Increase Your HealthSpan Through Optimizing Your Biological Age Transcript

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Introduction and Guest Welcome

This is Doctor Talks, real talk from real doctors on the issues that matter to you most. Welcome to this episode of the Environmental Toxicants, Auto Immunity, and Chronic Diseases Summit.

I'm Dr. Wendy Troubeau, MD, MBA, and my co-host is Dr. Edward Levitan, MD, and we're your hosts of today's summit. I say this all the time, okay, because it really is true.

I'm so excited for our guest today, who is Kara Fitzgerald, ND. She is Naturopathic doctor, she's a functional medicine certified practitioner, and she's a clinical researcher on the impact of diet and lifestyle intervention on your DNA methylation, which we're going to dive into.

She's the author of Younger You, Reduce Your Bio Age and Live Longer Better. She's on faculty at the Institute for Functional Medicine and is an IFM certified practitioner who regularly lectures internationally and hosts the podcast New Frontiers in Functional Medicine.

Welcome, Kara. Thanks for being here. Yeah, it's great to hang out with you guys again. I know. You can go first. You can go first. Well, I'm excited because I learned so much when we first talked.

So I'm looking to dive in and really like get into it. So I guess let's start with just fundamental of what is biological age? Yeah. Yeah. Okay. So we have a chronological age, right?

Or the trips around the sun we've taken. I am a full deck of cards, Kara. I just turned 52 and I am playing with a full deck of cards this year. I was waiting on that.

A wise man once said nothing. That's funny. Yeah. You can't do anything about it. You know, you can't be 29 again. However, we can do a lot about our biological age and that's how rapidly or slowly, ideally, we're physically aging.

Biological age is infinitely more meaningful than chronological age. And as we enter into this era where we're looking at being able to reverse it and slow it down, that's gonna be the number that's more important to us that will supplant chronological age.

Chronological age will be way less important in the years to come. You studied this, right? Yeah. Yeah. And we really just galloped forward, you know, just in our ability to look at biological aging and we measure it via something called epigenetics and specifically DNA methylation.

And I'll define that now. Epi above genetics, your genes, your DNA. We mapped out the human genome in 2003 was when we completed the project about, and we really anticipated being able to identify genes that caused diseases.

That was the goal, that the mapping of the genome would provide a Rosetta stone for our ailments. And what we learned really pretty quickly was that it didn't at all.

And I think that there was a clear disappointment in not having that Rosetta stone, but it ushered us into what regulates our genes.

What Biological Age Means

And this is epigenetics. So the variables, how we live, how we eat, how we breathe, how we are in the world. And there is a heritable component we can talk about, but it plays a much smaller role.

But it's really us in our day-to-day choices that influence what genes are on and what genes are off. And it's in this, in the epigenetic space that we can look at the rate of biological aging.

And that's how we measure it. And we measure it via one specific mark called DNA methylation. Can I do this test? I want to do this test. Yeah, you sure can.

How do I get this done? Yeah. You can actually get it on our website. We are, we just started to offer the pace of aging, which, which is. I don't want to get too arcane, so just stop me if I am.

It's a third generation biological age clock. I'm supposed to be telling you about my study. When we did our study, which was in 2018, it was not long ago.

That's really old. It was a million years ago in terms of the pace of information. Well, yes, biological age or chronologically. That's so funny. It's actually a very rapidly accelerating biological age.

Yeah, we did it back in 2018, which is like the dark, the dark ages and we only put we published in 2021, you know, way back in 2021. There were only first generation biological age clocks at that time, the earliest iterations.

There's still amazing resources and they're still used today, but we're currently very interested in something called the pace of aging, which is a snapshot into how rapidly we're aging.

It doesn't provide a biological age number. Like my bio age and the last time I tested it, it was 41. I'm 55 and my bio age is 41, which is good. And I'd like to keep it as low as possible.

But the pace of aging, if you're aging at a pace of one, then you're consistent with your chronological age. You want to be less than that. And my pace of aging is about 0.8. 0.8 plus a couple of digits.

So it's less than one and that's great. And that's the third generation clock, which is just very highly respected. So we're currently offering that. How low can it get?

Just out of curiosity, how long have you seen it? You know what? So it can get as low as 0.6. And that's not seen in… I think that it's mostly limited to younger individuals where you'll see a slowdown to that extent.

So I think that, so we're past that. Well, you know what, like for the time being, give us a few weeks. We'll figure out how to crack that down. Yeah.

I think about, I think in point in the, in the 0.7 to 0.8 date range, you're, you know, you're doing really well. Can you talk about your study just so the listeners can understand what you started with and.

Yeah, so the question for us, we had a handful of questions, but we wanted to see whether we were influencing a diet and lifestyle intervention that was designed specifically to sweet talk epigenetics.

Like every piece of this intervention was designed around optimizing gene expression and specifically something called DNA methylation. Could we, within eight weeks time, show a favorable change to biological age, to epigenetic expression in general as compared to a control group who didn't have any intervention.

Remarkably, and I have to say, when we started our study, we were looking broadly at epigenetic, optimizing epigenetic expression. At that time, in the dark ages of 2018, there were no studies out there showing that biological age could be slowed down or reversed.

There were no studies demonstrating that at that time.

Measuring Aging with DNA Methylation

So I didn't go into the study thinking, you know, cavalierly and really cocky that, sure, our diet and lifestyle

intervention will you know, knock this back.

I was not at all. So it was part of the exploratory arm of it, but there's no evidence. In fact, the Horvath, Steve Horvath, the developer of that first clock we used, did not think that bio-age was reversible.

I mean, that's, he was very clear on that. And then in 2019 the very first study came out and it was just a super small study of nine men. And it was a year long intervention of growth hormone injections and some other interventions and they reversed bio age and that year long intervention of you know by over two years by two and a half years and that.

that stopped the presses, that stopped the scientific presses. They were published in Aging Cell, which is a good journal, but they were written up in Nature.

I mean, the very tippy top journals were incredibly interested, even though it was only nine men and there was no control group, but it was revolutionary, revolutionary.

So that was the first study. Ours was the, I think the third, I think that there was one interim trial. And what we showed was, as compared to our control group, the biological age in our study participants was slowed down by 3.2, 3 years.

Pretty remarkable. And so curious, Kara, because when you think about this, we're going to talk about all the things that impact your biological age and your epigenetics.

But did you ever, at any point, were you able to pinpoint, oh, out of the six things you can do, There's one, there's one that's like the most, you know, like people would argue, Oh, meditation or movement.

Is there anyone that you could say the data looks like it's this one versus such a good, such a good question. We can't really tease it out. Our study participants were real or quite adherent.

We, they worked with our nutrition team, the nutritionists act acted as their coaches. So they were basically, I wanted them to these, I wanted our nutritionists to stick to the study participants like This was a really important study and it was expensive to run it and I wanted them to adhere.

So I think that they stuck with it. It took us a long time to recruit people who were willing to do the intervention. That said, certainly the diet is fairly rigorous and was a big change for some folks, even though these guys were healthy.

They are healthy. The diet, just being very dense and the nutrients to regulate gene expression was, different for some of them, and we can talk about those details as well.

So, I mean, you know, diet's a heavy lifter, right? I mean, we know in clinical practice that diet can be the main intervention, the main game changer.

So, I mean, if somebody asked me, I would land with the nutrition intervention. However, I was pretty blown away by the role that stress plays, the role that chronic toxic stress, not a little burst of, you know, hormetic stress that's very empowering and cleansing, but this chronic toxic stress that we're exposed to in this, particularly in this country and, you know, just in our lives.

So because it's the environmental toxic summit. Tell us about that. So the clock that we used in our study, a full 25% of it is regulated by glucocorticoid.

It has glucocorticoid response elements. Basically what that means is that I think that we could summarize it as stress being cortisol really driving biological age, like hardcore, big time, 25%. There's no other variable on the clock that has such a power, such an impact.

so that's pretty amazing and it's huge it's huge i mean does that mean that stress is number one and we're not

appreciating it to the extent like that it dwarfs anything else well i'm curious about the people like the next you your your second or third or 18th generation of study which is you do the eating program but you don't do anything around stress and what does that do to your biological age versus doing the the food and the stress reduction.

But the challenge is stress is everything, right? Because it is what you eat, or not eat. It is what how you exercise or not exercise. It is how your emotions happening.

It's what your ancestors and what like, yeah, that's right. This is everything. So it doesn't surprise me because there's no one thing. Well, but I think you're talking about the talk, we're talking about the effect of unmitigated chronic cortisol expression from toxic or stressful environment experiences, thought processes.

Yeah, it's kind of big. You can't, how do you even, it's hard to tease it out. You're absolutely right. I mean, I think your question is, is awesome, Wendy, you know, to, to consider just isolating each variable.

Study Design and Early Results

I would love to. I mean, if I, if I had a lab and a lot of, a lot of grants, but you know, I'm, I'm in clinical practice. It's real life. And, you know, do you really think that's even possible though?

Like things are so complex and yeah. I mean, absolutely to your point. Yeah. But I mean, it might, we could tease variables out and pretend that we're actually doing something meaningful and publish on it.

And it may provide some interesting information, but yeah, you're right. I mean, you know, we are taught, you know, to your point, our self talk. can put us into a fight or flight in incessantly all the time.

Yeah, there's so many ways that we can. How do you tease out? Let's say you have 10 people, 10, quote unquote, healthy people, some of those people need to exercise, some of those people need to go to therapy, other people need to stop the sugar.

You layer it. You start with time zero and you layer on the food. You measure the impact. You layer on the stress reduction. You layer the impact. You layer on the extra.

You just keep measuring. Data, data, data. So we are continuing. We're continuing to research it. We do have some. We're going to publish a case series soon.

And this is looking at women. So our original study was in men only. And that's because middle-aged women would be pre-menopausal. Our problem. That's our next book here, Sweaty and Bitchy's Coming Out.

That's so funny. So we did our first study in men, then we have a nice little group of women. They were the first adopters, the earliest adopters to the program.

So these were the first group to finish the full eight weeks, get their baseline and their follow-up, and it's a group of six women, and they did fabulously well.

So that's nice to see. We're bringing, we do it in clinic practice. We're going to bring it in and study it. So we've got an IRB and we will look at individualized.

So to your point, Wendy, how do, you know, just breaking it up and structuring it in a way that we're optimizing it for that particular human sitting in front of us.

My guess is that we might see better outcome with an individualized structure. I mean, why wouldn't we, you know, using a functional approach, but using the younger you principles, but we'll see.

what did you tell the people who struggled with forming new habits? Because it's easy to say, eat like this, but it's much harder to live for eight weeks.

And the goal is not just eight weeks, right? This is like, this is your new normal, keep going. So what do you say to people who have- I was like, you just better do it.

I got funding for this, baby. You are staying. This nutritionist is going to psychically follow you around forever. You're gonna plant failure is not an opt in on this.

Sometimes I want to implant a little something in my kids and like, if they're not behaving, you can do that with your studies. Yeah, that's right. Yeah, yeah.

Non adherence is just simply not an option. But people we I think that we were well, it took a while to recruit took a full year to recruit for an eight week study, we had to use a rolling enrollment, because we had to get people who were actually interested in engaging in it, should they be chosen for the group, and so it did take us a little while.

They were a very healthy cohort, so we wanted healthy men and these guys were particularly healthy, so they had already moved along the continuum of change.

our study participants. It took us a while and they did. No, 100% the coaching element was essential. I just, I want to write that up because we have adherence data and they look really fabulous, but I, you know, we'll just have to compare it to you know, something else.

I think nutrition studies are notoriously, you know, poor because adherence is so sketchy and people sort of fabricate what they did. And, you know, I would like to speak to that and to the benefit of coaching.

So coaching for sure helps. But so once we launched the book, the study is different. Our clinic practice is different. People come to our clinic practice kind of ready to dive in here as well.

But out in the world, now that I'm bringing this into the world, I'm encountering a total, a different group. And I think it speaks more to your point, bringing these changes into the world, I would say that there's a lot.

So, epinutrients, eating for gene expression, you're already eating for gene expression. So one way we can talk about it is that surely that there are foods you're consuming on a daily basis that act favorably on your epigenome.

So let's start simply with things that you're already doing right. and then slowly build on that. We have a sort of an entry-level program. We call it the Younger You Every Day.

It's not quite as rigorous as the Intensive, and we can start there with people. So I think to your point, Wendy, is that let's meet the human being sitting in front of us and start on this journey with them.

What are you willing to do for exercise? How do you develop a good exercise habit? What elements do you need? I think about my sister who doesn't like exercising and when, and I do.

So we talk on the phone a lot and that will get her going. And she's like, I did two, you know, two trips around the block and she's super psyched and, or maybe she'll go to the drum and we'll be talking and she'll be driving to the gym and she gets her workout in and we get to connect.

So I think community, in fact, let me tell you something. Cool. So exercises is incredibly important for biological age reduction. It's one of the very clearly well studied interventions, if you will, that we can do that will extend life.

It won't just prevent disease. It does prevent disease, but it will tack years on your life. So we need to figure out how to do it. And one of the cool things is that Mayo published a few years back that community based exercise might you might actually get a few extra years.

So that connection. There's an oxytocin with the release with the community plus the benefit of the exercises and the number one, the number one sport was tennis, followed by I think like soccer.

Yeah, I'm a cyclist I'm sort of a loner but well you could do a spin you could do a spin class but yeah but it's also you sort of alluding to Dan butaner's work on on the blue zones and thing yes community and an active lifestyle and healthy eating program.

I despise the word diet, so I never use it. Because it implies temporary and you have to die to do it. I don't like that. So you mentioned epigenetics.

Are there any studies that look at epigenetic changes in your health and what happens downstream for what happens from your grandparents, great grandparents, any of that?

Yeah, I mean, there is definitely a heritable component. So yeah, and there's good and bad, right? Yes. Yeah, that's right. We definitely pass that information on to our kids.

So most of our epigenetic information is removed during embryo genesis, but about 30% has been estimated to stay.

Stress, Diet, and Epigenetic Change

So we can pass on information about our exercise habits. your, you know, your kid could be born with rock hard abs. I don't know. I just think that's so funny.

That's fine. But it's also toxins too, right? Yeah. Yeah. Yeah. Yeah. So, yes. So I just, in human studies, we see the influence of food. So the best Actually, and there's actually stress.

So Holocaust, offspring of Holocaust survivors has been investigated. World Trade Center offspring have been investigated. And then starvation, exposure to change in the amount of food in humans has also been investigated.

Starvation or excess food intake, both, either side, either side, serious starvation and excess and robust food intake, like a good harvest. not eating McDonald's and Krispy Kreme, just more caloric availability.

Both of those result in increased diabetes, increased mortality from diabetes, increased cardiovascular disease, et cetera, obesity. both of those in subsequent generations, which is pretty interesting.

And that's mediated via epigenetic changes. In the starvation cohort, there's something called the thrifty epigenome type that kicks in. And so they hang on to every calorie and that those epigenetic changes are passed down through the generations.

But there's a different epigenetic change that happens in the X generation zero excess calorie intake, but it still results in the same phenotypic changes of obesity and metabolic.

Yeah, isn't that interesting? It's so interesting. Crazy. You mentioned something offline before we started about each subsequent generation got worse, the circling, the drain therapy.

Talk to us about that. That was so cool. Persistent organic pollutants exposed to in generation zero. This is an animal model. So they expose them to some toxins that we unfortunately all have burdens of.

And it changed the epigenome on the sperm and subsequent generations had the toxin associated diseases, but they were actually amplified by generation, they actually got worse.

That's crazy. It is crazy. It's crazy. And it's, yeah, it's scary. And so, so okay. There's so many questions I have from this, but one is, if we are all that generation because we're all exposed to this ongoingly.

So what are some of the things? I think food is so impactful because you have control over your food, most of us. And so, I mean, to some extent, right?

So are there foods that people can eat that impact their ability to get rid of the POPs, the persistent organic pollutants, and alter their own epigenetics so that the generations are passing on?

Yeah, don't do that as much. So clearly, we have to continue to study this. You're asking really important questions and things that we'll be able to, you know, we'll answer with more and more human data.

But I would, but yes, I mean, the answer is yes. So there's, there's a scientist at the University of Kentucky, who I would love to podcast with, or you should podcast with him.

His name is Bernard Henig, University of Kentucky. And he studies the impact of nutrition and toxins, physiological impact of nutrition. And so he's shown awesome heartening stuff like consuming fish, fatty fish, getting EPA and DHA will offset the prone inflammatory pathology of persistent organic pollutants.

It'll just get in there and cut it off at the chase. Because persistent organic pollutants, or PCBs actually, turn on the whole arachidonic acosinoid cascade.

You know, they turn up the volume on those prostaglandins that we know in clinical practice, most of our patients are struggling with and we give them fish oil to inhibit that.

So. PCBs do the same thing. They turn this on and we know how to interrupt that. So it works. And similarly, he shows with polyphenols, green tea and others having an interruptive effect on toxins.

Our program, I just wanna say is dense with all of those important polyphenols, those detoxing compounds that can interrupt that burden and what's interesting.

So not only are they going to influence us, you know, getting rid of those toxins. But if we have the imprint of the toxins on our epigenome, so maybe not the toxin itself from generation zero, but the imprint, the damaging change to gene expression, these compounds are able to sweet talk gene expression.

I mean, that's what we showed in our study that our participants changed the pattern of gene expression towards a more youthful, younger pattern. They rearranged.

So the diet and lifestyle interventions rearranged gene expression patterns within our study subjects. So we should be able to do that with toxins. Tara, that's the title of your next book, Sweet Talk Your Genes.

Thanks. Right there. So basically what I'm hearing is you can eat your way out of it. You can eat your way deeper in and you can eat your way out of it or mitigate it.

But wait, there's more. Oh, I love this. No, talk to me. Well, I want to say that you know, if I was to pick the ultimate nutrient that sweet talks your genes profoundly, it would be exercise.

I mean, well, exercise acts, exercise exerts the same mechanism. So our diet is, and you're right, I shouldn't call it a diet, the eating pattern that we prescribe as something, has a bunch of something of nutrients we call methyl donors, foods that include these methyl donors are beets, eggs, they have choline, liver, greens, seeds.

So packed with methyl mushrooms, actually a really good source. But then it has these methylation adaptogens, green tea, turmeric, berries, citrus.

Exercise, Community, and Longevity

And these polyphenols work with the methyl donors and help optimal gene expression. And they help to turn genes on that we want on protective genes, anti-inflammatory genes.

They help us inhibit pro-inflammatory genes, genes that drive cancer, et cetera. So they do this rearrangement, the nutrients together. Exercise as a single entity does both of those.

Exercise will actually lead to hypermethylation and inhibition of bad genes, and it will re-express inhibited genes. It will take the methyl groups off.

I mean, it's just really extraordinary. I mean, there are some nutrients that can do that too, like curcumin is sort of a tumor, it's a super special nutrient, even soy, like a very organic soy.

I don't advocate a lot of soy eating, but some of those polyphenols are just potently interesting in their behavior. Do you hold on? Wait, question, question on the field.

So with the soy, because soy gets such a bad rap, but I'm like, you know, in moderation and for it's organic. I don't know that I would go too crazy about it.

Yes, that's right. It's very smart. So are you talking about edamame like the actual soybean or are you talking about soy milk or are we talking about tofu?

Like what's the formula? Well, we want happy with soy milk. Yeah. Yeah. Yeah. There are some really good soy milks out there. Yeah. I don't want to vilify soy either, but I want to make sure people are not eating GMO.

And ideally maybe they're consuming something that's fermented. It is antigenic. So if you're sensitive to it, if you tend to have allergies and you're reactive to soy, obviously it's not something to consume for that reason.

You want to, you want to consume soy that has so organic, ideally fermented and has those polyphenols present. So, you know, some kind of a tofu or a tempeh, edamame would have it.

I don't know how much we would have to see on the, you know, some soy milks would, would actually measure the polyphenol. So you would just want to look on the product and make sure I mean, edamame is not fermented, so it's…

Right, but it's still delicious. Right, it's yummy and it's green. Okay, and you mentioned exercise. When you say exercise, what do you mean? Good, good, good question.

So the exercise studies looking at epigenetics are, you know, they're different. There's cardiovascular exercise. There was actually a pretty cool study where they…

I don't know that I would want to participate in it, but they just, they had participants exercise one leg on a bike only. Muscle biopsies on both legs and really interesting changes to metabolic expression, muscle mass, et cetera.

So exercise that we used in our study was very simple. Do what you love. Do it for a minimum of 30 minutes, five days a week. Really important to do something that you're into.

Perceived exertion. You don't have to wear a fancy monitor. You don't have to measure your heart rate, anything like that. You just need to go to 60% to 80% of your maximum perceived exertion so 60% is you're still carrying on a conversation, you might be sweating a little bit, but it's not crazy, you know you're great me and my sister talking with she's walking around the block she's probably at 60% easy to do you ramp it up a little to 80% then maybe there's a noticeable.

breathing change and you might be sweating a little bit more, but it is still doable and you should still be able to carry on a conversation. And that's it.

30 minutes minimum, five days a week, whatever works. And that's what we prescribe. And what about stress management? I'm sorry. I've asked all the questions.

I'm like really into this. Are you hogging? You're hogging. I'm hogging. I know. My mortality is weighing very heavily on me this year. I don't know what it is.

It's like, it's so in my face. I'm like, what can we do? I think at 50, maybe you can be in a little denial. But then every year I'm like, what a gift cards, but I'm over 50 now.

I'm in like the second half of my life. If I'm going to live to a hundred, I know I don't have a full half life. You know, as a side note, what I, what interesting as I'm in my fifties, that there is an aging conversation, almost a hypnosis that absolutely has to be.

squash. I did some overtraining for a while. I was doing a lot of resistance training and I still do it. Love it. Muscle is important for longevity, big time, but I overdid it and I was sore and I needed to take time off and it's pro-inflammatory and pro-aging, by the way.

Too much exercise is pro-inflammatory and pro-aging. So I chilled out, you know, I'm restructuring, I'm regrouping. I'll continue to do it because it's important, but I'll just do it in a more balanced way.

But my mom, I, you know, love her. Oh, you're just, you know, you're getting old, Kara. And I'm like, mom, what does this mean? Does this mean that I retire to the couch?

That's it? Like no more? You're done. Yeah, I'm done. And it occurred to me that there's a certain time when that becomes a story. And it becomes a story.

I would have never said this. I had to build my quads when I was a young cyclist. I'm a bike rider. I wouldn't have told myself in my 20s. It was because I was old.

I just had to build my quads up. So we kick into this story. And it's a toxin. It's a pollution. We kick into that, which is absolutely Absolutely unhealthy.

We reject it. Well, how many people do we see on a day-to-day basis that come in, have that story? Yes. And it's real. And at least in our practice, and I'm sure in your practice, I'd say a third of the time that I'm talking to people is all about reframing that because, okay, so you're 60 and You can't really say to your patient, what's your point?

But what we do try to say to them is- That's so empowering when you say that though. Well, we reject the conventional wisdom that you're supposed to fail every year, get worse every decade, and die in your bed decrepit of your mind and body.

We reject that flatly. Absolutely. Good. The absence of that is not the presence of vitality. So you could say, Yes, we say that you're meant to be vital, vibrant, healthy, able to participate in an interest in an intimacy until you're at least 100 and then every decade you improve.

Awesome. How many people do? Yes, there are tons and tons of decrepit older people. Well, in the messages, they're supposed to be right.

Inherited Epigenetics and Toxin Exposure

I mean, and from the medical establishment, I mean, you are, you know, you're going against the grain with your, you know, the mirror that you're holding up.

I mean, it's just so important. Well, and doctors, if you look at the regular doctors, that's what they get this because you're old, right? Expectation drives reality in a lot of those cases.

There is a hypnosis, like this fog that kicks in, it's old, and then this resignation that comes with this, and you will in fact become old if that is your mindset.

I want to say that there's cool research coming out these days, actually in the last month, two studies. One looking at biological age in French centenarians, and they are almost 30 years younger than than in their biological age.

It's just, it's very, very cool. So 100 is the new 70. And then I'll take it. And then they looked at women. I think it was from the women's health initiative data.

So here in the U S women who were 90 and older. without physical limitations, without cognitive decline were significantly biologically younger than women who had physical issues or either physical issues or cognitive decline or both.

So it's just validating the whole biological age tool, its utility, but it definitely- But I mean, it goes to the same thing of if you have chronic disease, Okay, that's all you get.

Like, it's not we don't look in conventional medicine, you're not looking at how do you reverse it, you're looking at how can you deal with it the best you possibly can.

And on our side, we're like, okay, you have disease, let's reverse that and let's get you healthy and vibrant like Well, there's even more to it that if you're in the bucket of autoimmunity and chronic disease and aging, if you're in the aging bucket or degeneration, you're going backward, you can alter the course of the future with these things, your food, your movement, your stress management, your sleep, training your brain and resetting your expectations, your future changes.

Yeah, that's exactly right. Your present changes. You can heal your way out of these things. Yes. And if you get into the chronic disease, I think if you buy into the chronic disease slippery slope, if you buy into this aging phenomena, one disease begets another disease begets another disease.

I mean, most of us in the US have two by the time we're in our early 60s have two significant diagnosis, and one begets another. I mean, it's just crazy.

It is it's it is crazy. And it absolutely doesn't have to be and we are driving that car. I mean, we do have have a choice to reverse that whole that whole journey.

Yeah, I mean, we do accept the challenges, the majority of people there's no education, because the doctor knows everything. The doctor says you need a pill if you're gonna have high blood pressure and you're old and, and you got to listen to the doctor, as opposed to taking things into your own hands and really doing some research and finding out and yeah.

Or they happen upon you and the work that you're doing, which is, that's just so fabulous, you know, or they happen upon us. We're a little bit more like we're sort of boutique and people end up getting referred to us and it can take a while, but.

Well, the more practitioners that do this work, the more this gets out and the more this becomes the normal. Well, I was just thinking about there's two things when you're exercising I mean there's a million things when you're exercising but when you're exercising you're increasing your mitochondrial product production which increases your energy directly and you're also increasing the BDNF.

And I just remember brain derived neutroph something factor. And now here's like the limit of my knowledge, but I know that this is good for energy and healing.

Yeah. Yes. Absolutely. Absolutely. So let me also say that if I didn't, I may have, so not only does it very actively rearrange chain expression to something favorably.

In fact, scientists now are positing the idea that the way exercise mediates its amazing, you know, influence on mitochondria and BDNF, you know, all of these things is via epigenetic changes.

And exercise, as I said earlier, whether we're doing it or not, that information is something called the imprint and that's the region of the epigenome that gets handed down.

So your exercise information is given to your kid and it influences metabolic health, it influences certain chronic disease risk, it influences muscle.

It's amazing. I think we did our own little study in our family because we have four kids. And my health altered significantly in a good way from the first kid where I had undiagnosed celiac disease.

Then I got healthier because I was no longer a resident. I still had undiagnosed celiac with the second kid, but I was no longer having this toxic lifestyle.

And then the third kid, I knew I had celiac, was very compliant, was getting healthier, had more brain space and time to move. And then onto the fourth kid when I really started to feel like I hit my stride.

And it's so interesting to watch in their health because, I mean, the first one was a severely growth restricted preemie. So she got handed a harder deck of cards than the others did, but it's very interesting to watch their different bodies and the way they respond to things and resilience.

And it's just kind of cool. That's extraordinary. Wow. Yeah. What a journey. Built in study. Well, that's up to y'all have different genetic things. I know.

But yes. Well, no, I mean, I have two copies of everything. So they all got one. That's true. Why go halfway? Do you know they don't require genetic testing when you go there?

I should not have reproduced based on my genes. No. Yeah, but I'm sure your kids are awesome with what you know now. Knowing that we didn't know then, yeah.

They are awesome either way. Yeah, either way. Well, no, I mean, it really does, because the first set of kids, we did not restrict their gluten, even though I had celiac, they got gluten in school.

And by the time they were like three and five, they were both severely sensitive to gluten. The younger two we recognized, oh, nasty gene pattern, terrible epigenetics, mother with celiac, uncles with celiac, grandfather with celiac, gluten's not a good idea.

So the littles don't get gluten. And they're like, we're not sensitive. I'm like, let's keep it that way. With my genes, you're headed that way.

Practical Program, Testing, and Closing

But you absolutely followed You know, you followed the structure. I mean, if, if, if kids don't have the gene or actually they could have the genetics, but if they don't have the.

Yeah. So it's yeah. What it's what a journey, what a learning journey. Yeah. It's been great. Tell me about what happens after the study. Do you keep in touch with this group of men?

It's still burns my butt, but I understand why. to keep in touch with these men after the study to see how are they doing? Did they maintain it? And do they get to do this DNA test?

So they did. They did it during the study. No, I didn't build into our IRB the structure to have continued involvement with them. And I wish that I did.

I wish that I had had the hindsight. But again, we didn't know. I mean, this was like the first study of its kind at all in this model. I mean, nobody was looking at a human control diet and lifestyle intervention on epigenetics.

So we didn't have all of the foresight that we do now. So I wish that I had built it in so that I could watch them. I had no idea what we were going to see.

I mean, I was like, I hope we change some epigenetics that would be pretty cool. Little did I know that we, that we, you know, not only did we reverse the clock, but we actually changed what they call differential methylation.

We profoundly changed methylation on our study subjects as compared to controls on something like 8,000 genes, like big time, which means, which means what?

Like, what does that mean for? Well, I have to, I have to drill into it. So we turn genes on and off way differently in our study group than the control group.

And I have to drill into that data, but I can tell you that my early look at some of them is we've turned on some tumor suppressor genes. So tumor suppressor genes, those really important genes that protect us from cancer.

Part of aging is that we turn them off. I mean, it's like this rot, like aging has some predictable changes that we don't want to allow to happen. And one of them is turning off tumor suppressor genes.

And I can see that we change tumor suppressor tumor suppressor methylation that we allowed them to come back on in our study participants. But we, you know, stay tuned.

Like I have to do a drill into those, into those methylation patterns and then, you know, write a paper on it. Sweet talk your genes, baby. Yeah, it's, it's, it's really exciting but we were going somewhere else and I kind of digressed what was the question Oh, whether I stayed in contact with them with a minority of them so what we what we did include in the IRB was that we would, they could go to a Facebook page and hang out with us there and we would enact interact with them there, and a handful of them did the challenge was that we since it was a rolling enrollment, we were collecting data over the full year.

And so it was only like the final crew of guys that were a little bit more engaged with us. It was hard to get the people who were there at the beginning.

It was just, yeah, you know, hindsight is definitely 2020. But yeah, those guys were doing well. And the people that we were in contact with absolutely adopted some of these.

You know, they let themselves move towards, you know, one guy really liked beer and I know one guy loved rice. And so they let themselves have, you know, some things that they liked, but it, it, it really profoundly influenced those that, that we were in contact with.

Yeah. Awesome. What else should we ask you that we haven't asked you? What else? If people want to have their biological age tested, as I said, we're doing the piece of aging and people can come to the website and actually get it.

It's not, it's, it's much more affordable. God, I think we're charging 2.99 and that includes 30 minutes with one of the nutritionists who are, you know, have this program in their epigenome.

They know it. So the nutritionists have either that we're either in our, in our current research or in the original study. So they really, really know this.

So it's $2.99. We paid over a thousand dollars per test when we ran it back in. Yeah. Really expensive. But as everything happens in this kind of omics revolution, these tests are dropping in price quite a bit, which is pretty cool.

So that's still kind of high, but it's way better than it was. I think we paid $1,200 for. That's crazy. I mean, the thing that is so striking to me is that we have a lot of experts on this summit and it really does all come down funneling into to prevent and reverse autoimmunity and chronic disease.

There is a pretty consistent core set of behaviors that if you can do the majority of them every day, it's going to help you. And that's eat in a way that's devoid of processed food and super high in a wide range of minerals, nutrients, phytonutrients, protein to support your liver and detox, fish oil, make sure you move your body, sleep, de-stress.

And I would say what's not listed in yours that I would add in is deal with your trauma. Just to round it all out. Yeah, that's right. That's an anti-aging program.

It's running in the background for us. Yeah, that's right. It's crazy. So where can people find you? They can come to the best would be for this information, youngeruprogram.com, youngeruprogram.com.

In fact, there's a free bio-age quiz. So you can start there. You don't have to invest in the test at all. You can just go and take the bio-age quiz and see how you're doing.

You'll get a printout of your results emailed to you. And so you can look and see what you could do better, what you're doing well. For me, sitting is a pro-aging thing, hence my treadmill desk over there.

Yeah, yeah, yeah. That was one of the areas. I sit too much. And so that was a lesson from our bio-age quiz. But you can go grab it. Grab it. It's free.

And then you'll learn about what else we're doing. You're doing amazing work, really. It's always a pleasure to talk to you because you just have the coolest, you know, you're in it.

So it's great to hear. And it's great to connect with you. I enjoyed our first conversation and I was just really happy to see your smiling faces. Yes, we'll play.

We'll keep playing. So, Kara, thank you for joining us for this episode of the Autoimmunity, Chronic Diseases and Environmental Talks in Summit. It's been a pleasure interviewing you.

Everyone should be listening to this. It's just fantastic. So thank you. Thank you. It's been a pleasure. Thank you for tuning into Dr. Talks. We hope today's episode has enlightened and inspired you on your path to optimal health.

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