Introduction to Microbiome Labs

All right, guys, welcome back. We are speaking to a pro today a pro of the gut. Microbiome labs, which I'm sure a lot of you already have in your pantry and your shelf, and you've been taking it.

But, let's talk to the guy that actually made it for you. So one of the founders of Microbiome Labs, who started this company some time ago and made sure now that every functional medicine doctor across the world is now selling it, making you healthy.

We're going to dive deep into why you know, what's going on. Why were these things formulated? And why is it so important to maintain starting at the gut?

So first of all, welcome. Thank you so much for having me. It's a pleasure to be here today. Yeah. It's awesome. I mean, it's awesome to be able to speak to you because this, this area is something that there's a lot of buzz about.

You know, for some people it's old news, but for the most part, for people, it's newer information. Yeah. And you've been doing this for a while now. Like, when did Microbiome Labs start?

So, we actually formulated all the plans for the company, the our focus, our research and the products in 2012. And we launched Mega Spore, in January of 2013, so.

Okay, cool. Yeah, we're going on, I think nine years now. So what was the impetus like? That's a, a big job to say, hey, we need to start making, this product for people's gut.

And where did that start? Yeah. In fact, it was, it was almost a lucky mistake, if you will, in many ways. I had a research company prior to this, company called New Science Trading and Live Smart, where I actually would do, conduct clinical research for other companies.

So design and run clinical trials for them on their nutritional products. We also had, a kind of a technology development company, which is part of the new science where we develop different ingredient technologies and sell it B2B to other supplement companies.

How MegaSpore Was Formulated

Right. How do formulation work and all that. So I had this large, multinational company who actually, in national company, not multinational company brand that came up to me and said, hey, we really want to do a deep dive on probiotics.

They had a pretty successful product on the market, but they were seeing a lot of different competitors coming into the space, so they really wanted some next generation of a probiotic.

They also wanted us to investigate this issue of, you know, refrigeration versus non refrigeration. Does that you know what's the science behind that.

Is that make any sense. Dosing. You know, do we need to be at 100,000,000,200 billion as the numbers kept scaling up and up, how many strains do we need.

And just basically everything around the whole probiotic product development and marketing and so on. So we started doing a deep dive on it, and I looked at it for the first time as a as a microbiologist.

And up to that point, I kind of considered probiotics lightly as a consumer. But I never really used any because it

just intuitively didn't make a lot of sense to me how some of these things were done and formulated.

But then when we went through this deep dive, when we started digging in, we came to find out that there's a lot of nonsense in the industry, right? Right.

No surprise. You know, that's that's just the nature of our industry. There's a good portion of it that that will be nonsense. And then in talking to lots of doctors and practitioners, many kind of shared the same issue, like, yeah, I don't really know.

I believe that probiotics should work, but this one and this one and this one I've tried don't really seem to do anything. Or this one that worked for a little bit.

Now it stops working, and it kind of kept hearing the same frustrations around the concept of probiotics. And then as we went through the process, we discovered these bacillus and low scores and and just looking at the science and looking at it from a microbiologist perspective, it became very clear that that was kind of the next generation of probiotics.

Right. Like this is the right approach. These are what the strains will likely do. Here's all the clinical research you should do to validate that. And this is how you would formulate the product.

So I actually created the Mega Spore formula to give it to another company. So that is and so we went went. And by the time we were done with the work the company had changed ownership because it got bought out by by a larger group.

And so the new owners were kind of like, yeah, we're not really interested in this. There's nothing we can do about it with it. So we said, okay, we'll take it.

And then to me, that information was just too compelling. So we actually took it to a number of different companies, ones that I've worked with in the past.

Either as a consultant for formula development and all of them cats. And the one of the main reasons why they pass on it was we were proposing a probiotic product that was 4 billion curfews.

Right? And they couldn't wrap their head around how we going to sell for 4 billion CFU? Our product is 3540 billion. Right, right. The value in the probiotic was all tied to the CFU count, which was one of the things we were disproving is that there's no scientific validation to that increasing.

And see if you count. So everybody passed on it. And we were basically like this is too important, you know, that this product can really make a difference in people.

And lots of the stuff out there is really not doing much of anything. We got to get this out. So that's when we decided to do it ourselves. So if any one of those companies decided to move forward with it and could see kind of the vision and value of it, we wouldn't be here today, you know, we wouldn't be.

Microbiome labs wouldn't exist. And it wouldn't exist here, just it'd be under a different name. So you put your entrepreneurial hat, and so it's just too good.

I can't let it go in that drive. You know, the drive got to you, which often happens with entrepreneurs like us. So. And I kept thinking about, like, what?

The thought that couldn't escape me was just thinking about the people that are going on, spending their hard earned dollars buying products with the hope that it's doing something right and it's not actually doing anything.

And I'm sitting here going, this can really help, right? So we had to do it. I mean, we're so compelled. And that's kind of how we built the company quite aggressively because we went out there with this like aggressive passion to

get this in the hands of people.

Right. And that was that was the big propeller that drove us. And it seems like you started from sort of the context of precision, because often when it comes to the supplement industry, you know, there's there's pixie dusting, which is unfortunate, a little bit of an ingredient to make a claim on a label and you feel like you think you're getting it, but you're really not, at least not to a therapeutic dose.

Precision Gut Health and Foundational Support

Or there's, you know, overdosing where you may there's certain we've learned genetically certain ingredients that will literally have the opposite effect when you give too much.

Right. Or you're just, you're just picking it out. It's like expensive. Yeah. So what's the point? So but what you said is here's the precise tool that people actually need.

It's we're not we're not going marketing first. We're going efficacy first. And you're right. And that's what you built. So we've always believed that the gut is the sort of second half of personalization we deal with genetics.

We understand here's the human blueprint. Here's foundationally how you're wired. So I can, without meeting a person, understand where they're suboptimal, where they need support, how they behave, how they feel.

It's all wired. All those chemical reactions are all driven by genes. But that is kind of like this human that's wrapped around this gut. But there's a there's a whole other system, you know, firing and doing its own thing.

There's a lot of companies today that are trying to decode that. Yeah. And it seems like you kind of skipped a step and said, well, even once you figure it out, people still need to know, what do I do about it?

Totally. Right. Yeah. So we can decode every one of the trillions or billions of bacteria or strains. But if you're if there's no product, in the end you've got information but no action item, which is awesome in terms of what you did.

So how important do you think it is to understand, you know, and sequence and put AI to the actual gut microbiome versus the solutions that work? Yeah.

And I think, I think if we went with that with the AI machine learning data science approach, first, it would be years before we had anything that had any positive impact on people.

Right? Right. Because that that is a beast that you can just go deeper and deeper and deeper in. Yeah. And there's a massive translational gap there. Right.

So like between what you discover and how do you make that a practical solution. Does a massive gap. That's actually one of the things that that, I am and a big group of us are working on right now, and Nova Simons, which is our new parent company, they have a massive investment in data science, and they've acquired a couple of companies in that space.

And and we are having regular meetings on how do you use the insane amount of technology and data that's available in data science, and then how do you make that relevant to people?

How do you make a product that changes lives? Right. And we are far away from that. And so fortunately, what we were able to do in the interim was figure out some basic things that we need to change and improve in our microbiome that can be done with the right probiotic strains, the right prebiotics, the right polyphenols.

And a lot of that is just taking, clues from nature. Right. How we how we subsisted throughout the course of human evolution, what were the things we consume to build this microbiome.

Right. Well with it, what are we finding out from the hunter gatherer times that exists today when you compare them

to the modern, you know, industrialized human, right.

When you look at those gaps, that's where you start to find the magic in the simple things you can do to start bringing back our microbiome more towards its natural state.

And in the meantime, sure, let's dig deep into and dive into the whole, you know, massive data science and see if we can get AI to make some sense of all that.

But we have to do something now too, right? Right. And that's the that's a balance. We're striking. Fortunately, we went with the let's do something now, philosophy first and then now that we have the capability and resources, we're looking into the other side as well, right?

Yeah. Maybe some things that come out, but it will still be a couple of years. So the goal is to move the needle and get some people an outcome. Right.

And essentially that sort of anthropological route you took, which we could just study people and understood what we're wired for, the way we live today, it's kind of like, so our DNA is 250,000 years old.

We are the same as people of that time. It's only in the last 10,000 years that we've been sort of agricultural and civilized. It's only the last couple hundred years that we've been industrial to this degree that our guts are subjected.

And it's only really the last generation that our food supply is what it is now. So what you're saying is that huge data, great data, is dumb until you know what it's telling you, and somebody has to go build something out of it, right?

Yeah. Other than that, it's a bunch of information that is not going to drive anything. Meanwhile, you just went through a simple like, here's what people did for 250,000 years.

Here's what's what we're doing wrong today. Let's kill the guy, right? Let's let's fix it. Right. And that's a very simple solution. So how important is it to then actually understand your gut like your microbiome, to taste, for example, like a biome type test to know whether you need this or not?

Or is this sort of like, no, everybody does it just because we're all suffering from the same environmental exposures and for food, etc.. Yeah. So that's a really important question.

Microbiome Testing and Universal Dysfunction

And that was a question that we set out to answer about five years ago. Right. So one of the most common questions we got from clinicians, as they're trying to understand the microbiome and trying to utilize the microbiome in their practice.

The most common question we got is, hey, I have a patient. You know, my first patient today is dealing with diabetes. And I know something's wrong with his or her microbiome, right.

Because that's that's connected to these metabolic dysfunctions. But can you tell me how I figure out what's wrong with that person's microbiome and what I should do about it versus my second patient who's coming in, who's autoimmune?

I know the microbiome plays a role there, but how do I know what's wrong with that microbiome and how do I fix it? Right. And then the third patient is coming in with reflux.

And I know the microbiome plays a role there. But what's wrong with that and how do I fix it. Right. So when you look at these seemingly unrelated conditions that present very differently diabetes, autoimmune disease, maybe it's on the skin and then reflux, right?

They seem completely unrelated, although intuitively and based on, on, research, we know that the microbiome plays a role in each of those. But the big question is what is wrong with each of those microbiomes?

And how do you go about fixing it? So that was the big conundrum that we had. And we started digging into the research and mapping everything out and just kind of putting all the science together.

And what we've come to find out, which is actually a bit of a relief, is that the dysfunction in the diabetes gut is exactly the same as a dysfunctional reflux gut, and it's exactly the same as the dysfunction in the autoimmune gut, right?

Even though those conditions are seemingly unrelated because they present so differently the underlying factors in a dysfunctional microbiome that allows for those conditions to flourish is exactly the same, right?

All three of those conditions have low diversity in the microbiome, which provides the risk factor for developing those conditions. All three of those microbiomes have low levels of keystone species, like Aquaman.

Yeah, like fecal and bacteria like this. Before long, all three of those microbiomes have, low levels of short chain fatty acid production and other post biotics.

All three of those microbiomes also have intestinal permeability, right? So they have high levels of LPs and other endotoxins and circulation. And the studies on the pathologies in the pathophysiology are all there.

Right? If you look at the pathophysiology of the reflux of reflux disease, you'll find it's the same exact dysfunctions that lead to it as diabetes, as depression, as anxiety, as Alzheimer's.

Right. So that was very revealing to us. And we found that there are certain universal through routes within a healthy microbiome that we all need. Right?

So we all need to deal with intestinal barrier dysfunction. We all need improvements in, diversity. We all need more keystone species. We all need more, post biotics like short chain fatty acids.

So then that became foundational for us. Right now you can do a microbiome analysis like we have one. Combine the right, which is a whole genome sequencing analysis that really looks at functional aspects of the microbiome.

So we've changed it up a little bit than what is typically out there. But that's really to get a to to get them even deeper, look as to some of the dietary and lifestyle and other things that you would want to tweak or some additional supplementation that you might want to add beyond the foundational and also foundational is foundational work.

Everybody needs that. And the foundational is kind of where the majority of the impact is, meaning that that that delta value between let's fix what everybody needs or that personalization of let's scan my gut, which is maybe 5 or 10% of that, that personalization difference, right, versus 80%.

So it kind of speaks to what we've been sort of screaming for the rooftops that your gut is, it's that half a personalization where we know that it is a load on the system.

But what disease is going to express we we believe that it's been looked at wrong, meaning you're not going to sequence the gut and then figure out this bacteria is this disease.

This vector is this disease. It's more it's more like this is a hub and reason for why the body's metabolically unhealthy. Now genetically we can figure out where are you suboptimal.

We know what disease is going to happen. Right. If you have poor cellular structure in the endothelial, well you're probably gonna have a cholesterol problem and heart disease.

You know, if you're estrogen dominant and you're already having an estrogen toxic load on your system, you may end up with ovarian cancer, a breast cancer, you know, if so, there's it's kind of pairing.

And like you said, taking a more functional approach. And that big data, I think the impact versus what you've already done, which you can then pair to genetics and understand, where are you, you know, not doing well.

You could predict what disease is coming, sorry. And you could prevent. So the bulk of the work is already done. So the good news is that people can take action right away.

They don't need to wait for the big data solutions, you know. So it's you know, to me, it's going back to kind of basic truths about just healthy living.

Right. We know universally it's good for 99% of people to get some activity in your, in your lifestyle, right, to, to diversify your diet to a certain degree, to get enough sleep.

Right? We know that. We know that those are fundamental truths about kind of just being generally healthy. And, and that's the same with the microbiome.

There's a general wellness, level to the microbiome that we are not achieving right now because, of course, the world around us that we're all, accustomed, that we're all susceptible to works against that general level of healthiness within the microbiome.

Right. So we that's the main thing that we need to start addressing and tweaking. Before getting super deep dive into all of that individual microbes.

So all right, so you've done a great job sort of on the solution side, do you have any thoughts or research on what are the biggest threats? What are the things that are causing that sort of, you know, unbalance?

Yeah. So we've done a couple of studies on, on common, drivers of dysfunction. So number one, one of the one of the most interesting studies we did, and I think it's published now, is a is the study on the impact of glyphosate exposure and a roundup exposure on a pediatric microbiome.

Right. So we were one of the first to do a study on that, showing that we could take what was what was really kind of a pristine pediatric, a three year old microbiome, a three year old's microbiome, and then exposing it to approved levels.

Roundup, for a three week period was enough to alter the microbiome to a point where it started looking like the microbiome was somebody suffering from inflammatory bowel disease.

Right. In a three week period.

Environmental Drivers of Gut Damage

And then we were able to fortunately be able to start recovering it once we started using this for probiotics and things like that, even though we were continuously exposing it to roundups just yet.

But that's one of the most profound things we saw, is that how quickly the microbiome can be damaged and start looking like a disease, microbiome, with exposure to chemicals.

So that's one of the key ones, that we looked at. And then we also looked at, a couple of, dietary components of people, for example, people with liver failure.

We did, we did a study on, on their intake of protein and saw that even, you know, slightly too high a protein can be really disruptive to them because, they can't clear ammonia.

Well, right. And so, protein metabolism will increase their ammonia production. And that actually creates increases the pH in the gut, creates significant dysbiosis, and can also disrupt them, overall metabolically and, and, systemically as well.

So we've we've done some work on that and we, we want to do more in that space, but, and we want to do a couple more. We're doing a study on, antibiotics, coming up.

And there's a number of studies already on antibiotics, but we want to do it more in a pediatric population, which is going to be interesting to us because most of the studies on antibiotics are on adults.

Right? In terms of how the antibiotics impact the microbiome, what would be super interesting is to see how much more or less it impacts a pediatric microbiome, right.

What what is a profound change? And can that be recovered? You see the any recovery naturally or with the intervention. So those are the areas we're going into.

And you said you did the work of understanding the three weeks, first of all, is mind blowing the how it could happen. Yeah, yeah. And imagine the 30 year old without autoimmune condition wondering why if three weeks can cause something measurable.

Well, what if you did it for 30 years? Exactly. You know, and we're talking about parts per million level. Right. Of of of the, of this kind of chemical exposure.

So it's not even like we're dosing it a milligram dose. It's parts million doses. Yeah. And then you have the parents that argue you know, that it was it was the day that that environment changed.

Whether it's some shot or some environmental exposure that my kids started expressing something that we had labeled as autism. Right. And then the clinician, the scientists will argue that's not how it works, right?

It's a genetic it's a genetic condition. But how do you argue with parents who say, well, I used to be one out of 10,000 kids. Now it's one out of 60. Exactly.

The kids didn't change. We we we can attest to the DNA is the same if the the load or the exposure. So would you suggest or. I don't know if the research is done yet, that if parents were to start working on supplementing early, that things of this nature, like autism, could be prevented?

Yeah. Not only not only supplementing early in terms of child, but even arguably more importantly for the pregnant mom, right. Because a lot of the risk factors that that, that that lead to an autism like gut.

Right. And there's a pretty signature gut microbiome for, for kids on the spectrum. There are certain pathogens that tend to be high, like Clostridium bolt.

There are, you know, certain, proteolytic organisms that tend to be higher than in kids without autism. This low diversity issues, again, there's, too many, too many, too much production of shame, fatty acids.

And like all these, there are very signature elements of an autism god. And, part of the scientific, studies show that that development actually occurs in utero, based on what's happening with mom.

Right. So we know that, for example, in humans, obese moms, overweight moms tend to have higher risk for, for delivering kids on the spectrum. Right. And and we know overweight and obese moms tend to have different microbiomes, and they have different, profiles in their circulation.

They have higher levels of LPs and other endotoxins that impact inflammation. We also know that there are compounds that are made in mom's microbiome that are essential for the development of the baby's brain, for example, peptidoglycan, right.

There are microbes in mom's got that produced a glycan and released that glycan into mom's circulation. And the placenta has receptor sites and transporters for a blanket for bacterial peptide like in transporting it to the baby's brain where the baby's brain has receptors.

So like in and the studies show that when you bind peptidoglycan it initiates, synaptic agenesis initiates different cellular differentiation in brain development, and initiates a production of the blood brain barrier.

And also the neurological growth in, in the brain itself. And and if you don't have enough exposure to glycan, you actually get certain levels of stunting, of neurological growth and brain development.

So it's it's almost even more important in gestation where a lot of these changes can kind of can affect the growth of the fetus. And then once the baby comes out, there are some triggering elements, right?

Like you said, there are literally thousands of moms that will swear up and down that their baby is fine until they got the shot right. And then the day after they notice a difference.

Right now, that's not scientific in the traditional scientific sense, but like you said, you can't ignore those moms, right?

Early-Life Gut Health and Autism Risk

They know their child way more than any scientist will ever know from doing a double blind, placebo controlled study. And, you know, and then you might not be able to find a direct causation between that shot and the development of spectrum disorders.

But what that indicates is that that child system was vulnerable. Right. And that shot is what we would call an environmental factor that triggers and spins a body out of control.

That's a same thing in autoimmune disease, right? It's pretty clear the work that Fasano and the people at Harvard have done is that you need a you need that third element, that environmental factor that then triggers the auto immune response. Right.

You have genetic susceptibility from SNPs on nod to receptors and so on a number of different things. Then you have severe dysbiosis. Right. So there's there is a gut associated risk factor.

And then you need that environmental trigger which can be of course antibiotics. It could be a bad cold or flu. It could be a shock of some sort. So we can't ignore, you know, the, the empirical evidence that we have that there are triggers that can that can create this kind of problem in susceptible children.

Right. And not all children are susceptible, of course, because you can have a 100 million kids get a shot and be fine. And then that 101 million kid will get it.

Something happening. Right. But the but we still have to appreciate why was that child at risk of developing something. And and the studies are clear that even in utero that's where things can start to go. Right.

It's incredible because, I mean, expecting parents aren't taught to think that way. Right. And so you give the example of the sort of obese, expectant expectant mother and what it took, the foods that it took to get there.

And we already know what those foods, how they're wreaking havoc on the gut. So I guess it's no surprise, that you would end up with at a state where the the guts, you know, screw it up, right?

And it's going to lead to this suboptimal lives, like you said. So, would you recommend that people, you know, do a stool test, send their samples in, and is the are the apps and the technologies that people are promoting in terms of here know what to eat based on your gut?

Are they mature enough or are they still kind of in research phase? Yeah, I think there are some aspects of it that that are that can be really helpful.

But it really depends on whether or not you, you, you have the symptoms also. Right? Because, like your genetics, same thing with the gut. There's this tendencies and risk trait based on what your genes SNPs look like, what your genetics look like.

And same thing with what you microbiome looks like. But it doesn't necessarily mean that the phenotype will turn out that way. Right? Because there are many controlling factors in there in terms of gene expression and so on.

And and so the same thing with the microbiome. So you can get a test right now and it'll tell you things like don't eat spinach, right, right. Does that mean you shouldn't eat spinach? Likely not.

Because the signs between picking up this cluster of organisms of this cluster of RNA to eating spinach is bad for you, there's still a massive gap in there.

Right. And how you translate that is still, for the most part in many of the companies that are doing it, it's still a black box, right? They're not revealing how they make those translations.

And so that is problematic. And and so when you look at translate of science between microbiome metagenomics, you know what we, what we refer to as metagenomics.

And then how your behaviors should, should change based on this data. You have to look at the things that are drawn up by consensus by lots of researchers studying it.

Right. And there are still a few things. So for example, a couple of things that we have found is, sulfate reducing bacteria. Right? So if you have high levels of sulfate reducing bacteria and you eat lots of foods that are rich in sulfates, you're going to end up with large follow this disorder stress because these foods, even though many of them are quite healthy foods, you know, like you take, you know, mushrooms and leeks and all these.

There's a number of vegetables, you know, sauerkraut and, not sorry, not sauerkraut, but, what sauerkraut is, made from cabbage and cabbage. Yeah. They tend to be high in sulfates. Right.

And and most people can endure them just perfectly fine and get all the benefit out of them. But people with high sulfate reducing bacteria will reduce a good amount of those sulfates into hydrogen sulfide.

And that hydrogen sulfide is going to cause inflammation in the large bowel. Now, even if you have sulfate reducing bacteria, it doesn't mean all of it's going to get turned that way.

But if you have the symptoms and you have sulfate, high levels of sulfate reducing back, then it's a good idea to cut back, right? For example, you have large bowel distress, you get a lot of diarrhea, you get a lot of food sensitivity issues.

All of these things that indicate inflammation in your large bowel and your your microbiome analysis tells you you have high levels of sulfate releasing bacteria.

That's a good time to try to adjust that behavior. Yeah. So there's a few of those things. Right. That are that are pretty clear across the board. And it has to be paired up with the Symptomology, because if the symptomology is not there, then there's likely some way that that's being overcome in your gut.

Right. And, and there may be another set of bacteria that are breaking down the hydrogen sulfide. So it doesn't cause you that problem. Right. And I think, based on what you said, you know, that visceral response, like I had a symptom.

One thing we've seen is there's certain foods that people aren't actually getting what they think they're getting

meaning, for example, something like hummus seems like it would be in the health food category, right?

And it was seemingly clean. But guess how many chemicals are used to dry chickpeas so that they can ship right? Right. And if you're not, you know, drying the chickpeas yourself and you know which most people aren't, things like bread.

People wonder what my ancestors ate. Bread. You know, people were eating bread for a long time. Yeah, but same thing. There's chemicals used to dry the wheat, which in Europe are illegal.

And in Canada, where I am, you know, because we have long winters, they're rampant. The usage of them. In order to survive, we need we need bread. So, it's you often there's a mismatch to.

Well, my apps that I could eat this, but I still don't feel right, you know? So. Yeah. So you have to like you said, how do you feel? You got to measure and track and take charge yourself.

That's there's there's guidance. I definitely accept guidance. But a lot of this stuff, how much of it is a visceral response and how much of it is you can feel inflammation?

This is going to lead to a disease in ten years, right? Right. You know, that's a that's a really important question. Now you can't feel inflammation but you can certainly measure it.

Right. Right.

Limits of Gut Testing and Symptom-Based Guidance

And I think that's one of the important factors where we always promote working with some sort of health professional. Right. Because I think it's important for people and any age almost to kind of get a sense on where their body is, from a immunological and metabolic, profile.

Right. We do our normal, you know, a lot of people have these kind of wellness programs where they check your vitals, your blood pressure, your heart rate.

They look at your cholesterol, you know, they look at those basic things. But but what is what is clear? And it still baffles me that this isn't part of a regular wellness checkup.

What is clear is that inflammation is the driver of all of these problems, right? Inflammation has to exist in order for many of the chronic illnesses that we deal with to to actually show up, right.

We know that aging is driven by inflammation. We know that it's called inflammation. Inflammation. So I don't know why we don't have a regular check on our inflammatory status.

Right. Whether it's simple things like high sensitivity, CRP, interleukin six, interleukin 12 and a just a simple panel, a cytokine panel of some sort.

But to me, that's something that's absolutely critical for people. You have to get a sense on where your level of systemic inflammation is, you know, at least once a year or twice a year, right.

And like you said, there are lots of those silent culprits where your current diet and the things you're eating, you may not feel it, but it may be setting you up for foundation of chronic illness because of the inflammation it creates.

But you would not you wouldn't know that until you tested. So it sounds like, you know, if someone or someone were to ask you. Okay, well, if I, if I take action on this and I start to take care of my gut, what kind of diseases can I prevent?

And it sounds like the answer as well. Everything. Because if it. Yeah. If, if, if if inflammation is the root, and it's not

the only reason why diseases happen.

But we're saying that for a large part, if you consider how we eat and what we're what's available to us, the environmental exposures are chemicals, things that you don't even know you're exposed to.

You know, cooking on a Teflon plane, that seems safe. But for some women, it's the hormone disruptor and causing problems. So, so really what we're saying is you name a chronic disease, we can probably bring it back to the gut in some way or the other.

Yeah, inflammation is a is a key aspect of it. And the biggest source of chronic inflammation is a this biotic gut and the intestinal permeability that goes along with it.

There's this and the condition called metabolic endotoxin Mia. Or it's sometimes referred to as postprandial endotoxin. And that's the leaking through of of LPs, which is an endotoxin that's produced largely in the gut.

And then all of the inflammatory havoc that that creates in the body. I've written a couple of chapters now, one one for a functional medicine textbook and then another one for another book that's actually being published, where we go through just dozens and dozens and dozens of references on meta analysis studies and so on, showing how this type of inflammatory, response is at the root cause of the vast majority of chronic illnesses, you know, and, and it's much harder for chronic illness to develop if you don't have that inflammation.

Right. So, you, you, you have the genetic risk. You know, many of us have all kinds of genetic risks. And then you have environmental triggers. But if the inflammation is not there, you still have some resiliency against the condition.

And so it becomes so important to manage and handle that inflammation in your body. And most people have no idea where their inflammation is until it's too late.

Right. Yeah. So they feel and they now they're diagnosable. Whereas that condition was brewing in their system for the last seven, ten years. Yeah. It's it's challenging because the the system you rely on isn't designed to do that work.

You know, it's it's designed to mask the symptom. And do you have any challenges where, you know, what we're talking about is eliminating chronic disease.

If this is done properly and through and through to the end, do you have challenges in with resistance, meaning that, you know, the certain parties are saying, we need to get rid of these guys?

The biggest resistance comes from the interventions that we would use. Right? So because we have the capability of developing and validating and utilizing low cost, natural, non patented, you know, interventions like simple things like probiotics and prebiotics and all that.

That's where most of the resistance is because those at some point become competitive to the bigger drug, markets. Right. The prescription drug markets, that's where the resistance comes from.

There isn't so much of a resistance on, you know, you're making people well, which means that they're not a big market for us because this wellness world that you and I are in is still a teeny, teeny, teeny fraction of the total population, right?

Even though we reach a lot of people and we talk to a lot of people and we engage, when you really look at it, you go, wow, we live in a tiny little bubble of wellness, right?

The vast majority of people out there have zero clue that any of this exists. They've never heard of a summit. They've never heard of, you know, they don't use a probiotic, they've never used any of this stuff, and they just kind of go to their regular doctor, you know, once every few years or when a problem comes up and that's it.

Right? So they might be drinking Diet Coke, still thinking that they're doing something healthy. Right. That's that's the mentality the vast majority of people.

Inflammation, Chronic Disease, and Resistance to Change

Right. So we're not challenging their, their, their market in the sense that they're the pool of sick people that they have at their disposal. But it does become uncomfortable when low cost natural interventions start to catch on, you know, because then that can be a threat to, to, to the, to the bigger markets of, of, prescription products and all that.

And and again, not that every prescription product is bad in any way. Right. There are many things that people need to take. And, can help and can save lives, but it's just not the it shouldn't be the, the predominant way of doing health and medicine, you know?

Yeah. Especially when it comes to chronic conditions like acute conditions. We understand solve the problem of emergency, get it all the way. But even then, even with the acute condition, there may be something underlying that need to be resolved once you put the Band-Aid on. Right.

So, you know, do you see I there's a lot of work you're doing behind the scenes in research and with other companies. Do you see a day where this becomes sort of common practice and you walk into your private career, MD and your guts been already mapped, and that's the map that you work off of 100%.

Yeah. We we knowing all the things I know from behind the scenes, all of the work that's going on in the in the data science, AI side, working with, you know, having some connection with insurance companies and corporate wellness.

And then the big CPG companies, I work on a number of products, projects with big CPG companies. There's a massive, you know, groundswell of interest in, in reshaping the paradigm around health.

Right. And I think the big motivator for that, for from all of these corporations and institute and all that, is because the consumers are demanding that.

Yeah, I mean, they're getting more and more that way. Right? So every time anyone that's listening to this, right, anytime you make a choice on a healthier option, right, or anytime you sign up for yoga class or anytime that you do, you go to this meditation retreat or you go and get your gene in genetics tested just for wellness reasons.

Right? Those are the things. Those things are recorded, right? Everything we do is recorded and data five. Right. And so all of these companies have access to that kind of information.

So they're seeing this swelling of interest in wellness and preventative, you know, notions and also in ensue in, in customers really want to, to understand their bodies better.

Right. So they're seeing the number of people that they're using 24 hour glucose monitors and or rings and doing genetic testing and all that stuff. So they're all starting to realize that that's the future, right?

That people want to know what's going on in their body. They want to be in control of what's going on in the body. They want to have some say in how they live and how they're their health and wellness outcomes look like they're no longer just going to wake up and count on their doctor for their health.

Right? That's not the future. And so there is a massive groundswell and level of investment that I've never seen before in that side of the world. And so there will be a time where you go to poop in the morning and your toilet is reading, right, a number of metabolites in your stool and the gases coming out and even looking at certain genetic primers in your microbiome and then sending that data to your health cloud, that's also measuring it from your sleep sensors on your bed, from your, you know, metabolic, your metrics, biometric sensors on your fingers and your toothbrush is measuring your, oral microbiome levels.

All of that stuff is happening. And and actually, we'll we'll probably be, come to fruition sooner than we think, you know, probably in the next ten years, I would say that's very cool.

So essentially, it's kind of like this democratization or taking this, this hierarchy of I start with my doctor, that's the gatekeeper, and then I can access other stuff.

Right. And it's all siloed versus my health cloud. You know, he said it so beautifully. Here's my health cloud. And the data is already there. And it should be in real time. I should not be waiting for something.

So I should be triggered that by the way, this is off. That's off because we are we know these things already. The technology now exist. It's just the adoption.

And I think when it's at that point, the clinicians will be using it as a tool. You'll see in primary care that you're not going for visits, you're picking up your phone and your your clinician is actually reaching out to you to say, hey, something's off.

What got these alerts? Yeah. Did you not sleep properly last night? Like what happened? So I just took I should mention I just got a new bed yesterday, which was absolutely fascinating.

It's one of those sleep number beds. Right. And and I got it because I just want to be able to recline up while I'm at night even watching TV. That was my main motivation, right?

But I didn't even realize all the things it does. So then I slept on it last night. I opened up the app this morning. It had all of these biometrics for me to measure.

Yeah, and measured all the different cycles of my sleep, how long I slept, my heart rate variability, my respiration rate, all this stuff. And I was like, Holy cow, this thing is getting now I'm like, motivated to improve my sleep score.

So tonight I'm like, I'm getting to bed by midnight this year. You know, I want the score to go up. So yeah, it's all there. It's all going to start coming together in a singular hub that you, your healthcare practitioners, your doctors all will have access to.

And it's all going to be, you know, preventative, which is going to be awesome.

Future of Health Data and Preventive Monitoring

Oh, one last thought, in general, nowadays whenever we talk to anyone that's all up in that biohacking wellness type space and we ask them, you know, what do you suggest?

Like forgot to take everything aside, what's a 1 or 2 things people should do? And more often than not, it's intermittent fasting and good sleep, you know, is there a connection between those two things and the gut?

Oh, 100%, yes. So I'm glad you asked me that, because if you would ask me, what are two couple things you would do, I would have probably laid out the same things.

Okay. And I started, intermittent fasting about four years ago. And probably one of the best things I've ever done for myself, especially because I travel so much and I eat everywhere.

I'm eating outside 98% of the time. Right. And then I. And then sleep is something I'm, I'm battling to do better this year. So intermittent fasting in fact increases the diversity within your microbiome, which is counterintuitive, right?

You're like, wait, so not fitting my microbiome increases diversity. Yes, because your microbiome is layered with different types of operators. You've got this top layer of primary fermenters or primary digesters.

They digest all of the big macromolecules that come into your diet. Right. And then they create all of these

secondary metabolites that feed the next layer of microbes that then need time to break down the secondary metabolites and produce tertiary metabolites.

And during each of those layers of fermentation and digestion, you're getting all of these bioactive molecules that we need for our overall health and wellness, right?

So the secondary and tertiary metabolizes stop functioning when more food comes in. So we actually need periods of not having any food entering into the system in order for us to, actually increase the diversity of all of those types of organisms.

And then the second part is sleep. Your your microbiome is a diner. But, that neural system as well, it works off of a 24 hour clock. There are microbes that get turned on in the night time that turn on housekeeping genes in your system overall.

Right. For example, my autophagy and autophagy, that cleaning up a mitochondria, cleaning up a cellular debris, and all that is turned on to certain degree by microbes in your microbiome.

And those microbes only come on during rest state. So when you when you go into the nighttime rest state. So having adequate sleep will actually help your microbiome trigger repair functions not only in the microbiome itself, in the gut, but also systemically.

So if you don't get adequate sleep, you don't get that repair that housekeeping, that cleaning. And if you don't intermittent fast, you will actually not find enough diversity for your secondary and tertiary metabolism.

That's fascinating because a lot of people understand that we need rest. We need to call it recharge, but nobody knows what that charge is like, what's actually happening.

And if you understand the mechanics of it, you get a little bit more motivated to do it. So, you know, it's one thing to understand, hey, I need rest.

It's another to understand, like there's an actual biological function that has to happen daily, you know, in order to have live with optimal age. And you wonder why then you're sick, you know.

So yeah. And I the visual I always have and I, I work well off of visuals. Right. In terms of motivating myself. So I'm sitting here in my office and it's like midnight, I'm still toiling away at something, reading articles, writing emails or something.

And I can't help but visualize this whole set of microbes sitting there with like, runes and mops and shovels and all that, just going like, what the hell?

Intermittent Fasting, Sleep, and Microbiome Repair

Like, you know, when we have less time to work now we got to repair everything you did today, right? And I had them. I had this visual of them getting frustrated because we're not giving an amount of time, and then that's the kind of thing that motivates me to go, okay, I got to give my microbes time to fix me.

So I got to get to bed right? So if people think about it that way, there's absolute biological, validated scientific reasons for having to do these things, like sleeping.

And it's so clear the science can't be more clear on this. Well, this was honestly very fascinating. It was. All we were hoping to talk about was, hey, how why does your product work?

Well, we got so much farther to understand why the gut is so important. We've been hearing this. We talk about it. It's there's, you know, Instagram, post blogs, all the everyone's talking, but we don't know why.

Right. And the why I think a lot of people have been pointing in the wrong direction of what the big data will tell us why one day. Right. And I think there's some truth to that, but I don't really.

We don't need to wait. There's there's enough knowledge today. There's enough actionable work we can be doing today. And you're part of that. You pioneered it and made it happen, you know?

So. Absolutely. Well, thank you so much. I appreciate that. And, you know, that was kind of our, our impetus when we first came out is we're like, you know, how do we solve some of the existing problems that we know we can solve?

We know enough now to solve those problems, right? We know enough about microbes to utilize the right microbes to make an impact. And at the end of the day, it's really about people understanding the stuff that makes them appreciate it.

Right? If you don't understand it, you're not going to appreciate it. Most people don't appreciate quantum mechanics because they don't understand it, but you get even the people that study it don't understand it, so it's hard to appreciate it.

So I appreciate the opportunity to get to talk about this. So thanks for having me on. Yeah, you made it very simple and easy to understand. So thank you again for joining.

It was awesome I sure. Thank you for.