THE MODEL HEALTH SHOW

EPISODE 453

The Microbiome-Body Fat Connection

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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. On this episode, we're going to be diving into the microbiome body fat connection. And as we've been discussing, this is one of the epicaloric controllers. These are the things that control what calories do in our bodies. And today we're going to take a deep dive into the world of the microbiome. Now, this information is coming from my brand new book Eat Smarter, which I've just been blown away, it just came out last week, and it skyrocketed to the number one new release in America. The number one new release book of all books in the United States. I could not have envisioned this happening in this way so quickly. And this just shows that we are demanding change. The book reached into the top 20 of all books sold. This is up there next to US presidents, celebrities. But this is about health. This is about the health of our families, the health of our communities. We're showing that this matters to us, that this is important.

And a book like this cannot be created without so many different people and so many different inputs. I feel like this is so much bigger than me. It just... The universe wanted this to be delivered right now at this time when we so desperately needed it. And I'm just so grateful to be a part of it all. I'm grateful that you are a part of it all. And so, on this episode, we're going to dive into one of the most important facets that we examine in Eat Smarter, and also dive into some solutions, because once you understand how truly integral your microbiome is, the health of your microbiome in regulating your metabolism, this is going to be something that you're proactively, passionately, going to be looked to optimize here in 2021 and well beyond. Now, to a recap, there are seven clinically-proven factors that control what calories do in our bodies. In conventional training about calories and how this all works, and what I was taught in my nutritional science classes in college was that calories are the major regulating force of our body composition, and our mandate is to manage calories so that we can manage our body composition. We can manage our health by managing calories. But these seven factors, what we talked about on a recent episode, are epicaloric controllers. They control, they're above caloric

control and control what calories do in our bodies.

And one of the most important, as we're going to talk about today, is your microbiome, which is highlighted in a study published in a peer-reviewed journal, Cell, where researchers discovered that there's a specific bacteria found in mice that literally blocked their intestines from absorbing as many calories from the food that they consumed. Alright. The bacteria, the microbiome, that makeup in these little critters blocked their intestines from absorbing as many calories from their food. Now, through the lens of allopathic medicine, we hear something like that, or the researchers find something like that, and they try to make a drug. Alright, we got to make a drug out of this bacteria that we found, so we can block people's intestines from absorbing as many calories. That will be the solution to our obesity epidemic. And that's the problem with allopathic thinking and conventional medicine. It doesn't look at health as a real integrated phenomenon. It looks at it in parts. We're separated into parts, alright. And so by targeting this particular strain of bacteria, maybe this strain of bacteria and coming in with this pharmaceutical intervention is going to prevent you from producing as many SCFAs, short-chain fatty acids to protect your gut lining, maybe it's going to interrupt the creation of B12 by your bacteria, and the list goes on and on and on and on the "Side effects" that happen when we try to target one thing through the lens of allopathic thinking.

We operate as a whole. Everything about us is interconnected. If we have something that's good for our eyes, it's going to affect our joints. If we have something that's good for our hearts, it's going to affect our kidneys. If there's something that's detrimental to your eyes, it's going to be hurtful to the joints in your toes. If you have something detrimental to your brain, it's going to affect your libido. Alright. Everything is connected. Everything is connected. So life does not operate in a vacuum. So we want to be aware that we want to include things and cultivate health that is this term holistic that treats the whole, because that's what we really are. We're an integrated, incredible phenomenon. Now, to couple with the research that was done on these little critters, the Weizmann Institute looked at what was going on with human test subjects, and found very conclusively, and this is what I saw in my clinical practice as well, is that there is a specific microbiome cascade, a microbiome makeup that is correlated with obesity, insulin resistance, and excessive body fat gain, alright. Increased weight gain, increased body fat, and insulin resistance. And I can tell that without ever even seeing the person when I get the report back and look at the makeup of their microbiome. I can have a pretty

good indication of whether or not they're obese just by looking at the bacteria cascade.

And so knowing this, when researchers found the cascade that was associated with obesity, insulin resistance, they took those samples from human test subjects and implanted them into mice, these "Fat" bacteria, and they took samples from lean, "Normal" human test subjects and implanted them into mice. Those mice that received the implant from the lean human subjects or the microbiome makeup associated with leanness stayed lean.

However, the mice who received the "Fat" bacteria associated with obesity, these "Fat" bacteria caused the mice to become insulin-resistant, gained weight and gained body fat, changed nothing else about the mouse's diet. Simply changing the microbiome makeup caused them to gain more weight and become insulin-resistant. Our microbes are controlling our metabolism at the absolute frontlines. And this just makes sense, they're right there at that action point, the interaction point between the outside environment, the food you put in your body, and the food getting into you. Because in a strange way, your gastrointestinal tract is not necessarily you, in one perspective, it's a tube from your mouth to your anus, alright, to your anus. Shout out to Jupiter and all that whole thing going on. But it's a tube from your mouth to your anus, and within that tube, you can just think of it like a hose, your body is surrounding that hose and your microbes, and what the activity that happens within that hose is determining what actually gets into your body itself, what gets into your "Human tissues" and your bloodstream. And so the intelligence of those microbial communities and the management of all that truly, again, this is...

They're the frontline in making those decisions about your digestion of nutrients, assimilation of nutrients, and elimination as well. Alright. So we need to pay more attention to this incredible world that we term our microbiome. And so we have... The microbiome is not just bacteria. Alright. We have the human virome, which is made up of viruses, and we also have the mycobiome, all the associated fungi in that kingdom as well that make us up, we have trillions upon trillions upon trillions of these different organisms. We have upwards of 400 trillion viruses that are a part of our makeup. And this is so important for us to understand right now. We're at war with viruses. We're at war with bacteria. And we neglect to realize that this is who we are, we're made of these things. Of course, they're opportunistic, pathogenic, these are labels that we give them, but the question is, why do they exist?

Why do we carry, all of us, carry pathogenic viruses in and on our bodies 100% of our days here on planet Earth, viruses that can make us sick? They're called opportunistic, and in a sense, they wait for our immune system to be compromised, and then they can take over, they can create sickness. And the question is, why would nature have this kind of built into the system? It's not necessarily to hurt us. Many of these "Opportunistic" organisms, in some strange way, oftentimes they're giving us some benefit. They might be producing... Many of these microbes produce vitamins and minerals in us for us, as I mentioned earlier, producing short-chain fatty acids. The majority of that is not coming through our diet and what it actually is utilized by our bodies, they're produced by our microbes. Alright. So it's this wonderful balance. It's this wonderful symbiotic relationship that we've evolved over time that our conventional medicine, our conventional system of healthcare is simply not paying attention to. It's like it doesn't exist. But this is the cutting edge of science. It absolutely exists. Right now we have about two pounds, two pounds of microbes in our bellies.

I know it's super weird. It is definitely a little weird. But again, it's a symbiotic relationship. It's how we are designed. We evolved from these single-celled organisms. We evolved from viruses. As a matter of fact, our immune system is built from viruses. It evolved initially from a virus integrating itself with our "Human DNA," our human genes, so much so, this happened so long ago, that when the Human Genome Project was done, they found that the human genome itself is 8% virus. We're 8% endogenous retroviruses. Alright. We wouldn't even be human without viruses. Viruses are what enabled us to evolve to have the human placenta, to be able to have a human, what we refer to as a human birth versus laying... We'd be laying eggs! We'd be laying eggs if it wasn't for viruses. It's so weird. I'll be like, "Hey, babe, did you lay that egg today? You were trying to have me fertilize it." A whole different... This brings a whole different meaning to the word "Nesting," alright. We'd be nesting like crazy. But viruses helped us to integrate and to create the human beings that we are today.

Alright. So to be at war with viruses is to be at war with ourselves. We have to understand the nature of these things. And we keep looking, getting more powerful and more powerful and more powerful microscopes to try to discover what is the thing that's making us sick? And we already destroyed so much of what makes us human by going after what we refer to as "Germs," this war on

germs, this war on bacteria. Once we found the bacteria, researchers went nuts. Science shifted so much to this germ theory of disease and started just destroying our terrain, destroying our microbiome with haphazard use of antibiotics and all of these insane products that we use in our homes, and to grow our food, as we're going to talk about today. So I just want to reiterate this point again and again and again until we really get this, we have to look at things... From a meta-perspective to zoom out and look at the big picture.

And of course, we can dive in and look at the minutia absolutely, but the truth is, we are existing here in this Earth bubble altogether with all of these things. We're in a glorified gigantic snow globe, alright. There is not something happening on the other side of this snow globe that isn't affecting us. We're all connected. In fact, one of the studies that I shared on a recent episode of the show found that there are billions of virus particles that rain down from the atmosphere every single day, billions within a very small 3 x 3 foot measured space of the Earth. Many of these virus particles are coming from different states, different countries, traveling through the atmosphere in the clouds, across continents, across oceans. Truly, we are all connected. We really are. So we have to understand what's controlling things at a much bigger level, zoom out to look at the bigger picture, and part of it is the association, having a level of health and resilience in a robust immune system, a robust, healthy, sovereign human being, a sovereign human organism, so that we are not taken down when we interact with pathogenic organisms. Alright. Ultimately, that's how we're designed, we face off against new viruses, new bacteria, new fungi.

Our immune system is called the adaptive immune system adapts to it. We don't just have an innate immunity or innate immune system, we also have the adaptive immune system, and this is how we develop and continue to evolve, but so much of what we're exposed to today has been demolishing our ability to adapt to our environment and our environment is very abnormal in and of itself. And so we're diving in today looking at this ecology really this... If you want to give the analogy of your microbiome being like a rainforest. A rainforest has a diverse array of different species, and this is what we have, we have countless different species of microbes, and many of them we haven't even identified yet, and again, just like a rainforest, we can have endangered species that are important for the overall sustainability of the environment itself. And also we can have things that go extinct, that damage everything, and if you look at the data, and this is one of the studies that we highlight in Eat Smarter, looking at the microbes or the microbiome makeup of folks who are eating more of a

indigenous diet, more of a hunter-gatherer diet, they have four times more microbial diversity, five times more microbial diversity than the average person here in America.

We'll just say we have a 100 trillion different microbes, four or five times more diversity. That's a big deal. That's a big deal. What happens when we don't have it? Well, these are the things we're going to be talking about today. So one of the other points of emphasis in this microbiome body fat connection is the relationship between your microbes, your gut and your brain. Alright, the gut-brain connection has a huge impact on the microbiome/gut-body fat connection, and this is highlighted by researchers at Yale University School of Medicine. Understanding first and foremost, your vagus nerve connecting your gut and your brain, they uncovered that the vagus nerve communicates information between your gut and your brain about the volume and type of nutrients you have available in your body, and depending on your nutritional status, the function of your vagus nerve can directly inhibit or stimulate calorie absorption and nutrient absorption.

This connection can literally tell your gut in all associated aspects of the gut, including the microbes to stop the assimilation of calories, it can inhibit that process or can stimulate it to absorb more calories, just based on that connection, and remember, your gut is your brain's second in command in many ways, and they're constantly feeding information back and forth. And inflammation, and this is what we talked about in the recent episode and really dive into in Eat Smarter can severely mess up this communication, can severely damage this process.

Inflammation being from the Latin word meaning, to set on fire, alright. It's burning down... That cord is burning down that connection. And these are some of the other things we're going to discuss and dive into today. So going back and as we move forward and talk about some of the new data that we're going to cover today, when we talked about the "Fat bacteria" being implanted into mice from humans, being implanted into mice and causing the mice to become insulin resistant, gain weight and gain body fat, this is all well noted now at this point to be happening in humans. And one of the very best studies done was using identical twins and seeing what happens when there's a change in their microbiome compared to their sibling and how that affects their metabolism.

Now these are again, this is identical twins, they have the same DNA. This is not

fraternal, this is not like the twins, like the movie twins, Arnold Schwarzenegger, Danny DeVito. It's not that variance alright, I remember that scene when Danny DeVito saw Arnold with the shirt off and he was like, "Look, at your chest, it's swollen," just thought that was funny. I think he said, it looks like he was stung by bees or something, he had never seen those chesticles like that shot up to Arnold. Again, this was done on identical twins, identical, they came in the game, same egg, they had that two yoke jump off, alright, same egg, same DNA, on paper, same people, but fun fact, they have a unique fingerprint, and they have a unique metabolic fingerprint.

Highlighted by scientists at Washington University School of Medicine in St. Louis, Missouri set out to find if changes to the microbiome could affect fat loss in sets of identical twins. Shockingly, they discovered that if one twin had a higher ratio of the bacteria Firmicutes and a lower ratio of Bacteroidetes, they absorbed more calories than the other twin and were more apt to gain fat while eating the exact same diet. The make-up of our microbiome matters. The make-up of our microbiome matters. If you wondering like, "What is the Firmicutes and the Bacteroidetes?", these are categories of various microbes. And a study published in BMC Microbiology found that individuals who are obese have a significantly higher level of the bacteria Firmicutes and a lower level of Bacteroidetes compared to normal weight and lean adults, it is proposed that a higher ratio of Firmicutes in their intestines make them more efficient at metabolizing and absorbing calories.

Alright, this is a big player here. Our microbes are making decisions. They're right there at the front, they're like gatekeepers. I'm thinking about the show, Avatar that I watch it my son. Avatar. They're these gatekeepers who are deciding whether or not they can escape the persecution, escape danger and get on these boats and be able to go to this land that's more protected. Some of the people got a little attitude, they're at the gates causing problems, other people are more, they're cool. So our microbes are taking notes, they're checking the passports, they're checking your information of the food that's coming in, they're determining what's getting in and what's not. This matters. This isn't talked about conventional diets. And I'm done with it. I'm so done. It hasn't helped us. There are wonderful diet frameworks that exist now, absolutely, and underneath the surface, they're actually fixing some of these issues that are governing what's happening with our metabolism for some people, for some people, but not for everybody, because every diet framework is not going to work for every person.

We are so unique. We all have a unique metabolic fingerprint. Our metabolism that we have right now at this moment, as you're listening to this, your metabolism, your make-up of microbes is unique to you, and no one in the history of humanity has ever had a metabolism like yours, and nobody in the future ever will. And yourself next week will not have the metabolism like you have right now. The future you, the Michael J. Fox, both sides, future and past, not the same as you right now. It's constantly changing and in flux and dynamic and fluid. That's what health really is. Health isn't a destination that you arrive at. Health is really something that you cultivate and you attract to you continuously. It's continuously coming to you and manifesting from you by the person that you become. And the principles that you live by determine the out-picturing of your health.

And so this is what Eat Smarter is about. It's giving us these fundamental principles that every human being should have the right to know, the things that are regulating what's happening with their bodies as they're consuming their various foods, and giving the permission to eat foods that are right for them, not based on dogma, not based on right or wrong, and eliminating the fear. There's so much fear around food today as well. So we were addressing all of these things. But again, we're diving in deep today in the guts. Alright. We're diving in deep into the microbiome. So we're just highlighting a couple in that balance of Firmicutes and Bacteroidetes, but there's so much more. Now, in addressing this issue, how do we optimize our gut health to optimize our metabolism, the first principle, the most important principle that is often neglected in our healthcare system, in conventional medicine, that brought in $4 trillion, $4 trillion in 2019 in our healthcare system, yet everything got worse, every single disease got worse; heart disease, cancer, obesity, diabetes, Alzheimer's, arthritis, autoimmune issues, everything keeps getting worse, more money is getting poured into it because they're not abiding by principle number one: Remove the cause of the disease, remove the cause of the problem.

I don't want to start this episode in how to optimize our gut health by telling you what to, "Here, take this thing, add this thing in, have this food, have this nutrient." It's not going to matter if we don't remove the thing that's hurting the microbiome in the first place. Alright. That's like taking one step forward and two steps back. We have to remove the cause first. So what is contributing to the degradation of our microbiome? This issue, this dysfunction with our

microbiome is driving the obesity epidemic below the surface. It's the main driver of what's happening. So why? Why is this taking place right now, and what can we do to fix it? This today is very important, and I believe that this will spark, and the awareness around eating smarter is going to help to shift this for our culture, because enough is enough.

One of the things that's dramatically damaging the health of our microbiome are pesticides, fungicides, herbicides, rodenticides, and we have the proof now. For instance, a recent study published in the journal, Chemosphere, uncovered that the intake of one of our most widely used pesticides called Chlorpyrifos can promote obesity and insulin resistance through influencing our gut and gut microbiota, and this should be front page news, but nobody's talking about this. What's actually contributing to our obesity epidemic, what we're exposed to coming through our food supply every single day, but there are so many far-reaching detrimental things happening with the use of these chemicals. Chlorpyrifos was invented as an alternative to the pesticide DDT, which itself was a substitute for toxic lead called arsenate, used with growing food, and has become a part of a pattern known as "regrettable substitution". It's what we do, as like from the line from the Suicide Squad, Harley Quinn.

We're bad guys. It's what we do.

She's like breaking in, stealing some jewelry on a whim. They're bad guys. It's what they do. They're not going to substitute with something that is life-affirming. They keep trying to drug their way out of solving our problems, better living through chemistry, and we continue to be hurt, and hurting our citizens and what's happening behind the scenes... Listen, we'll dive even deeper. Chlorpyrifos works by attacking insects' nervous systems and has been repeatedly shown to create side effects in people working on farms. According to researchers at Columbia University, one of the most devastating issues seen in pregnant women exposed to Chlorpyrifos finding that it led to significant impairment in the development of their children's brains. Pregnant women working on farms using this chemical had a skyrocketing rate of miscarriage as well. It's not okay. We need to stop this. Now, how does this affect all of us?

This isn't just about pregnant women. Clearly it's going to be hurting us in other ways. Well, the human gut itself, these... Again, the researchers noted that this particular pesticide is designed to attack the nervous system of insects. The microbes and cells that make you up are even smaller than insects. The human

gut itself is a mass of neural tissue. So again, the pesticide is targeting the nervous system. Our gut itself is made of a mass of neural tissue filled with 30 types of neurotransmitters, just like the brain. Because of the massive amount of brain-like tissue found in the gut, it has rightfully earned the title of being the second brain. The human gut is referred to as the second brain, technically known as the enteric nervous system. And this second brain that we all have in our bellies consists of around 100 million neurons, more than either the spinal cord or even the peripheral nervous system. And these pesticides are designed to target and destroy the nervous system. Clearly, it's been banned by now, right?

Nope. There's been massive litigation going back and forth. It was on track to getting banned, but lobbyists, these chemical companies, they're not trying to have a hit to their pocket book, they got a good thing going. They finessed their way into getting it pulled back from being banned. Now it's supposed to be banned again, but now it's just caught up in the red tape, it's that red tape, and our citizens are suffering. Now, you might think, "Well, this is just one." We get this banned, but it's the same thing, and the way that we're growing our food. It's not just this one. There are more than 34,000 pesticides derived from over 600 synthetic chemicals that are registered by the EPA for use here in America.

EPA, Environmental Protection Agency, huh? We're bad guys. It's what we do. They're not trying to help you. These systems are corrupt. They're not looking... How would they allow 34,000 pesticides? The data exists. In addition, there's 85,000 more chemicals that are regulated separately under the Toxic Substance Control Act 85,000. And what is this doing directly to our microbes? What are these pesticides doing directly to our microbes? Most citizens are easily consuming hundreds of synthetic chemicals every year that are wreaking havoc on their nervous system, their endocrine system, and damaging their microbiome. Our bacteria can literally store memories, respond to and create electrical signals and communicate with each other.

That sounds pretty close to a nervous system to me. A study published in the journal, Scientific Reports, revealed that pesticides create a pro-inflammatory state in the gut and disrupt microbial gene expression. This isn't an inert thing. This here, we have to remove the cause so that we can heal. The human body has an innate intelligence. It will start to heal if we remove the cause. We can't just start throwing drugs at it, that's what conventional medicine does and it sucks at it, if you look at the rate of everything it's gotten worse, because

they're treating a symptom instead of removing the cause. Let's treat the symptom of high blood pressure with Lisinopril instead of removing the cause of the blood pressure, which the Journal of the American Medical Association affirmed the leading cause of hypertension is poor diet. But again, there's no money to be made in a system that operates on the farming of sick people. And the systems that are in place to protect you? Come on now. They're bad guys, it's what they do.

Listen. Our bodies start healing the moment we remove the intrusion, alright, but we have to remove the thing, or at least significantly remove it. I liken it to, you got a knife stuck in your back, if I pull the knife out halfway, the knife is still in there, the inflection point, the damage is still happening, the body cannot heal until the knife is removed. If we can remove these things from our food system, man, we can see some great healing take place. But right now on a grassroots level, we need to proactively do this more so for ourselves and for our families, for our communities, helping to create access for other people who might not be aware that this is causing damage to their health, giving access. But it starts with us. It starts with us. Now, what else is creating so much disruption to the health of our microbiome, and thus our metabolism? Well, again, going back to the germ theory of disease and our war against microbes, our war against bacteria, the haphazard use of antibiotics for decades now has created so much damage to the health of our microbiome for the average person.

At this point again, we have to be... Because it's just going in and making species of bacteria extinct, it's just going and dropping a little nuke off and just killing everything in sight. It doesn't care what jersey the bacteria has on, oftentimes it's taking them out. Alright. So at this point, to help to invite the wolves back, alright, help to invite the different species back in that can help to regulate and change the ecology, change the environment, we have to be more judicious and cautious about our use of antibiotics. It should be targeted. It's not that antibiotics can't be helpful. Everything can be... It's not that Lisinopril can't be helpful. Everything has its place. Everything has some form of value, even in some kind of a weird planetary circumstance, but at the same time, we don't want to just jump to that. So for antibiotics to be very targeted towards a specific strain of bacteria that might have an overgrowth to help to get things back in check, maybe there's a natural food-based form of antibiotic that can be helpful before we jump to the synthetic version. There's so many different degrees of this, but we need to be more cautious and not just jump to taking

antibiotics if it's not absolutely necessary, because it has definitely, over the years, been damaging our microbiome.

Another big issue, and this is from a study that was published in Scientific Reports, noted that the disruption of our microbes from common food-borne chemicals from processed foods has been contributing to the epidemic of dysfunctional microbiome health. Processed foods. What are we feeding the microbes? Health-giving, supportive probiotics and friendly flora, to stay in balance and stay in control in your system, they need their preferred food source, and also the more opportunistic pathogens that tend to love processed foods, you've got to be weary and be careful about feeding them too much as well. This doesn't mean you can't have a doughnut, this doesn't mean you can't have different things here or there that isn't coming from a close interaction with nature, but we just need to make that the exception and not the rule. Because for me, I know that I grew up probably 85% of the food that I ate was highly processed food, and I'm not stretching that. I regularly start my day with a few bowls of cereal, alright? When we have money, I got the Fruity Pebbles, alright. Shout out to the Flintstones.

Fruity Pebbles, the array of flavor explosion, astronomical. But when we didn't have money, which was most of the time, we had the off-brand stuff. Alright. So I didn't get Fruit loops. We had Fruit Rings. Alright. I didn't have Cap'n Crunch, we had King Vitaman. Alright. I didn't have Rice Krispies, we had Crispy Rice. True story. So I start my day with cereal, and then for lunch, oftentimes, I'm just thinking about my typical school day, I have a personal pizza and I get a pretzel with cheese, and I dip the pizza into the cheese also, 'cause I was getting freaky. Alright. I was being freaky with my lunch. And maybe I get a juice to go along with that. And for dinner, a lot of times we'd have fast food, a great percentage of the time. And if my mom happened to cook something, we got fried pork chops, fried chicken, french fries, maybe we sneak some canned green beans in there, that's my 15%, and this is how we subsisted, we subsisted on highly processed food. So when I say that the majority of people in our country, that diet is not that abnormal here in the United States. 84 million Americans every day get fast food, every day.

We have to have a change in all of these systems involved. And it's not that we need to shut all the fast food restaurants down. What if we create systems and structure? Because they're concerned about shareholder value. That's what they care about. They care about that money. What if we start to dip into their

profits by funneling our food dollars into fast food places that are doing things and removing synthetic chemicals from their food?

Maybe they're giving you a burger, but they're eliminating all of the pesticides that come along with their growing of the vegetables that they have in the bun and all that stuff, and maybe they're doing grass-fed versus the conventional factory farm, maybe they're making steps that eliminate so much of the proven... Things that are proven to be destructive in the form of these processed foods. What would they do then? They're going to change their ingredients, they're going to pull things out. We can demand it, we could fight. Vani Hari, the Food Babe, she just text me right before this episode, she just had... She just gave birth to her son last night, a little baby boy, Finley is in the world. Welcome to the world Finley. But Vani Hari, she is one individual, and she created the Food Babe Army, she's garnered hundreds of thousands of sign... Signatures on various petitions to get companies like Kraft Foods to take things that are proven to cause biological damage to our citizens, specifically for... they're damaging our children, many of these ingredients are banned in other countries, but they're still in use here.

She's got McDonald's, Subway, Kraft Foods, the list goes on and on to pull those things out of their foods. There's still so much more to go, but is literally is just chipping away at it. What if we do it from multiple directions, where we encourage these companies to do the right thing because they can make more money doing it. Unfortunately, that's the way that a lot of these things need to take place, and so even in Eat Smarter we dive into this conversation, and so we can have a conversation about how do we best address this from change from the top down, environmental social change, and also from the bottom up, an individual change, an individual empowerment and choice. Because both of those things matter. But to dive back into this and processed foods, what's the main thing we're getting? We're getting that, that sugar, sugar. Alright, ah sugar, sugar pum, pum, pum, pum, pum, pum, a study published in proceedings of the National Academy of Sciences demonstrated that sugars "Silence genes" that regulate the proliferation of beneficial bacteria, and those sound good.

Specifically, sugar appears to negatively impact the colonization of Bacteroidetes, populations that are crucial in regulating our metabolism. It all works together. Other studies like was published in Advances in Nutrition uncovered that there's even more issues with sugar in our microbiome, noting that there's a clear pro-inflammatory impact sugar creates in our gut, and we

talked earlier about the gut-brain connection, right, the vagus nerve and inflammation damaging that connection. And understanding that your microbes are determining whether or not you're going to assimilate calories from your food and creating abnormal activity, inflammation, damaging this connection, we've seen the out-picturing what it's done to our citizens. So what do we do here? Again, remove the cause. So we talked earlier about removing one of the big issues with pesticides and herbicides, the best that we can, the best that we can, and demanding change, cultural change for it, being more conscientious about antibiotic use, here let's move our families away from the fake foods, just as best as we can, we don't have to be perfect, but just making a shift. Even a 5% change is going to help, 10% change is going to help.

We don't have to rip the band-aid off and just go 100% whole food, real food, we can still get some various pre-packaged products, that's all good, but we can increase the ingredient... The quality of those ingredients, make them more accessible. The store that we used to shop at when I was a kid, it's called ALDI's. I don't think they have ALDI's everywhere, but ALDI's is kind of like a Safeway or like a Food 4 Less, so this is like all generic stuff in the store, right, "Generic" off-brand. And now ALDI's and many of these other grocery stores in different places all over the country, they have organic products there, they've shifted, they've made it more accessible for folks who normally wouldn't have access. And the thing... The reason that we go there is, that is more affordable, and so we can move our families away, make a shift, alright, so maybe again, we just swap out what we're doing for our breakfast meal to start, instead of the cinnamon roll, oh man, the cinnamon rolls. Oh man, the cinnamon rolls that was my Mama Mia. That was my jam. Honey Buns.

Oh my goodness. So moving away from those things, the Dunkin' donuts, the donut sticks, I'm saying Dunkin' donuts, 'cause you dunk them bad boys into the milk, get a little soft. Donut holes. I remember when donut holes, they start popping, right, donut holes, maybe we move... A little shift away from the crazy cereals that are in our culture, right? Everything from Count Chocula to organic Honey Nut oats, still processed foods. And we make a shift and sometimes we have a green smoothie or sometimes we have an omelette or sometimes we have...

Whatever the case might be, but something that actually comes from nature, just making that shift. It doesn't have to be lunch, it doesn't have to be dinner, but just making a shift is going to help to solve this issue. So I wanted to target

this first and talk about removing the cause of the disruption to our microbiome. There are other issues even outside the realm of our diet, but diet is definitely a top-tier impact. It's probably the number one impact on the health of our microbiome that's controlling our metabolism.

So now we're going to dive in, we're going to look at what are some solutions, what are some of the things that we can do, what are some of the things we can add in to help to revolutionize the health of our microbiome to re-energize this inner ecology, this rain forest, to bring life back to it? And one of the things, just right off the bat, we're going to talk about various food sources, but I want to give you something that, for myself, and I just... I literally had this last night, most evenings, this is what I have, this what I drink, and I had no idea of the benefits that I'm about to share with you. This is new, I just saw this study, but this is the thing about real food. This is the thing about things that our ancestors have been using for centuries for health, is that they don't just impact one thing and make one thing better, they tend to have this whole body benefit. So a study published in Patents on Inflammation and Drug Discovery revealed that the renowned medicinal mushroom reishi has potent anti-inflammatory and anti-allergic action plus... So already helping to reduce inflammation, reduce inflammation in our gut, plus it's also, in this study, noted to possess significant immune-modulating and immune-potentiating capabilities. It's an immunomodulator, meaning it helps your immune system to up-level, to improve its action or to bring it down if it's overactive. It has an intelligence. It interacts with the intelligence of our bodies. Alright.

And I, just about every night, because of the benefits, clinically proven benefits that reishi has on improving your overall sleep time, improving your sleep efficiency and improving your time spent in deep anabolic sleep as well. So I get my reishi, because it's dual extracted, it's a hot water and alcohol extract, meaning you're actually getting all of the nutrients that do all this cool stuff from the mushroom, from Four Sigmatic. And if you're not using Four Sigmatic yet, seriously, take advantage of it. It's so awesome. It's foursigmatic.com/model. That's F-O-U-R-S-I-G-M-A-T-I-C dot com/model. You also get a special discount there. Use the code model. Alright. So reishi's one of my favorite things. By the way, nobody said it's delicious. Nobody said that, okay?

Chaga, lion's mane, various incredible medicinal mushrooms and all the benefits that they carry. Sometimes you got to coordinate. You got to make them taste

good for you. Some folks like reishi just in and of itself. And for me, I like to have a little bit of fat. So I have it with a little bit of emulsified MCT oil, a couple of drops, and maybe some flavored stevia, maybe some chocolate stevia, just to make it more palatable and enjoyable. But these are things, again, that have been used for thousands upon thousands of years, documented use, and now today we have our modern scientific method to affirm what our ancestors already knew. So again, we're talking about reducing inflammation, reducing systemic inflammation, inflammation in the gut. Reishi is incredibly helpful in that and plus, it has the benefit of supporting your immune system at a time when our immune health is of the utmost importance in conversation.

Now, leaning in even more into how do we optimize our microbiome and optimize our metabolism, this is one of the most important takeaways from today. As your diversity of microbes goes down, your rate of obesity and insulin resistance goes up. These have an inverse relationship. Alright. So one of the biggest epidemics we're seeing is this decrease, this radical decrease in diversity in microbes, and here's what the impact has on the other side when we improve this. A recent study published in the International Journal of Obesity revealed that a higher diversity of gut bacteria is directly correlated with less weight gain and improved energy metabolism independent of calorie intake. Independent of calorie intake. Calories are not the boss. It's not Tony Danza. It's not the boss. Calories are not Genghis Khan. It's not the emperor. It's not the Mongolian boss. It's not. Calories are controlled by other things, namely, one of the most important is your gut bacteria.

Now, the number one way to increase your microbiome diversity, which is noted in the data, is to increase the diversity of foods that you're eating. That one simple thing and just think about it. I know, for myself, this definitely hit me, how often, even if I'm "Eating healthy," how I get stuck in a rut of eating the same things over and over and over again. And all of the different bacteria strains that create the diversity, create overall optimal health, they require different prebiotics, food substrates for them to eat, so that they can proliferate. Our "Probiotics" can actually proliferate, colonize and then create postbiotics. So the prebiotics enable the probiotics to create the postbiotics, which again is the vitamins, minerals, short-chain fatty acids in you, for you, that help your metabolism and your health to thrive. Alright. So we have to give them their preferred food source. In Eat Smarter, we go through a plethora of specific foods that can transform the health of your microbiome and to support your metabolism. Take blueberries, for example. Bifidobacteria make SCFAs,

make short-chain fatty acids that protect your gut lining and reduce inflammation. Data published in the Journal of Agriculture and Food Chemistry affirm that eating blueberries increases this bifidobacteria and listen to this, positively modulates the diversity of gut bacteria overall.

Pretty cool. And a study published in the British Journal of Nutrition found that eating some pistachios can also improve your overall ratio of Bifidobacteria as well. Real food can do it, real food. Fake food caused the issue, real food can help fix it. Alright. So those are just a couple of simple, easy things to add in as snacks or throw some blueberries into a smoothie, just add them in with your cooking. There's so many different dynamic ways to get some of these foods in. And these are just a couple. Again, these are coming right out of the pages of Eat Smarter, including this one. A specific SCFA, again, short-chain fatty acid, to support your gut health is propionate. Okay. Propionate has been found to reduce inflammation in the gut, and it can help reduce visceral fat.

So this is belly fat. This is a deep abdominal fat. This SCFA has been proven to help to reduce your ratio of visceral fat. And just to be clear, this is a naturally occurring propionate that's made by your gut flora, and this is not the synthetic propionate that's added to a lot of processed foods that actually increases your risk of visceral adiposity, the growth of visceral fat. So we want to target real food sources that support your microbes in doing this production of this SCFA. Great sources of prebiotic foods that help you to make propionate are garlic, onions, chicory root, jicama, Jerusalem artichoke, and asparagus.

And those are just some of them. Pretty cool. Pretty cool. Now, another prebiotic microbiome supportive food that was really surprising to me, that's in the pages of Eat Smarter, and this one again, this one really trip me out, is cocoa, alright, AKA cacao, but the powdered, de-fatted powder form of chocolate. A randomized, double blind, controlled trial, gold standard of study, published in the American Journal of Clinical Nutrition revealed that polyphenol-rich cocoa has remarkable prebiotic effects in the human body. Study participants consuming a sugar-free cocoa Flavanol drink for four weeks significantly increased their ratio of Bifidobacteria and lactobacilli populations while significantly decreasing their counts of Clostridia, a class of Firmicutes associated with fat gain. These microbial changes were paralleled by significant reductions in plasma triglycerides, which are blood fats, and inflammation, C-reactive protein concentrations, indicating reductions in inflammation. Wow.

Shout out to you, chocolate. Alright, pretty cool. We want to get the best quality we can from the original source of where chocolate comes from, and this is why regularly, again, one of the things that's just on top here in my household is the chocolate, Organifi Gold formula, because it highlights one of these benefits, of course, bringing in this high quality source of cacao, and getting the benefits from the chocolate, but also has this incredible combination of other metabolism supportive foods like turmeric. And turmeric, the active ingredient in there, curcumin has been found to literally support antiangiogenesis of adipose tissue, so blocking the nutrient supply of haphazard growth of your fat cells. That's incredible.

There are very few foods that we know that are able to have that capacity. And also turmeric is well-noted to be one of the most remarkable anti-inflammatory foods ever discovered. So having that in the mix can be helpful as well, so you get those two major components all together in one, in one delicious beverage. So if you want to get yourself some Organifi Gold, go to organifi.com/model, that's O-R-G-A-N-I-F-I dot com/model, and you get 20% off, they're giving you 20% off their Organifi Gold formula and Chocolate Gold formula as well. Alright, these are just cool things to add in, they make it easy. The reason that I talk about these things is that I understand the behavior pattern of most of our citizens, and so we're trying to just upgrade, up level the things that people are already doing. People that are going to drink coffee, they're going to drink it. But what if we can swap that out with a medicinal mushroom-infused organic coffee instead of the pesticide, rodenticide, herbicide-laden frappuccino from Starbucks? What if we could swap them out? What if we can make them equally delicious with outside effects?

This is what we're doing now, we got to up level, just upgrade the things people are already doing. It makes it an easy on-ramp, an easy switch. Alright, so Organifi Gold, go to organifi.com/model, you get 20% off. Another big category here to support the diversity of our microbes is this category of what we call fiber, but there are so many different fiber types. It's a very broad statement. And in Eat Smarter, we go through several categories of fiber types, and some might even surprise you, truly. I think it's going to trip you out a little bit. But this just speaks to the importance of metabolic individuality. Because in truth, there's going to be some fiber types, this broad category of fibers and different fiber types that are going to be beneficial for your microbiome, that won't necessarily be beneficial for someone else, so we cannot try to impress upon our diet framework onto other people as if it's going to work for them too.

The perfect diet for your best friend is not going to be the perfect diet for you, and even your close family members. And even as we shown early, even in identical twins, we can have so much variance in our unique metabolic fingerprint. And so paying attention to our own cues for our own metabolism and understanding the different portions, the different pieces that control our metabolism, that's what Eat Smarter is all about.

But in this vein, I want to share a specific category of dietary fiber that has been garnering a lot of attention in the last few years by researchers and for a pretty good reason. A study published in the American Journal of Clinical Nutrition found that resistant starch, resistant starch, resistant to typical digestion... That feeds microbes, resistant starch has profound effects on improving insulin sensitivity. While another study published in the Journal of Nutrients revealed that the consumption of resistant starch at breakfast and lunch led to significantly reduced appetite at dinner for overweight and obese test subjects. What if they knew this? They're trying to do a shake for breakfast, a shake for lunch and a sensible dinner. Alright. I tried it. My mom tried it. The commercials told me it will work, but what does the data show? What does the evidence actually show?

Resistant starch is one of those interesting things. So what is resistant starch? We think of starch as we might think of things that cause disruption to our blood sugar, but resistant starch is resistant to that accelerated blood sugar dysregulation property, and it's resistant to the abnormal digestion and it's feeding microbes, it's feeding beneficial bacteria. Alright, they seem to really, really enjoy resistant starch. Where do you find it? I'm going to give you some sources: Unripe bananas. Alright, green bananas are one of the hottest things on the streets for resistant starch. Nobody said it's delicious, okay. I'm not advocating to eat unripe bananas, alright. But as the banana gets more ripe, it goes from green to brown, the resistant starch content slowly shifts over to sugar content, alright. So it's higher in starch at the beginning, higher in sugar when it's all said and done. Alright. So what do we do? Maybe you can add a little bit of a green banana to a smoothie.

There's green banana flowers, again, another popular thing that folks are buying and adding to baked goods, adding to different things. So there's cool different ways to add it in. I just want to share... Again, this doesn't... There's so many choices here, but this is just one of them. Also, white potatoes. White

potatoes were deemed to be ungodly. Alright. They were deemed to be dirty, those bad potatoes. Alright. When I was in school, everything white wasn't right. Everything brown, got to be down.

Alright, I want to be down. So this is what I was taught in my... I paid for that education. I paid to be told the wrong stuff. Alright. It's not to say that brown rice... But I went hard. I went all the way down the brown pathway. Oh that didn't sound right. I went all the way down into the darkness. Alright. Brown pasta, my first date with my wife, which really wasn't an official date, but when we met in college, I was like, "Yeah, I cook, you know what I'm saying? Come by, I'll make some spaghetti." She didn't know it was going to be brown pasta. She didn't know it was going to be whole wheat spaghetti. She'd never seen or heard of such things.

Alright. So it was earthy, had a earthy flavor, I was kind of used to it, I was lying to myself. But these were steps, I was proactive, I was trying to figure this stuff out. And so we go into this in Eat Smarter, the different situations that occur and this debate about brown rice versus white rice, and that conversation is so important and so wonderful, there's so many different dynamics to it, and the truth is, they both can be valuable, but it depends on how they're used and how they're prepared. Alright. Same thing with pasta, same thing with bread, we have to put everything... There's nuance to it all. It's not this cut and dry, black or white thing. And so white potatoes, but the resistant starch content occurs when the potatoes are cooled down, all the way down. If you cook 'em, then refrigerate them. Same thing with white rice, the resistant starch content skyrockets when the rice is cooked and then cooled, and then reheat it, it goes up even higher. Alright. For centuries, countries all over the world, my wife is from Kenya, they didn't eat brown rice, India, no brown rice.

All the different countries all over Asia, you're not going to see a lot of folks eating brown rice. Of course, there are different types, there's wild rices, there are different strains, but a lot of the time, many cultures for centuries were using white rice, and the question is why? Why would they get rid of where the "fiber" is? And all the different minerals are in the brand, it's in the husk, it's in the coding. Why get rid of it? Well, long ago, our ancestors figured out that there's a potential gut irritant here in this rice, and by removing it for everybody, just getting it out of the way, it's not like you're getting a stellar health food when you get white rice, okay, but you're getting some micronutrients, you're getting some "calories," you're getting some caloric

benefit, and usually it can be a delivery system for other foods to come along with it. It's not like it's a stellar health food, but we're getting something. And with that, brown rice, wild rice, we can absolutely have these things, but we need to reduce the anti-nutrients, because you could be consuming the brown rice to get certain micronutrients and then consume the very thing that blocks your intestines from absorbing it, so they should be soaked and/or sprouted and/or cooked with a pressure cooker, and before you know it, you've got...

And so many... Again, I would eat brown rice. When I got on to my brown kick, and I feel like puffy, and I feel bloated. But I'm like, I'm eating right, and I just ignored it. My body was giving me an indication that, "Hey, you're not digesting this very well." And so the same thing is happening for so many people still today, and I want to end the confusion, give people little tips and insights so they can have their favorite food that fits within the framework of the diet program that they choose, whether it's every diet framework that exists. Eat Smarter is a unifier. You will not be left out, you will find things that absolutely blow your mind and help you in the diet framework that you choose. Because so many people... I know all the guys that have made these diets...

The big superstar of each diet, and the truth is they have helped people with whatever diet framework they have, that physician or healthcare practitioner, nutritionist has helped patients with that diet framework, but there's a big percentage of people who aren't helped because it's ignoring or are leaving out the understanding of how their unique metabolism works. Alright, so we're going to wrap things up here with two additional points in optimizing your microbiome, and this was another thing that really shocked me, I was by myself in my office when I was writing the book, and this was one of those topics, it was just like, "Oh, my goodness, I can't believe, people don't know this." One of the most surprising things regarding diversity in the microbiome is that your gut bacteria can actually change dramatically based on what time of year it is, based on the season. Stanford University research has discovered that gut microbes in digestion are cyclical and in sync with the seasons and environmental conditions, so another tip here to support microbiome diversity and your metabolism overall is to purposefully eat more seasonal foods.

And this by no means, again, says that you can't have your favorite foods that might not be in season, but what if we proactively add in some things that nature is trying to signal us to eat right now at this time of year, because our microbes are cyclical. As we evolve, our microbes would change and adjust as

the seasons change. So these are those things below the surface that can create health from the inside out. So we talked about prebiotics, now, the prebiotics are the food that the friendly flora need are different bacteria strains need in order for them to proliferate. And we have to understand that the prebiotic foods that we eat are unique to us. If a diet framework has us strip of food away that our ancestors have been eating for centuries that has been feeding a strain of microbes or strains of microbes that have been protecting you against autoimmunity, protecting you against joint issues, protecting you against inflammation, and now this diet takes it away. You might even get results with a different calorie management or whatever the diet framework might hold, but then this is why so often folks see diminishing returns as they do the diet. We have to do what's best for us and our unique metabolism.

The same thing with, we might start adding in foods that don't necessarily jive with our system, this is why we go through such a diverse array of different foods and stuff that we can experiment with, add in and just have some fun. Because the truth is, overall, increasing that diversity of foods that we bring in, oftentimes, especially if they're real whole foods, they're just going to have more and more benefit. And now this gets into the conversation of those probiotic foods, these are super popular right now and probiotic supplements, but the probiotic supplements cannot proliferate and colonize if they don't have the prebiotics. But the probiotic foods are also important here, and this is the next step, and this is what we're going to close with today, is we're going to cover some of the probiotic foods that have clinically proven benefits highlighted in Eat Smarter.

The first one is kimchi. Alright. Kimchi is heavily studied right now for its notable anti-obesity benefits and is gaining massive popularity right now outside of its original home of Korea. And kimchi is a spicy fermented vegetable dish with a base of cabbage, and it can include an assortment of different ingredients like garlic, ginger, radishes, carrots, red pepper, scallions and more. A peer-reviewed study published in the journal, Nutrition Research found that eating kimchi leads to a significant decrease in body fat, hip to waste ratio and fasting blood sugar for study participants versus those who merely ate the un-fermented version of the cabbage dish, that fermentation did something magical, those probiotics did something magical. Again, this is just one food add, and especially if you like spicy stuff, adding the little kimchi, adding the little kimchi. Now, another source of probiotics that also comes packaged with prebiotics being that it has the vegetable fibers that it can be like kimchi's

brother from another mother. Alright. And this one traces back all the way to fourth century BC, it's one of the most common and oldest forms of preserving cabbage, and it's called sauerkraut, it's a rich source of vitamins and minerals like Vitamin C, B-vitamins, vitamin K, iron and also a great source of prebiotic fiber.

And these are all players in a healthy metabolism as we've been discussing. A study published in the journal PLOS ONE found that a prebiotic strain found in sauerkraut lactobacillus can potentially defend against fat gain by modulating genes associated with metabolism and inflammation in the liver and fat tissue. Now, bacteria aren't just assistant managers of our metabolism, they're not just assistant managers, they also influence our genetic expression. And this highlights again how bacteria is able to do that, and we've got great foods that we can find this in. Again, there's a whole list of probiotic foods and also the science behind it. I'm going to share just one more with you here, and I'm going to share this one because this is probably the most popular in our culture, what most folks think about when they think about probiotics and they think about probiotic foods, it's yogurt. Alright. As the Aztecs used to call it. I'm sorry, the Aztecs did not say that. Yogurt, a recent study published in the British Journal of Nutrition found that yogurt consumption was able to reduce biomarkers of chronic inflammation and endotoxin exposure in many of the test subjects. Yogurt does that thing. But we're not talking about the Frutti Tutti version, we're not talking about the Go-GURT, we're not talking about the yogurt that has all of the crazy added sweeteners and artificial colors, and just yogurt... Just yogurt.

Please, please don't make a fuss, I'm just plain yogurt.

Listen to this one, this one's nuts. Another study conducted by researchers at the University of Connecticut uncovered that yogurt has a strange unexpected superpower. The researchers gave test subjects some pretty crappy, high-calorie/low quality food for breakfast. They wanted to "Stress the test subjects metabolism and see if there would be any influence if they consumed yogurt beforehand." One group was given a serving of yogurt just prior to their meal, while another group was given a serving of non-dairy pudding, pudding, the test subjects were then instructed to eat a total of 900 calories of breakfast food, you'd find at a typical fast food restaurant, two sausage biscuits and two hash browns. This sounds like... This sounds very familiar to me. They had the test subjects to fast for several hours beforehand, so they were hungry enough to

eat it all, and then they set out to monitor their biomarkers over the next several hours. Here's what they found. The test subjects who had yogurt prior to their meal had significant reductions in certain endotoxin markers and endotoxins are toxic substances bound to your bacterial cell walls.

The researchers also noted that in obese participants post-meal glucose levels drop back to baseline faster when folks had yogurt beforehand. This indicates that fermented food can improve glucose metabolism in some people. Again, eating yogurt, that doesn't give you a permission slip to knock down the Eggnog muffins and the Brown Browns, those Hashes. Okay, I'm not saying, but wow, what an impact having yogurt had, getting their blood sugar back to normal faster. Those probiotics bacteria are doing remarkable things for our metabolism, there's obviously many different types of yogurt out there, there's whole milk yogurt, there's low fat, there's Greek yogurt there's this, there's that. Obviously, if you can lean on what most folks evolved having, which is grass-fed versions, there's also goat milk versions, the list goes on and on, but then there are also now many plant-based versions, they don't have a lot of clinical evidence at this point, but studies are being done all the time.

And studies are continued to be done and encouraged when we change our buying behavior and we demand it. Alright, so hope that you enjoyed this episode. We went through a wide range of things for us to target in this important and powerful microbiome body fat connection, if we can improve the health of our microbiome, we will inherently improve the health of our metabolism and get our citizens healthier. Make sure to pick up your copy of Eat Smarter today at your favorite book store, get it at Amazon, Barnes & Noble, Books-A-Million, Target stores, pick it up today.

This is something also to get for the people that you care about, it's an incredible adventure, in a way that's fun, in a way that makes sense, in a way that's empowering. We are creating a movement right now, and it's up to us to demand and show retailers that we care about our health. And also, of course, applying the things that we learn to transform the health of ourselves, our families and our communities. I appreciate you so much for tuning into the show today, make sure to share this out with the people you care about on social media, you can tag me on @shawnmodel, and we've got some power house shows coming your way very soon. So make sure to stay tuned. Take care. Have an amazing day. I'll talk with you soon.

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