THE MODEL HEALTH SHOW

EPISODE 670

Eat These Foods to Support Fat Loss

With Guest Dr. William Li

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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. This episode is all about eating to improve our metabolic health, how nutrition impacts our metabolism, foods that support fat loss, and so much more. I think you're going to be absolutely blown away. Now, we have one of the leading experts in the understanding of nutritional science, immune function and metabolic health for us on this episode. And again, I think you're going to be absolutely blown away, but make sure to stay tuned until after the interview is over because I'm going to be sharing some new research on how our immune system is deeply influencing our metabolism. And this is an important conversation today because obviously immune function, immune health, is of the utmost importance in the public domain, but also our metabolic health is suffering mightily.

So how do these two things marry together? And most importantly, what can we do to improve all of the above? That's what we're digging into today. And to just give you a little heads up on one of those powerhouse sources of nutrition that we're going to talk more in depth about in the episode, but I wanted to just give a highlight because this is something that I utilize on a regular basis, a study published in the European Journal of Nutrition uncovered that compounds in turmeric can down-regulate inflammatory cytokines. Inflammation is a huge contributor to excess body weight, by the way, and we're going to talk a little bit about that today, they also found that the compounds found in turmeric were able to upregulate the activity of adiponectin. Again, we're going to talk about this in this episode, adiponectin, and other satiety related hormones. This combination, this equation with our satiety and hunger hormones obviously has a huge influence on our body weight and our metabolic health.

And so, compounds in turmeric are now clinically proven to not only reduce inflammation in the inflammatory aspect of what's happening with our fat cells as they're expanding, but also helping to upregulate the activity of adiponectin, a satiety hormone, and other satiety hormones. Additionally, turmeric has been found clinically to improve insulin sensitivity, reduce blood fats, and directly act upon our fat cells. Plus, research published in the Journal of Ethnopharmacology points to turmeric's potential in reducing the severity of brain inflammation and helping to reduce both anxiety and depression, so even affecting our mood. This is so special; it's been utilized for thousands of years. Today, more important than ever is making sure that if we're utilizing something like turmeric, getting it from a great source. The turmeric complex that I utilize, because turmeric isn't just stand alone in its performance, historically it's always utilizing bio-potentiators and other compounds from other foods together.

That's what the concept of a curry, for example, is going to be but in particular there are compounds in black pepper that have been shown to improve the assimilation and utilization of turmeric and curcumin and other compounds in turmeric to help to actually get these processes that we're talking about, these benefits we're talking about, to get more from the turmeric itself. And so, this turmeric complex is designed in a way to actually help us to up level our ability to utilize turmeric to its fullest capacity. I'm talking about the turmeric complex from Paleovalley. Go to Paleovalley.com/model, and you'll get 15% off their incredible turmeric complex and all of their other top tier human health and performance supplements. They're doing things the right way. Their turmeric complex is all organic and there's no binders, no fillers, nothing nefarious, just done the right way, high quality, and it's one of the things I utilize again on a regular basis. So, you get 15% off when you go to Paleovalley.com/model, that's P-A-L-E-O-V-A-L-L-E-Y.com/model for 15% off. Head over there, check them out, take advantage of this fat loss supportive nutrient source. Paleovalley.com/model. And now let's get to the Apple Podcast review of the week.

ITUNES REVIEW: Another five-star review titled "Big Heart Meets Big Facts" by Kenzie Thiel. "Not only does Shawn bring the highest levels of integrity and intelligence, but he has a beautiful heart. His way of bringing truth to light to empower and uplift is quite frankly unlike any other person I've encountered. Yes, I've learned tremendously eye-opening information around health from Shawn, but more than that, he has helped shape the person I've become and how I show up in the world. His unwavering dedication to truth, compassion and impact is literally changing our world one listener at a time. Like so many of us, he comes from a background of odds stacked against him. He teaches us there is a better way available. Forever grateful I found this podcast all those years ago. Thank you for what you're doing in this world."

SHAWN STEVENSON: Wow, I am filled with emotion right now, that is so profound. Thank you so much for seeing me, and thank you so much for acknowledging my heart, and I appreciate you so much for being a part of this mission. And again, thank you for leaving this review over on Apple Podcast. If you get to do so, please pop over to Apple Podcast and leave a review for the Model Health Show. And without further ado, let's get to our special guest and topic of the day. Dr. William Li is a physician, scientist, New York Times best-selling author, and the president, and medical director of the Angiogenesis Foundation. His groundbreaking research has led to the development of more than 30 new medical treatments that impact care for more than 70 diseases, including diabetes, blindness, heart disease and obesity. He's appeared on countless major media outlets including Good Morning America, CNBC, Rachel Ray, LIVE with Kelly and Ryan. He's also been featured in USA Today, Time Magazine, The Atlantic, O Magazine, and so much more. And now he's back here on The Model Health Show to talk about metabolic health and fat loss. Let's dive into this conversation with the amazing Dr. William Li. Such an honor. This is our third time doing a show together, many offline conversations as well, and I got you here, Dr. William Li, so good to see you.

DR. WILLIAM LI: Thanks very much. Great to be here and that we're together.

SHAWN STEVENSON: Yes. So, I'm just so blown away by your new book. And it's a topic that's obviously a big part of our kind of social lexicon diet, and you really deconstruct even our diet paradigm today. And I'm not saying this is an anti-diet book, but by saying eat to beat your diet is quite a big statement.

DR. WILLIAM LI: I'll tell you it is an anti-diet book. I wrote it because I really don't abide by diets myself, I don't like them. I think that they're fads, trends, unsustainable things, and so that's actually what I deliberately wrote this about is like, what is everything we need to know that would allow us not to have to go on a diet?

SHAWN STEVENSON: This is what I love about you. You're going to do the thing; you're actually calling it out and talking about the thing. And in a moment, we're going to go through some of the top foods that actually support fat loss by cutting off the nutrient supply to fat cells. But first, let's start off by talking about how fat cells actually grow.

DR. WILLIAM LI: Right. Well, look, fat is an actual term that elicits some pretty negative responses. If you think about it, when you hear the word fat, in your mind it automatically turns into something that's not so positive. Even if you walk in a grocery store and you walk by the butcher cabinet and you see the fat on the rind around the steak, it's kind of like, oh, it's kind of gross, right? And the other experience we all have associated with fat, and this is I think common to everyone, all of us take a shower in the morning, step out naked and out of the corner of our eye we see in a mirror a little lump or a bump that wasn't there before, or we don't think belongs there, and you automatically think, "Man, I got to do something about that, I got to eat better, I got to work out," or whatever it is, and you step on the scale and that number doesn't deliver what you expect, it's a disappointment. So, all around, this whole idea of fat, body fat is kind of in our society become quite a negative thing, but I'm actually here to tell you that there's a completely different way, a more I think liberating way, more powerful way to look at fat and has to do with biology because I'm a scientist.

What scientists do is we are interested in looking at the origins of things, so where does fat come from? Fat doesn't just automatically come up when we were adult and we want to actually lose some weight, turns out what's amazing is that fat forms when we're in the womb. So, when your mom's egg met your dad's sperm, ball of cells emerge, first tissue that got laid down were blood vessels, 'cause every future organ needs a circulation. Second, nerves started forming, because every organ needs a channel to receive signals on what the organ should do. The third tissue is little bubbles of fat, they're called adipocytes, little fat cells, and they form like bubble wrap around every blood vessel. Now, the reason is fat cells are not actually bad,

they're good, they're actually fuel tanks, just like the tank of your car. And they wrap themselves around blood vessels because when you eat food and you get energy, the energy comes through the blood, and it gets stored into the fuel tank. So, it makes a lot of sense.

Now, that means that we had body fat before we had a face we could stuff with food, very important to think about, mind-blowing to think about really. Now, when you're born, think about it, a cute baby, how do you know if there's a cute healthy baby? It's pudgy, it's chubby, it's fat, round, big, chubby cheeks, round tummy, arms, and legs are like balloons, like that circus balloon, twisted into a poodle, right? So fat babies are considered healthy babies. So fat is actually good at the moment we're born, and in fact, if you saw a baby that had chisel cheekbones, thin arms, long thin thighs like a fashion model, you'd go like, "There's something seriously wrong with this baby," and you'd be right. And that's the key thing. Fat is important in our origins; it starts before we were born. And so, the real new science about fat and the new science about your metabolism tracks back into this origin. So, the question is, what does fat do? Why do we even have it? And why is it important?

SHAWN STEVENSON: Yeah. Oh man, it's so fascinating. I love this because we have to reframe something that has been so vilified in our culture and in some aspects rightfully so, but if we don't, oftentimes we're fighting against something we don't understand and also trying to hate our way into fitness. And so, creating a new relationship and value and understanding with fat has been a big mission of mine as well. And I know again, having someone like you as an ally in this because it really starts with education, and now we get into a place, so we know the beginning, the origins of fat and why it's so valuable, it's helped us to evolve as a species and not need to have a funnel of food going in all the time because fat is there to do its job. Now, let's talk about what happens when we become "over fat" or fat cells begin to grow abnormally, how does that process work? How are fat cells growing in the first place, is this have something to do with that first thing that develops, blood vessels?

DR. WILLIAM LI: Yeah. Let me put a little story together first to talk about how good fat, how helps us. And that's really the best way to start, I think this conversation is, what is fat doing? Why do we need it? Why does it form so early? And actually, has completely to do with our metabolism, which is what my new book is really about, it's not a diet book, it's really a metabolism book, and it's really the new science of the metabolism. So, to break it down and to understand why excess fat is so damaging to our health and compromises our fitness, let's reel it back just a little bit to say, first of all, what does a normal fat do? Normal fat, first I mentioned to you, is a fuel tank. It literally is a canister, a jerry can, to be able to store fuel that we eat. Just like if you had a car and you're driving around, you need your engine to run smoothly on gasoline, what do you do? You look at the fuel gauge, when your fuel gauge runs low, runs towards empty, you pull over to the filling station, pull out the nozzle, plug it into the

car and press the handle and you actually fill up the tank, when the tank is filled, there's a click, that's it, you put it back and you drive off with a full tank.

So, our body is kind of like a car engine. That's how our metabolism works, how it actually gets the energy. And so, the engine of our body needs fuel the same way as a car. Now, when our fuel gauge, which we sense in our brain runs low, what do we do? We don't go to the filling station, we pull over to the dinner table, to the restaurant, to the refrigerator, to the pantry, that's how we actually pull over and we load up on fuel. Our fuel is food. That's our energy. Some people call it calories. I don't want people to get distracted on the whole topic of calories because it has become such a fixation, but we just call it calories, but let's call it fuel. And so, what happens is that when we eat, the fuel goes into our body, and our body produces a hormone called insulin. Insulin is a hormone that basically says, "Oh, you got some fuel, you're eating? Let's pull that energy into our function so we have enough fuel," just like you would when you're filling up a car, and then anything extra that you don't need at that moment to keep running your body, your engine, it gets stored away. And it's smart that we're storing in a way, because when we're not eating, we need to draw down from it, it's our storage. Where does it store it? It stores it in body fat.

So, what does it do? It takes those food that we eat, goes into our stomach, absorbed in our blood stream, that energy, the fuel actually is stored with insulin's help into little fat cells. Those little fat cells with a bubble wrap that form when we're in our mom's womb, and it just stores up. Just load it up, okay? It's our fuel tanks. Now, when we actually are not eating, when our insulin goes down, our body normally can draw down from that extra fuel and it reaches for the fuel tanks, it just empties it out. Normal fat cells are not big, they're tiny, and when you load them up, they get a little bit bigger. It's like a water balloon that you fill up halfway, and then you stop, you could draw it out from that water, but what happens when you overeat? It's like going to the filling station and imagine if you're pumping gas and that clicker didn't stop the gas from flowing when your tank is full, imagine what would happen. Gas keeps on pumping up, gas tank fills up, but now it continues to overflow, gas comes out of the side, runs out the side, around the tires, around your shoes, and now you're standing in this dangerous flammable mess.

Now, in our bodies, when we're fueling up, we don't have a clicker to stop us from eating, so we can keep on eating. And we can overload and over fill our tanks. In our body it doesn't run down around our shoes, what happens, our body has to pack it away in fat. So those little fat cells get bigger and bigger and bigger, they get stretched to their max. And if you keep on eating and you still got more fuel, guess what, the body's got to make more fuel tanks. Now you take stem cells, and you make another fuel tank, little fat cell and that gets filled up and you still got more fat, got to make another one. Keep on cloning it. And that's why overeating, overloading our bodies with fuel, that habit that too many people practice, it's kind of a

hallmark of modern society and lots of other complexities. It's a psychological component, there's all kinds of marketing forces that can actually make us do this, overloads our body and so then the fat actually gets bigger and bigger and bigger.

Now, what's the connection to blood vessels? Well, fat is an actual organ in the body, and it means it needs a blood supply, and I'll tell you why it's an organ in a second, but it needs a blood supply. And so when fat starts to clone itself because you need more fuel tanks, 'cause you got too much fuel, and it keeps on getting bigger and bigger, and it starts to fill up more and more, the faster it grows the more blood supply it needs, but if it can't grow its own blood supply quickly enough, what happens is that in this giant expanding mass, the center of that mass is starved of oxygen, it starts to die. It's called hypoxia, not enough oxygen. And when that happens, the fat becomes inflamed, inflammatory cells infiltrate that fat. And we see this even in cancers that are trying to expand, they can't grow enough of a blood supply starts to die in the middle.

Once you have inflammation and hypoxia inside a massive fat, you completely derail your metabolism and you derail many other hormonal systems as well, and it sets you up for harm. So answered your question, what happens? And why does it happen? And what's the connection to blood vessels? That's a simple way to think about the fact that when we eat, we're loading up our fuel, we overeat, we have to keep on loading it up and it's going to create more fat. When that fat grows too big, it's going to start to die in the middle of the mass, can't grow enough blood supply, it starts to go bad, hypoxic, and that starts the trigger to all kinds of problems downstream.

SHAWN STEVENSON: This is fascinating. Again, this is something we see experientially on the surface, but to understand what's happening with our fat cell, number one, they're getting filled up with content, and so they're expanding their volume. And our fat cells can actually expand their volume hundreds of times their size, but at a point, they're going to start to replicate as well, so that's talking about the stem cells, which we'll get more into in this episode for sure. And so now we're making copies, but all of these blood vessels, so we've got the filling up of content, but with the blood vessels, they also need to create more blood vessels, angiogenesis.

DR. WILLIAM LI: That's right.

SHAWN STEVENSON: So, they can get a fuel supply, an oxygen supply, nutrient supply, so that they can keep growing in the first place.

DR. WILLIAM LI: Exactly.

SHAWN STEVENSON: Now, the question is, with this process happening, with them just pulling in more and more fuel and growing in size, are there foods that can actually restrict these fat cells from growing/cut off their nutrient supply, so they won't continue to get as big?

DR. WILLIAM LI: Yeah. Before we talk about food, let me just say that actually our body has its own kind of like regulatory switch. So, here's the thing, we talked about insulin that rises in the body as a response to eating. Basically, food is coming in, energy is coming in, your body senses it, it makes this hormone. And insulin actually helps draw that energy into regular cells as well as store it into fat. Now, here's something really important about normal healthy fat. Now, I'm going to talk a little bit more about normal healthy because understanding the normal allows us to understand the abnormal. We've just jumped to kind of like the demon, then you miss the good guy part of it. It's not black and white, there's a transition where fat is good until there's too much of it and then it actually becomes harmful. What we want to do is respect our fat and tame it, not vilify it, and not try to cut it out, suck it out, and poison it. So normal fat, I mentioned, is an organ. That organ is an endocrine organ. It's actually like a thyroid, like a pancreas, like an adrenal gland. This is quite amazing to think about fat as an actual organ. And it releases about 13 different hormones. Hormones are just proteins that are made, released by an organ, go into the bloodstream, and they go elsewhere in the body to help to control different kinds of functions.

So, one of the things that fat does as an organ, it releases leptin. Leptin is sort of an appetite regulator. It turns up and turns down your appetite depending on the volume, so it controls your behavior. And the reason I'm mentioning this is that you know what? When the leptin is high and it turns down your appetite, you don't want to eat so much. Guess what? Less fuel. Less need to keep storing that stuff in, number one. Number two, it produces a super powerful hormone called adiponectin. Now, many people may not know this term, adiponectin, but if I were to draw your blood, Shawn, take it to a lab, ordinary hospital lab, and measure all the hormones in your body, your adiponectin levels, and mine by the way, would be 1,000 times higher than any other hormone in your body. Higher than your thyroid, higher than your testosterone, higher than any other organ. And the reason is, adiponectin is what allows insulin to pull that energy in to your cells. It's another hormone made by fat, by good, healthy fat. We need that fat to get our energy, our basic energy. Now, there's one more hormone I want to talk about. It's called resistin, made by fat. And resistin basically is the brake to the gas pedal of adiponectin.

So, if adiponectin at 1,000 times higher than any other hormone in your body helps insulin pull fuel into your body, into your cells, resistin is the brake to basically say, "Oh, whoa, let's slow down a little bit." Normal balance, right? So, the life is all about balance. Adiponectin, resistin, leptin, these are just three of the hormones in normal, healthy fat. Here's the thing. When you've got too much fuel that needs to be packed up, and those fat cells get hundreds of times

bigger, and then they replicate, and stem cells make more and more fat, and they get bigger, and they get hypoxic in the middle, and they start dying because they can't get enough blood supply, what happens is that inflammation actually derails your normal fat's ability to produce these hormones. Leptin gets screwed up. Now, you don't know if you're hungry or not. You can keep on eating. It's worse, okay? Now you can keep on loading more fuel. Your adiponectin gets screwed up, so now even though you're eating, and you've got all this energy, now your body can't pull it into the cells. It doesn't even store it very well, and then the resistin goes haywire, so basically it doesn't know that you should slow it down or speed it up.

So basically, it's kind of like, as excess fat grows, it's basically like creating chaos in air traffic control. Nobody knows where to land the planes, and so this causes even more chaos. So, the important thing is how do we actually tame that excess fat, and so the body can do some of it by itself. Our body is hardwired to know how to tame fat to some extent. Not if it goes too crazy, but secondly, and this is sort of like the surprise, is that there are certain foods that can do it as well. But how your body does it is actually incredibly important, because when we're not eating, fasting, when we're not eating, like when we're sleeping, insulin goes down, and our body basically says, "Oh, when the insulin is down, we can burn fuel. When the insulin is up, we can't burn the fuel. We can't tap into those fat cells, fuel cells." When insulin is down, like when we're sleeping, it goes, "All right, not eating. We need to draw into our fuel cells. Let's pull some energy out," and it starts to actually burn extra fuel by burning extra fat.

So, when we're sleeping, our body's hardwired, as our metabolism is hardwired to start burning down extra fuel, and this is really kind of the basis of thinking about intermittent fasting, timed eating. The longer we give our body's natural metabolism, our hardwiring to burn that fuel, the better it is. Now, it turns out that certain foods, and this is the big surprise that I write about eating to beat your diet, certain foods can amplify that effect, not just when you're sleeping, but even when you're eating. So, it's an override. You can actually use food to override that system. So, even though your body's not supposed to be burning that energy, it goes, "Let's go ahead and burn some energy anyway."

SHAWN STEVENSON: It's fascinating, fascinating. One of the things that I love about your work and your book is that you're reframing food as well, because a lot of times we see food as an enemy, and you're saying food is not the enemy, it's actually the solution. Food is a big contributor to so many of our problems. If we're talking about obesity, we're talking about excess fat gain, and it's also the solution, right? And so, choosing intelligent foods, because that's the thing, these foods, it's not just food, it's information, and there's an intelligence underlying all of this stuff and how it's influencing our metabolism. So, at this point, let's get into, and circling back to my initial question, when talking about the growth of our fat cells and angiogenesis, the creation of those new blood vessels, let's talk about first, in this fat loss

equation, what are some foods that have anti-angiogenesis properties that can help to cut off that nutrient supply to fat cells?

DR. WILLIAM LI: Well, this actually goes all the way back to my research in the late 1980s. I was super interested in finding ways to fight cancer by cutting off the blood supply. So, I worked in a lab, and we were looking at, before pharmaceuticals were developed, biopharmaceuticals were developed for this area, we were looking for natural sources. And we were looking for anything in nature that could give us a clue of how nature might provide a natural chemical that could cut off the blood supply to cancers. Now, we knew actually, even back then, like licorice could do it, stuff in licorice could actually cut off the blood supply to tumors, feeding extra cells that you don't want to be growing.

SHAWN STEVENSON: You're not talking about Twizzlers?

DR. WILLIAM LI: I'm not talking about Twizzlers. I'm actually talking about licorice, and it turns out that there's a natural chemical found in licorice called isoliquiritin. Now, as a researcher, one of the things that we're able to do is to know something's in a natural compound, take it out, and test it in a lab. We tested isoliquiritin on blood vessels that are grown to feed harmful cells like tumor blood vessels, and it actually powerfully stopped those extra blood vessels. But the thing that really brought it home for me, and I've never forgotten this, is a research study that was done by a Greek researcher working in Switzerland. His name was Ted Fotsis, and he looked at the urine of villagers outside of Kyoto, Japan. These villagers were all vegetarians. They ate mostly soy, and he had frozen jars of this urine, and his boss, his supervisor, said, "Go find something interesting to do with the urine, or toss it out." So, he went to look for hormones inside the urine thinking that, he was an endocrinologist, so he was interested in looking at hormones. When he ran the urine underneath this thing called a mass spectrometry, you see these spikes, and he found a spike that didn't belong in the human, and it only came from the soybean.

And it was a spike of genistein, so he cut out that spike, which we can do in the lab, and he tested it on blood vessels that would be feeding cancer. It immediately stopped those blood vessels from growing, and so this was the discovery that genistein found in plant-based foods like soybeans could actually be anti-androgenic, and they could cut off the blood supply feeding cancers. It really was a mind-blowing discovery, and I read this, and I know Ted Fotsis. We had this conversation about it, and it was absolutely amazing to think about what other secrets might be in food that could help to control the blood vessels. Now, remember, earlier we talked about the fact that growing fat needs extra blood vessels, so it's trying to grow those blood vessels. If you deliberately cut off the blood vessels that are feeding fat, it'll actually shrink the tumor. It'll shrink tumors, and it'll also shrink fat. So, although the tumor wants to grow more blood vessels, and it can't, so it starts to die in the middle, if you then step in and

do an intervention to really cut off the blood vessels, that fat mass will shrink. This has been shown very conclusively in the lab that this can actually happen.

Green tea, another, the catechins, EGCG, powerful anti-androgenic, can cut off the blood supply feeding tumors, can cut off the blood supply feeding fat as well. So, one of the reasons I really came up to this whole idea of body fat is not only my background in this research, thinking about, well, maybe fat growing the way that we talked about, cloning itself, getting bigger and bigger and bigger, hypoxic in the middle, that, to me, resembles a tumor exactly. And so, the question is, could we tame the tumor by taming the blood supply? And I remembered the work that was done earlier, and it turns out that many of the foods that I wrote about in my first book that are anti-androgenic, my first book being "Eat to Beat Disease," more than 300 foods, the whole chapter on anti-androgenic, cancer-starving foods, blood vessel-taming foods. And I started to realize, here was this whole opportunity to look at ways of taming our body fat as well, and the epidemiological study supports it.

SHAWN STEVENSON: Wow. So, the thing is, first and foremost, these foods have been around for thousands of years and utilized by humans to great success. Today, however, our diets obviously have been altered so much, ultra-processed foods is now the norm. And if you think about something like green tea and how many remarkable health benefits it has, now had another check to its boxes of benefits, which is supporting fat loss, potentially. But one that is a little controversial here is soybeans. Now, I want to ask you, the benefits seen here with potential cutting off that nutrient supply to fat cells and cancer cells with soybeans, seen in the data, are these soy beans the same thing as like eating a Tofurky?

DR. WILLIAM LI: Well, first of all, I'm so glad you brought up the normative status of ultra-processed foods. You know, a Tofurky could be really kind of considered an ultra-processed food, right? Just like a lot of these plant-based meats that are very carefully engineered to taste like meat, but they're actually manipulated in a factory to be able to do so. The controversy really about soy is, I think it's an urban legend, is really what it is. This idea that, remember I told you the guy who was looking for this, he was studying hormones. And so, he looked at genistein, he found this thing in soy because it's a phytoestrogen. So, phytoestrogen means plant estrogen. And many people believed for a long time that because some human breast cancers are stimulated by estrogen, that maybe soy would be dangerous because it has a phytoestrogen. Well-intentioned, I think perfectly natural, connecting dots, except not scientifically correct. And this is where I come in as a scientist and as a doctor. I can tell you, if you look at the chemical structure of human estrogen that could fuel breast cancer development, and you looked at phytoestrogen, plant estrogen from soybeans, they don't look anything alike.

They're two separate chemicals. And in fact, the plant estrogen will actually block the human estrogen. It's kind of like Mother Nature's tamoxifen, which is used to block human estrogen. And in fact, all the human studies, all the lab studies, all the epidemiological studies show that women who eat more soy, and the women who are at the highest risk for breast cancer problems, are the women who already have breast cancer, that the more soy they eat, the lower their mortality. And so, this is completely opposite of what we think. I want to kind of clarify this. Phytoestrogens are not like human estrogens. They block human estrogens in a beneficial way. And so, this well-intentioned connection that led to this urban legend that soy is dangerous actually just isn't true.

SHAWN STEVENSON: Got it. Now, let's dissect soy, like what form we're eating the soy in versus soy dogs, soy milk, soy everything, soy nuggets, soy in Tofurky, the list goes on and on, ultra-processed versions versus what?

DR. WILLIAM LI: Yeah, no, I mean, I think this is something that we need to all be very aware of now. Everyone knows that plant-based foods are healthier for you, but just because they come from a plant doesn't mean that they're necessarily healthy for you, right? And so, you can take soy as a filler, as an additive, put it into a factory, mix it into all this other kind of stuff, and ultra-process it, that doesn't make it a healthy choice, doesn't make it a healthy ingredient, let's call it. I would say this whole idea of whole foods, minimally processed foods, I mean, if you make tofu, either firm tofu, silky tofu, the Asian traditions of making tofu, that's also a kind of processing, but it's very light processing. You don't actually have to extrude it and do all kinds of other things and mix it, mill it with other ingredients. So, I encourage everyone to think, even if you are espousing or you're seeing a label of something that's just plant-based must be good for you, and you think must be good for you, look at the ingredient labels. Think about that product you're holding in your hand. If it's a nugget, if it's something you're popping in a microwave or a toaster oven, is that ultra-processed? Does it come from a box or a can? Look at the ingredient labels. Is it clearly mixed with other things so that it really no longer resembles the actual whole food that originated from? That should raise a red flag.

SHAWN STEVENSON: Yeah, red flag. I love that, red flag alert. And having that bias because what's happening today is health washing, where we have a plant-based moniker. And then so that's like all systems go or free will on all these different products and marketers are taking advantage of a well-intentioned drive towards health. Now, in this context, so you mentioned traditionally made tofu. What about fermented soy products?

DR. WILLIAM LI: Fermented soy products are also another continuum of minimal processing because you're letting nature kind of process it, exposing the temperature and bacteria, and changing its nature. I mean, fermented soy, soy paste, soybeans...

SHAWN STEVENSON: Miso?

DR. WILLIAM LI: Miso, oh, amazing. And also, some of those Korean spicy pastes like gochujang, you know, like amazing, right? Those are actually probiotic soy products that are minimally processed and they're actually wonderful condiments or wonderful accompaniments actually to food. So again, I think buyer beware. All these kinds of, from whole food to ultra-processed continuum. Sort of take a look at the fact that minimal processing means that you're sort of letting nature present itself to you either in a completely un-manipulated way to naturally or minimally manipulating. I mean, look, if you cook food, you're processing it, and when you put it in a pan, you're processing it. So, the key is that minimal processing is really not changing the fundamental nature.

SHAWN STEVENSON: And that's what humans have been doing forever.

DR. WILLIAM LI: Exactly.

SHAWN STEVENSON: Ultra processing is taking something that originates in the form of corn, and it ends up being Lucky Charms. You know, there's so many things, so many processes that it's no longer remotely connected to its origins.

DR. WILLIAM LI: And by the way, one of the things I write about in my new book that I'm so excited by is this idea that we should be looking at our historical past and how people actually encountered food, exchanged food, experienced food, to really recognize where some of the healthiest foods are available, hidden in plain sight. And maybe not even hidden, like we're actually partaking in them, but without appreciating the long history of healthy tradition. And so, there's a whole chapter I write about as a term that I use when I'm asked how I eat. Like people come up to me and say, "Dr. Li, how do you actually eat? What kind of diet are you on?" And I basically say, "I'm not on a diet. I don't really go for diets." But I do have a way of eating. My way, my approach of eating, I call MediterAsian. And MediterAsian is really how I naturally do it. Like I have a Chinese background, I grew up eating Asian food.

I lived in the Mediterranean in Italy and Greece. I've traveled there many, many times. So, whenever I have an opportunity to choose food, I naturally gravitate for something in those genres. They're delicious. They come from the healthiest traditions. What's interesting is although I write in the book as sort of a new term, MediterAsian, it turns out that 2,000 years ago, people are already doing this. And the Mediterranean and Asian were connected by the Silk Road, the greatest trading route in human history. It covered thousands of miles through desert caravans. And along the way, people from the Mediterranean and people from Asia met each other and they exchanged their food. They cooked together. They saw each other along the way. And they were carrying food from their own homelands to share and distribute and

sell to other people. And so again, as you say, we've been doing this for thousands of years, literally.

SHAWN STEVENSON: Wow. I love the connection with the Silk Road. This could be called the Silky diet.

DR. WILLIAM LI: Silky diet.

SHAWN STEVENSON: I love this so much. And so, when you talked earlier about your research in cancer and the angiogenesis phenomenon and then finding anti-angiogenesis properties in a variety of foods, the first thing I thought about was turmeric, because that's one of the things just, I don't know, maybe 10, 15 years ago, I was just shocked to see that there was data on this. I didn't know that that was a thing, that this could be effective in this conversation about cancer, is that something that's going to apply with fat loss as well, if we're talking about turmeric?

DR. WILLIAM LI: Yeah, so turmeric has a natural chemical called curcumin. And again, I'm a scientist, so leave the tongue twisters to me, but just know that we've actually discovered some of the specific actives, bioactives, that are in these foods. Powerful anti-androgenic, but a lot of these anti-androgenic substances, like curcumin in turmeric, or like genistein in soy, or the catechins in tea, as it turns out, they also directly help to manipulate our body to be able to burn body fat, which is really interesting. So, this is sort of like multiple job descriptions, multitaskers, and that's the amazing thing that research is discovering. You know, like, I study food as medicine now. Food is medicine, just like medicine, say, we discover aspirin treats headache. Oh, wait a minute, it actually can help to thin your blood and actually helps to prevent heart attack and that kind of stuff.

So, we're beginning to rediscover that in Mother Nature's farmacy with an F, not a PH, that what she has imbued in our, in the foods, the whole foods that we have, are all these natural chemicals that have multiple tasks in our body. And when it comes to food and health, it's not just about the food, it's about how our body responds to what you put inside it and what those chemicals are actually activating, those pathways, the domino effects that they trigger once we actually eat them. And some of the foods that actually cut off the blood supply to fat and cancers also turn on the engine of our metabolism to burn down harmful body fat.

SHAWN STEVENSON: It's just like, it's not a one trick pony.

DR. WILLIAM LI: No.

SHAWN STEVENSON: Like an isolated thing, the pharmacological method of looking at things today, that food has so many other benefits.

DR. WILLIAM LI: I call food, like whole foods, as we're going to research, as a food and medicine guy, researcher, these foods that we're discovering are like Swiss army knives. They got all kinds of little new tricks that you didn't realize. Pull something out, it can do this, and it can do that. Oh, wait a minute, there's another tool in there too. Oh my gosh, let's keep on pulling and discovering. That's why I think that in the health and wellness space, there are lots and lots of people talking about some real research, exciting research. We're talking about longevity, we're talking about better aging, we're talking about all kinds of different aspects of vitality. We're talking about metabolism. The key thing is not to oversell it, and to realize that we're still at the beginning of this discovery, but even at the beginning, what we're finding is like, it's like opening the shades of your window, it's jaw-dropping, it's mind-blowing what it is our foods can do for us if we make wise choices.

SHAWN STEVENSON: Yeah, yeah. Now, in the book you talk about the five defense systems, which you did in your first book, but now it's related to metabolism. And I love how you connected each and every one of these. Let's go through a few of them. One of them is the regeneration system. So, let's talk about the regeneration system in regards to metabolism.

Okay. Regeneration and metabolism is very, very important. And it actually starts with body fat, the healthy, normal body fat, because when we're born, we have, our bodies are formed with stem cells. When we're born, we have our excess stem cells that we didn't need to form ourselves. It's kind of like extra cans of paint that you bought to finish repainting a house, always have some overage, right? So how much overage do we have in our stem cells at birth? About 75 million extra stem cells. And what they do is when we're born, cut the cord, this is why people talk about umbilical cord stem cells. Okay, you can harvest that if you want, but the body already has 75 million extras. And so, your body immediately begins packing those stem cells away. Most of them go into our bone marrow, which is like the hollow center of all of our bones. And a lot of stem cells live there like bees in a hive. But the other place that the stem cells go to is a little in our skin. There's a little bit scattered in our heart and our brains. I mean, there's stem cells in a lot of places. But our body fat also has a lot of stem cells. And a reason is because those stem cells help our body create new fuel cells if we need more containers for extra fuel, it's kind of a survival thing over evolution.

So, stem cells are we've known for a long time. By the way, the stem cells, in fact, are called ASCs, adipose stromal cells. I spent a lot of time working in this space. And for a really interesting way that I write about in my book, we really don't want the stem cells in our fat to create much more extra fat. We don't need that most of the time. However, to study it, one of the things that some really, really brilliant cardiologists did is they were wondering, could we

be borrowing those stem cells from body fat and using them somewhere else? Because stem cells are what we call context dependent. So, if they're in fat, they'll make more fat. But if they're in another tissue, they'll make other tissues. So, the cardiologist says, "What if you put them in a heart?" So can you imagine a cardiologist working with a plastic surgeon, plastic surgeon does liposuction, sucks out the fat. Now, what do you do with this can, this jar of liposuction fat? I'll tell you as a researcher, I was kind of like take away all the mystery on this. You put a little enzyme in there, enzyme kind of dissolves the fat up and releases the cells, separates the cells from the fat, you put it in something called a centrifuge, it spins around.

And when round and round she goes, what happens is that the stem cells go to the bottom of the tube, and the fat floats to the top of the tube, as fat should. And then when you stop the spinner, you pour off the fat, and now you got a tube with stem cells at the bottom. The plastic surgeon hands this tube to the cardiologist, who takes these stem cells, puts it in a catheter, and then snakes it through your groin, up into your heart of somebody who has heart disease, and pops it right into the heart. So now, stem cells from your fat go into your heart, and guess what happens? It grows new heart tissue. It grows blood vessels to feed the heart. Amazing. Not ready for prime time yet. This is not the strip mall injecting your knee kind of stem cell. This is like I've been involved with this and still involved with it. It's amazing to see some of the early success. Not ready for prime time yet, okay? There's a lot more work needs to be done, but amazing. So, one of the things I wanted to write about in the book, though, to show you just how powerful this is. I didn't want to talk about the heart part of it. This was my jaw dropper when I looked at it.

Somebody did the same process of taking out liposuction fat, separating those stem cells in a young person near their 30s who is paralyzed from a neck injury, quadriplegic. Can't move their arms, can't move their legs, paralyzed. Game over, right? In terms of, I mean, it's a whole lifetime, 30 years. A lifetime of disability, serious disability. So, this was a patient in a clinical trial where they took his own fat stem cells and put them in a brand-new place. They took them out of his fat, isolated them, and injected his fat stem cells into his spinal cord right where it was broken, severed. And guess what? It grew new spinal cord. And pretty soon he started to be able to move his arms and his legs. Unbelievable. So, stem cells reside in fat, absolutely powerful. And so, you don't want to be, you can't be removing those stem cells, but there are certain foods you can eat that can actually prevent or slow down those stem cells from cloning themselves into brand new fat.

So, there's a dietary way to control it as well. You don't have to remove it and give them to another doctor. You can actually eat foods that will actually contain them, things like olive oil, has a substance called hydroxytyrosol, slows down adipose stromal stem cells from growing and cloning themselves. Omega-3, marine omega-3 fatty acid you find in seafood or dietary supplements also do the same thing. Lycopene found in tomatoes, and watermelon is an

example, which also has lycopene, will actually kind of reprogram the stem cells to basically say, you know what, if you're thinking about making more fat, don't do it.

SHAWN STEVENSON: Don't do it. I love that so much. I made a note in that particular chapter, another one of those foods that you mentioned was goji berries.

DR. WILLIAM LI: Goji berries also can actually reprogram stem cells and goji berries, you know, it's amazing. It's one of those continuum like you hear, these days you hear a lot about these medicinal foods that have been used in Asia for years like cordyceps, mushrooms, which I saw in the marketplace the other day, really cool. But goji berries are something very common as an herbal medicine. And I think that one of the things that we need to remember is that when we're borrowing and exploring fascinating food substances that have been used traditionally for thousands of years as medicine in other cultures, we should be just a little cautious that this doesn't mean that we can just be playing around with the substance. But goji berries, I love to put goji berries in tea. If you mix goji berries with tea, put a date, a dry date in there, put some chrysanthemum flower in there, you kind of create this really nice herbal tea. You can put oolong tea or black tea, so you can actually find ways to extract some of these natural substances. Goji berries have bioactives like lutein and zeaxanthin, which is good for your vision. But some of these substances also reprogram your fat stem cells as well.

SHAWN STEVENSON: Amazing, amazing. In Chinese medicine, it's one of the definitely top five things. But traditionally, it's not like we might do today, which is snacking on goji berries, it's using teas and being able to infuse different things together. For years, I would take, maybe I'm doing a cordyceps tea or reishi, and doing a decoction or kind of boiling it down, adding some goji berries in there. Also, they add like a nice flavor note too...

DR. WILLIAM LI: Yeah. Oh, yeah.

SHAWN STEVENSON: As well. And goji berries are so interesting, because they're one of the few plant foods in general, but in particular, in the berry family, that's essentially a complete protein, you're going to find all the amino acids there, it's like that is so incredibly rare, not to mention all those other micronutrients you just mentioned.

DR. WILLIAM LI: And that's what I'm saying, is that instead of just buying a big bag, a sack of it and snacking on it all day long, there's a great wisdom in looking back at how traditionally they actually used it, whether they cooked it in a soup, I mean, you can you can put it in a beverage, you can put in a tea, you can also cook it in a soup. And it also lends this really sophisticated, interesting flavor to chicken soup, for example, or vegetable soup. So, the best thing about ingredients these days, Shawn, is that, I write in my new book about 150 ingredients that are shown with human research studies, along with their doses of foods that can activate your

metabolism, burn down harmful body fat, and generally activate your health defenses as well. For people who don't... Who may encounter a food that I talk about that they're not really sure what to do with, the wonderful thing today is that you can go onto the internet, you can search that food on Google, put recipe and put video, click on the video, and you're going to have the search results, you'll have somebody passionate, who's experienced, teach you how to actually cook with it. And you'll have multiple choices and multiple videos to see. There's no more secrets on how to get to use these things. But try to go with sort of like, like learn something about how it was done for hundreds of years.

SHAWN STEVENSON: Yeah, yeah, yeah. I love this. This is a way we can consciously choose our bias. Okay? Because a lot of our biases, obviously, are unconscious, but I'm encouraging people and as are you to create a cognitive bias on what have humans been doing the longest, right? What have our ancestors been doing to get us to this place where we are such an evolved species and the most complex, amazing brains and all these things. Because what we're doing today, with according to the BMJ, about 60% of the average American's diet is ultra-processed foods now, children is even higher than that. And we're making our brain cells literally out of this garbage, so getting a bias to where number one, what have our ancestors done the longest, but the other thing is, how did they use these foods as well? So, I love that. Got a quick break coming up. We'll be right back.

More than ever, because of our environmental stressors, we need key nutrients that help our bodies to modulate and manage and process stress. A lot of those have to do with micronutrients. Key minerals are essential in running processes to help to even modulate, like shifting our nervous system from the sympathetic fight or flight dominance over to parasympathetic rest and digest recovery. We need certain key micronutrients to do that. Historically, in the last few decades, unfortunately, we turn to these sh*tty multivitamins that are coming from synthetic sources. That's what I was given. My grandma gave me Flintstone vitamins. I am biting off the head of Fred and Barney and Dino. And what that really is, it's sugar, synthetic micronutrients, artificial flavors, artificial colors, all of these things that are terrible for a growing, developing human brain and body, because the emphasis here is on synthetic versions of these micronutrients. A synthetic nutrient, though it might be the same chemical makeup on paper, does not have the underlying intelligence. And even more tangibly speaking, the supporting elements, the cofactors found in real food concentrations that magnify its resonance with our human cells.

Let's take vitamin E, for example. This nutrient is important for healthy function of our cardiovascular system, cognitive performance, and even the health of our skin. Well, a study that was published in the American Journal of Clinical Nutrition determined that natural vitamin E from food concentrates has nearly twice the bioavailability of synthetic vitamin E. All right, so again, synthetic versions of this, so these are artificially concocted versus the whole

food form and also whole food concentrate, so food-based supplementations. Now, all of my family, my kids in particular, I make sure that they're getting in a concentration of whole food-based micronutrients several times a week at minimum, most of the time every day. And for me, especially for my kids, and in particular with my youngest, I love the formulation of red juice and these kind of red-blended, red and blue-hued superfoods in the Organifi Red Juice, because he loves the way that it tastes, and it's just packed with real food nutrition. So, in particular, we've got Acai that's in there. And the Journal of Agriculture and Food Chemistry found that Acai actually, not just theoretically, it actually raises participants' antioxidant levels, demonstrating how effectively it's absorbed by our gut, by the human digestive system.

We actually do absorb the antioxidants. It's not theoretical. There's a resonance here, and Acai actually has an ORAC value of 103,000. This means that it's about 10 times the antioxidants of most fruits that you're going to see in your produce aisle. So, it's, again, getting our kids' growing bodies the antioxidants in a concentrated source, but it's kid-tested, parent-approved, tasty. Another ingredient in that red juice blend is actually blueberry, and researchers at the University of Michigan published data finding that blueberry intake can potentially affect genes related to fat burning, again, stacking conditions for healthy metabolism. Head over to Organifi.com/model, and you get 20% off their red juice blend, and also their green juice blend, their incredible gold, everything that they carry, actually. It's a really, really special thing that they have going on. Go to organifi.com/model. That's O-R-G-A-N-I-F-I.com/model. You get 20% off, getting kid-tested, parent-approved. Definitely for our kids, red juice is a huge winner. Now, back to the show.

Let's talk about another one of these five defense systems that you cover in the book. And again, pick up the book like ASAP, because he breaks down and ties in these five defense systems in metabolism like none other. Another one of these is the DNA protection system. Why is this important in the context of metabolism?

DR. WILLIAM LI: All right. Remember I told you that when you start growing excess body fat, one of the things that really is harmful in addition to inflammation is that that expanding harmful mass, and I want to explain where that harmful mass is most harmful, is inside your body cavities. It's not under your arms, under your chin. It's not the muffin top, not in your thigh and your butt, it's actually packed inside your body. So, you could look kind of skinny, or you could have a large body. But equally, the visceral fat, which is viscera, I mean gut, the gut fat is the really billowing, harmful, inflammatory, damaging fat correlated with terrible diseases, terrible chronic diseases. So, what happens is as that grows and gets bigger and bigger, think of it like a baseball glove wrapped around your organs, just choking your organs, getting more inflammatory, right? Remember that gasoline pooling around your feet when you overfill the tank? Now you're talking about inflammatory fat wrapped around your organs. You don't want that to be going on.

So, the thing that happens is that all these billowing fat produces a lot of free radicals. And that is a pro-oxidative stress on your organs. And they're like completely surrounded, choked off by this expanding fat. So, the good news is our DNA, which is present in every single cell in our body and every organ, actually is capable of countering that damage to an extent. And this is why ultimately what we need to do is control extra body fat to protect ourselves. But we have our own three musketeers with their rapiers and their swords kind of defending against it. And that's like natural anti-oxidative protection, DNA repair mechanisms, to try to fix DNA that's actually broken. By the way, we know that excess obesity, excess body fat, high BMI, it's all linked to the development of cancer. We know that cancer is caused by DNA mutations. This is the connection. Alright? And we know that our body tries to protect us as much as possible, it's a health defense, but at some point, it gets overwhelmed, your defenders actually are surrounded by overwhelming forces, and that's actually when you tip over into the state of complete, from health to chronic disease.

This is why we all have an opportunity at any given point in our life to be able to combat that extra fat, which by the way back to the metabolism, there's a lot of misunderstanding about metabolism because we often are told or even think about that we're born with either a slow metabolism or a fast metabolism, and that's our fate, but in fact, it's not quite so. And that a slow metabolism dooms us to actually struggle with weight our whole lives, but in fact, it's that extra body fat slows down our metabolism, it's completely the other way around. So, by fighting extra body fat, allowing your body to do what it wants to do while you're not eating, and by eating foods that will naturally burn down that extra fuel and shrink those extra fat cells, what we're doing is unleashing our natural... Our own operating system, the metabolism wants to actually be active in our body, and that's a good thing 'cause it puts the power in our hands.

SHAWN STEVENSON: Yeah, it's amazing how often... In particular in your new book, but just in general, in our reality, how obesity and/or excessive fat gain is connected to cancer, and how the solutions or dramatically reducing the risk of all of these things all tie together, and they're all found in a variety of foods and lifestyle practices. Now, in the book, this is a direct quote from this particular section, you said that "Excess body fat creates free radicals inside your body and increases the risk for cancer-causing mutations." And you also share some of the foods that can help to boost DNA repair and protect us against excessive fat gain and excessive potential with cancer.

DR. WILLIAM LI: Yeah, so many of the foods that are associated with high anti-oxidative properties, these are phytochemicals, these are flavonols, polyphenols, all actually are able to assist us. We talked about some already, green tea, actually wonderful antioxidant properties, but it... Think about it less as the... What you see on the label of somebody trying to sell you

some healthy, specifically healthy tea, but think about it as really just sort of boosting your natural health defenses, helping your DNA protect itself, tomatoes, watermelon, those are... They've got lycopene. They also are wonderful. You know, lycopene is so powerful that if you actually have a cup of tomato juice or have two slices of watermelon before you go out to the beach, like a couple of hours before, so have lunch, make sure you have some tomato juice or a watermelon, a couple of slices of watermelon, average size of watermelon before you go to the beach, it'll actually protect your body from ultra-violet radiation damage from the sun that you're going to get on the beach by 60%, just by having the lycopene in your system. And so, this is actually how we can make some of these subtle and delicious tasty choices that actually will help us as we navigate through our lives, and so it's no secret. I think that in the Mediterranean, many times you have a tomato salad at lunch time before people go back out into the sun or to the beach.

SHAWN STEVENSON: If you just think about today when rates of skin cancer have just gone up exponentially in recent decades, it's just like something that was rare earlier on in the history of our species, documented history, and you think about what were people doing, because sunscreen is even a newer invention, what were people doing? How were people surviving such a vicious thing interacting with the sun, it was through our diet, because a lot of that protection is from the inside out.

DR. WILLIAM LI: Yeah, exactly. Because sunscreen is just a thin layer on the top that you got to re-apply once you get in the water or once you sweat it off. This type of protection, antioxidant protection, DNA protection from the inside out takes advantage of your 40 trillion cells. Uses food to power it up even more, to be more vigorous on your behalf, and it protects you from the inside out, that's the way to go.

SHAWN STEVENSON: Yeah. Another one of these foods that you mentioned is kiwis in this context.

DR. WILLIAM LI: Oh yeah. Alright, look kiwis, you can find almost anywhere these days. They're a fruit from Southeast Asia, fuzzy on the outside, by the way, most people don't think they can eat the skin of kiwi, but in fact, you can put the skin into a blender and you get a ton of the natural dietary fiber from the skin. It's really packed. But the flesh, which is either green or golden, is sort of mildly sweet, the golden kiwi is a little bit sweeter, but I like the green ones, it's got these little dark seeds, wonderful source of antioxidant activity in kiwi. It's got a ton of vitamin C. It's packed with dietary fiber, and one kiwi a day will actually protect your DNA again by about 60%, and if you just eat three kiwis for breakfast, for example, pretty easy to do if you cut up the kiwi, put it in chunks, you could be eating that as a breakfast as I have. Basically, that starts to build back damaged DNA, so one kind of is like a missile shield, prevents the damage from coming in by about 60%, that's just one kiwi a day, simple. If you had three, any

DNA that did get damaged, it'll start to repair it, it sends out the road crew to fill up the potholes.

SHAWN STEVENSON: Amazing, amazing. Now, in this context, when we're talking about the DNA protection system, you also get into this conversation about methylation in the book as well. Let's talk about that.

DR. WILLIAM LI: Alright, so the interesting thing about DNA is that it's much more than a genetic code. A genetic code is kind of like software program, it's just like, it's an algorithm and it just kind of runs. Our DNA doesn't change, but what we can do is we can actually unlock and uncover certain parts of our DNA that we want to actually operate. On the other hand, we can also cover up some areas that we don't want to operate in our DNA, that's the way our DNA actually is really controlled after we're born. So, people are like, "Why, you can't change my genetics?" True. However, at least not yet. However, what we can do is we can actually cover up parts of your DNA that are maybe not doing the things that we want them to do, and we can uncloak them when there's parts that we want them to actually do their thing.

So, methylation is covering it up, and it is part of what we call epigenetics. So, a lot of people are talking about epigenetics now, let me just explain that, let me just sort of get people to see epigenetics is as simple as saying that you're going to cover up certain parts of the crossword puzzle, or you're going to remove the covering from certain parts of the crossword puzzle, so you could see, either see more or see less. That's basically epigenetics, and it turns out the foods we eat can actually help us do that. So, there are lots of epigenetic changes from all these health defense foods that we can actually eat, that what we want to do with body fat, like methylation actually blocks the process to make extra body fat, so when we actually methylate, we're covering up some of those crossword puzzle things, alright? You don't know if it's going to be six letters going horizontally or three letters going down, you cover that up, and your fat has a harder time growing.

SHAWN STEVENSON: This is so fascinating. Again, it's all built in.

DR. WILLIAM LI: It's all built in.

SHAWN STEVENSON: This is another quote from the book in this section. "A study by scientists at the Norwegian University of Science and Technology compared the DNA of 60 lean and 60 obese women who were between the age of 23 and 31 years old. They found there were 10 specific sites in the DNA that were more methylated, helpfully blocked in people who were lean compared to those who were obese." Fascinating.

DR. WILLIAM LI: Absolutely. And so that shows you... And this is kind of where we are with this research, it means that there are certain spots that are vulnerabilities that some people carry around that might predispose them to gain extra weight, and so if you block those vulnerable spots, think about finger in the dike. Alright? Just block those, then you actually might be able to tip the balance more in favor of a more healthy body type body composition.

SHAWN STEVENSON: You know what I would love to cover with you that I haven't really covered with anybody else, it's talking about some of the nutritional powerhouses found under the sea. You've outlined so many remarkable foods in the book in relationship to metabolism, but I want to ask you about a few specific ones, lobster. Let's talk about lobster.

DR. WILLIAM LI: Alright. I got to explain how I got into seafood first. When I was writing this book, 'Eat To Beat Your Diet,' one of the things I wanted to do when it comes to sharing a 150 different foods, research has shown with human studies that they can actually fight body fat and improve your metabolism. I didn't want to just have a laundry list of foods, I wanted to take my reader on a literal tour through the grocery store. So, I wrote the chapter, the second part of my book as if we were going to the grocery store, the reader and myself, and I invite you to hop into my grocery cart, like you did with your mom's grocery cart when you were little and your mom's wheeling around. And I wanted to take you through the different sections of the grocery store, produce aisle. Let me kind of tell you what to put in the cart, just like your mom did. And so that's what I do. Piece by piece, what to put in the cart in the produce section, we can talk about that. And then I wanted to actually take people through the beverage section, 'cause in the grocery store, you go into those aisles, and you've got all the sodas, all the fruit juices, all the bottled waters, seltzers.

I wanted to take people through there to see what you should choose or not choose, as the case may be, and also in the middle aisles, I took people through the forbidden middle aisles. People say, "Shop the perimeter," I'm like, you know what, again, this is like that black/white thinking in health and wellness space, you know, let's not discard that, let's go right into the middle aisle, I wanted to be a little bit contrarian, and I want to show you where the treasures are in the middle aisle, that's why I call it treasure hunt, you'll find the real gold compared to the fool's gold. So, I take you to the middle aisle. Then the final section. My publisher basically said, "Be careful about writing about seafood." And I'm like, "But that's part of the grocery store." And they're like, "Well, you know, a lot of people don't like seafood, so just be careful. It's almost a turn off for people." And I'm like, "Wait a minute, what are you talking about? There are people that live along the tens of thousands of miles of coastline around the world that relish seafood, and I actually like seafood."

So, the fact of the matter is, if you're someone who says, "Yeah, I don't like fish, I don't like shellfish, I don't like seafood," I'll tell you right up, straight upfront, it's because you haven't had

it properly prepared yet. When you taste really well-prepared seafood, it's like you've discovered your new favorite thing. So, what do most people think of it? So, I wrote a whole chapter about this. And so, this, discoveries under the sea. First of all, you need to realize, my background is in biotechnology, so people have been looking for Mother Nature's pharmacy with a... I guess you can't even say F because it's under sea farms, in sea cucumbers, in fish, in shellfish and squid, amazing discoveries that have been made. New cancer drugs are being discovered from the sea squirt. You can't even see the sea squirt, it's this tiny little thing that lives in the water. So, from where my background from, I said, let's go discover what could be good for the metabolism in the ocean. Well, boiling it down to two very simple categories that you might find in a seafood market, it's fish and shellfish, and then it's also seaweed. You can also get good stuff from seaweed.

So again, because we know the healthy things that are... We know that some of the molecules means that we can really do. So, what I did is I basically took first, a look at the thing that everyone recognizes as healthy for you in seafood, oily fish, salmon, mackerel, sardines, anchovies, the things that people go like, "Man, it's fishy, I don't like it." So, everybody knows and salmon, even if you like it, you probably have had it so many times, you're like sick of salmon. So, what I did is I basically said, "What else might be equivalent to salmon?" And I was looking for other types of seafood that might have the same potency with the same effects. Amazingly, cod, which is not an oily fish, can also fight body fat because it has omega-3 fatty acids. Let me explain to you what I've just said. We know that oily fish, high fatty fish with lots of omega-3 fatty acids is good for your metabolism, good for your heart health, fights cancer. We also now know that cod, which is not oily fish, it has some omega-3s, also can be very good for you in exactly the same ways.

What that means is that we have underestimated the power of omega-3s, you don't need to have the oiliest fish, even fish that has even some omega-3s at the level of cod is good. So, what I did is I converted the cod levels omega-3 across all kinds of sea foods that are eaten in the Mediterranean and in Asia that are considered staple seafoods, delicious seafoods, sometimes exotic seafoods. I wanted to push the envelope. When people tell me don't do something, I'm like, "Alright, well, maybe that's a reason to actually really get into it." I get into some really exotic different seafoods. Well, bottom line is that there is an absolute amazing cornucopia of seafoods that can actually fight body fat.

SHAWN STEVENSON: Amazing, amazing. So, we got cod, you talk about sea bass in the book, but I want to go back to lobster, this crustacean.

DR. WILLIAM LI: Alright, so it turns out that lobster actually contains omega-3 fatty acids, and by the way, omega-3 fatty acids originally come from plant-based foods of the sea. They come from plankton and algae, that's where... That's actually what makes omega-3 and pretty much

everything else in sea eats that, starting with the smaller organisms on all the way up to the bigger fish on the food chain, lobsters have omega-3s and they retain them actually in their meat, but their shell also has a bio-active called astaxanthin. Astaxanthin which is also found in plankton and in some seaweeds also it's another bioactive. So, if you have lobster bisque, lobster soup, you make that by boiling the shells, it turns out that that red color that you get from bisque actually is caused by this natural bio-active dye called astaxanthin. Alright? Shell, good for you. Meat also good for you. So, what I try to do is kind of convert the doses based on Omega-3s that actually have healthful effects for your metabolism.

SHAWN STEVENSON: So cool. That astaxanthin, it's been found to be protective of omega-3s as well.

DR. WILLIAM LI: That's right. They work hand in hand.

SHAWN STEVENSON: Yeah, it's so...

DR. WILLIAM LI: Now you got this partnership, so I do think that by and large, plant-based foods are absolutely sort of the biggest category of foods that are healthful for our health defenses, for our metabolism to help fight body fat, and so many other reasons, for the reasons that people have talked about before, but really an untapped area is this whole area of what's actually in our oceans or the sea.

SHAWN STEVENSON: Yeah, there's one other I want to talk to you about, and I think this one is... People are really black or white about, they're either for or against.

DR. WILLIAM LI: Alright, bring it on.

SHAWN STEVENSON: This one's oysters. Now, a lot of people... I think the common association for people who are into oysters is like, this is like aphrodisiac vibes, it's more so for that kind of thing, but for a lot of folks, I think that the on-ramp to trying oysters might not be attractive in the first place, so what are some of the benefits with the oysters?

DR. WILLIAM LI: Alright, so I'm going to talk about what those benefits are, but I want to first demystify as somebody who likes to cook and who likes to explore food, that oysters, shucked oysters raw on the half shell with a mignonette sauce are something you might have on Valentine's Day with your sweetie pie, that's not the only way to eat oysters. You can actually cook oysters, you can smoke oysters, there are so many different ways that you can actually use oysters to create delicious foods, that don't think about just the half a dozen or a dozen oysters on ice shucked open. You might not buy oysters in the shell to take home to shuck in

your kitchen, that's a lot of work and it takes a little bit of skill. But you can actually buy oysters that are pre-shucked, and...

SHAWN STEVENSON: Shuck the f*ck up, no, I'm sorry. Shuck up.

DR. WILLIAM LI: That's shucked up, right?

SHAWN STEVENSON: Yeah.

DR. WILLIAM LI: So, the point is, oysters are pretty versatile, much more versatile than we think, and that's the thing that I want to talk about is that, it's good to eat oysters. Now, what do they have in them? It turns out that... Let's address the aphrodisiac property first. Oysters are known to have a pretty high level of zinc. Zinc actually is connected to fertility; zinc is connected to testosterone. And so, I think the long-standing connection between eating oysters and aphrodisiac properties is really due to the zinc. And it's there. There's some zinc there. I think some of it's also mindset. You've ever gone on a date and you're having oysters, both of them, you know like what's coming. All right? The...

SHAWN STEVENSON: Literally. Okay, keep it going, keep it going.

DR. WILLIAM LI: All right, we're getting into it. Yeah, we're going there. But actually, other things that are in oysters are amazing. There's polysaccharides, there's natural polysaccharides that are actually found in oysters that actually can boost your immune system, which is pretty amazing. They're anti-inflammatory and they boost your T cells, which is quite amazing. And in fact, you can even find those when you cook down oysters, so they're caramelized. And you know what we call that? You call that oyster sauce, which is a staple in Asian cooking, right?

SHAWN STEVENSON: There you go, yeah.

DR. WILLIAM LI: Another way of having oysters that's not on a half shell. And then oysters have all these other, they also contain omega-3 fatty acids, lots of different ways to get the benefits from oysters.

SHAWN STEVENSON: Now, you just tied in the last thing that I wanted to definitely cover with you today in these five defense systems connected to metabolism as well, which is the immune system. And I don't think a lot of times we think about the immune system being connected or influential over our metabolic health or vice versa. So how is this connected?

DR. WILLIAM LI: All right. Well, first of all, our immune system, mostly in our gut, about 70% of our immune system is found inside our gut, in the walls of our gut, our intestines. So, think of

your intestines like a garden hose. If you cut that garden hose in half and you look down the cross section, you'll see in the wall of the garden hose, that's where 70% of our immune system lives. So not surprisingly, our gut microbiome actually speaks to our immune system, right? So, our gut microbiome also connects, talks to our metabolism. And so here is where gut health, which is a loose term that talks about a healthy ecosystem that our diet and lifestyle can actually have a lot of interaction with is connected to our immune system. Surprisingly, up to 20% of our immune system's also found in our body fat. So that's a big surprise, right? Like, remember I told you, our fat's an organ, produces hormones. Our fats also house stem cells to make more of itself, but maybe useful for other parts as well. And now the new science of our body fat and our metabolism tells us that actually our fat actually contains immunity as well.

Now, when we develop extra body fat and it becomes pro-inflammatory and we derail our metabolism, our ability for our fat to send out immune cells is completely compromised. And this is why we need to really protect ourselves against the harms of extra body fat. So again, on a big picture level, all these correlations of bad chronic diseases that we struggle with in people who are overweight or obese, it starts to make perfect sense why that might be. Because good healthy levels of fat are perfectly fine, but excess body fat is really harmful. It can actually derail our immunity as well, suppresses our immunity. Now, one of the things that I think is really, really important to think about, and this has to do with what we now know about extra body fat, one of the things that's most important for us to understand is how our normal metabolism is hardwired. And this is really the soul of my book, is really the fact that new science of the metabolism teaches us that all human beings are born to go through, run through four phases of metabolism throughout our entire life cycle. So, and this, by the way, is a discovery that was made only two years ago.

So, it's so spanking new that, and it's changed everything we know about human metabolism, that the old textbooks are being ripped up and thrown out the window, and the new ones haven't even been written yet. So, this is research that is really, really jaw-droppingly important, because it changes our understanding of ourselves. Our own nature has been changed through discovery. So let me explain, and I'll tell you how body fat fits into it, and then connect it back to immunity. So, two years ago, there was a researcher named Herman Pontzer, who worked with 90 colleagues. This is like a 90-plus research team, big research team, across 20 countries, global, and they studied 6,000 people, that's a lot of people, in exactly the same way. They studied their metabolism, and they studied people that were from two days old to 90 years old. That's the entire human lifespan. Think about how unusual that research project is designed. It's one of the most ambitious metabolism research studies ever undertaken in human history, and what's remarkable is they studied every individual from two days old to 90 years old in exactly the same way, across 20 countries, which is awesome to me.

What they did is they gave people a drink of water, simplest thing that you could do, but they tweaked the water in a special way, the atoms of the water. Water is H2O. They tweaked the hydrogen, H, a little bit, and they tweaked the oxygen, O, a little bit, so that you can measure it. So, when they drank the water, their body metabolized the hydrogen, the oxygen, and they can measure the metabolism in their breath once you're exhaling, they can measure in the blood how hydrogen and oxygen got manipulated, and it was measured in the urine. Standard research study, again, 6,000 people, 20 countries, 2 days old to 90 years old. Most ambitious metabolism study ever undertaken in human history, and what do they find when they looked at the output for what human metabolism is in the beginning? All over the map. Everyone's readings were different. There was no way of making any sense of it, just like you might expect, right? Except we now live in the age of artificial intelligence and really supercomputing. So what they did is they developed an algorithm based on the size, the body size of the individual that they were studying, a 2-day-old versus a 90-year-old, and they were able to, in this algorithm, subtract the impact on metabolism of excess body fat, the very thing we were talking about.

And when they removed the excess body fat from every individual, every data point, and what they found from out of the sea of confusing result data, they found that every human went through four phases of metabolism. It was crystal clear. It was like uncloaking the statue of David. It was just a lumpy thing over here. Nobody knows what's in it. You pull it out and you see crystal clear human beings are hardwired to go through four phases of metabolism from the time they were born until the end of life. And here's basically what those stages or those phases are. The first stage, phase one, is from one year born all the way to your... One-year-old. Your metabolism is going up like a rocket ship to 50% above adult metabolism levels. So, babies are like firing up their engines big time, all right? Now that's phase one, stage one. Second stage is from one year old to 20 years old. Metabolism is going from that high level, that elevated level, going down, down, down, down from one to 20. It's decreasing. Now think about what that means and how surprising that is. Right through the teenage years, adolescence, where kids are shooting up in their height, they're eating two dinners, they're bouncing off the wall with energy.

Every parent goes, "Yeah, their metabolism must be going crazy." Not so. The truth of the matter is that between one years old and 20 year olds, our metabolism is actually going down, down to adult levels, all right? But it's going, it's heading downwards. That's the second stage. The third stage is from age 20 to age 60. Guess what? Metabolism is rock steady. It's hardwired not to change. It's a flat line. Our metabolism isn't designed to change when you have your first baby, when you actually hit menopause, when you get into your 40s and 50s and 60s. So, it's not natural that we start gaining weight and our metabolism slows down in our middle ages. That's a gigantic eye-opener, a jaw dropping. That's a mic drop, actually, from this research study. It changes how we understand how humans are designed. Our bodies don't

want to actually gain weight and be fat. Our energy doesn't want to go low. We are hardwired like a laptop with an operating system to be rock stable from 20 to 60. What that means, 60 can be the new 20 if we let our metabolism do its thing naturally.

Now, the final stage from 60 to 90, last phase of life, our metabolism does decline slightly, all right? It goes down only 17% from 60 to 90. So, at 90, you're only 17% of what you were when you were 60. But 90 also means that you're only 17% from when you were 20 years old. That means that aging doesn't have to be declining. It doesn't have to be decrepit. We decline a little bit, but we actually have the... This is what happens when you remove the effect of excess body fat. This is what our hardwiring is. Now, here's basically what's really surprising. When you add the effect of excess body fat back into the equation, remember I told you they removed it to find this, the statue of David. When you put it back in, you know what excess body fat does to your hardwired metabolism? It crushes it. When you add extra body fat, it crushes your metabolism at every stage of the game.

And so it's not that we're born with a slow metabolism, which is why we gain body fat and struggle with weight, it's that our behavior, our choices, our lifestyle, our psychology causes us to gain extra body fat because of those fuel tanks that get bigger and bigger and clone themselves and become inflammatory and compromise your immune system and all those other kinds of things. That extra body fat crushes your metabolism. What that means is that the power is in our hands at any stage of our life to try to uncloak and reveal and resurface our hardwired metabolism. To me, that is the mic drop of the new science of the metabolism. There's something we can do about it. It's deep.

SHAWN STEVENSON: Amazing. Eat To Beat Your Diet. Dr. William Li, thank you so much for putting this research together, and most importantly, in an engaging way, in a way that makes sense for everybody, no matter where your education level is, your level of enthusiasm, you're going to be enthused when you start to read this book because it becomes so approachable and attainable for all of us. We're in the middle of multiple epidemics with our health as a species, but there are solutions and they're built on principles of logic and of food and also the secret sauce, the enjoyment of food along the way. Can you tell people where to pick up your book and to get more information from?

DR. WILLIAM LI: Well, anybody can learn about the continuous stream of information that I'm pumping out every single week. Come to my website, it's drwilliamli.com. I'm on social, @drwilliamli. I really make it my mission to get new information out whenever I can in different contexts that I share, but it's a free newsletter. I do masterclasses that people from around the world come. It's really thrilling to me when I do a masterclass and I ask where people are coming from and they're coming from Kenya and they're coming from the Philippines and they're coming from Denmark and they're coming across North America. It's just really cool

that we all share as humans this common interest in health and common interest in food. And of course, I teach these really deep dive masterclasses. Anybody who wants to really kind of get into it with me, I'm happy to bring you on my ship and co-pilot with you and show you actually how to get there.

SHAWN STEVENSON: Amazing. Amazing. And everywhere books are sold...

DR. WILLIAM LI: Anywhere books are sold.

SHAWN STEVENSON: You can pick up Eat to Beat Your Diet. Dr. William Li, you're a living legend and just appreciate you so much.

DR. WILLIAM LI: Thanks so much, Shawn. Thanks for having me.

SHAWN STEVENSON: Awesome. Dr. William Li, everybody. Part of our mission is to help demystify metabolism and take the process of metabolism out of this pithy little box that we've put it in as a culture. Metabolism is truly everything about human health. Every aspect of our bodies, every cell in our bodies is functioning through the action, the activities of metabolism. This includes our immune system, our immune cells. There's an entire field of immunometabolism studying how our immune cells themselves have their own metabolic processes and also how our immune system is deeply influenced by our overall metabolic health, our overall metabolism of our bodies. Because as we know, as we venture into a state of gaining an excessive amount of body fat and venturing into being overweight and obese, we know that our immune system is inherently going to suffer. And this has not been more clear than our recent experience with COVID-19 and seeing, according to the CDC, this was a huge meta-analysis published in July of 2021. They were looking at over 800 US hospitals and over 540,000 COVID-19 patients and finding that obesity is the number one risk factor for death from this particular virus.

Now, regardless of your perception of this virus, we have to understand that being in a state of obesity is inherently a risk factor for all manner of chronic and infectious diseases. It isn't just this one flavor of thing, but this is speaking to how important it is for us to improve the metabolic health of our citizens. Because again, with immunometabolism, we're understanding why is this an occurrence, why is being in a state of obesity creating such a susceptibility to viral conditions like COVID-19? Part of this is actually highlighted in Dr. William Li's new book. And he's sharing actually, if we look at the contents of our fat cells themselves, then we understand that when we're in a state where we have a healthy body composition, about 5% of the contents of our fat cells are immune cells. Specifically, we're talking about macrophages. And they are critical because they help us to have adequate blood supply to our fat cells. They're also tasked with removing dead cells and helping with the cleaning of our

cellular communities. And also, this is leaning into the conversation that what if we have too much of this activity happening? What can take place?

And researchers at Columbia University performed fat biopsies in obese test subjects as well as lean people and compared their immune cells. They found that the macrophage content in an obese cell was a whopping 40% of all the cell's make up. So, it's no longer 5%, which is normal. Now 40% of the fat cells content is macrophages, these immune cells that are driven towards, again, kind of creating a process of inflammation in order to protect the body. But now that protection or that perceived protection, and that system, that alarm system has now been heightened about eight times their normal level once we venture into a state of obesity. Now to take it a step further, now we have inflammatory activity. We have the macrophages; we have inflammatory cytokines kind of going nuts as we're creating and storing more and more fat. But on the other side, we have immune cells that are getting depressed in function. So, we have the inflammatory temperature or dial or volume getting turned up in one area, but if we're talking about the activity of our T cells, if we're talking about the activity of our surveillance cells of our immune system being able to recognize foreign invaders and to mount an appropriate response, those cells get suppressed when in the context of gaining excessive body fat.

So as we're having this conversation today in this really important episode looking at our metabolic health and reducing our body fat, and this thing that is kind of plaguing our society right now, we have to stop looking at it through this vanilla lens, this one size fits all, this one flavor of science, which is something more kind of driven towards vanity metrics, which that's cool. Nobody's wanting to look bad or to feel bad about our body makeup. But we have to give this desire more legs. That one thing, how's it been working out for us? Have we had a revolution in our health, in our body composition as a species? No, because we don't understand that this isn't just about vanity. This isn't just about our appearance. This is about taking the reins on our health overall, because our metabolic health is obviously having a huge controlling interest in the performance of our immune system, and the performance of our cardiovascular system, and the performance of our nervous system and our brain health and our cognitive function. All of these things are intimately connected because everything about our bodies, human health, all of it is related to our metabolism.

All of it is related to metabolic health. So, we're improving our metabolic health, we're improving everything about us. And that's what their mission really is. I appreciate you so much for tuning into the show today. If you got a lot of value out of this, please share this out with your friends and family. Send this directly to them through the app that you are tuned in on. And of course, you could take a screenshot of this episode and share it on social media. Tag me, I'm @shawnmodel on Instagram and Twitter. On Facebook, I'm @themodelhealthshow.

And we've got some epic world-class guest, powerful masterclasses coming your way very, very soon. So, make sure to stay tuned. Take care, have an amazing day. I'll talk with you soon.

And for more after the show, make sure to head over to themodelhealthshow.com. That's where you can find all of the show notes. You 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.