Decoding Autoimmunity with Dr. Datis Kharrazian Transcript

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Introduction and Guest Background

Hey, everybody. Dr. Bob here. I'm here with a luminary in the areas of functional neurology, functional medicine, one of the smartest guys in the room without question.

I'm excited to have him here, and he's going to share some ultimate knowledge bombs, Dr. Tatist Karazian. Doc, how are you today? Hey, Bob. Pleasure to be here.

Nice. Thank you. This is exciting, man. I've been following you since I got out of school. We got out about the same time, and you've just blazed a great path.

So much information. I mean, you're a researcher, scientist, practitioner, author, and a teacher. I mean, your plate's busy, my friend. So let's delve right in.

One of the things you talk about a lot is autoimmunity. And in autoimmunity is, I think, let's lay the groundwork. Why is autoimmunity on the rise, and what is autoimmunity?

So autoimmune is just when the immune system starts to target some of the proteins or tissues in your own body as being formed like a pathogen and starts to create an immune response against it.

And the key feature of it from a laboratory diagnostic point of view are what we call autoantibodies. So antibodies are typically made, as most people know, to fight a pathogen.

So if you get a virus in, your body makes the antibody for the pathogen so that your immune system can find it and destroy it. So autoimmunity is where the immune system basically dysfunctions and starts to make antibodies to the body's own tissues.

It could be an enzyme in the body. It could be a protein, and it's sort of various tissue in the body. But then the person starts to have their immune system destroy their own tissue.

And this really then creates a chronic degenerative cascade. And unfortunately, no one has really figured out the cure for autoimmunity. It's really just a disease where you can't put it into remission and slow down the expression or response of it.

At times, sometimes people may feel like they're cured, but they do have ups and downs. They do have flare-ups, and it's really a growing disease. No one really knows why autoimmune disease has been exploding.

The rates have gone up. It's also starting to affect a younger population than before.

Understanding Autoimmunity

I mean, the scientific theories are basically that there's an environmental component, there's different chemical exposures over a period of time, different genes that are susceptible, changes in how we change proteins in our food through hybridization, through GMOs.

So it's basically this soup of chemicals, pathogens, genes, environmental exposures that all start to merge together that then changes the expression of the immune system.

And once this switch turns on to attack the body's own tissues, it's really difficult to turn it off. Fascinating. There's a lot to unbox with that. So it's the body's producing antibodies.

So it's the inability of the immune system, if you will, to differentiate between self and foreign, producing an auto antibody. Now, do those antibodies attack each other?

There's some complex proteins like agglutination where some antibodies can react with each other, but for the most part, what's more fascinating I think with that is that what they're finding is antibodies made to one tissue can actually bind into another.

So for example, the most common autoimmune disease in the world is Hashimoto's, which is the main cause of being able to become hypothyroid. So 98% of the people that are hypothyroid actually have an autoimmune disease, whether they know it or not.

But what they recently found in the past 10 years is like these thyroid antibodies, TPO antibodies, can also directly attach to proteins in the brain to facilitate the cerebellum.

So then these people are actually getting degenerative changes happening much faster in the brain and they get this known for neuroinflammatory response in the brain.

And they may not be aware of that. And this is really why many people have like Hashimoto's or they may know they're just being hypothyroid. Even though they're on thyroid replacement, they're not really getting anything done to manage your autoimmunity and to continue to progress.

And this is why doctors usually have them come in every year to get their thyroid levels checked because they expect their thyroid tissue to be destroyed.

more in the next year or so. So they may need to increase their dosage. But for example, this connection between these antibodies binding to other tissues like the brain is just totally ignored.

And then they may have these degenerative changes taking place in the brain and specifically the cerebellum that will impact people's cognition, their balance, their ability to handle motion and movement.

So this is, I think, what's really fascinating about antibodies and autoimmunity is that we're learning that they're not just attaching that one tissue that we first thought, they're actually attaching to multiple different tissues in the body.

And this is a very interesting area of exploration as a clinician, as a patient dealing with an autoimmune disease. So these antibodies that are getting attacked, obviously there must be a stimuli.

So I'll throw one of the stimuli out there. Probably one of the biggest egregious ones would be gluten. Am I correct? Yeah. You know, the thing with autoimmune disease, this thing is very frustrating for a practitioner of the patient.

It's, you know, in the classification of a multivariate disease that is in one variable. So there's some strong associations, for example, the celiac disease and many autoimmune diseases and gluten reactivity with many different autoimmune diseases, but it's not like one thing.

Now, there are some strong variables that have a greater power and effect on a tissue. So for example, if someone has severe reactions to gluten and they have celiac disease, which is an autoimmune reaction to gluten, they have genetic overactivity of how their immune system and their T cells respond that are much more aggressive even than how they react to a pathogen.

Some of those celiac diseases, for example, turn on, like we talked about, like Hashimoto's hypothyroidism very aggressively in which even when they've done some studies where they have people come off gluten, it can pretty much in some cases reverse the condition, put them into remission immediately, but in others it doesn't do that.

So the frustrating thing is if you have autoimmune disease, like you go on the internet, you just read those simple things like if you just fix your microbiome, it's going to go away.

If you fix leaky gut, it's going to go away. If you're just gluten-free, it's going to go away. And those things may have some impact, but I think the key thing to understand about But some of these chronic disease, especially autoimmunity, that it's a multivariate disease.

And these variables that can trigger and push the disease can change over time. They can change as your genes change. So for example, as you age, certain genes turn on, certain genes turn off.

So the disease is always dynamic. And it's always changing. And there's just this constant battle of trying to figure out the right diet, nutrition, lifestyle, nutraceutical intervention to try to optimize function.

But it's not linear. It's not simple. It's not like people use the word root cause. It's not a root cause-based disease. There's multivariables and people are searching for this one root cause that may cause it, but it's much more complicated than that.

Now, gluten certainly plays a huge role in many autoimmune diseases because it's such a what they call modern wheat in the immunology world. or wheat has been changed in the structure of the proteins and the protein sequences through things like hybridization of seeds, through things like what they call haptination, where chemicals like glyphosates bind to gluten and change the protein structures to become much more immune reactive.

With certain gene pools, it becomes devastating. So these things are all happening. It's a bit complicated, you know, and I think the average person that's suffering is just trying to look for a simple answer, simple thing, and it's not always so simple.

And I only say that because there's definitely hope that you can do things to dramatically change it, but it's a dynamic game. It's not a simple rule.

It's not like one root cause for all these things when you're dealing with a multivariate disease like autoimmunity. You just really explained something truly complex and the basic premise is root cause resolution is a great concept, the starting concept, but it's really root causes resolution.

And I've got something that you said that autoimmunity, there's no magic pills. just lifestyle changes, and you indicated sleep, stress, exercise as a few.

Triggers, Lifestyle, and Immune Tolerance

Could you give some of the remedies to autoimmunity? I know you won't be able to give everything, because you take everybody as an individual, n equals one.

Right. So the thing is, the key feature of autoimmunity, when you look at it and dissect it down to what's happening with the immune system, there's some key features.

And in the world of immunology, they refer to it as loss of tolerance. So it's a field of immunology where the immune system has a hard time distinguishing their own tissue from foreign tissue, and that's the whole hallmark of autoimmunity.

And when people lose this tolerance, what they found is that there's many different immune players that are involved. So there's a very important cell called regulatory T-cells.

They regulate how aggressive the immune system responds against something. They are dysfunctional. There are cells called dendritic cells. They tend to be overactive with autoimmunity.

There's even cells in the liver like creeper cells that are like the immune cells of the liver, they become overreactive, overzealous. There's changes in how different antibodies start to react against the cell tissue proteins.

There's messages in the thymus gland that can dysfunction. There's all these different areas, but there's this loss of immune tolerance. There are some general rules that seem to have some effect on loss of immune tolerance in all aspects of immunity, for example, sleep.

I mean, it doesn't really matter if you have a chronic infection or an immune disease, if sleep is necessary to really help prime the immune system, help it function well.

Lots of different physiological steps take place to balance out these systems. So sleep is a big issue. There's a phenomenal explosion of research on exercise where they're finding muscle tissue itself releases proteins called myokines, and there's also things called extrakines.

that are released when we move that then modulate the immune system in different T cells and B cells and some of these immune players and these chronic diseases that seem to have a very powerful effect.

And there's just a whole entire explosion of research the past 10 years on the psychoneuroimmune response where you know, how we deal with stress really impacts how these immune systems express.

So the very basic fundamental things for someone who's got a chronic disease that involves the immune system like autoimmunity is, you know, the three key ones are like sleep, exercise, healthy relationships.

Those things make a profound impact. And it's almost like if you're dealing with a immune mediated disease or a chronic disease, you know, you can't go wrong starting with those.

Those are great lifestyle hacks. But you brought up the idea of immune tolerance. Some of the things in our field now, people are talking about immune competence.

So could you differentiate between competence and immune tolerance? So immune competence is like in the field where you're trying to see, can your immune system actually fight and destroy a pathogen?

Can it actually do its job? And immune tolerance is, does the immune system know how to distinguish So the key feature is this ability to distinguish between self-tissue and non-self-tissue, like pathogens, for example.

And tolerance is his own field. And what we're finding is tolerance is being disrupted much earlier than ever before. We're finding like many mothers who have children, their offspring tend to have autoimmune disease much earlier.

where there's a bunch of research that's really shown things like autism may really be autoimmune disease while the baby's developing. And there's these studies that have clearly shown that kids that are born that end up developing autistic traits later have brain autoantibodies developed from the minute they're born.

They can see these immune responses taking place. So tolerance is really about distinction of self versus non-stealth. And competence is about how effective the immune system is destroying tissue, or a pathogen, I should say.

So give me your three best things for people listening to try and quell some autoimmune. I know I don't want to wrap you in a box. I'm going to give you the attitude.

There's some generalizations you can make. And just for general health, people definitely need to figure out their sleep. Sleep is a big one. a key factor.

It would be a huge variable for them. They will know, for example, if they don't get good sleep, they're going to have a flare-up. Let's say someone has rheumatoid arthritis.

Rheumatoid arthritis is one of the most common autoimmune diseases as well, and that's where people have a swelling of their joints. They start to get arthritic changes.

Their joints start to deform. They may notice the arthritis really flares up if they haven't had a couple nights of sleep that are good. They notice when they start sleeping better, their inflammation and joints are a lot better.

So sleep is a big one. So sleep will involve like, can you fall asleep? Can you stay asleep? How's your sleep quality throughout the night? Are you waking up several times throughout the night?

Like you could have someone who has autoimmune and they have sleep issues, but the sleep issues, maybe they have an overactive bladder. So they keep waking up every few hours.

They never get this long extended sleep, which is really what the immune system needs. So as a clinician, maybe we're working with, how do we try to support the overactive bladder?

Maybe we have to have them stop drinking any kind of fluids by six o'clock and then they can start sleeping through the night. It all depends. For other people, they can't sleep well and they tend to get hypoglycemic.

They wake up the middle of the night at three or four o'clock, put the heart rate up, they crave sugar, they eat something, go back to sleep. So even though sleep is an issue in a clinical setting, you still have to figure out what's the variable of sleep.

Are they not getting extended periods of sleep? Do they not stay asleep? Some of them just can't fall asleep. That's another issue. So even though we say, oh, you got to sleep better, a lot of times in a real clinical setting, We then have to figure out what are the variables that are causing their sleep to not be efficient as well, right?

And sometimes it's just like poor sleep hygiene. They're just staring at their phone all night or, you know, they're just distracted. They're not going through a ritual to help their body relax, to calm down so they can sleep.

And so we have to figure that out. Like for some people, they have to like exercise. really hard that morning to sleep that well that night other people have to like if they actually too late in the day then they can't sleep and too wired like there's just definitely trial and error and this is what's yeah and this is what like what's so frustrating when you like I can't watch social media stuff with healthcare practitioners anymore I always watch and I just go you've never clinically practiced like gets so frustrating because people just try to put the general rules on things and it doesn't really apply that way.

Everyone that has a chronic disease has to go through a period of trial and error with key concepts and then figure out how they apply to them and it's working for them.

So for example, someone has a debilitating autoimmune disease and someone goes, oh, if you want to sleep well, you just need to have your room temperature to be 75 degrees and you have to have this perfect mattress.

And they may do that and it has no effect with them. Maybe it's the person that has to eat, you know, six high protein meals throughout the day so their blood sugar doesn't drop at night, then maybe that's their answer for being able to sleep through the night.

So we can get with some general principles like sleep, but ultimately it's like how good is the quality of your sleep and then what are some of the variables that are affecting it and that's where you, you know, play this clinical game.

And for the person who's dealing with the chronic illness, it's really frustrating because all you see out in the world is these generalizations without really individuality.

And it's even more frustrating when you go see a practitioner and the practitioner doesn't dig deeper and they don't know how to clinically dig deeper.

And then they're frustrated like hoping they would have the answers and they don't. And then this is why we have this growing population of chronic disease that just feel abandoned and have nowhere to go.

You make a great point. This is the first podcast you said you've done in three or four years. I'm going to be using Reels. We're going to be on Instagram and all that.

We're going to be sharing information. And there are some influencers like you, I found they're abhorrent. That said, let's talk about what we do, the concept of functional medicine, and let's talk about some of the things that are wrong that need to be corrected to right that ship.

Well, I mean, functional medicine, I mean, I'm a functional medicine practitioner. I identify myself as a functional medicine educator, and that's what I do as part of my career.

And the principles of functional medicine are wonderful because the goal is to try to improve function. And function could be making sure hormones are optimized, making sure your blood sugar is stabilized, making sure your immune system is confidence, making sure your immune system is tolerance.

You're just trying to improve function. And when you look at, for example, conventional medicine, pharmacology is completely opposite. Everything is there to block and inhibit, right?

So we have protein pump inhibitors and beta blockers. It's all block, inhibit, down-regulate, serotonin-reptic inhibitors. If you look at the top common drugs, they're all blocking, inhibiting, down-regulating.

And that's not really increasing function. That's shutting down a part of physiological functions for some kind of clinical outcome or a biomarker outcome.

The whole functional medicine is, are your physiological functions all operating at their peak? Can you have normal bowel movements throughout the day?

Is your edge level stable throughout the day? Is your cognitive function stable? Can you have synapses? All these things are the goal of functional medicine.

So the principle of functional medicine is fantastic. I mean, it really is such a great way to think of how the body works. It's not really disease focused, you're not necessarily coming in and saying, well, for example, we talked about autoimmunity.

So there's autoimmunity, you don't just go to like an autoimmune protocol, autoimmune drug. You go, what part of their auto, you know, if they have auto meaning, what are the variables?

And we talked about sleep, for example. So then you have sleep, and then they go to the variables that may impact their sleep. From a functional medicine point of view, like we talked about examples like overactive bladder, blood tributus regulation, maybe they have high cortisol or something like that that's impacting their levels.

Functional Medicine Critique and Practitioner Training

But the goal of functional medicine by itself is a phenomenal concept, except one of the problems we have with it is like people that practice functional medicine may not really understand it that well.

Functional medicine is all about depth. How deep can you go? And how well can you see these interconnections with the person? Then what do you do to improve physiological function?

And that's hard. So to give everyone a break, that's fraction functionalism. It's not an easy task. And since it's not an easy task, people sometimes try to simplify the steps involved, and that's where you get sometimes very simple equations.

I think what's failed with functional medicine education is when people say stuff, like educators say stuff like, well, if you don't know where to start, just start with the gut.

That just basically means you have no idea what you're doing. And by the way, everything a person does is going to impact the gut. If you sleep, that's going to impact the microbiome.

If you take hormones, that's going to affect the microbiome. If you exercise and move, that's going to affect the microbiome. So what they really mean is let's start with the gut with supplements.

And so one of the things that's kind of, I think, translated into functional medicine that's become made a little bit more inefficient for both the patient going through treatment and practitioner providing it, is it just becomes, which supplements do we start with?

It's really become the supplement game, and it's really become how many labs do you order? And this, partly, I think, influenced by the main educators of functional medicine have always been nutraceutical companies and laboratory companies.

So they have a heavy, heavy influence on auto-functional medicine. Because when you go to a conference, when you go to a seminar, they're usually held by some of these companies.

Or if you go to the vendors at a conference, they're all there, and they all have their influence on the speakers. that really starts to kind of strongly influence it.

So you can almost tell when someone's gone to a functional medicine practitioner that doesn't know what they're doing because they'll have hundreds and hundreds of tests and then hundreds and hundreds of supplements.

and very little focus on the actual lifestyle or interactions and how these things work and prioritizing. And for myself as a functional medicine educator, one of the things that we talk about is it's not easy to find every things that are wrong.

If you take an average person and run different panels, let's say you run a GI panel, you're gonna find some type of microbiome imbalance or some type of digestive marker that's a little bit off.

If you run like a red blood cell nutrient analysis, you can find some nutrients that may be low in some person or another. If you run some kind of toxicology profile, you'll find some environmental chemicals are off.

So if you run enough, when you run a bunch of these tests, you're gonna find people will have little imbalances or even sometimes big imbalances here and there.

So finding them is not the hard part. Prioritizing where to start and how they all interact with you is really the skill of functional medicine. So I think what happens to a lot of people who learn functional medicine or work with a practitioner in functional medicine, they just kind of do this deep, deep search for everything, find everything, and then try to supplement everything.

And this is where patients get frustrated because now they're spending thousands and thousands of dollars on tests that they made that doesn't really help start in the right place.

And they're taking all these different supplements because they're treating every lab marker that's abnormal with the supplement, just like people treat every disease with a drug and end up with multiple drugs.

And this is, I think, where things can go wrong quickly in a functional medicine approach. I hardly agree with you. I wrote a question down. In your opinion, I mean, you own an institute.

It's all about learning. It's all about helping the patient via information. What's missing in most practitioner education, especially with the rise of this protocol-driven care?

Everybody says, hey, Rob, what's the protocol for autoimmunity? Hey, Rob, what's the protocol for rotator cuff, et cetera? Yeah, so I think that's one of the problems we have.

So in a functional medicine approach, we're not really protocol by disease-based conditions, right? Like we may have protocols, for example, what are some protocols if we see white blood cells low?

Look, there's some things we know with lifestyle and nutraceuticals that may have an impact on raising white blood cells, but it's not for a certain condition, right?

What are some of the protocols and lifestyle factors can improve insulin signaling, right? But it's not necessarily for a certain condition, but you're just trying to, let's say, improve insulin sensitization.

So like in a functional medicine model, it's not really the disease or condition that's based that's approached. It's really what's the mechanism of the physiology you're trying to change with them, right?

Are you trying to activate GABA receptors? What are you trying to do? So that's where we have some interventions. And we have to have some degree of things we know we do for certain mechanisms, but it's not really disease or condition based.

So I think that's kind of the shift in learning. So I have my own institute, the Crossey Institute. We have over 5,000 doctors, healthcare practitioners that have been studying there since 2016. And recently I made a new educational program called the Academy of Functional and Lifestyle Medicine.

And this was because we noticed that a lot of our functional medicine doctors and especially physicians just didn't have any real training in nutrition protocols.

And like a dead giveaway practice doesn't really understand like the foundation of basic nutrition, which is one of the key essential parts of functional medicine is they just basically use the supplement that a nutrition company recommends that they like.

And that's kind of how they think of things. They think of like, oh, I have this GI product from this company for this and I have this, but they don't really know which of the ingredients or how they use them that are distinguished one supplement to another.

So for me as an educator, I can very clearly like, okay, hard-growing group of practitioners, especially physicians and nurse practitioners that never really got any good training in nutrition.

Also, many chiropractors, acupuncturists, they never really get really foundational good information nutrition. They were having a hard time getting to the next level because they never had that back.

But even for myself, when I was on my journey, I need to learn more. I went and had to get a master's degree in nutrition, do a lot of self-study, take a bunch of conferences and courses to learn how to Apply it into a clinical setting.

I mean, it's just, it's skill you have to have. So I think a lot of practitioners that learn functional medicine, they never really had that strong foundational background in nutrition.

Like they may not know the difference between evening permazole and baragial and EPA and DHA and what kind of compounds are in them, how they have a different effect clinically.

They just think, oh, I like fish oils, I'll just use this. You can't use flaxseed oil, that's acetyl, that's going to cause harm. We kind of misinterpret what they mean by cooking oils and rancid oils versus supplemental.

that whole foundation is just gone. And they think, oh, well, if I just do multi, it'll cover everything. So that's good. And that's not really how it works.

So as an educator, if I'm seeing this mnemonic, starting to think out, or just do what's called, for example, a four-hour program or a five-hour program, where they say replace, reenact, restore, these basic rules, just they don't

have the strong foundational stuff.

So for myself as an educator, when I developed the Crossey Institute and created the functional lesson program, you know, it's a 300 hour program, we have 200 hours of coursework, all with the evidence-based research and mechanisms and physiology that aren't really focused on protocols for conditions, but protocols and physiological mechanisms.

Then I have 100 hours of clinical ground rounds where you see me actually work with patients in my practice, really monitoring some of the patients we've followed for two years, like the first intake to how they follow up with labs and things over time, so they get real clinical education.

And then recently, I'm like, okay, we're having a hard time in our group, and this is where we started the Academy of Functional Nutrition and Lifestyle Medicine because they're like, we got to give them the foundations, fundamentals of clinical nutrition, not academic nutrition.

So it's like this evolving step. And then for me, I realized clinical ground rounds are a big issue because people learn about functional medicine. But when you actually work with a patient, it's never anything like you learn in a seminar.

There's multiple variables you're trying to pull on at the same time and see how they interconnect. I mean, the other thing, to be fair, it's a long journey for people that want to learn functional medicine.

Not to say you can't get clinical results not being very good at it. You can get traumatic clinical results with people dealing with health chronic conditions today just by simple concepts of functional medicine.

But as you're dealing with chronic disease like autoimmunity, you really have to have this level of depth. to be able to figure things out and go through the trial and error journey with your patients to see what they respond to and figure out what interventions are really working best for them.

There really is a need for this individualized personal development with each individual person. N equals one, I agree. I've heard you circle the wagon a little bit with gut.

So let me ask you something about the gut-to-brain immune axis. You're an expert on it. We now understand about the gut-to-brain connection. What is it that we now understand about it that we didn't know five years ago?

There's a lot. I mean, I wouldn't call myself an expert. I consider myself just being exposed to it as some of the research is coming out as well. But we know like the gut itself, the microbiome release is what are called post-biotics.

You know, everyone knows the word prebiotic where things like fiber help support beneficial bacteria. And then stick to the microbiome for a second. The microbiome is also more complicated than we ever thought because what we used to call bad strains or good strains, it's not that simple.

And what we're finding is even when we talk to the top researchers studying the microbiome, they're like, we can't label these things and it's so complex.

We're going to have to use machine learning to even have a clue. What different bacterial profiles that work and integrate together are actually having an effect.

They're having effects in different ways. But ultimately, it's about these bacteria in the gut. And these bacteria in the gut release what I call post-biotics, which are like signaling molecules, things like polysaccharides.

Some of these bacteria produce different peptides and neurotransmitter substances. And these are communicating agents. So the bacteria we have actually create these messenger systems throughout our body.

And these messenger systems can impact our brains. And we're talking about the gut-brain access. But these messenger systems can get into our blood, into our circulation, then across the blood-brain barrier have an effect.

But we also have direct pathways that go from the gut itself to the brain. Like the vagus nervous innervates in the entire gut but goes right up to the brainstem.

So some of these messenger pathways go straight up to the brain through these what are called canalized pathways. And then non-canonized pathways are basically what's, you know, the neurochemical environment that we have in our system, in our body.

But the microbiome is definitely having an impact all throughout the body as we've always known, you know, in the fields of natural medicine. But now it's great to see all these researchers doing it.

So this is an explosion of the microbiome diabetes connection, the microbiome eyelid cell, the microbiome pulmonary connection. Every gut, everything access, now there's a gut something access, right?

Got pulmonary access, got renal access, got liver access, got everything access, because they're realizing that these bacteria in the gut are really having all these influences.

But it's not as simple as just taking a good probiotic, which then this is where everything goes wrong. It just translates to, oh, you just need to have an impact gut.

For example, some of the most profound research on what changes the microbiome more than any supplement is physical activity. If you look at the research and what happens when people contract muscles regularly, the profound effect of these muscle proteins called myokines, the extra kinds, these bacterial species is much, much, much, much more profound than ever taking a supplement.

So as a functional medicine educator, we'll see stuff like, yeah, I got my patient, I put him on all these supplements, I hadn't changed her diet, they're eating all these foods, not fermented foods, they've restricted all gluten, dairy, soy, all this bad stuff out of their diet, they're not eating sugar, and I still can't change their GI panel.

like, tell me more about the patient. They're like, well, they're so tired. They're sedentary. I'm like, why don't you just start there? Why don't you just have them go for a walk?

Why don't you have them start moving, pushing that a little bit? Because that's going to have a very profound impact on the microbiome. And then there's also studies that show if someone's in a hypothyroid state, their microbiome is completely dysfunctional.

So sometimes like fixing in the functional medicine, a lot of times you find out it's like fixing the gut really involves going in other areas. And the mistake is just to focus on like supplementation for it itself.

And I think that's, that's one of the frustrating things. So going back to your original answer, like the gut-brain access.

Gut-Brain Axis and Neurodegeneration

There's all these relationships between the microbiome and gut. Diet and lifestyle factor has an influence on it, but these other variables may have a profound impact.

And for clinicians that are actually measuring the gut through different biomarkers, like a microbiome profile or different digestive markers of the panel or inflammatory markers in the gut, the most common thing to see with people that are going through that journey with their patients as they're learning functional medicine is It's not as simple as supplementation.

It really has to be this whole patient approach. And you could have a person who's sedentary and the microbiome's

terrible, and then you have a move and still nothing changes.

And as a clinician, you go, well, that wasn't the variable that we needed. And then you might find out they really have to get sleep. As soon as they start sleeping, the microbiome changes.

And the frustrating thing is we don't know what's going to change the variable. So as a journey of someone who's dealing with chronic disease or if you're a practitioner of chronic disease, you have to realize it's all about this continued dive into trial and error with this thing.

The great thing about labs is you use them as a baseline and they compare them to have some objective information that's happening with them. If you can do that, then you can play this chronic disease game and this N of one game, this individuality personalized approach game.

Let's talk about neurodegenerative disease, autoimmunity, and the gut-to-brain axis. Is it the gut to the brain? Is it the brain to the gut? We do know that it's bidirectional.

It is bidirectional. So let's talk about the brain-to-gut axis. There's a very profound relationship between brain function and gut access. The brain basically has a very powerful effect on the gut through the vagus nerve, and the vagus nerve is part of the brainstem.

But these areas of the brain, these autonomic areas of the brainstem, are constantly getting activation throughout the rest of the brain. So these different cortexes, different regions of the brain, but they kind of descend down, and they fire into an area of the brain called the pantomedular area, and these pantomedular areas are respiratory autonomic centers.

And then from there, we get activation into the gut. So when they look at injuries with traumatic brain injuries, they see within hours in animal studies complete inflammation in the gut, hyperactivation of immune cells in the gut, severe inflammation.

They see leaky gut happen within six to eight hours. So we know when there's the most acute severe disruption of this access through traumatic brain injury that we see these functions in the gut.

There's some researchers that looked at traumatic brain injury studies in animals where they induced traumatic brain but then the vagal stimulation, and then all these impacts in the gut were mitigated.

They really didn't develop the serolicky gut, their immune system in the gut didn't really flare up and acute. So it really showed how powerful this relationship is between brain function and the gut.

And the key thing with the brain too, the spleen-gut axis is as the brain degenerates, these these areas in the nerve called the enteric nervous system that are in the gut, they start to degenerate too.

So the keeping a healthy brain really means keeping healthy neurons. I mean, to keep healthy neurons, you're keeping that brain-gut access viable. So as people start to develop neurodegenerative changes in the brain, what they're also finding is the gut is aging, is degenerating as well.

What I mean by the gut, I mean the nervous system pathways in the gut from the vagus. So you have these disruptions as well. So when you look at things like neurodegenerative diseases like Alzheimer's and Parkinson's, you see really poor gut function.

It's just a consequence of this brain gut access. You see kids that have developmental delays. You see kids suffering from things like autism. They have really bad guts.

And a large part of that is this component of just brain health is not there to constantly activate these vagal projections down into the gut. You're preaching to the choir.

I love it. Vagus nerve, cranial nerve, number 10, medulla vingata, down through the transverse colon. The gut-to-brain axis, whatever you do to gut, you do to your brain.

Whatever you do to your brain, you do to your gut in a millisecond. You may have heard that one before because I think I may have copped it from you. Interestingly enough, so let's turn the page a little bit.

I want to know your thoughts on GLP-1, gut peptides, and microbiome-directed therapies and their effect, not on weight loss, but on cognitive health. I think for me, it's just an area I'm still learning about and looking at cautiously.

I think more and more connections are going to come out over time. I mean, you're dealing with a peptide, you're dealing with a signaling agent, and when you start dealing with a signaling agent over time, you're going to change receptor site responses and sensitivity to it.

I mean, there's definitely a role for peptide therapy in all forms for different types of things, for sure. I've seen people that have severe things like polycyclovarian syndrome where they get really stuck in this insulin cortisol web where they can't get out of it no matter how they diet and do things do really well with things like a peptide type of therapy.

Then you see like the abuse of it. I think we're going to see this. Post-GLP-1 syndrome coming out over a period of time, I think it's literally that, just like all things, when people overdo it, they have some side effects.

I think more information is going to come out with it, but these peptides like GLP-1, they have effects all throughout the body. They're not just affecting the appetite centers.

I'm not well versed in the cognitive effects or neurological effects of them, but there's no doubt they would have some effect on them. You probably know I brought that to an idea.

So without question, whatever we do that positively affects the gut affects the brain. But it's interesting with these GLP-1 receptor and the dorsal-medial hypothalamus communicates with the GLP-1 in the gut.

What's interesting is that is a direct communication and the blood-brain barrier is not protecting it. So to speaking to you now, That's exciting for me because that really exemplifies the idea of the gut-to-brain axis, how critical it is to communicate in a proper manner.

Right. Yeah. I mean, that's the key thing. But some things that really, really GFP1 naturally, just things like fiber can have a huge impact on those things.

Berberine. Berberine, when people are trying to control their appetite, sometimes just having a fibrous drink in the morning can have a huge impact on that.

A lot of times we'll have some of our patients just take a fiber capsule with each meal that slows down the glycemic index response and helps increase and control their appetite centers.

There's a place for it. I don't know what's going to happen because weight loss is such an emotional issue for so many people. It's beyond thinking through what the long-term effects are.

So I think you're going to see a lot of overuse and a lot of abuse with it. But I think we're going to see over time. But there's definitely a place and benefit for many people with it.

The NIH has said 80% of bacterial infections in the gut have had a biofilm, which I call an acorn to keep it simplistic for my patients. An example is it's kind of sticky, gummy, kind of like plaque.

Now I come to you and I have biofilm. One, what would the test be for the biofilm and where would you start as a practitioner? Because I know you see patients.

Yeah, I mean, I think with biofilms itself, I'm not aware of any really good laboratory tests to determine biofilming. If it's like an upper sinus infection, It's pretty obvious.

You have the coding in certain areas. You can physically see biofilm when they look at certain endoscopic things. And if they do sampling of tissue, they can see biofilm cells all over the place.

But ultimately, the key thing is there's just a class. There's a bunch of natural biofilm disruptors. There's even mechanical disruption of some of these biofilms people use.

But it is the biggest issue I think we have. I think it's one of the things that's going to drive chronic infections. Right now we just have a limited few of natural compounds that have some strong anti-bioform capabilities, but it's going to be a big factor in different types of pathogen resistance.

I hope we develop some breakthroughs with it over time. But it's really an issue and I've definitely been stuck with some really chronic sick patients not being able to disrupt the biofilm and just like frustrated as well.

It is the bane of my existence as well. Food sensitivities. I believe they're one of the leading causes for chronic hidden inflammation. Also, you can make the case that they're a reason for autoimmunity.

What are you looking for in a food sensitivity test that makes you most comfortable? Well, I think with food sensitivity, we have to understand a couple of things about them from an immunological perspective.

Food sensitivities can have different effects on different people based on multivariables. So there's a very important concept in immunology called molecular mimicry across reactivity.

This is where, for some people, a food protein they make, those antibodies against that food protein may then attach to their own tissue. So a really great example of that is gluten, and especially in the celiac disease genetic population, because they have such an overreactive response to making gluten antibodies and get exposed to gluten.

But For some population of people, we don't know what the variables are that make him susceptible. When people make, for example, have an immune reaction to gluten, the gluten molecule can then attach to the myelin sheath of nerves.

So now this gluten compound is attaching to the myelin sheath and it's telling the immune system this is foreign. So this causes severe destruction, right?

So you could have one person for a set of genes and different variables that have turned on this sensitivity, they have a bowl of pasta, and their brain gets severely inflamed from it.

Another person may have some gluten antibodies made, but it doesn't have this cross-reactivity reaction with these myelin sheath cells, so it's not as devastating for them.

So certain food proteins can have molecular mimicry for different target proteins in the body. And for example, some people are very sensitive to milk.

Milk proteins like casein antibodies or milk betrafilin antibodies, they can attach to certain tissues in the body for some populations. We did a large study where we looked at all the different thyroid target sites like TSH, T4, T3, reverse T3, 5-D-I-A-N-A.

GLP-1, Biofilms, and Food Sensitivities

So the whole thyroid axis, and we checked 208 foods against them for molecular mimicry. recreate. And we found the study, we published the journal Thyroid Research.

And we tried to signal if someone has hypothyroidism or is not making T3 well, these are some of the foods that may be more relevant because they have this potential for cross-reactivity.

And what you do in a lab is you take a monoclonal antibody in a lab and they get the target protein and then measure the degree of reactivity using what's called optical density measurements.

And then you can map this cross-reactivity molecule and make a list. We did a study like that too for diabetes, and I remember what the title of the paper was, but we looked at 200 foods that cross-react with islet cell proteins, and we found that many of the foods that cross-react with islet cell proteins were low glycemic foods.

So we're saying in type 1 diabetes, I mean, diabetes is low glycemic and that's really the key thing, because maybe it has to do more with this reactivity to foods.

And we found 18 really common low-glycemic foods that actually have molecular mimicry with different target proteins of pilot cells that are associated with type 1 diabetes.

So food sensitivities, for some people, can just cause low-grade inflammation. For some other people that have this molecular mimicry mechanism, it can cause devastation.

So not all foods reactivity responses are the same from one person to another. I think for most people, especially as they get older, because we lose some degree of tolerance as we age, we start to react to some foods we didn't do earlier on, we're going to see antibodies show up in a profile.

But if the antibody shows up in a profile that then has molecular memory with a target protein, it can be devastating. And it can be life changing, changing those foods.

And for other people, you know, they have a food sensitivity profile and they eat the food. They don't really notice much of a difference. Maybe as time goes on, they have a reaction and maybe as different variables add into that, they start to react against the food.

But, you know, I think for most people that have never had a food sensitivity test, you're kind of probably, you're kind of shoe up with some antibodies.

Now we can see like a few examples of things where things are wrong. Like if someone has a food sensitivity panel and they react to almost every single food, That is what we call loss of oral tolerance.

So oral tolerance is not the same thing as autoimmune tolerance. Oral tolerance is reactivation to food proteins. And in the world of immunology, they use the word oral tolerance to mean dietary foods.

So when people lose their oral tolerance, When we see if it's every panel on the head, let's say we tested, let's say, I don't know, 200, 250 foods or something, right?

We show up, they reacted to 70% of them. We can't cut their diet out of the 70% of foods. They have nothing left to eat, right? And then if you just have meat, the foods that they're not reacted to and repeat the test, then let's just start reacting against those foods.

So that's where you can't just remove the food. They actually had this immune tolerance issue. And then what we do in those cases is we basically leave, like if there's any foods that they don't directly cause reactions, we tell them to avoid those foods, but we keep their initial test as a baseline.

And then we just try to improve their tolerance. Then you might ask, well, how do you improve their tolerance? We might try to have a lot of different diverse fibers.

We may work on things like sleep, exercise, movement. We might give them supplementation for their gut. We may stabilize their blood sugar levels. We try to get their hormones under balance.

We might just treat the patient as a whole to see if we can just improve all the things that impact the immune system. And then if we see like they react to 7% of the foods and then we check them four months later and now they're only reacting to 50% of their foods, then we know we're going the right direction.

And then maybe down the road, they're only reacting to 35% of foods instead of 70. Then we know we hit a home run. Probably never even get them to be non-reactive to everything.

That's not realistic. But it's a regression to the right direction. And I think for a lot of people, they want to see everything be perfect. And you don't have to have everything be perfect on a food sensitivity panel to have dramatic results.

And then there's some people that have… The classic thing is if you see a lot of food sensitivity, it has to be intestinal permeability. It does not have to be intestinal permeability.

It could be anything that impacts immune tolerance. And sometimes it's very simple. Sometimes someone's just vitamin D deficient. You just get the vitamin D levels back up and And magic happens and other times it's just this complex web.

And this is why, you know, over my years of practice, I don't know, over, I think 25, something 26, maybe 27 years and almost now, I just don't have any, I don't have any confidence of telling the patient, this is how you're going to react.

I just learned to go, we don't know. Let's just see what happens. Let's just work through it. You're so unique to, you know, yourself. with your body's signaling, let's just keep very good track of it, see what things are responding and not responding.

It has been said that food is a potentiator for health information when your body processes it in a positive, salubrious manner, whereas health can also be a potentiator for inflammation.

Which foods traditionally, obviously you indicated gluten. I'm assuming milk is on that list. Dairy. And if so, why? Everybody always says to me why. I mean, I have my pithy answers, but I want your answer.

I mean, okay, for gluten, I think it's very clear when it looks at the protein sequences of wheat in the immunology literature, where people who study just gluten as a research field, they actually see what they call modern wheat, where the amino acid sequence of wheat has changed.

So the structure of wheat has changed. I mean, it's a sequence of change with modernization, with haptination of chemicals, with hybridization of seeds.

It's different. So they use the term modern wheat. And I think there's just some changes to that. I think you can say the same with many of the different reactive foods.

The most common ones like we see in practice are for sure gluten and milk, milk protein. There's lots of different great arguments of people that are experts in the field.

They talk about milk and how we shouldn't be in animal products and things like that. I don't have that degree of depth to go into it, but as a clinician, I can tell you milk, wheat, corn, soy, the big theory corn and soy is at the GMO that they've been really modified.

Their protein structure has changed. Those are the main ones that we see, glutenary, and then we also see albumin egg protein be very reactive with many people.

So, you know, it's interesting. One of my mentors who really helped me in my career, and I did my PhD work in his lab, Rishnivej Dhani, I become really good friends with him over the years.

And I go, Ari, what would you do tomorrow if you had an autoimmune disease? Like if you have a crippling autoimmune disease, what are you going to do?

Because I want to be like this guy who knows everything about autoimmune disease and food reactivity. Yeah, Godfather. Godfather, right? The Godfather of food sensitivity testing, autoimmunity testing, functional medicine approaches to it, like this guy, the scientist.

He goes, I would go to Iran. He was from Iran. I'd live in a small village and just eat my native food. And I go, oh. I was like, okay, so you'd go back to Iran, live in a farm and have your own food there.

He goes, yeah. Maybe I just couldn't risk being here in America anymore. I couldn't risk being in Europe. I'd have to go back to a small farm where we grow our own food.

It's not exposed to all these different pesticides and chemicals and things that can change the structure of food proteins. So I think there's a lot of truth into how we modernize food.

with different types of chemicals and pesticides and farming techniques and storage. We have so much BPA and plastics and that we store food and we get so many things like different overgrowths of different types of chemical like yeast compounds, wheat compounds, micro toxins in foods that we're all getting exposed to when we ingest foods today.

So I think that's part of the reason we're getting sick too. And then when you add food dyes and chemicals to food proteins, the structure changes. It's not digestible.

It's not even be broken down. It's more immune reactive. So I think all those things have all contributed to it. But the big players are definitely wheat, milk, corn, egg, and soy.

So we've talked a lot about the gut microbiome. The new microbiome that everybody's talking about, maybe not new for you and I, is the gum microbiome.

So we're talking about gingivalis, the bacteria that causes ginger pans, its destructive enzyme, which leads down a path of a high percentage of people getting Alzheimer's.

Last night, they talked about gingivitis, increasing dramatically the incidence of Afib. How do you talk about the gum-to-gut axis? It's really, really important.

As a matter of fact, I mean, one of the screens we teach people to do when they do a new patient evaluation is to look at their gums, I mean, to make sure they don't have any indication of gingivitis.

And, you know, there's all these different bacteria, Pseudomonas gingivalis being one of the most severe destructive ones that's been linked to many things.

We published a study in the Journal of Alzheimer's Disease linking it to different target proteins that involved with the beta amyloid plaques that developed in Alzheimer's disease a few years ago.

And there's other pathogens as well, that oral pathogens that can do it. But first big clue you have gingivitis or gingivalis is you have really bad breath.

Because bacteria causes a foul odor. So you have bad breath and you don't know what to do, but it's always there. That's a red flag. And as a clinician, if you're hearing a patient's history, if you're doing an exam and they just have really bad breath, You really want to look at the gums, make sure they're not tender, they're not swollen, they're not inflamed.

Overuse of mouth cleansers, of alcohol, really is devastating for the microbiome of the mouth. Dental hygiene is really critical. People have to have their plaque removed, regularly cleaned, because plaque is where these

bacteria store.

If they haven't had a dental cleaning in a long time, they can get this buildup of this pathogenic bacteria that can start to flame their gums. And once that vicious cascade sets in, these bacteria can hide in different cavities in the mouth, different notches in the gum line, and it can be very, very, very hard to eliminate.

So it is extremely important to have dental health. If this is just a reminder for people listening to go get a dental exam or just like get your teeth cleaned, you should do it.

And especially as people get older, they're much, much more prone to different types of gingivitis, periodontal disease. It's a big player. And part of the reason is these bacteria produce antibodies and these antibodies can't just react.

This is one of the studies we published. These antibodies produced against pseudomonas gingivalis, for example, can bind to different target proteins of beta amyloid and then create that process in nerves causing this plaque development and formation.

And I'm sure when they're seeing this association between AFib or different cardiovascular disease, I'm sure some of these bacteria are binding to cholinergic receptors in the heart and causing some dysfunction in those nerve plexus as well.

Yeah. You know, I think that we just don't have enough functional dentists yet in the field to really grab this burgeoning topic. I agree. And it's nice to see some jump in.

It'd be great. We're seeing a lot of pharmacists jump in. We're seeing a lot of nurse practitioners jump in. We're seeing that slow steady stream of medical doctors.

You and I both having our original doctorate in chiropractic. Chiropractors have been a baseline. because they've always thought out of the box, but I don't want to go down that rabbit hole and get myself in trouble because medical doctors taking me to dinner tonight, I want them to pay the bill.

I did want to get you into some rapid fire. Sure. Detese Karazi and rapid fire myths. Give me three to five myths of people who practice functional medicine.

Three misses, over supplementation, over testing, and mnemonics and generalizations for how they practice functional medicine protocols. So you mean to say 200 pills a day is not going to solve your problem?

It gets to the point where you just can't utilize them and it completely distracts people and it really drains them. What practitioners don't realize is when you keep making wrong steps, your patient loses trust in the model and your ability to help them.

Gum Health, Chronic Disease, and Rapid-Fire Myths

What does the next generation of diagnostic testing and therapeutic precision look like? I think we're going to be much more efficient at getting very accurate signaling molecules.

For example, if we can start measuring things like mycokines, myokines, and extrakines reflectively and reliably, that'll make a huge impact. If we can start to look at these peptide proteins like GLP-1 and be able to measure them accurately and see what's happening with these, it's all about messenger systems.

If we can get reliable markers for messenger systems, it's going to change everything. your vision for the role of functional medicine in solving the chronic disease epidemic, and if not the chronic disease epidemic, how about just simply long COVID?

Well, I think long COVID is definitely linked to autoimmune being turned on by an infection. Well, I think for a

chronic disease epidemic, if you have chronic disease, many times if you have chronic disease, you end up with When a person develops uncurable diseases, that means no one has figured out how to cure them yet.

So then your real goal in life is to try to function the best you can with what you have so then you can have a normal life and have a highly functioning life, right?

So this is where functional medicine shines for the chronic disease epidemic. Now, ultimately, preventive medicine would be ideal if we can change things that can turn these diseases to turn on, but once the person develops functional medicine as their solution to improving the quality of life to some degree because the goal is to try to get these systems to work better with what they have.

As far as long COVID goes, I'll tell you what happened. When long COVID happened, Actually, when the COVID-19 pandemic happened, within the first two weeks, I get a call from Dr.

Vajadani. We've done some collaborative papers, and like I said, I was able to do a lot of my PhD research in his lab. And he goes, hey, Detice, I just got four blood samples from people infected in Wuhan, China.

with covid and I ran their blood work and they have off the charts auto immunity and circling antibodies and like really he goes do you want to collaborate and write some work do some research together with absolutely so we first wrote a paper we published in the journal clinical immunology like a letter of hey we think this is a virus that can really turn on autoimmunity.

It's going to lead to long-term problems. We got some early blood samples as to what we saw. It's a highly cited paper now. And we actually predicted the vaccine passport issues and all the things in this letter to the editor of the journal, which they published.

And we really thought there was a really strong autoimmune component to it. For a year and a half, we went and got spike proteins, nuclear proteins, envelope proteins, membrane proteins of the virus, all the different branches.

And then we checked over 100 tissue autoantibodies to see is there any potential cross-reactivity for these viral antibodies. In the field of immunology, there's an entire specialty where it's pathogen-induced autoimmunity.

And of all pathogens, viruses are one of the strongest pathogens that can turn on autoimmune disease. And the way they can turn on autoimmune disease is when you make an antibody against, let's say, a virus protein, like a spike protein or envelope protein, those antibodies can also attach to your own cell tissue proteins, which then turns on destruction against those autoimmune disease.

So we did this study, we checked all the different proteins for the virus and we found this profound relationship with this molecular mimicry with the SARS-CoV-2 virus and heart autoimmunity and brain autoimmunity and some of the markers that lead to clotting.

We published this And it went much earlier before we started to see all these things come out, like myocarditis and neurological disease. I think we've thought about that a lot in COVID.

But I think there's going to be a large percentage of patients that actually have a lot of COVID where they actually develop this viral-induced autoimmunity.

And where they have symptoms may indicate where their pathogen, the virus, or even vaccine-induced autoimmunity. That's another field of study in the field of immunology.

where they're having symptoms. So if they, for example, got exposed to the pathogen or let's say a vaccine and all of a sudden they have complete neurological deficit and can't think and can't focus and have weakness and balance issues, they might want to go and check like the myelin-based protein, neurofilament antibodies, like neurological autoantibiotics if that's an issue.

If someone started to develop different types of, let's say type one diabetes, go and check check islet cell antibodies. Well, there's a strong relationship between people who live on Hashimoto's and getting the infection.

We found a strong relationship between TPO and tyroglobin cross-reactivity with SARS-CoV-2. So I think a lot of people who live on COVID may not really realize that their virus may have turned on an autoimmune disease specific to target proteins.

Most likely in the list that we published, we were the first people to publish that. Read that article. And many, many different autoimmune disease can be triggered by this specific virus.

I never revealed this. I mean, I read the article that there's no hidden agenda there, but I was very concerned about how the immune system was being depicted by the TB doctors.

And then I read your guy's article. And that spurred me on to write my book, Immunoboot. I just hadn't told anybody that. I was waiting to get you on a little feather in your cap.

So thank you very much. I appreciate that. Interesting. I've done a lot of blood work also, and that virus, that COVID virus is gnarly. It woke up all these antibodies.

So maybe you can explain to everybody why I've said that getting COVID increases the antibodies in Epstein-Barr, Lyme, pneumonia, et cetera. Yeah, there's this phenomenon with pathogens called poly reactivity.

You start to make antibodies at a much higher rate for some of the viruses. If you check the population for Epstein-Barr, I mean, I'm not sure what the numbers is, but it's like 90% of people will have some Epstein-Barr antibodies from past exposures, from past infections.

But a lot of times when you get a pathogen in, they can cause this poly reactivity reaction where you get multiple antibodies elevated. Those antibodies will have an effect on tissue.

they'll have some adverse effects on tissue. And sometimes when we do a pathogen panel with 24 different pathogens, all of them will be off the charts.

That's called polyreactivity. So this polyreactivity can be triggered by certain infections, and this polyreactivity can also be triggered by cancers.

So if I'll run a panel where it checks 24 pathogens at once, and if I see everything off the chart, I know they have polyreactivity, and we have to go, is there cancer in this patient?

Wow. Or is there like this active infection that's there? So that's a phenomenon, immunology is very interesting, where the whole immune system just rubs up when it's under attack, especially by specific pathogens.

So it can definitely cause poly reactivity in some people. I'll tell you those antibodies have been raised. I got two more for you. The biggest bottleneck in getting patients real answers, because I know that is something that you're most concerned about, is it biological, educational, or is it systemic?

One of the biggest complaints I get from patients is that They don't really understand what the doctor said. They lost confidence in the medical field, unfortunately.

So that idea of they're all bottlenecked and kind of funneled into one thing as opposed to really looking at the whole field. Sometimes the doctor becomes myopic and you're talking about looking at the whole field and you said you didn't like a lot of sports.

Long COVID, Patient Advocacy, and Closing Thoughts

I love quarterbacks and point guards because they have to look at the whole field to be effective. Same thing with

the doctor. That's a hard question.

I have the same frustration they do. Every time I had a family member when my daughter was born, to go to a pediatrician, it took me a hard time to find them at a pediatrician.

I didn't trust anyone. I didn't do anything. I have this antitrust against everyone in healthcare, including my own bias when I read information and say things.

It's a big problem because it's so complicated and so difficult. I think there's a few issues. First of all, if you have chronic disease, you cannot be a passive patient.

If you're a passive patient just wanting to hand something over to a practitioner, you're guaranteed to have a case of ill. If you have a chronic disease, you have to also become an expert.

You have to dedicate some part of your time and life to really understanding the condition and disease, which many patients do. I mean, there's the all-star patients that come in, they like know all about their case, and then they're teaching like you as a practitioner about something like, I didn't know that.

Thank you for teaching me. All the papers and information. You're like, okay, you're awesome. And you look forward to seeing them each time because they're going to teach you something.

And then at the same time, you go on a journey together. I think the key thing is when you're dealing with a chronic disease, first of all, that the patient themselves cannot be passive.

They have to be an active participant. And you should expect to have everything fail with you if you become an active participant. And even, I can tell you, even some of the top best practitioners in the world I would go see, they're overwhelmed.

They do the best they can too, but cases are complicated. Being active can keep them on track too. Sometimes they deviate. So the more you know about the case, the better.

And also, there's got to be this trial and error. There's this discussion of working through things and figuring things out. There's no simple, I've got the answers for you.

I think the key thing is don't get focused on having the answers, understand trial and error, work with someone who's got trial and error. And that involves communication, the practice of the education and knowledge in that field, but also patients not being passive and really trying to understand where they can about it.

Let's close with what's next for you. I mean, you've clearly done so much in your 26-year illustrious career. Yet, you know, what's most compelling is, you know, talking to you before we came on, you're still at it, man.

You're still thriving. You're probably more energetic and more… driven than you were 10 years ago. What's next? Yeah. And I would tell you, I just feel like, man, I'm getting older.

I only have so much time left. And I'm just learning. And I just want to do stuff now. I'm sure you feel the same way. It's like everything you've built up to your knowledge base now is just trying to make you feel a little more comfortable.

And then you're like, I just need another 30, 40 more years. You've got that in the bag because you're all about health and functional medicine and all that.

One thing is my friend always listens, Oxford grad in Geneva, and he always says, listen, keep it simple for me. Give me one thing at the end of the podcast that if I had to listen, that I could do tomorrow to make my life better.

So I think, listen, for me, where I'm at in my journey right now is I want, my role is really an educator. So I've had

the most profound impact teaching other physicians and practitioners healthcare.

So the Cross Institute has become a central part of my my life mission to just recreate educational programs that teach practitioners, because when they learn, they have an impact on their populations, which is much more profound than me working with a patient one at a time.

And the two education sources I have right now are focusing on my time, and right now is the Cross Union Institute and the Academy of Functional Nutrition and Lifestyle Medicine.

Which is more of an interesting program and we open that program up for also general public and practitioners because you know that a lot of the general public that are passive patients need to understand basics of funnel nutrition diet lifestyle for themselves instead of being what to do.

So the program is open for practitioners and the general public to go through. So right now I'm just trying to really. understand how they're responding to the education.

What are some of the deficiencies in it? How do we optimize it? How do we make it better? And that's really been my passion project. Well, keep going.

Love it. Love all that I learned from you. Thank you very much. That's the number one thing that everybody told me to say to you. Thanks so much for setting such a high bar and a standard.

It's not a problem. I love grabbing low-hanging fruit and climbing up the tree. I'll see you at the top. Everybody, Dr. Tateesh Karazi and Rob Silverman, Proven Health Alternatives.