Intro to Vitamin D and Bone Health

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So there's kind of some back end stuff that goes into that. But needless to say, a very easily modifiable risk here. And so that's vitamin D's impact on bone.

Now, looking at nutrition as an example, there's ways to optimize bone through minerals. People think calcium, well, not so fast. There's like 12 other minerals, whether that's silica, strontium, magnesium, manganese, phosphorus, protax.

I mean, there's There's a lot more that goes into building bone. Calcium is just a very small piece of that puzzle, while it certainly matters. Making sure that you're enriching your nutrition with the rainbow, I always suggest.

Hello again and welcome back to my MD Unscripted podcast. We have a slightly irregular show for you that I'm super excited about. We have back a previous guest, Dr.

Daniel Keeley, who has his own practice in Chicago area, total body diagnostics.

Guest Introduction and Genetic Testing Overview

And he was generous enough to agree to do my DNA because a big part of how Daniel does his practice is a DNA evaluation on all of his clients to kind of get a base at where, you know, what they're starting with.

And so today you guys and me are going to be treated to how he runs through some DNA hitting the highlights. Obviously we have a truncated amount of time doing a podcast, whereas he can probably spend even more time with you on yours.

But the idea is he's going to roll through my DNA results and we'll get to share it together. So Daniel, thanks for coming on, man. My pleasure to be back eager to decode your genetic makeup.

So which I want to preface is genes are not our destiny. Right. They're they're turned on or they're deterministic only in lieu of the environment. So epigenetics really drive, I think, a good chunk of how we can handle stress or mitigate disease.

And so while genes are not our destiny, they certainly do play an impact. And so how I like to discuss this with my patients is once you decode your genes, you can begin to plug holes in your biology that you otherwise would never have known.

And so you can be mindful of certain nutritional needs, you can be mindful of certain risk factors, and you can begin to devise a lifestyle program that's very, very specific to you.

The upside of this test is it's a one and done. You do it once and you know this for the rest of your life. And more importantly too, while it's not necessarily extremely costly, you can discern information about your children as well, right?

So you'll see specific tendencies within yourself, which is obviously reflected in your kids, but that's also representative of our genes. And so how I like to begin is I'll typically look at the very highest risk factors.

So in terms of our genes, we have very high impact, high impact, medium impact, and low impact in terms of how our genes code for kind of specific pathways in the body.

And so, I typically focus on the very high and the high. There's enough bread and butter just within that to have a several-hour conversation, but it also expresses the risk.

And so, very high and high is where I begin to focus. I don't concern myself necessarily too much with the the lower impact genes because they're often enough not express it when we kind of focus on the the top tier we're able to get a good representation of how it's best to optimize our lifestyle so looking at your very high to start you have four factors bone health blood pressure weight gain and salt okay let's so dissect each one.

And I can go super into the weeds with looking at specific weeds or we can keep it superficial or we can do both. But looking at bone health in particular, an example, you have a very high risk factor.

Two of the reasons for that is that you are a homozygote for the VDR and the GD5F. So VDR is your kind of gene representative of your need for vitamin D.

The metabolic active, 125-dihydroxy vitamin D, it exerts its action by binding to the VDR receptor. And this then signals the synthesis of proteins involved in bone mineral homeostasis, if you will, and cell cycle regulation.

So vitamin D has a tremendous impact on both health. And be it that you are homozygous, you have a reduced function here. It confers in lower immune response, confers in more bone loss, and potentially metabolic syndrome such as cancer.

Now, I don't ever sound the alarm bells from my patients. Never do I want to instill fear. It's just to be mindful of certain things. So how can we improve bone health?

Well, low-hanging fruit, let's talk about movement and exercise, particularly strength training. Are you doing any of that? Yes, I'm doing, I work out with a trainer two to three times a week when my life allows it.

I try to get out, hit some tennis balls or play indoor soccer from time to time. So if I don't break one of my poor bones doing that, then it's probably only good.

Bone Health, Sun Exposure, and Nutrition

And I will say here too, is that I'll just post these, this whole report in the show notes. So anyone watching who wants to see what it looks like to look at these results can see it as we go along as well.

And you'll see too, what's really interesting about our genes is while we have like, let's call it a negative impact in one area, there's other areas that are very protective and they counterbalance.

In fact, I have never seen, I don't like black and white. My genes, unfortunately, rank among the worst out of hundreds of patients that I've seen. Network lottery, here's the reality.

Okay, because if you look at my very eye impact, you have four. Mine is like cardiovascular, inflammatory, Alzheimer's, both oxidative. But what's interesting is that if I look at my great grandfather, he passed away in his sleep at 104 in Sicily.

Okay, so while your genes matter, your environment probably more still. And so he works on his farm, toiling the land and you wait asleep. Same cardiovascular risk factors apply to myself, my father, my grandfather.

Take those individuals. They moved from the summers rural Sicily to urban area of Rome. They both passed away from cardiovascular incidences at 84, my grandfather and grandfather.

How interesting, right? We have a susceptibility in our gene profile, but in a life that's a little bit less toxic, less

stressful, you don't express that high impact.

So going back to your bone health, vitamin D certainly matters. How can you get vitamin D? Obviously, blue light exposure early in the morning, which sets you up for healthy sleep, but optimizes your circadian biology, but then also impacts many other systems, hormones, immune, the reduction of inflammation, obviously bone preservation.

My suggestion is always getting 15 to 20 minutes of sunlight early in the morning when you have less ionizing UVB rays. Same thing in the evening. or very easily now supplementing with a quality source of vitamin D.

Is that something you're doing? Yeah, I'm doing 10,000 units, probably four days a week. I found that 5,000 units isn't enough and 10,000 every day is too much.

So I usually run around 70 on my vitamin D. So that's a perfect sweet spot. I like nothing below 16. In fact, anything below 40 nanograms per deciliter is considered pro-inflammatory.

You're uplifting inflammatory cytokines when vitamin D status is inadequate. Something that is super changeable, if you will. But it's everyone. Every Vatamadhi you check on someone who's not basically supplementing or working really hard at getting it otherwise, everyone's barely in range or low.

So 20s and 30s, everyone's under 40. That's crazy. It is the sad reality. And even sometimes people in Florida, we have patients in Florida and they're alone.

They're like, I'm taking the sun. Well, genes can impact the synthesis of vitamin D and sometimes we need more. Obviously what is often overlooked, a toxic burden that goes into that.

It's now suggested that some doctors are saying we are becoming allergic to the sun. That's impossible. We need the sun for optimal health. But the problem is our toxic burden predominantly Poly microbial factors or heavy metal exposure, which again prevents the synthesis of cholesterol and vitamin D absorption.

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I think maybe we discussed this on your podcast last time, five plant points, getting good sources of antioxidants, but a lot of green leafy vegetables, vegetables in general, things that help promote K2 production, which is critical.

only with a healthy microbiome. People will recognize that synthesis of B vitamins and vitamin K is very driven by our healthy microbes, a good ratio of bacterialities to formicides.

Making sure that when tolerable, you're getting in healthy sources of fermented foods is another great option. And then meats, organ meats, wild-caught fish, eggs, all great sources of nutrition that will help preserve bone.

How much of that are you doing or accounting for your nutrition plan? Uh, you know, we do a lot of eggs. I try to stay low ish carb. So I get plenty of meats.

I can't promise on how high quality they all are, how fresh caught all the fish is all of that. Probably could really focus on the quality of the food, you know, the sourcing.

Try to stay away from processed stuff as much as possible, but it, you know, it happens, but definitely could be

more intentional about that. Okay. So nutrition, again, another very low-hanging fruit pun intended where you can control what you ingest, right?

And often the adages, you are what you eat. I believe in you are what you absorb, assimilate, and eliminate. It goes way more than just what you're putting into your body.

Digestion certainly matters. And with a deluge of just herbicide, fungicide, pesticide, insecticides, plus the other xenoestrogens and phthalates that we're now exposed to, our digestion is compromised.

So we don't get all the nutrients out of our food. That's why supplementation matters. I suspect you're probably having that same discussion with your patients.

The goal is to get everything from food. Then looking at a gene report, we can now supplement the gaps, not only in your nutrition plan, but also in preventing some of these risk factors.

So that looks at bone health. Anything in question to that? No, I think that's, that's great. Especially for my two daughters, as we go forward, they're going to share some of my risk factors for bones.

I'm sure there'll be something for them to know now as they're teenagers to move forward into. Super interesting, right? Because looking at perimenopausal females, we can protect bone before we start degrading bone, right?

As estrogen begins to decline, especially in the post-menopausal years, that is very, very bone protective. many people don't recognize the impact of our hormones on something as simple as bone.

And worse still is, a lot of heavy metals are sequestered in bone. And when we're leaching some of the mineralization, leaching some of the bone, that gets into the bloodstream.

Now we become more toxic, right? You have cancer as an example. And you're already peri-postmenopausal and feeling all off. And now you've got extra heavy metals to deal with as well, right?

So the component here is, again, very easily modifiable risk factor. The second one here for you is blood pressure. Are you taking blood pressure daily?

I am. You know, my blood pressure was running 135 over 85 long enough that I just decided that was too high for too long. I replaced my testosterone, which, you know, isn't specifically high blood pressure, but it definitely supports blood volume.

And so I'm on a like a less than April 10 with 12 and a half HCTZ just to keep it in a happy place. And with that, it does well. Plus, you know, when I exercise and I'm on my routine, it does better.

Here's why this becomes ever more interesting. To me, I'm gonna throw this out there, but I believe it is malpractice when you go to a cardiologist and they're not considering some of your risk factors.

You are very likely to run elevated in terms of blood pressure. I see this in myself, I see this in many patients here, but we're quick to prescribe or looking at cholesterol and stats as an example.

But what if you have a proclivity for higher cholesterol or for higher blood pressure? Is this, you know, we have to necessarily treat. I do support, I mean, if you're running high, you want to kind of mitigate that, but that means you have to be a little bit more extra careful in terms of nutrition or stress or sleep or toxic burden, et cetera.

Especially looking at kind of my specialty was the gut, leaky gut, leaky heart. There's going to be our leaky blood vessels as an example. So this all ties together.

So there's a multitude of risk factors potentially, but looking at your genes directly, you are prone to higher blood pressure.

Blood Pressure and Salt Sensitivity

How do you mitigate that? Well, nitric oxide to me is consuming oxide rich foods. I love green leaky vegetables. Again, going back to plant points, beets, nuts, seeds, dark chocolate, and not the milk chocolate nonsense that's kind of shriveled with a side of chocolate.

It's the dark 100% bitter. Bitter equals better. Okay. So pomegranate, some of these foods, they're higher in purple. Red cap, purple cabbage, iron anthocyanins, all that will confer tremendous blood pressure benefits.

Also, some other foods like garlic, herbs, ginger, basil, berries, even eggs, all great for optimizing, regulating blood pressure, making sure that you just have adequate mineral status.

Because in conjunction with your blood pressure, interestingly, you have a very high sensitivity to salt. Now, salt to me is not a problem. Salt actually is a solution.

A quality salt is rife with an abundance of minerals. The problem is our bleached iodine taken out of it and then have to reiodize table salt, which is chemically processed.

That to me is the problem, but a good quality salt is actually very, very beneficial. And my suggestion, almost with all our patients, especially to optimize for blood pressure, is make sure you optimize mineral balance.

So putting a pinch of salt in the morning in your water actually helps structure the water, helps with absorption, helps replenish your mineral balance and your electrolytes.

So you have a sensitivity to salt. I don't tell patients, hey, avoid salt. I just say, hey, make sure you get in a good salt. I suggest to patients what good salt means.

There's something like black Hawaiian salt, red salt, depending on kind of what someone might be dealing with. Black salt in particular helps with kind of binding some of the toxins for helping for phase two and three elimination.

But looking at salt, whenever I see patients that sensitive salt, I just want to ensure that their mineral status is adequate, meaning more magnesium, more potassium.

Cool. Okay. Nolens is iodium much better. Pink Himalayan, which I guess is probably everywhere now. I don't know, you know, how high quality that is or not.

I think that's kind of what we use at our house is table salt. But, you know, times we've been on a kick with Celtic or other salts as well. I've never tried the black salt for sure.

So my salt gain is very strong. Yeah, and I go very deep into this, the quality of water matters, the quality of salt matters, and this to me is very, very low-hanging fruit.

Himalayan salt was, that's what I used to use ubiquitously for almost the last decade. Some recent studies suggest that the ones coming, I think, from India and Pakistan, a little bit higher in some heavy metals.

The pink salt from, I believe, Venezuela or Chile, a little bit less so. So, sourcing… Okay, once again. Yeah. And, you know, we're still mining for coal, so it's raining down heavy metals, even our organic food, certainly being absorbed in the soil, in our waterways.

And so salt is going to be compromised kind of nowhere you go. But you want to make sure that you're trying to reduce the toxic burden in what you're ingesting, right?

Anytime you're applying anything to the skin, it's your largest organ. That certainly matters, too. But going back to salt, so you're likely more sensitive, which likely again, if your sodium is higher, your testosterone production, your blood pressure is driven up, that's the connection also there.

Okay. The last component here in your very high pathway is weight gain and weight loss. So you're likely to gain weight easier and lose weight slowly.

I don't know if you find that to be true. I mean, sure, it does come off, but yeah, I've never been the skinny kid for sure, right? Even in my soccer days, you know, I was more of the enforcer than I was the fast guy.

And then I played goalkeeper in the end. So then, you know, more mass, it's not all bad. So anyway, yeah, yeah, not the skinny guy. So interestingly here, if you look historically, we used to die either, you know, from natural cause, whether it's something comes in and wipes us out, unfortunately, but more often than not, it's either you're kind of getting eaten by a tiger or you're starved by fruit for prevalent 24 hours a day.

So you have specific genes that can actually benefit in terms of when food is scarce. Yeah. Interesting. But in our modern society, that's a detriment.

Yeah. You store fat more readily. It's harder for you to mobilize fat. I think of things like L-carnitine in particular, which helps with beta oxidation to use fat for fuel in terms of our mitochondria.

So in terms of mitigating insulin resistance, where is that found? Well, in meat primarily. So making sure you're getting a quality source of meat, organ meat even better still.

optimizing your inflammatory burden with again eating the rainbow nuts seeds and also omegas so certainly consuming more wild caught fish or taking in an omega-3 supplement and I like high dosing to be honest I haven't had sort of detriment with with high dosing our patients I usually take 2.4 grams is kind of a minimum depending on eye weight.

Weight Gain, Detox, and Methylation

That's something that I think most practitioners are overlooking is the omega-3 index and your ratio of omega-3 to omega-6, 9, etc. But if you look in terms of our cell membranes, they're made up of fat and protein, right?

If your membranes are rigid because you're inflamed, well, nutrients don't get in and toxins don't get out. So to me, in order of operations, one and two, looking at fuel delivery and perfusion circulation.

So looking at obviously glucose, how you handle glucose and other nutrients, fats and protein. And second to that is our membrane health. And we can look at, we can see that in the blood test, but that certainly plays into your genes here because next in line to me are your high pathways.

So that's to surmise you're very high, but your high pathways, you have quite a lot here, quite a lot of considerations. So the good part is that they're not all very high.

Because in terms of mine, like I said, I'm in the 1% of all my patients that I've seen that lost the genetic ladder, as I call. But again, I'm as healthy as I can be, right?

But looking at methylation and detoxification, phase two detoxification, this now becomes a certainly very interesting conversation. Methylation, all the craze now.

What's interesting to me is methylation is actually a small component of phase two detox. While it confers a lot of risk factor, glucuridation in the nutrient needs there within is substantially higher, about 70%. Then you have acetylation, sulfation, conjugation.

So glutathione production, you have amino acids. Particular protein-based detoxification is very amino acid driven and most people don't realize that when they do cleanses or detoxes, you become very conditionally deficient in cysteine, which is predominantly found in sulfur-rich foods.

Uh, you're usually not doing that when you're on a cleanse. And so then your inability to produce glutathione, your

mastery antioxidant goes up higher.

And that coincides with methylation because I think of methylation two factors. One is the ability to produce salmi as sedinol thionine to produce as a methyl donor for many chemical reactions, including DNA synthesis, hormone production.

immune benefits like producing T cells, natural killer cells, and how it impacts now immunity inflammation, but then also your ability to produce glutathione again and ability to bind clear out excess toxicity.

So your methylation need is high. Well, one thing to ensure that people think, well, take methylated B vitamins. Yes, that's certainly low-hanging fruit and more doesn't always equal better.

But again, I suggested earlier is our ability to produce the synthesized B vitamins is very much predicated upon our healthy microbes. So I turn to the gut before I just automatically give someone a B complex.

Now, a B complex is benign. It's water-soluble, so whatever you don't use, you typically excrete, but too much B6, as an example, can drive neuropathy.

So in terms of methylation support, I think of TMG, trimethyl lysine, B9, which is folate, and then B12, or ideally a methylated version of B12 to enhance absorption was looking Very interesting is a lot of people who have methylation issues from specific areas of the world, here's a way that you can kind of circumvent that.

The problem being is much of our food in the US is with the synthetic form of folic acid, which the body isn't able to break down. And as that accumulates, that's toxic.

And now we're talking about metabolic diseases. So a B complex, obviously, again, eating the rainbow is certainly going to be prudent. And then supporting with supplementation whenever you don't have enough.

And that's something you can discern on a blood test. One big component here that I really, really like that I've probably suggested with 99% of my patients is the consumption of sulforaphane from broccoli sprouts.

So I don't know if this is something that you do, but I've been growing broccoli, well, any kind of microgreens and sprouts myself. It's estimated that you have to eat one cup of broccoli sprouts equates to about two point something six pounds of broccoli that no one's eating.

All right. So a shortcut to me. Yeah. sprouts, broccoli sprouts in particular, which impacts almost every single phase two detox pathway. Okay. Or if you're not doing the sprouts, well, here you can hedge against that risk factor.

We use a couple different companies, but you can purchase this as long as you're sourcing a reputable company. Uh, sulforaphane and making sure that you get enough.

Usually you want about 20 to 40 milligrams of active, uh, sulforaphane, which is usually driven by the conversion from myrosinase when you start chewing in the mouth.

It happens that then, because we don't actually make sulfur or pain, so that's the conversion that happens when we are exposed or consuming some of these high sulfur rich foods.

So broccoli sprouts, I like sprouts in general, or just supplement and you confer such an amount of benefit with the ability to now reduce your risk factor.

Yeah, we use, I'm going to get some broccoli sprouts. That sounds, first of all, it sounds awesome. Secondly, I use a orthomolecular mitocore. It's going to have a lot of the methylated vitamins and some of the mitochondria sort of supplements.

And then we have a, a supplement called Inlight that is specifically in that whole methylation process has a lot of

the cofactors as well. Just to kind of help with whether you're CONT or you know, whichever ones you are as well.

And we found that there's a certain percent of the population, especially at first, that it makes a really big difference in. I think supporting that with like whole food nutrition that has all of that is going to have all of those factors that's going to really keep that benefit going for sure.

Let's talk about CMT, because that plays heavily into methylation here, since you brought it to light, because you lost the CMT battle. You have the AA allele, which is associated with a forex decrease in enzymatic activity.

So that impacts mood, that impacts behavior. So sometimes people express ADD, kind of like tendencies, ADHD, activity, certainly hormone balance. So your ability to kind of break down some of these catecholamines is definitely impaired.

And so that impacts methylation because the AA allele which you have is associated with lower catecholestrogen methylation and detoxification. So it just means that sometimes you have a harder ability to clear out your estrogens, which is very relevant for men, certainly obviously for females and everyone in general.

So sometimes you have this more estrogen dominant representation. which sometimes and then you think, okay, 5DHT associated with baldness. Well, there's also this impact as well in your inability to detoxify.

So if your oxidative burden is high because your toxic burden or exposure is high, to me, something looking at hair loss as an example, that's a product oxidative stress where the body isn't able to deliver nutrients.

So your blood flow kind of is your life force, if you will, isn't delivering the nutrients to to the hair follicles to similar growth. But hair follicles aside, the premise is, again, your ability to detoxify because how well you can detoxify impacts the quality of your life.

So caffeine example plays a huge risk factor into that. Even though you're low risk for caffeine, heavy coffee drinkers are impacted here. So that's one thing to be mindful of if you are drinking caffeine or to make sure just you're not kind of overdoing it.

That's obvious. Yeah. Cause it's tempting to overdo it. Cause you just, you know, part of, you know, this pathway is your energy pathway. And so you're like, I just need more caffeine.

Right. So I do a cup of coffee, a big cup of coffee every morning. But after that, I'm, I'm, I'm kind of over it, but good to know, man. Yeah, because again, with this representation in the AA allele carriers, you have an increased risk of myocardial infarction.

So how interesting, right? Something is coffee that we think is benign, not so fast, depending on your genes. Right. This is the point of doing a simple gene test because now we can say, I'm not saying, hey, Flynn, you got to avoid coffee for the rest of your life.

No, if you enjoy, do it, but be mindful that there's a trade off. So certainly timing matters, quality matters, quantity matters. So all that will impact because you're going to feel those effects impact specific risk factors in the body.

That's a huge concern, making sure that you have cofactors to help kind of rid that out. Obviously, like we talked about, sulforaphane, magnesium. You also want to be mindful of alcohol because that slows your CompT pathway faster.

Yeah, it slows it down even further. So, you have a reduced ability to eliminate xenobiotics. So, what I was talking about, like everyone is xenotoxic until proven otherwise is because we're just constantly exposed to chemicals.

And a lot of that is classics. It's estimated now we get one credit card's worth on a weekly basis and it's stored in our prefrontal cortex here, which then impairs executive function, clouds our memory.

creates brain fog, which impacts dementia over time. But how that impacts then the full cycle here is your phase two detoxification pathways, obviously going back to that.

And so if your toxic burden is high and you have a reduced capacity to deactivate some of these chemicals, well, we got a big problem now, right? some gentle support is going to be prudent.

How? Something like I said, obviously eating the rainbow, but sulfuraphane. But if you're not consuming sprouts, well, or sulfur rich foods, broccoli, Brussels sprouts, cauliflower, et cetera, then taking in a simple supplement is a very, very approachable way to mitigate that concern.

And I promise to all my patients who need my prefrontal cortex to work that I am on it. There we go. See? Yeah. And for some reason, so for patients who are listening, if you don't handle sulforaphane well, because again, from broccoli, a lot of people have issues when they consume sulfurous foods.

Usually that's a microbiome issue. Yeah, right. Gas and all the things. Yeah, we don't have specific microbes that are breaking the food down, but also obviously if you're not secreting pancreatic enzymes, your digestive enzymes, bile, if you're not secreting enough hydrochloric acid to break down foods as well, there's obviously concern.

But in particular with sulfur, usually a way to intervene is molybdenum. molybdenum, so is one way to kind of counteract the issues with sulforaphane or sulforaphane consumption.

I usually find that people that have issues with sulfur rich foods again have this deficiency in molybdenum or there's obviously SIBO and that's why I was alluding to some of the conserves.

But that's looking at COMTI, looking at, let me pull up here, going back to your report here. So in terms of methylation, I mean, you have several different pathways here that are between very high to medium impact that we can buffer against with some of the strategies that we just spoke about.

Looking further into phase two detoxification, so your homozygote for the CYF17A, which makes steroid hormones, so it accelerates hydrophilase and converts pregnenolone and DHEA, so sometimes patients with this representation can shunt more to cortisol, which is why going can be elevated.

Right. You have cortisol obviously hanging around longer. Now we know why, but the issue is, okay, how can we buffer against that? So very protective against DHT and cortisol, especially for men and mitigating prostate cancer, something like saw palmetto.

Yeah, right on. That's something that's super easy that you can supplement to reduce your risk factor there. So before going on to BHRT, I'm not sure if you're, are you doing any sort of TRT or anything?

Yeah, so I'm doing bioidentical hormone replacement pellets for me. We dig DEM to sort of mitigate some of that estrogen effect that you were talking about and help break it down the right pathway as much as possible.

But yeah, I burned out early on testosterone. Like I was in my mid thirties and was Hashimoto's and low T and depressed and you know, losing on the methylation, you know, genetic lottery didn't help any of that.

So yeah, that all makes perfect sense to me, man. So in lieu of the right environment or the wrong environment, 30s were burning the candle at both ends.

Now you're turning on these genes, they're not necessarily protective, they're doing more damage, right? You're expressing these genetic tendencies, which you can mitigate once you know, right?

So that's why I did a gene test on all my kids, because I can now point things from happening 20, 40 years down the line, right? So going up, before administering DHRT with our patients, someone like you, I would be cautious

with pregnenolone or DHEA as an example.

Root root is something that can slow this down as an example. And it's a lot of stimulatory formulas when we're supporting adrenals. So if you're dumping to cortisol or DHT, you likely need adrenal support with licorice root in particular.

Okay. be tremendously beneficial for you. I know Ortho, they have a good product that we'll use with our patients to improve body fat, right? Body fat composition is also going to confer protective benefits if you have the right amount of body fat, right?

Obviously, we want to be mindful of exercise. I know we discussed for you, your proclivity to kind of store fat, sometimes people like you, you just need to do a little bit more for longer to receive some sort of a benefit.

That's all. So consistency, right? Frequency reps, it's no different when you're in the weight room, matters. But going back to the hormones, So looking at your aromatase enzyme here, there's one here that is slower and so this will potentially result in actually higher T and lower E.

Okay. So when we administer T, you want to obviously look at patients and to recognize, okay, do you have good aromatase function? And so we want to be able to mitigate that.

Now, the component is, do you do any sort of like Dutch testing or are you just doing serum for blood? No, we're just doing serum. Okay, so you might want to consider looking at metabolites, how the metabolites look, because you have a better representation into what's being absorbed, what's being cleared out, what's recirculating, because when you're doing TRT or, you know, BHRT with our women, it's great that you've already adapted and adopted that.

The premise is, okay, what's actually not being broken down and recycling becomes very, very toxic. And so if we have some of these risk factors within phase two, which you do, if you're not clearing out some of these metabolites, well, you have a bigger problem downstream.

So we always want to test hormones. to see kind of what the metabolites are doing specifically the the tetrahydrocortisol for you because something like that can be mitigated with sod superoxide dismutase as an example we use a lot of biotics products which already have that inside of them cool So, catalase is really cool because why it prevents against the hydrogen peroxide that can build up, which respects the graying of our hair as an example.

And a lot of people were using copper peptide to mitigate that. So, you kind of have a higher risk factor there. So, the good part is you have no variance with sex hormone binding globulin.

So, that's super protective. but your dihydrotestosterone pathway needs to be monitored. So again, looking at your EHT, you have a slower CYP19A1. So you convert.

So while you do have a kind of a predicted benefit, but you also convert to E faster. Okay. Which again, going back to this estrogen dominance profile, that to me is, is really representative of a lot of cancer to me, looking at prostate cancer and eczema.

For sure.

Hormones, Estrogen Balance, and TRT

To me, that is a product of excess estrogen and dysbiosis until proven otherwise. Every single time I've seen that to be whole true. And our genes certainly play an impact there.

Going back to obviously dysbiosis and digestive function, we see now that every organ function has its own microbiome. Yeah. Yeah. Well, you talked about that when the prostate last time and that was the first I really

thought of that, which is great.

So to, to correct, I didn't going back to when I said like, you know, for DHT to crack for DHT, some suggestions, Tribulus. I know we mentioned, uh, Saul Palmetto.

Quercetin, which is a catechol, the lanteur, COMT, Rudin. So I love quercetin, because we see a lot of mold-toxic patients, very sensitive patients. Quercetin, high in garlic and in onion, as an example.

So getting this from our nutrition, but also supplementing the gaps where nutrition fails. For women, Chaseberry and Vitex is super protective in kind of this representation.

So if you're dumping to DHT, obviously you need to increase aromatase function. You have a faster CYP1V1, so it's higher for the 4-hydroxyl, which obviously impacts methylation.

There's a slower methylation here. So you clear out garbage much slower. So if we're looking at phase three detox, this like in step where you're kind of the intermediate step when you're converting some of these metabolites, they become super toxic if you're not cleaning, clearing them out.

So depending on a patient's UGT and glucuronidation, you want to make sure that gut health is, is clean. Yes. Cause someone like you, you would be more susceptible to colon polyps and prostate cancer as an example, because of Okay.

Again, not deterministic. There's no reason to fear monger here, but the premise is we can take certain things. Like I said, sulforaphane, I love quercetin in supplin form.

It's great as an antihistamine, very immune boosting, reduces and attenuates inflammation. So a formulation like that would be tremendously beneficial focusing on foods that are rich in minerals, calcium, calcium deglucarate.

Again, going back to sulfur rich foods. and just mitigating caffeine. That's why I always advocate for green tea. Are you drinking any herbal teas or green tea?

No, no. Good. Don't do it. OK. No, come on now. So that's a great substitute. Yeah, right on. The EGCGs there are very beneficial and fighting against cancer and immune dysplasia.

Well and you know if I'm going to be a slow detoxer then you know the less crud I put in my body to start with is a good start as well right like really just the quality of the food and drink that goes in the body right all the more reason to be a little more hardcore you know pay a little little more detail oriented to that to the sourcing and where your food's coming from.

Yeah, you mentioned DIMM. Let me touch on DIMM for a second. DIMM speeds up 1v1. Someone is fast, you don't want to use DIMM. So I don't need it? We can activate it, but we can't conjugate it fast enough.

And so then we have this buildup of toxins. So that's why I just wanted to address that point for you. But we rely on our quinone pool, going back to this toxic burn-in, to conjugate glutathione.

and you have slower SGTP1, this is really one we can re-know again with sulforaphane. Okay. So sulforaphane again for the win. You're going to see this is why I suggest this for like 99% of my patients.

Yeah, right. Or two, which is not a gene, but more of a transcription factor, which turns up the lights in the home that says, okay, we need to upregulate some of these fatty space to detoxification pathways when they're slow.

Or sometimes it can buffer against when it's too fast, because sometimes what happens with patients that are slow in one category and faster in another, and that's a problem.

Like an assembly line, things work great on a time stamp basis, right? Each section takes a specific amount of

time. If one's faster or slower, that becomes a problem.

So recognizing that and being able to intervene certainly will help. Looking at now some of these others, I know we need to be mindful of time here. We're going to do a rapid fire here.

You're high in the collagen and joint pathway, so you're susceptible to injury and tissue damage. What's interesting though is I don't necessarily recommend collagen supplementation because that's a completely complete protein.

It can be great for hair and skin, hydroxyproline, et cetera, but I like just getting it from food. We're not eating those to tail. That's the problem.

So our college sources from nutrition usually is less. So supplementing where you feel you might fall short or just making sure you get adequate proteins.

Because it's difficult for the body to discriminately just say, oh, these are the proteins I need for collagen. The body uses amino acids to repair tissue and rebuild.

So again, making sure you get quality sources of protein, that's going to be key. Vitamin C, cofactor for collagen absorption, if you are taking collagen as an example.

I like MSN, methyl sulfonylmethane. So MSN is a great supplement that I'll use when I see people have a higher collagen risk. As an example, that's one that's often overlooked.

But making sure that your exercise is adequate, that's going to be key. Yeah. Well, my activity is all in the high risk categories, right? Endurance, injury, recovery, training response.

It's like, I'm glad I didn't know that when I was playing ball in college. I'd have been like, now I'm out. But interestingly, like if you're supplementing correctly, you're getting stuff from nutrition, your sleep is on point, your stool is good, you're mitigating stress, you're not going to express these injury potential risk factors.

Right. But it wasn't until I was mid 30s that my Achilles decided to completely spontaneously combust during a soccer game. So, you know, that sucks. But you know, we made it through the Achilles isn't necessarily age related anyway, but luckily I made it through the important years and then limped along in the mid thirties at the same time I was depressed and low T and Hashimoto's.

It was a, it was a bit of a trifecta, but yeah. Yeah. You need to, you know, you need to know where your genes are starting from and then fill in the holes, man.

Bingo, I don't know if this one relates to you. In conjunction with your COMT, you have also the TT allele for NAOA, which impacts mood and behavior. So I don't know, you have tendencies for- Yep, depression, man.

Depression is a thing with me, especially if my hormones are off or I'm not getting my exercise or whatever.

Collagen, Injury Risk, and Mood Genes

Usually my staff knows when it's time for my re-pillet if I wait too long, because they're like, Clint, that was kind of an asshole thing to say, man.

When was your last pillet? So yeah, my MOA, that's funny because I only think of that as like the old school antidepressants that no one uses anymore, like the MAOA inhibitors and that kind of thing.

Yeah, with the yertelial, it's associated with increased aggression, both in women. So it speaks to that. We want to avoid alcohol and stimulants, as we addressed, right?

So those risk factors. You have several DRD receptors, which again, I find very typical in presentations of ADD,

ADHD. So that obviously plays a role as well, but you have this tendency for addiction in some capacity as well.

I don't know if you find that to be the case. I haven't had issue with it, but my grandmother was an alcoholic and we're all very sort of aware of those tendencies I've worn to my kids.

You know, we haven't abstained completely. We just keep a close eye. So again, super relevant, something that now you can offer against it. Going back to supporting methylation, that's key.

Obviously we talked about comti, certain supplements that help kind of prevent that. So again, it's not something that you express because your lifestyle is…

one that's kind of counting for that. The next one that's a big elephant in the room here is histamine. So you're prone to histamine overload. And this is super interesting.

I find that when I'm doing a gene test, this is probably one of the most profound markers here because in modern lifestyle, what we're doing is We predicate convenience.

So what do we do? Eat meals that are prepared before high histamine. So prep meals to me is just lighting someone on fire. Fermented foods, right? That are super beneficial to support health.

Can be a problem for you in the wrong context. Well, good. I don't really like fermented kombucha and things. So I'll just continue to not drink it. Well said so you don't do so well with histamine and looking at like mast cell and I find this to be a very big Lever that once you clean up that the histamine issues people respond so much better almost immediately effectively overnight So again going back to to corset in I love cooking with spices.

Yeah that really helps with mitigating histamine and histamine isn't the devil we need histamine too especially for and and i mean problems with histamine will drive also ed as an example so histamine isn't necessarily the the villain here it's how can you support if you're intolerant to histamine issues already through your genes.

So certain supplements like quercetin we mentioned, luteolin, berberine is a great one, which helps with blood sugar. If you're doing berberine, the HCl great for impacting at the level of the gut, dihydro for weight loss.

Oregano oil, again, going back to our herbs and spices and making sure that you have adequate histamine-reducing microbes like lactobacillus, rhamnosus, bifidobacterium, bacterium, it goes back to the gut, especially when we're looking at histamine.

So that's one that can really turn on a fire for you very, very quickly. If you're not- So is a general sort of, you know, standard broad spectrum probiotic good enough or do I need to be more specific in histamine?

Yes. Here's the interesting part. So there are specific microbes that break down histamine. There are specific microbes that actually can drive histamine like Lactobacillus casei, Sharota, Helbeticus.

All those are driving histamine and some probiotics will have them in them. Yeah. So, a general one may not be the best bet. You want to make sure and look at the label and you're avoiding and I can share with you the list that degrades histamine versus the ones that kind of avoid histamine.

And so, histamine necessarily isn't the problem. It's if we're missing the beneficial microbes that are breaking it down. So, what I suggest is always starting with a stool test and you can see what's missing there and make sure then you're also plugging that gap because then you're not expressing the histamine issue.

Another very, very simple way to think about it, too, is avoiding histamine-rich foods, which we discussed, but there are certain foods like seafood, which we all, well, almost all of, myself included, you have higher histamine, right?

So there are certain people are eating that they're just lighting on fire, which they don't recognize, okay? Yeah. Yeah, it was a very, very easy kind of hack, if you will, to mitigate against that.

But I like giving more. I just like getting a counting lifestyle factor so that you can avoid and you're not turning on or expressing this genetic intolerance.

Histamine, Exercise Response, and Nutrient Needs

Then as you nailed it with kind of exercise response, adipogenesis, which we spoke to your ability to store fat in a scarcity model, you win. In our current model, you lose.

Obviously, your energy expenditure, so your metabolism is slower. So again, your ability to kind of burn calories, you're enduring, you do well with endurance training, just FYI.

So I know you mentioned soccer. Yeah, I'm definitely long distance. I am not a sprinter, man. There you go. So that's indicative in your pathway versus me, I have the Olympic sprinter gene.

I was always fast, no one could keep up, but you could further benefit in endurance training. So your VO2 max, which again is a tremendous now marker of longevity.

It responds well to training. So, you have a very high net benefit when you do engage in some of these endurance training. Now, looking at nutrient needs to kind of tie everything in a full circle.

So, we already addressed the salt component. You have high issues for methylation, right? So, they didn't be 12. folate, which is benign, and then fatty acids.

So your ability to metabolize fatty acids is likely reduced. And so that's why I don't always think in terms of more equals better, but the quality matters.

And sometimes a gentle push with SPMs or activated fish oil is going to be tremendously beneficial for you. Cool. All right. So make sure you're getting in healthy fats.

Vitamin C, you do have a higher need as well. For me, I'm similar like you. It's interesting because we have this intuitive nature. When I go to a grocery store, I'm pulled to certain foods.

I try not to come in with a recipe. I come in like, what does my body want? That might sound woo woo, but I love eating bell peppers, red bell peppers.

which is a tremendous source of vitamin C. And I have a high need for vitamin C. How interesting. The body tells you what it needs. We just shut up and listen.

Right, right, right. So if you're not getting vitamin C from, you know, lemons, limes, grapefruit, citrus, bell peppers, you know, sometimes the green lethies, making sure that you're supplementing super easy.

You want to be mindful because a lot of the vitamin C citric acid can be sourced from mold, interestingly. That's awesome. Ascorbe kind of buffered vitamin C better still rather than the ascorbic acid.

Okay. And then lastly is choline. So you have three requirements from dietary choline. When I think of choline, I think of brain food. And probably one of the best sources I always think is egg yolks as an example.

But animal sources, so grass-fed, grass-finished beef, wild-caught fish, free-range eggs, obviously organic when possible. And then supplementing if need be, I have a very high need for choline.

So what I'm doing is phosphatidylcholine. I take it in a powder. It's not the best absorber, intravenously, but I just want to ensure that bases are covered.

So I use it from a sunflower source instead of a soy source. And that kind of qualifies my need for choline if I'm not eating some of these foods, just as an example.

So I'll make a schlie. with nutrients like that, but those are your high nutrient needs. And then the last one is vitamin D, obviously that we discussed previously for higher vitamin D and you found your sweet spot, which is awesome.

Yeah, finally. Yeah. You have a low low issue with gluten. We already discussed your caffeine. And even though you're low to you metabolize caffeine fast, which is great if you're consuming caffeine.

But the problem is, how does it impact your other path? Right, right, right. It's a dual-edged sword there. So just be mindful of caffeine because it's the most drunk drink if you will Globally, and so a lot of people I find have issues with this Yeah, it comes to sleep which compromises your ability to detoxify which we already alluded to so you have already some kind of slower pathway issues So all this goes hand in hand and this is exactly how our genes matter man Daniel that's Awesome.

That was so fun, man. I really appreciate it. I could see how we could sit around and talk about this for hours. And I'll have, you know, the patient report on the show notes so people can see what he's talking about with high, very high and where it's at.

And it's, you know, I think the take home point here is This is just the start, not the finish. And it's plugging holes and mitigating risks and accentuating strengths.

So man, thanks a lot. That was, that was absolutely a blast. This was super fun for me. Usually, so it starts with one parent and then the other one says, hey, I want to learn my genes.

That's right. That's right. The spouse is curious and then we get to the kids. Listen, it's fun. And again, while genes are not our destiny, they certainly do play a role in matter.

And so now you have specific actionable takeaways and steps into to mitigate certain risk factors. So I'm glad you found this fruitful. Love to do a sort of follow up if your community has any sort of questions.

And if you want to do round two, listen, I can geek out further. We can go deep into the science. That would be great for me. I don't know how much the audience would care, but you and I, I mean, I might just hang out next time in Chicago.

I might buy you a beer and it's fun, you know, let you keep going. But so remind my audience how they can find you. If this is the kind of thing they would love to dig deeper in themselves.

So remember, alcohol for you is not your friend, so I would prefer you do some kava kava maybe instead. There you go, I'll get some green tea. Tea for the win.

Love it. Yes, so our wellness clinic, Total Body Diagnostics in Elk Grove Village, Illinois, we also offer telehealth. I love absolutely going deep on all things gene related.

So our website, www.tbdfit.com, and then also our email, which is info at, tomboy David, TBD fit FIT.com. If you want to do a gene test, glad to, to help.

And this has been super fun. So I look forward to continuing the conversation. And then, you know, you've got a podcast too, TBD fit, right? So, you know, more, more information to be had, but reach out, grab a gene test.

This was a blast. I really appreciate your time, man. Clint, all the best. Looking forward to speaking together again, very soon. Of course. Bye bye. Thank you for tuning in to Doctor Talks.

We hope today's episode has enlightened and inspired you on your path to optimal health. Each day is a new opportunity to make choices that empower your well-being.

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