The Genetics Of Gut Health And The Brain Transcript

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Introduction to the summit and guest

– Hello everyone and welcome to the microbes and mental health summit. This is Dr. Miles Nichols and today I'm here with Kashif Khan he is the CEO for The D. N. A. Company. They do a lot of personalized medicine and our pioneer in helping people to understand the human genome.

The parts that are clinically relevant. The parts that aren't and utilizing those that are clinically relevant. We're going to be discussing and talking today about the gut in the brain and the genetics that can play a role in gut and brain health. Welcome to the microbes and mental Health Summit. – It's a pleasure.

It's a great thing you're putting on together for everybody. So happy to be here. – Wonderful. Well tell me a little bit about your your backstory. Anything else you'd like people to know about yourself before we dive into the material. – Sure. You know, we've been spending the last few years trying to interpret the human genome so that it's actionable for things like this. You know, we have a question about the brain and mental health and mood and what affects it. And particularly right now we're looking at microbes, you know, So how do we solve that problem Instead of the problem that we think genetics can solve which are innate genetic conditions which we already kind of understand most of us know if we have them or not. And it's a very small percentage of what impacts our health and healthcare in general. And so we said is if we can take what's known about genes, we already know what these genes are, what they do.

But map them as per the way the body actually functions. Let's look at actual biological function, human physiology and how do we get from the genes to biological function to physiology. That's the thing that we're actually dealing with right? Here's who I am.

Here's how I feel right.

Genetics, physiology, and personalized medicine

And how do you sort of jump from here all the way to here. There's things in the middle meaning putting those genes together in in the context of the systems are actually being reviewed in hormones, cardiovascular in this case mood in the brain, understanding how environment, nutrition and lifestyle that impacts those things.

Because it's one thing to tell you with all these genes together, I see this as sort of your avatar, here's your you know your profile and I can attach to that certain risks and certain solutions. But I also need to know what you're doing what you eat, how you exercise, what chemical exposures you have that's gonna pull you in certain directions with that. We believe we brought this sort of probability based science to a lot more certainty.

And we love sharing because now all of sudden these problems, people are doing what they can see them from a personalized lens and understand their sort of why, why is this happening to me. – And I've been watching the landscape of genes and genetic testing over the past 20 years shift dramatically.

It was first thought, Oh, oh when we when we map out the genome, everything's going to be solved and we're going to have all the answers. And then very quickly it became evident that oh well it's a lot more complicated than we thought it was. These genes are playing on each other.

They're expressing via the environment, some are not expressing the levels of methylation are turning them up or down. And we have this situation in the world today where there's this mismatch between how we evolved and where industry and the environment is the industrial revolution, changes in in electricity and lighting has changed the way our genes have evolved for circadian rhythm, the preservatives, additives, herbicides, pesticides, fungicides and toxin exposures, microplastics have exceeded the time that it takes genes to change to adapt to detoxification appropriately. So we have a bit of a modern day mismatch between the genetics haven't had the time

to catch up to the environmental exposures and changes that have occurred so rapidly. And I'm curious do you think that's a big part of why we're seeing so many disease promoting genes be expressing today and so much of an increase in chronic disease.

– So I feel like you've had a wiretap in our office for the last few years and you've been listening to all of our clinical reviews and coming to the conclusion that we came to.

But firstly the first thing you said that certainly there was this big promise. You know, we've discovered human genome 20 some odd years ago. We're gonna unpack unravel this thing. Billions of dollars were spent doing that.

But everyone still sick right 20 years later. So what happened? And the challenges we have this toolkit, this clinical toolkit that's not designed for prevention in the first place. So the lens, the research dollars, the goals are all around treatment of problems. Let's identify disease symptomatically and then sort of suppressive oppressive check mark of success.

It's gone. The pain point is gone, right. And and that's all genes were ever used for. The research was funneled towards. And so we didn't solve the big problems. But aren't developed that way.

Their chronic in nature. They take 10, 15, 20 years to develop with your improper choices. Which leads to the thing that you said, which is we aren't designed for our current reality.

It's not about waiting to even catch up. The reality of our genetics is it's it's a quarter million years old. You know, we're not even talking about. We are different than Great Grandpa who didn't have to deal with chemicals. We are wired of you don't know how many greats you want to say, but 250,000 years ago is the person.

You're wired. Like we haven't really changed. So now think about the industrialization that you were talking about? When did that start? And if you put that on a timeline and try and visualize it a quarter of million years versus the 150 year blip that we're talking about right? Modern agriculture started 10,000 years ago.

That's a blip. It sounds like a lot, but that's a blip in 250,000 years. So if we are wired for that, those habits and that's how long it takes our DNA to change where we're still the same as those people. We truly cannot cope with all of what we're exposed to. Whether it is like you said E. M. F.

From electricity and light and all. We're doing. The light exposures are instead of seeing an amber glow of fire at night, we're seeing beautiful pot lights and TVs. So of course we're sticking even screwed up instead of you know, washing with water and soap for washing with chemicals and blue goo.

You know, and things that are not meant to go into our body and so on. And so our skin, our breath, our breath, our gut all being exposed to things that were not designed for. So this is where we say that really what we can do with genetics is identify the red flag when it comes to biological function.

What is a gene, a gene tells yourselves what to do. It's an instruction and different cells read different parts of that instruction manual. And some people, some of us have spelling mistakes or errors or missing pages even.

And so those instructions are a little different now, depending what job we're talking about detoxification, inflammation, transport of neurochemicals, whatever you may do that job a little different than other people. Now, if you know, you do that job a little different, you start to think about these threats about environment, electricity, etcetera. Whatever it is, you now know what that does to your body.

Modern environmental mismatch and chronic disease

There's some people smoking till they're 100 years old saying this is my secret too long health, you know, one of these a day, a pack of days, one copy going, and there's some people that can smoke till they're 35 and get lung cancer.

The way we are built is different, right? I'm not telling everyone to go smoke. That's not the point. But I'm saying that we know that there's obvious variations in the same environment, nutrition lifestyle factors and what the outcome is for us. So, all we're saying is, if you identify your genetic profile, you know what the right choices are and what the wrong choices are.

And some of them are counterintuitive. Some of them are quite obvious. – Yeah. And this is important to look at from various perspectives, because they're great of gene disorders.

And somewhere the gene actually isn't able to make the protein that people hear about. Oh, it's a it's a it's a genetic issue that can't get better. Well, that's very, very rare. There are a couple of those, but that's extremely rare. So there are a couple of conditions like that.

But most of the conditions that are involving changes have to do with that. There's a almost like a potential genetic potential. And then whether that genetic potential becomes activated or or remains inactive depends a lot on the way a person lives their life.

And we know from a lot of autoimmune conditions that there are a number of genetic potential autoimmune issues that never manifest for an individual. But for another individual who has the same genetic potential, they get the autoimmune disease and they're struggling with it for a lot of their life.

So why is that? And what kinds of things have you been able to discover that have been helpful in understanding why the same genetic is expressing or not expressing to different people who have that same predisposition? – That's really important.

And for some, for some people have to think about, you weren't born sick for the most part, right? Unless you have that innate genetic condition which you know, you have from birth, diabetes, cholesterol, EMEA, breast cancer. These things don't happen to you when you're six years old, it's when you're the average american gets there first chronic disease by the 50-55 mark. And then 60 you get to and then you spend your last sort of 10, 15 year old life in treatment that's kind of unfortunately, the American story.

So why does it take that long? The body is resilient to a fight. Your mitochondria start to deplete, you can fight as well your hormones start to deplete.

You can't fight as well. So what we're saying is when it comes to for example um you talk about auto community, there's a gene called G. S. T. M. One which is really important for today's conversation which is protective of the gut.

So when it comes to what you're ingesting the food you're eating if you're not hyper diligent today about what you're eating, you can almost be certain that it's not good for you.

If you go to the grocery store and fill out the basket without being very careful. Most of it comes along with problems whether it's chemicals, preservatives, actual packaging itself and plastics, the processing and the chemicals that were used to clean the equipment and so on and so on and so on.

A lot of it is a threat. But you can buy the right stuff if you're focused right. So now the G. S. T. M. One gene is meant to be that first line of defense.

It's it's an arm of the glutathione pathway. So glutathione on this chemical that binds onto toxins and sends them to the liver to metabolize. You have this sort of these foot shoulders these first line defense in your gut that are meant to find and catch these things and prevent the gut from getting disturbed and the gut track from getting disturbed and then ultimately those things entering the bloodstream according to our data, these are the 7000 people that we studied.

So this is not general population data. We studied 7000 people in person out of the many more thousands we've worked with. But there's 7000 we actually clinically reviewed, 49% of them were absolutely missing. This gene.

It's called a copy number variation. It's not about what version what snip. They didn't even have the gene from mom or dad, which means they didn't do this function. There was no instruction telling this job to happen. So their guts were open to whatever attack was coming along with their food, which could lead to a gut dis by osmosis, you know, leaky gut, eventually leaky brain and so on and so on and so on.

About 46% had one copy, which means they kind of did this job. Okay. Not so well -50, 5% had two copies. Now. The thinking is well, That's great. Those 5%, they're lucky. But what did we find in those 5% autoimmune conditions? Why?

Because if you look at the reality of what they were wired for and their genetic inheritance, that legacy they got. There was no consideration of the amount of toxicity that was going to be coming into the gut and how much the body would then be hyper fighting. So their ability to fight was optimal.

There was too much to fight. And this is epi genetics at its best. You're eating garbage and your body is really efficient at sending glorifying out to sort of defend you.

And it it leads to auto immunity. It leads to you fighting yourself. Kind of like we talked about the cytokine storm and covid, right? Similar kind of context.

So these 5% of people kept complaining about auto immunity and we it would come down to this thing that we thought the people that didn't have it had a problem.

The people that had it had an entirely different problem. So it comes down to here's who you are, here's the right environment, nutrition lifestyle choices for you. If you're right, you'll do fine for both buckets if you're not right, here's the problem, you're gonna have it. It's a different problem for both of you.

– Yeah, it's really interesting. And of course with auto immunity often there are researchers who are looking at the triggers for the genetic expression, who are discovering that it can be infections or microbial triggers, it can be toxin or toxin triggers and it can be sometimes food and food triggers.

And so this gut function is so important because if it's permeable and we're allowing these bigger protein from food into the bloodstream, the immune system can see that protein and it can look a lot like tissue.

We also know certain microbes like for example, borrelia burgdorferi that causes Lyme. There's a study that looks at some of the protein structure, some of the gene overlap between the protein structure in the thyroid gland and the protein structure in borrelia burgdorferi bacteria. So if someone had a genetic predisposition for let's hashimoto's thyroid itis, not a immune disease of the thyroid, they may have an overlap. The trigger of Lyme disease.

Actually could that bacteria could trigger if there's that genetic predisposition the expression of that gene to start to attack inadvertently. The thyroid glance, we have these kinds of mechanisms that play.

So tell me, how does this genetic play a role is that the ones who have the two copies that are more likely to have the triggered auto immunity from food or how does that play into this mechanism here?

Gut protection, GSTM1, and autoimmune risk

– Yes, that's exactly what happens is we find that the healthiest are the people that are actually in the middle uniquely. They're still not doing well.

They're still a big exposure to inflammatory gut dysbiosis and permeability and leaky gut and all of that because they're not defending themselves well, depending on what they eat. It's just the people that are uh keep in mind that like we said, our ancestors are of a quarter million years ago, food was not a threat.

That's a very recent phenomenon. So we didn't need two copies of this gene. We didn't need that level of fight. And

so now when it comes to turn it on by eating the wrong foods where you're way over doing it.

So to which we believe would be ideal is actually too much right. And it's the same thing we've seen with lime. Um we participated in this lime study in Canada where we are.

We're in Toronto the largest lime study in Canada. There's about 800 people that we studied. And then we found that for some reason that women were so that you have these I don't even know I have it.

I have a flu and I can't get out of bed for six months. Right? Where where is that disparity coming from? And we found that the latter two buckets, there was more women than men.

So as we went deep into this, of course we first look at the genome and we aren't looking for Lyme genes. We aren't looking for anything of that nature.

We're looking where's the gap where is the red flag in this person's genome in general? What are the jobs they're not doing well? We found that of the I think it was uh 500 some odd women.

Of the 800 that we total that we tested. Um of those 500 it was over 25% didn't have lyme they were misdiagnosed what they had was one of two things. The majority estrogen toxicity which led to this inflammatory condition which mimicked kind of these gray area. We don't know why all these things are happening. Let's label that lime right or a gut dysbiosis And what would happen is there's certain strains of bacteria and this would lead to fibromyalgia also by the way, uh there's certain strains of bacteria for when you feed them that their excrement is actually toxic and their excrement leads to a similar inflammatory insult as lime and as estrogen toxicity and produces the exact same symptoms when you're eating foods that are mismatched your microbiome, You're fueling the wrong bacteria strains.

And it's the expert that becomes toxic inflammatory nature. So we found that there was again 25% plus that were in this bucket. And the majority of those 25% were the estrogen toxicity bucket.

So they didn't even have line. Right? And this is where understanding again. Starting with what is my genetic blueprint? Let me look at that manual. What jobs do I not do?

Well right now, I understand that the expression of them based on what I did what I ate and why is it one again? You can walk around one can't get out of bed, one has a flu etcetera. Uh That level is the thing that you were hinting at. How close are you to the threshold already?

Here's what the body can tolerate in general, right? The body is resilient. The mitochondrial keep finding the cells will keep thriving and replenishing and getting rid of mutated and dying cells and your body is trying to get there. There's a certain point we're depending on who you are. It's gonna tip you past the edge and you express a symptom and you start the inflammatory nature of whatever you're dealing with is too much. Whether it's eczema line migraine, you know, can't get out of bed because of depression, whatever that thing is, it's about keeping below the threshold. Now, you don't want to be close to it because again, your your inflamed, you're probably over time, longitudinal not going to be doing well.

You want to chip away and keep that coming down and down and down. And that only happens when you identify the root, the system failure. Why are my selves inflamed and under this duress?

Anyway, we gotta start there. Right. And then that's why I don't even know I have Lyme, I got a flu and I can't get it back because they were, how close to the threshold were they?

We see this over and over and over again. – Yeah. Yeah, that's so important. That's a concept. We call al static load where you can have a certain amount of stress on the body infectious load toxin accumulation and not have many if any symptoms or maybe just a real minor stuff.

And then when you approach that Alice static load, when you approach that threshold and you add a trauma here

and you add a toxin exposure there and you add an infectious loads, you add toxin from food and improper nutrition, you add circadian rhythm issues and sleep dysfunction and now all of a sudden you've pushed above that threshold.

And it's part of where a lot of people they're looking for the smoking gun, they're looking for the one thing that they can take or or do to make things better.

And and it's nice if we can find a good leverage point and help people focus there and make a big difference. But I also it's so important that people understand this concept of Alice static load because sometimes you chip away at eight or nine things and then you can drop below that load and you can really have that x the chronic system wide symptom expression, that global inflammation can just almost go away once you get below that load that your body can handle the body is resilient.

And as we've mentioned, the there's a huge mismatch between how we evolved and where Society is today and the exposures and it's amazing that people are functioning as well as they are. Even if 60% of Americans are walking around with one or more chronic diseases, according to the CDC, even if four in 10 Americans are walking around with two or more chronic diseases where there is a chronic disease epidemic. So it's not we're not free of issues.

But I'm surprised it's not worse than it is. And so you're speaking about there being potentially gut dysbiosis. So that's that's a microbial issue, of course bacterial changes and and then estrogen toxicity.

And of course, we know a lot of the exposures from things like microplastics are estrogenic in nature. And we see other estrogenic in nature endocrine disrupting chemicals that were being exposed to all the time.

And and I even read a study recently that showed that that microplastics are on average up to about five g per week found in the urine. That's equivalent of about a credit card of plastic in a week found in the urine.

That's quite alarming that that's happening A majority of that exposure was from water. But but so tell us if you're finding toxic estrogen is is finding the source of estrogenic compounds and reducing or eliminating them the solution there and then what's the solution with dysbiosis? – So there's a couple areas for estrogen toxicity.

There's and you can there's different dials you can turn depending again what your goals are. Right. Some women are in the fertility age and they need that estrogen, right?

Some women, you know, it may be a skin or hair or beauty issue, like what is your goal, What are you trying to achieve? But ultimately, you don't want that estrogen estrogen toxicity sticking around for too long.

So there's dials you can turn there's there's supplements and nutraceuticals. You can take that turn the dials on gene expression of conversion of testosterone into estrogen. So you can slow down that conversion have more testosterone which will give you more lean muscle mass, less fat. Um, maybe a little more vitality, you know.

Um, but if you need it, it's more dealing with the estrogen toxicity itself, which comes down to the glutathione pathway.

Lyme, estrogen toxicity, and threshold effects

Uh, anti oxidative pathways sought to and the tail end of methylation, which is comped so speeding those things up. And again, nutraceutical supplements, You can google tons of them that will do that.

Uh and if you speak those things up, then all of a sudden you're getting rid of your clearing it well. But the challenge is exactly what you said. When we go to our hormone testing or look at our genetic maps and say, here's here's who we are. We aren't considering the environmental load and where that bucket that looks like it's 80% full is actually 100 and 20 because of all of what you're taking in something as simple as a teflon coated frying pan, which you use daily. You don't realize how disruptive that is the hormones the water you're drinking, like you said, you

know, we we did some live blood analysis here in Toronto for various age ranges.

Uh, post pandemic because of the masking. And I can't I'm gonna send this to you after, by the way. Just for your own curiosity, we saw blue plastic specs in everybody's blood.

We don't realize how easily this stuff enters and how difficult it is to clear. We aren't designed to digest and clear plastics they stick around, right? You're yes, some come through through your your urine, you'll excrete it somehow. But it's your body is not out there actively seeking this stuff. So that challenge with everything that we're eating, smelling tasting the pesticides that make your lawn looks so beautiful, the chemicals that you're spraying on your countertops to make them look so shiny.

You have to consider every single one of these things. And what happens when they enter your body? Because they are entering as much as you may think. I sprayed it over here and I walked over here.

No, it's in the area breathing in, Right? So that's why all these clean cleaning products exist. Because that's what we actually need. We weren't designed for all of this stuff. Health Canada where I am, just put out a publication about how cancer rates have shot through the roof all of a sudden. And they're blaming it on the covid uh, hand cleansers because there's just such a spike.

And the use of that stuff. And because they needed the sort of PPE to come in quick, they didn't vet a lot of the companies that were bringing it in and everything was allowed in and there was so much that was absorbed through people's skins.

It's not causing cancer, right? So it's not only hormone that's so much more. But yes, first of all the where you intervene hormones itself, the toxicity depending what you want. But if you're not going to deal with all of the hormone disruptors. Endocrine disruptors which you can google and find many lists of them hurting this dial here is not enough.

The load is too heavy, right? It's too much you gotta deal with it. – Yeah and and there's even a link between the gut dysbiosis and the ability to detoxify estrogen because some estrogen is conjugated in the liver via the glue khurana Dacian pathway. And then of course some of the gut microbe infections and overgrowth can up regulate an enzyme called beta glue khurana dais.

And that enzyme then can pull that glue khurana need bond off of things like estrogens which the liver had tagged for getting out of the body. Now this enzyme from this gut infection actually antagonists almost like we had put it in a trash bag to take it out but someone came and pulled it out of the trash bag and now it's recirculating and coming back into circulation. And so we're dealing also sometimes with we need to look at this gut dysbiosis in order to be able to detoxify estrogen appropriately as well. So can you talk a little more about the dysbiosis aspect that you're finding. – Yeah so we're certainly seeing that and it's exactly what you said like look organization. This is where it's misunderstood that again you can have a copy number variation the U. G. T. B. Genes are called.

Or there's there's three genes we look at in that pathway for two of them it's possible and we see many people that look like this particularly women, it also clears DHT and sort of the toxic testosterone.

So when you see men with no hair like me, you know that their organization isn't the best. – So and DHT for the audience is the hydro testosterone the more androgenic kind that's associated with hair loss and certain other issues in the body.

– So if you don't even have the genes, if we know this is already a threat right? What if you don't have the genes that are supposed to fix it which is highly possible.

Two out of three that remain sort of starring characters with this renovation process. It's possible to have a copy number variation. And many many many of the people we look at especially in the women bucket do men not so much but women are more likely to have this copy number variation when it comes to the foundation in terms of what we've seen in our data and so what's meant to protect your gut and was meant to protect the or do this job,

the instruction of this job. People don't have the instruction, they're not doing it. And so there's even more gut this bio so that exponential it's here's the thing but for me it's like nine out of 10 because I don't I don't fix it. Right?

So and then that leads to so many other things when you got dysbiosis okay, leaky gut then all of a sudden you have toxic substrates that are going into the blood.

That the blood brain barrier was never designed to protect you from. You get leaky brain and all of sudden there's cognitive decline in neural inflammation and mood disorders. That's exactly what we're talking about here today. Which is how does this stuff eventually get to the brain? Well, if you have leaky gut in this, you know, it's a direct access past the blood brain barrier, neural inflammation, we can already look at certain gene pathways for neurochemicals and predict mood and behavior. People that are more likely to bind onto pain and trauma, hold onto it and sort of that's their their filter their perception.

People that are serotonin dis regulated. So they're a little bit hyper aware and responsive to stimulus. So everything means a little bit more to them.

Everything is irritable to them, right? Dopamine pathways and people being a little bit more reward seeking or addictive in their tendencies. If you take this profile again, we talk about the epigenetic what you put on top of it, the habits, if you're putting on a habit that leads to leaky gut leaking into neural inflammation. This thing that was kind of at bay, you know, is a little bit problematic. Now, all of a sudden is your identity.

I have anxiety. I have depression, right? I don't speak to my family because you're you're just taking it too far gone. It's not only chemical but it's also physical. The brain's inflamed, right? So it's important to understand mood and behavior at the genetic level because we can really be precise about who you are and how you perceive the world. What may stress you?

What may burn you out, why you may overdo things under do things. Uh And then you can predict, well one key thing about this, by the way, what context should I be in? If I'm wired for addictive tendencies then I shouldn't be around a pleasure. I should be around reward.

So I achieve something right? It's not a label. It's more like the context shift. If I'm wired for serotonin dis regulation I shouldn't be around irritability and teams that don't jive with I should be deep and analytical and because I'm so detail oriented and that's what makes me thrive.

So we can start to understand the same thing. That maybe sounds like your problem can actually be a superpower but either or doesn't work if the hardware is failing because your guts not doing well. – Yeah. And that's it's such an important mechanism that you're bringing into play here is that this bio sis in the gut can lead to intestinal permeability or leaky gut can lead to bacteria coming into the bloodstream and we know from studies for example where they take e coli one of the bacteria that people think a bad rap about E coli because there are some toxic kinds of e coli But they're they're healthful natural kinds of e coli that would normally be in the gut And when you take e.

Coli that's dead it's already dead so it's not going to have any effect. But if you inject it directly into the bloodstream we know the cell wall of gram negative bacteria is lippo policy. Sacra ride or LPS for short that's an endo toxin has to get filtered by the liver and it makes people sick.

Detox pathways and endocrine disruptors

So if you inject and we have studies on this there are lots of studies where people are injected with that e coli bacteria they get horribly ill for a while and it is cognitive, they're getting headaches, they're getting flu like symptoms, they're feeling miserable and all their inflammatory markers are rising.

Their interleukin six, their interleukin two are rising. The anti inflammatory like interleukin 10 is going down there. TNF alpha inflammatory marker is going up and we know with the side of kind theory of depression that as these inflammatory markers go up, depressive symptoms express. And so people who are predisposed to depression

when you increase inflammation you increase that depression.

Symptomatology and that's very clear in research too. So we have this mechanism by which this gut dysbiotic bacteria are leading to intestinal permeability leaky gut are leading to bacteria in the bloodstream a lot of that bacteria has endo toxin and it's getting into the brain, it's crossing the blood brain barrier and we're seeing this endo toxemia. We're seeing this effect of that endo toxin that's creating inflammation and that inflammation is contributing to many symptoms.

Many chronic diseases including depression and some of the neurologic and you mentioned predispositions, you mentioned dopamine, you mentioned serotonin and we're living in a society today where there's a lot of pressure already on the dopamine system.

Getting thrown advertisements and dinging and beeps and things all the time that are meant to stimulate dopamine and so that there's a lot of pressure on that system already.

And then you add some of these mechanisms behind the dopamine receptors and how they can be damaged by an autoimmune issue that can be related to microbe infections.

Then we're starting to see a picture here for how this got this by osmosis and got microbe changes can play a big role via the endo toxin pathway. But there's even other mechanisms, there are other mechanisms like for example the gut, despite aosis can contribute directly to signals from the gut to the brain via the vagus nerve. There are studies that show that for example there were two groups of mice and one got a sterile broth the other got a feed with a certain kind of probiotic to change the gut bacteria and the one that got the probiotic was making more Gaba in the brain and they tried to prove this by cutting the vagal nerve of those mice and then they weren't making more Gaba in the brain anymore.

So we know God is a relaxing neurotransmitter and we know now that many of the signals from the gut to the brain are telling the brain about which neurotransmitters to make.

So we also have that mechanism that plays. So what are what are some of these gene connections to the brain? There's dysbiosis is there any are there any others? – Well I think mapping out your movement and behavior profile and knowing who you are up there first of all and it leads to two things.

How do you think like are you reward seeking under your entrepreneurial or you risk adverse. But the more important thing is how do you perceive the world?

And so and how you think is how people perceive you right? Who are you? How you perceive the world is really important is if if you're here listening, you're trying to heal or learning or maybe somebody you don't need to heal a big part of that often is your perception and how you think and your thoughts right? And so when it comes to I'll give you an example, there's a woman we were dealing with um who had the sort of what we call the s s that's sort of the shortened alleles of serotonin dis regulation.

So most dis regulation you could potentially experience which means that everything that she experienced with a really heightened level of stimulus. So when we think of serotonin, we think of it as a mood regulator.

The mechanism by which that happens is your brain prioritizing stimulus. So everything that's happening sound, smell, you know, somebody crumpling paper, whatever your brain's ability to focus and give the task at hand, it's proper attention versus everything else. And people that can't do that are constantly irritated, bothered, frustrated by everything, right?

Everything gets to them, but they're also seeing the world at a much higher level of detail. Every t every eye that needs to be dotted, right? That that's how they see the world, challenges. They think everybody else sees the world like that too. When you say something to that person, they're reading in between every single line things that you didn't say because of the level of detail which their brain operates. And so that is highly impactful in terms of how they respond and how they actually accept the message of healing and what's meant to be done and how much

value they give that thing. Right?

So if you even know that one thing about yourself, and this is why potentially when somebody says it's not that big a deal, maybe it actually isn't that big a deal, right? Because of the way you think about things, then we look at, you know, brain derived neurotrophic factor, BDNF neural plasticity, your brain's ability to develop new neural pathways and synapses and throw throw information back and forth. So if you're not doing well there again, there's no good or bad, it's just how good is the gene and then there's different outcomes.

If you have the inefficient version, you're not doing a good job of neural plasticity in developing new neural pathways, it just speaks to a different type of personality.

Over here, the person that's doing well wears many hats, Jack of all trades, uh you know, sort of good mood and everything is always okay, this person is highly specialist, subject matter experts, the thing that they do, they do better than anybody, but they can do anything else right, because of the way their brain develops.

They also give things a lot of meaning, you know, when that irritability happens with the serotonin dis regulation and your BDNF is also off. Not only did it irritate you, but it means a lot.

So lawyer's letter in the mail, I read into every detail and my day is over, I can't talk to anyone, slam the door, yell, walk out of the meeting versus got it.

But right now I'm busy, I'm gonna put this away and deal with it later. Right, so now apply that to how you're dealing with your health, how you're dealing with your coach, how you're dealing with your clinician, when they say something to you, how do you perceive that as a two out of 10 or eight out of 10, right? When you ask them for something and they don't call you back in five minutes or they don't answer exactly the way you want it.

How do you perceive that as a two out of 10? Or is it eight out of 10? And these nuances? The actual healthcare journey and how you're perceiving that interaction often our people's source of failure, right? So somebody like you brilliant, you know what you're doing right? You're here to help everybody because you have a basic knowledge, you brought all these experts together.

Gut dysbiosis, leaky gut, and brain inflammation

There should be a solution here for So whoever is listening, right? If you were to sit through these 40 or whatever interviews are gonna be some people still won't get there right?

Some people will start so hard that they'll burn themselves out and quit. They'll do everything right? The reward seeking person with a low dopamine interceptor and the fast comp clearance where they can hardly feel it and it doesn't last long enough. So they're seeking reward.

It's never enough, Right? And we can we can keep going. But you can see how you can map a picture of how the brain actually works at a personalized level for both. Again, how does the world see you?

So how should you present yourself and how do you perceive the world meaning? What filters do you now need when you're dealing with people that's a big part of getting the healing because you have to deal with people, you're not going to get there. It's a big, big part.

– Yeah, this is so important and and you know, it used to be there. The testing has never been great for like there was the Braverman assessment where you could do a question there, you could try and try to get a sense for where your neurochemistry is at.

A lot of people started doing these urinary tests that we're looking at neurotransmitters. But then some of the lab companies actually got in trouble because they were really not very accurate for these urinary neurotransmitter reflections of what's actually happening in the brain. And then and then they were looking at, oh well it's really accurate in the cerebral spinal fluid, but no one's getting their spinal tap to to look at the neurotransmitters and

then, you know, plasma, we can get a reasonable, you know, sense and organic acids, we can start to get a sense for the urinary metabolites.

But I'm glad we're having more tools available that are helping to get a sense and even also on the genetic side, the ability to to clear for cortisol clearance and cata cola immune clearance is really important too because some people stress hits and they deal with it and then it's done, they're not thinking about it that night or the next day, Other people there, there's they have slowed clearance and that's going to mean that that they're gonna have a much different way of of of chewing on and metabolizing stressful events and gonna need to pay more attention to their self care activities related to when they do have a stressful situation that hits that they need to put more energy, more effort into stress resilience and and and abilities to to work with stress and relate to stress than the person who clears those very quickly naturally in their system.

So that part of the assessment as well. – That's amazing because that's exactly, it's kind of like when you hear, you know when a tree fell in the woods, if there was nobody here, they didn't make a sound, if nobody was there to hear it, right? So kind of like if I have this is how my cortisol pathway looks. I didn't get stressed.

This is how my cortisol pathway looks. I got super stressed. How stressful actually was that thing, right? Your perception may not be what's actually going on and you may be unfairly abusing your body based on how your brain works.

So now, if you understand that about yourself, I can't tell you how many people we deal with. We're just knowing this about how they think It's this relief, this like weight is lifted off their shoulders because everything that felt like a problem, they now realize they just see it as a six out of 10 when it's actually a two, right? So even that thing if you're stuck in the stress response for a long time, uh then it seems gonna seem more stressful for you, you won't understand why other people aren't bothered.

I don't want to help, you don't want to support your problem, right? Because they don't see the problem, they don't really/ – And this gets into the guilt shame complex sometimes, where people get really upset with themselves for having what seems like a harder time with getting over or processing through a stress response than other people in their lives.

They think something's wrong with them when there may just be a predisposition towards slower clearance of the stress hormones in the body. And if they can recognize that and not see it as such a problem with themselves can actually clear a lot of mental stress that people put on themselves and worsen the situation dramatically. It's like the old, I think it's a buddhist saying where if you get shot with an arrow, the pain is bad enough, but if you start to get upset with yourself or apply guilt or shame or or to that issue, it's like shooting yourself with a second arrow in the same spot, it's a lot more painful. – Right? Yeah, for sure, you know, we see over and over again that it's exactly like you're saying that perception that drives the outcome a big part of it and this is what we see so much is the context, you know? Um so the way you described it, where how they're feeling the stress, how they're perceiving things.

That thing. The reason why I may feel bad and I want to clarify this because there's no good or bad. I don't believe when it comes to mood and behavior that there's a bad outcome or a good outcome, there's who you are, right and where you're using it.

So if you are that person that feels elevated stress and it lasts a little too long, it doesn't mean that you have bad genes. You have a superpower that you're not, you need to go use when it comes to the team. You're the filter, you're the person that sees the problems.

Whereas the person that has no stress and fast clearance, they're going to say yes to everything and do everything and maybe destroy things because they're gonna take on too much.

Right? So understand. And this happened by the way in our own company company. So two of the founders, myself and another person, I have the ultra low expression of dopamine receptors and a very fast clearance. So for me, you know, I feel way down here and it's gone like this.

So it's I'm highly reward seeking. You could call it addictive tendencies, although that's been funneled towards building and rewarding, getting reward by helping people, right? He has the ultra high dopamine and a very slow clearance, exact opposite. So for the first year before we bother to sat down and look at our genetics, which we, which we already had.

We were both constantly pointing the finger at each other. I kept calling him a flake and he kept calling me too risky and destroying the company. Why? Why?

Because we go to a meeting, talk about 10 things we both say. Yes, yes, yes. He walks out, doesn't do any of them. And goes on his laptop laptop and starts looking at vacations because it's so easy for him to get satisfied. He doesn't need that reward from the work.

But the two things that he really enjoys that he really values, like I think this is important for the company. He will binge for eight hours and do a better job than anyone because he gets stuck in the dopamine response because his clearance is so slow, right? So when he really feels it, it's like a wow factor and he gets stuck there for me. I need to constantly be seeing, constructed like progress on every little bit. It's just like high functioning anxiety that's driving me to just deal with everything. So if I only did that and he only did this, we would both fail once we recognize that this is what we're good at and we had our various roles and we put them together, we started to thrive.

So either one of these could be an anxiety problem, a depression problem. I could have an anxiety problem because everything is irritating to me. I'm constantly needing to do to do. He could have an anxiety problem because he's so used to everything being good. That when you take it away, he's got a bigger delta value for the crash. Just different reasons, Right? So, if you understand who you are, what your context then should be. You thrive.

Neurochemistry, personality, and stress response

– It's so important. It's taking, it's taking the judgment away about good, bad. It's it's it's helping people to understand themselves and utilize that. And and when you're talking about those, I mean, part of the way I see that also is that there's this, this tonic pool and then there's these basic pulses and the tonic pool is, you know, the, like, how high is the threshold of a physic pulse to get your attention, right? So, you know, if that tonic pool is really high, like you're saying in your, your partner, like, it takes a lot to get his attention, but once he does, like, he's in it and because nothing else is going to get his attention and take it away. But for you, that phase IQ pool is lower.

So, like, sorry, the tonic pool is lower. So the phase, it pulses, lots of things will get your and move you. But that's, it's good. It's just, it's all good.

It's all well, it can be good or bad. It's not, it's not either inherently. It's how you, how you work with that, that energy, how you work with that predisposition that that sense of your tendencies can be funneled and channeled towards personal growth towards service to others, or they can be come dysfunctional and they can become disease promoting if you're not understanding and utilizing them and beating yourself up and creating guilt and shame about them. So I love that.

So to to kind of take all this that we've been discussing and and make it practical for people. So how can genetics inform specific, tangible practical on the ground?

I know we've been we've been hinting at, oh you can understand yourself better. So let's get practical here. – Yeah, I think for for the topic at hand, you know it's it is understanding mood like we can be very precise about how your brain works and then therefore you understand what the potential red flags are, right? My red flag is depression and addiction.

Burnout, procrastination, irritability. Where am I going to get to if there's a problem? So we can start and if you already starting to feel that stuff, you already know that maybe the inflammatory load is a little too high.

Right? So that's one second. Is how do you deal with this new reality of the science? No, we now know that microbial health and gut health is a very important thing.

We didn't understand it before. Now we do. So what you have to do well are you when it comes to the food you're eating is your gut designed for them, right? When it comes to uh call it your ability to deal with innate toxins that are coming along with the food?

Is your gut designed for that when it comes to mitochondria resilience. And why is it that as you age, things are getting worse. There's some people whose mitochondrial function isn't as good as others.

We can predict that genetically, you know, when it comes to hormones and how they're interacting with that problem as I call it a cool factor and driving it from a two to an eight. Right?

So it's more about this feeling we have of gut brain connection, micro brain connection, we know that. But the path for us, the red flag may be different for different people.

So the focus, the place you have to heal from and all that does is it takes the trial a narrow way it takes the one size fits all the way we all know.

This is the focus. You're gonna listen to all these talks, you understand? Yeah, I need to do this. But where do you start? What's the thing I need to do?

What's my red flag? What's my gaping hole? Is it my hormones? Is it my mitochondria is my glutathione pathway? Is it the gut lining itself? Right. Is it my indo thallium, is it my blood flow? Like what's what's the problem?

We can actually determine how you deal with blood transport and flow and how the health of the actual indo thallium itself? How resilient is it is that the thing that's causing an inflammatory load to your system. So where is the problem coming from?

From hyper focus and deal with that? First, get rid of the big sort of red flag and then also work on everything else. Because you're not gonna hear anything here that's bad. Everything you're gonna hear is gonna be helpful for you. Deal with that that that hub, that central hub. And we can identify that whether it's a hormone, whether it's the cells, whether it's the gut itself, whether it's detox, whatever that hub, whether it's the brain and how you're perceiving the thing to begin with, right, let's deal with that central hub. All these folks are to kind of go away because they're they're rooted in this thing, whatever that thing is, right? And so it's quite clear to to lay it out.

In fact um we, you know, after this is all done and we will likely um because it's a very specific topic and I know that there's a specific reason why people are here and I think they need to heal from will likely host some kind of master class for people so that they can learn how do you take this and apply it to this and if you have your test in hand, you can read along and understand exactly what works for you and then for this specific problem and we'll do that also.

– That's great. And part of the way I think about this is back to that concept of Alice static load and having just so much that you've exceeded your capacity to be in the healing state and now you're in a chronically inflamed state that it's a lot of things that have contributed to you being in that chronically inflamed state.

But there are what you're talking about are are these leverage points? There are these there are some things that okay, you you you reduce certain, you treat certain things or you reduce certain things and it notches you down a little bit.

But there there are a couple of things that when you get at those, it notches you down a lot and that there are these leverage points and that's that by hitting a couple of these ones that are bigger, sometimes people can drop right below that Alice static load, they can get out of systemic and chronic inflammation and they can see immense energy liberated, immense amounts of focus, immense amounts of clarity of mood regulation of feeling much better, much happier in their life when we can figure out what those leverage points are for some people that will be

perception related.

It'll be brain retraining practices and practices that are focused on meditation and breathwork and perceptive practices for other people. It will be really honing in on an aspect of the gut and that's really going to be one of the biggest things or a systemic infection or a toxin accumulation and and working those detox pathways is going to be much more important for that person.

So it is many people are going to have some infectious loads, some gut dysfunction, some talks and accumulation, some issues with imbalance in in in perception and ways of relating to clearance of stress hormones or other neurotransmitters in the brain being imbalanced and where are the leverage the key leverage points. It's it's not that there's one smoking gun but there are key leverage points that can drop it a lot.

Now if you keep working all these other areas and angles then you'll drop it more and more and more and more and chunk it down to where you have a buffer and it's nice to have a buffer to where you're kind of far from that threshold.

Like you can handle having an off dietary plan day and not getting enough sleep because it's your best friend's wedding, you know, and and you can handle, you can handle that and you're not pushing yourself back into inflammation because you're not right on the threshold of Alice static load.

Practical personalization and leverage points

So if we can get some of these big leverage points like like you're talking about here, then we can create and and then work on some of these other areas, we can create a nice buffer, a nice ability to that, you know, if things slip if you get an unexpected exposure, you have stress come up that you can handle that and still not go into that, that chronic inflammatory load.

So I love that you're you're gonna hone in and help people to focus on figuring out what are likely a couple of those bigger leverage points, bigger levers that they can pull and work on to create a significant reduction in that Alice static load.

– Beautifully said, you're you're right on, that's exactly what we're gonna do. – Fantastic. So give us a little summary on on what we've talked about here and if you have any any sort of big picture points that you'd like to kind of hone in on people for people before we wrap this conversation.

– Sure. I mean, ultimately what we're talking about here is inflammation, right? And so the things you can do to tackle that were just being a little bit more specific about where it's happening in the body and what's causing it the the outcome of this inflammation.

So start if you if you you know, if it's like i i if you can't wait, need to start right away, start there. But the key is the personalization and this is the challenge with sort of new science, uh more delineated problems as opposed to just I have an autoimmune or migraine.

Like no, it's it's rooted in microbiome and gut health. So when you get into that sort of delineated stuff, maybe you need some of these more specialized, more knowledgeable, but you also need to be more personalized.

That's what we're saying. So as opposed to the one size fits all. Take this off the shelf by off this website you can try that stuff. Hopefully it works but you don't need to go through that pain of trial and error.

You don't need to go through that one size fits all. It worked for them. Hopefully works for me. You may be solving a completely wrong problem or you might get lucky and they wanted to happen to be the right thing. Maybe it was your hormones right?

Maybe it was something but that's all we're saying that we can be highly personalized and on day one start with exactly what the body needs. – Fantastic.

That's lovely. So how can people how can people find out more? Right now? The D. N. A. Company. Are they going to the website or there is there is there anything you'd like to. – Go to TheDNACompany.com All I would say is I mentioned that master class so if you go to TheDNACompany.com/microbes let's make it that we'll get that ready. And then if if you're acquiring a test using that link then you'll automatically enroll into this master class and we'll also add for those people because you took the time to be here and I really honor that.

You're working on this healing yourself, we'll add our longevity report which is usually an extra $100 I believe. So we'll we'll include that in there.

So you have that also to look at because there's some additional insights there about sort of longitudinal health. So the TheDNACompany.com/microbes and you'll get automatically enrolled into the microbe master class. We can use that with your D.

N. A. And you'll get that longevity report for free. You wanna thank you for listening and being here and and sort of honor your time that you're investing here. It's amazing that you're here to begin with.

– Yeah and thanks for that because longevity is so important. It's that I mean once you're, once people do some therapeutic intervention they start to feel better and they start to feel good. Then what's next?

Like do you just maintain or or where do you go? And if you can optimize if you can look at longevity and a uh it's so important in the phases of care in the clinic.

We always we take people through these therapeutic phases and then we say okay what's next? Well we could just maintain or we can look at optimization and longevity and that's just a rich area for people.

So thank you for throwing that in. It's been amazing to have this conversation. I really appreciate the depth of knowledge and wisdom that you've been offering through your research through your company.

You're really helping people to know themselves to understand themselves and to think of their aspects of themselves as as brilliance and that's so important for people.

We need that in the world today more than we ever have. And then identifying those levers that we can pull to really have strong effects on that Alice, static load.

These are such important things. So thank you so much and thank you everyone for joining for this conversation on the microbes and Mental Health Summit.

This is Dr. Miles. Take care and have a great day.