

THE MODEL HEALTH SHOW

EPISODE 558

How Our Genes Impact Viruses & Why Disease Symptoms Are Not The Problem

With Guest Dr. Ben Lynch

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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 incredibly important, because we're getting to the heart, we're getting to the very root of what's taking place in our world today with COVID-19. We're literally getting into the domain of our DNA. And what you're going to learn today is going to blow your mind. What's taking place is not an accident by any means. And to be able to investigate something like this, I reached out to one of the foremost experts in the world in epigenetics and understanding what's happening with our genes and our genetic expression, our DNA and methylation, which you're going to learn about today as well. And again, it's going to be mind-blowing, so many powerful insights. But most importantly, it's empowering. It's giving us some tools that we can use right now to be more resilient, especially moving forward, because the next thing is coming.

This particular thing is not seeming to let up, but this is just possibly a preview. Because as a species, if you haven't noticed, in recent years it's been one thing after the other, every couple of years. Whereas back in the... We'll just say in the '90s and in the '80s, this wasn't a normal occurrence where things were kind of sweeping through and creating all of this panic and then kind of dissipating. Things have become... They're speeding up the rate at which new viruses, novel viruses are popping up, and also the extent of antibiotic-resistant infections as well. So again, there's a reason behind the scenes why these things are taking place. Because contrary to popular belief, if you actually look at the data, we believe that our susceptibility to infectious diseases has gone down. But that's not the case. Because of our advance in modern medicine and the drugs and the living better through chemistry modality that we're taking on, but the data is actually very contrary to that. For instance, an analysis published in the Journal of the American Medical Association, in the mid '90s found that between 1980 and 1992, the death rate due to infectious diseases as the underlying cause of death, increased by 58%. The researchers stated that, "Despite historical predictions that infectious diseases would wane in the United States, these data show that infectious disease mortality in the United States has been increasing."

There's a popular narrative, and then there's the truth. And the truth is, these things have been picking up in recent years and there's a reason why. And so again, that's what we're diving into today. Now, one of the key elements that we touched on just briefly, but I want to expand on here for you, is how certain key nutrients play a role in our immune response. Now again, we just briefly touched on it, but the role that specific electrolytes play. We mentioned one of them specifically. But overall, these molecules, these minerals that carry an electric charge are critical to the literal communication of our cells being able to talk to each other. So, it's kind of

important. But now we have some really valid data on how it's playing a role in our response, in our physical response, the response of our biology to this particular infectious disease.

This is a meta-analysis. Again, this is a combination of multiple studies published in the Annals of Clinical Biochemistry titled Electrolyte Imbalance in Patients with Severe Coronavirus Disease 2019. This is COVID-19. Now this study analyzed five studies with nearly 1500 patients. So, this is a pretty great data set who contracted COVID-19. They found that both the electrolyte sodium and potassium were significantly lower in patients with severe COVID-19, versus patients who had sufficient levels of these electrolytes. Now the question could be, was it COVID-19 that caused the depletion in their electrolyte balance? Or was the electrolyte balance the underlying factor for them contracting the virus and the severity of the virus? And the truth is, it's probably both. Because as your body is defending itself from any type of infection or pathogen, it's going to sequester, it's going to call into action the electrolytes that you have stored in your system. And it will literally pull electrolytes, pull minerals from different places in your body, even from your bones if to try to address any sense of urgency.

Now, when we're already in a state where we're depleted, the body being able to mount an appropriate response it's going to struggle to do that. So, number one, when we're faced with a pathogen, your body is going to sequester a lot of electrolytes in order to ramp things up and to mount an appropriate response to get you healthy. So that's number one. So, it is going to be something that siphons that source. But also, for coming into it already deficient is going to increase the likelihood that we're not going to mount a healthy response. It's something so simple. These electrolytes are critical, sodium, potassium, magnesium, but in the right ratios taking a great data set. You don't just go start dousing yourself with these different electrolytes. And these, basically, these are different forms of salts. There isn't just sodium salt. That's what we think about in our popular concept of electrolytes or sodium or salt. But there's magnesium salts. There's potassium salts. There's calcium salts.

And so, the very best data set that we have was leveraged by the folks at LMNT. That's L-M-N-T. Go to drinklmnt.com/model, and you're going to get to try LMNT for free. That's drinklmnt.com/model. All you're going to do is just pay a little bit in shipping, they're going to send you a free sample pack of their remarkable electrolyte. This is something that I have almost on a daily basis. I absolutely love it, and I've seen the benefits firsthand. And again, they've got a great data set of people. Now, a couple little secrets, don't tell anybody, but LMNT is being leveraged by many sports or professional sports teams out there that we're out there cheering for. They're getting that LMNT into their system and upgrading dramatically from the so-called electrolyte drinks that we grew up with in the form of these ades, Gatorade, Powerade, where it's also dousing the body with these abnormal artificial flavors and colors and sugar and all these unnecessary things. With LMNT, you're just getting stuff that you need.

And it's also sourced in an efficacious way. Go to drinkmnt.com/model. And now, let's get to the Apple Podcast review of the week.

ITUNES REVIEW: Another five-star review titled, "Sharing the Truth No One is Talking About", by Chad. "I've been listening to the Model Health Show for nearly five years. Shawn is not afraid to have insightful content and incredible guests that are not politically correct. And he does it not for clicks, but to share the truth to the common person. I'm deeply grateful for his work, especially as the world is so overloaded with misinformation. His work has impacted me both personally, impacting the way I eat and exercise, and professionally. He inspired my master's thesis topic, and I have started a leadership coaching podcast in business. Listening to his podcast has helped shape my life."

SHAWN STEVENSON: Thank you. Wow, that is absolutely amazing. That's beyond awesome. I don't even have the words to describe how amazing that is. Thank you so much for sharing that over on Apple Podcast. I'm just grateful to be a part of your story, and just thank you so much for sharing your light and sharing your voice, because the world truly does need it right now. If you had to do so, please pop over to Apple Podcast and leave a review for the Model Health Show. And now let's get to our special guest and topic of the day. Our guest today is a pioneer in the field of epigenetics. Dr. Ben Lynch is the best-selling author of the book, *Dirty Genes*. And he's the president of Seeking Health, a company that helps to educate both the public and health professionals on how to overcome genetic dysfunction. Now, this conversation again is loaded with incredible insights, but also things that are actionable that we can put into place right now. Let's jump into this conversation with the amazing Dr. Ben Lynch. Dr. Ben Lynch, one of my favorite human beings, one of the smartest guys I know, welcome back to the show.

DR. BEN LYNCH: Awesome to be here, Shawn.

SHAWN STEVENSON: Listen, I want to first and foremost start by talking about methylation. This is something that you, of all of the people in our sphere, our friends and colleagues have really brought this important insight about science and about biology forward. Can you start off by sharing what methylation actually is, how it controls our appearance, our functionality and our health overall?

DR. BEN LYNCH: Yeah, well, methylation, it's a really important biochemical process in the human body. And it basically transforms one compound to another, or it turns our genes on or off, or off and on, depending on the gene. So if your chemical process called methylation is not working very well, your genes are not producing what they need to be producing, and you're going to be getting symptoms, everyday ailments that you struggle with, that might send you to the doctor, or you might think that, "Oh, they're minor enough, I can't fall asleep at night,"

or "My nose is running," or "I'm kind of cranky today." "My PMS is kind of going off." All these have to do with your methylation status. And oftentimes, doctors don't check it. And it's actually very easy to check. And if you've been trying to get pregnant for a long time, or you've been having pregnancy complications and you keep losing your child. First of all, I'm sorry about that, but if your methylation status is not functioning, then the baby is not going to happen and you're going to get issues. And that's also where neural tube defects come from. And that's why folic acid is so highly recommended, because folic acid is supposed to support your methylation, but it actually hinders it for various reasons. But in short, methylation is a very, very important tool that your body uses to do damn near everything in it.

SHAWN STEVENSON: This is so important, because again, even issues ranging from childhood development, miscarriages, cancers, and the like, we're talking about drilling all the way down to the level of our DNA, all the way to the level of our genes.

DR. BEN LYNCH: Yeah, and we're also talking about the next generation. So oftentimes, when men and women are working really hard to try to get pregnant, they think about the baby that they're going to be having. That's key, right? But you're also affecting the grandkids. Because girls that are in utero have their eggs developing at that time. The girls are being born with their eggs for future reproductive purposes. And if you're not healthy, then the child that you provide in the world is also not going to be healthy. And there's research, Shawn, that shows most disease starts in the womb that last a lifetime. So, if you provide your diet with sufficient choline, which is a supportive nutrient for methylation. And primarily, choline comes from meat. So, vegans and vegetarians, I totally respect your position here and all that goes with it, but you really need to be supplementing with choline. 'Cause if you're not, your child can be born with an inferior brain and get early onset dementia, irregardless if they have an APOE 44 genetic variant or not, or early onset genetics, it's just a deficiency of choline. And Dr. Zeisel, amazing researcher in choline, has found that 800 milligrams of choline is the magic number where dementia doesn't even seem to occur in the newborns. It doesn't exist. So here we are talking about treating dementia or trying to find medications that treat Alzheimer's. But at the end of the day, if your pregnancy is supported, you've already done your job.

SHAWN STEVENSON: Wow, so it's starting off giving us essentially better cards that we're going to be able to play throughout our lifetime, is what I'm hearing. That makes sense. And so, choline specifically, so where are we going to find good food sources of choline? Would eggs be one of those?

DR. BEN LYNCH: Eggs. I'm going to level up a little bit, I'm going to say Caviar.

SHAWN STEVENSON: Fish eggs.

DR. BEN LYNCH: So, Caviar has not only a lot of good choline in it, but it's got some really good phosphatidyl... Phospholipids, and specifically phosphatidylcholine, which in phosphatidylcholine is that, it's a primary component of your cell membranes. It makes up, I don't know the exact percentage, but I'm going to say at least half of the structure of your cell membranes. And without a cell membrane, the cell is dead. We think about the nucleus, which is a container of all of our DNA as being the life blood of our cell. And if you pull out the nucleus, the cell will die. No, it just won't make anything. If you pull off the cell membrane of the cell, it's dead. It's done. So, phosphatidylcholine is extremely important. And I cannot tell you, Shawn, how many people that were struggling with pregnancy were vegans or vegetarians, and just over and over and over and over and over again. So, eggs are a big one, Caviar, meat of all types. So those are the primary ways. And you can get choline in non-meat ways, but you got to get a lot of it. And I don't think the source, or the quality of the choline is going to be nearly as good.

SHAWN STEVENSON: Thank you for sharing that. So, choline is one of these critical factors. And I love the fact you just mentioned this process. We've known about this for decades. Enucleation, taking the nucleus out of a cell. Because when I was in school, same thing, we were being taught that the nucleus is the "brain of the cell," and essentially negating the role that the cell membrane plays. Even brain is in that word as well. And part of that, and I know that there's some big roles or integration here with methylation, as well with that cell membrane, being able to communicate with the environment and getting those signals on what should be happening with our genes and with our DNA.

DR. BEN LYNCH: Yeah, and what makes phosphatidylcholine? The methylation cycles. 80% of your methylation process, the biochemical process in your body, 80% of it goes towards two things, creatine formation and phosphatidylcholine formation. So, if you are a vegan or vegetarian and you are not consuming adequate choline or nutrients that support your methylation cycle, you are going to be deficient in two things, creatine and phosphatidylcholine. And your homocysteine levels will go up. And so, the key marker of your methylation working is a very inexpensive lab test, it's homocysteine. And I know there's a lot of books discussing about how vegan, and vegetarianism reduce cardiovascular disease. That's if it's maybe done right, but it's super hard to do it right nutritionally. It's very difficult. And I've worked with doctors who were actually struggling with their health, and they were having heart attacks and strokes. And she goes, "Well, I don't know why this is happening, because I'm a vegan or vegetarian." I said, "Because your methylation pathway is completely clogged, you're homocysteine is through the roof."

SHAWN STEVENSON: So, homocysteine is one of those, again, you just mentioned it's a relatively inexpensive thing to get checked. And we've got these great biomarkers now that we've kind of pinned down, homocysteine, C-reactive protein is another one. But we've been

having tunnel vision on cholesterol, for example, and really missing the point here because cholesterol is an important role player in the integrity of all of our cells.

DR. BEN LYNCH: And your hormones. And in fact, a risk factor for suicidal tendencies is low cholesterol.

SHAWN STEVENSON: Yeah, I saw that data early on. Because the brain is actually... If we're looking at the place where cholesterol is most concentrated, it's in the human brain. And the cool thing is, of course, our brain... Our bodies do make cholesterol. But there is this... And this is what I really admire about your work as well, is like you're looking at how did we evolve? What are the things that humans have been doing the longest? And let's pay attention to those things. And also, again, we can get creative in our lifestyle whether we're taking a vegan protocol, vegetarian protocol, paleo protocol, whatever the case might be. But we've got to acknowledge the things that our genes expect from us, and what we've been doing throughout our evolution. Now, if we pull certain food groups out, we've got to find a way to supplant those things. And it might not be as efficient, so we've got to be mindful of that and not let our ideology start to suppress our biology if that makes sense.

DR. BEN LYNCH: I love that. Yeah, don't let your ideology suppress your biology. That's brilliant. And especially, what someone else's ideology is working well for their biology may actually harm your biology. Just because your neighbor is super excited, they lost 20 pounds and they've gained 10 pounds of lean muscle mass, and they feel great, and he's like, "Wow, okay, I'm going to jump on a vegetarian diet or the carnivore or paleo," or whatever it is that they're doing, and you try it, you actually feel like crap. And they're like, "Oh, you must be doing it wrong, or you got to do it harder, or you're cheating somewhere." It's like, "No, I don't think so. I'm super compliant. It just... It's not working." And your own genetics are different, or your epigenetics are different, or maybe your job is different. Maybe you're really physical at your job and you're... Endurance-wise, maybe you're shoveling all day or you're a landscaper or some type of contractor where you're moving heavy things all day long, and these people are desk jockeys, and you're a vegetarian, you're just eating veggies all day and you're not getting sufficient nuts or other power foods, you're going to be struggling. So, it's not just your genetics, but it's your lifestyle, your environment, and all these other factors.

SHAWN STEVENSON: This is awesome. So now I want to clarify this point a little bit before... So, I've got a two-part question. This is going to lead into, can methylation increase, or lack thereof, disruption in our methylation, increase our susceptibility to viruses? So that's the second part. But before we get to that, if you could... Because we've said this term a couple of times, we've said genes, we've said epigenetics, and you've talked about genes turning on or off or that kind of toggle being able to happen. So, I want to make it clear, if you could. Could our genes, the genes that we have, be putting us at risk for viral infections, or is it something

above our genetics, which is, of course, we could talk about methylation again. So, I want to clarify that point, and so I'm passing it to you. Is it our genes themselves that are causing our susceptibility, or is it something else? Are our genes getting dirty?

DR. BEN LYNCH: Yes. Got it. So, I think before I answer your first question of does decreased methylation increase our susceptibility to viral infections, I will back up and I'll talk about genes first, because your genes actually drive methylation. Well, they can. It's a two-way street. It's like, who's head of the household? Well, sometimes the lady and sometimes the man.

SHAWN STEVENSON: Who's the boss? Tony Danza.

DR. BEN LYNCH: It all depends on the situation. I would say... Let me just answer, "Do genes increase our risk?" When you go to the doctor, and it's your first visit to the doctor, what do they always give you to fill out? Patient history, family history, fill out these 10 pages. What does your mom have? What diseases do your mom have? Diabetes, cardiovascular disease, strokes, glaucoma's, cancer, various types. You're just flipping through there and you just check box, check box, check box. You're like, "Damn, my mom was sick," check, check, check. And then your dad, your grandma, your brothers, and your sisters. It's like, "Damn, I got check marks all over this thing, I guess I'm next." And then you give that to the doctor, and you're kind of embarrassed that you checked all these boxes of the family history and all these susceptibilities, and you're like, "Holy crap, when's my turn?" Let's back up a little bit. So, they've done genetic studies on twins, genetically identical twins, like every gene is the same 100%. But one of the twins goes on to live to 90 and they're all healthy, and there was no problems, they just died in their sleep. The other one lived until they were 65 and grossly obese, and seven different comorbidities, and super depressed and had a heart attack, a stroke, and died instantly.

So, what the hell? You can't... There's some people that want to be born with genes that are not functioning very well, because then they can blame whatever their conditions are on their genes and say, "I'm diabetic type 2 because my genes are bad. I got them from my mom and dad." And they settle for that. Then you got the other type of person who's like, "Damn, I've got these genes that increase my susceptibility to diabetes type 2. Why is that?" And they look at those particular genes, because if we understand what a gene does, it's very simple. Genes have different jobs, we have about 18 to 20,000 or so genes in our human body, every one of those genes has a particular job to do. And so, imagine in your household, if every appliance in your house was a certain gene and your refrigerator just turned off one day, it's like that's pretty significant, right?

If one of your heat registers in the back corner of your living room where you never sit got plugged, that's a gene. That doesn't really matter, it doesn't really give you such an impact. So,

you have to understand which gene is a problem and what is it doing, what's its job, what does it need in order to perform its job, and what hinders its ability to do its job? And so, if you look at a person who has diabetes type 2 or increased susceptibility to it, maybe it's a storage thing. Maybe they don't burn glucose very quickly, and so the glucose builds up in their blood stream for various reasons, or they can't metabolize glucose very well, or they can't transport fat very well. There's all sorts of reasons, so you can identify and pinpoint. We got kind of on a tangent there, I'll let you transition me to the next point.

SHAWN STEVENSON: Sure, sure. So, this is great because it's a clarification point that... And I know you were around working in the field when TIME Magazine comes out, it's just like, "We've discovered the fat gene, or your genes control your destiny." And that was a really twisted version of science and what's happening in actuality. Yes, our genes are critically important, but they function more like a blueprint to run operations, like you were just mentioning. But here's the key, is whether or not that blueprint is getting read and how well it's getting read, whether or not it's getting read, and that is determined by these epigenetic influences. With epigenetics, epi meaning "above," like our epidermis, the outer most portion.

And these epigenetic controllers, these are virtually all things that are, if not within our power, it's definitely within the environmental input that we're giving our bodies, consciously or unconsciously. And so that example that you just gave with diabetes, with type 2 diabetes, it's a progressive thing. It isn't just like, boom, a gene turns on and you have diabetes when you turn 17. There's genetic out-picture and it's taking place over time that are changing the way that your body functions, and here's the craziest part, and I know you know this as well. Oftentimes these genetic switches that might out-picture in a disease manifestation, they're actually your body just trying to adjust to keep you around to help you to survive your environmental exposures.

DR. BEN LYNCH: Absolutely. Yep. They're switches, they're switches. And if your body has all this storage of energy, then it's going to want to not put more storage in the cell, more energy in the cell. And it's going to say, "There's sufficient glucose, I got enough fuel, stop giving me more." And now we're going to down-regulate the glucose receptors to pull more glucose into the cell, it's a defensive mechanism. Diabetes type 2 is a defensive mechanism, it's not broken. And here we are giving patients more insulin to cram more fuel into the cell, which is actually pro-oxidative as well, meaning it's destructive to the cell. So, you go to the gas station, you got a 12-gallon gas tank. You fill it up, 12 gallons or 11.5, you're not supposed to top off, and you put it away and you drive off. But you want to put 14 gallons in there, and it's like I really want to get 14 gallons and you talk to the gas station attendant, and he's like, "Well, you can't do that." It's like, "Well, I really need to do that. My doctor said I need to do that." And they're like, "Well, you're going to make a mess," or "Here's another two-gallon container," and it's strapped on the outside of your car, somebody hits you, it blows up and the whole thing dies.

So, it's... You got to understand that the body is inherently brilliant, and we are messing it up. If you look at conventional medicine and you are given a drug, what does that drug typically start with? Anti-depressant, anxiolytic, breaking anxiety. Antacid, antihistamine, it's against whatever your body is doing, and it's doing it by force. And so, any time you do that, you need to step back and say, "Well, no wonder I'm getting all these side effects, because everything that I'm swallowing is going against what my body is trying to do, and it's just not good." And then if you have two people having a conversation at the same time at home, you're going to have problems, or if your significant other and you are having battles at home, it's going to break apart.

So just step back and first of all, appreciate what your body is doing. Step back and say, "Why is it doing what it's doing?" And say, "Okay, is this a good thing? I know it sucks for me right now, but is it doing its job?" Fever is a big one. The number one recommendation by doctors all across the world right now for this viral illness is take Tylenol, go home and be comfortable. You just shut down the number one thing that your body needs in order to eradicate that virus because... Put it this way. Are you going to slap a steak, a raw steak on your plate and eat it? No, that's stupid. Why? You could get E. Coli; you can get a bacterial infection and you overwhelm your microbiome and kill yourself. Well, that's why you cook your meat, pal, to kill those pathogens. So, fever is cooking the pathogens, it's upping your body temperature to kill the pathogens, so they are gone. And it sucks, it doesn't feel good to have a fever, but it is your number one tool to eliminate the virus. And here we are globally shutting it down, and not only that, but you're ruining your glutathione levels, which is your number one antioxidant, and now your immune system is not modulated, and you got a cytokine storm on top of it, so we are actually hurting people, millions and millions of people because of this.

SHAWN STEVENSON: Man, this is powerful because this is... Even though we're seeing this in a spotlight right now, this is something we've been doing for a long time. We're looking at our body symptoms as the target, like that's the problem, instead of understanding the underlying mechanism that our bodies are doing to actually keep us safe and to heal us. So, in our culture, we can't have a fever. It's just like that's the fever is the problem. The fever is indicative of an underlying issue. Even a headache, your body is giving you feedback that something is out of alignment. If we drill all the way down, we're talking about something going on at the level of your DNA. Your body is very, very smart. Now, not to say that fevers can't be too much. There is a space for that, but that's in a small... That's in a minority situation, but we're treating all fevers the same and not allowing the body like it's okay to be "sick" and create the conditions for your body to kind of gracefully transition through that instead of treating it... Basically, if you've got the one tool of being a hammer with drugs, everything looks like a nail, and that's what you're going to do is throw drugs at it.

So, this brings us to the question to sum it all up, and answering this question, "Can our genes, our DNA... " And your book, your amazing book is "Dirty Genes", and that's what you really talked about and broke down what that actually means. Can our genes and disruption in methylation be an underlying reason? So, we know that this is affecting chronic disease like diabetes, but can it be fostering the susceptibility to viruses like COVID-19?

DR. BEN LYNCH: Quick answer, yes. But I will keep going. I don't like saying "yes, but" because that just negates everything above it, but yes, genes increase your susceptibility to viral infections or anything; however, if you know which genes are increasing susceptibility, and what those jobs are for each of those genes, then you can usually provide specific tools to help them read those blueprints, or produce what the blueprint is trying to make, or just give it the end product, the final product. So, for example, if you have a particular gene, TNF alpha, which is an inflammatory gene, it works on inflammation, and it actually increases inflammation in the body, and we have this negative outlook on inflammation, like it's bad. Well, if you don't have any type of inflammation, then you actually have a disease, I forget the name of it, where you cannot fight any infection and you die from the smallest infection. The common cold will kill you.

And so, you have to have some sort of inflammation for your immune system to take action. Now, you could have no inflammation at all, and you will die from the smallest condition, infection, or you can have a greatly sensitive TNF alpha gene where it is super hypersensitive to the smallest stimulation, and you've got inflammation. You could have one bite of a tomato and boom, you got inflammation, or you can do one set of pull-ups, and now you've got post-workout soreness that lasts for a week and a half, and that's just, "What the hell is going on." Or you get an infection and every time you get sick, wow, you just get blasted. You get horrible full-body pain, headaches, and then you get this common one that's going around nowadays, and it puts you in the emergency room, 'cause you've got a cytokine storm, and they put you on steroids, and steroids actually saved your life.

Now if you look genetically at these individuals, you may find that these genes are actually born where they're super hypersensitive or hypo sensitive. And if you know that ahead of time, you can take action, it's like if I am born with a hypo-sensitive TNF alpha, then I know I need to be taking some antivirals or anti-bacterial or increase my probiotics, or up my vitamin D or something, or just do something to mitigate that. Or if I know that my TNF alpha gene is really hypersensitive, then I better be taking some curcumin or eating well and not being diabetic type 2, I better get that kicked in the butt because that's inflammatory, better get my sleep at night, better hydrate and so on. But in short, yes, genetics can increase your susceptibility, and in the book, "Dirty Genes", I talk about seven specific genes, which... Seven out of 20,000 is like, "How did you pick those seven, Ben?"

Well, I picked those seven because they are associated with common everyday ailments, everybody's got these genes that are either born hypo-functional or hyper-functional, or they're born perfectly fine, but your lifestyle, your diet, and your environment and your mindset has shifted their function or altered their function, and you need to figure that out, and they affect every major body part. And when I say a dirty gene, what Shawn shared earlier, a dirty gene is what? So, a dirty gene is a gene that is not functioning at its best, it's not optimal. And it's not a broken gene, mind you, it's a dirty one, and dirty has the connotation where you actually can clean it up, like cleaning stuff up requires work. And I say quite simply, health is a four-letter word, spelled W-O-R-K.

SHAWN STEVENSON: Yeah, man, that's powerful. So, to sum up this point, and this is just remarkable, and we don't think about this, we just... Again, we say the word, we might have a loose connotation to what it means, but it's all interconnected. Our immune system capacity is determined by our genes, number one, so everybody get that. But there are literally thousands of variations of the expression of our immune system, probably millions, if we're combining all the different potential outputs of what our genes are sharing. But our genes yes, at its foundational level, our genes are determining what type of immune system we're going to have, but that expression there can be thousands if not millions of different expressions of our genetic capacity or our immune system capacity.

And so, understanding where our genes are at, like do we have a tendency towards the hyperactive inflammation or under-active? And this is what I want you to talk about. Ultimately, what we want is an appropriate response, we want our immune system to be well-modulated, and mount an appropriate response, not be overactive and not be under-active, but to have that Goldilocks and knowing ourselves and proactively doing things so that we can put ourselves in right position, because here's the bottom line, whether it's COVID or whether it's another viral-type infection or bacterial infection, whatever the case might be, it's not the virus that does the thing, it's always our immune system. Our symptoms, what we experience is due to our immune systems response to the thing.

DR. BEN LYNCH: I got a post deleted... Well, I've had a number of posts deleted on YouTube and all banned on Twitter, and I decided to get my account back, so I deleted a comment, which was just stupid. Now, they're really pleading to get me back and engage more with of my audience, I'm like, "Screw you." The virus doesn't kill you; your own immune system does. Think about that for a second. Virus is using your cellular machinery in order to replicate; it is not living. If you sneeze and cough, that virus will lay on the counter, and it will die fairly quickly, and so it has to get into a human host in order to survive and thrive. And if that virus gets in your body, and we talked about this early, which I never answered the question. And the question was, is decreased methylation, increased viral susceptibility or viral replication? It depends on the virus, sometimes a virus will hijack your methylation and it will use it to

replicate. Other times, like the Hepatitis C virus and even the COVID virus, if you have sufficient methylation, you will turn off the genes which would enhance its replication.

So, they talk about how pregnant women are at increased risk because pregnant women have a immuno-compromised immune system, because they're pregnant. Well, hold on, a pregnant woman's immune system is not compromised, it's modulated. They're developing an entirely new organ in their body, which is using their own tissues, but they're also developing an entire new body in their own body that has different DNA. And if their immune system was hyperactive, that baby would be killed, and that's actually what causes some types of miscarriage. So, you can have high levels of natural killer cells, ladies, which will attack the baby and kill it, so your immune system is hyper-active, it's not modulated. So, if we say that pregnant women's immune system are compromised during pregnancy, that is not correct, as Shawn said earlier, it's about balance, we got to find the optimal level of immune function.

If a pregnant woman gets sick, she can still fight the infection. If you vaccinate a pregnant woman, a woman, what's going to happen? A vaccine is designed to up-regulate the immune system, which may increase risk for the pregnant mother, and there's research that just came out where they say a pregnant woman may be at decreased risk from COVID because she is taking additional methylation factors, folate is a big one. So, if you are consuming higher levels of folate, and pregnant women are taking 800 micrograms of folate, preferably folate, not folic acid, so folate as in methyl folate or leafy greens. Folic acid is completely synthetic man-made, has no biological effect on human body at all, it's a nightmare. That's a whole other podcast.

But in general, just use natural folates. And supplement companies do have that. So, calcium folinate, methyl folate, that's what you want. You do not want folic acid. But if women are taking every single day, a prenatal vitamin because they know they're pregnant and have to care of their baby, their methylation status is more functional and then since it's more functional, it'll be able to turn off the genes which are replicating the virus and the viral load will be less.

SHAWN STEVENSON: That's remarkable. Again, this is just looking at it. So, wow, specific nutrients, essential nutrients can help our bodies to defend itself against pathogens, for example. A study... This one was published recently, this was in PharmaNutrition, and it was looking at the role of vitamin C and found that it helped to suppress that cytokine storm, essentially helping the body to modulate its inflammation response a little bit better. Another study, this one was published by some scientists at Stanford, because this is going back to what you mentioned earlier about inflammation, and it's one of those things that also, it's going to change over time as well. It's a chronological thing of what inflammation is going to be doing in your body.

You might... As you age, you might have your inflammation set point at a certain place now, but as your age it might reduce, it might go higher. But they were looking at age-related inflammation, and they found that people who are moderate coffee drinkers, funny enough, they found that they... Essentially that the caffeine in coffee specifically was suppressing genes related to inflammation. And I was just like, "I don't know if people understand how remarkable that is." They're looking at what the genes are doing based on an environmental input, one of them being something that a lot of folks consume every day, but then that environmental input, that coffee, if it's not a higher quality might be coming along with pesticides and rodenticides and molds or who knows what, that's causing the opposite effect. So again, if we're looking at these things in isolation, we've got to take it out to the real world. Things are very different from what our ancestors were doing, but we can proactively do things to influence a healthy expression of our genes, and that's the bottom line.

DR. BEN LYNCH: Yeah, and if... These types of research papers are very informative and helpful, 'cause they guide what you can and can't do or should or should do, or decision-making. And when I was attending... Well, I still attend conferences 'cause I have to 'cause of CE credits, or I'm lecturing and I'm researching and I'm presenting them. But I always want to know why. So, vitamin C supports the immune system and modulates it, and caffeine supports it, well, what's going on here? And so, I always like to look at the mechanisms of why and how are these nutrients affecting our genetic expression. So, for vitamin C, it depends on the dosage. If you have a high-level dose of vitamin C, it actually becomes a pro-oxidant where it's actually supporting your immune system in terms of killing. Your immune system makes things like bleach, hypochlorous acid, it makes hydrogen peroxide, and it's using oxygen in order to do that. And actually, that's one of the main reasons why you are so tired when you're sick and so sore and your muscles ache, is because your mitochondria are not making ATP to have you get up and run an exercise because that's not lifesaving right now.

And you're also depressed and you're sad or your mind is... You just kind of have this brain fog, and you're not sharp, and your vision might actually be blurry, or your head may be aching. Well, what the hell is going on? Your body is actually using that oxygen to make pro-oxidants which are delivered by your immune cells to kill the viruses. So, hydrogen peroxide, nitric oxide, hypochlorous acid, kill these infections, and high dose vitamin C help that happen. And so that is one. Another one for vitamin C is vitamin C reduces histamine release. So, if vitamin C reduces histamine release, histamine is a major stimulator of the immune system. So that is why Benadryl is a life-saving medication. Because if someone eats a food that they shouldn't or they got stung by a bee or bit by something that's poisonous and they have this amazing anaphylactic response, they will die from it, and so they are given Benadryl and epinephrine and so on, and that that will actually calm the immune system down. That's a histamine response.

Caffeine, multiple things here, but one is caffeine affects methylation. Pregnant women should not be consuming too much caffeine because caffeine actually slows the methylation pathway down. So, it's very interesting. And there are many, many other factors with caffeine too, blood flow and so on but I don't know all of them, off course.

SHAWN STEVENSON: Yeah, so this brings to mind another one of these, and what we're talking about right now, which again, you and I both feel the same way, we have not talked enough about prevention and susceptibility as a culture.

DR. BEN LYNCH: No.

SHAWN STEVENSON: And this is such... For me, it's just, it's bordering on criminal, if not criminal.

DR. BEN LYNCH: It is criminal.

SHAWN STEVENSON: You said it, man.

DR. BEN LYNCH: It is criminal. It's flat out criminal. Yeah.

SHAWN STEVENSON: So many lives could have been saved, and not just from this particular issue, but just we have multi-pronged epidemics. In the United States, we're the sickest, most chronically diseased nation in the history of humanity, and we're just trucking along like it's okay, like it's normalized. And this has really brought a spotlight for us to say, "You know what, something's wrong here," and it's for us to bring these conversations up, but let's talk a little bit more about prevention. Because there's still things going on and also there's going to be something else, there's always... This could be a preview of more to come, especially when you see all of the, unfortunately, the profiteering that has taken place from a condition like this. But let's talk about the role that, for example, I'm close to Kaiser Permanente, and so very early on, they shared some data, they went back and looked... They had a great database of patients, it was like 50,000 patients, and looking at their exercise habits prior to contracting a COVID infection.

And they found that folks who were inactive, the folks who were not sufficiently active on a regular basis had a 2.5 times higher risk of dying, once contracting an infection. Of course, this is observational data, but it would immediately, it would require, let's look into this more. So, let's talk about this, let's talk about the role of exercise in prevention from virus infections, and again, just to branch this out even further, just in general.

DR. BEN LYNCH: I'm glad that you asked this very specific question because I really wanted to go here, 'cause I see your... I follow you on Instagram and I love your account. And I... You exercise a lot, which is awesome, and well, I don't know if a lot, but I know you exercise, which is key, and I exercise as well. And so, exercise is one of those things where, again, it depends on the amount. Exercise is inflammatory, and again, it's... Inflammation is a bad word, but it shouldn't be. A small amount of inflammation cleans a bunch of crap up in your body. It triggers an immune response to go about and kill things and clean things up, apoptosis where it'll just clean up some dead... Struggling lazy cells and gets rid of those and new ones can come in and take over and work a lot... More functionally efficient. And you also... It's mitochondrial biogenesis. You are actually stimulating more mitochondria, which are producing more energy for your body, ATP, so when you lay down and go to sleep at night, you're actually burning calories. You're losing weight while you sleep. You wrote a whole book on this.

And another one is, if you're making more mitochondria, then when you do have an acute infection then... Or a chronic one. But typically, with your mitochondria are really good, what's going to happen? We already talked about it. These mitochondria stop utilizing oxygen to make ATP, and you got more of them, now they're going to make... They're going to take that oxygen and they're going to divert it to making reactive oxygen species to kill the infections. So, exercise is brilliant. If you do not exercise, your immune system is not nearly as effective, as Shawn pointed out. If you exercise moderately, and I did a post on this two years ago now, probably two and a half when this whole damn thing started. I forget the duration, but let's just say moderate exercise, your immune system is supported significantly. Maybe from preventative-wise and recovery-wise. Now, if you exercise excessively, your immune system is compromised, and when you were reading the news back in... Back when this whole thing started, elite athlete died, healthy person died, a young 19-year-old boy died from COVID. And there was nothing wrong with him. Oh, by the way, he was top athlete in his school and fastest cross-country runner and so on.

It's like, I stepped back, and I looked at that. I was like, "Well, his immune system was probably very suppressed from over-training. The glutathione levels were probably absolutely depleted because of the inflammation response from the intensive exercise." So on the days where you are absolutely trashed and exhausted, or you're kind of borderline ill or what have you, you probably shouldn't exercise. Now, don't say that Dr. Lynch said, "Oh, I shouldn't exercise." And use that as a crutch, because we're all tired to go to the gym. You got to get your ass in the gym still on the days where you're tired, but I'm talking about exhausted. If you just got over an infection or you just got over something significant, take it easy that day. Go for a walk. Don't pump iron heavily or go for a big sprint. So, moderate exercise is best, intensive is not, nothing is not.

SHAWN STEVENSON: Perfect. Perfect. This really parallels with some... We'll put this episode for folks in the show notes. But I dug into this particular thing because there are several studies that are published on this. One of them was published in the British Journal of Sports Medicine, and this was another great data set. This was another country where they're tracking these things much better than we here... We are in the US, looking at people's exercise habits. Because they even looked at what type of exercise they were doing, and they found benefit, protective benefit against this particular virus with strength training and with cardiovascular training. But they found the greatest benefit when people were doing both. So it's a variety there. They're not just hammering down one form of training, and even running themselves into the ground, because there is this phenomenon of "doing too much," and we can look past it and say, over-training is a myth, but we're looking at what is this doing to your immune system, not just like can your muscles recover? But what is this doing to at the level again, of your genes?

And so, to take something from this, I want to encourage folks, and I know you would echo this, to have some diversity in what they're doing as well. Because it's kind of like nutrition. It's giving your bodies different metabolic inputs when we are engaging in different forms of exercise, but there's one nutrient... Like with our nutrition, there's going to be nutrients that kind of rise above others in importance because they're used for a lot of things. In exercise, that number one nutrient is walking, by far. It's the thing our bodies are designed to do as a species. We know this. Are we designed to deadlift 500 pounds? We can do it and it's great, and you can release HGH, and you get all these different benefits. It's wonderful, but are we designed to do that? Not necessarily. But we are designed for certain to walk, and so having that be... If that was one of the things, again, that was promoted to our citizens, if that was on the news broadcast when they're talking about prevention and supporting your immune system right now, if that was the top line thing, we would have had a revolution in the health of our nation. People getting out and getting a walk in for 20 minutes.

DR. BEN LYNCH: Yeah, you absolutely would, but who's the news sponsored by? Pfizer. You can't be talking about healthy stuff when the news is sponsored by drug companies.

SHAWN STEVENSON: Man if Pfizer's... It might be spelled with a Pf, but it's a F word, man, it's a F word. Got a quick break coming up, we'll be right back.

Researchers at Yale University School of Medicine, the researchers found that one of the biggest culprits behind our obesity epidemic is neuro-inflammation. Brain inflammation increases the propensity of obesity and obesity increases the propensity, the likelihood of neuroinflammation. They go hand in hand. So, we've got to address this, one of the things that's been proven to help to reduce neuroinflammation is cited in a study published in PLOS ONE, the Public Library of Science One. Revealed that the super green algae spirulina has the

potential to one, improve neurogenesis in the brain. So, the creation of new brain cells, specifically the hippocampus is where we get a lot, and the hippocampus is the memory center of the brain, this is kind of important. And two the study revealed that spirulina is able to directly reduce neuroinflammation, it's incredible. This... It's helping the structural integrity of this master gland, this master organ controlling everything about us. The most complicated object in the known universe is also one of the most fragile, we've got to protect it.

This is why for myself and my family, spirulina, Chlorella, ashwagandha, and all of these powerful foods are put together in the incredible blend at Organifi, and this is a regular staple here in my family, for good reason. Spirulina being one of the highlighted ingredients, not only does it have this benefit for neurogenesis and neuroinflammation, but also has rare nutrients like phycocyanin, the same thing with Chlorella as well. That phycocyanin is one of the few things that can trigger stem cell genesis, the creation of new stem cells. Very few things have been found to do that, and then chlorella is in the formula as well, and that growth factor, the chlorella growth factor, it's just remarkable, and also its benefits in helping your body to metabolize and eliminate heavy metals, and the list goes on and on, it's incredible. But the bottom line is this, it tastes good. It tastes good. I have experimented for at least about 15 years with all these different green formulas, these different green superfood plans. Many of them is not very good. Okay? And many of them... I'll... They shall remain nameless, but I've tried them back in the day before, tasting good was an option, it was just like, "Just get it in by any means necessary if you got to do the whole pinch the nose and get it down," whatever.

But now, pleasure leads to longevity, pleasure leads to taking a practice on it and embodying it and making it a part of your routine, your habits, your daily life. So, this is why I appreciate the fact they've created a formula that actually tastes good, all organic, cold process, so you actually retain and get the nutrients that we're looking for in Organifi. So, pop over there. Check it out, it's organifi.com/model. That's O-R-G-A-N-I-F-I.com/model. And you get 20% off, 20% off their Green Juice formula, their Red Juice formula, and also their Gold as well. So, they've got some incredible blends all done the right way. With integrity, again organic, low temperature processed and yummy alright, Organifi, you got that yummy yummy. Organifi.com/model, and now back to the show.

So, let's talk on about another one of these preventative mechanisms that we all again can engage in, let's talk about vitamin D. Because early on, this is one of those things that was getting suppressed as far as not being able to talk about this, and now there's literally, there's about 30 studies affirming how important this is in relationship to this particular virus.

DR. BEN LYNCH: Yeah. I mean, Fauci, I think a year and a half into it, finally admitted on an interview, he was like, "Oh yeah, Zinc and vitamin D, I take those." And there was like this whole blow-up on social media, it was like, "Oh my god, Fauci finally said it," and I don't think he said

it again, I think that was like... Oops, cat out of the bag. I posted research from Oregon Health Sciences University, one of the top medical schools in the nation, and that they found a connection between vitamin D and actually reducing the risk of catching COVID. So here we are using masks and vaccinations and social distancing, which is really interesting. They call it social distancing. Why not physical distancing? Why is it called social distancing? That's... Yeah. But the research was discussing, I forget what the amount was, but the risk reduction of even acquiring COVID was lower, significantly...

Well, yeah, it was reduced, so your risk of catching COVID was significantly reduced if your vitamin D levels were X, sufficient. And I was like, "I didn't know that." I had known that if your vitamin D levels were at a decent amount, that you could overcome COVID and it wouldn't... Your immune system wouldn't be so crazy, and that cytokine storm would be not so significant because why? Vitamin D is an immune modulator. And so here we are not talking about vitamin D as actually reducing the risk of even acquiring it. So, it's a twofold benefit, probably even more than that because vitamin D... You have vitamin D receptors on every single cell in your human body, which is remarkable, and vitamin D does so many different things, it supports, actually your insulin and levels, it's...

Without vitamin D, your insulin is not as responsive, it supports your immune system modulation, and so many others, which I've forgotten, and your serotonin synthesis... So, it's... For mood, it's massively important. So yeah, just in a nutshell, I posted that, and it got deleted, Instagram said it didn't follow their community guidelines, it doesn't support the World Health Organization and the CDC, and I was like, "Well... Alright, but it's research, it's scientific research, it's proven. Doctors are talking about it all the time... " And what's actually really bothering me now, Shawn, is there's a few people on social media that are talking about how vitamin D is toxic, and it should be avoided at all costs. It's like, well, air is toxic, water is toxic, a hug, somebody hugging you can be toxic and kill you if it's too long of a duration. Anything will kill you if it's in excess.

So, let's remove the blinders and the minutia of a single target and think of things broadly again. So, it's actually, it's very harmful when people just get on this bandwagon and just try to get clicks and views when they talk about the negatives.

SHAWN STEVENSON: What if that was the headline? Hugs kill. We have this like... We call it a bear hug. If a bear actually hugged you, it's not going to work out...

DR. BEN LYNCH: You're done.

SHAWN STEVENSON: That well. And I love this, you said... For me, the thing that stood out the most, because obviously there are all these wonderful aspects that come along with vitamin

D, which... It's so crazy. This is the problem with Lexicon. We put it in this categories as just a flimsy old vitamin, but this is a steroid hormone. This is one of the most important things for human survival. And the thing that jumped out was it's an immuno-modulator. So, helping your immune system to respond appropriately, and I don't know if you saw this one because I was looking at, "Okay, great, we've got dozens of studies now affirming the effectiveness in prevention and reducing your susceptibility," but this study was published in the BMJ and it was looking at vitamin D in treatment, and it was a randomized placebo-controlled study. It gave folks with SARS-CoV-2 short term high dose vitamin D for seven days. Gave another group a placebo. Here's what happened. A greater proportion of the vitamin D deficient... By the way, they're already vitamin D deficient, by the way.

DR. BEN LYNCH: Okay, important point.

SHAWN STEVENSON: Key part. So, a greater proportion of the vitamin D deficient individuals with SARS-CoV-2 infection, turned SARS-CoV-2 RNA negative faster with a significant decrease. And this is the key, this is something we're talking about now, a significant decrease in inflammatory biomarkers with the high dose vitamin D supplementation. The amount they used in the study was like 60,000 IUs daily for just a short period, like five to seven days, to boost it up there. And again, so jumping all the way to, this is toxic, for example, and of course, I know these folks out there, or I have a loose association. I get it, because what they're often trying to point to is the fact that we need to get it from the sun. And I get that.

DR. BEN LYNCH: Yeah, for sure.

SHAWN STEVENSON: That's the first primary point, but we cannot negate if we're doing a high quality... Because humans have been consuming vitamin D also through our nutrition for thousands of years. And so, if we get an efficacious extract or supplement form and add it to the mix like, again in these contexts, it can be lifesaving. So, this is just another point of emphasis. Oftentimes when these clinical trials are being done, whether we're looking at a drug effectiveness, vaccine effectiveness, the problem is, it's often put up against nothing. It's the drug versus nothing. Even in this study, it's vitamin D versus a placebo, put the drug up against vitamin D. Put the drug up against a lifestyle intervention, and then tell me what the results are. It's kind of like is something better than nothing, or is nothing better than something, and that is what our entire system of medicine is based on, and it's really unfortunate.

DR. BEN LYNCH: Yeah, it is. And a lot of medical research is published by a big pharma, and you're not going to see negative studies published very often because of this as well, so it's actually... It's a huge, huge problem. Big pharma, massive problem. I respect the drugs that are life-saving and supportive, and they have the right... They're great when used appropriately.

But that's just often not the case. In terms of vitamin D, I opened the app, dminder. Do you ever use the app, dminder?

SHAWN STEVENSON: I used to use that. I haven't used it in quite some time.

DR. BEN LYNCH: So, this thing right here, and my next vitamin D opportunity, meaning, to get any vitamin D, when I looked at this months ago, when I was in California visiting my son in September, my next vitamin D opportunity was in 180 days, according to Seattle. Because vitamin D synthesis is determined by the height of the sun, there needs to be a certain angle for it to work, and right now the sun is really low in the northern hemisphere, really low. So, my next vitamin D opportunity is, now that it's February, is in 17 days. So, I haven't had vitamin D naturally from the sun in over 180 days. My stores of vitamin D are going to be depleted. And vitamin D2, does have some benefit, but not as good as D3.

The research is conflicting. Vitamin D research is really complicated to understand and pull out what you actually really need to know, but the bottom line is you got to have the right amount. You can't have too low, you can't have too high, 'cause of calcifications and so on. But the point is, just because vitamin D is a hormone does not mean you should avoid it, and yes, you... Just because the sun is shining doesn't mean you're actually generating it; and your age, your weight, your skin color, are all factors and your cholesterol levels are all factors of how much vitamin D you're able to synthesize along with other factors as well as epigenetic. So, you got to get vitamin D through supplementation or fly to areas or consume it in your diet from fats. Fat, like cod liver oil, you got vitamin D in them. You look at the Eskimos... We always made fun that they're eating walrus and whale. Well, they're getting lots of vitamin D.

SHAWN STEVENSON: Man, this is... So, and I love this so much because also another point here with vitamin D, we also have to have healthy liver and kidneys, by the way.

DR. BEN LYNCH: Yes.

SHAWN STEVENSON: Because even with D3...

DR. BEN LYNCH: Absolutely.

SHAWN STEVENSON: So D2 is a step, D3 your body still has to do some conversion here, and so we'll put this for everybody in the show notes as well, we did a vitamin D Master Class a few months back, it's super important. It was a fun episode to do as well, but what you're talking about... So, this is one of the most... This is where we start to have separation with us in this community who's really health focused and we start to say, "You're wrong", and start pointing the finger instead of like, "Let's get the broader message here." So, folks that are above the

37th parallel... So, it's kind of like the vitamin D belt, where California, much of it is included and we're getting year-round access, but it still, it's going to depend on the time of day as well to how much vitamin D we're going to be able to make. But above the 37th parallel, the more Northern, even Midwest is kind of cutting through the Midwest... States are going to essentially not have access for a significant portion of the year. So, what are these folks supposed to do? Just not have vitamin D?

DR. BEN LYNCH: Yeah.

SHAWN STEVENSON: This is a great place for supplementation, and also, we can lean into the fact that we can store a bit. So maybe, hey, maybe you do take a trip at some point over the winter. You fly south for the winter. Like every time I think about that, I think about the Looney Tunes Cartoons. Like they are always talking about going South for the winter, I didn't get it. The migration. And so, you can store a little bit, but also, and of course, just like boost your system so much because it's a powerful immune system modulator and just critical for so many different things, cancer prevention as well. It's a huge role player in that, so if you could... I want to talk... If you got something else to add with vitamin D, that'd be awesome.

DR. BEN LYNCH: Yeah, I just looked up your area just now, LA. Current angle is 25 degrees. You're still 17 days out. You're not getting it either. Yeah.

SHAWN STEVENSON: What's that app again? It's dminder, right?

DR. BEN LYNCH: Dminder.

SHAWN STEVENSON: Yeah, I used to use that app, I used to check it out. This was when I lived in Missouri, and so yeah, it was much more like I was a little bit more on it, paying attention to that.

DR. BEN LYNCH: And what nationalities... Or not nationality, but ancestry, were we seeing in ethnic groups were more susceptible to COVID? African Americans. Right? We heard it on the news all the time, like African Americans are more susceptible to COVID. It was like, darker skin, so it's less vitamin D and we're an indoor society. And we were even more indoors during this whole thing due to quarantines and shutdowns, so... Yeah, it's... Anyway, moving on.

SHAWN STEVENSON: So, a larger portion of the year again, if you're under this 37th parallel, but especially the lower you get as well, you're going to get more and more access to year around vitamin D, but as you move up, it's going to be shorter and shorter days until... We're talking about again, where up where you're at 180 days, I think you said when you were...

DR. BEN LYNCH: Yeah, when I was right here around September, I think it was around 180 days. I did a short video and posted on Instagram when I looked and I was like, "Oh damn, I'm not getting anything." But I was in Pismo Beach by San Luis Obispo, and at that time I was getting vitamin D and it was great.

SHAWN STEVENSON: Yeah, we got it. More people need to get the D man out here.

DR. BEN LYNCH: Yeah, that's... When you go to tropical places and you get that D, actually it's generating, or in sunnier places, it's not just vitamin D that you're getting, and you are getting other things which support your mood. So, part of the vacation that you're... It's not just vacation, it's the vitamin D that you're getting that's supporting and enhancing your mood as well, so it's pretty amazing.

SHAWN STEVENSON: When Stella got her groove back, she was getting the D, she went down south and... Never mind. Alright, so let's move on and talk about some other aspects of, especially once we contract a viral infection, particularly the one... Again, this is what's on everybody's mind, and again, we are just... We let... Our society has been programmed with this idea that they're a victim, and so already we've already got in our mind of how bad this condition is going to be. Myself personally... And this is the first time I might have never even mentioned this on the show, because I didn't know, and you, Mike Mutzel and I were in a group text, and it was actually him who mentioned this great company to do a blood test and antigen test to check out to see...

I'm sorry, antibody tests to check out to see had I actually contracted the virus, and did I have robust antibodies, and I did, and I had no idea. But the only... There was a little bit of a hint because my sense of smell, like it wasn't that it was gone, but I just felt like, "Man, I used to be able to smell stuff better, I think." 'Cause like for example, if I squeeze a lemon, I would have to wash my hands because the lemon on my hand would influence the flavor of my food because of that whiffer I got, got that whiffer on me. And so, it's just like it had toned down a bit and I didn't notice it for quite some time, and...

So that was a big thing. And so, understanding this, that at some point something that was possibly cooked up somewhere else across the world landed on my body, it really pissed me off, I felt really... Just like I felt... I mean, I just felt... I felt a lot of piss... Okay, I'll just say it, I was pissed off, man. So, like a Chris Tucker level. And it's just like I felt so violated, that something that is happening on the other side of the world, potentially again, potentially, this illegal operation that's taken place, these loopholes folks are finding and tinkering around with stuff...

DR. BEN LYNCH: Oh yeah.

SHAWN STEVENSON: That's influencing our biology. It really pissed me off. But of course, I'm grateful that I'm in a state of health were I just kind of brushed it off. Well, again, you can be healthy and still get sick, that's not what I'm saying. It's just that for me, I had no idea, but I did have this particular symptom. So, let's talk about... First, let's talk about that particular symptom because...

DR. BEN LYNCH: Yeah, let's do it.

SHAWN STEVENSON: You actually have a great protocol of getting your sense of smell back.

DR. BEN LYNCH: Yeah. I was doing some research on this because I get a ton of DMs on Instagram. Probably saying that, I'm going to get a ton more.

SHAWN STEVENSON: DM him today.

DR. BEN LYNCH: I'll answer when I can. So many people are saying, "God, my sense of smell is gone. My taste is all messed up. I drink coffee and it tastes like I'm eating cat poop." And it's really interesting and it's just DM after DM after DM and I'm reading posts, people talking about it. And Theo, my youngest son, 13, he was the only one in the house who got COVID. I tested my antibodies, Nadia tested her antibodies using the test that you all did that Mike shared, and nothing. Nadia and I were pissed. I was laying down next to Theo multiple times a day when he had COVID and I was like, "Come on, man. Give it to me! Spit on my face. Let's go." Nothing. It's like damn it. He had the lowest vitamin D out of all of us in the family.

SHAWN STEVENSON: Interesting.

DR. BEN LYNCH: My family doctor, Dr. Sage Wheeler, pointed that out and he was like, what what his D? I was like, "Oh, his is around 25 and the rest of ours was probably around 40." Interesting, so there you go, the vitamin D proof in a five family in the house. But he did lose his sense smell for probably a couple weeks and then it just came back. Some people have lost it for over year and that's got to be terrible. Not being able to smell flowers. There's some benefits, of course, but for the most part, it's not.

So, I did some basic research on this, again, the body is going to be in survival mode. And yes, ACE2 receptor is where this virus likes to take hold. ACE2 receptors are everywhere in the body and I'm not going to go any beyond that because I don't know. But I do know there's an enzyme that is really important for smell and taste and that's carbonic or carbonyl anhydrase. And I could be pronouncing that slightly off, but let's call it the "CA enzyme," and the co-factor for this enzyme, it uses a primary mineral that is often recommended to treat the C. What do you think it is, Shawn?

SHAWN STEVENSON: Magnesium.

DR. BEN LYNCH: Good one. Zinc.

SHAWN STEVENSON: Zinc, of course, yes.

DR. BEN LYNCH: Yeah, zinc. So, this enzyme that supports smell and taste uses zinc. Now remember, going way back to the whole beginning of this podcast, this interview, we talked about dirty genes. Genes have jobs to do. The job for carbonic anhydrase is to do something in a human body that allows you to smell and taste. If... In order for that gene to function, let's say you were born with a totally functional carbonic anhydrase enzyme. No problem, no mutations in that gene at all. But in order for that enzyme to function, genes make enzymes, enzymes are actually doing the work... The blueprint to make that enzyme is the gene, so genes make the blueprint, the body will assemble it to make the enzyme, the enzyme then goes out there and performs a job, and job in this case is to permit smell and taste. But it will not do that unless it has the supervisor or the manager telling it to function and give it the tool it needs.

The primary tool that enzyme needs: Zinc. No zinc, no smell, period. So, people's zinc levels are wiped out from this infection because zinc is an extremely important mineral for your immune system. Micro-nutrient, and so it's really, really needed and so again, the body is going to be using zinc for your immune system. It could give a damn about your smell and taste, so your carbonic anhydrase is going to down-regulate, it's not going to work as hard to conserve zinc and allocate more zinc to the enzymes that need it for your immune system to fight. And sometimes, actually, the body will sequester zinc because some bacteria will use zinc to replicate so your zinc levels will naturally drop lower to reduce the bacteria from replicating. So, if you go to the doctor and you test your zinc levels and they're really low and you take zinc and you actually feel really bad, it may be because you're fighting the body. You're actually going to kill the bacterial infection before you replenish it with zinc.

And there is many, many different types of zinc out there. There's zinc tablets which are garbage. If you swallow a zinc tablet, trash. You need a zinc capsule, liquid, ionic liquids, or a lozenge. And the forms of zinc are really important, too. Zinc oxide, trash. You want zinc glycinate, citrate. Those are good forms, zinc gluconate, but I like zinc bisglycinate the best in the lozenge form. They talk about, also, if you take a zinc lozenge, it actually is not just the action of zinc that you're swallowing and getting in your blood cells, it's actually coating the whole oral facial cavity, the whole mouth area, for protection, and it acts locally in the mouth, as well.

But zinc is a major one for smell and taste. Another one is an antioxidant because this virus affects the brain in a big way and if the brain isn't working very well, then... Smell and taste are neurological and you're not going to be able to taste, so antioxidants, one like PQQ... So PQQ isn't talked about very much but to give you an idea, your vitamin C has antioxidant potential use about four times before it's done and trashed. CoQ10 can function about 400 times as an antioxidant before it's trashed. PQQ can go 20,000 cycles before it's trashed so it's the most potent antioxidant that I've seen. Studies show 20 milligrams being very, very effective. Some people have been taking PQQ just once and they DM me and it's like, "I could smell my dog's breath like that day." And then the smell would go away again, and they would take PQQ again and their smell would return, and then it would go away, and they would take it again, and it would return. So, they've got this oxidation coming back for some reason and then they would take the antioxidant and the smell would come back.

So, zinc, PQQ, and vitamin A. There is a research study that talked about taking vitamin A intranasally, 10,000 IUs per nostril, and smell returned in some of the individuals. Not all, but it actually increased it. That to me, vitamin A, is very anti-viral and anti-microbial so maybe it was acting locally and reducing the viral load in the nose, I don't know.

And so, you can also take vitamin A orally as well. Vitamin A orally is phenomenal for sore throats, but person after person has been DM-ing me back and say, "It worked amazingly well." Other people said, "I've been doing it for weeks, I've got like 30% back." Other people have said, "I've been doing it for weeks and I've got nothing." So, but I will say, a lot of people are saying that it's working well, and I say for those who it's not working well, just keep going but be careful with the vitamin A 'cause vitamin A too high of a dose is going to can be problematic, especially if your vitamin D levels are too low. So that's a big one.

I did a video on YouTube discussing this and pointing out the research, N-acetylcysteine, glutathione, ethyl lipolic acid, were all supportive in restoring sense of smell.

SHAWN STEVENSON: This is great, man. This is really, really helpful. And these implements support so many other things in the body, it's not just this. That's the good thing. And even when you asked me about minerals, I was thinking about which minerals do we know get depleted through immune system function, like just your immune system will gobble it up, whatever is available in the body. I was thinking about magnesium, and I was thinking about zinc, and you just mentioned it, and it's just like so... Once you said it, it's just so Captain Obvious that this will be playing a role here in this equation. And to tell the story, so this is when I actually... And I haven't said this story before, but when I decided to get that test done, and when I was just like, "Man, is my sense of smell off?" It was because we were all hanging out in the living room, and my son, Jordan, he's 21, he's lifting, he's a beast. He's doing his thing, he's doing the protein shakes, and he farted, alright?

And my youngest son was like, "Jordan farted! You smell it?" And I was like, "No, I don't. I don't. I don't actually smell the fart." And I was like, "Let me go ahead and order this kit because maybe I contracted it at some point." And thankfully I could smell farts again, so it's all good.

DR. BEN LYNCH: That's a blessing.

SHAWN STEVENSON: It's a blessing, it's a blessing we didn't know that we needed. One other thing I want to ask you about, it's been a few years now since I had some type of infection, so flu, cold, something of the like. And I remember having a shortness of breath during that, but it was just kind of faint. It was kind of like if I breathe all the air out of my lungs like during a meditation, it's just a little bit of effort, like I had to force through and kind of get short of breath. And what I implemented at that time was I would go do some sauna, and sit in the sauna, the infrared sauna, and just focus on my breathing. And just kind of allowing that, the heat shock proteins, all of that involved in that equation.

But again, I'm at N of one, so I didn't have somebody else to compare it to, but I know that it was bothering me for quite some time. And as soon as I started doing the sauna... This was bothering me for like a week. I felt perfect, everything was fine, except that shortness of breath. And I did the sauna for a couple of days, and I was back to 100 so quickly from adding that in. Is there any data here you can add as far as adding in a sauna in this equation?

DR. BEN LYNCH: I actually recommended sauna for people treating the C in certain situations, and in other situations not. I don't have specific papers to cite here, but I have some mechanisms, some theoretical, and... Well, actually all theoretical, I don't have papers to back 'em up. But you mentioned heat shock proteins. Heat shock proteins are really, really therapeutic, and obviously they're responsive to heat. And like vitamin D, they do a myriad of amazing things in the human body, tons of different things. And I was studying them when I was studying sauna and Balneotherapy and hydrotherapy back in the day in med school. I've since forgotten.

But with sauna, if you are increasing your core body temperature, if you're in there long enough and you have a sauna that does that, increasing your core body temperature is very difficult metabolically, so you're burning a lot of calories. And the older we get, the weaker the fevers we get. And people who struggle and die from cancer are usually those who do not. They're incapable of generating fever, and they've done research on animals where they've inhibited fever in the animal and they die from the infection, and they're just done. So, fever is a really important part, so you're actually inducing increasing your core body temperature, perhaps, and that is reducing the viral load or the bacterial load that you are experiencing,

which then reduces the inflammatory response, which is triggered by histamine. Excess of histamine leads to exercise-induced asthma or difficulty breathing.

So, if you look at the research on exercise-induced asthma or asthma in general, histamine is a big one, and adenosine is another. So high levels of adenosine, if you look at ATP, adenosine triphosphate. Higher levels of adenosine will contribute to asthma, and higher levels of histamine will contribute to asthma. So, what's going on here? The longer you exercise, the more adenosine that you're making 'cause the body is not able to convert that adenosine-to-adenosine monophosphate, to diphosphate, to triphosphate. It takes work and enzymes to do that, and so if you step off the court or the sideline, whatever sport you're playing, and you rest a little bit, then that exercise-induced asthma goes away because your adenosine levels are dropping and converting more to ATP. And then you get your respiratory normalcy back, and your histamine levels are normalizing as well. And you always hear when the pollution is worse, asthma gets worse. And why? Histamine levels. Histamine responds to scents and pollution, and glutathione levels drop. And glutathione levels drop, then that's immune modulator, and inflammation goes up.

So... And sauna will also increase vasodilation and perfusion of oxygen to the area. And just warming the body will allow the blood vessels to expand. So, there's all sorts of factors here. And I did recommend the use of sauna in individuals who had fevers of 100 or less. So, if your body temperature was low and you were tested positive for COVID, get your ass in a sauna or a hot bath or put on 20 sweatshirts and go for a walk or lay down under 10 blankets if you can't move 'cause your head is hurting so bad and your back is killing you.

You want to get hot whatever way you can. And it doesn't matter how your core body temperature increases, you just increase it. Have a hot cup of tea. Have hot soup. You don't want to have a hot hamburger or a hot pizza at that situation, but it really helps. And people who took Tylenol... And research supports this as well. If you take Tylenol during an infection then you lower your fever, you're already going to be sick longer than the person who allowed allow the fever to persist and overcome it. And if you have a fever one night, two days, you're done. Meanwhile, you're significant other who wimped out, typically the man of the house, you know, takes the Tylenol and they go on being sick for two weeks and the lady is just doing fine. I got DMed by this lady. She goes, "I've been following your posts. I'm not taking Tylenol. I got the fever. It was a hell, but I just did it and I managed. I got through it. Next day I woke up, I was brilliant. My husband, he took the Tylenol. He's still sick. What do I do?" I said, "Let his... Stop taking the Tylenol, let his fever return and tell him to quit being a wimp."

SHAWN STEVENSON: It's a pretty typical thing, you know.

DR. BEN LYNCH: Oh, yeah.

SHAWN STEVENSON: A lot of guys turn into big babies during those times. So... And a little thing I learned from my mother-in-law... Again, if you don't have access to a sauna, is to boil a pot of water. You know, a nice-sized pot and, well, sit on the floor. Like grab some paper bags or whatever, sit on the floor and put it...

DR. BEN LYNCH: Oh, yeah, yeah, yeah.

SHAWN STEVENSON: Throw a blanket. Have somebody throw a blanket over you or a couple of blankets and just sit in there. It's like a homemade sweat lodge basically.

DR. BEN LYNCH: Exactly.

SHAWN STEVENSON: And so, that's something that we do.

DR. BEN LYNCH: Yeah. That's brilliant. And another one, you know you can add essential oils to that. And if you have a persistent dry cough as well, humidity is a huge one. I get DMed all the time. It's like, "I've got this persistent, dry cough since COVID." Well, any time you have a lung infection or a viral infection, typically any infection, your primary antioxidant which is stored heavily in the lung is wiped out. It's gone.

And glutathione is the name. And you can get glutathione from eating cruciferous vegetables: Broccoli, cauliflower, onions, garlic. Eggs got some good Sulfur in there as well, which... Or Cysteine, which then goes on to make your glutathione. So a supplement of N-Acetyl Cysteine. But taking glutathione directly may be supportive, but some people can't tolerate it. And some people live in areas where the humidity is like 15 or 20. And the human body it's just... It needs more humidity. So, my son is in Cal Poly now in San Luis Obispo, a beautiful area, and he was coughing chronically, and all the time and he wasn't sick. And he left humid Seattle where it's 50% humidity, down there where it was 20 something. Alright? I got him a humidifier; cough went away. And before he got the humidifier, I said... 'Cause he was coughing all night long. I said, "Get one of your towels, throw it in the shower, wring it out and just hang it in your room." And he measured the humidity. Somehow, he measured it and the humidity went up to 35 just from a wet towel in his albeit tiny dorm room.

SHAWN STEVENSON: That's brilliant. Dr. Lynch, this has been amazing. So many great nuggets of wisdom. And if you could, could you let everybody know where they could follow you, get more information? Of course, mention your book as well.

DR. BEN LYNCH: Yeah. So as of now I'm still permitted to share my message on various social channels. I'm being somewhat careful, but not entirely. So, @drbenlynch on Instagram.

YouTube and Facebook, you can find me, Dr. Ben Lynch. But I'm pretty seriously shadow banned. So, make an effort. And my book, Dirty Genes, available wherever books are sold, for the most part, on Amazon as well. And working on my next one actually. So just submitting that with my publisher down in the San Francisco, LA area. And Seeking Health is my supplement company where you can find tools to support your health, but just remember a supplement is designed to enhance and supplement your health. It is not a tool to just go all out and eat like crap and live like crap. So, I want you doing the basics. So read Dirty Genes first.

SHAWN STEVENSON: Awesome. And, of course, we'll keep an eye out for your new project. I know we'll be in touch on that. And earlier when you mentioned folks who are experiencing exercise-induced asthma, we had probably the world's most famous exercised-induced asthmatic, Jackie Joyner-Kersey, on my show in the early years of The Model Health Show. You know, just a beast Olympian. And it's an awesome episode, awesome conversation, but I'm bringing this up because as far as people who would be on the podium and the Olympian level of science and health, you are one of those guys. And I want to make sure that folks are following you and supporting you because folks who are sharing very practical things that... Again, the simplicity is the beauty of it all, but of course you do nerd out and I love that about you too. But also, just making stuff empowering like, "Listen. Okay. This is the situation. Here's what we can do about it." So, I admire that about you, and I appreciate you so much for doing what you're doing.

DR. BEN LYNCH: Likewise, Shawn.

SHAWN STEVENSON: Awesome. Dr. Ben Lynch, everybody. Thank you so much for tuning in to the show today. I hope you got a lot of value out of this. Remember, it is our genes that are controlling the expression of our immune system. Like, if we're getting to the core of what's happening in the world right now, we all have a genetic blueprint that's determining our health outcomes. Now, there's an important caveat here because our genes are not doing the thing alone. It is our environmental inputs including the food that we eat, including the things that we're exposed to. All of these things are epigenetic controllers that are literally going to determine how our body responds to a thing. It's not an accident how different people are responding to what's happening in the world right now. There is a very specific reason why and this is the things that we should be talking about: What's going on behind the scenes, what is the root of our susceptibility and what can we do to improve that to make our immune system more resilient, to make our bodies more robust and healthy so that whatever we're facing against, we can overcome? And not just survive, but to thrive.

And that's what we need to be focused on moving forward as well. If you got a lot of value out of this, please share it out with your friends and family on social media. You can tag me. I'm

@shawnmodel and tag Dr. Lynch as well. And we've got some amazing shows coming your way very, very soon. So, make sure to stay tuned. Take care, have an amazing day and I'll talk with you soon.

And for more after this 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.