Introduction to the Brain-Immune-Gut Axis

Welcome back to another interview on reversing chronic conditions. I'm your host, Sinclair Kennally, and today I am joined by my wonderful friend and colleague, Dr.

Peter Kan. He is an expert on the gut immune brain axis. And what I love about Peter's work is that he makes it so easy to understand. And he also really goes into depth and nuance about how are these systems related in the body, and what does it mean for you as you're trying to heal from a chronic condition?

Today, when we have a lot of very interesting variables going on, a lot of extra, extra stressors in today's modern day and age. So I really wanted you to get the benefit of his wisdom on this summit.

And I'm so thrilled you're here with us, Peter. I am excited and so, so thankful that you are asking me to speak on this topic. So let's start right in.

So I actually don't think that I've heard you talk in depth before. What got you so excited about and passionate about the brain immune gut axis? What was your journey to become an expert on this?

Yeah. And so I started in a chiropractic school, been exposed to chiropractic neurology. And one of the lectures, it was actually notes. Somebody took a lecture that they typed out and I read it and it just got me so interested in the brain.

Basically what I was saying is that, you know, we have muscle spindles in our muscle and these are our sensory organs and our muscle that detect changes in length and basically proprioception.

And these muscle spindles are under the influence of gravity, are constantly being activated. So just by being sudden there, even when you're sleeping, gravity is constantly pulling on our sensory receptors within our organs.

It's a constant barrage of signal to our brain that drives our brain function to keep our brain essentially alive. Hmm. And to me, that was just like, whoa, mind blown that we have this world that's created where gravity is even sustaining our life, right?

This is why astronauts in space don't do so well, because under zero gravity, they don't have that constant pull. And in fact, astronauts have basically they have to constantly exercise to create that artificial pull like gravity for them to not degenerate.

And this is such a it's just kind of help me to understand how how wonderful our body is made and how important our brain function is. And then later on in my career, when I started learning about functional medicine, that's when I really started connected dots between neurologic function and metabolic function and immune system function.

And when I started seeing people with chronic condition, they often show up in my office with a set of brain symptoms like short term memory issue, depression can concentrate, and then they also have immune system problems, like they have chronic inflammation.

They have chronic infections they can't clear.

Peter Kanu2019s Journey Into Neurology and Functional Medicine

And then also show up with a lot of gut issues like leaky gut gas, bloating, reflux, IBS, IMO. And so it didn't matter what kind of chronic condition they had, whether it was Lyme disease or mold issues or Hashimoto's they all showed up with, I have brain fog, I have inflammation, I have GI problems.

So that led me to kind of make the connection that the brain immune gut kind of work in tandem together as an axis. And when one area this domino falls, the other pieces fall with it as well.

So that helps because I simplify things. One of the things with chronic condition is that people can show up with like 50 symptoms and they think they have 50 problems, you know, going on with them.

And they may be seeking 50 different solutions for 50 problems when in fact they just have one big problem, as I call it. And this help us to simplify and be able to target the most important things first.

And that really helped to get us, you know, better results and help simplify the protocols for clients. That's such a great point. Okay. So I really want to unpack in depth today like what is the brain immune gut axis?

Why is it so important to people who are working on their health right now? Yeah. So the brain immune gut axis is basically these these interconnecting, physiological and immunological pathways between the brain, immune and gut.

Now, we've heard a lot about the brain gut axis or the gut brain axis depends on who you read. You know, the people who are more they the gut people. They're going to say the gut bringing axes. People who are the brain people, they're going to say more braingut axis.

But really, it's a bi directional highway. Right. So it's not one is more important. The other they're all important and they drive each others function.

And we heard so much about the brain gut axes or the gut brain axis, but I feel that the immune system is kind of left out and is not getting as much attention because really the interface between the brain and the gut is the immune system.

The immune system is the go between and the messenger through cytokines and through these inflammatory pathways that really communicate what's going on between the brain and the gut.

So if we're going to address the brain gut connection or the gut brain connection, we have to understand the immune system and how that play a role in how all of these things to function.

And when we do that, we're able to become more customized and targeted and at very least understand why we're doing something. Like if we're doing a parasite cleanse, how is that going to help us to balance not just our gut but our immune system?

And when we address mold issues, how does that help with our nexus of the balance itself so that it's not creating havoc? So this is what I aim to relate to people.

And it's really important. So when we think about like this and placing this axis against the backdrop of modern day stressors, how have you seen that shift for people in your time in practice?

Like what have you seen start to change for people when it comes to brain immune gut axis issues? Yeah, with modern day stressors and this is we're talking about environmental toxin exposure, which is just, you know, ubiquitous and it's not a question of whether you're exposed.

It's a question of how much and how long. And I would even add to that equation not just how much and how low, but how is your body dealing with it, right?

How resilient are you to it? And how well are you able to handle the toxic burden that you have so people can handle it quite well? The genetics and and, you know, just different microbiome, you know, make up.

They just can handle things better. And other people, they get a whiff of something and they just fall apart. So everybody's different. We have to kind of just understand where they are.

But definitely the rise of the environmental toxin, I believe, is creating and a chronic inflammatory effect. Now, let's talk about inflammation for a little bit, because we're talking about the brain immune gut access.

And really, inflammation is a new system. Mediate a response, right? So we can talk about inflammation without saying that it is immune system that's doing that.

So when you're paying into a wall and your elbow swells up, it's not like your elbow solves up. No, it's your immune system that's doing that, that's causing the elbow to swell, bringing, you know, white blood cell to the area to clear cellular debris.

This is all immune system. So when we have inflammation, inflammation is not good or bad. Inflammation is a natural process within the body that's vital to us staying alive.

In fact, the weapon of destruction of the immune system, how your immune system get rid of pathogen, that's inflammation. When you think about immune system killing, it's killing off pathogens.

Inflammation is the tool and the weapon the uses to kill things off. So we want inflammation, which is don't want it to be there when we don't need it anymore.

As a lot of people, they have so many stressors and triggers in the body and then your body also have these pathway that can drive this imbalance that cause this inflammation to stay.

What the Brain-Immune-Gut Axis Means

And you don't swing the pendulum back to homeostasis. So you stay chronically inflamed. Now, the problem with chronic inflammation is that it causes tissue destruction, because when you have inflammation, remember, that's the weapon of destruction of your immune system trying to kill pathogen.

But as a byproduct of killing pathogen, your tissue is going to get damage as well. For example, if you have a cell that's infected by a virus or the way your body gets rid of that virus, oftentimes by killing the cell that's infected with the virus.

Right. This is what natural killer cells do. Natural killer cells identifying markers on the cell that will tell whether their cell is infected with the virus or not.

These are major histocompatibility compatibility complexes, and the presence or the absence of these MHC complexes inform the immune system whether a cell's being affected.

And then that all costs these natural fuel us to go hunt down these cells that look like nothing cells anymore. And so by killing off your own cell that has a viral infection, it gets rid of the virus or it gets rid of the possibility the virus can reproduce themselves inside the virus and spread to other cells.

But at the same time, you're killing your own cell, right? So then you're losing tissue, you're losing you your cells. And that also creates cellular debris because that that cell that's bursting and being killed off is going to just spill out the body parts and your when you're niece's and see body parts, it's like a signal that we're under attack.

Now, imagine you take a nice stroll through the forest. The birds are chirping, chirping. And then you see like an arm of a human laying on the ground.

I mean, you'll be kind of, like, freaked out, right? You'll be like, oh, there's a bird, an expert, or in the forest, you're run and you tell the cops, you know, you're telling people about us so you can, like, look out for the killer.

That's what happens when you have cellular debris. So by having infections and inflammation, you're creating cellular debris fields that's going to alert the immune system to come and try to clean up the cellular debris.

But the way your immune system play up the cellular debris is using the same weapon of mass destruction that it used to kill infection to clear the cellular debris.

So you're basically creating this chronic inflammatory cascade that leads into more tissue destruction. And this is why people get heart disease, they get arthritis, they get autoimmune disease, they get tissue destruction associated with the inflammation.

So this is really important to address by understanding that inflammation is not good or bad, it just is. But if it doesn't swing that that can cause a problem.

And chronic toxicity and these chronic modern day triggers is a main driver of this chronic inflammatory response, at least to chronic disease. That's such a great explanation, and I really appreciate you taking the time to do that.

And it's definitely some very memorable roles. So I will never unsee the arm and the four. So that's a really good description of what the chronic inflammatory response is like when you're dealing with infections, when you're dealing with toxin driven and inflammation.

And also, I'm really wondering how in your mind does this happen with brain dysfunction and how does that lead to chronic issues? Like what is the relationship there?

Can you unpack that? Right. So inflammation, of course, inflammation is kind of a catchword right now in this process where the immune system is trying to get rid of something.

Now, there's many different pathways and many different parts of the immune system with many different types of immune cells that are responsible for different types of inflammation.

So that's kind of a, you know, a talk in itself just to go over that. But inflammation can come from different sources. Right? So when we just say inflammation, a lot of times people will say, well, I have inflammation, so what pill do I take for inflammation?

Well, you know, taking some anti-inflammatories can help dampen inflammation. So you kind of reduce the damage there. But if you don't identify the underlying trigger for that inflammation, then you put out a fire here.

But the fire starts in another place. So you're just constantly, you know, chasing your tail. So there's different types of inflammation. They can infect the brain in a different type of inflammation, they can infect the gut.

And so, for example, in the gut, mostly, we're going to encounter things like pathogens or dysbiosis, which is a condition, a situation where you may have a situation where you don't have a lot of bad bacteria, but you don't have enough good bacteria.

So then the ratio between the bad and good is off balance. Or you can have a situation where your good bacteria are just fine, but you have too much bad bacteria that could be a problem.

Or you can even have a situation where you have way too much good bacteria. That's bad too, because bacteria to the body is bacteria, even if it's commensal.

So a lot of times we say, oh, their beneficial, beneficial bacteria more the better, right? No. If you have way too much beneficial bacteria, guess what?

Your body will use weapons of mass destruction, inflammation. Wipe us out. Come to the saying, it will try to kill these bacteria. That's way too much.

Modern Stressors, Toxins, and Chronic Inflammation

So this is the sense of this neutrophil bacterial by stable balance, which is a fancy way of saying your immune

system and your that all that your microbiome, all your all of your organisms that live in your body have to maintain this balance where your immune system kind of has an edge. Right.

You're not never you're not never sterile. Right. There's no sterile human being. Well, we all have like trillions of germs on us at all times. Some are pathogenic, some opportunistic, some are commensal that lives with us.

But any of those is a gross way too much is going to present a problem. And your news isn't going to start to increase the inflammatory response. So in the gut then, we're dealing a lot with these pathogens.

However, environmental toxin can definitely impact the gut as well. Glyphosate can damage the gut microbiome by inhibiting chicken multi pathway. That's one good example.

But in my practice I see many other things causing problem with the gut microbiome, you know, fire retardant material, EPA, you name it. These chemicals can all be a stressor to the gut microbiome or to the gut lining itself and cause leaky gut in other issues.

Now in the brain we don't have the same set of pathogens that can affect the brain, although some can still get in the brain by a certain parasite can be in the gut, can be in the brain, they can travel into the brain.

But the most part your brain's going to be has a blood brain barrier, which is the blood vessel that supply blood to the brain, and that serves as the barrier.

So that not just anything can get through. Although viruses like Herpes Simplex Virus and Harvey family virus can get through the blood brain barrier, they have a propensity for it.

And then in the brain, we're dealing a lot with these environmental toxins like heavy metals and environmental toxins that can either store in the brain or they can cause a lot of oxidative stress, which cause tissue destruction and brain.

And again, once you have tissue destruction, your body will use in the immune cells to go clean out the cellular debris, which can again meet the inflammation.

So I see these these triggers, right? We have to hunt for them. We have to understand the landscape of what we're dealing with, with modern, modern day environment.

And that's what makes detox and which is a topic that you talk a lot about. Sinclair So important that we really need to do regular maintenance. I come from a time where, you know, I'm an autocrat, so it was, you know, internal combustion engines, okay?

I didn't grow up with it. So which we were told to change the oil every 3000 miles. Yeah, that's a good thing for all for us to do for our body as well.

Yeah. It's a great way to say it. So let's talk about where to go from here, because so many people listening in are just taking control of their health and they have a new diagnosis.

And it's frustrating and scary and they've been maybe waiting for a label for a long time and they thought, Oh, I just got the short end of the stick.

Oh, you know, this runs in my family. Oh, and now it's finally bad enough that I actually have an autoimmune disease label or, you know, we're calling it Crohn's or colitis now or calling it SIBO.

There's finally a label to apply to this, and I think this is where Western medicine has really left us to perpetuating a cycle of suffering until it's finally bad enough that there's a word to apply to it.

For those people who are listening and how should they be thinking about the gut brain immune axis and how can

they take control of this? Yeah, and I that's great.

That's a great point. I used made that people I think the first thing I would tell people is to, you know, there's a time and place to get a diagnosis, right?

You want to know what you passed, but there's a time and place to get a diagnosis. But more important than the diagnosis is more important that we understand the mechanism right.

And the root cause of that diagnosis. Because if you're if you just get a diagnosis is nothing more than, as you say, a label. And the label itself tells you nothing about the root cause of it necessarily.

It just tells you the symptoms that you have associated with that. So I would encourage people to deemphasize the diagnosis. Are and emphasize more of the understanding, the mechanism.

How did that tissue or organ become dysfunctional in the first place? What's this? What's the cellular process that lead that to become that way? And what are the causes that caused that to happen?

And that'll help people to really start to seek solution in a different way. Right now, when it comes to branding, you got access. Again, when I say the branding, we got axes and then how we go about addressing it. This is all just kind of using that as a conceptual way to understand how your body works, and there's a way to understand the mechanism, right?

So when it comes to branding me, gut is understanding that, okay, there's a brain and gut connection, that if you have gut dysfunction that can drive neurological dysfunction, so your depression and your brain fog and your memory loss may be caused by gut issues.

So you don't want to just oh, I have memory issue. What memory supplement do I take? But rather maybe you need to look at the gut or I have gut issues.

Okay, you may need to address the gut, but do you also have a concurrent vagus nerve problem or some kind of brain issue that's driving the gut problem that you need to look at as well?

So this is causing people to look at the mechanism. Right, and understanding why things are happening. So they can empower themselves rather than looking at a label or a diagnosis.

So that's how I think this brain even gut concept can help people to to get to the root cause better. Yeah. That's I think that's really well said, you know, from a bio regulatory medicine perspective, you know, you know, all of my great teachers used to say, you know, like we're always looking for regulation and being providing the body with the opportunities to restore regulation to itself.

Right. And so in a very real way, you could look at a chronic condition. Yes. There's a toxin driver. Yes. There's there's other root causes and the mechanism of chronic illness that can be considered a bad habit of the brain. Wow.

I like that. It's cool, right?

How Inflammation Drives Tissue Damage and Disease

It's a really interesting way to think about it because I mean, that's why I love the way you talk about the brain gut immune axis because, you know, when think about nervous systems regulating every aspect of digestion and every aspect of the immune system, right?

So of course we have to talk about these things together. So let's go ahead, do what do you think about that? And then but then I have another question for you.

So I absolutely agree. It must be we need to take it as a holistic approach. And I think often time in natural health care, I think, you know, in the past or even currently, there may be some practitioner that have a tendency to, you know, still treat symptoms with a supplement, sort of looking at it from a holistic model.

And when people sometimes people think just because they're taking a natural supplement, that automatically makes it holistic. Now, that does not make it holistic at all.

I just means you're taking a natural supplement instead of a drug. But what is your underlying approach and your philosophy in dealing with this? Right.

So this is more of a philosophical approach, but philosophy is important because philosophy is what drives, you know, your behavior is what what you're doing, what you believe based on science.

His philosophy is not just talk. It's also based on science and philosophy and science are intimately linked together. So you have to have a way of thinking about things as useful as the way that you think about things is like, Oh, if I take a natural supplement, then I'm doing something natural, then that's not useful because you're not necessarily getting at the mechanism in the root cause.

And this is a reason why I talk about these things probably in a more detailed way. And then some people do. Yeah, because I think it's necessary and I think people can get it.

I think if I just speak English, people can understand these deep concepts and and be able to understand the nuances because the nuances is really where it's at.

Yeah, that's the perfect to get to. The next question I was going to ask you because, you know, we're getting more and more advanced students and our audience, thanks to, you know, events like the ones that you and I do, are really helping to educate people on that, basically how to take control back over their own health.

And at the same time, people are getting sicker. So pretty complex right now. So we get students in all the time. And I know there are many people in the audience today that would describe themselves as an advanced student and they're doing vagus nerve work.

And they they've been working on their leaky gut and they are very intentional about their food, obsessive even to the point of stress. Right. And, you know, they think that they understand their immune system and yet they're still not making the kind of progress that they would hope to have.

So what would you say to the advanced students in the audience today about their brain immune get access and how to be thinking about like what have they overlooked or where should they go next?

Yeah, that's a great point and I do see that myself as well in people out there. You know, a lot of people, patients come to me already have done everything.

They're almost like semi professional when it comes to the amount of knowledge they have gather throughout the years and they have a whole arsenal of supplements in the cupboard that they take for different situations and very specific, you know, how they do those things, but yet they still have certain issues that's not resolving.

I think it's not a lack of knowledge or or definitely not a lack of trying. Right. I think that the reason for that is because I think sometimes, you know, the body is so complex that and and just even for myself, you know, I'm always learning, right?

And just when I think I know something is like, oh, I don't know it that well. So I think the main thing is we have to stay humble. And just because we hear it out there in the summit land or on Google doesn't mean that they're always there to know.

You have to know that you know, we have limitations. Even the top scientists know that there's things that they

don't know. Right. So we have to be humble.

We have to be good observers. Good scientists are sciences, you know, innately an empirical type of field of study. So that means empirical, meaning your observing your response kind of like muscle testing as a way of empirical, right observation.

You do something and you muscle test and you see is a strong a weak and and this is give you an idea into the body. So I think for for advanced students, I think they need to continue to learn.

And really actually for me, the big turnaround for me that really helped me to up my game is get back into the basic sciences. Like I just, you know, these books, they're not virtual backgrounds.

They're they're real. I wouldn't say that I read every single one of them, but some of these books like textbooks, I just dove into basic sciences like really understand OC immune system.

Like what is adaptive immunity? What is an immunity? How does body produce antibodies? What are all the different branches like? I just dove into it and then I have basic sciences understanding so I can actually converse.

And when I read the literature I can understand it. And that's really what took my game really to another level because now I can actually understand how these things work.

And I read literatures, I can understand that versus a lot of people. They just kind of say, Oh, I'm inflamed, okay, turmeric, you know, right, right.

Yeah, that word. But like, how do they work? And it's almost too simplistic. There's other pieces to the puzzle and the more knowledge you have, the better you'll do.

A one perfect example is this. You know, when I talk about, you know, I think a lot of people who want to send teach 1 to 2, they've heard about it.

Why Root Cause Matters More Than Labels

But you know, a T helper one is your innate immunity to choose your adaptive immunity. And I think people need to just have a basic understanding what that is, you know, an innate immunity is a part of immune system that gets pissed off and go kill things.

You know, that's what's the weapon of mass destruction that you name. You know, they're the ones that go out and kill pathogens. And, you know, that that immunity are the smarter ones.

They make antibodies so that you have long term immunity right there. Those are the snipers. They don't just like go and know spray machine gunfire on the bad guy.

They're the one that they're the snipers that they're very specific, one antibody for one specific pathogen. And so our body works in that way. And there's situations where this 1 to 2, you know, activity can become imbalanced and that can be a driver for a lot of people sometimes.

And some people can have th1 dominant issue. Some people can to issue dominant issues. And when you are one dominant, you tend to be very inflamed by active tissue destruction.

When t issue dominant, you tend to have a lot more allergies and environmental sensitivity because you're making way too much antibodies and antibody.

Like when you do food sensitivity tests, what are you measuring but measuring antibody IGG to food proteins, right? When you're measuring Hashimoto's, what are you measuring antibody to TPO enzyme, thyroid tissue.

When you're measuring, you know, you can even measuring antibody to two metals to see if you know toxin re immune reactivity. So the point is that when you're THG dominant, you're going to have a lot more sensitivity.

When you're th1 dominant, you're going to get a lot more inflammatory response. And so but just by understanding that it will help you to like see patterns in your, in yourself or client populations, they'll be able to drive a decision making that, okay, maybe there's a tissue dominance situation.

I need to, you know, dampen that with certain nutrients or find a drivers of tissue dominance. For example, parasites are tissue dominant drivers, right?

Because parasites are too big for the immune cells to eat. Right? The innate immune cell th1. They're primarily macrophages, neutrophils, and the way they kill things is by phagocytosis.

Then golf a pathogen and they spill enzymes on and digest and degrade them. Well, parasites are too big for the for these little white blood cells to involve.

So the way your immune system killings by using eosinophils which is the specific white blood cell they have enzymes in them and what they do the NFL will spill enzyme on the parasite to digest them a degree, then basically bleach them to death.

And that's how eosinophils Morgan Neill Somerville is ath2 immune cell. So and then by the way, mold is a potent t two immune cell stimulator. So if you have somebody with parasite and they have mold, they're going to be probably very tissue dominant because they're just that part of immune system trying to actively get rid of those things.

So they're going to probably present with a lot of allergy symptoms. They're going to present a lot of drainage, like a lot of mucus because that's what tissue dominance does.

It creates drainage, so you can wash that stuff away. So then we can identify that and be able to say, okay, that's probably what's going on. Or someone with tissue damage and you'll be suspicious of tissue driver like parasites and mold and other things.

So knowing these things just helps you to be able to zero in better right to help you to get near the ballpark where the problem is instead of completely on the left here, where left field where you're not even close to it.

So that's what I mean by just learning, you know, just get better equipped with knowledge. As is such a great way to lay that out for everybody. Because what we see happening when we come as students or clients come into our practice or our groups, is that they're on like 37 things in their natural path, but I'm on 27 of them because they were low end 27 markers and then they watched some ads or listen to podcasts and they're like, Oh, on to work, oh at Omegas.

Oh, and this. And when you look at the, the full shopping bag of supplements, it makes no sense together like whatsoever and you could actually be aggravating the body's inflammatory responses and being while you're doing it what you think is like the best thing to to heal.

And it's actually prolonging the issue because you're asking the body to process these things that are too much work and are actually aggravating the issue without getting to the root cause.

Advanced Students: What They May Be Missing

So I really appreciate you taking the time to break that down for people. I am really curious what immune support you prefer in the context of this access amidst all of these stressors today, are there any tools that you really rely on that you think have broad applications for folks?

Yeah, and you know, the macro is the brain immune got axes, the reasons the axes because they all impact the

immune system. Right. And the impact of gut and brain and breaking packed immune system in the gut.

So for my perspective, there's several different ways to impact the immune system. Of course, a lot of this is context dependent right depending on what's right.

But if they have if they have if they have gut dysbiosis, okay, then the obvious thing to do would be to decrease the pathogenic load they have too much bad bacteria, let's say.

Right. If that's the problem. Because if they have too much bad bacteria, by the way, having gut dysbiosis is very inflammatory and is also very tissue promoting at the same time.

Your gut lining is a factory for inflammatory cytokines. Like it just it's just really good at making cytokines and inflammation. The reason because if you think about it, your gut is the port of entry for things that you put into your mouth.

So it's constantly gut pathogens going and germs going through your gut like these lined with immune cells that are there to just kill things. Right. So there's really a really a factory, an inflammation.

But if you have way too much stuff going on like toxins and infection and stress and blood sugar issues, that you're going to just make way too much cytokines now you're going to damage the guideline, you're going to get leaky gut. You can result in more inflammation.

So decreasing pathogenic bloat if you have one. It's always a good thing to do because you're taking the stress of the immune system to have to do that fight alone.

So antimicrobials, you know, berberine and copper like acid or fungus, you know, artemisinin, sweet wormwood things like, you know, oregano, oil like these, these, you know, antimicrobial herbs, broad spectrum.

Yeah, yeah. Can help just lower pathogenic load and take the load off in the system. That's the gut. On the brain's perspective, how can we use the brain to improve immune function?

Well, we know that there's a brain gut connection, that if your brain's inflamed, your guts, inflames you guts, insulin, your brain's inflamed. So a lot of times leaky got a leaky gut, the blood brain barrier and leads to brain inflammation and brain inflammation leaks to leaky blood brain barrier.

And these the gut inflammation. So we may need to dampen brain inflammation. At the same time, there are certain anti-inflammatories that can cross the blood brain barrier.

Like, for example, you know, if you take your classic, you know, woven zine type of enzyme, like proteolytic enzymes, like, you know, your. Love, my what we as I had a whole chapter of health with lots of work.

So you know these these are proteolytic lytic enzymes they do not cross the blood brain barrier. So they don't they don't dampen inflammation in the brain.

They can work well. If you have arthritis or something. To do in the body, that's fine. Yeah, yeah, yeah. So then you use a specific anti-inflammatory that can cross the blood brain barrier.

So that would be like things like tumor, like things like epigenome and luteal and these flavonoid compounds. So then you can get selective with that.

Now I would say also stimulating the vagus nerve can also dampen inflammation. I think a lot of people are not aware how important the vagus nerve is in its role in inhibiting macrophage activation within the liver, spleen and intestinal lining.

So what that means is that there's a cholinergic pathway in which the vagus nerve, when is firing, has a dampening

effect on your body's cytokine production and specifically in the liver, spleen and the intestine.

I said, okay, what if I don't have any problem with my spleen, liver, intestine? Well, that's not the point, because your liver and your spleen and your intestine produce the vast majority of the cytokines, inflammatory cytokines that circulate in your entire body.

So in your ankle, your liver transplant is going to make some cytokines. It's going to go to your ankle to help with that. So if you if you have systemic inflammation that's chronic, that's excessive, that needs to be dampen.

Stimulate in vagus nerve can have an impact on that. So that's brain. We talk about gut and specifically within immune system, how can we support the immune response?

Well, depends on what we're trying to do. You know, if you're trying to kill an infection that you want to just full bore kill the infection. So sometimes if you have an acute case and you have infection you're trying to kill, you may not want to pour on so much anti-inflammatory because you're kind of dampening the process of trying to kill it.

But because inflamed inflammation is the way your body kill infection. So if you get inflammation too much excessively, then you kind of hamper that process.

So so if we're trying to kill infection, then we want to focus on that. And maybe after a few weeks, then maybe if the infection is under control, we can start laying the anti-inflammatories.

Immune Support Strategies Across Brain, Gut, and Body

If someone's really inflamed, then obviously we can, you know, lay on anti-inflammatory. And while watching it, they have chronic infection. So it's kind of a, you know, assessing the situation with the person, you know, clinically speaking, you know.

So, again, the more things that we can look out for as markers for whether someone has, you know, inflammation or infections and what are the underlying drivers.

And I say underlying driver. We say toxins, you know, infection, the lot. Of course, those are the main things. But I want to remind people that blood sugar problem, like insulin resistance, is one of the biggest driver of inflammation and is also the most common.

And you know that by just looking at how many people in the US have diabetes or pre-diabetes, I mean that alone is a huge driver now. Sure, there's probably a certain percentage of those people with diabetes or pre-diabetes that have environmental toxin exposure causing insulin resistance.

Right. That that could be a thing. That's a thing that a lot of these toxins can literally cause insulin resistant block, insulin receptor. But a lot of these people with diabetes or pre-diabetes simply is just eating way too much sugar and carbs or processed food and not getting enough exercise.

So they're getting pre-diabetes and diabetes and that's a huge driver for inflammation as well. So we want to mind that as well. We've been sold a food pyramid that makes great customers long term for big pharma.

It's working out awesome as a business model. Hey, so you've covered so many great gems for people today, both the beginners and the advanced students in the audience.

I really want to give you a chance to speak to the practitioners listening right now. You know, and I love what you said about staying humble and continuing to learn and I totally agree in our mentorship that we do for practitioners are our first six weeks are about unlearning like what you've been taught that doesn't work or is misleading in this day and age.

And I really want to give you a chance to share your thoughts on myth busting right now. Any any myths that

persist for practitioners that you really want to, you know, unpack for people and advice for practitioners looking to get better at dealing with this complex time.

Yeah, I thank you for giving me an opportunity to share that. I have a few thoughts on it. You know, but really the most important thing I think for practitioner is, you know, be able to ask really good questions.

You know, the quality of the questions that you ask is going to determine the quality of the outcome for your patients and what that the result that you get because if the question is, oh, this person has a leaky gut, so what supplement do I give them for that?

Then it becomes very prescriptive, right? We don't want to be prescriptive. We want to be thinking about the mechanism. As I said earlier, I think about what got them there and what's the physiological process and the biological process that's driving this.

And then finally, what's the trigger for it? The reasons because you can just get rid of a trigger, but sometimes people just need some help. They just need some rescuing.

They just need to have the fire put out, at least temporarily, while we're looking for the root cause. So there's some hope. So they can have some relief because ultimately they're looking for relief, right?

Get them relief. And we just bring them along for like, you know, a long period of time without them feeling better and say, oh, we're still chasing the root cause, then they can lose faith and they may not stay in a fight long enough to get to the resolve. Right.

We all understand root cause. It may take some time, but it my opinion, if we can do the right thing, usually we can get them some type of improvement symptomatically within like a month or two.

Advice for Practitioners and Closing Thoughts

I think that's reasonable to expect that and then as we continue to work on the root cause, that doesn't mean within a month or two they're going to feel completely better.

But it should be something, right? Give them a carrot. Right. Keep the fight so they can come to you. So that comes down to really good questions about their history and understanding what that history means.

As far as the mechanism that's driving that particular symptom, I think just, you know, being very thoughtful, intelligent instead of being, you know, too quick to recommend a supplement.

Right. Think about the supplement in context of the overall condition. I think that's probably good advice for all of us. Yeah, I got full body chills when you said that.

The quality of question that the questions you ask patients and clients determines the quality of their results. Yeah, that's that's definitely I hope everybody puts that up in their office.

It's so true. I just love you, man. Thanks for being such a bright light in this landscape and for giving ready hope. And I love the nuance with which you approach these topics and also how you make it really accessible to take the next steps.

Thank you so much for having me. Sinclair Yeah, you're so welcome. So where can people find you and your work right now? Absolutely. Thank you for letting me share.

I'm on YouTube. I have a lot of just free videos out there, just speaking a lot about, you know, my thoughts and these these concepts so they can just go to YouTube and search Dr.

Peter Kan. They'll find me. I'm on social media tik-tok, Instagram, but also my website askdrkan.com There's just

informationabout the practice as well.

So thanks so much.