Fight Stress, Inflammation & Aging—Activate Your Vagus Nerve Today! Transcript

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Introduction and Guest Background

if those cells aren't creating an integral barrier, there's flow of all that microbiome into you, into your body. That's why there's 70% of the immune cells in your body are associated with that digestive system, with that digestive tract.

And so you've got mucosal and peri mucosal, macrophages. You've got all sorts of different, mast cells etc. that are sitting lining that ready to act.

If that barrier is broken down. Hi everyone. Welcome back to the Integrative Health Podcast with Doctor Jen. Today we're going to be talking about a really important subject which is the vagus nerve and our vagal nerve health.

And this is something that personally over the last few years I've really dove into with my own health journey. So I'm so excited to have JP Eriko today to talk about this.

He is a seasoned professional. He served as a C-suite member and board member in several health care companies, including the founding chief executive officer of startups including Spine Corp and Electric Core.

He's also served as founding board member, C-suite officer, and advisor for multiple private and public companies, including K2 Medical, morphogenesis and Undyne.

Biomedical is the inventor of more than 250 U. S. patents and different applications, including Electric Horse, primary intellectual property portfolio relating to the vagus nerve, stimulation for medical and wellness indications, including cluster, cluster, and migraine headaches.

When the technology has received FDA clearances. His educational background is as impressive and extensive as his professional career. In 1990, he received his undergraduate degree in aeronautical engineering from Massachusetts Institute of Technology and worked for the Air Force National Laboratory, Lincoln Laboratories.

While a student, he also holds law and mechanical Materials Engineering graduate degrees from Duke University, where he received simultaneously in 1993.

He trained as a patent attorney in New York and authored a treatise on International Intellectual Property Law, published in 1995. He's also authored chapters in neuromodulation and second edition, and Vagus Nerve Stimulation, both textbooks published by Elsevier, as well as the Vagus Immune Connection, a popular science book for Biohackers and practicing healthcare providers.

He's currently the co-host of the health Upgrade podcast The Doctrine of Ease Abebe, which showcases interviews with bureaucrats, experts in functional medicine, longevity, health, high performance, and functional movement.

Welcome to the podcast, JP. Excited to have your expertise here. Glad to be here. Thank you for having me. Yes. So it looks like you were kind of a nerd and really into learning well, which is great, that's for sure.

I've always enjoyed, sciences, and, although I will say in my spare time, I like to write novels and screenplays and watch movies, and and I'm a bit of a sports enthusiasts, so, I like to use the word geek as opposed to nerd, but that's all right.

Well, okay. Well, let me just this is a sidebar. So I was saying something to my kids and I'm like, oh, I'm excited to geek out with them about this topic.

So you can't use that word geeking out anymore. It doesn't mean nerd out. It means like it's drug related. It means, or did you know that, like, I didn't think you did or you didn't, I didn't.

I thought I was tweaking, I thought, like, no, I was different from I can't keep up with it. So anyone anyone out there don't say you're going to geek out listening to my podcast, like, say you're going to nerd out.

We can still say nerd unless unless it's on something like high flow oxygen or something like that, right? I wonder if that counts. That's what the kids need to get into these days.

But that was just pretty funny. Anyway, so, what I love about, like, reading all your bio is that it's it's great to have ideas. It's great to be a nerd about science, but you're actually, like, putting it out there trying to get FDA clearance on.

We'll talk about Carmaker and Trivago, which I love and I use daily. So this is where it's important because a lot of people, especially like doctors like I've noticed, like we have good ideas or we're excited about stuff, but we're, we're they're seeing patients like, we can't we're not implementing stuff and we don't know how.

So like, let's just talk about your journey. Like when you actually was like, okay, this is how I'm going to use this information and actually build companies that are going to change health.

Yeah, it's sort of a long and winding journey that, I, I wouldn't necessarily suggest anybody repeat, but, my father was a physician. He was an ob gyn, and, and which is a really tough, a tough field to be in just in terms of your, your sleep hygiene and, being around for the family.

I mean, he was obviously a good provider and a good father, but at the same time, he was just always so tired from being up in the middle of the night delivering babies and I just looked at that lifestyle and said, I don't want that.

So I really steered clear of medicine. Well, many of my cousins either went into law or into medicine. I was going to go to engineering. I wanted to do the sciences, hard sciences.

In fact, if you'd asked me as a high school senior what I was going to major in, I would have told you either math or physics, but ended up doing, aeronautical engineering at MIT.

I was on my way to go to law school to learn how to become a patent attorney. And then, did a joint master's, a master's degree in engineering at the same time.

And I sort of got roped into it out of nowhere because my uncle, who is a world renowned spine surgeon, decided to recruit me to help him patent some ideas that he had.

And that led to us collaborating on developing literally hundreds of different, ideas for spine surgery, orthopedic surgery, neurosurgery. And that led me to be exposed to some of his colleagues who were doing work in neuromodulation.

And we're talking about, like, 1999. I mean, really far back in time at this point. And, you know, for my kids, that's before they were born. So I always tell them it's like this, this stuff existed back in the dark Ages.

But I got fascinated by it, and and that led me to start thinking about, okay, well, how can we how can I be a part of this? How can I do something that nobody's ever done before?

How Vagus Nerve Research Began

And the one bit of advice that I got, and it was really an offhand comment that one of my uncles colleagues, his name was, Doctor Ali Rizvi said was if anybody's ever cut a nerve and gained a benefit from cutting that nerve, you might be able to stimulate it and get the same benefit.

And it was with that little offhand piece of, I mean, literally, I think we were on a ski slope at the time, you know, with that little bit of information stuck in my head.

Four years later, I read an article in which somebody had cut the vagus nerve and gained a benefit in anaphylactic reactions. And so I said, well, why don't I do the same thing?

Why don't I just stimulate the nerve and get the same benefits for anaphylaxis? And we did the study at Columbia University showed that we could do it.

And then we were off to the races. And that was the beginning of the company. That is so cool. And for those listening out there, they've also cut the vagus nerve to the stomach for like stomach acid stuff.

So that, I mean, and and that's so my thing is it's like God designed us perfectly. Right? Like, why are we cutting things out or taking them out? Right.

That means that we're messing up. So so I love that. So that goes with neuromodulation. So why would stimulating it have the same effect as cutting it?

If you can explain to our audience a little bit. Yeah. And that is a curious thing. I'm not entirely sure that cutting it does do the same thing that stimulating he does.

But in the specific study that I was looking at, they cut the vagus nerve after they gave the challenge to the dog. So I think that the physical act of cutting the nerve actually stimulated it for a very brief period of time before it damaged it.

And that stimulation was actually what the benefit was. I'm, I'm blue sky here a little bit with respect to that. I don't know for sure because we never did studies where we cut the vagus nerve.

We didn't we didn't think that that was really we were trying to save animals lives. We weren't trying to kill them. So, we were we were not willing to damage them, permanently.

Now, I will say I agree with you that, on a larger issue, which I think is, is great for functional and integrative medicine in general, is this idea that human beings did not either evolve or be created, or the combination of both in a way that is lacking?

We don't we don't have, flaws that are designed in so that we need statins, for example. I think there's a great line out there, like we do not suffer with heart disease because we have a statin deficiency.

And so the same thing is true of our vagal health, our autonomic nervous system, our autonomic nervous systems are not broken. We may be misusing them.

We may be asking things of them that are causing problems for us, and we'll get into all of that. But I don't think that we need to be cutting the vagus nerve to solving anybody's problems.

Right. I think it's really hard when we talk about the on and omics system and parasympathetic rest and digest versus sympathetic fight or flight running from the bear, and we're living in parasympathetic fight or flight all the time.

And whether that's from a childhood event, an adverse childhood event is source which we know determine health, you know, decades down the road. But it's really hard.

I just had a call with some patients today, and two of them I spoke about trauma and stress and maybe activating the vocal nerve, whether it's, you know, going outside and grounding or prayer and meditation or physical stimulation of it.

So I think it's really hard for people to wrap wrap the idea around this. So how do you start to explain this to someone like, yes, your vagus nerve might be the key to your health problems, right?

So the way I do it is I say to people that all of our systems in our body and there's thousands, biochemical systems, pathways, etc. there are really four fundamental ones and everything else is really sits on that foundation.

The first is and it's the most fundamental is your mitochondria, your energy, and how how your cells are producing the energy units, the battery packs, if you will, that attached to all the different other chemicals in your body so that they can do work.

Okay. That's ATP, adenosine triphosphate. We create energy in our mitochondria. If we don't have healthy mitochondria, our mitochondria aren't functioning properly.

If they're too sugared up and we're not we don't we're not they're not flexible. They can't use fatty acids and ketone bodies and other things for energy.

And we're stuck in this sugar cycle. Then they become dysfunctional and we become fatigued. We become damaged. We become at risk for cancer. We become, you know, really, there's no disease out there that doesn't involve mitochondrial dysfunction of some sort.

The second system is your immune system. And our immune system is sort of the way we interact with ourselves in the world around us. And and we don't most people don't realize that our bodies are actually built by our immune cells system.

There are immune cells, tissue, resident macrophages in the brain. They're called micro glial cells. And in our liver they're called cup for cells. And for skin they're called Langerhans cells.

I mean we are we are literally built by those cells. And they stay with us for our entire lives. And they maintain that tissue. And in some cases, they'll even sort of do the work for the tissue that's there, just because it's they sort of sub in, if you will, and help.

But when they become distracted by inflammation, everything goes haywire. I mean, it's sort of like if the farmer leaves the farm, yeah, the farm animals will still be there, but they'll they're going to wander all over the place.

And the crops are going to grow in the weeds and the buildings will go into disrepair. So you need to have those, those chaperons there. The third is our microbiome, and how we interact.

And most people talk about the microbiome being your gut, you know, from, you know, the bacteria and, and fungus and yeast and all the rest of it that lives in our, in our digestive tract.

But that's not the only microbiome that we have. We have a microbiome in our skin. We have a microbiome in our airways. And in the fact that our nose and our mouth, I mean, our mouth is connected to both the airways and, our, our gut.

So those are in communication all the time. And there are other microbiomes that that exist in our bodies. We have to interact with that. And if we're not interacting well with that microbiome, then we will die.

I mean, without a microbiome, your body will fall apart within days. The final piece is your autonomic nervous system. It's the it's the control system that has the ability to control all three of those other systems.

And it has two sides, as you said, the parasympathetic and the sympathetic side. And you need both. You can't exist with only one.

Autonomic Nervous System and Stress

It's sort of a dynamic balance that has to be struck. And as you're absolutely right, for people who have early childhood trauma or or other experiences that leave them permanently in a threat response mode, then you're going to end up being dysregulated across everything else, in part because your immune system responds to that autonomic nervous system and the threats that are perceived, whether they're physical threats, emotional threats, toxic threats, any kind of threat is your immune system responds to equivalently, you know, people who have, inflammatory bowel disease, for example, one of the you know, one of the really interesting studies is that if you have inflammatory bowel disease, just being in a socially stressful situation can cause your inflammatory cytokines levels to rise and and puts you at risk for a flare up.

So the we think of oh that's just that's just mental stress. That's just emotional stress. It's it's still a stress. And we we have to learn how to deal with that.

We have to become more resilient. Yeah. And and it's hard to have people understand how something ten years ago can still be a threat. You know, so hundred years ago.

Yeah. Or even sometimes, like watching a movie. So watching a scary movie and then you're walking outside and you think someone's going to jump out of a bush, but they're not.

But it's that perceived stress. It's stressing you out. And that's why I just said no more scary movies, no more violent movie. Like, I barely watch any of that anymore because you still are perceiving it as as a threat.

So anyway, you know, staying in that fight or flight, I mean, we have enough going on right now in the world where people are, you know, just perceiving this threat.

But I talk to my kids about it. I'm like, that's why I don't want you to go to, like, haunted houses or stuff like that. Like, it's just I want to try to keep your autonomic nervous system as calm as possible.

Yeah, so I would I think you're absolutely right with respect to the fact that there's so much that's stimulating people's sympathetic nervous systems.

And, and keep in mind that when you go out and play a basketball game or you go to the gym and you get on the treadmill, I mean, you are simulating fight or flight.

I mean, when you lift weights that simulating fight, when you're on the treadmill, you're simulating flight. That's fine. Short periods, short bursts of of that level of intensity and fight or flight response is actually healthy.

It's what we call a core medic stress. You want to have four medic stresses, but there's so much going on in the world. There's so many different stresses, there's so many different things that are stimulating people that we really have a lack of relaxation, a lack of calmness.

So, you know, well, going to a haunted house or going to see a scary movie isn't necessarily in and of itself bad. But if you leave the scary movie and you go and you go to the next scary thing, or the next threatening thing or the next overstimulating thing, and there is never that that the downtime, if you don't have that, that's where you end up with chronic inflammation.

You end up with mitochondrial dysfunction, you end up with this viruses. You end up with higher risks of everything from, you know, cancer to neurodegenerative disorders to to cardiovascular disease to metabolic dysfunction.

I mean, all of that is resulting from never getting yourself back down into that rest digest, restore recovery mode, right? Yeah. And that's that's the hard part.

You need to get to that. And and we don't sometimes we are in the hustle and bustle state, especially. I work with mainly perimenopausal women, and they're at that phase of life where they are not getting a break at all, ever.

And they're not giving themselves that downtime. So it's it's difficult, you know, and there's this withdraw of

estrogen. And, you know, estrogen is a really, really, really important hormone.

It controls so many different things and is so anti-inflammatory for women. And so one of the reasons you experience all of the symptoms of, you know, perimenopausal hot flashes and, and night sweats and mood swings and all of that is really because your immune system has ratcheted up to a much higher level, and it has an effect on everything.

It's degrading your everything from, you know, people say, well, what osteoporosis. How is osteoporosis related to this? It's related to it because there's a balance between building bone and breaking bone down, and that the cells that are responsible for controlling all of that are called osteoblasts.

And what we don't realize most people don't realize those osteoblasts are actually immune cells. They are the tissue resident macrophages of your bones.

And so when you withdraw the estrogen they become activated. They become inflamed. And what do they do when they become inflamed. They break bone down.

And so you end up with a D mineralization and a breakdown of bone. And you end up with lower bone density and osteoporosis. Now how does this relate to aging and how does the autonomic nervous system relate to aging?

Yeah. So I actually, I'm in the process of publishing a paper, which is introducing the theory of, the autonomic deregulation theory of aging. And so what we did was we went and we looked and we said, okay, we know if you look at somebody like the president of the United States, you know, you know, whether Democrat or Republican, one of the things that we've always noted is how much they age.

You know, during being the president ages, you they say four years as the president ages you ten years. Can you say, well, why? I mean, this this is an individual who has access to the best possible medical care.

He's constantly being monitored for what he's eating and saying, you know, Diet Cokes, decide, you know, where he's never going to end up without having the best possible medical care.

And yet he's still aging so much. And the reason is because when you're in that constant stimulation, that constant sympathetic state, you are aging more rapidly.

And so we went and we said, well, how can we be sure that this is really the right interpretation? And so there's there's certain phenomena we'll call them hallmarks, the hallmarks of aging.

And they range from, you know, metabolic dysfunction and inflammation and, deregulation of your, of your, microbiome. Deregulation of nutrient sensing at the cellular level.

There's genetic mutations and epigenetic drift. We looked at those things and we said, what is the effect of the autonomic nervous system being in a sympathetic state versus a parasympathetic state.

What what's the effect of these on aging, on these aging phenomenon. And what we found was that every single one of those phenomena accelerates or gets worse when you're in a chronically, sympathetically active state, even your telomeres shorten faster.

And then we looked and we said, what happens when your parasympathetic nervous system is dominant? When you're in that rest, digest and restore state.

And we found that every single one of them slowed down and in some cases even reversed when you were able to get in on a regular basis, not all the time, but on a regular basis, getting back into that rest digest and restore state.

And so I think that at the end of the day, stress is not just a mind killer. It's it's our it is what ultimately kills us. Yeah. Well, so what do you say to the person?

Because I hear this a lot from patients. They're like, well, I don't feel stress, but I know that they are from their load that they have or from their past trauma.

You know, I mean, I think that's one of the hardest thing when people they're like, I don't feel stress. And I'm like, but you are like, I can see it.

What do you what do you tell to them? Someone that you know is operating in the fight or flight, but they're so used to it they don't even notice. Yeah.

And there's, there's a lot of people out there who may appear healthy who are you know, we always talk about those skinny, fat people.

Aging, Hormones, and Inflammation

You know, there's people who look like they're healthy, but they're metabolically a disaster. There's people who look healthy, but their inflammation markers are through the roof. Cardiovascular health.

You know, it doesn't look like a potbelly. It looks like, you know, problems with your vasculature and your and your cardiac. You know, muscle tissue.

So I look and I say to people like that, a cyclist, you may actually be healthy, I don't know, we have to, you know, run the test. But if you if your tests come back in, you're not you're not sleeping right.

You're not. Your inflammation levels are high. Then start to integrate into your life. Certain resilience enhancing exercises and and habits. You know, vagus nerve stimulation with the device is very easy.

I mean, that's sort of the cheat code, but things like, deep breathing, meditation, for medic stress, you know, any kind of hermetic stress, which is a small stress that you allow your body to heal from and become more, you know, stronger and more resistant to things like sauna and ice baths and, you know, and exercise.

All of these things are ways to break it down and build it back stronger in a way that's more healthy. And it can you can do it at any stage of life. I mean, literally, as people say, if you can fog a mirror, you can do deep breathing.

And if you can, I mean, that's it doesn't take very much. You can you can do it at any time and start to really slow down the aging process and even reverse it.

Yeah, I love the four, seven, eight breath. I was introduced to that during my fellowship for integrative medicine with Doctor what I, al and I had recommended that so many times, and I've had patients where it's helped so much and and that's just active you know inhale for four.

Hold for seven. Exhale for eight. And that's activating that that vagal nerve through through the diaphragm. And this is why breathing is is so important.

And it doesn't take a long time I think that's the hardest thing. About this is we're saying that there's a key to aging slower. Like there's documented research on this to, you know, prevent cancer via immune health.

And, you know, people aren't taking a couple of minutes to do it. And I know I'm guilty sometimes, too. I, I have my true vigor sitting on my nightstand.

And I'll go like 3 or 4 days without using it, or I'll go a couple days without doing deep breathing. And it's it's not smart. You know, we really need to focus on activating this vagus nerve.

And it's not that like you brought up earlier, you know, we were talking about it's not that our body's broken, and it's just that we are not stimulating it or using it like.

Like we all used to, like, decades and decades ago. It's just gotten pushed away. And there's been increased stress or increased stimulation in the world via technology and electronics.

So yeah, one thing that you, can you talk about the immune cancer connection? Because I think this is something that people miss and especially post-pandemic we're seeing an increase of cancer.

And, this is because, you know, that thing that that virus, it really affected the immune system. So I don't think that this is a common connection that people may.

Yeah. So there's there's there's actually three legs to this one is actually is absolutely the immune system. The second leg is the is the metabolic. Health of your mitochondria.

And they're so tightly related. As I said, these, these four foundational systems in the body, you know, metabolism, microbiome, immune system and autonomic nervous system, the the even even at the, at the most, you know, central level, they interact with one another.

And so let's take the immune system, which is what you're, you're highlighting when the immune system becomes activated. One of the things that it's doing to your cells is it's saying there's, there's a hostile, pathogen or, or danger or threat that's, that's existing in the body.

You need to get ready to defend yourself. And so how do cells that have been instructed now to defend themselves? What do they do? Well, one of the things that they do is they reduce the hospitable ness, if you will, of their internal environment.

And the way they do that is they get their mitochondria to start to produce free radicals. So you mitochondria, these little factories, it's like they're creating energy.

But at the same time they're also creating some waste products. And those waste products need to be handled properly. And so we have antioxidants, things like Bluetooth, thiamin and melatonin.

And they don't people think about melatonin as a sleep hormone. But melatonin is a really important antioxidant. We have superoxide dismutase and catalase and vitamin C and vitamin E and all of those antioxidants that are designed to help our cells get rid of that waste material that that the damaging byproduct of energy creation.

But when you want to become an inhospitable environment, the cells begin to reduce the level to which they're blocking those free radicals. They create more free radicals that damages everything within the cell.

So you're literally just slowly breaking the cell down from the inside out. Now that's fine. If you've got a virus or you've got a bacterial infection for a short period of time.

But if you're chronically in that state of being inflamed, then you're going to end up with your mitochondria becoming dysfunctional and the combination of your immune system not functioning properly because it it wears out too.

It becomes tired and fatigued and the cells becoming tired and fatigued and damaged on the inside by those free radicals, those cells will start to become cancerous.

They will they'll they'll be a breakdown in in the genetic code, a breakdown in the, mitochondrial function of the metabolism that's going on inside the cell.

And remember, the cells police themselves also. So when Excel starts to turn cancerous, what should happen is the cell should say, hey, listen, I got a tap out here.

I'm I'm turning bad. I don't want to I don't want to damage the system. So I'm just going to literally just end my life. It's called apoptosis. But that process is run by the mitochondria.

And if your mitochondria aren't functioning properly, then the cell can't do that. And there's a bunch of other steps these cells can take to try to prevent themselves from becoming cancerous.

But we systematically break them down by getting rid of the immune system functioning properly. We get rid of our mitochondria functioning properly, we are run down, we're stressed out.

We're we're constantly, you know, flooded with norepinephrine from our fight or flight response. And so our risks of of having cancerous cells reproduce and survive and live within us, without being cleared out becomes higher.

And so we're seeing a lot of that.

Cancer, Immune Health, and Chronic Stress

And, and Covid and, and frankly, I'm, you know, I personally think that when you have the body producing the most toxic part of that virus and that is constantly triggering the immune system, you are increasing the risk that those cells are going to become that you're going to end up with a cancer.

Yeah, yeah. I've seen so much inflammatory problems. It's literally like practicing medicine in a different time in the last ten years. Everything is a lot different.

But but I mean, if you recognize that and realize everyone is really inflamed and then we have to start breaking down, you know, how we rebalance the immune system.

And, and this is where very little nerve stimulation does come into there, as is an important part. And that's why I really like, wanted to do this podcast with you, just as a way to convince people that it's so important.

Because why? You know, I could one nerve be so important, right? Because it it goes throughout your body. So let's talk about the gut health and the connection to the vagus nerve.

Because, you know, we when you talk about pooping, I mean, we the parasympathetic nervous system and that vagal nerve has a really big influence on it.

And we are seeing a lot of chronic constipation, where once again, miralax it's not a miralax deficiency. Right? So yes, some of this is diet, but I see more and more that if we balance the the vagus nerve, the autonomic nervous system, if we get that back on track, then constipation improves.

And then because we're fixing the overall gut health from the physical nerve standpoint and a whole system standpoint, that everything else is functioning in better bile, small, you know, we're not having dysbiosis or imbalance of gut bacteria.

So we're breaking down leaky gut, or leaky gut. You know, that's to me, that's that's the most fascinating aspect of the, of the digestive system. I mean, it is such an important part of of our, our evolutionary history, but it's literally one self-check.

I mean, the barrier between what's going on inside the intestinal tract and your sterile environment is one cell thick. And that cell, if those cells aren't creating an integral barrier, there's flow of all that microbiome into you, into your body.

That's why there's 70% of the immune cells in your body are associated with that digestive system, with that digestive tract. And so you've got mucosal and peri mucosal, macrophages.

You've got all sorts of different, mast cells etc. that are sitting lining that ready to act. If that barrier is broken down. Well processed foods, ultra processed foods, toxins, dyes, you know, seed oils, motor oils, all that kind of stuff that's going into our food supply is damaging that balance of the, the, the bacteria that should be there.

So now you're getting a especially sugars causing all sorts of changes to what actually the bacteria count, what constitutes that bacterial load, and then the damage to the that tissue is that one cell thick layer is happening as a result of our stress levels.

You know, our stress levels are leading to heightened levels of inflammation. And I said before, one of the things that that we looked at in the aging context was a breakdown of connective tissue.

Well, part of what's holding that barrier together is connective molecules, connection molecules adherence and other things that literally get broken down because we have another group of, of of compounds that we make, chemicals called matrix metallic proteases.

And these matrix metallic proteases are going to break down those connections. And they happen when your immune system is activated. So one of the ways that vagus nerve stimulation helps prevent all of this and sort of quiet the immune system and restore balance in the gut is through one of the pathways that's called the cholinergic anti-inflammatory pathways.

And I always say it makes certain people know it's plural because there's more than one pathway. There's a separate pathway in the central nervous system within the brain itself.

There's a pathway that involves the spleen. And that's really important because that will affect things peripherally, like in your joints like rheumatoid arthritis and vagus nerve stimulation was just approved by the FDA for treating rheumatoid arthritis.

What's happening in the gut? Yes. Within it is it's it's it's been a long time coming. And I'm glad to see that it finally happened. But vagus nerve stimulation is now an approved therapy for treating rheumatoid arthritis.

That's, the drug companies, man. Oh, absolutely. Why do you think it took so long to get it approved? Sure thing. Yeah, they they just want to put everybody on, you know, Enbrel, Remicade, Humira or Jax inhibitor, etc..

What what we found and what I didn't, but but it's been found by the research community that's focused on vagus nerve. Is that within the gut, there is a very direct pathway by which vagal release of acetylcholine changes the what immune cells are even being expressed in that tissue.

You want to get away from those pro-inflammatory 17 cells that are pumping out cytokines and matrix metallic proteases and leading to leaky gut problems, and you want to create T regulatory cells, T regulatory even sound nice and regulatory.

What they do is they go and they calm the inflammation down. They resolve inflammation. They restore and heal. And that is what vagus nerve stimulation does in the gut.

And it's a really important pathway. Yeah. It's interesting because, I have a patient who has Crohn's and she, you know, they're starting her on just another biologic.

And we had her off for a while, but then she went through some stress and that that was her trigger and, viral a viral load too. But it's interesting because a lot of these biologics, they just suppress THC 17.

Right. They just they just suppress those. So but you're not fixing the root cause, like you said. You know, if you're not activating the T regulatory cells, you're just suppressing, you're still going to have flares, you're still going to have problems.

And these and the crazy thing is these biologics, they wear out. Or if they're not at the right high enough level, then your body becomes like they gets used to them basically.

And they don't work. And it's just it's just like a cat and mouse game with the these aren't an answer.

Gut Health, Leaky Gut, and Vagus Nerve Stimulation

It is. And that is really I have sort of a couple of different pet peeves out there in the in the pharmaceutical world. Probably the one that I talk about the most is antidepressants.

Yeah. So antidepressant medications are designed and their entire rationale is around the observation that in people who have depression, there is a higher level or a lower level, I should say, of serotonin and a higher level of concern.

And so if you go back again to the root cause, if you go back up the chain and you look and say, well, where does serotonin come from? What is it synthesized from?

It's synthesized from the amino acid tryptophan. And there's a two step process by which tryptophan is turned into serotonin. Now serotonin is made by almost every cell in your body.

But we should think about it is in the brain context. 90% of it's made in the gut. But we think about it in terms of our mood. Serotonin is like the happiness molecule.

Okay. Interestingly, two steps down from serotonin. Serotonin actually serves as a precursor for making melatonin. Remember we talked about the importance of melatonin not only for sleep but also for as an antioxidant protecting mitochondria.

But what happens is when you are stressed all the time and you become inflamed, your cells stop making that serotonin because they don't want to make the melatonin, because they want to have that.

Those free radicals be created to become inhospitable. So instead they create something called concerning. Concerning is the other side of making from tryptophan.

Now concerning is important. You need to have that and you need all the pro-inflammatory protein. Free radical promoting compounds that, that come with it.

Those are sort of the bad side because at the very bottom you make nad and that's really important for your mitochondria also. But along the way, if you get stuck at any one of those biochemical stages, you end up with a toxic environment inside your cells.

And so all of that is aging you. And so again, if you use if you use vagus nerve stimulation instead of using a drug like, you know, an SSRI, a selective serotonin reuptake inhibitor, it's not solving the problem.

It's not solving the problem of creating serotonin. And to your point, which you just were mentioning, if you take a selective serotonin reuptake inhibitor, what is the first thing the body is going to do?

It's going to fight back against that. It was doing something because it thought it needed to. And then you came on top and put a drug in that blocked it from doing what it thought it really needed to do, and it's going to do it even harder.

That's why you end up having to increase your dosage of your SSRI until you get to the point where it doesn't work anymore, and then they switch you to an S, NRT.

And and the problem is you become your your levels in your body become sort of acclimated to that new environment where you're loading up on all these selective serotonin and norepinephrine reuptake inhibitors.

And now if you try to go off those drugs, now you have what could be a lethal, literally a lethal problem with with serotonin. So I always say to people, listen, it's far more likely that what you need to do to treat your depression is to treat the inflammation that's that's in your central nervous system.

And you do that better with vagus nerve stimulation than you're ever going to do it with the selective serotonin reuptake inhibitor. Right. And they don't feel better I don't know.

They don't they feel they feel they feel numb. Yeah. They feel numb. They the cognitive they're they're affected as well. And they gain weight and you know, and like going back to hormones with women.

I mean, if progesterone and estrogen aren't balanced then they always want to put them on a SSRI. And then we're having even more problems. I mean, it is just massively horrible how patients are being treated honestly.

So like it's it's I wish I could say I wish I could say that we're we've evolved from this and so but if you go back to the word hysterectomy, I mean that that procedure that basically removes the the ovaries, etc.

from a woman. The reason it's called a hysterectomy is because it was designed to remove the hysteria from women. Okay. I think about how incredibly misogynistic that entire concept is, that women at a certain age become hysterical and they need to have their ovaries removed in order to become less.

But have we really changed? Have we really evolved? I mean, my father was no began, as I mentioned before, and I used to have long conversations with him about and I have to say, he really was not like the rest of his colleagues.

But he said, listen, I understand that there are all of these medical conditions and problems that are female centric. Yes, men get them too, but women get them far more than men do.

And that includes depression and anxiety. That includes fibromyalgia. It includes IBS. It includes all of these conditions that are more prevalent in women, especially in as a result of a dysregulated, you know, female cycle.

And what ends up happening is a male dominated medical field discounted says these women are crazy. He said, I know they're not because I've known them for their entire lives.

I've been around long enough. Something is going on. I'm, I'm I'm honest enough to say, I don't know what it is. And I said, but I, I told him, I said, I think, I think we are getting to the point where we are understanding.

What we're understanding is that there's an inflammatory problem. It's coming from the environment. It's coming from, from stress levels. It's coming from a change in in social norms.

It's coming from a change in social connectivity that we, you know, nobody is connecting the way they used to. You know, we just don't have the same kind of social support network that we need.

And that impacts women more than it impacts men. And we need to fix that. And, you know, yes, a vagus nerve stimulator is a nice Band-Aid. It's a nice tool, but it doesn't make up for all of the all of the rest of the things that are missing.

Yeah, you're right. And I personally am trying to get better at that, trying to spend more time with other females, taking a break from working and just being social because I could just work forever and put my nose down and just be like, okay, here I go.

I'm just going to work in my free time. So it takes, it takes some commitment to do, it make sure that you are, you know, being healthy because you need to be healthy for for your children and to be a good mother.

So I think, I think you're right. Just one device isn't going to do it all. You have to look at the whole picture. Now, if someone's using, vital nerve stimulator, can they use it too much?

What? Or does it wear out its use? That's a question that I get a lot from. Yeah. So those are two great questions. The first, the first question of can you use it too much?

By and large, the answer is no, because you can naturally activate your vagus nerve by doing deep breathing. Can

you deep breathe too much? I mean, I guess you can get lightheaded.

But but we haven't seen anything that seems. That suggests that you can use it too much. And keep in mind that for reasons that are a long story, which I'd be happy to tell you, but I don't know if everybody would want to listen.

Vagus nerve implanted devices that are used for treating epilepsy and depression. Those devices are on every five minutes. Now, it is entirely unnecessary to do that.

Depression, SSRIs, and Root-Cause Treatment

However, the fact that they're on every five minutes suggests that no, there's no limit to the there's no upper bound on the maximum number of doses of vagus nerve stimulation that a person can can withstand.

You can have it on all the time. In fact, in one in our very first study, before we realized how infrequently you really only you needed it people, we had people on for six hours at a time straight where we were stimulating their their vagus nerve for six hours.

So no problem there. In terms of the what, what people would say is, is there some tacky full access to this? Is there some level to which if I do this every day, twice a day for six months, it's going to stop being effective?

For me, the answer is it actually everything we've seen is it's the opposite. That much like exercise, if you go out and you start exercising that first day, there's only so much benefit you're going to get from that.

But if you do it every day for six months, well, at the end of six months you'll be able to do a lot more and you'll see even more benefits. And six months might not be enough.

You might need to do it for the rest of your life. The same thing is true with vagus nerve stimulation. The efficacy appears to actually get better with time, which is why I always say to people, if you if you use it for three days and you don't see any results, then you're the type of person who's probably going to quit your quit your New Year's resolution to get in shape on January 4th.

You know, don't do that. You know, if you want to quit your your New Year's resolution, do it on June 4th, not January 4th. Yeah. Yeah. They got to keep going that's for sure.

Well I've seen great patient comply since with a nerve stimulator and and it helping them a lot. And I personally need to be a little bit more consistent.

But I love using the trigger and actually my nine year old start it took him a little bit to get used to it. But now he like asks for treatment. So actually he has a little bit of neuroinflammation from a mold exposure.

And also so it's like his body kind of craves it now. So it's been great to watch because my family, we went through a lot of stress moving, you know, from Ohio to Tennessee.

So it's been you know, I think we've all handled it pretty well because I guess moving is one of the most stressful things you can do. So I'm interested to see what my biological age did in this last year with the move, but incorporating, some other things like by regulators, but incorporating in vagal nerve stimulation.

I wonder if I'll come out even so, I'll see. I hope so, I mean, I have to ask you, how are you planning to do your, your biological age test? Are you going to use, epigenetic test?

Yes. Yeah, the epigenetic that does the OCM. I, score in the telomeres and stuff. So. Excellent, excellent. And I'll look and do that again, epigenetics is, is another area where vagus nerve stimulation is we're really digging in and looking to see the ways in which it can actually restore.

And epigenetics are fascinating because, you know, when I said before, you know, what happened even 100 years

ago, can affect you, especially childhood traumas, because if your grandmother experienced serious trauma as a child, the epigenetic changes that occurred in her will have affected your mother or your father, depending on which side the grandmother is on.

And that can then affect you. So that generational trauma. I know that sounds, you know, 20 years ago people would have this a generational trauma. That's that sounds kind of like new agey, right.

But now we're finding out. No, no, there's real science behind. This is hard core science of, you know, where methyl groups are being added to DNA and changing the winding, you know, tension of the of the DNA around histones and, and whether or not the genes are being expressed in which genes are.

And all of that is real and it's affected by trauma, and it is inherited. So it's really important to to dig into this and understand it better. And it's one of the things I really love to study.

Yeah. And can you explain why it's the grandmother specifically or the mother's side? Well, it isn't always just the mother. The father can also but basically it but not as much.

And part of that is because we actually inherit our mitochondria from our mothers. there's, you know, each species has typically a mitochondrial Eve, which is the, the single female that all of the, of the living beings are, that species today can go back in time and and find.

Yes. In fact, there's one mitochondrial mom, if you will. And, for humans, I think it's about 70,000 years ago, there was, there was one small tribe of humans that existed, and they all had one.

One mom who, we all, we all can trace our mitochondria back to. Yeah.

Sleep Research, Biohacking, and Closing Remarks

So it's kind of interesting because you talk about trauma. Imagine how traumatic it would be for women to be called hysterical. And they have to take out their they're using their ovaries.

But yeah, I mean, that's kind of cool though, when you when you think about like the mitochondria being passed on and everything. So and you know, your grandmother was born with, you know, all the eggs and the eggs and you know, and and it's just kind of cool.

And I so I have chickens now on the mini farm, and they're born with all of their eggs. Same thing. So it's kind of cool because they just they just grow, one grows bigger, and then it turns into an egg.

And it's kind of cool when you see well, it's like an autopsy. I saw of it where they had all the eggs. But anyway, good source of protein, you know. Absolutely.

But but anyway, JP, thank you. I feel like we could talk all day. Maybe we could do a part two up to you. What are what are you working on? Like, what are you up to now?

I feel like you're always working on something. So I'm a senior research scientist at a place called the Aiadmk. The Institute for Human and Machine Cognition.

It's a group of researchers that do various different work, mostly in robotics and in health care and human performance. The study that I'm really hoping that we get off the ground in the next, couple of months is a study on sleep.

We didn't spend a lot of time talking about the importance of sleep, but my goodness, people talk about exercise and diet. But sleep is really, really important.

And so what we're showing is it's a it's a study looking at the effects of vagus nerve stimulation on people who are

significantly and chronically sleep deprived.

So people, for example, special operators in the military who have to go on on a mission and they are only getting three hours of sleep a night for a week.

What we know from the history is that those people have very, very, very severe cognitive, damage that's done. And, and some of it is lingers on even after they get a chance to sleep nine hours a night. It stays with them for a while.

What we're trying to show is that we can enhance the lymphatic clearance rate of, the neurotoxins that and metabolic waste that builds up in the brain that really only gets cleaned out during, during sleep.

There's massive changes to the brain that happen during sleep. And what we're showing is that vagus nerve stimulation can significantly enhance the ability of the brain to clear out that waste.

That is so cool. And every night shifter should have one. Then for sure, they should go in and use it when they start their shift and use it at the end.

That's what hospitals the military's your military. You don't try to sneak that in. You know, I know some CMO of hospitals and maybe I could bring that up to her, but I would love to talk to her.

Yeah, yeah. Oh, awesome. This is. That's so cool. I, I love it all. And why don't you tell everyone where they can get your book? Your book is excellent.

And and where they can purchase a Truvada, and I, I have a code that I'll leave to in the show notes for everyone. Great. Well, yeah. The true. There's a both the the two Vega 350 which is sort of has 350 doses.

It's a trial device. If you if you're not sure you want to spend the money to buy the the one that lasts forever, buy the one that is about half price, that lasts for about six months. Try it.

And if it works for you, well then it's a no brainer. You want to have one that lasts forever. You can buy that at True vega.com. True vega.com. You can buy my book which is the Vegas immune connection.

It's available on Amazon. And it's, a great dive into the science behind how it works. But I tried to keep it very approachable and easy to read for anybody.

If you if you took high school biology and forgot all of it, don't worry about it. We'll go back and we'll we'll refresh your memory, on it. And then if you want to, if you want to listen in on, on the podcast that I do weekly with Doctor Nova's hub, it's, called the Health Upgrade Podcast.

and I'm always on Instagram at the VNS guy, so, you know, drop me a, drop me a DM, ask me some questions. Happy to answer. Awesome. Yeah. Don't geek out within the nerd.

No geeking out. We we don't want to do that. Well, that's okay. That will probably disappear. That slang in a couple years, you know, I hope so. Well, thank you.

I appreciate you, JP. I had a great time, doctor. Jen, it was awesome. Thank you for having me. Appreciate.