THE MODEL HEALTH SHOW

EPISODE 884

How Your Microbiome Controls Your Mental Health & The Gut-Brain Paradox

With Guest Dr. Steven Gundry

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SHAWN STEVENSON: Today we're going to dive into some new discoveries about the human body. We're gonna be talking about how waste products from bacteria are affecting our brains. We're gonna be talking about the newly discovered microbiome of the human brain. We're also going to cover how our gut health influences our mental health and so much more. I love these kinds of conversations because they keep on expanding my own knowledge base and just blowing my mind and every time I'm with today's special guest, without fail, he does something to blow my mind. And I'm so grateful for him. He's been a good friend and mentor for many years now, and not only does he stay on the cutting edge of research and education, but he's truly a testament now in his seventies to what real longevity can look like.

His level of physical fitness, his cognitive function is off the charts and just hanging out with him, you feel like you're just sopping up wisdom. He gives off big granddad energy, to say the least. And when he was in here today, I was actually, I was sharing all my, my problems, just like, ah, sitting at the, at the feet of grandpa and sharing. And just that nurturing energy and, you know, the wisdom, the insight, and just the care that he delivers. You know, again, every time that I get to spend time with them is, is just truly amazing. So I'm very grateful to be able to share this conversation with you today. Now, when it comes to longevity, there's a certain beverage that I know my special guest loves as well, that is highly, highly associated with a longer lifespan.

A meta-analysis of 40 studies published in the European Journal of Epidemiology revealed that regularly drinking coffee was associated with a lower risk of death from cardiovascular disease, certain types of cancer, and all cause mortality. Now, this is just one of many studies affirming the connection between drinking coffee and longevity. Now, just to be clear, there's a very clear, bell-shaped curve of benefits, a little bit small to moderate coffee consumption, and the key here is the quality of the coffee, by the way, is shown to extend lifespan. But once we get into that chain drinking of coffee, obviously that is teetering into dysfunction. And so again, most importantly, making sure that if we are drinking coffee, we wanna make sure that it is high quality coffee and not riddled with pesticides and rodenticides and heavy metals and all these nefarious compounds that are making their way into the average cup of coffee.

We wanna make sure that our coffee is certified organic. But also to take it a few hundred steps further, having coffee that is infused with science-backed medicinal mushrooms like Chaga, with tons of studies affirming its benefit for our immune system, anti-cancer capacity, the list goes on and on. And also Lion's mane. Medicinal mushroom, which is well established to be neuroprotective and to even have the potential to stimulate neurogenesis.

And this is what I actually had today in the incredible Think Coffee blend from Four Sigmatic. Head over to foursigmatic.com/model. That's F-O-U-R-S-I-G-M-A-T-I c.com/model. And you're going to get 10% off all of their phenomenal coffee blends, their dual extracted medicinal mushroom elixirs, and their incredible mushroom infused hot cocoa as well. I've been utilizing four Sigmatic products for it's getting close to a decade now. I love those guys, love them, they're incredible people and they're doing a phenomenal job delivering science and also some of the highest quality, dual extracted medicinal mushrooms with tons of benefits for everyday folks to be able to take advantage of. So again, head over to foursigmatic.com/model for 10% off. And now let's get to a special YouTube comment of the week.

YOUTUBE REVIEW: : Here's a YouTube review from Melissa Jackson 9458. I used to take antidepressants and went to therapy for years, I did this. It made my depression worse and I hardly slept. Making me feel suicidal. I decided to stop meds and therapy. Started working out, getting sun, and just allowing the feelings to happen. It changed my life. Side note, being a mother of eight, having my last baby 20 months ago at 42. The weight has been a challenge. The moment I start working out, I'm happier, more confident, and my husband and I get along better. Sex life gets better too. Also, if my husband works out and I don't, his high vibes annoy me. When we work out as a family, we're all happy, especially we use the outdoors for part of our fitness. If you're on the fence about working out and lifting weights, just do it. It will change your life. The eating and better sleeping will follow. Also, get some sun.

SHAWN STEVENSON: Thank you so much for leaving that comment over on the Model Health Show YouTube channel. If you're not subscribed to the Model Health Show YouTube channel, you are missing out. Yes, you're gonna come and hang out in the studio with me and

are all of our amazing guests. But also we're doing exclusive content on YouTube, some video experiences that are going to knock your socks off. All right? So make sure that you're subscribed right now. Pop over to the Model Health Show YouTube channel, and hit that subscribe button so that you don't miss out. And on that note, let's get to our special guest and topic of the day.

Today's guest is Steven Gundry, md. After a distinguished surgical career as a professor and chairman of Cardiothoracic Surgery at Loma Linda University. Dr. Gundry changed his focus to curing modern diseases via dietary changes. Today he's the director of the International Heart and Lung Institute. And founder and director of the Center for Restorative Medicine. He's a multi-time New York Times bestselling author and has written more than 300 articles published in peer-reviewed journals on using diet and supplements to eliminate heart disease, diabetes on immune disease, and many other diseases.

Let's dive into this conversation with the one and only Dr. Steven Gundry. We got one of my favorite people here. I was telling my wife on the way in who I was gonna go and hang out with today on the show, and she was like, oh, please tell 'em I said Hello number one.

DR. STEVEN GUNDRY: Hello back.

SHAWN STEVENSON: Hello back, baby. And also, she knows how much I appreciate you. I admire you. I learn from you and we've had some great conversations in the past. I appreciate you and your work and so I'm excited because I know when I was in college, I was taught this particular thing, and I know when you were in college, you were taught this, which was the brain is a sterile environment. All right. So I know when you were going through your training, this is just what we were taught, but today we know that this isn't so.

DR. STEVEN GUNDRY: That's very true. And what a shocker.

SHAWN STEVENSON: Yeah. So let's talk about this term has now taken over the world of wellness, the microbiome, but it's bigger than that, right? We generally think of the gut, but let's talk about what's going on with the brain and the bacteria that are basically taking up shop in the human brain.

DR. STEVEN GUNDRY: Yeah. You know, that was one of the, I guess shockers, we have to realize that the Human microbiome project literally finished in 2017, actually not very long ago. And it was really through that project that was sponsored by the NIH that was figured out that you could actually measure RNA and DNA of bacteria and find out, not by culturing them like we used to do smear mono petri dish and see if they'd grow. But by actually looking at their genetic signature. And you know, lo and behold, there's, you know, a thousand trillion bacteria alone in our gut and there's over a thousand species of bacteria in our mouth, thousand different guys and 700 different species on our skin. And so once they were able to get these guys identities, then they started looking in other places. And lo and behold, there are bacteria in a normal human's bloodstream. And there are. Bacteria that have been discovered in the brain. And so are they there just passing through or are they there doing things in the brain?

Should they be in the brain? I just came back from the big microbiome meeting that we have every year. This year it was in Malta and there was actually an intense debate. It was, you know, okay, everybody calm down. We know they're there now, but just because they're there, what are they doing there? And we know, for instance, there are bacteria in cancerous tumors. And each cancerous tumor actually has a different bacterial population. And the question is, okay. Did those guys cause the cancer or are they taking advantage of the cancer? Or is the cancer cooperating with the bacteria? Are they both getting something for it? So the whole idea of where we start and they begin is kind of the premise of the gut-brain paradox. How intimately involved are we with our, what I call the holobiome, which is all of these guys.

SHAWN STEVENSON: Yeah. And this is opening up a huge part of the conversation because it's so funny, we cast off the brain as like this separate area as if it's not connected to everything else. Right? So you mentioned we've got a skin microbiome. We've got a gut microbiome. We've got a microbiome of, of our lungs. We've got the oral microbiome. The list goes on and on, but then not the brain. It's a sterile environment, end of story. And so one of the, the coolest parts of your book, which there's, there's many of course, 'cause that's just how, who you are and how you write. There was a chapter affectionately titled Shit for Brains.

And I was like, what is he about to tell me now? And not only did you break down why you're making a statement, but in particular you talked about certain things that are going on in our system that can essentially infect or affect our brain. Right? And so one of those things that you talked about was lipopolysaccharides, which is, you know, a lot of people in the health space know about lipopolysaccharides now, L-P-S.

DR. STEVEN GUNDRY: L-P-S.

SHAWN STEVENSON: But also you point out that LPS can stand for little pieces of shit.

DR. STEVEN GUNDRY: That's correct.

SHAWN STEVENSON: Let's talk about it.

DR. STEVEN GUNDRY: Yeah. So, um, so there are gram-negative and gram-positive bacteria and it was actually discovered by a scientist long ago by the name of Gram who developed a stain. And if the stain picked up in certain bacteria, they were gram positive. And if the stain wasn't picked up by certain bacteria, they were gram negative. Well, the gram negative guys are potentially some of the bad actors. There are bad actors who are Gram positive, but the gram negatives are kind of the bad actors and they have cell walls that carry an identity. And one of the interesting things that I've written about for years now is.

Our immune system, our white blood cells can identify who's who in the bacterial community by literally using a barcode scanner that looks at the cell wall and it says, oh, this is a good guy. I know who that is. And ooh, this is a bad actor and I don't like him, and he shouldn't be here. So what we've learned through the years is a lot of these gram-negative bacteria, they're reproducing and they're dying. They're dying all the time. So these dead bacterial pieces, lipopolysaccharides or little pieces of, they literally are pieces of stool can get through the wall of the gut, and they have several ways of doing it. And I talk about how they can do that and when they get through the wall of the gut. The immune system says, oh my gosh, there's some bad guys loose in us.

Lemme give you an example. For instance, in medicine we talk about people going into septic shock and they get literally so sick, so full of bacteria in their bloodstream that their blood pressure crashes. Their heart is going a thousand miles an hour and they can literally die. Interestingly enough, you can take LPSs and take healthy volunteers. Now these are dead pieces of bacteria and inject them into the bloodstream of a healthy volunteer and they will go into septic shock. The blood pressure will crash, their heart rate will go up, they'll faint, and even though there's no living bacteria, just the immune system. Reads, these guys says, holy cow, dare our bacteria in here.

And you know, we're at war and this is life-threatening. Okay? Just by way, VIM Hoff, the iceman rose to fame because through his breathing techniques, he could be injected with LPSs and sit there and go, yeah. So what? I'm having a nice day. How about you? And all the scientists are going, why isn't this guy dead on the floor? And he actually showed that he could train 20 individuals in his breathing techniques and ice techniques and do the same thing. So it was trainable. It wasn't, he wasn't just a freak of nature, but they're that powerful, even though they're dead. Okay, so. Fast forward, we can actually measure these guys in people's body, but more importantly, we can actually measure whether our immune system has developed antibodies to them as recognized them and is ready to attack them.

And I use this in my practice all the time and seeing who's got issues with leaky gut. But the sad thing is these guys can actually get through the wall of our gut. Even if we don't have leaky gut, they can actually ride on certain fats that we eat. And in fact, Michael Gregor, loves to talk about, who happens to be a vegan, loves to talk about that. You just put cream in your coffee and you can measure LPSs in the bloodstream riding on the cream through the wall of the gut.

SHAWN STEVENSON: Lipopolysaccharides.

DR. STEVEN GUNDRY: Lipopolysaccharides.

SHAWN STEVENSON: That's fascinating. So you brought forward, and you do this all the time, you know, you put certain terms into popular culture, especially in the health space and, you

know, we kind of create a blanket idea about the microbiome, but you talk about the holo biome, right? Being all of these different respective microbial communities coming together to form you. So let's talk about that a little bit.

DR. STEVEN GUNDRY: Yeah, that's right. IZ spent some time in the book talking about one of the great battles between two opposing men, scientists, chemists in France in the 1800S, Louis Pasteur and Antoine Béchamp.And these guys, both of them. This was a time when bacteria were really just first discovered and fermentation was discovered. And believe it or not, people thought that fermentation, like how grapes turned into wine, was somehow some mystical process until these microorganisms like yeast and bacteria were discovered. And Pasteur came from the camp, that bacteria were really evil and that they were the cause of disease.

And Béchamp said, no, no, no. Wait a minute. He said, bacteria are always with us and. It's the terrain that they occur in. And as long as there's good guys and bad guys, and as long as there's this balance between good guys and bad guys, the bad guys don't get outta control. 'cause the good guys have ways of, you know, keeping them in their place. But it's when the balance of power gets rearranged that the bad guy can show up. But if we got this terrain back to normal, the bad guys wouldn't have a chance. And they're not necessarily bad. Pasteur was a better public speaker, and Pasteur discovered that it was bacteria that was making French wine go bad.

Yeast were supposed to ferment wine and bacteria would turn it into vinegar. And of course, the King of France thought that was pretty cool discovery. So Pasteur's discovery, he won the debate and the idea that the terrain was really the important part fell into disrepute. Now, what's fun, I've read every book about the two of them that's ever been written and there's no proof. But many books say that on Pasteur's deathbed, he called Béchamp to his side and, he says, you're right. It is the terrain. So, and I, I believe that. And what we now know is that he was right. That, yeah. It's the terrain. It's the tropical rainforest with all these different creatures, all these different sets of bacteria, not to mention molds and fungus and amoebas and worms.

It's this literally tropical rainforest. And as long as, well, to use a Hillary Clinton phrase, it takes a village, then everything is fine. That this symbiotic organism functions beautifully. But if something gets on balance, that's when a disease process starts. And you know, Hippocrates knew this 2,500 years ago, the father of medicine, that all disease begins in the gut. And he actually, he phrased it and I, I wrote about this in the Plant paradox, and it sounds really California speak, but it's worth mentioning again, he believed that all of us had a green life force energy that wanted us to have perfect health, but that there were external factors preventing that expression of this green life force energy in someone who had an illness.

And the object of a physician was to be a detective to find out what these external factors were and teach the patient to remove them and then step back and the green life force energy would fix it. And it sounds really California and hokey, but the doggone thing is right. And now I think we should probably call it the Brown Life Force Energy because what he was referring to was this terrain, this balance. Because we happen to be the home of these bacteria and they want us as long as everybody's in the right amounts to have perfect health. 'cause as long as we have perfect health, they got a great place to live.

SHAWN STEVENSON: Yeah. Symbiotic relationship.

DR. STEVEN GUNDRY: It's just the most incredible symbiotic relationship. And the thing that made me have to write this book is with each passing year. After the Human Microbiome Project, we get another, we're peeling back the layers of the onion of the communication system that exists between the whole biome and us. And you take a deep dive into this and you just are still just amazed at the depth of communication and control over us that this microbiome has. And the book is really all about that control. And the good news is, it's certainly out of control right now, but the whole book is, guess what? You can get this communication back and get the good guys and get the terrain stabilized.

SHAWN STEVENSON: Yeah. You have this gift of bringing a voice to certain things that I think about, but I don't necessarily put a name on it. You know, I don't put a ring on it. Shout out to Beyonce. But what you did when you mentioned keystone species in the book, for example, you of course just talking about what you already shared. We've got this cascade of, you

know, trillions of bacteria. And it's really about having everything in balance and keeping the “bad guys” in check, but even the bad guys play some significant roles.

DR. STEVEN GUNDRY: Oh, absolutely.

SHAWN STEVENSON: But when the balance gets shifted. When we are in a good place, our bodies are very resilient against different things, whether that's exposure to something "bad", whether it's a, you know, maybe a overgrowth gets a little bit outta hand. But it's about these keystone species being there and being powerful is part of what helps to keep us healthy.

DR. STEVEN GUNDRY: Yeah. It's amazing how number one, these guys are sentient beings and people go, well, here he goes, California, speak again. Woo woo. These guys can see each other. Now they don't have eyes, but they can count the number of bacteria around them. They can count who their friends are, who the bad guys are. They can see who the bad guys are. They can actually make, for instance, chemicals to fort the bad guy's growth. They can even exchange information between each other. So there might be a keystone species that there might be an antibiotic that would not, they would, they don't wanna be killed. And maybe one of these keystone species has gotten some information from another bacteria that contains a bit of RNA or DNA that makes that bacteria resistant to a particular antibiotic.

And he literally calls his friends and says, Hey, I just got some stuff that's gonna protect us the next time the idiot upstairs takes an antibiotic for their runny nose, which was a virus. Here I want to give you this information. And so these keystone species, as long as they're doing the right thing, they're constantly sharing information. Which is a good segue into what I talk about in the book, and I've talked about it before. We humans have actually not very many genes. A plant, a corn plant has more genes than we do. A sand flea has more genes than we do, and yet, you know, we're the most advanced organism there is. So on the other hand, bacteria have fewer genes, but there's a hundred trillion of them.

And they're constantly reproducing. They're constantly exchanging genetic information. They're constantly getting viral genes. And so for instance, you have your cell phone in your

hand. This cell phone doesn't have a lot of computing power, but it's a really good receiver for the computing power that all of us now have loaded into the cloud. And so the text message that you and I maybe just got is from that computer up in the cloud. I submit, and others have submitted that because there's so much more action down here that we have actually put most of our computing power into our holobiome and that our brain is actually the receiver for the computer that's in our gut.

And the more I look at this intricate connection, the more I'm convinced that once again, this symbiotic organism, bacteria have been around for 3 billion years. We've been around a hundred thousand. And one can argue that, hey, let's take advantage of all this survival knowledge and let's have them direct our behavior. Now, in the good old days, that was a good deal. The book right now, there's a lot of bad guys directing some bad behavior. Here's how to turn it around.

SHAWN STEVENSON: Yeah. It sounds like a genius, intelligent thing to do for any higher species. You know, let me rely on the cloud basically all this data so that I can focus my big bad genes on doing all this human stuff. And so those genes from the bacteria, the holobiome functioning as an epigenetic controller.

DR. STEVEN GUNDRY: That's exactly right. And I mean, the exciting thing, and I, you know, I go down some deep rabbit holes. But we now know that these bacteria and even plants can pop off little text messages containing information containing. Genetic information messenger, RNA, containing mitochondria. And they're called either exosomes or, little packets of information. And they can go up to a cell, merge with the cell, very much like, you know, a space shuttle, merges with the space station and put its contents into a cell like a neuron and say, I want you to do this.

I want to turn on these genes. I want you to make this epigenetics. And so, even though we don't have very many genes, we're now realizing that these guys, this processor can actually send messages to activate certain genes.

SHAWN STEVENSON: It's fascinating.

DR. STEVEN GUNDRY: You wanna get, you wanna get really scared?

SHAWN STEVENSON: No, but yes.

DR. STEVEN GUNDRY: Well, uh, I think most of our audience has heard or had a coronary calcium score. A CT of their chest, and you count the amount of calcium in your coronary arteries. And lo and behold, believe it or not, there's no good correlation between coronary calcium and plaque inside blood vessels. There isn't, and I'm a heart certain I would know. I look at these things, but it's used as a score of risk. Now, what the heck is calcium doing in the wall of our blood vessel? There's only two things that can make calcium in us. One is the bacteria in our mouth, and if you've ever gone to the dentist and they're picking out plaque and chipping away at it. Those are biofilms formed by bacteria with calcium, they're little igloos. So they can make calcium, but the only other thing that's capable of making calcium is bone cells osteoplasty.

So there's amazing paper coming back to LPSs that when these little pieces of shit activate a part of our immune system called macrophages, they're white blood cells. Macrophages go through the bloodstream and they land on the blood vessels in our heart and they talk to the smooth muscle cells, which is, makes the blood vessels move the second layer of the lining of your blood vessels. And they take these little exosomes or extracellular vesicles. And they send a text message to this smooth muscle cell, I want you to turn into a bone cell and start making calcium. And you go, well wait a minute. That's a smooth muscle cell. Well, then you go, well, how did it know to be a smooth muscle cell?

It's got the same genes as a bone cell, same genes. It's the epigenetic, epigenetic message. So that macrophage activated by LPSs tells the smooth muscle cell start becoming a bone cell and start laying down calcium. Whoa. So I use that to my patients who walk in and say, oh my gosh, I've got a really high coronary calcium score. I go, guess what? You've got a lot of LPSs going through the wall of your gut activating your immune cells that are telling. Your smooth muscle cells to become a different cell. Why? Because if you're under attack by bacteria, maybe you wanna put down a wall of protection, and that is the segue into why we have so

much dementia and Alzheimer's and Parkinson's, and why do we have all these amyloid beta plaques?

Why do we have all these tau proteins? As I tell my patients, what are these things doing up in your brain? Well, anybody who remembers nine 11 knows that after that, all of a sudden all these concrete barriers went up in front of every important building in front of airports and you know, government, whatever. I want them to visualize that these proteins that are in people's brains are concrete barriers that have been put in place because the attackers, the terrorists on the, on the way to the this protected citadel, the brain. And if you visualize it that way, you go, oh my gosh, we shouldn't be trying to use drugs to tear apart these tau proteins and amyloid beta proteins. Those are actually protective barriers. Why are they being erected? Oh my gosh. Because the guys from the God are loose and it totally flips everything. We think about this on its head.

SHAWN STEVENSON: Whoa. Yeah. I've had three Keanu Reeves moments over here. Whoa. Oh my goodness. So we're basically. I had visions of like Wolverine X-Men stuff while you were talking about that. Having a bony heart, bony blood vessels, and man, that is so fascinating. It's just about the signals. It's all about the signals.

DR. STEVEN GUNDRY: It's all about the signals.

SHAWN STEVENSON: And if we're being honest about it at this point, what entity has the most signaling power in our bodies? It is these bacteria communities. They've got more information, more data, more genes, everything. And we're not focused there when we're wondering what's happening upstairs in our brain. Why are we having epidemics of mental health conditions, Alzheimer's? Dementia. Alzheimer's is now, it's almost in the top five leading cause of death in the United States. People do not know that. And it didn't just happen out of nowhere. It has happened recently. But there's a reason behind it, and you're really helping to pull back the curtain. With this gut-brain paradox, got a quick break coming up. We'll be right back.

SHAWN STEVENSON: As you know, mental health challenges have skyrocketed in recent decades without addressing the root causes shown in mountains of studies, including social isolation, sleep abnormalities, nutrient deficiencies, sedentary behavior, and many other factors Will continue to see rates rise. And are communities struggling for solutions? It's so important for people to understand that no two cases of depression are alike. There are unique lifestyle and mental health work that each of us need in different situations. And right now in the United States, depression is the leading cause of disability, is the number one reason for people missing work and school.

And so we've gotta do something about this. Of course, medications can be helpful in some context. But most people are not educated about the science-backed natural supplement that's shown to be just as effective as many medications. An analysis published in the Journal of Effective Disorders found that the renowned spice Saffron was just as effective as conventional antidepressant drugs like Prozac, toenail, and Celexa. Additionally, the researchers noted that fewer people experienced side effects from Saffron than from those other treatments. This should go without saying people should know about this. Something that's been utilized for centuries far safer and just as effective as conventional antidepressant drugs.

Now are we talking about curing this condition? Absolutely not. We're talking about having another option to turn to something that can be supportive in an overall plan to support our mental health. There is no supplement. There is no drug that's gonna fix everything. But again, people need to know about this and there are great companies that are providing easy to use saffron supplements like the happy drops from Organifi. This includes a therapeutic amount of Saffron, gotchu cola, passion, flour, and ginger. They are amazing. You really do notice a difference, and I highly encourage you to look at the reviews for this product. I'm just gonna share a couple with you because they really do stand out.

Nicholas said "happily surprised." He said that I was extremely skeptical of this product despite all the good reviews. However, after using it daily for the past two weeks, I can definitely say they work. I definitely have an easier time staying positive and rolling with the punches of daily life. With the help of Happy Drops, Hilary said "Happy Drops will make you

happy." You ordered. I found out about these little drops of bliss on Instagram. I was skeptical as every product makes claims that aren't always backed upon trying these happy drops, I've noticed a mood improvement energy that lasts throughout the day. And improved sleep at night. I'm thrilled. Definitely. Check out Organifi's Science-backed gummies again, they're called Happy drops. Head over to organifi.com/model and you're going to get hooked up with 20% off. Go to organifi.com/model. Again, you're gonna get 20% off store wide. Pop over there and check them out. And now back to the show.

SHAWN STEVENSON: So let's talk a little bit more about this, like what is going on, what's at the root, which you've already uncovered this, but let's talk a little bit more about it. The root of our mental health epidemics can addressing what's happening with our microbiome help to resolve issues like depression.

DR. STEVEN GUNDRY: Yeah, that's, I mean, that's the exciting thing. I've been doing what I do now for about 25 years, and a number of the patients who came to see me for other reasons, whether it was an autoimmune disease or diabetes or you know, being obese. A lot of these people were on antidepressants and so many of them were on two, three antidepressants and they'd been on it for so many years that often they wouldn't even put depression under a symptom or a problem. And I told them naively, I guess initially that, well, you know, I think you're gonna find that we can get you off of these, um, just by fixing your gut. And this was actually before the Human Microbiome Project. I was just echoing Hippocrates. And lo and behold, as we measured their leaky gut being fixed as we measured their gut.

Diversity, their terrain improving. These people were able to wean off their antidepressants. Now it gets even more interesting now that we've been able to identify who's in there. We know that there are certain bacteria that highly associate with depression. This was first discovered in in rats where you could take germ-free rats who have no microbiome and have them eat human poop from depressed individuals. Now, rats love to eat poop. They just think poop's delicious. So you can feed them depressed individuals poop. And these rats will get depressed. They will get all the symptoms of depression. And believe it or not, you can measure depression or rats so they don't sit on a couch and complain. And then you can feed them poop from happy individuals, which has a completely different microbiome.

And these depressed rats will become happy because there's a happy microbiome too. And the depressed microbiome, unfortunately that terrain becomes overloaded with the depressed guys and the happy guys have been kind of pushed to the side. But you can fortify that happy guys. And one of the real shockers of the book, we know that glyphosate, the active ingredient in Roundup. It was actually patented as an antibiotic, not as a weed killer. And we now know that glyphosate will particularly target in our gut the basically happy bacteria, the ones that make tryptophan and serotonin and dopamine and gaba and kill them off. But the depressive bacteria are far more resistant to glyphosate.

And we wonder why is it that since glyphosate was introduced in the 1970s, that we've had this epidemic, you know, of anxiety and depression. Obviously there's lots of other good reasons, COVID and social media, but the correlation is incredibly strong. And now that we know that we can measure depressive bacteria and happy bacteria and no, the glyphosate kills off the good guys. You go, holy cow. You know, what have we done.

SHAWN STEVENSON: Just with that alone, because of course we're like, are we consuming enough glyphosate to really make a difference? Because, you know, there's such a difference with our mental health. Well, the environmental working group did an analysis a couple years ago, and they found over 80% of the conventional grain products on store shelves was contaminated with glyphosate like a notable amount to be dangerous for humans.

DR. STEVEN GUNDRY: Yeah.

SHAWN STEVENSON: Over 80% of the products. It is crazy. And not to mention there's been this whole thing, and you know, there've been great documentaries about this, but the cross contamination issue and just even organic stuff, you know? It's very difficult to find places, especially here in the United States, but really all over the world, that aren't contaminated with very dangerous pesticides like glyphosate.

DR. STEVEN GUNDRY: Yeah, it's, I mean, even a lot of organic oats are contaminated with glyphosate, uh, because of drift. I've got a friend who's a biodynamic wine maker in Santa Barbara County. I'll drop his name. Steve Beckman, Beckman Vineyards who farms

Biodynamically, which is, you know, one step beyond organic. And he's got one kind of parcel that he doesn't certify as either organic or biodynamic. And I said, well, you know, why don't you? And he says, well, 'cause my neighbor sprays with glyphosate in his rows and it drifts and we can detect it. And he says, I sell those grapes off to other people. But yeah, you're right. Just the drift from spraying a field, um, will contaminate an organic orchard.

SHAWN STEVENSON: So what do we do with, obviously, again, that great analogy of building a wall. Essentially, you know, with the beta amyloid plaque, with the tau proteins, our body is operating in response with what we call these plaques, right? Which we blame cholesterol, for example. And cholesterol might just be there. It's like blaming the firemen for the fire, you know,. What can we do to help our bodies to, to stop putting up these walls with our brain health? And you know, again, having the outcome, which is gonna be different from person to person, you might express it as symptoms of dementia. You might express it as symptoms of depression or anxiety or A DHD. The list goes on and on. How do we start to resolve this issue so our brain can let down the guard and we can start to have good mental health and good cognitive function again?

DR. STEVEN GUNDRY: Well, for years most of my interest was on repairing leaky gut and the causes of leaky gut. And leaky gut is a real thing. It is a measurable thing. A gastro, a pediatric gastroenterologist who's now at Harvard, Alessio Fasano, proved for instance that gluten, which happens to be a lectin, a plant protein, causes leaky gut, and he showed the mechanism. And subsequently we've learned how to measure the degree of leaky gut with blood tests. We can learn how activated the immune system is to leaky gut and we can actually follow leaky gut being repaired in the immune system standing down.

And this is what I do with my patients. But the other piece is what béchamp was talking about. We can, we can repair leaky gut, but you've gotta have this really great set, this tropical rainforest of bacteria that are all kind of pull in their weight. We'll use a football analogy. They're really the offensive line front four that protects the quarterback from the oncoming lineman, rushers and linebackers. That if they're intact, they basically tell the quarterback, Hey, take all the time you want back there. Find your receiver. No one's gonna get to you. Quarterbacks is great. You know, I'll be fine. Unfortunately, our front four has been

decimated by antibiotics by glyphosate, by environmental toxins, by microplastics. We could go on and on by endocrine disruptors. So now our front four, we've already used up the third stringers and now we're getting the water boy to come in and try.

And the quarterback now is running around, getting tackled, getting crushed. And our immune system is just always on hyper alert, always sending out alarms, like, oh my gosh, we're getting overrun, but I mean, there's no stopping these guys. We'll try to hold the fort down here. But the immune system now signals to cells in the heart to cells in the brain, the immune system in the brain or bodyguards, the microglial. We, we can't hold them back. Protect these guys up here. So the immune system in the brain says, oh my gosh, you know, we're getting messages that they're coming up. In fact, we just saw some come up, you know, let's put roadblocks in their way. Let's throw down all this garbage, these walls to try and slow 'em down.

And what the really scary thing is? Nerves have all these connections to other nerves that are called dendritic processes. So one nerve, it's almost like bespoke of an airport, check in and then ride a car out to your plane. So these guys are talking to each other like this. When they hear the message that the bad guys are coming, the first thing they do to protect the nerve itself is they literally eat away these processes. And we can actually watch them under the microscope, little pacman eating away these dendritic processes till you get right back to the nerve. Well, what happens when all those guys are pruned? Guess what? These nerve can't talk to each other. Memories can't exist. And so we know the process now, and it all is coming from the alarm signals from the gut.

SHAWN STEVENSON: This is mind blowing stuff. So we've got a good idea. And again, we're just scratching the surface. And as I said at the beginning of the show, you know, this is what you do. You bring all these huge paradigm shifts for everybody, and then it becomes part of the lexicon, part of the popular culture in this field of health. And I, first of all, I wanna give you your props. You know, I wanna give you your credit because you've been such a pioneer is a, it's not the appropriate word because, you know, it's not as cool, all right? You're so much cooler the way that you go about this stuff. And you know, really just pushing this conversation forward as a thought leader.

And you spend so much time. One of the things I was talking about before you got here was, you know, in a whole previous aspect of your career and the inventions and the devices and the patents and all the published papers and all this stuff,. And you know, just getting to this place where you're spending a lot of your time and energy, sharing your wisdom and reaching a lot of people to, again, help to push this conversation forward, to help change health overall. And so you dig in much deeper, obviously in the book, the Gut-Brain paradox on the causes, what's going on. But what I'd love to do to close things out is to share a few of the insights on what we can start to do to change these.

DR. STEVEN GUNDRY: Yeah, absolutely. Well, number one, that anybody can do starting a day. 80% of my patients in Southern California are vitamin D deficient when they walk through the door. Vitamin D does three things that are so important. First of all, vitamin D is a hormone, it's not a vitamin. Vitamin D is critical for repairing the wall of the gut. The wall of the gut is only one cell thick, and it's the same surface area coming back to sports as one or two tennis courts. So when people are watching the Indian Wells BNP Paribas Open in a couple . , there's least one tennis court of surface area inside of us, probably two that is only one cell thick, and vitamin D is essential to keep that wall intact.

The University of California, San Diego biggest research group in vitamin D in the country says the average American should be taking 9,600 international units of vitamin D a day. They've never seen vitamin D toxicity, even at 40,000 international units a day. And I haven't either. I've never seen it in my practice, and I've been measuring it for 30 years, every three months. That's number one. Repair the wall of the gut. Number two, the higher your vitamin D level is, the more diverse your microbiome is, the better that terrain is. Higher vitamin D, better terrain. Number three, normally white blood cells are kept calm by vitamin D. And vitamin D says, Hey guys, we know there might be some bad things going on, but you know, calm down.

Get your finger off the trigger and just chill a little bit. If your leaky gut is happening, and quite frankly, folks, most people have leaky gut. The immune system is wearing a Kevlar vest. They got two achy, and their fingers are on the trigger. Vitamin D, if you get a high enough dose, tells the immune system. No, no, no. Get your finger off the trigger. Put down your gun,

just quiet down. So it's three factors that, that getting your vitamin D is, is really the number one thing. The number two thing, and this was discovered by the husband and wife, microbiology team at Stanford, the Sonenberg. Now Sonnenberg's, I have great respect for 'em.

They're doomsayers. They basically think we have a desert wasteland for a microbiome in all of us, and there may be no hope. I happen to think, and my patients have shown me that we can turn that desert wasteland into a tropical rainforest. But how do you do that? Well, one is we should be eating prebiotic fiber. Everybody knows probiotics, friendly bacteria. Prebiotics are the foods that the friendly bacteria. Knee eat. They produce what are now called postbiotics, which is part of the messaging system between them and us. So they took a prebiotic, good prebiotic inulin, which is in asparagus, it's in artichoke hearts, it's in chicory family vegetables like radicchio, that kinda red Italian lettuce that you see in all the stores now.

So they gave healthy volunteers inulin, and they looked at their gut microbiome diversity, their terrain, and they looked at their inflammation markers. And lo and behold, despite eating all this prebiotic fiber, their gut diversity didn't change and their inflammation markers didn't change. And they go, well, that's weird. They said, we must be missing something. So they did the same experiment. This time, they had the people eat fermented foods. Now in this case, they used yogurts and kefi primarily, but it could have been sauerkraut, could have been vinegar, it could have been fermented cheeses. You were eating a fermented meat stick.

We could have used that. Could have been kombucha. And they also gave them the inulin. Lo and behold, the combination of the fermented foods and the prebiotics, they got more gut diversity and happy day, their markers of inflammation went down. So that's really part two is you gotta give these guys what they need to eat, but you gotta have preformed postbiotics, which are contained in fermented foods. So that's number two. Number three, and I show this all the time to my patients. Look, we can repair your leaky gut. We can rebuild your tropical rainforest, but if you keep swallowing razor blades, you're going to tear it right back open. Now, my humble opinion, razor blades are these lectins that made me infamous or famous, depending on your point of view.

And these are plant compounds that are proteins that are really good for causing leaky gut. So where are they? Well, you've already mentioned one. Most grains have lectins. There are two grains that don't, millet and sorghum. So millet and sorghum are great, but wheat, rye, barley, corn, oats, quinoa, they're no-nos. The nightshade family, tomatoes, potatoes, eggplant, peppers. And believe it or not, goji berries, are full of lectins. Beans are the most notorious of the lectin containing foods. But good news, if you ferment beans the way they're, probably, the lectins are destroyed. Or if you pressure cook beans. I had two different dishes of beans this past week. They were pressure cooked. You can buy 'em, pressure cooked. Now couple companies sell 'em or you get a pressure cooker. So do that. So number one, get your vitamin D up. Number two, get prebiotics and postbiotics in terms of fermented foods. And number three, stop swallowing razor plates and you can start today.

SHAWN STEVENSON: Amazing. Amazing. How many people did you say? What's the percentage of people that are deficient in Vitamin D?

DR. STEVEN GUNDRY: 80% in Southern California. In Brooklyn, New York, 92% of people are deficient in vitamin D.

SHAWN STEVENSON: This is a red alert for everybody. Get your vitamin D, of course, get your sun exposure, but this is a place for supplementation. This is a place for eating more vitamin D rich foods. It's almost..

DR. STEVEN GUNDRY: And mushrooms are a great source of vitamin D, and they're a great source of prebiotic fiber. So it's a win-win.

SHAWN STEVENSON: I love win-wins. That's what it's all about. It's what I get when I'm hanging out with you. That's right.

DR. STEVEN GUNDRY: Great to see you again too. Yeah. Been too long.

SHAWN STEVENSON: I know. Time flies when you're having fun. Can you let everybody know the best place to pick up a copy?

DR. STEVEN GUNDRY: Well, hopefully go to your local bookstore. You know, I've had a number of bestsellers, so usually they're stocked in your local bookstore. Covid, as we all know, killed the local bookstores and they're coming back and we need to support 'em. But the obvious places, Amazon, Barnes and Noble, wherever you get your books, it'll be there. Comes out April 15th. And, so there you go.

SHAWN STEVENSON: And I'll make sure everybody check the show notes for a link to the book, because I know you're gonna have some bonuses as well. So make sure to check out that link. And again, you've got one of the top shows in the health space so people could check out?

DR. STEVEN GUNDRY: The Dr. Gundry podcast.

SHAWN STEVENSON: Dr. Gundry podcast. Yes.

DR. STEVEN GUNDRY: Got nearly a million YouTube subscribers, coming up to 2 million for my newsletter. So, and hopefully I appear while you're scrolling every day. Weaving at you with Gundry md.

SHAWN STEVENSON: Yeah. The real you though, because we were talking about this.

DR. STEVEN GUNDRY: The real you.

SHAWN STEVENSON: There's AI-U out there doing ads on YouTube and saying some wild stuff too.

DR. STEVEN GUNDRY: But it's not me.

SHAWN STEVENSON: It is not you. I was just like, as soon as I saw it, I was gonna send it to you and text you, but just, I just forgot to, but seeing you today, I'm like, this isn't you, is it? You're like, nah, it's not me. AI is bonkers, bonkers. It's full on your voice. I mean, it's not quite as, there's, it's missing a little spice. It's missing a little bit of that wholesomeness, but it's close enough to fool people.

DR. STEVEN GUNDRY: It's impressive, and it really is. And as soon as we shut one down, they pop up. We just play whack-a-mole with them. Yeah, they're getting really good at this, unfortunately.

SHAWN STEVENSON: Yeah, I'm pretty sure it's people who have poor gut-brain connections who are doing that. All right, if we get everybody feeling good, they're gonna do things with more integrity and love and real appreciation. And I appreciate you so much for all the wisdom that you continue to share, and thanks for coming to hang out with me.

DR. STEVEN GUNDRY: Well, thanks for having me. Great to see you.

SHAWN STEVENSON: Awesome. The one and only, Dr. Steven Gundry. Thank you so much for tuning into this episode today. I hope that you got a lot of value out of this you already know to do. If you enjoyed it, please share it out with the people that you care about. You can send this directly from the podcast app that you're listening on. Of course, write as a text message to share the love. Or of course, you could take a screenshot of this episode and share it out on social media. If you wanna tag me. I'm at Shawn model on Instagram, and of course tag Dr. Gundry as well. I know that he would love to see the love today, so I appreciate you so much Again, we've got some amazing, amazing masterclasses.

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 the model health show.com. That's where you can find all of the show notes. You can find transcriptions videos for each episode. And if you 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.