# Why Stress Is Aging You FASTER! Secret Link To Brain, Belly Fat & Disease l Gus Vickery l Ep #408 Transcript

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## Introduction and Episode Setup

Hi, I'm Natalie Nittum, your host. Welcome back to the show. In today's episode, i'm sitting down with my good friend and amazing doctor, Dr. Gus Vickery.

And fair warning, put myself under the microscope a little bit on this one. We walked through my own metabolomics testing and what showed up after a stretch of heavy travel, a whole lot of stress, and me taking what I thought was a harmless break from supplements.

Turns out that even when you feel great, your cells may be telling a slightly different story. We talk about mitochondrial health, nutrient depletion, and why foundational support isn't optional as life gets busier.

Now, this episode is brought to you by Cozy Earth, Nature's Marvel's Bioregulators, And Blue Peptide Spray from Young Goose, all with special offers just for you.

Check out the show notes below for details, then let's dive into this Welcome back to the show, Dr. Gus Vickery. It is an absolute pleasure to have you back.

Natalie, it is always an absolute pleasure for me to get to dialogue with you and hang out and an honor to be on your show. Oh, wow. Poof. Blushing. Well, you know, the best part of doing an episode with, we got to talk a whole bunch of times beforehand just to prep.

I know. And it's been a long time since we caught up and there's so much going on out there. You know more about it than I do. No, I mean, but here's the thing, right?

I'm out, they're kind of like the busy bee. checking out all the different flowers, sampling different nectars, and you're back at the hive making the honey and the Honeycomb and killing the invaders and wrapping them up in propolis.

It's not a bad way to look at it. No, it's Not a Bad Way to Look at It. But yeah, I'm glad you were out there scouting for all those new molecules that we can bring back to the Hive and get better results.

we're going to talk about today actually primarily is testing. We're gonna get into some testing because, well, we both know the folks over at Therium quite well.

And they agreed that I would run my test and you and I We're not deep diving into my results, folks, so don't be whipping out your pens and pencils going, okay, what's really going on under the surface?

But I ran a test at the end of the summer, which was really enlightening. The results were not necessarily what I was hoping to see, but upon reflection, I did that thing where I took a total break almost from supplements and got a little lazy.

I think that it would be great to just talk a little top line about what you saw, because so much of what we're seeing right now is we are encouraging people, don't take too many supplements, like cut back, prune.

And there's a lot of wisdom there. But this really brought home to me, and we will talk about it, this idea of foundational supplements and how they vary from person to person.

So I'm going to let you kind of take it away here, but maybe you can just explain what you really noticed in these

results, especially around the metabolites that reflect the heavy travel, the stress, sleep patterns, recovery, all that stuff.

Yeah, absolutely. And so, yeah, the score was not what a superstar health expert like you would be. It's so humbling of you to present this to your audience.

But also, and we'll talk a little bit more about the implications of Ethereum and what is its role as part of the diagnostic survey in a We also had some blood testing that you had had updated, and there was a gut test, which we might not get into too much, but it plays into that because we know how the gut biome and metabolites being produced via the got metabolism are directly influencing mitochondrial function.

And so it's a system.

## Natalieu2019s Metabolomics Test Overview

We'll always say that over and over again, it is a Yeah, and I think what's important to note is the discussion we're having and the results we looked at are the intersection of all three of those.

It wasn't one test. That's right. And I and think that's that important. One thing I want to really emphasize on Therium is it's primarily sold as a practitioner tool.

Yes. There's a good reason for that and that is that if you don't know what you're looking at and you you get really upset, confused, and overwhelmed.

There's a lot of information here. Yes. And the key is that cross-pollination with other data and the subjective presentation of that individual because, as you reported, you feel great.

You're doing well. Energy is good. Overall, things are good, And that's an important piece of data that ties into this because ultimately, metabolomics, which I'll show in just a moment, the test, It's a unique and very powerful lens into what's going on in a human system biochemically being impacted by all inputs, not simply, you know, your nutritional status or what your gut bio is producing, but your stress, and all these things are influencing the metabolism.

And so I do believe it's a very powerful tool. It's part of my staple workup for all patients I see now. We always include Ethereum panel, along with the other data that I collect on patients, which still includes Comprehensive blood tests, body composition and bone density with DEXA, arterial screenings, tox panels, possibly gut panels.

We're still looking at a lot of various endpoints. And what I'll say thus far is I've seen a high congruency with what Therium is reporting and concluding about that system with the other tests that I'm running, which has helped me to build my confidence in this tool.

and that it is accurately assessing these biochemical domains, and then meaningfully applying those to what does that look like from a standpoint of cell function, human function.

But the interpretation is critical, there's so much knowledge out there. It's incredible how much, I love it, it's wonderful. All the different knowledge around different diagnostics, different aspects of human health, behavioral interventions, molecules, peptides, and now regenerative therapeutics.

There's so much information, but actually how you apply that knowledge is where the power is. And that application piece is critical. I think especially for consumers who might not have a structured education, in any kind of health domain, they might be a very educated consumer.

They may know more than a lot of doctors and probably do about peptides and Regen, but at the end of the day, the actual putting it together into a story that makes sense around this human system, and then the hierarchy of interventions you would create, that really does take, I believe, clinical experience.

AI might get there eventually, it's not there right now, right? At the end of the day, AI can be very helpful. It can give you some guidance, but it is not skilled and nuanced in its interpretation capabilities.

Well, and you'd even said that the way that you work with these results has evolved a lot over the last year, because when I first look at that little wheel there, I was like, okay, This is, this can't be good.

But, but the, the cool, I think what's great is being able to put it into context for people. Some orientation to the report. Um, and I, think it's awesome when people in our domain.

I've been on a lot of my case, like a lotta times when I'm presenting case studies, have just presented my own data. over time, right? Because I learn a lot by just looking at that and sharing and people saying I'm a fellow human being, like I am not a perfect specimen of biological health.

I have impacts of my profession and life and other things and not every habit do I doubt imperfectly and it's good for people to recognize that because I think sometimes the bar of people are trying to attain to or expecting, not trying, trying is good.

Expecting to obtain to is unreasonable. from other people. And they're putting too much pressure on themselves, which is adding to the sympathetic dominance, we'll talk about later.

Which will be our next topic. Exactly. Yeah. So when we're looking at this test, real quick orientation. Obviously we have these various domains that we can meaningfully create some interpretations based on looking biochemical metabolites.

We have aging, nutrition, inflammation, mitochondria, cardiovascular, which isn't just arterial function. It gets into cardiac contractility and electrophysiology.

hormone management, really phase one and phase two detoxification processes in the liver, bone metabolites, neurocognition, skin, toxin. I do like this because while I'm still looking at a toxine panel, one, I've seen great concurrency because later you'll see they actually index to the toxins that are creating the biochemical impact for this measurement.

And what I have seen is it matches pretty well with the actual inventory of toxicants I on that with your individual. Now, the pink is where you don't want to be.

The pink, this is like impairment, dysfunctional pathways. You probably need to intervene in these particular areas. What's that? No, there's a couple of areas that need some attention.

And specifically aging for the Longevity Podcast. Which is bizarre because every other metric of aging I get is good. This is understanding that this tool is a predictive tool.

This is the canary in the coal mine before anything really shows up. If you look at most of my other testing results, I'm over a decade younger than my chronological age.

I've got all this great data that I can run around waving a banner at. If I go to a glycan age tomorrow, I'll be 20 years old. Amazing. Yeah, but this is what is right now at a biochemical level.

There's an enormous amount of research. This is heavily based in biomedical sciences. Publish your research, right? They've been researching, publishing on the metabolism and critical metabolite ratios for decades.

We just didn't have the ability to create the interpretations because the data set's too complex. And AI is what has facilitated the fact that we can finally really create more specific interpretations.

But yeah, at the time, your aging pathways, which are multiple pathways cell cleanup, autophagy, oxidative stress, membrane physiology, they're not doing well.

Now remember the context, she stopped all her basic support. And even if she is 20 from bioglycan age, actually she's still 62. Yeah, almost. Yeah. Sorry, I'm almost 62. And so yeah, this one's you know, if you're in the yellow, you are in technically what's called the normative range.

You'd rather be high normitive than low normatives. It doesn't mean that you shouldn't be intervening, but there's usually going to be a subdomain within that area that might be unique where that's what you need attention.

What you would typically see is it's going actually cross match with other sub domains for other areas, meaning we don't really have to use a individual tool for every one of these sub-domains.

There's some common tools that are going work across all of them. That's what I was going to say. Once you're working on one thing, it's going be interconnected.

We know that your NAD, NAH balance was terrible at the time of this test. Right? We have reasons for that, actually. That is going massively impact aging pathways, DNA repair, mitochondrial function, inflammatory, all of it.

Fixing that alone can have a global effect on the metabolome. Right. Yeah. And so, you know, so these are where Natalie is scoring right now. Uh, and this out here is their predictive score, which is generally pretty accurate if there are no major confounders and people are reasonably compliant with the intervention plans.

We'll talk about the Intervention Plans in just a moment. But you can see that, you know, this is actually a pretty big movement over, over months, right?

To be able to go from, a 42 out to whatever this total would be substantially higher and into the high normative and some things optimal, tells us that this a biochemical system that's modifiable.

This is not a system, that is deeply entrained into dysfunction and probably resistance to change, which is what happens in disease states. When you've migrated into disease, the body has done every compensation it can to keep you alive.

It's doing a good job of that. And now beginning to get these pathways to correct, you have to bring the sledgehammer, not just the little precise toolkit.

Yeah, which is probably what's happening now, right? Like I'm tapping out my reserves. Yes. Not now. But what I was at the time of this test, when I had stopped everything, I Was basically depleting my Reserves.

That's right. Just hasn't shown up yet. Yeah. This is a metabolism that bounces back quickly, with just the right inputs. You know, just getting some things back in play that were needed.

And again, we'll emphasize, But not always. I mean, I have patients who come in and have multiple chronic diseases and they have terrible metabolomics reports, and so it can be correlated to disease to some extent.

But generally speaking, in healthy people who feel well that don't have diagnoses, we're way upstream of disease, meaning this could go on potentially for years before you're even seeing it in your blood metrics.

Right. Yeah, that's an experiment. I'm not running. No reason to run that experiment fix early. And I think the younger you start with accessing information like this, where all you really need is a little bit of fine tuning and modification, and you just keep this metabolome tuned.

to whatever optimal is for you, then the better opportunity you have to resist disease and stay healthy and feel good. Now, also, what's realistic for optimal, right, for an aging population, and depending on the context, stress, travel, toxin exposure, et cetera, their newer reports will start doing some indexing towards age so that you're not being compared with 20-year-olds.

Yeah, so let's talk about that a tiny bit. The last couple of things I want to touch on on this test and then I wanna

move on to our other topics because we don't want this podcast to be all about me.

## Reading the Report and Key Biomarkers

Hey, folks, I just wanted to throw a little message in here for those of you who are sending me all these incredible questions on social media or through YouTube or even on Spotify, wherever you're listening to the podcast.

I wish I could get back to each one of your personally, but unfortunately, And because I cannot, I created, about a couple of years ago now, a membership community where I get to hang out with people just like you.

I do live weekly Q&As, almost weekly anyway. We also do have podcast guests come in to answer everybody's questions and do presentations, you get to interact live with those podcast guests.

We will sometimes do challenges with some of the partners. Like in 2026, we have a mitochondrial enhancement challenge coming up where we're going to be testing mitochondria function.

we are going be to testing people's deuterium levels. If you haven't heard about deutereum, We've got podcasts coming down the pipes on that. And then people will be invited to follow a personalized protocol and then retest their mitochondria on the other side.

We offer that in the membership community and we do it at incredible discounts that you just can't find anywhere else. So if you're interested in hanging out with me and other like-minded people, which actually happen to include some pretty awesome practitioners and even some previous podcast guests who've come and joined the community, then I invite you to check it out on my website natnidam.com slash the dash longevity dash community or just go to natnadam dot com and look for the Longevity Community tab at the top of the page.

Click on that and see if this is right for you. I would love to see you there. And we could make 2026 our best year ever together. So once again, that's natnidam.com.

Just look for the Lungevity community tab, at top the of page, now let's get back to the show. Number one, what do you think the three or four early signals are that we really need to pay attention to?

And you pointed to the aging one which is the DNA dam. Aging, is that the DNA repair? No, well, mutational loads DNA repair but that's not looking great either.

I mean, these two walk hand in hand. Yeah, but it's as bad as the ageing one. No but mutation load, aging, inflammation, mitochondria could all be integrated into a kind of a common domain, right?

Correct, yeah. So basically, go with that. And then the two ones at the bottom. Yeah, so we're looking at our liver processing. This is going to tie right back into not only but the glutathione that we talked about, and then bone metabolic pathways.

Now, the big themes of your report are nutrient depletion and oxidative stress, which No, no, like, duh, right? Like, we weren't using our typical broad-based higher dose essential nutrient support.

Yeah. And as much as we wish the food would provide it, you know, good luck there, and especially with biomes that have been altered by our environments and age and stress.

So we're not going to go through every one of these in detail. I'm just going point out a few key points. So under each domain, they're giving you your score, right?

Aging is not great at this point. We want to target it. And they have subdomains that affect aging, so cellular pair and longevity are getting into autophagy pathways.

And then fatty acid and cell membrane health, which is critical. Cell membranes, probably you've already been

beating that drum on this podcast a lot, right?

Cell membrane, that's like that ground zero of mitochondrial function because mitochondria are dependent upon their membrans. At baseline, for most people with mitochondrial issues, the original insult is an unhealthy biochemical environment with high oxidative stress, but the end result of that are membranes with holes punched in them.

You can no longer maintain mitochondria voltage in cases like that. And that membrane repair process of getting the right things loaded back in to help manage the oxidative stress and rebuild those membranes, if you just do it the natural way, you're talking nine months of a process, which means if syndrome of fatigue, cognitive fatigue whatever from mitochondrial dysfunction and you've eliminated the cause whether it's chronic infection, heavy toxicant burden or you minimize it at least or stress or sleep deprivation and now you're in repair phase, you don't expect in three weeks that you are popping back.

right? You'll be feeling better, but it's a long game you're playing, upgrading the system. Now, there are peptides that can accelerate that and allow you to play a faster game.

But this one's really key. And then we're seeing that cellular energy production is impaired. Part of that, you can look at your low adenosine level, which is a sign of low ATP turnover, right, so energy flux is reduced.

There's a lot of other things that go into adenosine, but that's one of them. But niacinamide, one our substrates for niocin, I mean, you see it up here, it really should be up there.

And then glutathione, right? Which, of course, as we age, we're producing less, plus it's being overtaxed with all the additional toxicant work it is doing on top of its regular job of managing oxidative stress and other chemical processes.

That's very low. So these are pretty key. We'll just kind of go down and we won't again go like once again that we see fatty acid and lipid balance, right?

Which is going to tie into membranes again. And so some of the other nutrients and maybe if I don't find them, I'll tell like our nicotinamic nicotenic acid, or other form of niacin, was not optimal.

Alka-tocopherol was optimal, there's a vitamin B6 metabolite that was no optimal alpha-linoleic acid and important fatty acid for mitochondrial membrane structural integrity.

That was low. And you get the theme, right? I don't probably have to say a whole lot more about that. The bottom line was your diet wasn't providing adequate levels of essential macro and micronutrients just to support normal biochemical function.

And that alone is a massive mover with this. You could make one argument of, let's just fix nutritional sufficiency and see what happens. Yeah, but you know, we're going to go a little further.

I'm going go further than that. This is the report on a 25 year old. maybe a month after I'd stopped crazy travel, crazy disruption. It's just really interesting and eye-opening.

And what it tells me is those breaks of everything are not an option. Yeah. Right. Like I've got enough stress on my system all the time. That's the kind of really lean into all of the core foundational supplements because that's when I'm rebuilding.

Yeah, you are. The demand pressure that you're putting on your system, cognitively and physically, is huge. Your biochemical system isn't being asked to deal with just sort of a minimal threshold of performance.

It's having to maintain a high cognitive load, high physical load on top of circadian rhythm disruption from travel, stress of travel exposures of traveling.

So you've got to push in with more robust support for these systems than somebody who might be in a retirement phase and really has their life centered around rest, recovery and relaxation.

All right. Net net, guys, I think what we wanted to bring to this discussion was with this tool. I recorded a podcast with the guys at Therium last year.

The test has come a long way. And I just wanted to provide a snapshot of how it's being used a year out now and how its evolved. So I'm going to take all of Dr.

Vickrey's recommendations to heart and I'm back on the program and i actually have been back in my program for a little while so I'll probably do a retest in six months and fingers crossed everything will have bounced back And I anticipate that's the case.

And real quickly on the mitochondrial side, what we see are multiple blocks and energy pathways. Then this NAD balance is not good, which is, of course, a critical molecule.

We won't go through the whole digital twinning where they actually create your own intervention plan. They don't mean for people to adopt all these interventions.

The model is based on adopting 60% of them. They're very specific. they use a process called digital twinning. They clone your metabolism a thousand times.

Their AI engine basically looks at all the research-based inputs that could be used to shift a metabolism, runs a 1000 experiments, picks the best of a 1,000 for you.

So it's very helpful. anything that's easy, you should do. But in Natalie's case, we would focus on NAD replenishment, starting first with making sure she's got adequate niacin, right?

But then, in her particular case they're suggesting that nicotinamide riboside at 500 milligrams will be the best preloader for NADA versus say NMN or other approaches.

And then getting back on her glutathione support, and optimizing nitric oxide pathways, because they were showing impairment on this report, and fixing nutrient sufficiency in fatty acids so her cell membranes can be maintained and then she can maintain.

That would be our focus in Natalie's case, which she's already done. She already got back on her protocol. And I don't know if now is a good time to segue into what would that base level of support somebody might stay on even when they're taking breaks from their more intensive regimens or not.

It's your show. Well, I mean, if you think about it, the things that I should not ever have broken off of, and I know that from a genetic perspective, my nitric oxide production is not, My pathways are not optimized.

My glutathione pathways, are no optimized, like I'd know this even from my genetic testing days. And so, you know, this was a bit of an experiment and it was short-term experiment.

So the wheels haven't come too far off the bus, but things I won't be taking breaks from. glutathione support, NAD support. The omega-3s, the fatty 15, all the PC oil, like all of the things to address the cell membrane.

Your B vitamins, your minerals, yeah, and your nitric oxide support? And so, you know, so the list is not that short, guys. Like, I mean, there's still, it's interesting, right?

I think probably, and even spermidine is something. Your levels were not optimal with spermidine, yeah. Exactly. And spermadine I'd kind of taken a break from.

So it just really, This was a really valuable experiment for me, and I'm hoping that people can learn from me without

doing it themselves necessarily.

And that is to understand the value of supplementation, like smart supplementations, in the sense that we will need it. My stack might be different than the next person's stack, but there's that nut of support that my body just needs to deal.

And everybody's body actually essential, macro and micronutrients. So when I say macronutrics, I'm talking about essential fatty acids and adequate protein or essential amino acids at the dosing that's really required to fill our nutritional gaps based partly on gut biome shifts that are affecting what's actually getting there, right?

So we are having to use heavier doses than we'd like because of some other aspects. But the essential nutrient piece, and then depending on age and health, the antioxidant support, priming nitric oxide pathways and glutathione, making sure you're not beginning to drop off in that glutothione availability.

Those are just critical foundational. Most people are going to benefit from staying on at least that kind of core regimen. And then there might be other things their human system uniquely needs on an ongoing basis.

So the last thing on Therion that I forgot we wanted to talk about, and that is that right now, my results are being compared to the entire cohort of people.

It's not being spread out across age. And I'm actually grateful for that because they are going to be moving into a world where my 60 something year old female self will be compared.

## Foundational Supplements and Nutrient Depletion

To a more age appropriate group, let's say women 55 to 75, for example, I don't know where their breaks are gonna be. And in that cohort, I may have performed way better.

That's right. From a comparative perspective. Where, what I'm being compared to now is like the full spectrum of ages. So there's a lot of young people in there dragging down that number, right?

Dragging down your number. Well, dragging my number down and pulling up the numbers. But this is the thing, Right? I am actually grateful that I m getting this because my goal is to perform like a younger person.

My goal Is not to better than other people In my age group. That's right. Right. And so it would be interesting to see when they bring out the new model where they're sequestering you into your proper age group and gender, how those numbers would have looked different if they were compared to my age.

Yeah. As we discussed in our pre-meeting, I adopted these reports after you introduced me to the company. Thank you. You're welcome. That's the bee pollen I'm bringing back.

And you know me, I am constantly vetting diagnostic tools. There are a lot of great tools out there, many of which add marginal value to what we're doing.

It's overkill, it's more information that's needed, or it is not information clinically validated yet. And so I'm very selective about what tests am I going to bring into the model.

And this one's become a cornerstone test along with other tests. I don't look at it as a solo test. You need more context to interpret the results. But the test is continually evolved.

They're continually improving their technology. Their machine learning is rapidly evolving. It's not far down the road that we'll have not only the metabolome but proteome and the transcriptome, and full genome sequencing, we'll be playing a whole new ballgame in precision medicine with that.

Because what we're looking at here are things I used to have to intuit, make educated guesses at. I believe there's

probably a membrane problem based on a fatty acid balance test that I had, some oxidative stress numbers.

And how that patient's reporting their energy and performance So we're going to start by working on cell membranes and doing these other things. Now I can actually know, right?

This is where the problems are. And that helps me a lot when it comes to this huge toolbox of therapeutics, behavioral interventions, technologies, and peptides.

to really dial it into what's really needed in this human system and what it's not. Because as we also know, as you run all these amazing podcasts with brilliant researchers who have new molecules, good molecules that many people could benefit from, If you just keep stacking one after the other and other into your protocol, one, you're spending a lot of money.

There's a lotta time and effort. You're probably creating stress response to some extent, feeling like you gotta manage all of this, which is working against your system.

And you might be creating biochemical confusion for your body. Many times I find people who come in to see me and who have big stacks of peptides that they're essentially, just as an example, they are actually priming AMP K and mTOR at the same time.

It's like a real common one. And so you've got to understand these systems and how they work in balance and where you're trying to take the body over a given phase.

This test has helped me a lot, but I don't look at it exclusively. I think their intervention plans are great, they would tell you that they don t have peptides on these intervention lists.

So there are certain areas where I see certain domains, for instance, where we have a cell membrane problem or a mitochondrial membrane and yet we've got to make sure the phospholipids and maybe plasmalogens and the essential fatty acids and all of these are made available to the cell so it can do the repair.

But then we can ring in a peptide like SS31, which stabilizes cardiolipin and accelerate that membrane repair, meanwhile, if you're not having an issue with mitochondrial membrane performance and you are trying SS 31 because everybody tells you it improves your energy, maybe you felt an energy boost, but that was probably psychosomatic because it's actually not doing much for you in that particular scenario.

That's a good point. Yeah. And so it's great for us to be able, and what's ending up happening though, is that people who are wanting to use every therapeutic, because they all sound so awesome, are a little disappointed because, they wanted more.

I'm like, no, we're going to doing less. We're actually, were pulling back. Yeah, or people, who jump into MOTC before having done the membrane work. That's right.

Or not doing the memory work at least. Oh yeah. Yeah, and this is like preaching to the choir, but I see it all the time because peptides become popular and they have for a good reason and people are jumping to them based on reading about them and yet have not done any of this foundational work that would actually set their biological system up to respond optimally to that peptide.

And so it's like you can't skip these foundations, which is what you did temporarily to take a well-deserved break from all this crazy stuff. But, you know, I mean the good news is all my, my CAMT score was zero.

So I've got like no plaque in my carotid, no thickening of the carotic arteries. Like my brain function score, was amazing. When I did this blood work, right around the time that I ran this test, it was also accompanied by lots of other functional testing.

Yeah, your VO2 max looked good. You did the hand grip strength and core strength, and all those assessments

look good for you. Yeah. But this is making sure we We shore it up and we state it.

Yeah, this is deeper, more granular work, but I think very necessary work if you want the results of living as long as you can and as healthy of a body.

As healthy. 100%. So now let's leave the test behind and let us move into something, into another topic that underpins all of this. right? And this is this whole mindset, toxicity, like the sympathetic state.

These are the foundations under the foundation, if you will. And I think that this big theme that's coming up in your work is what you're seeing in terms of what we call sympathetic dominance, which we could call chronic stress or being in fight or flight.

I'd love to invite you to kind of talk about what you're seeing and how in your mind is this affecting all this metabolomic data or frankly, even just people's ability to stay healthy or reclaim their health?

Massively. And if it's not being addressed, I'm not saying that there's no benefit. I mean, of course, still maintaining nutrients and antioxidants and all these things are always going to be helpful.

But if you are not working on rebalancing your autonomic nervous system, you still ultimately going going backwards. I mean, there is nothing that has a greater impact on pace of aging, epigenetic aging.

And, you know, chronic sympathetic dominance also has direct impacts on gut integrity. It'll create hyper permeability independent of like toxins and molecules doing that.

And then it has a direct impact on central nervous system, inflammatory pathways, and oxidative stress, which have a directly impact your transmitter synthesis and neurotransmitter balance.

This is so critical. I began recognizing this a decade ago, I think, when I ran my own first epigenetic age test. Who knows how accurate they were then?

I was 45. The result was that of a 63-year-old. It was purely a telomere length. Yeah. And it caught my eye because at 45, I had recovered from the first 12 years of starting a medical clinic and having three kids.

I'd begun to get back into good fitness and my sleep was good. And although I would have self-reported my stress as low because I felt motivated and excited about the work I was doing, the truth was that it was a ridiculous amount of demand pressure I putting on my system, running my business, seeing massive loads of patients, doing everything I And when I did the deep dive into the impacts on epigenetic age, it was clear that stress was the one thing that I wasn't sensing it.

I thought, you know, I'm doing great because I use positive psychology to retranslate my life into this is all awesome, which is a healthy thing to do.

And so I had tuned out the fact that my body was living in threat state physiology all the time. That's what drove me to heart rate variability in the early days of heartrate variability.

And my heart rate variability was deceptively solid. But then if you got into the apps that break it down into frequency inputs, I was pinned against the far side of sympathetic dominance.

No kidding. And I tried all the hacks because I'm like, man, and I got to keep doing what I am doing and none of it budgeted. It didn't budget. it just was stuck there.

So that was where I began to rebalance how I always going to approach my professional career. in a way that gave me more rest recovery and just time back in the woods and things like that.

And I did, and it took years and years, but eventually my autonomic nervous system did rebounds. Now we can do

it faster with some technologies that have come to the market.

But at the end of the day, it's a long time. Interestingly enough, seven years later, when I repeated epigenetic age with DNA methylation, and had taken big stacks of bioregulatory peptides and rebalance model non-nervous system, my epigenetic age came back as a 45-year-old when I was 52. There you go.

To the extent this was accurate, which we don't know. That was a 21-years swing in epigene age over a stretch where I aged seven years. And I do think bi-regulatory peptide played a big role in that.

I began to do an inventory on my own patients about their stress and just observing them. And I begin to realize that even like the non-stressed, non depressed, high performer, super athlete, corporate, you know, these people, their systems were tanking because of stress.

I knew it. But it was like, what was the answer? The answer was a lot of spiritual practices, rebalancing, how you reset your environment, the expectations you place upon yourself.

That's just not easy. for people. And for some people, it's not even optional. The demands of their life are such that they can't really put boundaries around it at that particular time.

But that may be not at the time, but they need to begin to forecast when they could. So this is critical. For instance, I have one of these Uber specimen guys who incredibly athletic, incredibly fit, does everything.

When I first met him, his data was looking great because he wasn't taking care of the basics and he was putting huge demand pressure. But then once we got him on the foundational stuff, it all cleaned up.

It was beautiful. His metabolomic data, was near optimal, and it was in his early 50s. And then six months later, is metabolism had all contracted down, other than toxicant, which was better because we had been working on that.

Everything else was contracted. Down. The one variable that had changed for him was he is going through a very hostile divorce. and I knew it, and it was working on him.

So we got onto all these interventions and the bottom line is that this is stress. Stress has shifted your entire metabolism. It's that powerful, it can do that to you.

And so it is absolutely critical that you're doing the right inventory on it. If you are a person who's really invested in mindset, you can't necessarily trust your own interpretations about the impact of stress, heart rate variability is a very helpful metric.

for this. Like the heart math tool, stuff like that. Yeah. And then being able to take heart rate variability and find out what are those frequency inputs, because mine was actually deceptively high for somebody who had such high sympathetic dominance in terms of the frequency input.

So, you know, being to understand that and then be able track that over time and seeing if it's beginning to shift. And people will use all kinds of interventions, molecules hoping to ship HRV.

Rarely do I see that work. What I do see work is when they begin to actually push in. Again, speaking about this in a more vague way, spiritual practices that allow them to begin, to operate more out of a sense of safety rather than threat and vigilance.

So what you're saying, if I'm hearing you properly, is there's no supplement, there is no tech. There's nothing that's going to really be able to move, push that lever for you if it's a lever that is a factor for, which it may or may not be, but nothing is going move that leaver until you've done that inner work.

That's right. Now, do you think that doing the inner work can offset if your life doesn't change? You still have a crazy life. You're still running on all cylinders.

Is there a threshold of things that still need to be met? for that inner work to translate into better outcomes? Yeah, it's a great question. And briefly, I do want to acknowledge technologies can be helpful for this.

For sure. They can possibly slow the progression, they might help bring you back a little bit, but they can't fix it. Right. I do think some of the new vagal nerve stimulators, Katrine will disagree with me on this, but I've seen results with patients using some new devices that have some published data where over an eight or 12 week period we're seeing heart rate variability come up and sleep scores improve, with that being the only intervention.

So I think technology, brain mapping and neurofeedback and heart math, all these things can absolutely be helpful and they can at least teach you how to recognize when your nervous system has been triggered, because you'll feel it when you go out of coherence.

## Stress, Sympathetic Dominance, and Nervous System Health

If you've learned what coherency feels like, you will know the feeling of going out and something like heart math, and you can learn how quickly to get yourself back to at least coherents.

So that's going to, at the least, mitigate to some extent the negative impacts of this But that internal state really has a lot to do with interpretation around threat or safety.

And right now the vast majority of inputs coming into us via social media, be it news, the political environment, other people who have been trained by these systems is generally going to provoke us into threat state.

Like the things are not okay, you are okay. And yeah, there are real problems in the world and there's real volatility. For some individuals, they may be dealing with a medical challenge, financial challenge or a loved one that's sick.

We're all going to encounter these things. But when you multiply on top of that everything else, right? You feel completely out of control even if you don't necessarily.

Your nervous system knows there is nothing I can do about a lot of this. You're completely outta control. It's how we perceive stress that plays a big role.

whether it's a negative or non-negative, and a lack of agency over it, being disempowered as a major contributor to this issue. And so how you begin to recognize that at the end of the day, it is about, am I threatened or am And you may be in certain domains feeling a little threatened right now.

It could be financial, it could health, or it can be a loved one. But then there are a lot of other domains where you're totally safe. And for most of us, probably listening to this podcast, in general, we are safe, right?

The core drivers of ancestral stress are just not an issue for us. We probably have a stable living environment with you know, the ability to mitigate extreme temperatures and availability of food and water.

And if we live in a relatively safe place, aren't necessarily, there's a low physical likelihood that we're going to have violence or something like that happen to us, right?

So all of those things. So like, I'm alive. I've got a body that's working for me. Hopefully I have some degree of family or social support. I'll have a system.

Connectivity is critical, right? Human connectivity, social isolation, a huge player in this. And connected to other people, I had nurturing relationships.

At the end of the day, anything could happen this day. But in general, And I do have agency because today I have a living human body that has amazing capacity and built into it.

I had an ability to go out and begin to engage in life in a way that can produce a different set of circumstances for

me eventually. And so really in training to that and beginning to, because what's happening is the times where we should just be at ease and non-vigilant, you know, at home safe, tucked away after dinner with family on a Sunday on the day off on hike in the woods, we're not.

We're actually in threat state and so we're not getting yet. And then that autonomic nervous system is in train, meaning it becomes a habit. It's just where it lives.

it's not like every day you wake up with a fresh new start and a nervous systems that's ready for what's going to happen today, you are now waking up already under a sense of threat.

And everything you're doing is under a sense of threat. Whether you are perceiving it as threat or not, that's what's going on. And threat state physiology is unique and distinct from safe state psychology.

So the internal work and the environmental work, the type of sound environment, lighting environment the social environment who you connect with, is going to be critical for being able to cultivate this calming, I'm okay everything is all right, you know, safety.

And if you're not working towards that, then you are going to be entrained into a threat state all the time just based on our society and the way things go and pressures of life.

No matter all of the peptides and molecules you want to use, your going age at an accelerated rate and you will end up having challenges. Right. So the takeaway from this section is finding a way to find that inner balance.

And there might be some tech that can help you. It's funny, I haven't even done a podcast with them yet and I probably mention them more often than anything else on this podcast.

The HeartMath tool is wildly easy to use, it's not very expensive and it trains you to train yourself to get out of a sympathetic state so that eventually you're just better at doing that for yourself.

But the big takeaway here is investing in the skill and getting rid of the practices that are keeping you in that sympathetic state. And maybe even investing some technology would be one of most worthwhile foundational things you can do for your health and pace of aging.

Yeah, and sleep, obviously. Well, sleep obviously, yeah. Obviously. Yeah. You summed it up nicely. Okay, because I want to move on. I wanna move onto toxicity and detox.

So one of the things when we were talking about earlier that you talked about quite dramatically, cause everybody's talking mold and definitely mold is a big deal.

A lot of people talk about Lyme, but you've seen a dramatic increase in a particular toxicant that That's left you actually really surprised. And you were talking about the heavy metals.

Yeah, heavy metal. Do you think that there's more exposure? Do think our detox pathways are more impaired? Because you yourself, you're like, I'm shocked.

I am seeing numbers I've never seen before. So… And I see heavy medals I have never see before, and these are actual medals. Yeah, these are reports that are accurate, right?

This is what was in your system that you were excreting. And that's only showing you what is excreted at a given time. It's not showing what all is stored.

There can be acute exposures. If you go for an MRI with gadolinium, you're going to have high gadalinium for a period of time until you clear it. Some people don't detox it that well, and so they probably need to be on a focused detox at that time, but nonetheless, a lot of these just kind of chronic.

five, six years ago when I began running these talks panels because I realized that we're going to have to dig deeper because there's, you know, at first I was also distrustful of the data because it was just already bad, right?

We've talked about the glyphosate levels on everybody off the chart. that's gotten actually better. I think that might be a lot of awareness and people going to more organic.

But a of other organophosphates, pesticides, herbicides are still there. Phthalates and parabens, plasticizers, I don't think I've seen anybody with optimal BPA.

It's like, we can't get away from it. You can't get away from it. And it has real biological impacts. But again, your biological system is robust and resilient and really well designed, and it can handle some negative inputs as long as it's not being overwhelmed by them and has what it needs to function well.

So I don't all get worked up if I see a high level of BPA on my talks panel, which I've seen every time. As long others are being managed and other systems are…

I'm like, okay, I am not going to believe a plasticizer is going determine my destiny. I just not. Look, let's talk about stress, right? Talk about not feeling safe.

Like if you're feeling attacked from the inside, it's pretty hard to do any kind of spiritual work that's going to offset that. But you just said something really important that I just want to highlight for the audience, which is coming back to trusting your body.

And what we're going to try to do here and what this conversation, this part of the conversation on heavy metals and toxins is going focus on is what can we, can, we diminish the load so that the body can go back to dealing with what it can deal with.

Right? So enormous part. The work I'm doing with people, even sick people who come in is really focused on the psychological aspects of restoring confidence in their own body, their body's self-healing, self regenerating capacity.

given that it has the right information to work with to do so. And I'm convinced I've seen terrible diseases that we didn't think there was any way to reverse.

Greatly improved, right? I have seen health restoration in people. You didn' think it's just been too long, they're too sick, but they bought in and they were willing to it.

We use big intensive protocols and it was a long game, two, three, four years. But it's remarkable the case studies that we can present. But nonetheless, what I started seeing on those talks reports originally, I was already disturbed by, we started working on these things, but I didn't see many heavy metals.

Occasionally there was the mercury in people who were eating a lot of sushi or seafood or also had mercury fillings. And occasionally there were trace amounts of sometimes lead, and a little bit of arsenic that's heavily contaminated in the food supply.

Now, the person I saw just before we did this podcast, we've got sesium, terillium cadmium titanium, lead, arsenate, mercury, gadolinium and she did not get in all these heavy metals.

And now this is, I want to be clear to the audience. This is just my observations in a clinic. This isn't a human study, this isn' population level data, but this is hundreds of people that I've assessed over a continuity of time.

And what I have seen is a major increase in the quantity and the number of different variants of heavy metals on these tox reports. which I know are having biological impact.

Your own tox section of your therium, your microtoxins look pretty good. It was actually not bad. Yeah. Actually,

most of it looked pretty. There were industrial chemicals, which are very hard to avoid, and there was BPA or plasticizers, there were heavy metals.

The most common sources for the heavy metal are going to be the same as many of the other toxicants, food and water. Clear. That's where we're probably getting most of these.

We know dark chocolate was implicated with cadmium recently. Not if you're buying it from Katrine. I don't know whether, to one of your questions around why, I've thought about this a lot.

I do think it's both. It's a depletion of internal resiliency and its ability to deal with toxicant burden. But I also think there's probably been a tipping point we crossed with soil quality, groundwater quality.

and just food manufacturing and also ocean pollution where we just crossed over. And even if you're being very cautious with the foods that you purchase trying to keep them clean, you are probably still getting some heavy metal contamination.

Yeah. So what do people do about it? How are you supporting people in this? Well, obviously we proactively support endogenous detox systems and hopefully have them working the way they should be working.

And the gut biome plays a role in it. The gut is part of our detox, especially microtoxins. Um, and so working on the gut and the nutrient piece, all of that.

And then we do have dedicated detox protocols. I typically use the cell core products because they work. They really do. We have our heavy metal, enviro toxin binders and biotoxin biners, drainage activators.

But then on other side, we've got to turn the faucet off. We don't turn the faucet off, yeah, we're not accomplishing anything. I ask all my patients if feasible to get whole house water filtration, a good system, right, period.

Yeah, I literally got one yesterday. That makes a major difference. And a lot of this heavy metal contamination is now water, municipal water. Sink filters and things like that, that I would be a fan of if that's all you have, aren't necessarily gonna clear all that.

So, and then when you shower and skin is permeable, right? So like being able to bathe, brush your teeth, cook with, then drink water that's been heavily filtered.

And then you can argue for the restructuralization, mineralization. Yeah, I agree with all that. But nonetheless, clear the poisons first. So I asked them to do that.

And then when it comes to the food, I don't want people to get weird about food and be afraid to eat. Right. Because that's going to be play right back into the stress thing, which arguably might have more bad impact than the toxin thing.

I'm like, when your friends all want you to meet at the Mexican restaurant, then go and eat, maybe use a little extra glutathione if you're nervous or take a binder.

That's fine. If I eat sushi, take heavy metal binder, every time. It's not hard to do and I'm not stressed about it. But at the same time, recognizing that you're playing a percentage game.

I think we talked about this yesterday. And the percentage you get to play is dependent on your health, your fragility, and your resiliency. If you've got a you know, an anti-fragile, highly resilient system that you've been building up and your metabolism is functioning well, then you probably can play a 20% game where 20 percent of the time, you're just not going to think much about it.

But 80%, and that's mostly going be your home environment, the snack foods you have, that foods in your cupboard, foods your refrigerator, You have found reputable brands that have minimized toxin, and it's going make

a big difference.

And then when you're eating out, you can certainly, if you've got good restaurants that do farm to table from local organic farmers, sure, choose those.

That's great. But yeah, but you got to do the food thing. And if your a more fragile person that is in a phase where you are trying to either reverse disease or you tip at the tipping point disease, You might need to play a 95% game.

or even 100% game for a season. For a period of time. Yeah. Until you build back up that resiliency in your system. And then of course there's air and I think everybody knows this.

Now the air pollutants are not where we're getting the heavy metals, but nonetheless having the proper, I use both primary and secondary air filtration.

## Toxicity, Heavy Metals, and Detox Support

I was going to say, wouldn't air in a major city give you heavy metal? Wouldn't that be? You know, it's a great question and maybe it does. Because I think that car exhaust does contain some heavy metals.

You're right. And if you were to get those… It's the question of in the pulmonary tree, I don't know the answer to the questions, but it is a question.

I'm glad you asked it because I am going to go find out whether or not… I've got two scrubbers and I have two of the Jasper scrubber at my house. It is almost like every time they have a sale, add another one for another room kind of thing.

I have it running in multiple. Not that I'm seeing the microparticles, but when I change those filters every six months, just that more heavy particulate matter that it has caught, that my high-gun HVAC system with built-in air purification has not been able to capture, tells me, I am glad I m doing this.

Yeah. Because it's not subtle when I pull that filter out of there and replace it. It looks very different than the new one, that's for sure. Yeah, yeah.

And so, you know, the air quality, and I do think you're probably right. When I look and read, because one of the things with the talks I run, they always have the most latest research.

What are the likely sources of exposure? What the health impacts of these heavy metals? And generally it's air and water. I mean, sorry, usually it is water and food and then exposures and manufacturing, things like that.

And I haven't seen air coming up, but I'm really curious about this now, whether air is… Yeah. Well, I am definitely like if you're on a plane and so I spend too much time on planes and somebody just handed me a supplement stack to take when you are on the plane.

And it's a specific binder and the company, it is a new company called Detox U, just the letter U. And he's got an industrial binder complex and another one.

Because when we're on planes, the exhaust from the plane, recycled air, or the materials in the planes. This is not to freak people out or to make them crazy.

These are relatively easy. interventions, right? You're not going to stop flying. You got to get from point A to point B. Okay. So if I need to fly, then I will do this.

I'll drink my molecular hydrogen. And I've got my travel stack that hopefully is helping to mitigate. It's not We're about lowering the volume here. That's it.

Just give your body a little better playing field to work with and you'll be fine because I do believe human capacities are amazing and we're not even scratching the surface of what really is built into our system from a capacity standpoint into our level of robustness, resilience, cognitive capabilities, physical capabilities.

And that's really, it's not really the longevity, which is the title. That's the journey we're on is pushing in and wanting to know. We don't want to miss out on these capacities in our life.

And we're willing to do these things so that we have that opportunity, regardless of whether we are in our late 50s, early 60s or even at a younger age.

And so I really want people to feel confident that their bodies can be healthy, but I can promise you there are things going on environmentally that include stress impacts, but also toxin exposures and lack of nutrients available in a lot of the food you're eating that are impacting your ability to access those capacities and potentially contributing to deficits in capacities.

And that there things that your unique human system needs programmed into it if you want to age well, period. Yeah. Yeah, I love this. So you've said that nutrient sufficiency is foundational in metabolism, in metabolomic terms.

What does nutrient depletion look like? And I think we saw part of that in my metabolomics results. the depletion of glutathione showing up. So maybe you want to touch on those points quickly.

And then I'm curious if you're seeing particular nutrients showing over and over. Okay, yeah, that's a great question. Yeah, and so from the standpoint of nutrients efficiency, we're talking about essential nutrients.

I also believe polyphenols are important, phytonutrients are, I think these are all important. But we are talking the staple of essential molecules that we know our biochemistry is absolutely dependent upon.

So that includes vitamins, minerals, and essential macronutrients, which often get missed in the conversation. Which will include your essential fatty acids, Which also include omega-6 fatty acid.

And now with the seed oil craze, I've gone from a problem of seeing people with too high of linoleic acid over and over in their cell membranes, to now people too low of Lino-Leic Acid.

No, I'm not. And it's creating problems for them. So linoleic acid, you guys, is omega-6. Yes, and it is a central fatty acid. We die without it. Right.

For those folks who are absolutely mitigating exposures other than omega 3, but polyunsaturated fats, seed oils, You may actually need more linalic acids.

And so where would be a good place to get it? Because we know the processed seed oils from processed foods. Those are not going to be your friend ever.

Never, never, yeah. But so organic nuts and seeds and then things like flax oil or organic sesame oil, or some of the pine nut oil is actually really great.

Interesting. Yeah. And so some of the organic seed oils that are not vegetable corn, safflower, sunflower, corn and all that, and then nuts and seeds.

I am a big fan because like many people, what I see is low alpha linoleic acid, which you had, honestly, I used to put in a category of relatively inert biologically, but an important substrate to build DHA, DPA and EPA out of, just not an efficient way to get there.

Now we have a lot of really good research data showing that mitochondrial membrane structural integrity, alpha-linoleic acid is playing a very important role in that.

And so for individuals who can use more linoleic acid and certainly more alpha, I'll have them using organic ground flax seed and organic round chia seed, adding it to their smoothies or yogurts, just making sure it's fresh.

If it is old, it, yeah. And for those who don't want to do that, and this is what I personally do and my levels looked really good on myself, so I'm going to brain test.

I use an organic flex oil and I just take a big swig of it every day. Yeah. And that means I'm getting more linoleic acid, but that's okay because I actually need that.

You need it, yeah. Lino-lec acid is readily used by the mitochondrial as a substrate for energy. It's a good energy source. The problem was when it's excessive and then it overpopulating the cell membrane.

Because at the end of the day, what the body is going to do with cell membranes, it's got to build intact membrane. It has to. Has no option. So it is only going…

It's going build them out of whatever it has available. And so if you have low availability of DHA and EPA, then that's gonna create a void in that…

And what is gonna fill it up with is what it can always produce itself is saturated fat. So if it has to, it'll plug that up with saturated fat, which I commonly see high saturated-fat indexes on patients with deficiencies and other essential fatty acids, Which creates rigid membranes.

That affects membrane fluidity, in which the brain has a direct impact on synaptic function. So that's critically important, membrane-fluidity, and polyunsaturated fats are maintaining that.

But if your diet is higher in linoleic acid, then you're going to overpopulate those membrane with linalaic acids and now you are tilted into production of inflammatory icosanoids rather than tamping down inflammation.

I'm sure you've talked about that plenty of times. But on the metabolomics report, so these essential macromicronutrients, you're looking at it two ways.

One, sometimes you are actually measuring it. alpha-tocopherol and fatty acids and niacinamide and nicotinic acid and others and peroxidine. But then you're looking at metabolites of those nutrients.

Are they being utilized and are they been utilized in the right pathways? And you are also looking nutrient linked metabolism. In some fat cases, people have the nutrients, but the linkage is broken.

And so the chemical reactions are still not taking place. That's actually fixed through different interventions and then just taking more nutrients And so that's where therium really shines, right?

Because your blood work just shows you the thing. What theriome is looking at, it's looking, and this is how your body works, guys. And I know many of you know this.

It's a series of chemical reactions and pathways from step one to step two to three to four. If you have the material for step 1 and step 2, but you're never getting to Step 4, What is it along that chain that's broken?

That's exactly right. And in those cases, giving us the intervention that we work based on research, because that is not something I can intuit. Right.

And exactly because the instinct without that clarity, people might take more of the nutrients, but never just have a backup of nutrient without ever getting to the end goal.

Creating log jams and other pathways and creating problems. Yeah. So, I mean, that's the real, That's the value of a metabolomics test and so few clinicians know about it still.

It's still in its infancy. Yeah, the evolution, they're evolving those reports in a way where it'll be more clinician friendly and more consumer friendly, and in more directly applicable.

And that's an active work in process and they are going to do a great job of it. Yeah. It's tough. Even for me, I had a big learning curve to integrate this, and I have to trust it because I trust their AI.

And so I really had to do a lot of runs with patients I trusted who let me experiment on them and know sometimes we're going to mistarget a little bit and then have it with the comparative data, not as a solo.

I needed to be able to look at it, with a tox report, an intracellular nutrient report and a prodrum report. Because it was interesting because every time Ethereum showed a block in beta oxidation of fatty acids, I would actually see that on a Proderm report as well, that there was a fatty acid elongation issue.

And so that congruency really helped build up my trust. But to the other point of your question, what are the commonalities that I've seen now for well before I had metabolomics tests that prompted me to really push in on this whole higher dose broad-based essential nutrient for a person who's not been supplementing?

Eating a normal diet, I'm not going to call it a standard American diet. Just a normally diet while we're still healthy. Almost 100% of the time, we are going see deficiencies in essential fatty acids.

That's critical because that's cell membranes and that is where it all starts. Phospholipids are not technically an essential fat acid. Your body builds them.

But I do typically see deficiency in phosphatidylcholine. Yeah. Yeah, and sometimes also phosphatidylethanolamine, but not as common. And then the B vitamins, right?

I was shocked. I knew that it was common in our population to have suboptimal B12, sub optimal folate. You know, if you had MTHFR, you needed to come in anywhere with that.

But when I began seeing the low levels of niacin, thiamine, riboflavin, pancreatic acid, it was across the board. It was over. Now, what I wouldn't see necessarily, sometimes I did, was outright deficiency, meaning you're going to get sick and have a medical problem if this isn't fixed.

What I saw was that intracellularly, you had the bare minimum. Right. And then so you could sustain a baseline level biochemical function that would sustain life.

But the demand pressure you want to put on your system, forget about it. Because then most nutrients are consumed in bio chemical reactions. Not always.

Sometimes they can be recycled, but most of the time they're consumed. So once they've been utilized, they been utilizing. If you're not replenishing and maintaining higher intracellular reserve, then there's only so much bio-chemical demand-pressure your systems can sustain.

period at the end of the day. And there are a lot of other dynamics here, electromagnetic frequencies and energetics and things that we could get into that are also impacting these systems, but we're focusing on the biochemistry right now.

So B vitamins, magnesium, that's no surprise to anybody because they've done population health studies on that one. Population health, studies have consistently shown depleted magnesium depleting riboflavin.

and depleted niacin in our population. And niocin is the basis of NAD. That's your first level of solving your NADA problem is making sure you have what it's built out of in the first place.

Then I would commonly see deficiencies in zinc and selenium as two minerals. Now, occasionally I'd see copper was deficient or a different mineral was proficient, but the big clusters were the essential fatty acids, the

phosphatidylcholine, vitamin D, of course, and then the B vitamins and a few key minerals.

Now, what I also started seeing in the last few years that I didn't used to see is CoQ10 depletion as well. Interesting. Which I think is, I could be wrong, but I it's a oxidative stress, mitochondrial oxidant stress problem.

Well, because it's a massive piece of the puzzle in the antioxidant chain. Yes. For most people, CoQ10 levels would come in okay. I'm talking about not just in-the-blood, like intracellular, and now it is half the time.

We're starting with low Coq10, even in healthy people who have come to see me. Interesting. Have you messed around with mitoquinol yet or not yet? I have recommended it for a few people.

Their need for ubiquinol in the mitochondria was critical.

## Testing Strategy and Clinical Interpretation

I did go there based on their research and their claims, but otherwise not. These things all add up in cost. And what I've seen is generally with good quality ubiquinol, and there's ubiquinoin and ubiquinal, right?

One's reduced. Ubiquinone is reduced as an electron donor. One is oxidized ubiquine and sort of an electronic receiver. If you're younger and healthier, ubiquitin is probably the thing that you would use.

And if you are older or sicker, you'll actually need that electron donation. Metabolomics will actually tell you which form you want to use for what they're detecting.

But generally, a good quality ubiquinone or ubiquinal and follow-up studies have suggested it fixed the problem. Nice. So once we've addressed those nutritional foundations, do people feel different on that?

Yeah, that was the big thing. That one was great because like we talked about earlier, fixing mitochondrial membranes may be a nine-month process. The just repleting nutrients, typically within two to three weeks, people would say, I feel better.

My energy is better, yeah. So did you create something for nutrient replacement? I did. Are you still using it? Yeah. All my patients use it because originally what I had was the phospholipid complex, the fat soluble complex.

The essential fatty acids, maybe a fish oil or some other source. Then I have your full spectrum B complex because the B vitamin load and a multivitamin wasn't covering and I couldn't find one that did, the dosing that we needed.

Then I had, of course, just the adequate dosings of mineral complex. And then we got fulvic and humic that are critical. It was working. This was years ago.

People are taking eight different products, 15 capsules a day, and some solution, but it's working and they're not complaining, even though it is cumbersome.

And I just had it in my mind that if we could somehow create a unification of those into common formulas, that that would make everybody's life easier and cheaper.

And, I finally found a company in Oregon that I could formulate that with. So, we have our essential nutrients is the B vitamins, the patented form of Shizu.

You know, so it has the fulvic and humic already intermingled in at the dose that was studied for the patent, along with the mineral complex and carotenoids.

Then our central fats has phosphatidylcholine, phosphatolyserine, a thousand milligrams of omega-3 fatty acids ratio to DHAA slightly higher than NPA, AEDNK, and ubiquinone CoQ10.

So yeah, the basic. My children became much happier because they bought in in their teenage years because when they started using the nutrient support, they felt better.

And they went off to college with their big baskets. But when I created my formulations and replaced those eight products with two, Yeah, nothing wrong with that.

All right. So there's an explosion of genetic and metabolomic tests. Like there is a new one every day. I threw two at you before we started recording.

They were like, I haven't seen that yet. What have you learned in the past year about all these new tests that are coming out? Like what should and should not be used for longevity?

Do you have any thoughts on that? or how do people look at them critically? Yeah, I mean, there's a lot of options and everybody is going to make claims and possibly have some data to support those claims probably.

At the end of the day with the more complex like epigenetics, when we start looking, genetics is genetics, right? And people are going have various algorithms or many polymorphisms they look to evaluate a pathway.

But for the most part, the tests that have been available for some time in the genetic space that would look at, say, detox pathways, methylation, glutathione synthesis pathways and fitness.

I think those are still pretty good, right? Like in terms of- That's good information to have. Yeah. But when it comes to the metabolomics, so Genova is a great company.

I used to use their metabolomics testing. It doesn't have the same number of metabolites, nor do I think the algorithms are as sophisticated or as precise when it comes to interpretation as, say, therium.

But really what you're looking at is the complexity of the datasets. And so how well is the AI trained? Who's been training it and what databases has it been searching and how is it trained to come to its conclusions?

Because I don't care how skilled as a clinician you are, you're probably not going to be able to actually create the precise interpretations yourself off of all of these various metabolites and their critical ratios.

So what I really try to do with testing is to vet. And I think everybody has great quality. I'm not suggesting anyone test out there is not really good or exceptional or maybe better than the testing I am using.

Just talking about my experience in this space is getting to know the researchers behind the test. Getting to know their particular pedigrees and experience in their domain of expertise within where this testing is reported to go and how they're building out their AI neural engines and the data sets has got access to train itself.

To me, that's the critical piece. And then it's a matter of does it actually add value to the clinical process? Because this is important to know, right?

We talked about this earlier. There's all this information we can gather. How you're going to apply it is the critical piece. And ultimately, there is a major gap between where most people are starting off on their health journey of health optimization and where they could be taken.

Most people, you're going to start with these foundations we're talking about. The end of mitigate stress, start cleaning up the toxins, clean up, the environment, work on the gut, replete nutrients, support antioxidants.

For most people that's step one. And for people who are new to this type of medicine, that a lot. That is life-changing. Yeah. They went from taking a multivitamin to using a lot of different resources, but it was life changing and they buy in because not only do they experience the result, you can measure the results and show them the resulting.

So it's a matter of, is this additional data going to meaningfully change? What am I going to do for this individual human system? Is it, you know, or is it just marginal?

And I believe that there's the metabolomic space will be highly competitive and many people have, have brilliant AI. Uh, Therium will have many competitors.

I don't have a financial relationship with Theriom at all. It's just a tool I use. Do have very friendly relationship at their team because I've asked for an enormous amount of their time going through reports and getting to know them.

But, uh, well, they love that about you though. Yeah, but ultimately what at this point in my assessment of what's available from a metabolomics, I believe therium is the best test in the marketplace for actionable information, meaningful information.

It's not marginal. It's going to reveal the blind spots and help me dial in, and as I mentioned earlier, potentially use less interventions rather than more interventions for a human system to move in the direction that it wants to.

With metabolomics, to the extent that is accurately indexing the toxicants, nowadays, depending on people's financial situation, I might not run the full tox report to start.

I may just look at what's going on metabolomically, and if it's not too bad, then we might just be able to match a detox to what is going and measure it that way.

I'm not running comprehensive intracellular nutrient reports any longer because I trust Therium to point me to those potential deficiencies and insufficiencies.

Honestly, unless it's a neurodegenerative case, I don't really run Prodrom any longer either because the functional aspects are actually well elucidated on therium.

Now, what I do not have on there yet is the inventory of phospholipids and plasmalogens, but they tell me that is coming. And they are actually looking at phospholipid as a component of cell membrane.

So there are a lot of times reports will say, you need a lots of phosphatidylcholine, right? You need lots a phosphorylstherine. Right now what I'm doing, and I feel like for most people it gets me there, I always want the full blood panel.

Always. Yeah, that is absolutely key. And then as much of the subjective as I can possibly get, and I do think things like functional metrics like VO2 max and exercise capacities and strength and hand grip strength, all of those and walking pace, those are all really important and helpful.

Then I use the therium and if the person's interested, I'll add epigenetic age testing. and look at pace of aging and what I have also seen is that when aging pathways do look compromised on therium, not always, but say a new patient who hasn't been doing this type of work will also see that pace aging is over one on their epigenetic age test, which has been interesting.

In your case, it's not, and it is not likely going to ever get there. It could have tracked in that direction. I was heading there, yeah. You were going ahead there but it wasn't going So, despite all the technologies that are available, at the end of the day, there's still just a handful, I think, that make the difference in our clinical assessment and how we guide a patient on a journey of health.

Yeah. The stress piece that we talked about earlier, the sympathetic Yeah. So autonomic nervous system testing of some sort. Yeah, is absolutely. Okay.

Let's move into our final stretch here.

## Future of Longevity and Practical Takeaway

Our future outlook, hope, direction, and next-gen longevity. Gavin, everything that you're seeing, the sympathetic dominance, toxicity, nutrient gaps, environmental load, what gives you optimism about the future of human health?

Well, I am an optimistic guy. One, really firmly believe in the brilliance of human design. I do. We have amazingly adaptive systems that are oriented to life itself.

But beyond that, towards thriving, like that's part of all of our neurotransmitter involvement and the way we feel the healthier that we get. And I believe that is a strong primal driving force within human beings.

I think it was easy for a generation to tune out into the status quo, as long as the manifestations of diseases were not like what they are now. Right.

So most people didn't have diagnoses of metabolic diseases and most didn' have fibromyalgia and severe all these things. It was easy to kind of tune out and just coast.

Now, because of the awareness of trajectory of chronic disease in our population, what's happening in aging population which is people are getting dementia at younger ages, cancer at young ages.

Vascular disease issues at younger ages, lifespan is reducing, health span is producing. People see that and they're like, okay, I need to pay attention.

So part of this is waking us up and allowing that deep-seated primal drive towards life and thriving to activate, motivate, and take us where we want to go.

I also firmly believe your body will teach you. The more that you do this, The more that you don't necessarily always have to do a test, you know, right?

You you you're able to intuitively understand what's going on in your own body and what is attuning you to and What is specific needs are at this time and being able?

to move in those directions now the other thing piece that I Don't almost want to go there because it makes us technology dependent, but I'm optimistic because the technologies Right.

Because of how quickly on the, I just mentioned that on diagnostic side that right now I'm, you know, not necessarily like we've got all these incredible things.

There's, we didn't bring up full body MRI. We do arterial assessment, CIMT. I order coronary calcium scores, potential CT angiograms. So these are important things that I didn t mention earlier that are part of my testing arterial health, endothelial function that we also do as part of our evaluations.

There's grail, liquid, Bobsie, cancer screening, and there's another test that I think is going to be better coming out. And so these are all still potentially important.

But the rapid expansion, so I do think that when we do have accurate and actionable multi-omics where we have the metabolome, proteome transcriptome full genome sequencing and biome integrated with that, that it's going be amazing.

how we can really begin to tune our human systems in the way that they're needed and build up that resiliency. And then imaging modalities and then in regenerative space, the biologics, right?

So stem cells, manipulated stem cell, exosomes, combined with peptides, new stem-cells, these things have enormous promise. for human systems. And so I think that as these technologies get the right research behind them and we understand really what they can do, what can't do.

It's going to evolve so quickly. Today's hottest, best, most potent stem cell that has been manipulated in these particular ways with growth factors and differentiated is going be replaced within a year with an even better one.

do more precise work in a human system. And so I believe that the technologies, because this pursuit of living our healthiest life is obviously critical for everyone.

It's a big target. There's an enormous amount of financial capital in it. Trillions of dollars will be invested in this space. And I believe that we're going to end up in a situation for people who are willing to submit to a deeper level of testing and willing submit, to using interventional protocols to tune their system, that they're gonna be able, we are gonna leave behind this story of chronic disease.

I really do. It's gonna take time and it's going take awareness. You're part of that by having this podcast and putting this information out there. Thank you.

All right, well, you answered my second question. So we'll go to the last question, which is if you could give every listener one simple, actionable step to improve their metabolomic health signature this week, what would it be?

Just one. Go take walks outside in a pretty serene, safe space. Beautiful, I love it. Broad-spectrum sunlight, no sunglasses on. Yes. No sunglasses, get the photon receptors working on your retina.

Just walking outdoors in a serene place that feels safe, it works on mitochondrial biogenesis, mitochondria function. It works stress response systems, autonomic gut biome.

If you're only doing one thing, that would be the thing I'd do. I love it. Dr. Gus Vickery, you rocked it as always. Thank you for your time. It's easy to rock it with you, Nat.

So why don't we just leave people with, where do they find you? Like if somebody wanted to work with your or someone in your clinic. I mean, I know you've now expanded the clinic, we have more practitioners there.

How do people find Dr Gus? Yeah, so my personal website is drvdrv.com. And that's a site that, honestly, we're really more minimizing and directing people to our Authentic Health website, which is www.authentichealth.

com, And most of the content, blogs, podcasts, interviews, and things that I've had posted at my personal site have now moved over. We're integrating and building that out because we're really, our clinic is called Authentic Health, we are a team, We are on this mission of helping everybody that we can help.

And it was founded in primary care for all those years of just community medicine. And so we're really trying to make this more about this team and its mission and what it's doing rather than me personally.

AuthenticHealth.com is probably the best place to learn more us, but at that personal site, there is more specific information about me. Amazing. I love it.

And I've sent a couple of people your way and I got to tell you guys, the reviews are always phenomenal. So, and that's not always the case. Thank you for the work that you do.

Thanks for always being willing to take the call and listen to the, oh my God, you're not going to believe what I just found. Yeah. Love it! I'd be completely clueless of what's going on out there if I didn't have you, Natalie.

Well, thank you so much, Gus. It's been a pleasure. Until we meet again.