THE MODEL HEALTH SHOW

EPISODE 539

Muscle-Centric Medicine & Why Protein Is The Key To Sustainable Weight Loss

With Guest Dr. Gabrielle Lyon

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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, I'm so excited about this episode. We're going to be talking about a rapidly growing field of science, targeting muscle-centric medicine. We have on the foremost expert in the world, in this subject, to break down all the components, and it's going to be eye-opening, to say the least. One of our biggest hallmarks here is to have an inclusive perspective with all of the different diet frameworks that exist out there. There are a lot of folks who are eating different styles of nutrition, they're constructing their plates differently in a spectrum of plant to animal models, and we want to take it upon ourselves to have an open mind and to make sure that we're utilizing the best data possible to make an informed decision for ourselves on what we're choosing to eat, to fuel our bodies, our minds on. And of course, that's what we're really dedicated here with The Model Health Show and being a model for ourselves and for other people and the human potential, and what's possible for us as a species, and also just in our day-to-day lives, being an inspiration for the people that we care about.

And so, this is another reason I'm really excited about our guest because that is one of her tenets as well, is to be that model, to be that example, and to be somebody who's leading leaders and teaching teachers. Right now, she's really hard at work at integrating this really cutting-edge science and it's just, again, mind-blowing into medical training right now for physicians and helping to make a paradigm shift in how we're treating patients because clearly, something is not adding up. We're so advanced as far as our medical technology, and yet... Right now, and just in the last couple of decades, for the first time in modern human history, we are the first generation that is not going to outlive our predecessors, that's right. As decades have gone on and centuries that have gone on, human life expectancy has continued to rise until now. Despite our seeming advances, that progression in our lifespan has now reversed, we're now going to be dying at a younger age than our predecessors. And I would argue that even leading up to this, folks have not been living longer, they've been dying longer because our system of healthcare has been about symptoms treatment and not actually removing the underlying causes of our greatest diseases.

And one of the biggest causes that we're going to be talking about today has to do with our intake of dietary protein, and I mentioned this study during the episode with our special guest, but I'm going to share it for you here in its specificity. This was published by researchers at St. Louis University, which is... This is my hometown, and also, she actually got her post-doctorate training at Washington University in Saint Louis, and these are both places that I've been and done research there. Both of these places and have colleagues who I've had the opportunity to work with, and this was actually published in the International Journal of Obesity, and they

sought to discover what happens with fat loss when you eat a high carbohydrate breakfast versus a high protein breakfast when the calorie count of the meals is exactly the same. The researchers did put the study participants on an overall reduced caloric diet of 1000 calories per day overall in the study but had different people to use different macro-nutrient ratios for their first meal, here's what they found.

After the eight-week study period, the study participants in the protein dominant breakfast group lost 61% more of their body mass index, they had a 65% greater weight loss, a 34% greater reduction in waist circumference, and a 16% greater reduction in body fat percentage. The data exists, simply making a shift in this macro-nutrient ratio to paying more attention to what I refer to as the Rodney Danger field of macronutrients. I get no respect talking about protein, protein really doesn't get the respect when there's so much infighting about carbohydrates and fats, and it's a basis for literally building every tissue of the human body. Our neurotransmitters are based on proteins, our hormones are based on proteins, our immune cells are based on proteins, obviously, you know our muscle is based on proteins, the list goes on and on. If we're not providing our body these raw materials, these building blocks, we are going to suffer, our metabolic health is going to suffer, our cognition is going to suffer and so... But this is something we can easily do something about and shift our thinking and incorporating more high-quality foods in a way that is ideal for us and our unique metabolic fingerprints.

So again, really pumped about this episode and if you're looking for a high-quality protein, look no further than Paleovalley. Go to paleovalley.com/model, you get an exclusive 15% off discount. Grass-fed proteins, bone broth proteins, snacks for the kids. My favorite thing from Paleovalley is their Essential C Complex with three of the most powerful botanical sources of Vitamin C ever discovered, Camu Camu berry, amla berry, and acerola cherry with no binders or fillers, all organic. This is a staple in your superfood cabinet. A recent study published in the journal, PharmaNutrition investigated the impact of vitamin C in relation to the cytokine activity associated with COVID-19, And from the vitamin C is effective by inhibiting the production of the cytokine storm. Now, specifically with Camu Camu berry, we know that... Let's use the example of smoking, being a very strong oxidative force and an inflammatory force for the human body as well. Well, this study published in the Journal of Cardiology had 20 male smokers to consume Camu Camu berry daily over the course of a one-week study and found that it led to significantly lowered oxidative stress and inflammatory biomarkers like C-reactive protein versus when they were taking a conventional vitamin C "supplement".

A vitamin C synthetic, the thing that you find out there at the checkout counter for example, which had no detectable changes in inflammation and oxidative stress, Camu Camu berry work. This is something that's been utilized for centuries, and because it's coming from a botanical source, it has all these different enzymatic factors and bio-potentiators that actually

help our bodies to interact with it intelligently. Just a small amount, just under a teaspoon of Camu Camu berry is about 700% of your RDA for vitamin C. And you combine that with an amla berry which is... The studies regarding amla berry are remarkable, and acerola cherry, just there's nothing else quite like it. Go to paleovalley.com/model, get their Essential C Formula. It's essential, the name says it all. You're going to get a special 15% off, and on that note, let's get to the Apple Podcast review of the week.

ITUNES REVIEW: Another 5-star review titled, "My fav podcast" by healthforme.com. “Such great information, the kindness and knowledge that Shawn gives me gives me the strength to make so many changes in my life, greatly appreciate it.”

SHAWN STEVENSON: That's what it's all about. Thank you so much for leaving that review over on Apple Podcast, it means everything, and if you've yet to do so, please pop over to The Apple Podcast and leave a review for the Model Health Show, and on that note, let's get to our special guest and topic of the day. Our guest today is Dr. Gabrielle Lyon, and she attended the Arizona College of Osteopathic Medicine and is a board-certified practitioner in family practice. She also completed her research fellowship in nutritional science and geriatrics at Washington University in St. Louis, and prior to her foray into medicine, Dr. Lyon was a national semifinalist in fitness America, in a professional fitness model and nationally ranked fitness competitor. Dr. Lyon's work has been focused on metabolism, muscle, and body composition optimization. She's a nationally recognized authority in this domain. As I stated earlier, she is the foremost expert in the world in this subject matter of muscle-centric medicine. Dr. Lyon is a world-renowned speaker and expert and educator, and she's here for us right now on The Model Health Show. Let's jump into this conversation with the amazing Dr. Gabrielle Lyon, welcome to The Model Health Show.

DR. GABRIELLE LYON: Hi. Thank you so much for having me.

SHAWN STEVENSON: It's such a joy. We have a lot of mutual friends, obviously.

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: And you're somebody that everybody talks about, and so I'm really grateful to have you on. The first thing I want to ask you about is something you call muscle-centric medicine.

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: Can you talk about what that means?

DR. GABRIELLE LYON: Yeah, of course. So, muscle-centric medicine is the concept that muscle is the largest organ in the body and it's actually an endocrine organ. So, if we take a step back, everything focuses on obesity right now. We are overweight, it is all about losing weight, all our metabolic markers are really focused on being overfat but what if I told you that that's actually a mistake. We are not over-fat, we are under-muscled, and if we really care about people and we really care about weight, we have to be muscle-centric. So, this concept that muscle is the largest organ in the body is what muscle-centric medicine is all about.

SHAWN STEVENSON: There's a saying, a running saying that it's the skin that's the largest organ...

DR. GABRIELLE LYON: Right, it's wrong, it's wrong.

SHAWN STEVENSON: It's muscle. What is it like? 30%, 40%.

DR. GABRIELLE LYON: Yeah, of course, depending on if you are a bigger human and training, but yeah, and it's really interesting because skeletal muscle... People always think about skeletal muscle as looking good in a bikini or as it relates to locomotion but actually, it is an endocrine organ.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: And it's really under-represented in healthcare.

SHAWN STEVENSON: So, if that is the case, which of course it is...

DR. GABRIELLE LYON: It is.

SHAWN STEVENSON: How does this play into some of our biggest issues that we're struggling with right now? For example, as you mentioned, we're targeting and looking at adiposity when it comes to issues like type 2 diabetes, how can muscle and the care of influence issues like that?

DR. GABRIELLE LYON: Well, when you think about muscle, it's the primary site for glucose disposal, so if you care about your metabolism, you have to care about muscle, if you care about fatty acid metabolism, if you care about cholesterol, you have to care about muscle. So, if we look at the big killers or the big burdens on our society, we have obesity, we have hypertension, cardiovascular disease, Alzheimer's disease. What if I told you, these are diseases of skeletal muscle first and that obesity, diabetes, heart disease, cardiovascular disease begins in skeletal muscle first, insulin resistance begins in skeletal muscle first, and if we care about root cause medicine, then we have to care about skeleton muscle.

SHAWN STEVENSON: This is very counterculture right now...

DR. GABRIELLE LYON: It is.

SHAWN STEVENSON: And so...

DR. GABRIELLE LYON: That's why we're so bad at treating it.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: We're trying to answer the wrong question. We're trying to fix for adiposity. Adiposity is a symptom, it's a symptom of impaired muscle.

SHAWN STEVENSON: Before we talk about how exactly muscle plays into these conditions including as you mentioned Alzheimer's, I'm very, very curious and excited to talk about that, let's talk about this being counterculture because your conventional training as well, let's talk about your background and how you got to this place.

DR. GABRIELLE LYON: Yeah, so I've had a very interesting background when it comes to health and nutrition. I graduated high school early and moved in with my godmother, whose name is Liz Lipski. Do you know Liz Lipski? She wrote Digestive Wellness.

SHAWN STEVENSON: That sounds very familiar. Yes, I think she even wrote a...

DR. GABRIELLE LYON: Children's book.

SHAWN STEVENSON: And a quote on somebody else's book, like one of my friends potentially.

DR. GABRIELLE LYON: Okay. She is an OG in functional medicine.

SHAWN STEVENSON: Yes.

DR. GABRIELLE LYON: And she was a Ph.D. at the time, and I moved in with her and worked for room and board, and I started really learning about the role of nutrition in health and disease. And at 17, that changed the trajectory of everything I did. And when I went to go do my undergraduate, I did in human nutrition, vitamin, and mineral metabolism, and I was lucky enough to train under one of the world-leading experts in protein metabolism, still to this day 20 years later. And then, of course, medical school, almost quit at least three times, it was terrible. Then I did 2 years of psychiatry training, 3 years of family medicine, and then I went back to Wash U, which I know you're from St. Louis...

SHAWN STEVENSON: That's right, yeah.

DR. GABRIELLE LYON: And I did a combined clinical research fellowship with medical practice, so it was Nutritional Sciences, Geriatrics, and Obesity Medicine.

SHAWN STEVENSON: Wow, that is such a diverse... But each step along the way, there's...

DR. GABRIELLE LYON: It's all intertwined.

SHAWN STEVENSON: Yeah, that is so fascinating.

DR. GABRIELLE LYON: And actually, I would love to share with you where Muscle Centric Medicine was born from.

SHAWN STEVENSON: Yeah, please.

DR. GABRIELLE LYON: Okay, so after going through nutritional science training, medical school, working with Dr. Donald Layman, going through residency then landing at Wash U, and doing a combined fellowship in Geriatrics, Obesity Medicine and Nutrition. I was working on a study where we were looking at body weight, and brain, brain function, and I became very attached to one of the participants. She was a mom of three, she really had struggled with her weight her whole life. And you spend a lot of time with these people, and I imaged her brain, and when we looked at the MRI study, it was almost as if it was looking at the brain of an Alzheimer's patient. And I realized at that time, in 10 years, this woman was going to actually struggle to remember names. It was at that moment, I realized that we had been focused on the wrong stuff, that this is a woman who had been chasing, losing weight her whole life, and we were focused on the wrong tissue. We were focused on adipose tissue for her when we should have been focused on muscle. Because muscle, as the metabolic driver, as the way in which you can manage metabolism, would have helped prevent the Alzheimer's that I was looking at for her.

And that's where actually Muscle Centric Medicine was born. It was from an entirely devastating desire to fix the problem and then the realization that we were trying to fix the wrong problem.

SHAWN STEVENSON: That's powerful. Now, as you're talking it already, the pieces are coming together for me...

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: And seeing... Because I think we tend to also have very compartmentalized ways of looking at things in modern medicine...

DR. GABRIELLE LYON: We do.

SHAWN STEVENSON: And you're really bringing this together. You know, even the brain, it's not considered to be a muscle, per se, but it functions sort of like a muscle in its development, like certain things, getting exercise and use...

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: And being able to develop and grow and plasticity. But obviously, muscle is going to affect the activity of our brain...

DR. GABRIELLE LYON: Right, it does.

SHAWN STEVENSON: Let's talk about that a little bit more.

DR. GABRIELLE LYON: Yeah, it's interesting, skeletal muscle, when you contract skeletal muscle, it releases myokines. And this concept that skeletal muscle is actually an organ system is... It is true, it's relatively new science, some of the better data is coming out since 2012, so this is new stuff. Patterson really kind of paved the way, and when you think about exercise, we often think about endorphins, but we don't think about contracting muscle-releasing myokines. And one of those myokines, and there's many, there's hundreds of different myokines. BDNF is a myokine.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: And it goes to the brain, and it affects brain function, it also affects nutrients. It affects lipolysis, it affects the liver, it affects all these other tissues. Skeletal muscles and organ also has a relationship to the immune system. It's essentially a crosstalk. And if we care about Alzheimer's, which we do, and we care about cardiovascular disease, and we care about Type 2 diabetes, and we care about insulin resistance, we have to understand that at the very core, we have to fix skeletal muscle first. And what I'm seeing is, it's becoming

more and more challenging. And the reason it's becoming more and more challenging is because there's narratives of misinformation of nutrition. And of course, this is just one aspect, but these narratives make it very hard for people to age well, because dietary protein is so controversial.

SHAWN STEVENSON: Mm-hmm. Right.

DR. GABRIELLE LYON: And it shouldn't be. It wasn't... Was it controversial 10 years ago when you were looking? It wasn't.

SHAWN STEVENSON: Yeah. It's so funny how these things like...

DR. GABRIELLE LYON: Right.

SHAWN STEVENSON: Come in and out of favor.

DR. GABRIELLE LYON: Right.

SHAWN STEVENSON: You know, the same thing happened with fat.

DR. GABRIELLE LYON: Right.

SHAWN STEVENSON: There's a big fatphobia for a long time.

DR. GABRIELLE LYON: Right.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: And this issue with protein, this plant versus animal-based protein issue, and then these myths around protein, like it being bad for the bones, and promoting cancer, and bad for the environment...

SHAWN STEVENSON: Kidneys too.

DR. GABRIELLE LYON: Kidneys? They just came out with a few, there was a recent meta-analysis to prove that totally wrong. Steve Phillips wrote a great meta-analysis regarding kidney function. But if you looked at the common media, you wouldn't believe those things.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: You would believe that all our problems relate to eating protein.

SHAWN STEVENSON: Right. This is what I really admire about you, is that and you know this, so many of our friends and colleagues have come from conditions where they're wanting to help people in medicine, but literally, just, they're working in volume... Not even really having time to read medical literature, but on top of that, actually understanding it...

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: And understanding where it came from, as well.

DR. GABRIELLE LYON: You have to understand where it came from.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: You have to understand the backstory behind things. You know, it's interesting, when I post about red meat, or I talk about red meat and listen, do I really care about red meat? No, I care about protecting individuals as they age. I care about the trajectory of aging. Skeletal muscle health is the key to aging well, it is the organ of longevity. You have to get that right if you want to protect yourself and your family members. You got to get that right and with the current information, people aren't going to get it right.

SHAWN STEVENSON: With this said, there's something I want to just circle back to really quickly because you mentioned this myokine activity through muscle activation and the potentiality

here, the influence on the immune system and the anti-inflammatory capacity, and I want to tie this in with there is a big issue on a lot of people's minds right now. We're talking about obviously chronic disease at epidemic proportions right now but also infectious diseases and the biggest risk factor outside of advanced age is obesity reported by the CDC, massive meta-analysis, 540,000 patients, and obesity is the number one risk factor. But what I'm hearing is it's not just about targeting fat...

DR. GABRIELLE LYON: It's the wrong focus actually.

SHAWN STEVENSON: So, let's talk about how muscle development is critical in solving this issue and in supporting our immune system.

DR. GABRIELLE LYON: Absolutely. I love that you bring that up, and I want to just point out one thing in terms of how broken the system is, okay? When you look at obesity and you go to the doctor, you look at obesity endpoints; you look at insulin, you look at glucose, you look at triglycerides, you look at cholesterol, you look at CRP, you look at these endpoints that are all related to obesity. Okay, great, and everybody does that, that makes sense, this is what we do. What about endpoints related to muscle health? We don't look at that. We don't look at what is actually released post-exercise, and if we are effectively stimulating the myokines, or we don't look at marker endpoints post-exercise... This is a huge gape; this is like a gaping hole. I also want to bring up something else. We know what percent body fat could negatively affect people; we have an idea. Thirty percent or above. That might be negative. I can't tell you what your percent muscle mass should be, we have no idea. This is how little data that we have for actually solution-oriented medicine, this blows my mind. Why are we not looking at skeletal muscle as a marker endpoint for health and vitality? Even a DEXA looks at body fat and then it extrapolates lean tissue. These are big holes...

SHAWN STEVENSON: But that's like all...

DR. GABRIELLE LYON: But everybody, but no... But there hasn't been...

SHAWN STEVENSON: Lean tissue.

DR. GABRIELLE LYON: Right, all lean tissue. We're looking at bone, blood, we're looking at everything. But how is it that we've had blinders on constantly focused on obesity, and if we really care about a solution and we really care about getting people better, we have to shift to skeletal muscle? And it's not about just going to work out, it's about understanding that as we age, skeletal muscle changes. Skeletal muscle is a primary site for glucose disposal, it is the primary site for metabolic regulation, it is a primary site for fatty acid oxidation. If you want to survive an infectious disease and your body goes into a highly catabolic state, what is going to save you, it's going to be skeletal muscle.

SHAWN STEVENSON: That is so not part of the conversation.

DR. GABRIELLE LYON: But everyone... But it's all about fat. That's wrong, and in fact, insulin resistance begins in skeletal muscle first before you gain weight, before you see elevated blood glucose, it is all about skeletal muscle. The myokines... And again, this is a newer science and I'm just starting to look at this data in my clinic, we're just starting to collect some of this information. Myokines, when skeletal muscle contracts, it has this interface between all organ systems just like hormones and it's fascinating. And if we can shift the focus to a more muscle-centric-based medicine model, then we can move the needle.

SHAWN STEVENSON: There's so many... I love that you brought this up and I think that this is part of your legacy.

DR. GABRIELLE LYON: It's my job. Before the camera was rolling, I asked you, "Do you like podcasting?" Or I said, "Do you love it?" And you go, "Love is not a strong enough word. I have to do it." This message of muscle-centric medicine and intelligent health is my purpose. I've been trained by some of the world's leading experts. How did I just land in that lab? It doesn't just happen and it's a personal responsibility to do it.

SHAWN STEVENSON: Yeah, this reminds me of going in when I was a kid and you do all these check-ups, you go in to see your doctor, they take your weight, they take your temperature, all these different things, but there isn't an assessment for muscle.

DR. GABRIELLE LYON: No, strength, and also as we age... So, what also happens as... And I know, I'm sorry I interrupted you, but I'm so excited to be able to talk about this and I want to make sure we can get this out. When we age, the health of skeletal muscle isn't just about the size of the muscle or the strength, aging skeletal muscle can look like marbled steak, and if you believe that skeletal muscle is the organ of longevity and you believe it's responsible for metabolic regulation, glucose regulation, brain health. You have to have metabolic control. When tissue becomes like a marbled steak, which is exactly what happens, it becomes less efficient, it becomes not as metabolically robust.

SHAWN STEVENSON: So, this is reminding me... Of course, there's a change happening in that ratio, we have more intramuscular fat, starting to become more dominant and... I want you to talk about this, this is so important. Sarcopenia, there's this blanket term but what's happening... Once we get to a certain spot...

DR. GABRIELLE LYON: Wait, do you believe that though?

SHAWN STEVENSON: No, this is...

DR. GABRIELLE LYON: I don't believe that all of a sudden you turn 50 or 60 and you have sarcopenia. Sarcopenia, I believe starts in your 30s.

SHAWN STEVENSON: Yeah, come on. This is what I was trying to... I was trying to frame it, yes, yes.

DR. GABRIELLE LYON: 'Cause when you image individuals, whether you're doing an MRI or CT, you see fat infiltration into their muscle. That's not normal, we've become domesticated. And then, now, you're also fighting this anti-animal narrative, this anti-protein narrative, and you're trying to focus on skeletal muscle health, it's a losing battle, you understand? And then all this stuff about longevity is coming out and people are saying you should reduce your protein intake, that is the single worst piece of advice I would ever give an aging individual. Not to mention, I worked in a nursing home for two years, I'm a trained geriatrician, this is my area of

specialty. I did this at Wash U, which is not... Not a joke. It's a tough place to do it. Not one of those individuals would say we should reduce our protein intake because it's going to affect longevity. Longevity what? Does that mean six months? Does that mean one year? Is that the difference between living between 95 and 96? Crippled in bed and bed-ridden or robust and out moving at 95? The framework at which people are thinking about these things are extremely narrow-minded.

SHAWN STEVENSON: Yeah. The thing that surprised me the most in recent years as I've... This is my life, studying food, studying nutrition, and of course teaching, and I was just... I'm continuously shocked at how important protein is and also how it's vilified. And one of the studies that I actually cited in my latest book, Eat Smarter, was a really well-done meta-analysis looking at the protein requirements as we age, being even more significant and seeing higher rates of disease when folks are losing muscle but also, they noted that this is something that you can do something about, that's the thing.

DR. GABRIELLE LYON: Which is so amazing, which is why this isn't some nebulous cause. One of the studies that you may be referring to is called the PROT-AGE study, and it was the new recommendation for protein requirements as we age. The RDA is set at 0.8 grams per kilogram. We know anything below that is dangerous for people. According to... And he then stated the average female is consuming 70 grams of protein. Not to mention, people will say, "Oh, but that's so much." Where are they coming up with that? We have to question what we've been taught. PROT-AGE, the PROT-AGE study, we know that as people age, you need roughly double the amount of protein, and there's a normal physiologic process as we age called anabolic resistance, and it's this concept that the skeletal muscle becomes less efficient at utilizing protein. You must account for that as we age, not only that, but you also can see that in obesity.

SHAWN STEVENSON: This, again... Man, I'm so grateful to have you here because this is bringing... I love... Why? Answering the question why, why is the requirement higher as we age as the study indicates? This anabolic resistance is the whys, the thing behind the scenes. And so again, this is something we can do something about, but we have to reframe things and also support people on getting in the good stuff. Now, this isn't a debate about plant versus animal, I'm really somebody who is always thinking about what humans have been doing the

longest, what do our genes expect us to consume, and based on that, and based on what we're eating today, we are actually as a society, contrary to popular belief, we are largely plant-based because of all the processed food.

DR. GABRIELLE LYON: We are 70% actually, 70%. Our diet is currently 70% plant-based, and I am not against plant-based proteins, this is not... Like you said, it's not a conversation of plant versus animal, what it is a conversation of, is it's about misinformation and how deadly that misinformation becomes. What happens as we age, the window to actually affect change gets smaller and smaller, and that's where it becomes so significant. When you're in your 20s and 30s, we can all argue. When you hit 40, you better know what you are doing, and you better know what you're doing for that next decade because the clock is not going back. And when you were young, you could be on the Twinkie diet and be fine and... When you are young, you can get away with less dietary protein as long as you're training hard, and listen, if you want to counteract sarcopenia, you train hard, but you have to eat high-quality protein, and if you're not, you better be supplementing in a very smart way.

SHAWN STEVENSON: Alright, let's talk about this, so what is the amount we ideally are targeting? Again, you are the foremost expert on this subject matter and also... So, within that... So, we've got... How much should we be targeting? And where are we actually going to be ideally getting this from because of the quality as well?

DR. GABRIELLE LYON: Really important stuff. My recommendation is a bit on the higher end, and that's one gram per pound ideal body weight. Individuals don't have to go that high. So, if you are... How much do you weigh?

SHAWN STEVENSON: 175-ish?

DR. GABRIELLE LYON: Okay, you could easily eat 175 grams of protein and be great. You could also eat 150 grams of protein and also be great. So, what I'm saying is there is some flexibility, but we have to think about dietary protein not just in a 24-hour period, we have to think about it in a meal-based experience and I'm going to explain to you why. So, one gram per pound

ideal body weight is perfectly fine. What we have to think about is you want to really leverage protein as a signaling mechanism for skeletal muscle.

And the way that you do that is you get branched-chain amino acids. And that is typically 30-50 grams of high-quality protein with two and a half to three grams of leucine, which is really that target, that key, will then stimulate muscle protein synthesis. For example, what would that be? Four, five ounces of... Yeah, five ounces of steak, five ounces of chicken, will be enough to then stimulate muscle protein synthesis. When you are younger, you can get away with less. My daughter is two and a half, she could eat 5 grams of protein and it will stimulate her muscles. For anybody else, as people age, you actually require a bolus amount, so you need that eaten at one time to actually signal the muscle, and that becomes really important to understand, so 30-50 grams per meal to really optimize that stimulus is necessary.

So, if you sip on a protein shake, you'll never get to that leucine threshold in the blood, you won't stimulate your muscles. You do that over a period of time, you become sarcopenic, and obviously, I'm making this a bit black and white, and I don't mean to do that, but for the listener to really understand, they must understand that we have to rethink the way that we're feeding. We have to rethink how we're eating and the way in which we do that is we really focus, you prioritize protein, you do things in a protein-forward manner, and you do that... If you're interested in metabolic correction, you could do those three times a day. If you are wanting to combat sarcopenia, you need to make sure that the first meal is optimized and that last meal is optimized, so that... And I don't care when that first meal is, that first meal when you are in a catabolic state should be between 40 and 50 grams, this will help overcome anabolic resistance in the muscle.

SHAWN STEVENSON: I want to share this with you, what I've seen to be... And this is just from my clinical experience, I've worked with so many folks over the years, contrary to popular belief, the number one thing that I would see as far as of course, helping folks to eat more real food, of course, that's the primary pillar, but within that, if we're talking about macronutrients, it's not a low carb or a low fat or any... I'm really looking at getting the right amount of protein in for these folks. If we're talking specifically about weight loss, there's nothing that I've seen to be as effective...

DR. GABRIELLE LYON: I agree.

SHAWN STEVENSON: And it's just like again and again and again. But you said the ideal body weight, one gram per ideal body weight, so...

DR. GABRIELLE LYON: Per pound.

SHAWN STEVENSON: If somebody is, for example, they are 150 pounds and they're wanting to be 130 pounds, they want to lose 20 pounds...

DR. GABRIELLE LYON: And they... Yep, I would have a meal of 130 grams of protein and then they would also make sure that they're getting it between 30 and 50 grams per meal, and that's how they would break it up.

SHAWN STEVENSON: And so also, chances are they're probably eating half of that right now?

DR. GABRIELLE LYON: Right.

SHAWN STEVENSON: And what happens metabolically when we are increasing our protein? How is that actually...

DR. GABRIELLE LYON: Good question.

SHAWN STEVENSON: Changing our body?

DR. GABRIELLE LYON: It's interesting, protein is very unique and it's complex, there's 20 amino acids, we have nine essential amino acids. When you eat protein, there's this thermic effect of food. What that means is it actually takes energy to utilize that protein. The common belief is that it's to deal with the nitrogen and the urea but that's actually not what myself and some of my colleagues believe to be true. I was talking to Donald Layman about this morning, and really, the thermic effect of feeding, it actually relates to muscle protein synthesis, and it

actually relates to mTOR. That process is metabolically challenging, it utilizes a lot of ATP. That is where I believe the thermic effect of feeding or the thermic effect of food comes in. And it really comes from the muscle utilization of that high-quality protein versus fat and carbohydrates are... Maybe fat is 3% and maybe carbs are between five and yeah, maybe 5%, maybe it's a little higher. So, this idea that you eat 100 calories of steak, and if the thermic effect of food is I don't know, 20%, then you only get 80 calories 'cause your body is utilizing the other 20 to deal with the amino acids, very interesting. The other thing is that it protects skeletal muscle. We care about skeletal muscle because we care about metabolism and glucose regulation, right?

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: Also, it signals satiety mechanisms, you are much less likely to overeat. And this is interesting, some of the breakfast-skipping studies, this is out of Heather Leidy's lab, and they looked at kids, young girls and brain studies where they fed them high protein in the morning and they looked at their brain and they were much less driven to eat cupcakes or other foods, other sweet foods.

SHAWN STEVENSON: Yep, I believe it was Kansas University?

DR. GABRIELLE LYON: Yeah, yeah.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: That's right.

SHAWN STEVENSON: I know, right?

DR. GABRIELLE LYON: I saw it, so...

SHAWN STEVENSON: Because I remember it because I was so happy when I saw that they're actually looking at the brain.

DR. GABRIELLE LYON: Right.

SHAWN STEVENSON: Right, they're actually getting in there, "Let's see what happens," actually see... When we're talking about this increase in satiety hormones and this shift in metabolism, what's actually happening in the brain, which is largely controlling so much of this process, so that's fascinating. So, we get this benefit with satiety, and you also mentioned mTOR, now, this is a controversial thing as well.

DR. GABRIELLE LYON: Can't wait, yeah.

SHAWN STEVENSON: Let's talk about that.

DR. GABRIELLE LYON: Let's... By the time people leave this podcast or are done listening to this, I want them to not have any questions, I want them to understand some fundamental concepts that they can take home and just go, "Okay." mTOR, cancer, and protein has gotten a lot of heat, have you heard that? That's the big thing with this mTOR situation.

SHAWN STEVENSON: Of course. And can you say what mTOR is first?

DR. GABRIELLE LYON: Yeah, mTOR is mechanistic target of rapamycin, it's in every cell, it's in skeletal muscle, it's in the pancreas, it's in the brain, it's in the liver, every cell, and it's a nutrient-sensing mechanism. In skeletal muscle, mTOR is exquisitely sensitive to leucine, which is once you trigger mTOR, it goes down this pathway, and I'm over-simplifying it, and you get muscle protein synthesis. When you stimulate mTOR in the liver, which could be from excess calories, or excess insulin, or excess carbohydrates. This is a whole other pathway, okay? The idea that... And there's other ways to stimulate mTOR, by the way, which is exercise. So, there are other ways. This idea that protein and cancer, that there's some correlation, there's actually zero evidence to support that, and I'm going to start with the concept of... Some of the studies, and when you think about lung cancer or smoking cancer, the risk ratio is 12, which means there is a high clinical association. Anything above 2 is considered a risk. They looked at the data for protein and cancer, red meat consumption, and cancer, and came out to be 1.1, 1.3.

So, I ask you, if the data doesn't support that there is a connection, then why is there such a huge driver? So, let's go back to the argument of protein and cancer, specifically as it relates to mTOR. When you eat protein, you do stimulate mTOR. Again, mTOR is in every tissue, mTOR is exquisitely sensitive to amino acids in muscle. It doesn't mean that mTOR is exquisitely sensitive to amino acids in the liver because it's more sensitive to other things, like excess carbohydrates or excess calories, excess energy. The concept that protein would then cause cancer, we have to, number one, think about, "Well, what kind of case are we talking about?"

Cancer is a disease of the genome. Are we talking about lung cancer? Are we talking about colon cancer? Breast cancer, ovarian cancer? Those cancers are clearly linked to obesity as a risk factor. Whereas, if you're telling me, you eat protein and protein upregulates a pathway, since when does upregulating a pathway cause a genomic alteration? Do you understand? So, the argument is, "Well if you eat protein, you're going to get cancer." Okay, what's the mechanism of action? You're saying its mTOR, but the idea that you're pushing a pathway up, that you're pushing mTOR up, has nothing to do with a genetic alteration. They're two separate things. Protein isn't an initiator of cancer, mTOR is a growth... It's a growth complex. Do you see? It doesn't make any sense, so there's some other reason why people are perpetuating this narrative.

SHAWN STEVENSON: So, for example, like when we are younger, we tend to have a lot of mTOR. So, wouldn't everybody get cancer then?

DR. GABRIELLE LYON: It's for growth. I mean it's normal, so mTOR is a normal... It has normal mechanisms in the body. It's not a bad thing. That's like saying going out to exercise is bad because it stimulates mTOR. What? If you really care about mTOR, then you shouldn't be eating excess carbohydrates, you shouldn't be eating excess calories and you shouldn't be snacking all day, because all of those things stimulate mTOR, and if you really care about cancer, then you really have to care about obesity. This cannot be a topic of protein.

SHAWN STEVENSON: Yeah, I'm just thinking about... It's a logical fallacy, because with mTOR being more robust, especially, would you say when we're in our early 20s, for example, wouldn't that be so cancer-promoting if... Just to be 20 years old, because of the higher level?

DR. GABRIELLE LYON: Yeah, yeah, no, it sounds like what they talk about with IGF-1, they say "Oh, well, growth hormone is so high when you're younger," well, if that was really related to cancer... When we think about cancer, you have to think there has to be some genetic mutation that happens. If cancer is a disease of the genome. And these become very, very important questions, so if you look at... They had a recent group of studies, that Annals of Internal Medicine came out with this group of studies, where they put protein and red meat to the test. It's called the... They used the grade system, and they wanted to see, "Okay, so should we really be cutting back on protein, by the way, or red meat?" By the way, red meat consumption since 1975 is down 40%.

SHAWN STEVENSON: Down 40%.

DR. GABRIELLE LYON: But somehow, we're making it all the problem.

SHAWN STEVENSON: We're far less healthy, since then.

DR. GABRIELLE LYON: But we're eating less red meat, chicken consumption's taken its place. It doesn't... The narratives don't make sense, and I think that we really have to come to question some of these narratives. So, the grade study, or not the grade study, this group of studies from Annals of Internal Medicine was about... Was a bunch of different papers. Actually, determined that there is no reason for us to be cutting back on red meat. I am telling you they came after this guy, they came after the head researcher to try to get him thrown out, but it's science, so...

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: Since when does that happen, in the history of ever? There's a lot of problems and a lot of issues with the things that we're seeing.

SHAWN STEVENSON: That's just so obvious, I never thought about that.

DR. GABRIELLE LYON: So, this concept that we actually would create a genomic alteration from pushing an mTOR pathway, since when, in the history of ever, does that even make any sense? And you know this concept that we... That meat is bad for the planet? It's not that binary. Do you know that 80% of all that stuff comes from transportation, electricity, and industry? Do you know that 50% of our fruits are imported in? So, if you really care about the environment... What are people talking about? Now you know why I'm so passionate about this because I'm watching this. This narrative is brutal, and the truth is, I've sat next to enough dying people, it really messes with you.

SHAWN STEVENSON: We got to talk about that too, actually.

DR. GABRIELLE LYON: You know, protein and cancer have nothing to do with each other.

SHAWN STEVENSON: Alright, let's dig in right here.

DR. GABRIELLE LYON: So, what? So mTOR... And again, mTOR is much more sensitive to carbohydrates and excess energy in the pancreas and the liver and all these other places, but somehow, they're targeting skeletal muscle and protein? How does that make any sense?

SHAWN STEVENSON: It doesn't.

DR. GABRIELLE LYON: Doesn't make any sense. Do you see? But we're being fed this, no pun intended...

SHAWN STEVENSON: Of course.

DR. GABRIELLE LYON: But it's... We're being fed this stuff.

SHAWN STEVENSON: So... Wow.

DR. GABRIELLE LYON: This is a major problem.

SHAWN STEVENSON: Yeah, and this a serious, serious issue.

DR. GABRIELLE LYON: So then if you go and you look at this IARC committee. This IARC committee is... They determine what is carcinogenic or not, and they get together a group of papers, okay? And this guy named Clarfeld... I can't remember his first name. David Clarfeld was on the committee when they came out saying red meat was a carcinogen, remember that whole thing? And he said, "Listen," they threw out all the randomized control trials because they were smaller. They used epidemiology data, they used observational data which is really low-quality data to say that protein causes cancer, to list it as a carcinogen. The majority of people were vegan or vegetarian on that board.

SHAWN STEVENSON: Yeah, we've got to take that into consideration, of course, who's putting the research together, and again, everybody... It's not saying that these are bad people.

DR. GABRIELLE LYON: No, not at all.

SHAWN STEVENSON: But it's the agenda...

DR. GABRIELLE LYON: Absolutely not at all.

SHAWN STEVENSON: And also, we cannot just cherry-pick which data is convenient and throw out... This has been one of my biggest things I've been driving towards this past year and a half, two years, is for folks to understand the quality of data. If we've got a double-blind, randomized, placebo-controlled trial demonstrating this outcome...

DR. GABRIELLE LYON: What we consider the gold standard, yeah.

SHAWN STEVENSON: And then we throw that to the side...

DR. GABRIELLE LYON: Yeah, 'cause it doesn't fit...

SHAWN STEVENSON: Throw 20 of those to the side, because it doesn't fit the narrative and then we point to some observational data.

DR. GABRIELLE LYON: Right. It's a problem.

SHAWN STEVENSON: It's not okay.

DR. GABRIELLE LYON: Not only that but that's how we train our professionals, that's brutal.

SHAWN STEVENSON: So, it's perpetuating the cycle of ignorance.

DR. GABRIELLE LYON: It perpetuates it because... Just because an individual was a physician doesn't mean that they are looking at the science, they are taking someone's word for it and at some level, you have to, but at the other, you really should go back and say, "Man, okay, does this make sense? Does this make sense? The recommendation that I'm giving, is it actually making sense?" This idea that red meat is a carcinogen, how? The concept of TMAO, if you care about TMAO, then there's more TMAO in fish. It's really not a red meat story, is it? It's not really, because people care about the individual's health. It's really not about cancer and protein, it's about whatever behind the agenda is, they don't want people eating animals, probably something, but it's not because they're caring about our health first.

SHAWN STEVENSON: Yes, and I think I should clarify when I was saying mTOR is going to be propagated when we're in that younger stage, I think, and I would defer to you of course on this, is that around that age bracket, late teens, early 20s, folks are probably consuming a higher ratio of protein than when they get older...

DR. GABRIELLE LYON: I don't know. Yeah, I mean...

SHAWN STEVENSON: But also... But the other part two was the exercise that is going to be involved which tends to decline as folks are getting older, especially in our society, so mTOR is

going to be more active and I love... This is the compliment you mentioned IGF-1, which is just going to be produced more in abundance when we're younger, period. And again, if that was a stimulator and driver of cancer, people would just have cancer all the time.

DR. GABRIELLE LYON: Exactly, and we also have to differentiate what kind of cancers are we talking about. Do you realize that people...? People say, "Oh, protein cancer." What kind of cancer? Lung cancer? We haven't gotten better at treating lung cancer in the last 60 years, it's not a metabolic disease. Colon cancer? Well, that's kind of pulling at straws, because we know obesity is a risk factor for that but why are you not focused on that, you see.

SHAWN STEVENSON: Speaking of the gastrointestinal tract, period. What about protein as far as our microbiome? This is where a lot of science is just teeming with innovation and new research. Is there any connections here that you recognize?

DR. GABRIELLE LYON: Yeah, I think it's going to be interesting to see what comes out in the next decade. A recent study just came out, there was a proof-of-concept study, I think Nature Communication which was... My mentor was a part of, and it actually showed that for an eight-week period of time that the body and this is a rodent study, can become more like a ruminant microbiome, so it actually generates some essential amino acids, which is a proof of concept as to why some beginner vegetarian individuals do not seem more... I don't want to say the word, don't have lower muscle mass than we would expect, because if they are very devoid of branched-chain amino acids or lower in those essential amino acids, we would anticipate them to be much more muscle deficient, I guess you would say. Some data is coming out that the gut can actually generate essential amino acids from the microbiome.

SHAWN STEVENSON: This is fascinating, same thing with generating glucose from protein.

DR. GABRIELLE LYON: Yeah, so gluconeogenesis. Gluconeogenesis is interesting. When you think about gluconeogenesis, this is this concept that the body can generate its own glucose. One of the reasons why... In my clinic, I see some individuals that eat a higher-protein diet, have higher elevated or higher hemoglobin A1Cs, but there's a belief, possibly, that the red blood cells live longer, because the body is going through this process of gluconeogenesis. For

every 100 grams of protein we eat, our body generates 60 grams of glucose through gluconeogenesis, through its self-generating properties. Interesting, right?

SHAWN STEVENSON: Yeah, yeah.

DR. GABRIELLE LYON: I'd much rather get my glucose that way.

SHAWN STEVENSON: Man, that is just... What I'm really hearing is another leg under the belief system which is really... This is a truism, that the human body is incredibly adaptable.

DR. GABRIELLE LYON: It is.

SHAWN STEVENSON: And it knows what to do to survive, but also what we're talking about today is, what can you do for your body to thrive? What is ideal? What is your DNA really expecting you to provide for just robust health, immune system, wellness, metabolic health, cardiovascular health? And that's what we're talking about here today, and I want to go back to our biggest killer, cardiovascular disease, which the average...

From year to year, the last few years has been about 630,000 folks have passed away here in the United States, with heart disease being what's on their death certificate. In 2020, that jumped up to almost 700,000 and it's as if it didn't happen, nobody's blinking an eye about it. Well, the point I'm making is, it's been a consistent major issue of premature death for our citizens, and what we've been targeting, which we've sucked at it, is the dietary change here to stop heart disease is, "Lower your cholesterol, take a statin and lower your fat."

DR. GABRIELLE LYON: Sorry, I was just looking at this today. There's over 200 million people on a statin. I usually say 40 million, but I would... Just looking at this one, that's a lot. To lower cholesterol? People are saying... They threw out that reduced dietary cholesterol, but people are still recommending that. They took that out of the guidelines, they took cholesterol recommendations out of the guidelines.

SHAWN STEVENSON: Actually, didn't see that headline.

DR. GABRIELLE LYON: You sure didn't see that, did you?

SHAWN STEVENSON: Yeah, it's so interesting, again, when we get a narrative and then you get products around it, you get people profiting from it, and not understanding how cholesterol is literally one of the most important nutrients for the human body, and also the cholesterol in food and the cholesterol in your body are two different things.

DR. GABRIELLE LYON: Absolutely, your body makes 100 milligrams of cholesterol a day.

SHAWN STEVENSON: If it's so bad, why is your body making it? It's so interesting but again, this is what these conversations...

DR. GABRIELLE LYON: Or... I'm sorry, your body needs 100 milligrams a day. Either it makes 800 milligrams, and you eat the rest...

SHAWN STEVENSON: The brain is just making its own on-demand. Your brain is most concentrated with cholesterol anywhere. Again, if it's so bad... But again, logic is kind of pushed to the side and... I'm wanting to know more about protecting us from this major killer, something that ended my grandfather's life, multiple open-heart surgeries, hypertension, all these things, his doctor told him, "Lower the fat, eat these partially hydrogenated oils, definitely stay away from red meat." What could my grandfather have done? And he was a... He used to hunt, and he would forage and all these things and all that kind of got taken away from him slowly. Number one, I'm hearing, of course, we really have to look at building muscle...

DR. GABRIELLE LYON: You do, you do.

SHAWN STEVENSON: And we need to make sure... Why? So, let's talk about why as far as cardiovascular health, muscle, and protein?

DR. GABRIELLE LYON: Yeah, so for cardiovascular health, obviously, there's that training component. The heart is a muscle, there's resistance exercise, aerobic activity, which I think is

status quo. Where skeletal muscle really plays a role, is that it allows for regulation of body composition. It really can reduce visceral body fat. As you're utilizing skeletal muscle, it allows glucose regulation. Fatty acid oxidation occurs in skeletal muscle, and for survival, say someone does have a cardiac event, the way in which they're going to survive, the more muscle mass they have, the better their survivability.

SHAWN STEVENSON: That's proven.

DR. GABRIELLE LYON: Yeah, which is really interesting. You know, there is something to be said for good cardiovascular screening. If an individual has familial hypercholesterolemia, definitely should be examined, and we do more advanced lipid testing, calcium score, clear... It's called a... A new scan called a clearly scan, those kinds of things which will allow for early detection in calorie control. And also, if you care about triglycerides, you have to reduce carbohydrates, it's not a red meat issue. It could be a total calorie issue but it's not a red meat issue. The next question you would have to say is, "Well, what's the mechanism of action?" If they told your grandfather to stop eating red meat because it's bad for his cholesterol, well, what's the mechanism of action? Why? They've proven that dietary cholesterol has very minimal impact on blood cholesterol, of course, if you are a lean mass hyper-responder or there's other components to that, but the majority of the population doesn't really need to be focused on cholesterol. In fact, like I said, they took that out of the guidelines.

SHAWN STEVENSON: Yeah. No, I was very young when this happened. And again, he was far too young and...

DR. GABRIELLE LYON: How old was he?

SHAWN STEVENSON: I believe he was 59 or 60. And I remember, again, it would start off as high blood pressure, and he invoked these changes primarily because of the pushing of my grandmother, and from there, he did the things and it got worse instead of better, and this can be like... If somebody can omit the power of food here, but that would be the biggest mistake because our tissues are literally made from these things. We get to decide what our cells are made of and also how they're communicating, and that was one of those moments,

again, that just added to my armor that I wear today in defense of everybody and so... And I want to thank you for that too because again, the issue today that's on a lot of people's minds... These very simple tenets are so overlooked, and I want to ask you about this as well, the role that protein... And again, even as I'm saying it talking to you, it seems so such a... It seems like it doesn't... The word doesn't express how important it is, but in regard to immune system function, our immune cells are made of proteins. Let's talk about that.

DR. GABRIELLE LYON: Yeah, protein, dietary protein, and just protein in the body is what everything is built on, and they are again... And even if you think about branched-chain amino acids, they fuel our immune cells, and they are... There's a crosstalk between skeletal muscle and immune function, macrophages, these interleukins that are released. We have to... If you really care about immune health, you do need to care about training, you do need to care about your diet, you do need to care about wellness for sure.

SHAWN STEVENSON: Wow. Of course, it's not getting much attention, but I appreciate you talking about that, and this is a good spot to reiterate the quality of protein, so you mentioned earlier, just give an example of whether it's a chicken breast or red meat example...

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: But let's compare that to a vegetarian source because again, this is inclusive, but we also need to look at logic here.

DR. GABRIELLE LYON: Yeah.

SHAWN STEVENSON: How much quinoa would you need or how much...

DR. GABRIELLE LYON: It's about six cups.

SHAWN STEVENSON: Peanut butter.

DR. GABRIELLE LYON: It's about six cups of quinoa to one small chicken breast.

SHAWN STEVENSON: That's a lot of quinoa.

DR. GABRIELLE LYON: That's a lot.

SHAWN STEVENSON: That's a lot of quinoa.

DR. GABRIELLE LYON: Probably the best of both worlds would be to utilize both. It doesn't have to be where you're eating all meat, and it doesn't have to be where you're eating all vegetables, there can be a combination of the two. And when you think about high-quality protein, you do think about animal sources, it's just the way that it is, and it's kind of like saying that the sky is blue, this is from the amino acid profile that exists.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: These are hard fast scientific numbers. We do need a certain amount of amino acids, essential amino acids to stimulate muscle, those amino acids go on and do a multiple... They do multiple other things. If you care about gut health, you care about preening, which helps make mucin, you care about serotonin production. There's all sorts of reasons why we need dietary protein above and beyond skeletal muscle health, but if we don't do the foundation then the rest all kind of falls away.

SHAWN STEVENSON: And also, I think, in addition, we need to talk about the actual protein fraction of these things too, it might be the beans and rice combination to get these... What's assumed to be a complete protein and...

DR. GABRIELLE LYON: It's a lot of carbs.

SHAWN STEVENSON: Yeah.

DR. GABRIELLE LYON: If you care about obesity, you care about Alzheimer's, you care about heart disease, we have to not over-consume. When you're younger, you can get away with

eating beans and rice, it's fine, but as we age, we have to understand that protein is a nutrient signal, it is a cellular signaling mechanism for mTOR. We have to make sure, so if you're eating sub-threshold, let's say you're in your 40s and you decide you're going to have 20 grams of protein, and that's how you're going to do it and you're going to get it from rice and beans. You're never going to stimulate your tissue. Your skeletal muscle will not be stimulated on that, it's not adequate, it is an on or off mechanism, it either is going to stimulate these processes or it's not. As we age, it becomes much more important to pay attention. When I think about some of my favorite sources of high-quality protein, I do, I think about beef or bison or chicken or turkey, even fish is okay, eggs, whey. If you're vegan or vegetarian, it's going to take... It could take 35% more. It could take six cups of quinoa.

It's interesting, protein is really under-represented. Next time you look at your... If you eat anything out of the packages, you might not, but if you look at a protein bar or if you look at say, hemp protein, it'll just say protein. Whereas you look at, I don't know, a fat label, it'll have a breakdown of fat, if you look at a carbohydrate label it'll have a breakdown of carbohydrates, and then you just look at protein, but the reality is protein is made up of 20 amino acids. And for example, if you have 20 grams of hemp protein, the bioavailability, that might be 10 grams, but because the amino acid profile is not there, you have no idea. We have no idea of the quality of that protein.

SHAWN STEVENSON: Let's talk about that because I'm wondering about protein supplements, because here's the thing, and again, I really hope folks get this, especially if the goal is weight loss if you take on what Dr. Lyon is sharing today...

DR. GABRIELLE LYON: Try it, try it.

SHAWN STEVENSON: And targeting your ideal body weight in grams of protein.

DR. GABRIELLE LYON: Yep.

SHAWN STEVENSON: It can be challenging to get that protein in because it's so satiating in some aspects, and I want to talk about protein supplement, whey is the most studied...

DR. GABRIELLE LYON: Yep.

SHAWN STEVENSON: I'll just throw a ballpark figure is probably 90%, 95% of studies on protein supplementation is whey.

DR. GABRIELLE LYON: And whey is an amazing food matrix. It has Alpha Lactalbumin when you care about the immune system, you have to care about whey protein, has Alpha Lactalbumin, lactoferrin, it has these food matrixes within them these substances that are very helpful for the immune system.

SHAWN STEVENSON: Yeah. And then there, of course, there are some studies now with pea protein and the like.

DR. GABRIELLE LYON: Which are relatively new to the human body, these pea isolates.

SHAWN STEVENSON: Got to consider that.

DR. GABRIELLE LYON: You do. And also, there's a lot of talk about estrogen components in pea and soy, which is much higher than you would find in an egg, for example.

SHAWN STEVENSON: And there's egg protein, but it's probably... You'd probably recommend folks to just eat the egg.

DR. GABRIELLE LYON: I would recommend it. And then there's collagen protein, which is incomplete protein and weighs around a plant-based protein of pea or rice if it's in combination because you're really looking for that amino acid profile. You could utilize a scoop of essential amino acids; you could use a scoop of branched-chain amino acids to really make it workable for someone who doesn't want to eat any kind of animal product.

SHAWN STEVENSON: Got it. So, if we're doing the pea protein or pea-rice combination...

DR. GABRIELLE LYON: Yep.

SHAWN STEVENSON: Protein, adding in some BCAAs...

DR. GABRIELLE LYON: Yeah. It'd be great.

SHAWN STEVENSON: As well. Okay, got it. But the BCAAs in and of themselves that isn't going to stimulate protein synthesis?

DR. GABRIELLE LYON: It will, but it's like sitting in a car and turning on the key, it won't actually go. Branched-chain amino acids by themselves will actually stimulate mTOR, but it won't be enough to lay down, you require all the amino acids to lay down muscle.

SHAWN STEVENSON: There we go. So, the full Monty. It's like, "You got it," okay.

DR. GABRIELLE LYON: Yeah, and there's actually a great paper, Robert Wolf wrote on this. I can send it to you, it's great.

SHAWN STEVENSON: Awesome, yeah, this is fascinating, and so we've got... You mentioned collagen but let's clarify this because collagen is hot right now and I think for a good reason, there's a lot of benefits in here but you're saying that this is not the complete protein we're looking for. It's...

DR. GABRIELLE LYON: Not for muscle health. It's very low in branched-chains and it's devoid of tryptophan. Not to say it's not good, but it's not something for muscle health.

SHAWN STEVENSON: Okay, so we're not going to be stimulating what we're looking for here with muscle development, but what are some other potential benefits here that... Again, I don't want to... Because I know a lot of folks are probably utilizing collagen.

DR. GABRIELLE LYON: It's great for your gut. I use it. Use it for your gut, you can use it in addition to other protein sources, skin, hair, nails.

SHAWN STEVENSON: To be 100. I haven't really talked about collagen on the show very often, maybe a couple of times in all these years, but I do know, of course, I see the trends as well. And what about as far as the glycine, for example, what about that?

DR. GABRIELLE LYON: Yes, I actually was thinking about that, that's one way. So, glycine is an amino acid, it's... Glycine can actually help reduce methionine, there may be some evidence. Again, I'm not totally sure yet, but it may be helpful in methionine restriction which is... Methionine restriction is this idea of why fasting can be beneficial, one reason why fasting can be beneficial, I try not to talk in absolutes, but yes, it does have a lot of glycines and that can be helpful, it can also help you sleep, can lower anxiety, those kinds of things.

SHAWN STEVENSON: Awesome, well, I want to switch gears because I heard you say something along the lines of modern medicine's focus on pathology is sort of like chasing your own tail. Why did you say that?

DR. GABRIELLE LYON: It's a mistake. We are trying... It's as if we are constantly focusing on this problem and we believe that problem to be the source but it's not. If we were going to fix the obesity epidemic, we're smarter than we've ever been, we have more technology than we ever have, and we're fatter than we've ever been in our... We're fatter and more unhealthy than we've ever been, we're chasing our tail. We're looking... We're trying to answer the wrong question. This is not an issue about being overfat, this is truly an issue about being under-muscled and if we keep looking in this paradigm, we're going to constantly be chasing our tail, it's not going to get better. Guarantee you, in another 10 years, it's going to look exactly the same. Actually, with higher populations, it's going to look worse. Then throw on the narrative, this anti-protein narrative, people are not going to have a chance, so I personally don't like chasing my own tail. And it's not to offend people, I don't want to say... I'm not...

SHAWN STEVENSON: I was thinking about somebody actually with the tail bone, with a long coccyx out here chasing it around.

DR. GABRIELLE LYON: And I'm not... This is not about fat-shaming, I'm not saying there's anything wrong with individuals who are struggling with their weight, what I am really trying to advocate is I believe that people deserve answers, and I believe in order for people to change, they have to have the right information. And with information overload, people don't have a chance, and that's what I'm really trying to shift.

SHAWN STEVENSON: And this is not complicated, this isn't like for that weight loss access...

DR. GABRIELLE LYON: This is not complicated stuff.

SHAWN STEVENSON: You don't have to buy some special Lyon signed-off supplement, or you don't have to... You just eat real food, and you take a shift in your thinking about that food.

DR. GABRIELLE LYON: Yep, and you figure out how to dose it appropriately. You don't need less protein as you age, you need more. You need to make sure that you're consuming protein in discrete meals, which is going to be much bigger than most people realize, and they're not used to. They really need to work on stimulating their tissue, they really need to be consistent. The standard American eating pattern is, "Have a big steak dinner." You don't want to do that. You want to start the day with protein, you want to prioritize protein. If you eat carbohydrates, you want to make sure that you keep it under 30 to 40 grams easily 'cause you don't want to stimulate... You don't want to have a more robust insulin response and you end your day with a protein meal. The meal in between, I don't care. Shouldn't be straight carbohydrates but whether your protein meal hits 30 grams or not, I'm okay with, because you've already stimulated your tissue first thing in the morning, and you stimulate it again before you go to sleep.

SHAWN STEVENSON: Sounds pretty simple. This has been so fascinating, and you already mentioned this earlier, that this is really your life's work, this is why you're here, your purpose, and if you could, can you share a little bit more about what is the model that you're hoping to create for everyone?

DR. GABRIELLE LYON: I am really hoping to create a new form of medicine where it is focused on skeletal muscle, and it's not... What this is, is it's looking at skeletal muscles and endpoint for health, it's looking at biomarkers that directly are related to skeletal muscle, it's about looking at post-exercise endpoints, not Vo2 max, not just body composition, but also these myokines and these other markers. It's also looking at... Actually, looking at skeletal muscle tissue. It's also looking at, is the skeletal muscle tissue being... How is the blood flow to skeletal muscle tissue? It's actually treating skeletal muscle as the organ that it is. It's an endocrine organ and it should be treated like that. So, we should measure it like that, we should image it like that, and we should have physicians that specialize in it.

SHAWN STEVENSON: This just makes too much sense and so thank you so much for sharing your wisdom and your insights. I'm still bubbling over; I want to talk about muscle...

DR. GABRIELLE LYON: There's so much to talk about.

SHAWN STEVENSON: Being an endocrine organ, related to the thyroid, its impact on the thyroid, the impact on the adrenal glands, just... So, I would love to have you back, of course, whenever we get the chance and...

DR. GABRIELLE LYON: I would love to.

SHAWN STEVENSON: You're amazing, thank you so much for being a voice and for being somebody who's really leading the charge in this, and if you can let everybody know where they can follow you, get more information, just get more into your work.

DR. GABRIELLE LYON: Yep, and also, I will have a book coming out on all this stuff but just it needs a little bit of time and... But you can find me on my website, Dr. Gabrielle Lyon. You can find me on Instagram, Dr. Gabrielle Lyon. YouTube, you can see conversations with my mentor, but it was really... You know, he's older. I hope he doesn't ever listen to my stuff, and I wanted to be able to share these conversations that I've had for two decades. So, we record, and we talk about all this stuff, they can find it on my YouTube. I have a newsletter which I curate

myself and it's some of these just interesting studies and learning resources, that kind of a thing, and if people are interested in being a patient, they can apply.

SHAWN STEVENSON: Fantastic. Thank you so much for hanging out with us.

DR. GABRIELLE LYON: Yeah, thank you.

SHAWN STEVENSON: Dr. Gabrielle Lyon everybody. Thank you so much for tuning in to the show today. I hope you got a lot of value out of this. What if we can shift the paradigm? What if we can actually take a big mental lift-off of our shoulders from something that has not been working? We've continued to have this paradigm of targeting weight loss, and we've created a state of learned helplessness for so many people who've tried again and again and again to, "Lose weight." And targeting and hating their fat and making this an obsession and doing the cookie-cutter diets. What if the prescription was no longer just, or no longer period, you need to lose weight? Instead, the prescription now becomes, you need to gain some muscle. For your insulin sensitivity, your heart health, your body composition, your immune system, what if that becomes the thread, the connective tissue of our healthcare system, our healthcare providers, our healthcare workers. Whether it's in endocrinology or whether it's in gastroenterology and folks saying, "Hey, you know what, we've got all this data here demonstrating how important muscle tissue is and the function of all these different systems, your prescription is you need to add five pounds of muscle, here's how to do it."

Hey, I believe this can be the future, and it also, again, it takes this psychological weight off of us in targeting something as Dr. Lyon dictated today, which is the symptom our issues of cardiovascular disease, our issues of obesity, or a symptom of losing muscle, or a symptom of not taking advantage of our incredible gift that we're endowed with, which is the ability to build muscle. I appreciate you so much for tuning in to the show today. If you got a lot of value out of this, please share this out with your friends and family on social media. Tag me, I'm @shawnmodel, and of course, tag Dr. Lyon on Instagram as well, and share what you thought about this episode. And we've got some incredible master classes, and amazing guests coming your way very soon.

Take care, have an amazing day and I'll talk to you soon. And for more after the show, make sure to head over to themodelhealthshow.com, that's where you can find all of the show notes, you could find transcriptions, videos for each episode, and if you 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.