How Genes Affect Mold Detoxification

Dr. Eric Gordon, M.D. interviewing
Kashif Khan

Eric D. Gordon, M.D.
Welcome. Good afternoon and glad to have you all with us again, for another edition of Mycotoxins and Chronic Illness 2.0. Today it's my pleasure to have Kashif Khan who is CEO of the DNA Company. And he's gonna talk to us about how to use the information we can glean from looking at our DNA to help make a more, I'd say, stepwise and appropriate response to chronic illness. So just welcome Kashif and so tell me first off is just, you told me that when we were talking that you're not a doctor or not a scientist, but this is your passion. So how did you wind up here?

Kashif Khan
Yeah, so I mean like most, first of all, thanks for having me. It's a pleasure to be here, like most sort of functional medicine type stories. You often hear that the people, that purvey sort of the best solutions started by healing themselves. And that's how you get there because you have to be failed by something to look for something else. That's often where it starts. And I was no different, , I ran a marketing company where I help startup companies grow. I'm in Toronto, Ontario, and Canada. And we have a lot of business happening here. And so I was thriving in my business, but I was sick as hell, like really bad shape. My business partner would've to drive me home. Cause I'd have debilitating migraines. I couldn't function. I had eczema to the point

where I couldn't open my left eye. Like it was literally a sealed shut. My psoriasis was so bad that when I would like bend my hands, I'd be bleeding from my knuckles. And there was more depression, lots of stuff. And it all just kept stacking and stacking. And you treat it as you're told that there's a cream for this, a pill for this, a doctor for this, and they're all separate. And it felt like all I was doing was maintaining a plateau, of the threshold of pain that I could tolerate for each one. And that was the check mark of success. I now have these things. That's my identity. You are an eczema patient. You have psoriasis, you have it. So I started to wonder like, why now? I'm 42 now, by the way, I don't have any of these problems. Now I've been healthy for years. I don't even get sick really anymore. Why did it all happen at the same time when I was in my late thirties? And what I learned was somebody said, maybe it's genetic. I said, what does that mean? Maybe it's genetic. So I took a DNA test and it was completely underwhelming and failed me. It's just, 80% chance of Alzheimer's 30% chance of prostate cancer. What is that really telling me? Aren't you also telling me that I have a 20% chance of not getting Alzheimer's. So what's the difference? You're taking the most personal thing I have and really not mining it for me properly.

So I thought there's gotta be a better answer here. So I looked and I looked and I looked and I found the scientists that were interpreting genomics functionally, the same way that functional medicine doctors are not asking what condition you have, but why do you have it. The root cause. And if we resolve that, all the symptoms go away, all these spoke that point to the central hub. So I did that for myself. I healed myself by understanding genomically, what I was lacking and the most important part, why my environment, nutrition and lifestyle choices were not for me. And I'll end with that in terms of answering your question. My business partner used to drive me home. Didn't have the migraines, didn't have the eczema, didn't have all these problems in the basement of our building. There was a manufacturing company that was pumping toxins into the airstream. So month after month after breathing that in, I ended up with all these problems. Why? Because I was missing key detox things, forget about what version I didn't even have them. My business partner was doing well there genetically. So there's one thing to understand genetically where you're at. It's a whole other thing to now put that in the right or wrong context, which will change your result. And that's why I discovered I walked away from my business. I

literally handed the keys to my business partner. I said, I got something I gotta work on. And I haven't looked back since we built a team of amazing scientists and clinicians, and we help people over the world though.

Eric D. Gordon, M.D.
That is amazing. I love the success and but the tenacity to do the work, because it's very frustrating when your life starts becoming more and more disrupted and you're just not getting answers, but you're right. I think I learned over the years, I would say at least half of the new of the new therapies and new ways of thinking that I learn are from my patients because they work hard at uncovering what the medical literature hides.

Kashif Khan
And your knowledge is limited by the amount of time you can research and you can't possibly know everything. All you'd be doing is studying. And the person that has a problem is gonna specifically look for the solution for that. And they're gonna drill in deep into that world. And they're gonna come back with nuances that you don't get at the generalized level. That's where healing is found.

Eric D. Gordon, M.D.
Yeah, that's what and that's a lesson for, I think every person listening to this is that, bring what you learn to your doctor. And if your doctor doesn't wanna hear it, find another one because you're not gonna get well, if nobody try with, to try to work with you. But so getting back to your story, I mean, 'cause you just laid it open. Okay. So you were being exposed to toxins, And, and like I tell people we're talking about mycotoxins, but the reality is when we're talking about chronic illness, It's like just whatever stressing your system, chronic illness is about your individualized response to the environment. It's not about the thing that caused it. And so tell us more, like when you were, what was the, what were the first things that you found, that changed your life a bit.

Kashif Khan
Well, firstly, when it came to what I discovered genetically, the way we even looked at the genome was different than it was being looked at. So how was at that time and we've talked about this, which is that, what does this gene mean? What does this gene mean? What does this gene mean? And research is structured that way because that's the way science is dealt. Like let's define each thing and maybe this will turn this switch on or off, and this will turn this switch on or off, but all you're ever gonna resolve, there is genetic conditions, meaning that you are born with it. You are born with a certain version of this gene, which directly correlates and equal to the problem. Now, if I can figure out a therapeutic to turn that off, the problem goes away, but you're not born with diabetes and cholesterol problems and breast cancer and fibromyalgia, and toxin inability to deal with your environment. These things happen over time. 'cause it takes that many years, decades often to do the wrong thing for so long to get sick. Diseases are rooted in inflammation.

We already, whether you talk to a naturopath or an ophthalmologist, everybody agrees that disease is rooted in inflammation. What we don't ask is what is inflammation rooted in? Why am I inflamed to begin with? You have inflammation, your cellularly weak here. You're gonna get that disease. Why did get inflamed? Because what we're designed to do genetically, and I'll use myself an example to answer your question. We are not doing that. We're in the wrong context. Our food, our environment in a big wage is which is probably the silent killer that we don't see or experience. And then our lifestyle, the way we exercise, the way we sleep, the way we move, everything about how we live. So taking that as an example, glutathionylation, I mean, sure, everyone here listening is somewhat familiar with glutathione on that process of-

Eric D. Gordon, M.D.
I don't think so.

Kashif Khan
Yeah. Let's bind onto a toxin, send it to deliver, metabolize it, you drink some alcohol, you need to get rid of it. So your body does a good job of doing that. But what does good mean. Good means that we all do it, but to what degree? There's certain genes for which it's not just about a snip, a snip is that spelling mistake in a gene, which is you're looking for that variant. And if you have a certain version, it does this instead of that, or it doesn't do it so well you tune the dial down a little bit. What if you don't even have the gene? Like forget about this snip or the spelling mistake, it's possible for a page to be torn out of your human instruction manual, completely missing. So you don't do that function. That's called a copy number variation, which most genetic testing companies don't test for. Cause it's expensive. You have to run a whole other test. There's something in between called an insertion or deletion, which is a paragraph is missing. So now if that snip, that spelling mistake is so important that the genetic test you're paying for will tell you your list of snips.

How much more important is it to know that a whole paragraph is missing or you have a extra paragraph. Duplicating the instruction or a page is torn out or you have an extra page duplicating the instruction. And that that's an instruction. What are genes? They tell yourselves what to do. They are instructions. If you're either missing or have a duplicate version of the instruction what's going on with biochemistry, that's being instructed by these genes or not being instructed 'cause you don't have them. That's what I found in myself that the key glutathione genes, I didn't even have forget about what version I didn't have them. So this is exactly why me sitting at my desk right next to my business partner, breathing in the same toxic load. I had to be driven home with migraines. So I couldn't function. He kept going and is still in that office today with no problem. The differences are what we were wired for, our capacity, then matched to our environment, which was either matched or mismatched, our ability to cope. You could either change the input, get rid of the problem or increase capacity by supplementing in diet, which are all things we can talk about.

Eric D. Gordon, M.D.
No, I think that's the two things I'd really like to emphasize, is that one, the idea of the one gene, one disease mentality. That applies to, I think there's what maybe three or 400 diseases, but most of them that are, that have one gene, one disease. But most of those kill you before your are 10. There's only a handful something like some of the genetic Huntingtons, and stuff like that, that show up as we age, all the diseases that we suffer with as we age are multiple, multiple, multiple genes interacting with the environment. And so that's where, I think what we're gonna talk about is why software and AI becomes so important to under to understand this.

Kashif Khan
And that what you just said is the key is the interpretation. You can have as much data as you want. In fact, we were talking earlier about Dave Asper. He's one of our investors, a founder of Bulletproof Coffee, well known guy in the biohacking space. So he had run a $50,000 full genome sequence. They ran all of his 22,000 genes. He found Germany, met with some clinician, spent a lot of money on it. Then he did our test for a few hundred dollars. He said he learned more in one hour from this than he did from the full genome sequence, why? 'Cause data's dumb. Unless a question to ask it's just information. You need to interpret it. That interpretation is the key. Without interpretation you're just telling you have this version of this gene and this version of that gene, what is that? What's wrong? How do I fix it? That's what I need to know. So what we did is what we believe the gap was when like myself, you get a genetic result that tells you, Hey, you got an 80% chance Alzheimer's you should be asking, how did the 20% not get it? What were they doing? We have a disease based healthcare system. That's all about masking and treating stuff, waiting to get sick and treating it. So even our research has done that way. Even our genetic reports are provided that way. You have 80% chance of this 60% chance this you've got the BRCA gene, go get a mastectomy and cut your breasts off.

Eric D. Gordon, M.D.
Oh God. Yeah.

Kashif Khan
So when that's even what the BRCA gene does, we can get into that also. So then we did that. We studied the 20%. We said that of the 20% that didn't get sick. And by the way, we studied 7,000 people over three years. It's the largest study of it's sky in the world where we sat clinically in front of people like this with their medical history and their genome in hand and understood what were their habits, the epigenetics. What were they eating? What were they surrounded by? How often did they golf and breathe in toxic pesticides in the golf course, what kind of hair dye did they use? Like literally every detailed nuance to understand why did you not get sick? Why are you in the 20% with the exact same genetics, that point to an 80% risk.

Eric D. Gordon, M.D.
Wow.

Kashif Khan
Product disease, meaning you weren't born with it, but you're gonna cause it from your choices. Then we were able to then extract, put into the AI, the Artificial Intelligence platform, here's the various genetic profiles. And here's what this person should be doing. Here's what this person should not be doing. And by the way, if they do this, they're getting sick. If they already are sick, here's the things they can do to reverse that condition. Because we're talking about the root cause. That's what should have been done from the beginning. Healthcare research studied the healthy and teach those habits to the sick and that everybody can sort of find that middle. So that's the work we did, which was kind of a completely different direction.

Eric D. Gordon, M.D.
Yeah, no, no, that, that is the direction that we are. We're striving, but like you said it, and I like the National Institute of Health Budget it's all focus on pathology. What's broken and it looks down into the individual silos of individual diseases and doesn't look at what, how they're connected.

Kashif Khan
For sure.

Eric D. Gordon, M.D.
What's happening and what you're doing is just, , I said, but it's a lot more work.

Kashif Khan
It's yeah. It's work and the challenge in the beginning was exactly that, that we couldn't scale this out to like a clinician like you or anybody else that didn't learn what we learned. So what we realized we needed was not to think like a genetic company. We had to think like a technology company, we had to build the AI to do the thinking, to make it easy so that when somebody get report it, doesn't say you have this version of this gene, this it says anxiety, low, medium, high risk, by the way, here's why here's the genes that inform it. But you don't need to know what you need to know is your risk and what to do about it. That's what people really need to know. What's am I what's like the thing that I might get affected by and what can I do today to make sure it doesn't happen.

Eric D. Gordon, M.D.
It should be as simple as that. And, and what's nice is that what you're talking about in do are the environmental and nutritional and responses to life that if you're wrong, aren't gonna generally cause you much damage because they're usually in a positive sense.

Kashif Khan
Yeah. For sure.

Eric D. Gordon, M.D.
Not to take a pharmaceutical that may or may not be right for you and may hurt you in the long run.

Kashif Khan
And that that's maybe the perfect example to sort of put some color to this. I'll give you an example of like one of our actual patients and how this applies clinically. So there's certain genes that are commonly known to be cardiovascular genes that will tell you, you have an elevated risk of cardiovascular disease. Which typically isn't in the heart, it's usually in the arteries around the heart. That's usually where disease happens. So there's plenty of genes you can look at that will tell you high risk, 60, 70, 80%, but still don't tell you why or what to do about it. All they did was study people that were sick and said, here's the genes that were off. So there must be something going on there. So what's actually going on, like I said, heart disease, typically isn't in the heart and this is highly related to toxin. This is why I bring it up. We can determine genetically what quality of hardware you have. Meaning if heart disease happens in the arteries, then let's figure out you have good arteries or bad arteries that are more or less prone to inflammation. We can actually determine that the inner lining, which is called the endothelial, that inner lining of the, the vest vessel, there's different qualities.

There's stainless steel, where, you can be smoking, drinking, doing whatever you want and doesn't get inflammed. And there's all the way down to paper thin where any little inflammatory insoles gonna cause you a problem. And there's something in the middle. Most of us, by the way, are middle or worse. There's very few people that have the hear the strong, resilient stuff. Very few. So take part that aside, say, you're in the bad buckets. You weren't born sick. Take that person with that bad bucket. They still were born healthy and could potentially remain to be until they die. Something has to happen. So now some people with that bad hardware also like myself are missing key detox genes. So what they're exposed to, again, whether they're golfing and breathing things in, whether they're in under construction, epoxy, or chemicals, or they're having the wrong coffee beans with toxins on it, whatever that inflammatory insoles is starts to free flow in the blood. They aren't able to clear it because their detox pathways aren't the best like myself. And it starts to cause that inflammatory those abrasions, that inflammation here to this weak cellular structure. What's meant to happen is your methylation system, your anti-inflammatory army,

as supposed to deal with that and reduce the well, what if you're also not doing well there? And it's not just one gene, it's not just the MTHFR that we're talking about. There's a whole cascade, there's six or seven genes that go through this methylation process. And if you're not doing well there in the entire process, not one or two genes that inflammation becomes exaggerated, Your body can't fight it. Still at that point, you're not sick, right? You're what you are, is inflamed. The body's response to inflammation here. It will actually deploy cholesterol as a hormone. To reduce the inflammation. When cholesterol meets that toxicity, that cause the inflammation in the first place, it hardens and deposits and it can't move. Some people genetically. We can also determine with the APOE gene, their ability to transport, lipids and cholesterol. So if you're also not doing well there, this again gets exaggerated even more because you can't transport as well. That's the beginnings of cholesterolemia. And it isn't until that happens, that biochemically in the blood you measure, there's some number that's off your cholesterol numbers are high that you start to take a pill. And the purpose of the pill is to reduce the cholesterol numbers when the disease is actually endothelial inflammation. And this course is your environmental inputs. You've been making wrong choices. And we have to-

Eric D. Gordon, M.D.
Absolutely preventable.

Kashif Khan
Yeah.

Eric D. Gordon, M.D.
And we have to remember that cholesterol is also one of our better antioxidants. And so it's going up, it's anti, it's going up because there's a problem, and knocking it down, again in certain circumstances is helpful, but it's not dealing with the issue with the original problem.

Kashif Khan
Exactly.

Eric D. Gordon, M.D.
So like, yeah, no. So that's beautiful. So what you guys have done is, is I say, you really you've had to think out the process.

Kashif Khan
Yes.

Eric D. Gordon, M.D.
Yeah.

Kashif Khan
We already know biochemistry what the body does, the biochemistry and genetics didn't speak to each other. That's what was missing. Genetics was this gene does this, this gene does that, but that's not the way the body works. It's not 22,000 independent genes. It's systems that are already defined and already known. We just needed to reverse engineer what genes instruct each step of each system. And now you can be very certain about things, but you need to interpret the way the body actually works. That's, that's kind of what we did.

Eric D. Gordon, M.D.
'Cause we have to remember is that just having the gene by itself is not usually a problem because if this gene is in 20, well, if it's in 30 or 40% of people, it's been well compensated for there's other genes that will compensate, but it's still not working a 100% in the wrong environment.

Kashif Khan
Yes, yeah.

Eric D. Gordon, M.D.
And that's that's okay. And you folks are always working on figuring out, like I said, looking more at the clinical data and trying to-

Kashif Khan
So there's a few inputs. There's first of all, what's being published ? Like what are the new scientific findings . Which are usually gene siloed. So they're not ready to, for the public to use them. Something new has been learned about a gene or disease. So we take that, then we plug it into our existing ecosystem of insights to say, we think of things, functionally, where does this fit? And I'll give you an example. So methylation the MTHFR gene, which everybody talks about that there's MTR, MTRR, foot two there's a bunch of genes that make up your methylation system and you need to understand them all. 'cause you can go to a doctor who says you have the best MTHFR. You're doing good. Well, what if the supporting characters aren't doing good? Then the, the system is failing. So a new publication is now saying that comped the enzyme that's known to clear hormones and neurochemicals, brain chemicals-

Eric D. Gordon, M.D.
Catecholamine I name it because people, a lot of our listeners will understand it. This is catecholamine or methyltransferase so it's one of those methylation genes that people don't think about as a methyl.

Kashif Khan
Nobody thinks of it because it's not part of that methylation map. 'Cause it's the next step. Once you've provided the methyl donors and methel groups and all that's done, then Comcast to come along like the broom and sweep things away. And we don't think about if you, you have the slow or the fast comp, how differently the outcome could be for that methylation process.

Eric D. Gordon, M.D.
And so how much it can affect your mood.

Kashif Khan
Exactly, yeah. It can affect the neurochemicals in your brain for the most part are cleared by comped. So take me and I'll, I'll use myself as the guinea pig again. So

dopamine is your pleasure and reward seeking chemical. It allows you to enjoy that tasty pizza or feel good at work when you did something good. So the process is you have to bind dopamine there's receptors in your brain. Then once you're done MAO, there's a gene that comes and breaks the dopamine down to get it ready to clear and then comp that same enzyme gets rid of the broken metabolite. So I have the DRD2 gene, the least density of dopamine receptors. So I feel it way down here. I also have the fastest MAO and the fastest comp. So I last that long. So I am wired for depression, addiction or achievement, which one depends on the context I'm in. If I'm not doing anything I'm not enjoying and I'm not trying, I'm gonna be depressed. If I'm feeding the pleasure route, I'm gonna be addicted.

If I'm entrepreneurial, which thank God, that's the root I went down unintentionally. Then I'm gonna be reward seeking and I'm gonna achieve, I'm gonna take stupid risk, like handing the keys in my marketing company over to my business partner and said, I found what I need to work on. So that's the type of thing that my wiring will lead me to. But again, just to your point, gene single sort of gene factoids don't mean much 'cause comp doesn't only is not only a methylation gene. It's also clearing neurochemicals. It's also clearing hormones for women that have toxic estrogen problems that compound what you're suffering from the toxins that you're bringing in. But it's the same inflammatory load. Now coming from two fronts. If you have a slow comp you're not clearing those toxic estrogens fast enough. So it's, it's multi sort of it, it shows up in so many different places. That's why, again, you have to understand the biochemistry first. How does the body work then know what genes point to each step of the process. And you can be so much more certain about things.

Eric D. Gordon, M.D.
And that you brought up so many important points. And one, I just wanna emphasize is the, remember that the there's very few chemicals in the body that do one thing. I mean, B12 is one of the few major things that only has like, I think two major functions, but most, every other chemical that we measure is in multiple of reactions and the same thing with the genes, they affect many different pathways. And so that's, that's the beauty of the work that you're doing is when you take into

the clinical outcomes, you can make up for the, for our ignorance, because sometimes we start off thinking we know what something does. And only when you look at what it's really happening in the population, you go, oh, There's more to this.

Kashif Khan
Whenever you get to an that's leading you to probability, like 80% of people have ABC, you're not finished yet. Because the body is much more sophisticated than that. We can be very precise.

Eric D. Gordon, M.D.
One quick digresion I just wanna remind people is that one of the reasons that we don't have evidence based medicine for a lot of the things that we do for people who are chronically ill is because most of the people who are really truly chronically ill with their own set of symptoms are in the a few percent of the population. And when you're doing a trial on a medicine, on a supplement or on anything, you're looking for a 70, 60, 70, you love 80% response. Okay. And the people who are chronically ill, often the people who get the 10, who are the 10% of the people who actually responded to something and that gets thrown away as garbage information. And it's the same for the beauty of what you're doing with the genetics is making sure that those 20% aren't forgotten about, that you're diving down and going what's happening with these people? These, we think we have to learn from.

Kashif Khan
The funny thing is that that evidence based model was developed down the street from us at McMaster University, like just in Hamilton was just outside of Toronto. So that's where literally he was built and the original intention was around safety and efficacy. And the safety part, we agree with like, don't put chemicals into somebody's body. That's not safe. The trouble is that it went down the wrong path and that the efficacy piece that's, you can't take people that are individual and then average it out. This trial and error and you have to do, what's called N of one. What works for you? What works for you and what works for you? And they're not the same, the challenge. There is in order to scale things, else that it works for everybody, the belief is I have to come up with one product. That's the most efficacious. So maybe it's not

gonna work on three outta 10 people, but at least I help seven, but it's not as complex as I need a million different. It's more like, for example, in female hormones, we unintentionally realize that there's only six profiles. Women always fit into one of six buckets just genetically. We didn't start off that way. We started with hundreds of women that we were studying. And then all of a sudden they always fit into 1 or 6, but now first of all, the middle two don't need anything. They're optimal. The outside two both need a different dosage of the same thing. So the outside two on this side are more estrogen dominant and these ones are more androgen dominant. So they kind of need the same thing. And just more dose, the more extreme you are. So now we've gone from one product, one size fits all, which is failing 30 or 40% of people to six profiles that really only need two products. So we can solve 100% of problems with two products. That's true for most genetic systems.

Eric D. Gordon, M.D.
That's beautiful work. No, cause really, cause we, I mean, off times when you listen to your patients, you wind up doing what I call pin the tail and the donkey, , try that. Oops. That didn't make me feel good. Okay. We'll try the other thing. Yeah. Let estrogen, no, that didn't work and well try more progesterone and more androgen, I mean it's because the levels don't always tell you what to do. The genetics.

Kashif Khan
The combination of two is great. 'cause the levels will tell you where you're at. And if something is off, the genetics will answer why. You now know where to focus. And there's certain men who we're in Toronto, which is the hub of hockey training for the NHL. So we have all the best trainers here. Everybody flies here and on the off season to train and I can't tell you how many trainers have come to us saying that this guy doesn't recover. He's got testosterone issues and we've tried everything and it just doesn't work. So what does try everything mean? We've seen you men, NHL players that come to us with gynaecomastia man boobs. Because the guys testosterone levels are low. So intuitively what do you think? Give them some testosterone. So they put on an androgen gel pack. It's like a thing you put on your stomach where it absorbs through your skin, androgens testosterone, but in your genetic cascade. What if you're converting all the testosterone into estrogen?

Eric D. Gordon, M.D.
Yep.

Kashif Khan
The more testosterone I give you, it's just gonna make more estrogen. There's no way to, that becomes more testosterone. What you actually knew need to do is block the conversion. So again, that comes back to the test will tell you in time what's wrong, this person doesn't have enough testosterone how to fix it or why is the genetics? Here's where the guy is failing in biochemistry. So intervene at this location. Not at this location.

Eric D. Gordon, M.D.
This is beautiful work. I mean 'cause I mean it's just so good to hear that you're that you're spending what excites me is that there are other companies out there that are looking at lots of studies. Improving things, but you're doing the next step. You're looking at people.

Kashif Khan
Yes.

Eric D. Gordon, M.D.
And the dirty, what, nobody likes the dirty information, what I mean? Like it it's because it's not clean, it's not, yes or no. It's like, you've got a group of people and some of 'em respond a lot. Some of 'em respond a little and that's beautiful that you've spent the time and money to, to get the AI to actually be useful. 'Cause too much of the time you, it's, I've been, what can I say? I've been a doctor for a long time and I remember when everything was gonna be a virus, this was back in the 70s and 80s, everything was gonna be a virus. Okay. And then 2000 came and everything was gonna be a gene, and all these things, each one has information, but nothing has all of it. And, but the, and even now, so many people are trying data mining and this and that. But unless you really spend the time and do the, the careful clinical evaluations, the data mining is garbage.

Kashif Khan
Yeah that's right.

Eric D. Gordon, M.D.
And that's just really, I'm sorry, I'm going off into things that excite me, because this is the work, as an individual physician, you only, you have your experience and that's colored and you forget. And it's just good to have people who are actually, putting this into systems because that's when we can really share, information and-

Kashif Khan
Yeah that's when you can apply it, it becomes easy to use. First of all, because it's very challenging to be a practicing physician trying to incorporate genetics, 'cause you're already so busy. You already only have 30 seconds to read the chart before you walk in room. And now I have to go interpret a 300 page genetic report before I see this patient. How do you do that? So and they expect you to know it inside out.

Eric D. Gordon, M.D.
And you well, and of course can't because the issue with genetics is that first of all, nothing has a name that really means what it's supposed to mean. I should say a few of them do at least COMT kind of tells me what it does, but most of the genes are a gobly book and so they don't really, you have to do levels of reading to get any information about it. That that's what people have to understand. This is not a straightforward, read a paragraph and know what's going on.

Kashif Khan
Yep and that a big part of the work we did. Was we before launching anything actually last year. So from January, till June of last year, I probably spent time with about, I'd say 80 to 90 different physicians to ask them, why does genetics not work? What's the problem. And most of it had to do with it being not easy to use. That was the majority of it. And a big part of it. So they didn't really know what the solution was, but they told us all the problems. And so what we believe the solution is, and what we've done now is two things. First of all, the consume or the patient and the

clinician don't need the same thing. They need very different things. The consumer is saying, give me everything. I've just given you my DNA. You go mine it and tell me everything you can find. And make it easy for me to understand. The clinician is saying, I just need to know the red flag so I can fix them.

Eric D. Gordon, M.D.
Exactly.

Kashif Khan
That's what, and I need to know what to recommend because if you're uniquely telling me what's wrong, meaning that you're looking at this condition from a unique perspective, then your solution's also gonna be unique. It's not the symptom masking solution. So that's what we did. We built two separate reports. The consumer gets a more digital experience where they can drill through things and read and learn. And the clinician gets a very dry report, but straight to the point, here's what's wrong. Here's what to recommend. Here's how you fix it. So that as you walk into the meeting, you're, it's right there in your hand. So that was one, the second big thing that we learned, and this is again from talking to people is we had to speak to the condition. People don't again, like you said, what does this gene mean? but does it's all gibberish very versus anxiety, addiction, procrastination. Here's the human behaviors. Here's what people resonate with. Where do I rank in that stuff? And now I start to understand how my brain works and I start to understand how do I even perceive the problems that we're being talking about. When I say it's seven, outta 10 is a release seven outta 10. when Dr. Gordon tells me something I actually comply, how do I deal with reward? So that level of insight, if I can just look up anxiety, as opposed to 12 genes that might equal anxiety and try to interpret just so much easier. So that's what the key thing we learned was it had to be easy to use and that's done by splitting it up and then speaking to the condition.

Eric D. Gordon, M.D.
That's beautiful. And so right now you you're like when you were, you were talking about you look at glutathione and methylation, but obviously you're looking how many, this is an expanding database, I'm assuming. You're constantly growing what

you're doing well like from when you're looking at inflammation, especially now in the times of post COVID, which I think is gonna turn out to be for most people, there's some clotting and a lot of it is just persistent inflammation, perhaps is a piece of the bug is still, a piece of the protein might still be there, but whatever, but it's persistent inflammation. And again, most people deal with that without a problem. But some people don't. So what are your how are you looking at inflammation? I should say is I guess, across how many pathways are you-

Kashif Khan
Yeah, okay. So we look at a few different things. We look at really three big ones and that's the glutathione pathway. Which extends into the UGTS, which are sort of supporting characters of glutathione then glutathionylation what it's called. And then methylation is number two, which is again, the phase two, once you're done with the detox, then we look at antioxidation and we feel that one place where genetics fails is they combine detox in antioxidation when they should be looked at completely separately, 'cause one supports the other. And you're not necessarily doing the same in both. And that algorithm, that AI of how does, what does this look like? What is it equal? You have to think of it that way. So antioxidation, you could have the best detox and the best methylation, but still be under extreme oxidative stress because your mitochondria doesn't clear oxidation well.

That, so that may be supported by the GSTT genes, getting rid of the oxidation once it's in the blood, but you don't get into it. It's kind of like you have this fireplace with no chimney. So as you're taking an oxygen to create energy, you're creating oxidants and there's nowhere for it to go. It's just like piling up on the cell and creating this load. This is why you sometimes see, these marathon runners who are aging and they're, some of them look amazing and some of them are extremely haggardly and the skin's almost like leather and all wrinkled and their hair's all white because they've prematurely aged themselves. That high level of oxidative stress they put themselves through. They weren't genetically matched to that activity. So this is why we very purposely extract oxidation where it's normally combined. It's like sort of the same pool as a separate process entirely. So be more precise once again.

Eric D. Gordon, M.D.
That's so important because, being able to deal with oxidative forces, I don't like call it oxidative stress because it's an important part of your body's healing mechanism, to have a lot of oxidation, just being able to also be able to deal with it. This is the yin yang, the balance of the body. And you say, you're looking for the balance there. Are you prepared to deal with it? Because this is it's gonna happen. If you use your body, you're gonna have oxidative press. In fact that's what exercise is. But being able to handle it is critical. So and that's the beauty is that if you understand where the issue is, so are you able to break it down to a granular level, enough to be able to recommend individual supports for-

Kashif Khan
Yeah, for sure. Like we every report we issue has supplement recommendations in it. like here's what you need to plug your genetic holes and gaps. It's like you have this boat where the water's coming in, here's the specific cock size you need to plug that hole. So, and that's really what bad genetics is, is that you just don't do certain functions properly. So we know in some cases what supplements, up and down regulate genetic expression. So how do we take this slow gene and make it move faster, versus some things you need to simply support or mask the problem. And it depends on what problem we're talking about, but what we just talked about what oxidation yes for sure. You can make, so too, that a deoxidation gene just push it. You can push it harder with the right ingredients-

Eric D. Gordon, M.D.
Yes, but that's just- One of the problems of working in the same field for so long, Superoxide dismutase just to remind.

Kashif Khan
Exactly.

Eric D. Gordon, M.D.
Say the words.

Kashif Khan
Yeah so exactly. So that's what it is. And then we know that if you're not doing well, there there's certain ingredients where we're not trying to mask the symptom of your, or skin sagging and aging. We're saying, let's get that gene to work harder. So you're not having this root cause problem, which cellular health is the root of inflammation. If your cells are under stress and that's where inflammation starts, so let's, let's get right to the root. So yes in, we make sure that wherever we're saying something, we're also recommending something.

Eric D. Gordon, M.D.
Oh, good.

Kashif Khan
Yeah.

Eric D. Gordon, M.D.
Good, good, good. Cause that is so nice because there's so much information out there and this will help what I call the, the shopping bag visit. I have a lot of patients, they just accumulated so many supplements. Actually, besides some of them might not be helping and they're expensive. I just don't think taking that many jellos and capsules or whatever on what are the capsules made of a day is, is necessarily good for people, ? And it's nice to be able to help them, really hone, what they, what their body needs, because that's the problem you're taking 20 or 30 supplements a day. And maybe, seven of them are really important for you.

Kashif Khan
Yep. I agree and understand with the thinking that you can't possibly eat your way to proper supplementation anymore. 'Cause the food we get just isn't the food that we used to have. But I also understand and agree that our body was not designed to take in nutrition by scoops of supplements. Meaning that heavy extract, condensed dose of something, it's not the same as if you were to get it the natural way, The way you chew it, the way you, the enzyme activity, the way you swallow it, what, the way it's metabolized, all of that is different when it comes from food. But again, we are in

a place where it's hard to get it from food. So you have to be ultra careful there. And if you can ramp up what you're doing in your meal planning and sort of reduce supplementation, you might be better off.

Eric D. Gordon, M.D.
Absolutely, absolutely. Yeah. we forget how complex this system is. And every time we take a supplement, we might be feeding the wrong bug in the gut. And if we take food, we have a much better shot that we're feeding everybody. We got a neighborhood we have to feed. No, how would I say it's such a cultural, it's a cultural issue because, the idea that there's a technological fix for every problem suggests that there is this bullet, this magic bullet for each issue and life isn't like that. It's just not, I mean, again I always say our hospital medicine near death experiences, we know what we're doing, we got one to one we know, once you're out of the operating room, then it depends on body to heal and that we don't know, we don't understand very well. And what the work that you're doing is beginning to give us some of that wider view of what support your body needs for healing. And in, like you say, in an ideal world, we know, fresh air, so might sleep and a healthy diet, but the healthy diet even, and that's something I sort of a challenge for you guys for the future is looking at at the 'cause we come from such different parts of the world, ancestrally and I can't imagine that we've evolved to the point where the diet I'm eating today is the diet that my ancestors ate and that kept them going well.

Kashif Khan
We've done a lot of work on diet. And we started off thinking the way nutrigenomics type tests think, which is let's go through all the vegetables and fruits and everything and tell you which one you're supposed to eat. Then we realized the that's far too complex and nuanced, and it's really not even that accurate. So instead what we said is if we can just teach you the macros, what your body metabolizes, you're smart enough to go plan your meals from there. And what does that look like? We know with certainty, how you metabolize fats. So should you be on a keto diet or not? Very high level macro, but very impactful also. We know how you deal with the enzyme activity break to break down things like beans, chickpeas, lentils, or gloom. So should you be a vegan or not? There's some people that we say, great, go for it. But for most

people we say, it's a bad idea. It's actually gonna cause them inflammatory issues. We know how you deal with starches and your insulin response. So are you okay to be eating bowls of pasta or not? Most people are, low carb or thinking in that direction. But for some people it's actually a good thing. There's a one, a professional female athlete we deal with that. We identified her core root of her performance problems was that she cut out all carbs when she was actually designed to run off of carbs. Her body is designed to use carbs as fuel. She then she started to flourish. So that's sort of macronutrients and there's the micronutrients vitamin C, vitamin D, which is so important. The 22,000 genes in your body, 2000 require vitamin D to function. So 10% of your biochemistry is dependent on this one, micronutrient, which is acts as a hormone, not really a vitamin. But what we don't understand is, again, we have a biochemistry healthcare system that measures things in your blood and then tells you what's wrong. So looking at your vitamin D levels in your blood is 30% of the story. 'Cause genetically there's three steps. There's first yes. I need to get vitamin D from the blood and from the sun. Oh, sorry. From the sun and from food and put it into my blood where it's stored. Then I need to transport it to the cell where it's actually used. That's an entirely separate gene and separate process. So I could have great amounts of in my blood.

But if I don't transport it to the cell, I'm not getting enough. Once it gets the cell, I have to bind it. That's a third genetic process. And if I have the slow binder, then again, I'm not getting enough. So where do you see this people that are more equatorial, Mediterranean climate, where their ancestors spent a lot of time in the sun. And so they were getting enough, they do a job putting in the blood, but they mitigated the usage of it. 'Cause there was too much. So they were slowed, they slowed that down. And now all of a sudden you're when you're taking your vitamin D you're taking two, 3000 IU 'cause you don't feel right. But guess what? You can only actually use 500 of it. So you actually need to split the dose three times a day, 'cause you're designed to only use a small portion of that. What you actually take because of what your ancestors did. So that's macro micronutrients. That's one, half of diet. The other half of diet is perception genetically. Meaning when I say I'm done, do I actually know if I'm done or not that gut brain connection. There's one gene that determines how well you experience satiety feeling for some people it takes longer.

And then they need to know that. So they can look at their plate and realize they're gonna be hungry for 20 minutes after they've already eaten enough. There's some people that there's a gene called MC4R that determines the tidy of the tongue in the mouth and that satisfaction that you need to get from food. That, that satisfaction that drives the chewing, which drives the enzymes, which is why you do it. If you add the poor MC4R even though you're done your dinner, you're gonna start grazing and looking for the Doritos and the cookies and going to the pot and scraping up the stuff at the bottom, the greasy stuff, which gives you all the fla-

Eric D. Gordon, M.D.
Oh, oh, okay.

Kashif Khan
So that person that needs that mouth satisfaction. And they don't even realize they're doing it. Then there's people that lean on food as a coping mechanism, their serotonin levels are off and you irritate them. If they have a bad day, their body doesn't want to be stressed, cortisol levels go up. So it points them to food to get happy again. There's some people that binge, there's some people that have addictive tendencies. So if you don't take the sort of neural context and understand who you are and how you think and perceive, and then combine that with metabolization, which is what we talked about. You don't get the full picture. It's hard to actually implement change. This is why so many people fail with their diets because they're doing something that work for somebody who is not them. Both of what they're eating and how they're structuring it mentally. And that can all be very precise.

Eric D. Gordon, M.D.
That's amazing. That's really beautiful. 'Cause we struggle with that every day. When we talk to people as clinicians, we can hear these patterns. We can and people are pretty good at reporting how they do things, but if they understood that another level of what was driving it. It's easier to begin to hold it a little bit differently and make, and you say to make the right choices, just to know that if I could somehow

slow down how fast I'm eating and maybe distract myself with a cup of tea or something after dinner, I might not need to have that second helping.

Kashif Khan
Yeah.

Eric D. Gordon, M.D.
Cause I'll be full? Yeah, yeah. No, that is so beautiful. So beautiful. And so you are what, so when people, in order to do your test, I mean, what do they have to do? How does the process work?

Kashif Khan
So people can go directly to the website. It's open to the public. We also, the majority of what we do is working with functional medicine type clinicians. It's supplying them and they work with their patients. So if you go to the DNAcompany.com that's our website, the core task is called the 360, the DNA 360. And in that we provide six things that we believe everybody kind of needs to know cardiovascular health. And each one of these six things is broken down to more micro things. So cardiovascular health, mood and behavior, the brain, all of the stuff we've been talking about, diet in nutrition. So the stuff we, again, just talked about, hormones, which is really around fitness while body type, hair, skin, how do I lose weight? How do I put on muscle? That type of thing. Cellular health, immunity and detox, anti inflammation. And then the last one is sleep., there's some people that can't fall asleep. There's some people that can't stay asleep. Some people sleep through the night, wake up feeling like garbage. We've understood all that genetically. So we believe if you go through these six things, which is why we put them into our core product, that you've kind of taken yourself to into the next level, You're preventing disease. You're slowing down aging. You're helping reverse whatever conditions you cause most chronic diseases are drawn from one of these six buckets.

Eric D. Gordon, M.D.
Yeah.

Kashif Khan
You can resolve.

Eric D. Gordon, M.D.
Either they caused it or they're keeping it going.

Kashif Khan
Exactly, yeah. So that's kind of where the journey starts is you get the tests, you get these reports, you drill through, you learn. If you want us to send your clinician, the summary that I talked about, we'll do that. Also from there, we have various like coaching programs and things that people can get into if they want to implement, say that, oh, I love what you're telling me here, about how I lose weight. Can I work with a coach to build a say a nine week program to make sure I actually do it. So we have people that are sort of genetically trained to do all that. And that's what we offer. It's like, we don't want to be a data selling company. Like most testing companies are, let me get your data to sell it to some pharma company. And so my test is designed, not for you, is designed for that guy. Who's paying me 10 X what you're paying. He said, instead, let's be a data mining company. Let's give you what you originally wanted, which is look at my DNA and tell me what's going on. And then we believe you'll live with us ongoing for coaching and other solutions. So that's how we work.

Eric D. Gordon, M.D.
Wow. Okay. That that's I like it. I like it. I like it. So you you're not selling people's data.

Kashif Khan
No, we purposely- So here's the thing in order to sell data, we could not give you the reports we give you because we would, again, we would have to design the data extraction for what the data buyer will. They want a large number of steps, those spelling mistakes. Cause they're trying to design personalized drugs. They want as much data from he's this old he's of this ethnicity, this religion, and here's his health history. So now all of a sudden I'm gonna put that into a big AI data machine. And when I find a 100 or 200, a 300 of the same of you, I can start to find that one snip.

And I can design a drug to turn that snip on or off. And there becomes your one size fits all solution, but it's only gonna work on 6 people. And for, even for those six, it's gonna work really well on two or three. And for the other three, it's gonna be kind of okay. And for three, it doesn't even.

Eric D. Gordon, M.D.
Yeah, no, no. it's clear that the, the biochemistry is driving is turning on the snips often. So yeah, it's the wrong direction, but they'll take them a while to figure that out. I said it works for a handful of diseases really well, the rest of a lot of noise, you it's been 20 years well, not quite 20, but about 18 years that they've been pushing this agenda. And if you look at the output, it isn't really that impressive except in cancers, in a few diseases that are really clear cut.

Kashif Khan
Yeah.

Eric D. Gordon, M.D.
It's a failed strategy, but there's so much money behind it. I always tell people you medicine is like aircraft carriers. It doesn't matter if they're going in the wrong direction. It's a long time to change direction. It doesn't turn doesn't turn quick.Anyways, so this was a pleasure. I mean, I really appreciate this. I mean, good information and I'm looking forward to giving you a run, see how it goes with some of our patients. and I hope some of our listeners go out there and give it a try and give us some feedback.

Kashif Khan
For sure. It was a pleasure. Love joining you here and great talking to you.

Eric D. Gordon, M.D.
Well, I look forward to it and yeah, I'm just, and really thank you for having the inspiration and the drive and that do some people say dopamine is really the, the hormone of more. And the drive to do more and learn more is really helping all of us. So thank you.

Kashif Khan
No, thank you.