## Introduction and Why Gut Health Matters

Welcome back. We are diving into another interview on reversing chronic gut conditions. I'm your host, Sinclair Kennally And today I am joined by the wonderful Kiran Krishnan, microbiologist and co-founder of Microbiome Labs.

You are a beloved fixture in the community at this point for bringing your common sense wisdom and your deep research and ethics to this space. You know, it's no secret that we're in the middle of a gut pandemic right now.

And it's it's worse than ever. And yet we have more access to tools than ever. So I really want to do a deep dove with you today and talk about what's working, what's not working in the space right now and what's what's a good use of people's time on their healing journey.

So welcome. Thank you so much for having me. This is a, you know, this kind of program is so critically important because knowledge is power. And this, you know, in your endeavor for your health and nobody's going to advocate for your health better than you are or and certainly for your own families better than you will.

So knowledge is so important in order to be able to do that. And we do live in a world where we are inundated with information and in every possible way.

In fact, our phones are probably listening to us right now and and probably curating our feeds and lists based on the things we're saying. So, you know, we get we get a segmented, curated list of information.

A lot of it can be, you know, misdirection. So it's important for people to know the right things. And I would love to start with why you're so passionate about this.

I think we've spoken about this a little bit in the past together, but I think it really bears mention here. Look, I just moved on this journey. You know, so I've always been a nerdy science kid, you know, I've always been driven by curiosity.

Curiosity of the world around me. And I needed to know how things work. I desperately needed to know why things went wrong when they would go wrong. Right.

It was hard for me to take things just at face value or, you know, just on faith alone. Right. I had to really understand the mechanics of things, whether it's in your body or around you or, you know, the microwave or your you know, your heart or whatever it may be.

Right. I was always that kind of kid and I always searched for answers that way. So that's one part of why I'm in the world that we're that we're all in, because we live in a world right now and we practice in a world where the problems are massive and they're extremely important because we're talking about people's lives and we're talking about people's, you know, quality of life and their families and all that and the solutions can be quite elusive and the solutions can be difficult to ascertain because the problems are complex.

Right. And so it's the perfect place for someone like myself to put my effort, because if I can connect the dots to a certain degree, I can make sense of the in of the variable information that's out there.

And if through all that, we can find a few solutions that improve one life, two lives, three lives, let alone thousands of lives, then the time is well spent.

Right. And so for me, I always look at, you know, my time here on Earth and in this universe and I have a deep appreciation for being here. Right.

## The Gut-Brain Axis and Enteric Nervous System

When you consider that each one of us was a one in 300 million chance of being here because, you know, the sperm that made me in the egg was one of 300 million that were on that journey.

Right. And then if you think about how our molecules are made from Stardust, right? We we come from dying stars and supernovas that that poured out after nuclear fusion that put out this material into the cosmos that form life forms eventually.

So you just think about all of those things and you go, Holy shit, it's pretty special that I'm here. What can I do with my time, you know? And we're not here for very long. Right. So it comes down to that.

And that's how I think about the world and life and all that stuff. And if I can help, I'm compelled to do so. And that's why we do what we do. I'm so much for sharing that piece.

I think it really helps people know where we're coming from. You know, I frankly didn't think I'd make it to be this old given the health challenge. So I'm living on borrowed time and I'm thrilled to make the most of it now.

Absolutely. Absolutely. And it pays it forward, I think you know, I think you the people we help, well, a portion of them will help others and and so on.

And I think that's that's the legacy we leave. Right. To me, it's it's not about, you know, your last name or, you know, your what your tombstone looks like or whatever it may be.

People think of us as legacy or your wealth and so on. It's really about the the wave of change that you can create, whether it's with a singular line of people or groups of people, whatever it may be.

There's somebody that's going to be living, you know, two generations from now, from when you and I are having this conversation that's going to benefit from this information in one way or the other.

Right. And for their sake, we need to do what we do. Yeah, I think that's beautifully said. Okay, so let's dive right in. I really wanted to talk about neurotransmitters and that gut brain axis with a scientist.

With a researcher. Because. And I want to talk today about you know, what we can do to help support and shape our own microbiome. And we have so much more control than we think we do.

How that plays into, you know, our chronic conditions and how they came to pass and also how they can be a part of the past and not the present. So, yeah, so let's just dive in and talk about the enteric nervous system, if you could summarize that for folks.

We get to mix in our audience of people just getting started working on their help, people who know more about their conditions than their doctors do, and then of course are wonderful practitioners on the tools.

Yeah, absolutely. So, you know, I think most people know that the central nervous system, which is really centered around your brain and your spinal cord, and then you have something called the enteric nervous system, which is basically a very, very dense neurological network that wraps itself around your entire digestive tract.

Right. So and that nervous system is directly connected with your central nervous system, mostly through the vagus nerve, which is this nerve that connects to the top and the bottom, which means that it's a bi directional highway, which means the enteric nervous system, the gut and urological system, is constantly in communication with the brain and the central nervous system and vice versa.

Right now, what's interesting about the entire nervous system is it's actually the second dance, the second most dense neurological endings in the body.

It's much more dense than the spinal cord in terms of its neural and nerve endings and so on. Right. And neurological factors. So it's considered by many to be the second brain, if you will, physiologically.

It's definitely that when it when we talk about the density of nerve endings and the complexity of the neurological system, but when you think about the mechanical function between the gut and the brain, it's really not the second brain that's really the other brain because second would make it seem inferior in some way to our main brain.

Right. But it's not actually inferior in many ways. It's actually superior to the other brain in terms of some of the things it can do that the other brain can't do. Right.

But in in in reality, what they do is they work in concert with one another. So when you think of the gut and the brain, what's important to understand is the gut.

And the brain are two parts of the same system. They're not a different system at all that are. And that happen to be connected. If we think about the gut in the brain as a same system, it starts to put into better perspective how we have to address both the gut and the brain.

Right? Because where when we do anything to the gut, we impact the brain. When we do anything to the brain, we impact the gut. Right. And when there's a problem with the gut, for example, it can very likely be a brain issue.

And when there's a problem with the brain, we know it is often a gut issue. Right. Just a quick example of both of those things. IBS, IBS, irritable bowel syndrome, which is this massive syndrome of diagnosis, a lot of SIBO and all kinds of things fit into it.

But IBS impacts like 60, 70 million people in the in the U. S. It's a huge chunk of the population. Right. Have this massive issue of digestion and IBS is always thought to be a gut issue because it's irritable bowel syndrome.

It's in the bowels. Now, the research is pretty clear that IBS is a gut brain issue. It's it's actually a neurological issue that's centered around that relationship between the brain and the gut.

Right. It's not something that's happening actually in the gut. And driving it in the gut. It's both a gut brain issue. It's that system issue. Right.

Same thing with anxiety, depression. We always thought of it as being a brain issue. Well, it's not it's largely a gut issue that's impacting the brain.

Right. So it does. The research is so clear on this now. And when we know this, this is how we can we this is how and how we actually go about helping these conditions is when we understand what the true root causes are.

So that's a gut in the brain and the entire nervous system.

## Restoring the Microbiome: Keystone Species and Diversity

Beautifully said. Okay. So given all of that, where should we be focusing our energy and our efforts once a chronic gut condition has been created? Because there's that weird catch 22, right?

We need our gut to function well in order for the rest of our body to work well, because we have to absorb our nutrients. If we can't absorb our nutrients, we can't heal.

So we get into this weird position where we're adding more and more things to the list to do every day. And we're not seeing progress in our population.

Yeah. And it can get extremely complex. Right. And especially if you go and you see many different types of practitioners, you go, you know, you might spend your first several years just talking to allopathic doctors and they're giving you very one dimensional bandaid like solutions and ideas.

And then you go to a functional doctor, but it depends on what they focus on. They may go, Oh my God, you need to detox. And then they're just focusing on detox for the next eight months, right?

Or you shift to another one and they go, It's not about detoxing, it's about rebuilding. And then they want to rebuild for for the next eight months. So it can become very, very confusing nonetheless.

And then if you're looking for information about this stuff on online and all that, it becomes mind bogglingly confusing. So let's break it down simply for people, right?

The very simple issue here is that nine out of ten times, if you've got a chronic gut issue, it it start because there's a dysbiosis in your gut microbiome.

Right. What does that dysbiosis mean? It's a general word that we use to tune in to describe an imbalance of microbes in your gut. But we can get a little bit more specific.

What is actually out of balance in the gut, right? Normally it's the microbes that control certain features of diet, of the digestive system, and also by that connection, control features of the gut brain axis.

Right. So the key things are these keystone species. So keystone species are akkermansia fecal and bacteria bifidobacterium term. These organisms are designed by nature and through the course of evolution with us, their role has become to defend and rebuild and restore the physiological structures of the lining of the gut.

These these structures are incredibly important for the basic functionality of the gut, for you, for your body to be able to tolerate certain foods, break down nutrients, absorb them for your bowels, to actually move for your enteric nervous system, to have all the nutrients and and byproducts it needs to function to for the right signals to go up to the brain so your brain can function appropriately.

All of these basic things, including, of course, your entire immune response, which the vast majority of it is occurring in the gut. Right? All of those things are all dependent on a physiological structure within the gut, and that is having these tight junctions in the intestinal epithelium.

That's a lining of your gut cells, right? They all have to be tight next to each other, like soldier cells sitting next to each other and above them. You have to have a really good, robust mucosal layer, right?

You have to have within that mucosal layer, you have to have a nice diversity of microbes, high diversity means a stability in your microbiota and means that not any one aggressive or egregious microbe can take over and start creating problems and inflammation in the system.

It means that there's balance in means of the competitive forces. It means that there's a diversity of biochemistry and biochemical and biological activity in the gut.

And I've described why that in itself is important. And it also means that your gut is now functioning to support the body rather than acting as a highly toxic driver of the body.

Right. And one of the things I want people to understand about their gut microbiomes and thereby their gut is your gut anyway, especially when you think about the brain, for example, your gut is either a on this side of the spectrum, which means it's the most supportive, protective, important thing to your brain and the rest of your body.

Right. Or on the other end of the spectrum, it's the most toxic thing to your brain or the rest of the body. Right? Arguably the most toxic thing. Even more toxic than your behaviors.

Even more toxic than smoking or, you know, doing other things outside that we know are toxic genic. A dysfunctional gut can become the most toxic thing to your body.

And so most people's gut are somewhere on that spectrum, right? If you're all the way over here, which very few

people are, which is the supportive, nurturing component of the gut to the brain, then you're doing wonderfully well.

Your risk for chronic disease is virtually none. You can eat anything you want. You sleep 8 hours a night without any problem. You never have anxiety.

Or if you do, you come off of it within minutes, right? You're you're fit, you're lean. And all of that stuff, everything is perfect. In that case, right now, as you're moving down the spectrum, disease becomes more and more and more apparent when you get closer to this.

And it means you have a a compound number of chronic illnesses. You're dealing with autoimmunity, food sensitivities, allergy skin issues, anxiety, fatigue, sleep disorders, all of them compound on one another.

Right. And that's because of the direction in which your gut is going. So gut health is merely about bringing your gut from here as close to this other end as we can.

Right. And there are certain principles that drive your gut from this side to this side. And if we follow some of those principles, we can start making significant progress.

Right. And we don't have to get overly complicated with 50 different, you know, supplements and variables and, you know, devices and all of that stuff.

Right? So that's where we really want to bring value to people. So how do you go from this side to this side? Right. That's that's a simple breakdown of it.

The first thing is what I mentioned is those keystone species, they have been designed to protect the gut, to move it from here to here. Right. Re reestablish and maintain the lining of the gut, the intestinal epithelium, the tight junctions in between them, and then the mucosal layer.

Right. And then the immune response in the mucosal layer as well, because that's another very important component. So then how do you increase these keystone species?

Number one, fasting can improve many of them, right? It can increase the growth of many of these keystone species. This is why intermittent fasting, for example, has so many studies behind them showing all of these global health benefits just from not eating for a period of time.

Right. And the reason for that is because many of these organisms, like Akkermansia, for example, do really well under a condition where there isn't constant food coming in.

It gives them an opportunity to do secondary, tertiary metabolism. That was that cannot occur when this constant food coming into the system. Right. We're not designed to be constantly fed.

Right. Our ancestors did not have the luxury of eating 24 hours a day. Right. Or even 16 hours a day. They had to make significant effort to go out and find food.

And they spent a lot of the day fasting. And so our microbiomes are still in that state. Right. We need to fast to a certain degree, and we're talking about a simple 14, 15 hour fast, mostly overnight.

Right. So sometime in the late evening, starting through overnight and then kind of push off that first meal a little bit, you know, towards 9:00 or 10:00.

So you can get in somewhere around 14 hours is great. If you can do 16 hours, that's fantastic. But 12 to 14, there's still benefits there as well. Right.

So that's one way in which you can help the Keystone species. The second way is keep many of these keystone species are designed to consume complex oligosaccharides, right?

So oligosaccharides are pre biotic type fibers that are found in certain types of fruits and vegetables, and they're found in in the in the core part of the Kiwi, for example, or in plankton genes or, you know, sweet potatoes or, you know, other types of fruits and tubers.

And these and these oligosaccharides are very complex carbohydrates, structures that only these organisms have the enzymatic capability to break down and break down these oligosaccharides.

Not only does that increase their numbers, it also it also causes them to produce very, very beneficial byproducts that are really important for the gut things like short chain fatty acids or butyrate, propane and acetate, they will metabolize things like polyphenols and convert them to your olefins, which are really important for cellular function and gut function.

So a lot of the nutrients that we need to maintain a healthy gut microbiome and push the microbiome from this end to that end of the spectrum are our nutrients that are byproducts of microbial fermentation.

We can't get them directly from food. They don't exist in food. We need our microbes to break down food and create these nutrients for us. Right. So that's why that oligosaccharides and that prebiotic fermentation by the by they are the keystone species are so critically important.

It's not just about bringing their numbers up. It's because that metabolizes and creates byproducts that are incredibly important for our gut and overall health.

Right. So that's a second way of increasing those organisms fasting, increasing the intake of prebiotic fibers. And then and then the third way is just to try to avoid in time microbial compounds in your daily life as much as you can.

Right. We know one of the most egregious and pervasive antimicrobial compounds is Roundup. Right. It's a antibiotic. They were they in the 1970s. You know, the company, Watson and Monsanto that developed the product filed a patent for roundup or glyphosate being an antibiotic.

Right. It kills microbes and and it's sprayed everywhere. It's sprayed on everything. It's sprayed on your, you know, your oats and all of those things.

And so if you can reduce your exposure to those kind of compounds which do impact the keystone species, then you're doing a service to your keystone species by giving them the environment in which they can thrive a little bit more.

Right? So just those three things alone. If we start doing those three things alone, you can dramatically increase the growth of your keystone species, right?

So that's one thing, one step one of moving your gut from here to here. The second part is increasing diversity. And we're talking about alpha diversity, which is the number of functioning organisms you have within your gut. Right.

And a couple of simple ways of doing that. Fasting also increases diversity. Number two, eating a diverse diet, right? Our ancestors ate upwards of 600 different types of foods annually.

Right. They were foragers, gatherers, hunters. They they ate what was available. Right. And humans are omnivores. So the large part, right. We can eat almost anything.

We can eat insects and plants and animals and root fruits and berries and everything. We can dig in the ground and eat roots and so on, so we can eat all kinds of things.

And we're designing to eat a large diversity of foods. That's part of what drove us up. The evolutionary ladder and the, you know, the food chain. Because you look down at the lower levels of the food chain, you get a lot of obligate organisms, meaning, you know, obligate carnivores who only eat meat and their source of meat is gone because of a drought.

Then they're screwed, right? And their source of meat is often a obligate herbivore, which can only eat plants. And because of that drought, that herbivore has gone.

It's not like that forever. Can start hunting all of a sudden, right? It's not like the the buffaloes are going to start, you know, chasing down wolves and hunting them down and eating meat.

Right. And so, you know, we are in a special situation where we can, you know, if the buffalo is gone, if meat is gone, if plants are gone, we can eat insects, right?

We can eat crickets, we can eat worms, we can eat anything. Right. And we can survive on them. We can pluck fruits and we could pluck fruits and so on.

So the diversity in our microbiome is in part dictated by the diversity of our diet. And I understand that a lot of people watching this are probably like, well, I can only eat like six or seven foods, right?

And I can't tolerate a lot of things. So how can I increase my diversity? Well, that probably means that you have to do other gut fixing things first as you start increasing foods.

And I could talk about I can address that as well. Saying that let's just pause there for a second because we get so many students with chronic gut issues and they're being really hard on themselves.

I understand I was down to three foods for long periods of time, like a couple of years, and they're stressed because they're not eating the rainbow. Like, okay, first things first. We've got to work on absorption.

We've got a silver lining. We can get some drainage going. Yeah. And so yeah. So you have to address that, right? And you may end up in or be in a situation where you can't diversify your diet just yet. And that's fine.

Just know. And then the interesting thing about the microbiome is that it's an ecological problem. So don't be stressed that your diet is low in diversity right now because you don't have the capability of increasing diversity and that you're screwed because of that.

Right. It doesn't mean that at all. It means that a year from now we can add new foods. Great. Your microbiome will benefit from that a year from now.

Right. And if two years from now it takes you to add more food to your microbiome, will still benefit from it two years from now, it's an ecological problem.

And so those those organisms that are looking for the diversity of foods, they're not necessarily dying off and leaving your gut forever. They're there, but they're at such low levels that they're really not functional.

Right. And so when you can and you can start adding in more diversity of foods, you will bring them back. Right. And that's a critical thing to keep in mind because people do feel the sense of hopelessness and loss.

Right. They're like, oh, my God, I've taken, you know, ten rounds of antibiotics in my life because of this condition or reason. And, you know, my diet's really poor.

I'm totally screwed. You're not. It is an ecological problem. You can always improve it. It's never, never too late to improve your microbiome in moving from one end of the spectrum to the other.

Right. If I was 95 years old, I would be and I'd live them. Norm like allopathic life. I'm just taking medicines and and all that. I would start working on my microbiome today because it's never too late.

Right. And it's never too late to see the improvements and the and the subsequent benefits of it.

## Healing Leaky Gut and Reducing Inflammation

So so diversifying your your thing can come from just fasting, right? So so if you can't tolerate foods, right? You can fast, you cannot eat anything, right?

That in itself can can help. Number two is if you can't tolerate foods, then you want to start looking at how do I get some of the base nutrition into my microbiome to feed those organisms?

Right. So you want to start looking for a really good mineral balance, a mineral product, right? That has a good diversity of earth minerals. You want to look at really good natural multivitamins, right?

There's a lot of good ones in the market nowadays that are that are drinks. But you want to make sure that the vitamins sources are all natural. They a lot of them come from greens and things like that.

Right. So you can do some micronutrient supplementation in order to help give you a microbiome, some of the some of the benefits that it needs without being able to extract it from food.

Right. Because you just can't introduce that many foods into your system at the time. So you want to feed base nutrition to your microbiome. You want to fast you also want to just eat whatever you can as much as you can as and you try to add things in slowly.

One at a time. But you can also go outside, as it turns out, being out in nature, spending time in natural environments like going for a hike and, you know, sitting down.

And let's say you let's say you can just bananas are one thing you can eat right and your system tolerates bananas. Great. Take a couple of bananas with you on a hike.

Sit down somewhere in the natural environment on a log or something like that. Peel the banana and eat it there in the environment. Right. That is one of the most natural ways of introducing microbes into your system.

May seem esoteric because you know, you're not seeing microbes. You're not like rolling around in the dirt and eating dirt and all that. But believe me, you're getting exposure to microbes just by being in that environment and especially we're consuming in that environment.

Right. One of the things I do and I make sure my kids do, for example, we love going out in nature and hikes and all that. I make sure they're touching things, you know, like I'm picking up sticks and handing it to them.

Look at the stick. Look at this log. Hey, catch this rock. You know, like, I want them to touch things in the environment because that's how we engage with nature and that's how we pick up all of these microbes. Right.

And then I'll toss them an apple and have them eat it. Right now they're touching the apple. It's got microbes all over it from the trees and the bushes and all that that they were touching.

And you're putting that into your system now. It doesn't necessarily mean that those microbes are going to colonize your gut. Right. But it does mean that those microbes are going to facilitate reactions in your gut that actually help diversify some of the microbes that do exist in your gut microbiome.

Right. So that engagement with nature in itself can be very, very powerful. You may not be able to add ten new foods to your diet, but you can actually fast you can absolutely feed your microbiome with the right, with a good diversified mineral vitamin micronutrient mix.

So, so so they have all the components they have to engage in their metabolic activity. You can absolutely go outside as well. Right. You can be in the environment.

You can engage with nature. You can consume whatever it is you're able to consume in nature so that you can get more exposure to microbes and you can be prescriptive about that, right?

If your gut is really messed up, prescribe yourself for three or four times a week, 30 to 40, 60 minutes a day, being outside in a natural environment.

Right. And take your shoes off, you know, put your feet in a little bit. Right. And then put your socks and shoes back on or whatever you're wearing. Come home and walk around your home with that wood, with the feet that have been in the dirt, because that's how you're enriching your microbial environment in your home.

Right. You can actually keep your doors and windows open if it's safe where you are to do that for a few hours of the day to allow more microbes into your household and improve the microbiome of the household.

And again, it all just kind of sounds a little fluffy and esoteric. But there's research on this that shows that this kind of stuff actually does improve your health as as it's improving the microbial environment around you.

Right. So I want to really emphasize that this is like brass tacks stuff. I think that the sicker we are, the more we tend to reach for the most sophisticated sounding thing, which actually might be the most outside of nature.

You know, you do not need to go get 10,000 or $20,000 with a stem cell injections. You need to get outside. You need to stop eating food that hurts you and start from there right?

Okay. Absolutely. Yeah. And then okay, so we talked about keystone species. So increasing them, we talked about trying to increase diversity is another thing.

The third thing is you have to stop the leaking. It's in the gut, right? Leaky gut is the biggest driver of chronic gut issues and then chronic health issues in general.

I do a whole lecture for for for doctors where I take them through for two and a half plus hours on showing them how all of these seemingly unrelated conditions like reflux disease with diabetes and anxiety and autoimmune conditions and heart disease, all of these things are thought to impact different parts of the body and are seemingly unrelated how all of those actually have the same exact cost in in the gut.

And it's a leaky illness in the gut and a condition called endotoxin simian. That's when your gut is leaky and you leak through all of these endo toxins that are produced in the in the microbiome, in the gut, the presence of those endotoxin, not only in your gut lining, but then throughout your body, is the biggest driver of chronic low grade inflammation.

And in fact, a 2015 study in frontiers of immunology concluded that this process of your gut being leaky and these toxins leaking through is a number one driver of mortality and morbidity worldwide.

It's a number one cause of death worldwide. And the reason is because it is the driver, the key driver of the top five killers in the modern world. Right.

Heart disease, diabetes, cancer, osteoporosis. And then and then now, you know, neurodegenerative conditions as well are hitting that top list, things like Alzheimer's, Parkinson's, dementia and so on.

Right. All of those conditions are driven by this leak in us in the gut. Right. So you do have to do some things to address that. Now, that's been kind of the mission of Microbiome Lab.

So when we first were conceptualizing, you know, a microbiome company and the big problems we wanted to solve in health, it became very clear and easy to figure out that leaky gut was a key thing we need to resolve.

So we started looking at in nature, you know, how are animals engaging with microbes and all that? What are what is leaky gut look like in the natural environment?

Are there any other segments where leaky gut has been tested and actually successfully treated? And as it turns out, in veterinary medicine they've been successfully treating leaky gut for 50 years.

Right. And identified that leaky gut is a big issue in veterinary medicine because there's a massive economic impact in veterinary medicine with leaky gut and that's in farms.

Right. So in in meat production facilities, I know they're not the greatest example of anything healthy, but but the benefit of what the work that they've done is actually going to impact us in a very positive way.

What they found is that and this has been going on since the 1950s and 62, right. What they found is that when you have a lot of pigs together in a in a in a in a pig farm or a cow operation or chicken operation, you get a certain level of mortality rate in these animals.

Right. And for these companies, if you're at three or four or 5% mortality rates, it's a massive economic impact because a chicken company might have a billion chickens right among their four or five different production plants and so and grow houses and so on.

So if they have a billion chickens and 3% of them died, that's a huge economic impact. So they've been spending a lot of money in veterinary medicine to figure out what is making these animals sick.

Sure, the conditions they're in are absolutely horrific for the most part. Right. But what is it about the conditions and what's happening physiologically in the animals that are making them sick?

They've identified that intestinal permeability that is caused by antibiotic use and poor feeding conditions in poor environments and all that aren't is the biggest driver of mortality in these animals.

Right. It's also what causes their immune system to be suppressed and be more susceptible to illnesses and not gain weight appropriately and not be able to utilize the food.

That's called feed utilization. Right. That's a metric that they measure all the time. £1 of feed, how many pounds of weight do we gain on these animals?

And that's a directly that's directly associated with how leaky that animals gut is. Right. And so the ability of the animal to assimilate and utilize the food and nutrients is all the same stuff we experience, right? Yes.

We're not animals being grown in a grow house for slaughter, but we consume a lot of antibiotics, right? Well, yes, I guess we can't be completely sure about that.

And, you know, but we are we consume a lot of antibiotics. We're surrounded by all kinds of horrific chemicals that hurt our microbiome all the time. Right.

We have very poor food choices, you know, just as terrible as a fetus that they're feeding these animals. We have really low quality, cheap food for the most part.

Right. Low nutrient density, highly processed, you know. So we're so much similar to those or to those animals and we suffer from leaky gut as well. And then the things that kill us are typically things driven by leaky gut.

So in that world of veterinary medicine, they did a bunch of studies on types of probiotics that can actually alleviate leaky gut in these animals and dramatically reduce mortality rates and improve the health of the animals.

And that's where we got a lot of our signals from. So we started looking at the types of microbes that they identified and how those microbes stop leaking us in the gut of these animals, despite the horrific conditions on the animal chain.

And we took cues from that to identify similar organisms in humans that could perhaps do that as well. So that's what that's how we founded the company.

And we've built a solution around the leaky gut with the spore based probiotics. And we have a system called a

total gut restoration, and the focus of that is on alleviating leaking in the gut.

Right. And if we can do that, then that's a huge step forward in overall. So chronic conditions, chronic brain conditions, chronic health conditions can be dramatically helped by improving keystone species, improving diversity and stopping leaky gut.

If we do just those three things right, you're really making a massive shift towards the right. This other side of the spectrum. Yeah, I think that's really beautifully said.

So let's wrap all this together then. And when we look at reversing chronic gut conditions that have developed over a long period of time. Right. And the gut brain axis has been established like it's understood we're sending, what is it, ten times more signals to the brain from the gut than, than our returned.

Yeah. So, and this is like where the good stuff is, this is where the improvement can happen is going right to the gut and working on it with depth, with care.

And that does not mean dumping in like the maximum number of species. Right. Let's let's pause for a tangent here because more does not equal better, right?

Not in any way. In fact, when it comes to probiotics and more often than not, more is worse. And this is something we've been researching, right? And now we work a lot with big research organizations around the microbiome.

And there's this concept of whether or not your probiotics are silent or they're loud. And what that means is we're talking about from the perspective of the immune system.

Right. Keep in mind that the vast majority of probiotic bacteria you have access to when you buy, you know, the products in the stores and all over online aren't native to your gut.

Right. Which means that your immune system is going to have some sort of response to them. And what we're finding is that the vast majority of strains we're testing that are used as probiotics actually amplify inflammatory responses in your gut and systemically right.

And the reason for that is because here comes this ten, 20, 30 billion microbes into your system that aren't native to your system. It's perfectly normal for your immune system to go, holy crap, what's all this?

And ramp up its activity, right? And the innate part of the immune system, which is the first responders are going to do that through inflammation. They escalate inflammatory responses.

## Probiotics, Research, and Practical Takeaways

Now, that can be beneficial if you are a healthy person already who's looking to just stimulate your immune system. Right. Because that just kind of gets your immune system fired up and gets the inflammation and the monitoring cells and all that moving around.

But if you're sick, if you're already inflamed, if you have any condition that's associated with chronic low grade inflammation, the last thing you want to do is actually increase your inflammation, right?

So it's a very small percentage of people that will actually benefit from the conventional type of probiotics. That's ten to amplify inflammatory responses.

That's all when we develop probiotics. And probiotic strains were very careful in identifying strains that don't do that, that don't amplify the immune response, and instead modulate and bring down the inflammatory component of the immune response.

Right. And we have the studies to do it and it requires a lot of complex microbiology and immunology to figure that

out. And the vast majority of probiotic and supplement companies in the marketplace have no capability of doing that. Right.

They're just buying whatever species they can buy on open markets, you know, from China and overseas and all that. And just throwing them together, putting it in capsules, going, Oh my God, this is 15 strains, 50 billion, C a few.

So this is amazing, probiotic, highly potent and blah, blah, blah. All these statements and putting it out there. Yeah, right. When for the most part what those strains are doing is amplifying inflammation in your body.

Well, at best it arrives dead right. And they're all. Assessing storage and delivery. And it works. It actually works and it's totally inflammatory. Thirdly, it's and that's that's a crazy thing about this the unfortunate thing about our market.

And this is where the right information busting of focus on science is really important. Right. We've we've been a company now for nine years. And that nine years we've published, I think 16 studies right there.

The most of the companies in our space have been around for five times as long, you know, three times as long and have never published a single piece of scientific literature.

Right. And that's just mind boggling to me because to me, we're in the business of science and we need to make discoveries. We need to understand what our products are doing.

We need to figure out if they're helping people or they're not helping people. Right. And if they are helping people, how are they helping people? And the only way you can do that is by investing in science and research and knowing what you're doing.

And so it is unfortunate that the majority of things that people have access to in the supplement world are nonsense and in some cases can do more harm than good.

But the good news is that are some companies doing the right things right? And we've tried to set that bar for people. And then there are companies that are also doing research and following suit.

So there's hope out there, but people have to listen to programs like this and listen to nerds like myself talk and and follow the literature and research.

Right. So they can figure out where the right things are. But I'm going. To ask you this then, because I know we have some fans of yours in the audience today.

They're in a lot of your talks. And, you know, speaking about these studies, you know, regarding microbiome modulation and different probiotic strains and their effects on like the gut brain axis.

And I would love to know if there's any nuggets that you feel are relevant to share based on what we cover today that you don't normally get a chance to share.

That would really help our audience in reversing chronic conditions. Yeah, some of those, right. Yeah. So the one I just mentioned, whether your probiotic is loud or silent.

Right. That's a that's one I haven't really talked about because I just got an update on a lot of that research work. Just two weeks ago when I was in Ireland meeting with a bunch of the researchers at the APC.

So that's completely new information. So they tested it. So we have in our Zen Biome product, which is our gut brain product, right? That's the product that modulates cortisol response anxiety, improves sleep.

So it modulates brainwave activity as well. That's a bifidobacterium longa it has this coating around it called a exo

polysaccharide and that's what makes it really, really unique.

So they tested that bifidobacterium longan and then they tested about 12 other bifidobacterium probiotic strains. And bifida is very popular and almost every probiotic product.

Right. And they found that all the other bifidobacteria all increased inflammation at varying degrees, some of them really high. Right. And others a little bit lower.

And throughout there's a whole spectrum of the level of inflammation that they cause. The actual polysaccharide one doesn't. Right. And that's the exo polysaccharide actually prevents that increase in inflammation.

So that's a little nugget for people that I don't want them to be tempted by going, Oh, I saw this probiotic on Instagram in this ad, you know, and it's got 50 billion cells.

And I have a gut issue, which means I need a probiotic for it. And then they just start taking a probiotic, right? They're not at all created equal. Every probiotic is completely different from one another.

It's strain specific. And you really have to know if the company that has put the probiotic out in the market has done any studies on that finished product to see how does it impact your microbiome, how does it impact your immune system, how does impact the weakness in your gut?

Is it positive or negative? Right, because it can absolutely be negative. And that's that's the part that people just don't understand. Appreciate you. A probiotic is a probiotic.

I'm just going to take one, you know, but that's just not the case. Right. So the right probiotic can be one of the most powerful things you do because microbes can influence microbes better than we can.

But you have to have the right probiotic. Right. But you also cannot negate all those other little behaviors. Right. The little changes to being outside more the modulating your your stress by doing some mindfulness work, right by by trying to increase the diversity of your diet, by getting some exercise, getting adequate sleep, all those things sound very generic, but all of those things actually have a very positive impact on your and when you add them all together, it becomes a powerful solution, right?

Anyone by themselves is not necessarily going to move the needle, but when you add a bunch of those behaviors together, it really does make an improvement.

Thank you for saying that, because to us, the way we teach this to both our clients or students and our practitioners that we mentor were we're always talking about the stack.

Each layer has to support the other choice. The other input like this is not done in isolation. So I think it's so funny when people are like, Well, what?

Magus didn't fix all my problems. It's like, Well, what was the stack? You put it in like a nominal product, right? But you did it wrong is the point usually.

Yeah, yeah, absolutely. It's no different. I mean, if you use an analogy, right, it's not enough to to have your car functioning just by putting gas in it.

You have oil in it. You have to take care of this. You have to take care of that. You know, like there's so many components to make that machine work properly.

Our body is a complex machine and there's so many components to it, right? There's so many inputs and there's so many outputs. And so we have to make sure both our inputs and outputs a balance properly, then some of these tools will actually have really profound impact.

And I think the real important message is that there is hope because that 2015 publication in Frontiers of immunology, the one I said that, you know, shows that leaking us in the gut and a dysfunctional gut is the biggest driver of mortality and morbidity worldwide.

Right. The good news in that is that they're talking about the gut and the microbiome, which can be modulated, you know, and thereby the biggest driver of mortality and morbidity today is something that we can actually change.

Right. It's not our genetics. You know, we can't change our genes if we all had like just shitty gene snips and mutations all over the place. And that gave us cancers and heart disease and dementia and allergies, all that stuff, we'd be screwed because we're like, we can't change our genes, right?

But we can absolutely change our ecosystem. We can do that. A lot of what we talk about today will make a huge change to your ecosystem moving forward.

So, so know that there's hope. And that's a really, really important aspect because you may be watching this and you're down to three or four and you don't sleep well, you're anxious.

You've got a skin rash that's been bothering you for like a year now. Right. And just you're struggling with weight and lots of different things are all compounding on top of one another.

And you can't figure out what to deal with first, right? Do I deal with my gut issue first, my skin issue first, my weight? What do I do? Well, just know that if you start working on the fundamentals in the foundation, that spectrum that I talked about, right, where if you're on this end, it means your microbiome is damaging all things in your body and you move it to this end and it starts helping all things in your body.

All of the things that you're dealing with will be improved by just slowly moving the microbiome back this way. Right. And so you don't have to necessarily think about is it the example I go after first or is it the, you know, that the hair that's becoming thinner or is it my you know, my waist extra weight on my waist or whatever the condition is?

Do the fundamental. And when you do the fundamental, you'll start making improvements in all of those things, right? They're all connected. And so beautifully said and what a great way to end the other.

I remember doing my DNA reports with a specialist who was like, Oh yeah, look at all these problematic genes. And his essentially his assessment of me was that I would never go well.

And I'm happy that nothing could be further from the truth, right? From my own lived experience, from your body work, from mine. You know, if we start with the microbiome, we start with the gut, with her, the low hanging fruit, so much becomes possible.

So yeah. Totally. Yeah. Thank you so much for your time today, for sharing your wisdom, for publishing all those studies. And I know that people can find you at Microbiome Labs.

There's amazing protocol info there, awesome products that we, you know, incorporate into all of our work. So thank you so much for your contribution, just as usual.

Thank you for having me. I appreciate it.