Introduction and Guest Background

Hello. Welcome to another episode of the Telomere Summit. I'm your host, Doctor Joseph Rafael. Today I am very pleased to have on the show Kashif Khan, the founder of the DNA company.

He is the chief executive officer and founder of the DNA company, where personalized medicine is being pioneered through unique insights into the human genome, with the largest study of its kind globally.

The DNA company has developed a functional approach to genomic interpretation, overlaying environment, nutrition and lifestyle on the genetic blueprint to create personalized and deterministic health outcomes.

Welcome, Kashif. To the to the Telomere Summit. I'm really looking forward to having you. I looked at your bio and you have a lot of, interesting, details in there, but why don't you tell me a little bit about your story and how you came from not being in health care to as an entrepreneur, and then to creating the DNA, the DNA company, for sure.

Yeah, it was for me, a need, right? I was sick, as many people. You find that sort of get into this journey of understanding, healing themselves. Really.

It's been it gets driven by that a lot. And so I come from a completely different industry. I was a PR and marketing guy, so I used to help startup to mid-size companies grow, you know, the advisory they needed from the PR marketing to everything else that they didn't even know who they needed. Right?

And in that journey, I got pretty sick. Like, I'm 42. I was 35 at around the peak of it, and I had eczema, psoriasis, constant migraines, like debilitating migraines.

My business partner used to have to drive me home because I just couldn't function. Acid reflux. I had depression issues, anxiety issues. It's just a whole bunch of stuff that made me almost dysfunctional.

Right? So in that, you know, I was going to various clinicians that were solving all these things as a multitude of different problems, a pill for this or cream for that, to scan for this.

Right. And that's what I believed was the correct path, because, you know, you grow up with your doctor, which I did, and you kind of feel like they know me, and I do need to mask each one of these things and get rid of them.

That's the checkmark for success. The eczema is gone. You don't even ask why I got the eczema, but let's just get rid of it. Right? So, And it wasn't that the things were gone.

They just it kept manifesting in different ways where there was multiple things. So I took charge, as many people do. I started speaking to friends that I knew that were into functional medicine, that understood of root cause.

And I started to slowly heal things, and there was still this threshold I couldn't cross of being healthy. Right. The problems were gone, but I didn't feel great.

I was still not in good shape, etc. that's when I landed on genomics, because the true deep dive of why was I getting stuck? Well, I need to understand how different choices are different for me versus another person in another person.

Another person, and your genetic blueprint, that code that is not just about ancestry and what color your eyes are. There's so much more to it. If you understood it.

That's what made me cross that line of from masking symptoms to truly being healthy. I'm not sick anymore, right? I'm probably in the best health of my life.

I'm 42 years old. And I haven't had a cold or flu in four years. I don't have allergies anymore. So by digging deeper and deeper and deeper and peeling back those layers, I got healthy to the point where I took my marketing company, gave the keys to the staff, and literally walked away and said, thank you for your work. You keep it.

I found what I got to work on and I personally poured my own money into it. We built it and here we are today.

Personal Health Crisis and Discovery of Genomics

Well, that's a fascinating story. I mean, when we do hear it at time, people have a challenge that they have to, confront. Lorenzo's Oil, for instance, that movie, where you have to find the cure for your kid's illness and you had to find, you know, the the really the basis of why you were suffering from these things that were that were, being treated in sort of a whack a mole kind of fashion with allopathic medicine.

The way, the way it goes at it. So you started the DNA company at that time where you had sort of a we're in a different business, a supplement business. Yeah.

So we then. Yeah, we, it's funny, I actually met you around the time. Right around this time. Right. We we already for him. You were there. And of all the people there, I really sort of appreciated what you were working on because you were going beyond, how do I master system and you were trying to determine people's biological age.

Right. And that things like you kind of inspired me also. And I and I saw that there's so much more to how our body is wired than just the symptoms we're trying to suppress.

Right. And we can do so much more. And so yes, we started off developing solutions from the genome, which is how I cured myself. I learned and we can get into these.

Yeah. Tell me a little about that. We have time. So one one example I learned. So I talked about depression right. I have family that I as I grew up I saw addiction everywhere.

You know my uncles, my cousins, all alcoholics, all successful also, but all alcoholics. And when I get to the genomics of that, it will make sense. There was also a lot of illness, a lot of asthma, eczema, all these types of things.

And there was depression, right. So now what I understand about myself, I'm also entrepreneurial like my family. And when I look back now that I've learned ancestrally my grandfather, great grandfather, they were all entrepreneurs.

I have what's called warrior genetics up here. There's, you know, warrior, a warrior. Those are kind of the extremes. And then most people are in the Middle War warrior or warrior.

What are you talking about? Them. Okay. Exactly. Yeah. With the same context, two different results. So a fight or flight warrior or warrior kind of thing.

So something. Yeah. Very interesting. Why is that happening? And what does this have to do with depression and addiction and all these things and entrepreneurial ism.

Why is it all the same bucket. So when it comes to pleasure and reward, those two things that you feel you require dopamine for though. So dopamine is deployed, you then bind it and you experience that pleasure reward.

Well, there's one gene called D2 which determines how dense your dopamine binders are. And I have the least like sparse, slim to none density. So I feel things way down here. Right.

Then there's a gene called M0, which is breaking down the dopamine in an attempt to bring you back to your normal state. There's an enzyme produced by Comt, another gene which is well known which then clears.

It's a clearance enzyme. Right. So I have the least density of dopamine. I have the fastest meal that as I'm experiencing it's already being broken down and I have the fastest pump that's sweeping everything away.

So I hardly feel. And when I do, it lasts this long and it's gone. So you need to double me, grip. I basically I just don't get it. And so there's really three potential outcomes.

And I've experienced all three depression because you're not getting that hit. Right. Right. Addiction because you go down the pleasure route and you feel it with pleasure.

And you need more and more and more and more or achievement because you go down the reward route. Right? And you're feeling it with the neck. Whatever I did yesterday isn't good enough.

And that's why does the marketing guy walk away from his company and go invest into biotechnology when he has no business doing so? Right? Because that reward and that that opportunity is too much for me, I need it.

So this is why me? I have been through depression. I have been through addiction. And why my why? It was my family just they were all successful business people, all addicts at the same time because they would reach that plateau in their business and they wouldn't push for more, and then they would go down.

The pleasure would go on to addiction. So that one simple profile, there's so much more to genetics, quote unquote, from this gene means that this gene means that to the functional, you know, how how does the body actually work?

And how do we reverse engineer what genes are instructing each step in that process? And now the condition depression, addiction achievement being a condition and good condition like you're striving for, it can be unpacked into why is it happening?

Flip opposite. Now imagine I had the maximum dopamine receptors and I had the slowest clearance enzymes. I would then appear as opposed to being reward seeking and constantly saying yes, yes, yes, more and more, more I would be more flaky and not interested.

And by the way, my business partner is that he's the exact opposite of me, right? And for the first two years of working together, we had a lot of issues.

There was constant friction because we'd be in a meeting and we'd leave with our ten action items. I could not rest until I worked on them. He would not even touch them and think that he already did them right, because his sense of reward was so easy to get that he wasn't really pushed by these things.

But give him that thing that truly gave him that sense reward, and he would binge and get lost. That's the difference between addiction, which is constant elevation, and seeking reward to bingeing where you don't need to do it every day.

But when you do it, you're lost for eight hours. Right. And so he would come back. The two things that he actually enjoyed working on this stack of paper like this.

Like how did you do that. Right. For me it's all calls notes and summaries. But I get everything done right. Right. So that one simple thing can completely change the way you think about yourself.

And that's just one of the things I heal and it goes on and on and on from there. So that initially you I mean, recognizing those things is helpful, but there are supplements that you talk or know you had a company that so know.

So what is it about genomics that has not been actionable? There's been these hardcore diagnostic, you know, you got a rare genetic cancer or you have sickle cell syndrome, right?

That's a genetic condition. It's maybe 2 or 3% of health care, right? We know that of our $4 trillion health care budget, 90% is chronic disease, which you're not born with.

These are not genetic conditions. These are environment, nutrition and lifestyle conditions or poor polygenic like many, many genes involved. Right? Yeah.

So all these systems that interplay with each other and all of a sudden that profile is at a high risk, right? Versus, hey, this gene means you got an 80% chance of Alzheimer's, right?

Exactly. What does that do for me? What is that other than okay, now I have anxiety for the next 30 years, right? Or to ask the question, well, doesn't that mean that 20% didn't get Alzheimer's with the exact same genetics?

Yeah. Well, I think with with with the Alzheimer's. Give me the AP protein.

How Genetics Explains Behavior and Motivation

E gene, that is one of the most highly characterized ones for Alzheimer's disease risk. And we know what it is. You know what the variations are two, three and four.

But what's interesting to see is, you know, many people and we know that people that have two, inherit two fours and have ten fold increased risk of Alzheimer's disease, what are the genes around it that enabled some people to not express the Alzheimer's?

And that's sort of the the genomics sits around it. Yeah. You know, you have this really bad thing, but it's not like Huntington's at least. Maybe there's something hunting that we don't know about.

They could fix that. But, is there something to look at, like in, as Dale Bredesen does in his his protocol, a multi-modal approach? And that's, I think, what you're talking about, it's functional genomics versus, you know, genetics and genotyping.

Which, you know, maybe you could talk about how your because there's a lot of DNA companies out there that, that, that do DNA sequences, I'd be interested to know.

I mean, your how you approach what you do is different in your company and. Well, just to sort of talk about generally what, what what gets done there so that what you just described is the key element.

It's the interpretation. Right. I can anybody can go run a DNA test. In fact, anybody listening here can go buy a sequencing machine, put it in their basement and start running their own DNA.

Right. At this point, it's getting to that. Yeah. Exactly. What does it mean? What do you glean from that information? The interpretation. That's the difference between like a great clinician or somebody that's more like an order taker, a prescription writer.

It's the interpretation. Same thing genetically, I can tell you, you're about you're able Eugene. And what does it mean? But then how am I interpreting again that multifaceted insulin resistance.

It's another co-factor. Right. Absolutely. Your reward seeking behavior. How do you actually deal with food. Are you, are you an addict or binge or do you lean on food as a coping mechanism because your serotonin levels are screwed up?

Those types of things. Right. So when you start to package and create these profiles that are functional in nature, meaning not don't tell me my risk without telling me what to do about it.

And they typically can't tell you what to do about it because they haven't understood why they get to the risk. I mean, they give you an example. I'll give you a great example that really paints a picture.

So, and I'll pick cardiovascular disease because that's what touches the number one group of people. So the biggest killer in the United States, right 18 million people globally last year, 50% of people, unfortunately, in the U. S.

are expected to have some sort of cardiovascular issue. And then you wonder why. And if you go to most genetic testing websites, they will tell you we deal with this condition, this condition.

But cardiovascular is a lifestyle disease, right? Meaning that you have to make wrong choices to get it. But that's not true. Yeah. Yeah. So the those wrong choices are the load on the suboptimal genetics that just makes it express faster.

Right. It's like I have a Ferrari. Great. Beautiful. But what if I take the Ferrari off roading? That's the difference between that answer of, you know, you're not born with it, you're going to get it.

Or what did you do with what you were given, those cards you were dealt. And that's environment, nutrition, lifestyle, which leads to what we call epigenetics. So that that load that we create.

So cardiovascular uses that as an example. Really paint the picture for everybody. My good friend who was actually our first investor in the company, he's a pharmacist.

And he came to us because he in for an entirely different reason. He had been on Lipitor at the age of 38, and his cholesterol numbers just wouldn't stop rising, kept going up.

Right. So he said, I'm a pharmacist. I can't figure this out. Do you guys have a pharmacogenetics test which is very common nowadays, where you can figure out what type of drug you need to what those what gene metabolizes the drug?

I said, before we get into that, what if you don't need the drug? What if we can get you off of it? He said, no, that's not how this works. He's a pharmacist, right?

Is that I just need to know what dose I need. I said, no, just, you know, let me work on this for a bit. And if we don't get it, then I'll help you with your thing.

So we ran his genetics. And what do we find that 90 212 is, which determines what quality of endothelial, that inner lining of the blood vessel, what quality you have stainless steel or paper? Thin.

He had paper thin, right. Worse quality hardware. And we know that cardiovascular disease typically is in the heart. It's usually in the arteries around the heart.

You know, calcification, plaque buildup, all those things. Right. So he had really bad quality hardware which means more prone to inflammation. Again, take that profile, put it on a beach in Aruba with nice fish and out of the sea and good sleep and everything.

He's not getting sick. You have to have the load. Then we looked at his growth ionization pathway. Your detox pathway. And this is where we look at something unique.

Call a copy number variation. So anyone here that's done a genetic test is probably received a list of what are called snips. It's like a spelling mistake in the gene.

And if that spelling mistake is there, one letter is a t instead of a C, the gene is functioning different. What if you don't even have the gene? Literally, you didn't get it.

Yeah. Deletions, deletion or copying of the variation. Yeah. Right. Versus the next copy, you could have an extra copy of the gene. Right. So now imagine the if, if this snip or spelling mistake is so impactful, what does it mean when you don't even have the gene.

You don't have the instruction for that function. Right. So in Bluetooth ionization we look at three things. We look at first line of defense here. How do I filter things that I breathe in.

Because that's where things enter my broad center. Everything you're saying Bluetooth ionization I'm not familiar with that. Or do you mean glue cure on a disease or is it good or beautiful?

The actual use of glutathione to bind onto toxins, to send them to deliver, to metabolize and then clear. So that's based on levels of good of iron or or what is it.

Yeah. So it's it's based on the instruction to glutathione. And that's literally what I was just about to tell you, like what is what are your genes telling whether it's and this is why precursors work so well because they don't need the instruction.

They just get to work like any medium acid. Right. So if you in your blood, you're supposed to have these soldiers going around collecting and binding onto toxins to instruct, to clear the gene.

It's possible to have a copy number variation. I mean, you didn't even get it from mom or dad. And we have many clients who have zero copies, like this friend of mine.

So anything that enters a bloodstream is not being cleared. That core process of clearance, you just wasn't doing it. Wow. There's all that. The gut you know, that's another place where things enter your body.

You're meant to clear. There's a gene called TM one. You didn't have it. Forget about what version what quality didn't have the gene. So this instruction.

And you wonder why are some people so much more prone to colitis prone, leaky gut, etc.? Well, if I don't have the instruction to clear toxicity of the gut, imagine the inflammatory load that's being caused, right?

Then there's guest P1, which is kind of first line of defense of the lungs, and it's this one. You can't have a copy number variation. It's another snip. But he was also suboptimal there.

So now we know that he was probably suffering from a toxic load. Then we look at methylation which is the anti-inflammatory response. Because if he has this toxic load he's going to be inflamed.

Right. These free radicals are free flowing causing damage to the vasculature. And we already know he has a bad quality endothelial. So it's more easily damaged with abrasions, inflammation, etc..

Right. The body is supposed to methylated. You know, there's a methylation cycle. It's not just the MT gene that everybody hears about. There's a whole some upstream and downstream of of course important.

Right. And now you can look at that whole system to understand how well somebody's doing that. If you're suboptimal in that whole system. I have the toxins free flowing.

I have a bad quality hardware. It's now getting inflammation, and I don't deal with the inflammation. Well, right now we've understood the profile full of toxins.

Bad quality hardware can't deal with the inflammation. Even then, this person may never get sick because something has to cause the inflammation right?

Yeah. Ask him, what do you do? What was he doing? He was golfing four days a week. When you're golfing, you're in a golf course for four hours at a time, breathing in all those toxic pesticides that he did not have the genetic

ability to clear.

And in Canada, where we are, it's even worse because there's no regulation, because we have a heavy winter and we need to, you know, sort of keep up.

From DNA Data to Functional Interpretation

And so there's a heavy toxic load in that greenery that makes it so nice that he was breathing in for four hours a time, four days a week, that he could all clear now wreaking havoc through a system.

There's all that's coming in from the outside. There's also mitochondrial clearance, which is, you know, your cells in the process of using oxygen in nutrition to create energy.

They also create oxidants, the byproduct. Right. So there's different genetic levels of being able to clear that oxidant or byproduct. He was way down here.

So again the load on the cells was very heavy right. So now we know that he has inflammation here because of all this toxicity. He's not dealing with the information.

Well what is the body's response to inflammation in the endothelial. It will actually deploy cholesterol as a hormone to reduce the inflammation. Right.

What happens when cholesterol meets toxicity. It hardens and gets deposited. And you get the beginning of that cholesterol MBA, for which he was taking a pill to treat that very last layer of the onion.

Right. There's so many more things are happening for five, six, seven, ten years prior to which is why chronic conditions are the way they are. You're not born with them.

You're not born with type two diabetes. You have to do something wrong for a number of years to get to it. And then when you're in it, you have to solve the wrong problem to stay in it right?

Right. And that's what was happening. Yeah. He was masking the symptom as opposed to understanding. He just doesn't detox well or at all, we should say.

And now he doesn't deal with the information from that. Well. And he is weak in his hardware here. So he's going to get inflamed here. And the body's going to try and help him by sending cholesterol, which then creates that buildup.

So he no longer is on a pill, by the way. He's off. Lipitor is healthy. So his we've checked is cholesterol actually came down because the cholesterol would be deposited in the walls is different from creating circulating cholesterol.

Yes. You know, it's kind of interesting that his cholesterol. Did you have a coronary calcium score or anything? Prior to that, to see whether he had how much damage you had?

Yeah, probably a simple that's what he did for the thin, thickness of his, of his, you know, his intima, which is a measure of the endothelium, basically.

But in any case, I mean, I guess there wasn't a lot of longevity in his family either. Probably. Okay, so this is why. So him being Pakistani background, why are all Pakistanis and Indians told that cardiovascular disease is in your genetics, right?

The heart is fine. It's all of this around, right? So and so. Yeah. It's not the thing you just said. It would have been even more exaggerated if his lipid transport was suboptimal also, which it was a trade.

Yeah. So that would have been another layer because we knew. Right. And what if and here's another layer.

Brown people, subcontinent people Indian, Bangladeshi, Pakistani have the same insulin response from saturated fats as everybody else does from starches and sugars.

That's now that's fascinating. That's not something I knew. I had a couple Pakistani patients, who have had pretty bad, cholesterol at younger ages and evidence of heart disease in their late 30s.

Right. I had a guy that used to swim at my at my club. Really? Fat guy. Now is there every day doing laps, probably because he had a family history of heart disease.

And then one day I didn't notice him. And then for another week, I didn't know some. Somebody told me he died of a heart attack, like age 30, 30 something.

Well, crazy stuff. And also, incidentally, also some of those have had very short telomeres as well, patients that have had early, cardiovascular disease.

So we can talk about that in a little bit more. But so there are some pretty big differences then in, in, in genetics between certain populations and risk for cardiovascular disease.

And that's something that people need to. And also you don't know necessarily, you know, people don't always look like they necessarily are from Pakistan or have those genes that, we're all finding out from the services that we have version, you know, other ethnicities in us that that we might not even know.

So be good, good to to open that door. I'm sorry I interrupted your story. Oh, no. It's fine. And that's the challenge. Is that for most cardiovascular diseases, one of the things where it's completely silent until it hits you and there's 64% of women die on their first cardiovascular event, right?

Yeah, right. It's underdiagnosed for sure. Under diagnosed, completely silent. No previous warning sign then. And then that takes us down another path.

Well, why is it hit women so hard versus men? Well, there's other layers of inflammatory insult that compound like estrogen toxicity, which then you suffer so much from or loss of estrogen in menopause.

Which is the other on the opposite side of it. Right, exactly. Yeah. Is it all back to what you said? You have to interplay the systems. You take it from this probability based, you got an 80% chance or something to a certainty.

Here's you. Here's here's who you are. Here's what your risks are. Right? So then when somebody orders a test from your your company, is there you, obviously highly annotated.

And do you do some and I also read that you have the largest database, DNA database, in the world. Is that correct? For. Yeah, for clinical reviews, meaning that this is the other guy.

So me coming from the outside, it was very easy to see what wasn't working right and what wasn't working when I came into the industry was that geneticists study genes.

They don't study people. Right. And and all of a sudden they're supposed to provide solutions to chronic conditions. This is why if you ask generic companies about those, they aren't related to chronic disease. So you just haven't met any patients.

You don't understand how things connect, right? So what we set out to do is we said we need to meet every single one of our patients, at least during our research phase.

So we sat in front of 7000 people one by one, by one by one by one to understand. Give us your health care history. Tell us about your family. Let's look at the phenotypes. How did things manifest?

Oh, so that's very it. So for your first 7000 subjects that you were, I guess patients that, you did like extensive

phenotyping on them from family history, did you?

What are the marked kind of markers did you do? I'm curious. Even physical traits, like, we've gotten to the point now where we can ask you questions that assume your genetics with a very high level of accuracy, because we've seen over and over and over again, when somebody's balding by a certain age, it equals a certain hormonal pathway, which also leads to prostate enlargement.

When a woman is having certain physical traits, it is a very glaring red sign for fibromyalgia coming or a rocky menopause coming. And we now know what to do about it. Right?

So those types of things work because the same physical traits that equal this aren't limited to that. They also equal other things. Oh yeah. Sure. Right.

So yeah. But so with with that. So you've been did some deep data analysis on your first 7000 to make correlations between, various changes in genetics, copy number variation, snips, etc., deletions.

So what a lot of companies will specialize, you know, in what you were talking about earlier, the, genetics of of the mind, you know, dopamine receptors, etc.

some companies will focus on, nine key 21 like the Boston heart. You can get that for, for for heart conditions. Some will do it for pharmacology. Genomics.

Your I take it a broader approach that, because I remember when I got my genome set, my whole genome sequence by Illumina when they were doing the, back in maybe a dozen years ago, the, know your genome thing.

Right. You know, I got access to my genome, but it really is kind of useless to me because, you know, they told me, you know, whether I had at risk ratio fibrillation, whether I had a balding gene, whether I had, you know, a few traits that basically 23 of me gives you now, for sensitivity, that kind of business.

But I could browse through it and look at, look up numbers and but and snips and but it was kind of useless. What's really important is having the phenotype that goes with the genotype and then analyzing it and telling a person, yeah, exactly.

What does it mean? How is it actionable? What are your risks. So maybe you can tell our listeners about, you know, what a typical report will cover your company and and how you go about doing that.

That's different from, you know, what they've done with 23 of me are people upload to Prometheus or, you know, whatever to to analyze their genome. So what you explain is exactly what I experienced was broken, right?

I knew that my genome was my blueprint. It is literally your human instruction manual.

Cardiovascular Risk and a Case Study

But the level of insight that I was being provided by genetic purveyors was not personalized enough. It was all general information that, you know, and it wasn't pointing to the big problems.

So that's really what we did. We said in those 7000 reviews, let's keep banking the insights, what are we learning? And take it away from genetics to profiles.

Meaning again, you can't be certain or actionable clinically actionable unless you understand how things intersect. And that means building profiles are multiple things combined to one person.

Right? So in doing that, we then said, well, how do we make this available to everybody? Because our clinicians know this, we know this, but we can't teach it and train it and expect doctors to use it when they're already so busy.

That's difficult. So we built an artificial intelligence platform that it blew my mind when I saw this number, but it covers 200 trillion data points in order to populate the reports.

And I had no idea that that's the level of computation that was going in on our heads when we were sitting with patients and working with them. But that's what it took.

So starting with people don't care about their genetics. If I give you a DNA report, what I want to know is what's wrong with me and how do I fix it? Right in plain English?

Tell me. And great, if you give me all the supporting stuff for me to spend my time on in the evenings at some point. But right now, tell me what's wrong with me and how do I fix it, right?

So what we said is, well, that's where genetics is broken. I don't need to give you a list of genes, a gene report. I need to give you a list of conditions and how you rank in the conditions.

You're you're at risk for conditions that you may even currently have that you don't know about. Now, and things that you may be doing or that could cause you to have more risk or things that you shouldn't doing be doing to have less risk, that kind of stuff.

Yeah. Yep, yep. Here's what let's go with a little detail about. But the choose a particular up. We broke it up into six main areas where after going through these 7000 people, we kind of like this is what everybody kind of needs that to kind of optimize themselves and be a better version of themselves.

And it's not clinical yet where we need a MD in between. Right. Okay. Great. Right. So what are those areas? Sleep, which we all know now is so important.

Absolutely. But when you look at our sleep report, we could not make it without first understanding the brain, without first understanding diet and nutrition, because they all into sync, like you said.

Right. So sleep is a big one. Mood and behavior is the biggest report of the six that we provide. Everything. If I have your DNA, I don't ever need to speak to you to know how your personality works, how you deal with fear, anxiety, trauma.

Are you prone to PTSD? Are you a procrastinator? Should you have been an accountant instead of a doctor? We know this about you. That's a big statement, to make.

I mean, I'm not saying that you can't support it, but I mean, that's that's a that's a big statement. If we literally work with executive teams to help them build their team at a consultative level, because we understand what people are actually what it's very it's sounds like, it sounds crazy, but if you understand the dynamics of just understanding what neurochemicals drive, what behavior, and then knowing the blueprint for how much you deal with these, how much do I create, how much do I buy and how much do I clear, right.

Sure. I mean, it's simple in the end of the day and we already know it's already studied what these chemicals do. We've just never other than measured in real time.

We never understood the foundation of the blueprint. How is this person wired? And we're literally saying, here's your wiring, here's how your brain is wired.

Right. So that's the other one. Cardiovascular is a big one for us. So, you know, our diabetes, hypertension, stroke, cholesterol image, all that stuff.

Then we get into diet nutrition. So it's not just your typical genetic diet report of eat more greens, eat less of that. We we start with the brain. Are you a, you know, a binge or an addict?

Are you more emotionally driven towards food? Are you the time of day when you should eat, you know, then

there's carb metabolism and fat metabolism and insulin response, micronutrients like vitamin D, ABC, etc.

then we get into hormones and fitness. So how are your how is your hormonal cascade determining what your body looks like? Everyone gets stuck at these plateaus often because they're chasing goals that aren't relevant to them.

You know, I I'm not designed to be a linebacker, right? I can deadlift 400 pounds, but if I do workout the right way, I can look like Captain America, like, perfectly fit.

You know, I'm not going to be huge, right? So we have to understand who are you going to design for? You have and I give this example, it's funny, but Kim Kardashian and Kendall Jenner, they're sisters. But look at the right, right.

They have a different father. So the hormonal cascade is what's an Olympian? The others not. Yeah. Yeah. So yeah. So you definitely got a different genetics.

Yeah. But you're absolutely right about that. I'm curious to a lot of there's other companies that give, you know, athletic type genetics. And it's a particular genotypes.

And I forget whether, you know, which snips it is you either have, you know, propensity for fast twitch muscles or are more slow twitch your mitochondria.

How about, I just read something about, elite endurance athletes having the most amazing mitochondria? And how do you look at it? Mitochondrial genetics at all. And help.

Yeah, we do. So and that was the last of the six that I didn't mention was the immunity inflammation and detox. Right. Your immune response, which is where we look at the mitochondria.

So the side two gene determines, how well you deal with oxidative stress. And so D2 superoxide dismutase to. Yes. Exactly. Yes. And and that's where if you're not doing well there you look at these marathon runners that are in their 60s.

Right. They're kind of retired. And there's some that look great and some are all haggard, leave with their skin is all wrinkled. And why do they age so fast?

Because of the amount of oxidative stress they put their system through that they weren't able to cope with because the genetically they weren't wired for it. Right? Right.

So that whole ability to deal with mitochondrial, which would support so many other things. Right. Diseases are rooted in inflammation. We know that inflammation is rooted in cellular health.

If you don't understand how your cell is ticking, like what's going on there and what is it actually capable of and versus the load you're putting on it, well, you're probably going to get a disease of some sort, some chronic condition.

So yeah. Yeah yeah. Yeah. So so that's that sounds like that's very actionable for, for people early in life to know about whether or not they should be one of those people who, you know, thinks it's a good idea or likes to, for some reason, do ten marathons in a year.

Maybe some people just aren't set up for that. Or if your company has some, you know, research in the report that shows what you can do to mitigate that, you know, less, not healthy, but less capable genetic inheritance for a lot of endurance training.

I mean, I have some patients that are ultra marathoners. You know, they go run 100 miles in 24 hours. It's kind of stuff. You know, you'd think that that would cause a lot of oxidative stress, but I guess the ones that are successful,

it doesn't so much.

Or they just have great willpower, who knows what. But, are there then in your report things that you can that you suggest based on the literature that can mitigate a, you know, lower functioning or a lower expressed level of s.a.t to.

Yeah. So then exactly that. So now that we've identified what's going on, right where, where do we need to focus now? What do I do about it. And in the reports themselves we create some generalized recommendations.

They kind of cover. How do you deal with these various conditions. When we get more prescriptive about something, we need a health coach or somebody in between.

And so we do have offer programs where people can get coached by somebody or even at the clinician level. Right. Even working with clinicians like yourself to say you deal with the patient that you're in, we just provide the information, right, and help you guide them through it.

That also happens quite a bit with us. We work with a lot of functional medicine, doctors, etc.. But yeah, the action items are built right in. You know, they're in the reports because ultimately, okay, you've got 80.

But going back to that 80% chance of Alzheimer's, what did that really change in my life. Right. I need to know why. And I need to know what to do about it. Right.

That's really what the patient needs. And that's what we brought things to. And so your, just sort of patient will then get the test. I take it's a buckle swab or something like that.

It's just saliva and saliva to get it right. And then how much of their genome do you run? Is it, you have specific genes that you're looking at or you or.

It's not a, it's not a whole genome sequencing of. Oh, and here's the other thing. And just like yourself, how many people out there have had their whole genome sequenced to be completely underwhelmed? Yes.

Wow. Yeah. You given me my encyclopedia, but I don't know how to read this thing. It's in a different language, right? And other than pointing out a few genetic conditions, which I don't have, I would already know that I had them.

I didn't really do much more in the future. Maybe. Yeah, something might come out of that. So what we say is data is dumb unless you know what question to ask it.

That is just a pile of information. Yep. Right. And the this is another gap. It's and it's kind of like a dirty secret. I would say that the genetic industry where you wonder why is there so many concerns about data privacy and data being sold, etc..

Because to be straightforward, the DNA testing business is not a good business because I only need to test you once. Your DNA doesn't change. That's right. Right.

You're not. It's not like bloodwork. Ready to come back to me every six months or a year. So the model, it started off great. And then the 23 minutes of the world, you know, those types of people that you mentioned, their investors started to say, well, what else are you going to do?

You sold this guy a test. Let's go down then what? Right.

Building Personalized Reports and Coaching

They said, okay, well, what we can do that's reoccurring is we can sell data, but in order to sell data, that means your product is not designed for the person that's buying it.

As a how do I get my reports is designed for the buyer of the data. You have to collect what they need, because they're paying you a lot more money than what the test buyers figure, right? Right.

So that's what ended up happening where you have these lots gather as much information as possible. And then I and analysts and journalists will come through to find that needle in the haystack.

They may lead to some kind of therapeutic. And this is why I think it was 2018 or 1923, and we raised $300 million from Glaxo GSK well, you wonder why they're the ones that get them $300 million, right?

Because there's an endless pool of data to come out of it. So what we said is that we know of the 22,000 genes in your body, most of them we're not going to take action on.

In fact, we only cover about 100 of the 22,000. Right. And we test for about 600 because we believe there's others that are going to eventually be actionable.

But today to day, the report you get back gives you information on about 100 of them. And those 100 are in these systems hormones, which is so impactful.

Detox methylation mood and behavior and some other various snips for diet, nutrition, cardiovascular system here and there, things that we think are important.

So there's about 100 genes we look at from there. I would I would literally, as a cliche would say moneyback guarantee if we didn't give you more information that you got from a whole genome sequence.

Right? Okay. Because we operated better by focusing on what actually matters and drawing more insights out of the important stuff. We give you hundreds of pages of information that's actually that's actionable, that's insightful, as opposed to here's your encyclopedia that you need to now go hire scientists to comb through that.

Maybe it might tell you something. So when you're when you're the of the 100 genes, you're looking at, and are they in genes where there is a high percentage of variation, in the population, like the HFR gene, where there's, you know, 30% has this and 2% has that, or I mean, you're not really looking at looking for rare genetic mutations.

You're looking for ones that are more common, but when in combination with other ones. And so you'll put them together, you'll say, all right, you have x, y and z.

And this combination means this. That's different from something that says that you just you have this snip. Here are the papers that show what it's associated with.

A good reason to have a good time. You're giving a more, because, I mean, the hundreds of pages of stuff to read about is great, but frankly, nobody's gonna read those.

That's it's really they're going to want to read what is telling them, what I need to do, how strong the evidence is behind it. Clinicians are going to want that as well.

I'm sitting here thinking, I want to order this test now, and I'm really curious to see what it says, about me and these six areas that you mentioned.

Is there interaction between the genes and the one area two versus area six that you also look at? Because there's probably companies out there that do that measure the snips in each one of these areas. Right.

You'd have to put them together perhaps to do it. Just as I was. I mean, is there a single dashboard page as well where it's sort of like this? There's there's your first question about rare conditions.

We don't do that. We believe that that's what the genetic industry is doing. Well, they're focused on it. They don't believe that genes mean anything more than that.

Let them do that. Right. We also believe that 90% of health care isn't that it's chronic disease. Right. So the outcome of what we provide is three things prevent chronic disease.

Or if you already have it, reverse it. Slow down aging because we understand why it happens and optimize performance. If you're healthy and you just want to know how to get the best version of yourself out there, we can do that for you, right?

So how is that reported back in terms of yeah, everything intersects. If anyone tells you that this gene means this, right. Without it correlating to other systems, they're only giving you 60 or 70% of the information because everything is affected by everything else.

And that's why our AI triggers 200 trillion data points. It's not just what does this mean? What does this mean? If you have this and if you have this, and if you have this, and if you don't have this, and if you don't have that because it changes.

Right? So in those reports it's designed where you can look up anxiety and you can understand what is your risk. And we'll tell you why. Why do we say that you're more on the inside because it's different for different people.

And now you know exactly what to do about it. As opposed to saying, I have anxiety, I had to take a pill. Let me give you an example. My niece. Right, she's now 14, just turned 14 last year at this exact same time, November of last year, she had an anxiety attack.

First time in her life, 13 years old. My mother, my mother, my sister and my niece lived together. So my mother called me saying, get over here. Your niece has an issue.

So she couldn't breathe. You know, I called my, pediatrician friend. He said, sounds like classic anxiety issues. Call me if I have anything happens again. Right?

Some time later, my mother called me. I was, unfortunately, on a call like this, so I didn't answer. And she was texting me, texting me, texting me. She said, come over now. Come over now.

Or my niece had another anxiety attack and she fell over and hurt herself. This time she couldn't get up. She hurt her leg pretty bad. So I called my pediatrician friend again.

I said, I don't know if she has a fracture or something. Can you help me? He said, I'll get you into this clinic in Canada. It's all public health care, so there's long wait times, right?

Right. So I went to this urgent care Walk-In type hospital, and we spent eight hours there. And the net result, there was scans, there was questions. The net result was, if it happens again, let us know the same question and answer.

I got the first time right. And by that time, I knew what it meant. It meant that if it happens again, we have to give our prescription for a break for an anxiety pill.

Right? That's what that meant, right? So that happened again. But what happened this time is my mom call me crying that your niece has left. I said, what do you mean left? She said, I see a note here and she's gone.

I said, that makes you the sweetest, most innocent girl. Wouldn't even. You would never even guess. There's no problems, you know. So my mom's in an apartment building.

So I get over there and my niece is outside the front door because that's how innocent she is. For her, running away is like I went outside by myself right.

So I went and picked her up, got her in the car. I said, let's go for a drive. What? What's going on? Me being bullied. Like what? What? Tell me. I just I don't care, there's no judgment here.

So she actually didn't know. She, I she said I just feel horrible. I just need to get out of there. And she was actually just, like, running away from herself, from being in that space.

And then I just kind of slapped myself. I it I have this girl's genetics and I did what any concerned parent would do call the doctor. How do I fix this? Right?

I said, I have her genetics, let me figure out what's going on. And I didn't do that. Then I realized, wait a second, my mom's been calling me like monthly.

So I looked at the text message and it was from the last one, and it was like clockwork a month prior. So I asked my mom, is this time with her menstrual cycle right?

She said, you know, have mentioned it. Yeah, yeah. She said, it's right before the cycle, like couple days before. I said, okay, that's interesting. So I look up her hormones, slim to none.

She like she's highly androgen dominate dominant very low hormone levels. And we know at the beginning of that menstrual cycle is when you're already very low.

And she's even ultra compounding that. Right. So but even then it happened in November. 2020. Why then? Because that was when, for the first time in her life, she didn't go outdoors for months, right?

Because she was being homeschooled because of Covid, right? Right. No vitamin D. So this thing was happening before this low hormone level. But because that key other hormone that we call a vitamin, vitamin D was also extremely low because she wasn't getting any was trickling in, exaggerated response.

Sure. And just like me, she has hardly any dopamine receptors. So she was experiencing it, you know, in her mood and behavior. Yeah. So I looked at this, I said, I in three minutes, we just figure this out.

And it's been three months of her having this issue. So I called my pediatrician friend and I said, what do you think about this?

Longevity, Telomeres, and Future Reports

He literally was speechless. He said, if you speak in terms of biochemistry, what you just explained to me is 100% on I said, why are you framing it as if I speak in terms of biochemistry?

Is it right or wrong? He said, my problem is we don't have this in our toolkit. He said. What you're saying to me theoretically, is 100% sounds accurate.

I just don't know what to do about it. So what did I do about it? I gave her a whack load of vitamin D, I gave her l-theanine to boost our dopamine levels, and I said to my mom, if it gets worse, we should probably put her on birth control pill as an emergency just to get the hormone balance.

The first month we didn't do that and she had no problems. The problem since then, it's been a year to like literally almost exactly year has not had the problem once since then.

Yeah, no. Otherwise you might have been consigned to Xanax for or God knows who knows how long and how many young girls complaining about mood issues, anxiety issues that get treated as a symptom.

They're complaining about the pain point that people, and this is true of most conditions. The pain isn't the problem. The pain is your body's screaming at you.

There's something wrong, but you need to dig into it. Hers was a hormone problem and a vitamin D problem and a dopamine problem. That combination led to this expression of collapse.

I'm beyond my threshold. Can't take it anymore. I have anxiety. That's very interesting. Sort of case by sister. I know it's your niece, but, so you also mentioned you mentioned that one of the areas is longevity and this is a telomere summit.

I'm kind of curious about, I guess some of the things you're looking for, longevity are the, detoxification enzymes and, glutathione levels, etc.. Have you considered or do you look at any of the, telomere, mutations that can take place?

There's, something called a telomere biology disorder, which is extreme 50% loss of telomerase activity. And that's, you know, a little less than 1% of the population, be less than a 10th of a percent, depending on how you define it.

And those people have, you know, the classic case is just keratosis, congenital, where you have the three things, the tongue and the, Hairy Luca play, etc..

Then they go on to have bone marrow failure and, pulmonary fibrosis if it's the first generation. But just as in most, things in genetics, there's other mutations within the telomerase enzyme that, causes a lesser level of telomere, telomerase activity.

There's, genes, like the Tert gene TRT, which, so if you considered or do you test, for any of those multiple mutations? I have my doctors. There's dozens of.

Yeah. So that's literally the next thing we're building is our longevity report. So the thing that I just said, where we don't do what the genetic industry does, which is this gene, means just this means that the one area, the literally the one area where we think that's important is longevity, right?

Right. That otherwise it's all about genetic condition. So we have literally right now so first of all, the way our platform works. You asked about dashboard.

It keeps getting updated so people log into it. Six months later there's more information. Right. And the report gets better and better and better and lives with you forever.

So we're now doing that next stage of what do we do better. And there's two things we're working on female hormone health because we just find that there's so many women that are underserved.

And second is longevity. So we launched the Longevity Report. It's live now. The telomere science is now being added to it. What now exists in it. The first snip that we added was around a gene called Fox three.

And what that is your longevity, literally your longevity gene. Right. How well do you deal with, you know, getting rid of mutated proteins and stem cell production and all these types of things.

So literally, your ability to have a long, healthy life. So in that journey, we started working on the telomere stuff. Right? So I would say to anyone listening that that report you get today as it keeps getting updated, that you'll be one of the first people to see that new round.

So the longevity report is live today with the Fox three. And we've reinterpreted the brain in terms of how to optimize for longevity. We've been reinterpreted by nutrition, things like insulin response, etc.

bone health, skin health, hair health, all these things are what drives them. And the next thing we're adding is that you love your stuff. Do that. And the other stuff would be, the difference.

So the difference between that's why I brought up the telomere biology disorders. That is what geneticists do. Well, they test for that, that mutation that causes a high penetrance and significant disease and is usually relatively rare.

However, that's in, you know, there's specific single mutations that take place within telomerase or within the sheltering complex, which binds the whole telomere complex together.

But, you know, there's a large variation inheritance in inheritance in telomere length. It's sort of the most important part, 70% heritable. And that's outside of telomere biology disorders.

So, it's probably not part of it's almost assuredly polygenic. And so looking at, you know, this is perfect for a company like you looking at, a sort of a telomere mutation score or short telomere risk score or even a long telomere risk score.

But some people say that, you know, super long telomeres can be associated with increased risk of certain cancers. I think that's debatable, but that's another.

Another for another time. But I would love to see a company like you take ten of the most highly, published mutations and see if, then we'd have to do 200 testing as well.

Just to see you know, what is it socially with cardiovascular disease? We know that short telomere length is highly associated with cardiovascular disease.

You know, more of a risk factor than, cholesterol. And, and hypertension, or at least on par with them, because that way we would be able to predict, you know, who might two probably should should get a killer like test to see whether they actually have short telomeres.

And if they do, there's a lot of things you want to do differently. If you have really short telomeres. You definitely don't want to smoke. Yeah. You don't want to do that. Any of it. You really don't want to smoke.

So so that would be in addition to Foxo three, which I think is a great one, would be an interesting one. That whole area would be great for a company like yours.

And, be interesting to see what you do with that. That the longevity is available is, is is, you so you're gonna look at the 7000 you previously, previously had and all the phenotypes that they have, and then kind of put together a longevity report based on that.

The same. Yeah, the same sort of operate the way we operate in terms of what we've done today, we're now applying to longevity. And why. Because the demand that's what people are asking for.

How do I slow down aging. And that's one of the people you're asking for. That is oh yeah. So we've yeah. So we've done that. And now it's yeah.

Closing Thoughts and How to Access the DNA Company

So we're gonna take our same functional approach and basically what you just describe it and apply it to this area where it hasn't been applied to yet.

So it's just going to the net result. It's going to be a lot more actionable. Well that's great. Well I mean, it sounds like, you know, you've been doing amazing work in the last five years.

And since I guess we or so, spoke, for the first time. And, is there any parting thoughts you'd like to leave for the listeners about, you know, maybe.

Are you told what your next steps are, or maybe just even just tell them, you know, how you can get what your website is. It's working. Well, I have firstly, anyone that's here today are already taking that first great step because how many people actually even think that they can manage their own health?

Right? Taken for granted that 50% of Americans have a chronic condition by the age of 50, by the age of 60, you have to that just like the American dream.

It's supposed to happen, but you know, it doesn't have to happen specifically for chronic conditions. You can

manage, mitigate, reverse, prevent, do all those things if you understood why they happen.

And listening in on something like this today, first of all, is a first real big step, you know, making it a priority. But use all the tools available to you do not take for granted that somebody is going to take care of you.

You know, the technology, first of all, so accessible now, not only what we do, but what you do with all the testing, with there's so much you can be doing, there's no real excuse.

So other than I didn't do it right. So, you know, it's just about what choices do I need to make? How do I personalize them? Yes, DNA can guide you there.

There's other things that will also guide you. In terms of the product, I know our team, put together something, so that people can dive a little deeper.

I know there are some questions in terms of, hey, I want to buy the DNA test, but I actually want to know a lot more than just the DNA test. So, on our website, the DNA company.com, that's our website, the DNA company.com.

I think right there you can go register, that if you were part of the television summit that there's a event you can attend, right? So they can learn a lot more.

And just go register there. You can learn or you can just go straight to the website and buy a test and learn for yourself. The nature of who's listening here today, we're going to have our coaches ready if you want to get into coaching, to learn more and dive deeper, because I understand again the nature of who's here.

You want to sort of take charge of their health. So we've we've made that available to our coaches, have been trained in longevity so they can help with that.

But really that's in a nutshell. You can go to the website, grab a test and learn, sign up, set yourself up for the, webinar and learn more. Or just contact us if there's any questions you have.

We're here. Well that's great. It's been really wonderful talking to you. Fascinating discussion, and I look forward to checking your test out myself, in the very near future.

And I hope we get to speak again at a, another conference or, what's, what's it to you in? We're in Toronto. You're in Toronto? Yeah. I used to go to Toronto a fair amount.

When I had, I saw the licensee up there, and I used to know some hockey players up there, too, actually. So, I'll wait till the spring, though. How how's that play?

Could you be. Well, I should thank you again. Very good. Talk to. Yeah.