.

DR. WILL BULSIEWICZ: Carboxymethyl cellulose. And you and I are talking about these, but yet there's definitely other parts of the food system that we just don't know about yet. So, we're talking about what we do know. There's so much that we don't know. But yet, when you look at this class of foods, they appear to be problematic. And there's also been concern, Shawn, with Omega-6 fats and inflammatory oils. And it speaks to fried foods. There's a lot of fried food consumption in our society, and there was a signal that came out of a recent study, and there was a prior study in 2011 where it was suggested that the Omega-6s may be problematic. Going beyond this, whether or not saturated fats and meat consumption are driving this issue, the way that I interpret the studies is this. I don't think that we should be consuming these foods to excess. Can we consume them in balance with a predominantly plant-based diet and have a healthy diet that reduces our likelihood of developing these conditions? 100%.

So, I think it's important, so I kind of see the full picture. Here's the pie as it currently exists. The current pie is sliced up where only 10% of our calories are coming from plants, 60% are coming from ultra-processed foods, and 30% are coming from animal products like meat and dairy. So, what I'm just saying is 90% of the pie right now does not include fiber. And I would like to see it shift towards a pie where most of the pie is food that contains fiber, and with what's left over, say the last 10% or 20%, you can do whatever the heck you want. And because you are on a plant-predominant diet, it's a healthy diet.

SHAWN STEVENSON: What about stress? This isn't something that's talked about when it comes to the microbiome.

DR. WILL BULSIEWICZ: Yeah. I feel like when we get outside of the nutrition space and we start talking lifestyle, we often focus on exercise and sleep. We might talk about meditation. But are

we being real when it comes to talking about stress and what's going on in our subconscious? Because the most challenging patients that I take care of are not people who have complex digestive issues. The most challenging patients that I take care of, Shawn, are the people who have been the victim of abuse, trauma of some variety. That trauma leaves an imprint on their soul, on their subconscious. It's a wound, it's an open battle wound. And it's easy because... It's easy to ignore it because it's a lot easier to just avoid something that was traumatic and that hurt you, and to not turn towards it but instead to walk away from it, hence the problem for these people that I've discovered, Shawn. And I think this is directly applicable to people that have inflammatory bowel disease, but I think it's directly applicable to everyone who has complex health issues.

What I've discovered is that the solution to those issues is not to focus on your nutrition, the solution is actually to recognize that this traumatic event that occurred to you years ago or this history of disordered eating and having an unhealthy relationship with your food, this is actually continuing to linger and cause problems. And it's important to turn your attention directly to it, and with the help of an appropriate care team. Let health care professionals who you trust, let us lift you up. But ultimately, you need to turn towards this problem and have a solution, have a plan to take it head-on. Because when you fix that, when you actually heal the wounds from that prior trauma or from that history of disordered eating, then actually true health follows shortly thereafter. And what I've seen is actually amazing recoveries in many of my patients who suffer and may never get better until you actually go and address this specific issue.

SHAWN STEVENSON: Thank you so much for tuning into the show today. I hope you got a lot of value out of this. Again, this is an episode to share out with your friends and family, get them educated about gut health, get them educated about the health of our microbiome. This is something that we all have, but we might not really have a basic understanding about, and how much we can shift and improve our health by simply improving the health of our microbiome. Remember, you can send this directly from the podcast app that you're listening on. You can take a screenshot of the episode and share it out on social media. Of course, you can tag me, I'm @Shawnmodel on Instagram and Twitter, and @TheModelHealthShow on Facebook. We've got some epic master classes and world-class guests coming your way very, very soon so make sure to stay tuned. Take care, have an amazing day and I'll talk with you soon.

And for more after the show, make sure to head over to themodelhealthshow.com. That's where you can find all of the show notes, you could find transcriptions, videos for each episode, and if you've got a comment, you can leave me a comment there as well. And please make sure to head over to iTunes and leave us a rating to let everybody know that the show is awesome,

and I appreciate that so much. And take care, I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.