Introduction and Guest Background

Welcome back to the conversation. My next guest is doctor Miles Nichols. He's a functional medicine doctor specializing in Lyme mold illness, gut, thyroid, and autoimmunity.

After doctor Miles personally struggled with chronic fatigue in his early 20s, he dedicated himself to figure out the root causes he suffered with and recovered from thyroid dysfunction himself, along with autoimmunity, a gut infection, Lyme co-infections, and mold illness.

Doctor Miles has authored two books. He founded The Medicine with Heart Functional Medicine Clinic in Colorado, as well as the medicine with Heart Institute that trains other doctors in functional medicine.

And might I add, I actually turn to doctor Miles to help me with some of the stuff that I was going through. So this is this is actually something that's sort of common, which is wonderful to see, I think, which is colleagues leaning on each other, and kind of just bringing somebody else into the clinical picture saying, what am I missing here?

What? You know, what what about your expertise can I bring in to help me solve these issues? And so I did that with doctor Miles. And we're going to actually talk about some of the things that we uncovered with, with what was going on with me.

So doctor Miles, welcome. Thanks, Jason. Lovely to be here. Hello, everyone. So let me just kind of start here. You know, from a clinical perspective, why do you think sort of the gut and the brain are such a worthwhile topic?

How do they go together? What are you seeing in in clinic and with your patients? Well, it's funny because starting clinical practice gut was a big focus and it still is.

And what I started to notice over time as people were coming in for gut issues, but they were reporting brain benefits. Their anxiety was going away, depression was getting better.

They were focusing and concentrating better. I saw this so often that just a couple years back, I did a whole summit on microbes and mental health, and I interviewed experts from all over the world about the connections.

And there's a lot of connections in science between how even mental health concerns, which usually are relegated to neurotransmitter imbalances like serotonin, dopamine, these kinds of neurotransmitter function issues.

We are absolutely, positively seeing revolution within the research field of a cytokine theory for depression, which is related to inflammation, and that neuroinflammation often is tied to the gut, especially when there are these these toxins, endotoxins on the cell walls of gram negative bacteria in the gut like E coli.

There are these studies where they they inject that E coli into the bloodstream. People get really sick really quickly. But that happens. That happens when there's leaky gut and intestinal permeability.

The bacteria in the gut, like E coli again can get into the bloodstream. We can measure this in labs with antibodies against the polysaccharides, which are on the cell wall of those bacteria.

We know it happens. It's verified. And that creates systemic inflammation not only in the body but also in the brain, that neuroinflammation very clearly leads to microglial activation and leads to a number of challenges with brain function, be it brain fog, difficulty concentrating, chronic fatigue issues, as well as mental health issues like depression, anxiety, OCD and more.

It's very clear also that microbes in the gut. One of my favorite studies is actually it was done by a neurologist and

the neurologist said, I can't believe I'm studying a gut bacteria, and I can't believe I'm studying probiotics.

Earlier in my career, I would have said, that's a bunch of hogwash. But now here I am looking at these mice and one of the groups got a probiotic feed and the other group got a sterile broth, and they looked at their stress responses.

For mice, it's swimming is really, really stressful. So you do what's called a forced swim test. And for mice this is like trying to get out, trying to get out, trying to get out.

And a lot of stress hormone this corticosterone which is like cortisol in humans. This it floods the brain. So what they did is they subjected these two groups and they found that the group with the sterile broth swam, swam, swam for a minute, two minutes.

Why Gut Health Affects the Brain

And then they they kind of gave up. After a little bit. They just floated there. They resigned. They measured their corticosteroids. They had a huge stress response, and they kind of gave up.

The group that got the probiotic Lactobacillus from Gnosis in this case, actually just swam and swam and swam and swam. They weren't giving up even after six minutes.

They were still not giving up. At that point. They just said, well, why aren't they giving up? And it turns out they had this modulated stress response on the fly where they were producing the stress response could a corticosteroid response, but then they were producing a bunch of Gabba Gabba, this relaxing neurotransmitter in the brain.

And they thought, why are they doing that? How how is a probiotic related? And they they talked about the vagus nerve and how the vagus nerve connects the gut in the brain.

So what they did, it's a little grotesque. So warning. But they did a they did a big Artemis. They cut the vagal nerve on these mice. And all of a sudden they reverted right back to stress response and gave up.

Instead of having that Gaba response to regulate their stress on the fly, they didn't have that. It was signals clearly from the gut bacteria signaling via the vagus nerve to the brain to make these relaxing neurotransmitters, you know, and that study started to open my eyes.

And I think a lot of people in the fields, eyes that, wow, there's this vagus connection where the bacteria are signaling the vagus nerve to tell the brain what kinds of neurotransmitters to produce.

So even if we think it's neurotransmitters that are contributing to mental health, which there's argument as to whether that's the case or not. But even if we think that the gut bacteria are related that way, there are other gut bacteria that are producing compounds like peptidoglycan and other compounds that release these these proteins in the brain that are that are helping the brain to recover, like Bdnf, these nootropic factors.

And there's also that LPs that that but polysaccharide endotoxin. Yeah. That creates a systemic inflammation that contributes to inflammation in the brain.

So those are just a few of the mechanisms. But we just it's very, very clear there's a gut brain relationship. There's no doubt at this point. Yeah. And what comes up for me as you, as you kind of name all that is, you know, the, the sort of low level degradation or impact that somebody might be dealing with.

Let's just say they are having mental health challenges. But maybe it's just maybe it's something so subtle as lack of motivation. Right. They don't feel like really strong depression.

Maybe it's not even strong anxiety, but they just can't get going. Right? And the person may be wondering, why am I like this? What's happening? Or maybe they weren't always like that right?

Maybe there's just. And so there's this analysis I think that one does about what's wrong with me. You know, why am I like this? Because we we feel like first of all, we feel like we we are our head.

Right. We were growing mental, most of us. And so we feel like there's this is mean and there's something wrong with me. How do I fix this? Right. And they might be doing self-help stuff, might be listening to Tony Robbins, they might be whatever. It might be. Right.

And they can't figure out like, well, how do I get through this? Right? And it very well could be stemming from gut dysfunction imbalances at that level.

Right. It could be many other things as well. But I'm just kind of pointing out that some of these things are so subtle. Right. Somebody might be suffering from anxiety and depression on a pretty significant basis very often.

Right. And then it kind of fluctuates off and on and look, but all of us go through this, we go through these mood swings, right? Some of us most, well, all of us men and women.

There's a monthly cycle that we all go through. So there's that. There's external influences, there's poor sleep that we get. So there's lots of reasons, I guess, where I'm pointing out where we might fluctuate.

So we kind of normalize some of this. These feelings that we have. And for me, it I think a lot of people are missing the fact that there's probably a gut component if, if at least playing a role, if not a major role.

So I'm kind of what comes up for you as you think about your journey overcoming so many things, right? How did that affect you mentally and how much did your gut did you feel like play a role in the things that you were going through?

I'm all for personal development, self-help, meditation, mindfulness, breathwork. It's been a big part of my own journey. I went deep into mindfulness meditation practices, yoga, tai chi, qigong practice, breath practices, and those did help.

And they had a plateau. I was still chronically fatigued. I was still brain fog. I was still having a hard time getting through school. And I went to the doctor and they did basic blood work and they said, nothing's wrong and maybe you're depressed.

And that just I think a lot of people might be able to resonate with that story. I hear it in the clinic all the time where they say, hey, I feel off.

I've gone to the doctor. They've said, everything's okay. I had done all the I've changed my diet, I've changed my lifestyle and sleeping well. I'm managing my stress.

I'm doing meditation and mindfulness practices, and I'm still feeling like there's something going on. And and that's the story I hear over and over and over again.

Maybe because it was my own story and those people seek me out. But honestly, I think it's so common too, though. But yes, you're right, we tend to attract the people that sort of similar to our own journey, isn't it?

Yeah. I mean, I got called into the principal's office and she said, something like, you're great academically, but but arriving to the first morning class on time is an issue.

And I'm like, well, I have a hard time getting out of bed. I'm pushing snooze all the time, and sometimes the alarm goes off and I'm just sleeping through it and she's like, something's wrong medically.

And I said, well, I think so too. But I went to the doctor. They said, nothing's wrong. And she's like, go to a sleep specialist, find something out. I went to a sleep specialist and they gave me a diagnosis and that helped me get through school.

But it didn't give me the solution to the problem and it just helped me give me an accommodation to make my way through school. But the it that sent me on a journey a big motivate me to feel like, okay, there is something going on here, I'm going to figure this out.

I got that because before that I was looking in the mirror. I was wondering, should I just resign to not do my dreams, not go through school, not become what I want to become?

Should I just resign to something less? And luckily, I had that experience and I thought, no, no way, I'm not doing that. I'm I'm figuring this out no matter what it takes.

And so began a journey of going to provider after provider after provider, trying to figure this out and doing all these diet and lifestyle things and realizing that that there was a plateau in the experience that I had doing a lot of what I could do.

And then I realized that my thyroid labs were out of the functional range, and I started to understand a little bit about functional ranges versus conventional ranges.

I found a good mentor, and I was able to look at studies and try and figure out some of, well, what might there be in research. There's a link to thyroid, and I found that there was a link to thyroid antibodies and H.

Pylori, which is a bacteria can live in the stomach. So I did a stool test. It showed negative. I did a second stool test just a couple weeks later and showed positive for H.

Pylori. So I treated that and that helped some. But then I read a paper that with H. Pylori especially, but also with thyroid issues, 20 to 40% of people had these antibodies against parietal cells, these cells in the stomach that make stomach acid an intrinsic factor.

And so I tested that on myself. No one had ever mentioned that for me. And I tested it and it was elevated. So I had this autoantibodies against stomach cells.

And these stomach cells make stomach acid. And that's important for breaking down protein absorbing mineral nutrients. And they make intrinsic factor that's important for metabolizing B12.

So here I was taking B vitamins taking B12 not noticing a lot. And then I realized that my stomach didn't have the intrinsic factor that was sufficient in order to get that B12 to cellular be as active.

And I looked in research, okay, what treats these parietal cell antibodies. And it was very clear in research that B12 injections but not oral B12. So I started B12 injections.

I got tremendous energy back from that. And it wasn't full energy back. It wasn't full brain function. But that really got my hopes up. It got me feeling like, okay, there are solutions here.

I'm going to keep going. And that led towards a lot of additional lab testing, discovering infections, toxin accumulation, realized I was living in mold, had to get out of there a whole bunch of things.

And and it took a long time. It was huge expense. And I finally was able to feel better. And I just thought, I have to help other people make this a little more streamlined, do it a little more step by step.

And then my journey. So that's that's where I got inspired to. Yeah. And you know, what's interesting about that story is that it's not the B12 that was the answer.

It was that was the thing that was helpful because of the dysfunction. Right. And I think this is the trap some of us fall into even as practitioners, is that we kind of we rely on this thing as the solution.

But it's really that's the that's the thing that's necessary as a support. But we got to get to the underlying

dysfunction. Right. And then when it comes in the gut, there's so many steps along the way that could be in disarray.

Right. And the earlier up the chain where the dysfunction starts, it tends to kind of fall downhill and more things downhill right. Start to become an issue.

And so this is in my opinion, why it can be so tricky when we get so compromised. It feels like there's why am I so messed up. Well it's because of the dysfunction.

Continue to layer and pile on and you know and there may be other things that, you know mold come in. But but look, two people can be in a moldy house.

One person can be extremely affected, the other one not partially because of genetics, partially because of dysfunctions that might already be there. Right.

So this is, I think, why we need to fortify the system and really continue to dig deeper as you did. And once we do that, then we become a little bit more robust, right?

We're able to sort of get back to a functioning that perhaps we remember at one point, I want to talk about something that most people maybe don't know about.

A lot of practice practitioners, even in the, in the functional, integrative world, may be missing or they may have heard of, but it's not a part of their clinical workup because they kind of chase some other symptoms.

And this is again, this is I'm not really pointing any fingers or drawing any criticism. I think you and I have both been there as practitioners where we know what we know and we do the best we can.

And the more we work with people, we start these sort of light bulbs, start going off around other things that we may have missed in our workup or didn't think about.

Because here's the reality. The symptoms that somebody might be experiencing might have causes from eight different things. So the challenge is, is how do we work in sort of maybe clinical medicine or traditional medicine, we might say a differential diagnosis.

How do we differentiate between the symptoms and figure out what's really the cause of this symptom. And so one of these things that you helped me with was something called mark ons.

So some people may have heard of it, but I'm guessing most people have it. And it's an it's an acronym. So maybe you can break down the acronym first for us.

And just tell us a little bit about what this is. Sure. Yeah. So con's cons is coagulated with negative staff. And so what does that mean. Just for we don't have a two deep but like yeah for most people it means nothing.

Yeah. So so Staphylococcus is a bacteria. And there are different types of staff. Some are gram positive, some are gram negative. Some are resident that will live in and on the skin, in the sinuses that are normal and healthy and not problematic.

However, there can be staph infections in the skin. In fact, my my mom wound up in the hospital with a really bad staph infection, almost died, and that was actually her her thinking about what she wanted to do with her life and decided she wanted to have another kid.

And maybe part of why I'm here, I'll just. Wow. But I think is how most people know staph, right? It's like high school wrestling, you know, these kind of like shower stories.

Red staph isn't is maybe in the hospital, right. It's a but it's problematic. But what you're saying is that there's

there's actually types of staff that are, that are beneficial that that we, that we live with and benefit from.

Right. So there's differentiation here. Yeah. So when we're looking in the sinuses and we're doing a native hearing swab, you know, swabbing back deep in the nasopharynx.

And we're sending that off to be cultured or analyzed for bacteria.

Personal Health Journey and Root-Cause Discovery

If it shows staff that may or may not be a problem, but if it shows cognitive negative staph, we know that's a little more biofilm forming than, for example, staph aureus, which is a quagga.

The positive and then quagga negative tends to be much more biofilm forming when it's multiple antibiotic resistant. That's the more part. So when it's multiple antibiotic resistant coagulant negative staph ma cons.

We know that to be correlated in research with strong biofilm production. And that biofilm is kind of like if you have a glass of water and you let it sit for a while and a couple days, and then you go to dispose of it, there's that little film, that little film around where the top of the water was.

That's like biofilm, that's bacteria is creating this very and you have to scrub at it. It's kind of hard and difficult to get off. And that's part of the way that some bacteria protect themselves and try to propagate further.

And it just so happens that that's also connected and then correlated in research studies with brain issues, gut issues and other problems. And that that biofilm doesn't necessarily manifest as sinus issues.

So it can be tricky. People can think, oh, well, my sinuses are fine, why would I get a swab? This actually isn't necessarily correlated with sinusitis or issues with the sinuses specifically.

It actually manifests in some cases with no sinus symptoms. But we see brain symptoms and gut symptoms being sometimes an issue there. And interestingly, I was treating and we were identifying mark ons and treating it as part of the, the, the mold and environmental illness piece, because we know that 95% or so of people who are struggling with mold, illness and similar environmentally acquired illnesses have this bacteria.

But interestingly, I started to notice correlations. I noticed that we had this staph, sometimes klebsiella on these cultures in the sinuses, and then we'd run a stool analysis and we'd find elevations of staff, elevations of Klebsiella, and the stool.

And sometimes these people were people who they had gone through two, three, four gut treatments. And we were still seeing them in the stool. And I'm thinking to myself, well, they're in the sinuses, and we have this nasal drip that's going down, and the stomach barrier and the stomach acid may or may not be taking care of all of these bacteria, especially if there's an issue with stomach acid.

And then they're treating the gut. And then these bacteria keep over growing and I realized that sometimes we need to treat upstream a little bit. We need to to actually look at the rhino biome.

I started to think about the rhino biome similarly to the gut biome. And the gut biome is obviously getting a lot of press, a lot of attention, and I think the Rhino biome is one that deserves more attention because now we're doing next generation sequencing.

We're looking for over 50,000 bacteria in and fungal organisms in the sinuses. And there are several problematic mark ons being number one. But there are several problematic bacteria and organisms, and sometimes from the organs that were finding in the rhino biome, where we have a dysbiosis right by the brain and in a place that goes down to the gut.

So, you know, this is one of those things, right? So I want to break it down a little bit because or at least expand on

what you said because biofilms.

Right. These are another biofilm that we might all be familiar with. There's is is plaque or tartar in our mouth. Right. Like that's a that's a type of biofilm that's in the mouth.

And we have biofilms in the gut. And these biofilms are like sugars and proteins. Right. And a bunch of other stuff, minerals that really can create this.

There's different let's just say there's different consistencies. But they're they can be very difficult for the body to get through. In other words, immune cells can't get in there and kill what might be perceive as a pathogen because of this, this sort of shield like protection. Right.

So I think this becomes the challenge and no, no amount of gut treatment is really going to get to that. That Rhino biome, right? It's not it's not right here at the at the base of the nose.

It's deep in there. Right. And it's and it can be sort of covered. And again you mentioned it. First of all we're breeding right. So it's affecting any of the breeding pathways.

Right. It's connected to the brain. It's influencing the immune system. Right. Probably knocking it down creating more of a challenge. Right. Just like mold might.

So this I think is or weakens the whole system. Right. It's a crack in the dam of the body's defenses. And then as you said, it just keeps seeding the problem.

So you might have that. You might have done a wonderful gut test, identified some pathogens in there, some dysbiosis, some things where we can support the gut.

We can help the body to eliminate these things, support the liver, you know, include binders. We do like really the amazing process of healing and dealing with the whole gut terrain.

And yet we're just gonna get caught in this cycle, right? And we're gonna go, what the heck? How do I get out of this? Oh, doctor Miles's gut treatment didn't work right?

That that stuff doesn't work right. And this is the thing that many clients go through with various practitioners, and maybe even on their own, if they're sort of self-taught. Right.

And and they come away with this idea of that, that protocol didn't work or what have you. And it's like, wow, maybe. Or maybe it actually is working.

But the problem is, is elsewhere. So what what kind of challenges? What are the some of the symptoms that somebody might experience. You said it affects the brain, affects the gut.

How might somebody recognize these symptoms and think, oh, this this could be mark ons, I need to check. But one of the things that that I find frequently are reductions or low normal production of hormones.

So this endocrine team gets affected as mark ons produces. It's biofilm. It affects the hypothalamus. It affects the production of the precursor hormones.

These precursor hormones are things that tell the thyroid to make hormones that tell the the adrenals to make hormones that tell the ovaries or testes to make hormones, and just kind of paint a picture there clinically for people.

So we have the hypothalamus, which is part of the brain. Then we have the pituitary which is another part of the brain which makes sort of sends the hormone signals to the thyroid, the adrenals, the the bones, the ovaries, the testes, the breasts, the the kidneys.

Like there's all these hormone signals that come out of the pituitary. But if you influence the hypothalamus, which has a direct communication pathway to the pituitary, the and then people might have heard of this right.

The hypothalamus pituitary adrenal the HPA axis. Well that axis goes to I don't know. Ten 1215 different organ systems. Right. That are really, really critical in terms of hormone production.

And also so, so just wanted to kind of paint that too. We also if we're if this is affecting the hypothalamus that's a big deal. Yeah. And one of the one of the ways we measure that is we look at melanocytes stimulating hormone, which is one of that those hormones produced by the hypothalamus.

And when we see that low which we do also is msh msh. Yeah. Yes. It's alpha melanocytes stimulating hormone. I mean there's a milano caught in connection with leptin and blood sugar.

There's a million in connection with a lot of the peptides in the world of peptides. There are these analogs of MSH that do crazy and wild things, like they help with the nervous system, they reduce inflammation, it improves cognition.

There's a bunch of peptides that are actually analogs of MSH that are used clinically to help people in pretty enormous ways. I think there's an under appreciation of that particular side of the endocrine chain.

There's a lot of talk of the thyroid and adrenals and ovaries and testes and these, these. But we also see low normal production of thyroid as unexplained by antibodies.

We see these changes in the the levels of Acth, Adreno coric a drop in hormone that stimulates the adrenals to release. A lot of people think they have adrenal fatigue.

We look at Acta and Act is signaling to the it's signaling low. And so the adrenals are producing appropriate to the signaling. But we have to wonder why is the signaling low from the pituitary.

And then we look back to the hypothalamus and then we look to the rhino biome. And sometimes we find that there's the the link in the chain that's beginning that process of a low production of signaling that then winds up with what people think is adrenal fatigue.

But really the adrenals are doing fine and producing appropriately to the brain signaling. And we have to understand why the brain's signaling is reduced.

And instead, when the I can start complicate this picture too, is poor sleep elevated mental emotional stress, right? Which is I mean, those two things probably represent 80 to 90% of the American population, right?

We're all under slept and overstressed. Right. And I'm including myself in that. Right. I'm less than optimal in that way, even though it's a big focus of mine.

So especially if somebody is suffering from, let's say, metabolic distress, that's going to create sleep issues in and of itself. So you might have circadian rhythm issues, poor habits as long as as well as metabolic stress and some mental emotional stress.

And that's going to affect the low production from the hypothalamus and pituitary as well. So it's like we can have three, 4 or 5 things all affecting this.

Right. But what I find sometimes is that there's some awareness around some of these other things. So we might address those. You might have somebody that's listening to this, they're probably fairly aware of some of these health things.

And and they're focusing on sleep and they're doing stress reduction. Right. And then the production is still low. Right. So and again, this might be one of those things that I think many people are dealing with unknowingly that's

affecting this, that they would never have made that link.

So, you know, even at the clinical or the practitioner level, I think there's a lot of people that are missing this when there's you're bringing up metabolism and metabolic and mitochondrial and energy.

And there's another connection with mark chains that's newer discovered connection, which is that there are production of what are called polycyclic ethers.

And these actually inhibit the gene. Expression of mitochondrial gene expression might have small and might show large. And the gene transcription from might have small might have large genes, which are signaling the mitochondria to be able to take in glucose and fats and make ATP.

Energy or cellular energy are powerhouse of the cells. These mitochondria inside the cells, the gene signaling to tell them to make energy is actually being suppressed by these polycyclic ether toxins that are produced by mark ons.

And so then people think they have mitochondrial dysfunction, just like with adrenals. They think they are mitochondrial dysfunction. And yet the mitochondria are responding appropriately to the gene transcription.

But the gene transcription or expression is downregulated because of the polycyclic ethers that are produced by archons. So we also have a connection to energy production and metabolism there.

Yeah. So it's like they have a mitochondrial dysfunction but it's like a secondary dysfunction. Right. And because as you as you I think it's really important to note that just like I think the adrenal stuff that we that has been flushed out maybe the last 20 or 30 years, it's like, well it's not really adrenal problems, it's a secondary adrenal issue.

But it's again responding appropriately to the signal. Right. So, so maybe how do we identify if somebody has gotten Markland. Right. How to how would one go about testing this and figuring out, do I have this thing?

It's a pretty simple swab. It's a nasal fearing swab. It's it's one of the swabs that goes kind of back deep into the nasopharynx. So it'll go a few inches back.

People are probably familiar with this from the Covid sort of years. Remember, this is kind of a thing. Yeah. Yeah. So a similar swab to that. It's not super comfortable but not fun right.

But also not the end of the world. Right. Like that's a lot of testing. And this one's pretty easy. Yeah yeah yeah. It's not not the worst. And yeah simple swab like that.

And then there are a couple labs that that will test for this. And, and some of the labs are doing culture based testing and some of them are doing next generation sequencing.

So there are there are differences there. Both are one that's better. So for Mark it's it it's not that different. The next gen sequencing is an advance in the technology.

So a culture based test is looking for the bacteria via an older technology that's been around a long, long time. It's reliable. It definitely works.

What MARCoNS Is and Why It Matters

The microbiology is DX is one of the labs that does a sinus swab. And it will technically turn these offering swabs. You're swabbing the needs of pharynx and then they culture it.

And they're very very good at finding mark ons. And they'll they'll screen for a list of antibiotic resistances. So that's been sort of the gold standard for a long, long time.

The newer technology that's available now is called next generation sequencing. So micro gen DCS is a lab. We use. And for that they have something called the sinus key.

And that sinus key they use. It's a genetic they're it's like microbiome testing essentially or a like a shotgun sequence where they're looking at they're looking at DNA.

They have over 50,000 different organisms, DNA sequences that they can identify. So then what they can do with PCR or is it different tech. No. So they do PCR and next gen sequencing.

So PCR looks for the genetics of a specific organism. Only next gen sequencing sequences all the genes. And then and then it starts to match those genes up to bacteria.

So whereas PCR you can you have to have one sort of PCR sample per bacteria. So you're never going to get 50,000. That would be very, very expensive with PCR testing because you know, to to test that many would be just crazy.

But next gen sequencing, you just sequence all the genome and then you have a list of bacteria and then you match the gene to the bacteria. It's very, very accurate.

And they can give percentages. So they can say, yeah, 3% of this and 27% of this bacteria, and they're these three fungal organisms, or there were no fungal organisms, but they're these seven bacterial organisms.

And then they also do an antibiotic sensitivity. And they look at a bunch of antibiotics. So you can tell if it's multiple antibiotic resistant and you can tell what species.

And now we're seeing things like there are these gram positive bacteria in the class of the Tino bacteria. And the Tino mixes, which are, Carine bacteria and tuberculosis.

Dr. Kim is one that we're seeing a lot, and we're believing that it's causing quite a bit of problematic. Symptomatology and toxicity itself. And it's under appreciated.

It's very, very newly discovered in research, but that's an example of something that we're getting out of next gen sequencing. We occasionally get it out of culturing, but the sensitivity of next gen sequencing is catching it a lot more.

Okay, so I want to go into that in a little bit here, but I'm going to stay here for a second. So there's two testing the microbiology and the culturing.

Fairly inexpensive you know maybe 150 bucks. They also will culture for for fungal species as well. Right. So it's a in my opinion it's a sufficient test for most people.

Like this will get you your results. Tell you if it's ma cons or maybe there's some other organisms growing that are there potentially problematic, but not more cons per se, as well as mold.

Right. And that's again $140 test takes a couple weeks. You could do it at home, right? You do swab yourself very simple instructions. Mail it in. You might need a practitioner to get it right.

So that's the one sort of barrier there. Like not it's not available for the general public if I'm in unless that's changed. Is that is that right? Yeah.

I'm not entirely sure. I have seen some people get it on their own, but I'm not sure if they're if they haven't a practitioner in the next. But yeah, right. Yeah. You might be able to get it on your own.

Right. And then so, so that's, that's, that's the other one. So this next gen is it more expensive. Is it harder to do. Do you is it required to get a practitioner, you know, what's the sort of the pluses and minuses.

You could say it's a little bit more expensive. I think it's in the, in the, you know, 250 to 300 range depending on reasonable. Yeah. And and and insurance covers it occasionally depending on which insurance.

So you know sometimes Medicare if it's medically warranted I'll cover it for example. And there are certain insurance companies that they're in that work with.

And then and then they may have a different I think if you go direct through them, they may have a provider that they use, and there may be some surcharge for them to use their provider, but maybe you can get it that way.

I think, you know, again, with the company name again, micro gen, the micro gen. Okay. Great. So we have two, two different sort of ways we can look at this.

I want to go into acting. So let's just call that a is the type of bacteria right. It's just easy to call that. No. And this is actually something I learned from you and Richie Shoemaker, which is that we have a mold issue, no question, in the United States.

Right. And most of the Western world, the way we build our buildings, the type of drywall we use, this is, in fact, this is a world that I came from. And one of the the problems that I saw in that world of sort of construction and building design is we started to engineer energy efficiency into buildings.

So what does that mean? That means, you know, you're in a place like Minneapolis or Florida, you know, never trying to like, find somewhat extreme temperature.

New York might be a great one. Where in in New York it's really cold in the winter and it's really hot in the summer. So you want to seal up the building to make sure that the energy so that the temperature doesn't change a ton inside the building.

Well, the best way to do that is to provide lots of insulation and to seal it up tight. So no outside air comes in, because when outside air comes in and it's five degrees outside, it's going to make the building pretty cold, right?

But yet we're humans. We need fresh air. We can't just live in a CO2 dense environment and thrive. So there's this balance between how much outside air do we need to bring in?

Do we need to heat it? We need to cool it. Do we need to take out, humidity? And we seal up buildings and we have the building control systems and the Hvac units are really directing the the energy balance and the fresh air bounce.

Well, that I saw this in, in that world that that became a real problem because although we have the technology to do that, the old leaky buildings, in other words, leaky, I mean, air is getting in all these cracks.

You know, if you're if you remember these buildings, right, you might have government buildings this way or some old schools or what have you, and they're just drafty as heck.

Old houses, these tend to actually be healthier. I mean, depending on what building materials are used. But because of this drafty ness is actually a good thing.

And so the the materials that we're using, the types of drywall, the and the sort of the type buildings create this fungal issue. But we, we we learned that.

Right. And so we're using fungal chemicals to, to resist fungal species growing in drywall. Right. And I think this is primarily where snow tends to thrive.

But give me your give me your take on actin and buildings and where we're getting this infection from this, this actin so bacterium. What it kind of does.

Yeah. Is our soil based organisms. So they're going to be in the world in the environment. And some of them are just like mold. Some molds aren't pathogenic or they don't produce mycotoxins that are problematic to humans.

Some do produce these mycotoxins. Same with the tino's. Some of the catena bacteria are healthy soil based organisms. They're around. They're not problematic.

And yet some of them are what we call human host organisms, meaning they can actually colonize on the skin in particular, and they can colonize sometimes in the sinuses.

Occasionally we'll even see them on a semen sample or, you know, somewhere deeper in the body. And they're those ones, the human host ones. Some of those are certainly pathogenic.

And so these bacteria get in from the outdoors and from soils. And then if they start to propagate and grow inside, or if they elevate in levels, then if the human host ones, the potentially pathogenic ones start to grow at certain quantities, then we start to see, actually we'll do a skin swab from behind the ear, and we'll see elevations on the skin where they're actually propagating on a human host.

And then this becomes a little bit more difficult to treat. You can't just leave and and or the environment or clean the environment and be done with it.

You also have to treat the skin, see if they've colonized deeper and treat deeper. And they can grow in dry environments too. So it's not just wet. Now if there is water damage, that's an opportunity for any bacteria or fungal organisms to grow, and many of them will grow more when there's moisture and warmth.

So of course, the water damage. Buildings also are higher in snow levels, but sometimes dry buildings are, sometimes newer buildings are. So they're a little different in that you can't just assume because there's not been water damage or water events that occur tinas are not present levels that are dangerous or that are going to for sensitive individuals, for those who are predisposed, potentially going to contribute to their immune dysfunction, chronic inflammatory picture and brain changes.

There's a pattern of brain atrophy in certain regions of the brain that we see from a of exposures in those sensitive individuals to those bacteria, and it can look like mold, right.

Is a clinical presentation. Right. And this is kind of like the interesting thing. And I don't know if this has been proven out, but I think the theories are there.

That and it's sound thinking that, you know, we're we're we're trying to resist mold in our buildings, right in the, in the walls and the construction that we have.

And so just like any biome, when you, when you suppress any organism, well, other organisms now don't have competition. There's no, there's no balance.

And so things like actinic can can grow more in an abundance if because we're actually trying to suppress mold in our buildings and these type of things. Right.

And so and again, and the reason I mentioned that is because somebody can have these mold symptoms, mold like symptoms. And they go, I look at my environment, it's in the dryer.

There's no water damage. We did we we swab the floors and and and we found no mold and we found no mycotoxins. Right. And we looked at the air and we did all the testing. Right, right.

And there's no mold or at least nothing that's, that's really, you know, dramatic. And so but how many people are testing for these at Tino's. Right. And it's like there's, there's some environmental testing out there.

You can test your house a little bit. Right. But it's not a very common thing. And so again we have mark ons which

it's it's it's own challenge.

Actinobacteria, Mold, and Hidden Environmental Illness

Then we have these Aquino's which may be flying under the radar. Looks like mold feels like mold but doesn't show up like mold to actually maybe we can talk about that because they actually have a similar expression.

Biological expression is mold, right? Like they in some of them they don't act like traditional bacteria. Maybe you can talk about that. Yeah. Tina is do exhibit a lot of characteristics that we usually think of as fungal characteristics.

And they're gram positive bacteria, which usually we don't think of as pathogenic as much as gram negative bacteria. And sometimes gram positive bacteria don't even respond to the same.

A lot of the antibiotics and things that are designed to take care of bacterial infections are designed for gram negatives. Now, there are some that are designed for gram positives because there are gram positive bacteria that are problematic.

But you'll see some gram positives overgrow when people take normal standard antibiotics. So they're different and usually a lot of them are pathogenic.

But then there have been some studies that have looked at the what's called the these extracellular vesicles that are produced by teno bacteria that that are basically it's it's cell to cell or organism to organism communication method.

So a lot of bacteria will produce these extracellular vesicles. But it just so happens that some of these pathogenic ninos package some toxic compounds into those extracellular vesicles.

And they're transferring them into human cells. And so we're getting this direct transfer of these toxic compounds into human cells from these organisms.

And they're some of them are producing these enzymes that allow for actually they allow for fungal organisms to grow what are called glue cans. And so they're they they even play together with fungal organisms in some cases by producing an enzyme that then the fungal organism takes that enzyme and produces these glue cans.

And these glue cans can be breathed in and can create problematic immune responses as well. So there's is still new days in terms of research, but there's multi mechanisms behind how these teno bacteria are creating toxicity and inflaming the immune response is creating an inflammatory response to them.

And in the gene expression testing there's actual data that's showing these gene expression patterns of mold versus a nose versus endotoxins and glue cans.

And it's actually appearing that less than 10% of the gene expression of those who have this chronic inflammatory response syndrome. Picture this environmentally acquired illness picture.

It's less than 10%, it seems, right now. And the correlative data is from mold directly and mycotoxins. And it's much more than that. It's generally considered to be over 40% from Akino bacteria.

And then there's endotoxin and glue cans. So there are some others as well. So this really kind of kind of provides a little bit of an argument for that next gen sequencing to see if those are playing a role.

I mean, if you're going to you're going to test this. And I think it's maybe worth noting, mark ons. Well, it's something I do believe if you've if you've exhausted resources or if you're suspicious and brain gut issues definitely worth testing for this stuff.

I wouldn't say it's super common amongst the population, but but it's I would say it's super overlooked, right? It's

like it's so much so often missed.

And yet it's still only maybe 10 or 15% of the population that's suffering from these type of symptoms. I'm just making up a number. But but the point being that I don't think it's 90% right, and it's not something that everybody's dealing with.

And you got to go get this check. But for those who can't figure out what's really underlying this stuff, or they want to do a thorough investigation of these sort of brain and gut and immune symptoms, they might be experiencing skin symptoms.

That was what am I symptoms then. It's it's worth including in the picture, especially when it's something that's so missed and overlooked. Right. So if you include this next gen sequencing you look at from mark ons, you got this acting nose and you can kind of rule that stuff out.

Right. And there's there's mold to that show up on these. Right. So you actually can see if there's bungalow for growth. And and I would say even beyond that and the biofilm component of this right, which is almost its own, there's a treatment protocol.

Right. Like you have to address biofilms in a very specific way. So maybe we can get into that just a little bit when it comes to biofilms. Let's just stick to the the sort of nasal passage area.

Of course biofilms exist in the gut and they have their own sort of treatment protocol. But how do you go about breaking up a biofilm? You know, what are some of the specifics that that one might need to include if they have biofilm?

And I'll give a quick aside, the nasal swab. The micro biology can detect acting nose in some cases. So the culture can also sometimes it'll show creating bacterium for example.

But if it's only 3% Cabrini bacterium, it might miss it, whereas the next gen sequencing might catch it. So just clarification. And I do want to add something here too, right?

Which is that sometimes I feel that our testing methods can actually get out in front of the clinical research. And I've seen this many times with the gut stuff and even in, in, in some other organic acids testing is that we find all this stuff and we go, oh, we got to treat it.

And sometimes it's like, wow, maybe not. So even if we can parse out all this stuff, the, the sometimes the clinical mind or even in the patient or the client, Michael Ward, we've got to deal with that.

Right. And it's like, well, maybe. Right. So I just want to put that out there that our testing actually is pretty advanced. And sometimes we might mistakenly treat something that doesn't need to be treated.

And it's just sort of along for the ride. Yeah. If we treat it, everything will be on a million things and so it'll be a mess. But yeah, so biofilms are our big, big issue.

And then, you know, there are studies that look at that take bacteria that are behind biofilm and they apply antibiotics different antibiotics. And you'll see like the level of antibiotic needed to kill a bacteria behind biofilm gets astronomical very quickly as compared to that bacteria not behind biofilm.

And then as we're disrupting biofilm and and and sometimes what we what we find unfortunately is we we do another swab and there are new organisms. Maybe those organisms were they're hiding behind that biofilm.

Totally. You know, or or there could have been exposures. But but it's you know, we also think that that we see some, you know, deeper organisms coming forward and out as we're disrupting biofilm if the biofilm issues are are severe and there are a lot of enzymes and compounds and things that are intended to help to break apart, that matrix of proteins and sugars, that can then reveal those bacteria in the sinuses.

One of the ones that's been used for a long time is EDTA. EDTA is great biofilm disrupter, but you have to be careful, or I would only recommend doing this under guidance of a provider because you go to high of a percentage of EDTA and you have the wrong base of it, and people can lose their sense of smell and it it can create some problems.

You need the the right percentage and the right duration of time. You know, just go use it willy nilly all day long. So please do it under the guidance of a provider, xylitol has shown some ability to help with biofilm.

We usually they have. So the director of one of the labs that does the culturing, he's put mark ons in a culture and he's put xylitol in that and it will disrupt the biofilm.

However, we don't always find it, and for clinically effective, we find it to be helpful in sort of keeping it at bay once it's treated, depending how heavy the biofilm is.

But there are these excelsior or other nasal sprays that have xylitol in them, and they are effective to a degree, but they may not be effective for substantial level of biofilm.

Or we have these sort of a therapeutic window treatment. And then we have kind of maintenance. And so in the maintenance, something like xylitol, some, some of these have a little bit of grapefruit seed extract in them which is anti-microbial.

And then we've there, there are some studies looking at biofilm with some oxygenating agents. So peroxide as an example. Also one that you have to be careful with because it's too high of a concentration of peroxide, will be very drying and can be rough on the sinus mucosa.

And you really want that mucosa healthy. That's really important to get that part of the immune system, right? Yeah. Yeah. So so again the concentration has to be just right with peroxide.

Or it can be rough. More recently there's been a actually a development just within the past year less than in the past year of ozone is a gas which is very unstable.

And potentially it can damage some of the the lung, the lungs. So you don't want to breathe that gas in. But there's been a recent discovery that this gas, it's just so hard to stabilize, it dissipates so quickly that it's not been is it.

Some people had used it as a treatment, but you had to run it through this particular like oil or other things to, you know, coat it and then breathe it in.

It was an in clinic treatment, just not easy to do. But more recently they discovered that you can take glycerin and you can ozone the glycerin. Now this is a long and a complicated process, but there are some companies now that are making ozone aided glycerin and that was needed.

Glycerin actually stabilizes that gas for it's roughly six. It's roughly. Well if you refrigerate it like 18 months. If you freeze it even longer, if it's at room temperature, it's about 2 to 3 months that it'll stay suspended in that, in that, glycerin and glycerin is nice because glycerin is a humectant.

So glycerin actually is going to be soothing to the sinuses.

Testing, Biofilms, and Treatment Approaches

And but ozone it produces these, these stabilized oxidative compounds and these actually are really good at penetrating biofilm and helping to break biofilm and helping to oxidize the cell wall of negative certain bacteria like mark ons.

And so so there's actually we are really liking the designated glycerin, but it's a little too new for me to comment how well it's clinically working mechanistically. It's beautiful and brilliant with an initial clinical responses are really

good.

But again we have to get the right concentration of it and we have to with nasal sprays. I just don't recommend people mess around with them too much without some guidance, because you can get the you can get the salinity off and you can go to you can get the pH off, you can get the the moisture off and then you start irritating tissue.

And then, you know, you might kill Americans, but you're irritating tissue and you're getting more dysbiosis. So, so there's there's very, very delicate balance to getting the right amount of humectant, the right amount of salinity and, osmolality.

And you're trying to really, protect the mucosa while you're trying to treat the organisms. So it's a little bit complicated, but doesn't need a glycerin, EDTA, xylitol, sometimes peroxide can be quite helpful for biofilm.

And what about bee propolis. Yeah. So propolis as well is being used. And we like propolis for a variety of reasons. It has antimicrobial compounds to it.

And some people are sensitive to it yet to just check with that. But propolis is another povidone iodine is another. You don't want to go too high with that.

But you know, if you get the right concentration of povidone iodine, it can be effective against many different kinds of bacteria and viruses. And so there's those are some of the big compounds that we're that we're using and we're seeing used in the biofilm and organism treatment.

Yeah. And so I think that the point here that I want to stress is we have to there's certain compounds that are needed to help break up the biofilms. You can't just go at targeting the these these overgrowth and try to knock them down without breaking up the biofilm along with it. Right.

So there's there's the biofilm compounds. And then you have this sort of organism suppressing compounds. Right. And there's some crossover maybe with some of them.

But you generally need those both. And if you come in with just one or the other, it's not really going to be effective. So and it can be a little bit long of a process.

Right. It's not like it's a one week treatment thing. Right? This can be weeks and sometimes even months for people to really get through this. Right.

And I think, you know, when, when, when I was addressing mine, we included some essential oils. There were some, some of those and, you know, even some sort allicin from garlic I think was was part of the treatment.

So but I think the point that it's really important to note that, that you said, which is that I'm trying to give people some solutions here so that if, if and when they work with a practitioner, they have some familiarity about what the treatment protocol might look like, as opposed to just saying, hey, here's a bunch of stuff, go, go do this on your on your own and just good luck, right?

Because it generally does take some experience and a little bit of understanding of organic chemistry in the body. And you know, these type of things to recognize when you might be running into trouble. Right.

And that's I think me as a practitioner and also a little bit of a self, an autodidact of learning and experimenting on myself is if if nothing else, you better understand when you can get in trouble and what that looks like.

Because if you don't know the risk that you're taking and you don't know what the the warning signs are when you're running into trouble, that's when problems happen, right?

So it's not like there's extreme danger looking around every corner. You just need to understand where the danger is and what that starts to look like.

And this is where a lot of practitioners can come in handy because they understand the risks. They understand what the symptoms and warning signs might look like when we're pushing it too hard.

And they also understand when it's not enough. Right. Which is which is important because there's there's genuine clinical doses that are required. We can't just dance around the flame and pretend this is going to work because we're using the right stuff, right?

So anyway, I don't want to overcomplicate it for people, but it is that that sort of, I guess warning is, is worthy of of bringing up again. But generally speaking, when we find some of this stuff, some of these mold, some of these other overgrowth as well as mark ons.

Right. So it's not just mark ons are acting us. There's other organisms and gross that can be identified with these tests that again the the point here of I think this talk is to identify things that are missed when it comes to gut and brain.

So going back to the gut and brain, some of these issues that can come up may be stemming from these these symptoms or these issues and or these issues that we're talking about.

The active know the the mark horns and and other overgrowth that might be in sort of the nasal passage can be along for the ride with some of these other things that you might have already identified. Right.

It might be head trauma, it might be, you know, sleep issues. It might be metabolic dysfunction, it might be other gut issues. But generally we have multiple things happening.

And if this gets missed, we're just going to backslide or we're going to we're going to plateau. As as I think you went through in your process, your recovery process.

And I have had many plateaus in my recovery processes. Right. So is there anything we're missing? And then we covered a lot. A lot of this is pretty high level for people.

But, anything that that I'm leaving out with, with regard to the things that we mentioned. Yeah, let's spoil it back to the Rhino biomes a big deal. And it connects with the gut and the brain.

When we see there, we do MRI's on the brain and we do eye analysis of those MRI's. And there's a pattern that we see. For example, for a as we see three gray matter atrophies in regions of the brain, including often the hippocampus, which is that memory center atrophies, meaning that that someone who's age matched control, let's say we're doing a 29 year old and we're doing an MRI of the brain, and we're doing eye analysis of that MRI to look what percentage of the volume of the brain is the hippocampal region, which is that memory center.

And when we see that is looking more like a 70 year old and not a 29 year old, because it's a lower percentage of the total brain, we're worried about that.

We're worried about the cognitive impacts of that. And we've seen that. We've seen that more times than I would like to have seen that. And so we know that on average, 15 shows are going to be causing if there if there is an causation of immune dysfunction, we're going to also see three gray matter brain region atrophies on average or more.

And that's and I've seen four I've seen five in some cases. So so that's major. That's significant. That's something that I think people should wake up and pay attention to that brain symptoms may be very related even structurally.

Brain Imaging, When to Investigate Further, and Closing

We can see it on MRI. So it's not just this symptomatic correlation. It's actual structural correlation in this I mean this matches brilliantly. We do the gene expression testing.

We see someone has a Teno pattern. We see it's on their skin or in their sinuses. And we see three or more brain atrophy gray matter regions in the brain atrophy.

I've seen I've seen that correlation many times. So that it's very, very correlated with brain issues and gut issues that are especially recurrent, resurgent, not responding to treatment.

So if you've had gut issues, you've done things right. You've tried treating a couple of times and you've already done the basics. You've changed. You know, I go first, do the basics.

Do you know healthy diet, lifestyle, stress and sleep as best you can? You might not be able to get perfect at that, but to a degree you've really addressed the basics and then you've even gone a step further.

You've done some probiotics. You've looked at maybe some gut testing and treatment. You're still experiencing issues. That's a time to take a look upstream.

A little bit. And if you're also experiencing brain issues simultaneously that are unexplained by other things that you've investigated, it's not just that you had someone die in your life and you're depressed, it's that you know you're without great reason.

You're just not motivated enough. You're the little brain fog. You're having a hard time concentrating. You're feeling like the memory slipping a little bit more than would be normal for you.

That's a time to also pay attention and take a look. And if there are things going on in the sinuses, if it's minor, or sometimes these things like a propolis xylitol mix, like the, spray like that, or an x x there over the counter.

It may be supportive, it may be helpful. And in some cases it's best to get professional help to address in a deeper way, especially if you're not responding to something basic at home.

So hopefully that gives a good, rounded summary of what we're talking about here and when and when and where it would be relevant for people. I love the message.

Doctor Myles, your wealth of knowledge. Thank you so much for coming on. Tell people where they can find more of you work. Best place is medicine with heart.com.

That's where we have a free blog. It's got a lot of great information. We put a lot of time, energy, effort into our blog articles, and I highly recommend checking out medicine with heart.com and the blog there.

Also, there's information about the clinic, how to get involved with the clinic. Any providers who want to understand more about the training for providers can go to Mind Body Functional medicine.com.

Beautiful. And you may or may not have a book out at this point. When this when this interview does does release. But but tell us about the book that you're working on that might be published you very soon.

Yeah. So working on a book on microplastics, there's a it actually started as a blog article and it just kept there were so many things that kept coming out, and I realized that, wow, this is such a huge topic is so important.

It it just became a book kind of naturally nice. There's some just incredible studies on things like autopsies of brains showing huge amounts of microplastics, and even more in people with Alzheimer's dementia who die with that like ten times more microplastics, solid brain microplastics in the if they scrape the plaques out of carotid arteries.

The plaques that have microplastics are a lot more likely to get cardiovascular events, even per the same amount of plaque as the plaque that has less microplastic.

There's just a bunch of really fascinating information there. So that book is an up and coming beautiful doctor Myles, thanks so much. Thank you Jason.