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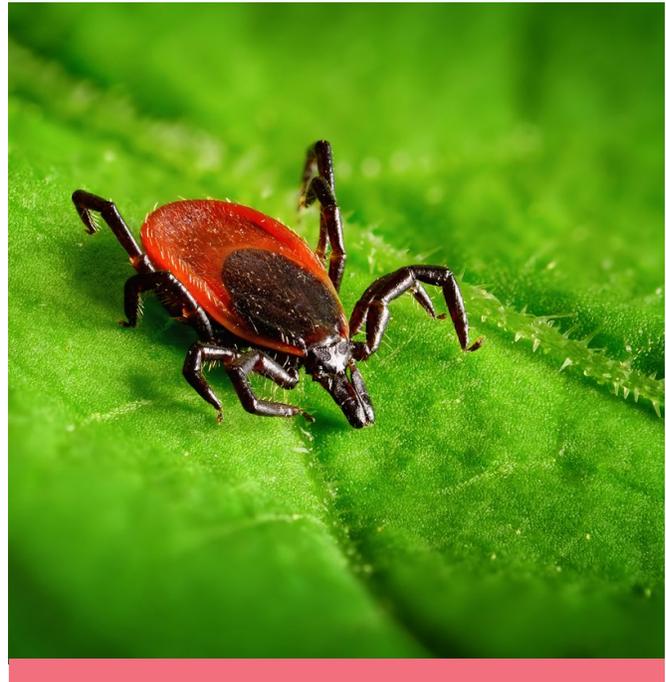
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GUEST EXPERTS

[!\[\]\(a870788d6ed9b8fd294b7654a8c8526b_img.jpg\)](#) **Your Mitochondria Are Key to Healing** with Jay Davidson, DC, PScD
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From the entire Chronic Lyme Disease Summit 4 team, thank you for downloading these transcripts -- we hope you learn a lot from them!



Your Mitochondria Are Key to Healing

Jay Davidson, DC, PScD

Dr. Jay Davidson: Hi, this is Dr. Jay Davidson, host of the Chronic Lyme Disease Summit 4. I didn't know when I did the very first Chronic Lyme Disease Summit that there'd be more to follow. I thought, "Oh," we'd figure it all out and on we'd go with the next topic. But clearly, there's been many developments over the last few years and many advancements, which is great because we're figuring things out at a higher level. Which is why I decided to host another Chronic Lyme Disease Summit, which is obviously number four right now.

It's really been divine. I was at a conference and one night in the hotel, 4:00 am, woke up from a dead sleep. I sat up, "Chronic Lyme Disease Summit," popped in my head, and this is back in 2014. And obviously, a lot has changed since then. But I'm very passionate, very invested into the topic of Lyme disease. Mainly because my wife has nearly died twice from chronic Lyme disease. So anybody that is invested, we can be like minded and speak with one another.

But however, there's really a lot of factors to consider with Lyme disease. The first is that we don't know everything, and things are going to continue to progress. We also don't need to be open to the idea that maybe we're misunderstanding even some foundational beliefs that potentially those are even wrong, such as the germ theory. I'm not so sold on Louis Pasteur's germ theory. As you go back in history

and look at [Beucham], and he said, it wasn't the bug, it was more of the terrain. And then there was a publication, a book published on the life, the private life of Louis Pasteur. It was by Gerald Geison, and it's called *The Private Science of Louis Pasteur*.

And what he did is he actually kept diaries privately that were never supposed to be published. And then he had his public work. And one of his kids actually ended up publishing the private journals and how different they are. So, what we believe or we hold fundamentally in truth, just be open that maybe we've actually got a concept like that wrong.

So my job as a host of the Chronic Lyme Disease Summit 4, is to extract the information and beliefs of each individual speaker. I don't necessarily agree with every statement or belief that each speaker has. However, I want to give them the freedom of speech, the freedom to express their ideas, because we want this to be an area where we can collectively grow. We can collectively look from different points of view and see what seems to make more sense than others, and of course, always in a loving way.

I don't expect you to jive necessarily with every single speaker, either, but it's really important to intake this information, so that you can gather and come up with your own conclusion. And I don't claim to know everything, I don't claim to



come up with every original idea. I have a gift in interviewing, I have a gift in presenting. And that's hopefully what I can bring to this summit, is extracting some really great information and interpretations, and really help to simplify the complex for you.

So what you can expect from the summit is to hear from actual scientists, hear from a lot of different clinicians that are in the trenches. Hear even from a journalist such as Kris Newby, who wrote Bitten, a really great interview. I'd really recommend for you to listen to that one, amongst all the other ones. You can also expect to hear even from some patients themselves that went through it. So I was actually able to get some in person interviews, which was great, so enjoy those. But everything is via video and everything is via online, which obviously you're watching right now.

I often get asked, especially after I host a summit, "Hey, Dr. Jay, what do you believe?" And my belief right now with Lyme disease in 2020, is that it's a multi-factorial illness, meaning there's multiple factors that we have to take into account for this condition. And we all have our own progression, so for instance, usually it starts with the bug. And then sometimes it can start in the pharmaceutical route and then go natural. And then expand, like, "Why am I not getting well?" And then it goes into toxins, and it keeps it keeps moving on.

I believe that those that are struggling with illness, it's a sign that we need to wake up to something or pay attention to something; that our body's giving us clues. And it's also a sign to figure things out for our health so that we not only we feel better now but also longevity. A lot of times, illness will come up when we need to take a different path in our life or we haven't been paying attention to certain things and it's caught up to us. Is Lyme disease that way? Potentially. And that's why it's up to you during this Lyme

Summit to really, you know, get into.

But as we look at health, I believe from a Lyme disease standpoint, it comes down to the mitochondrial level. So what I want to do is a little different. Instead of having somebody interview me, I actually decided to go through and put together slides on some of the intense research and science that Dr. Bob Naviaux has done on the cell danger response. There's a lot to it. So that's why I decided I'm going to put it in the slides. I'm going to put the scientific references in here as well too. So it's a little different than the different interviews. But the focus is about the mitochondria is the key and the cell danger response. So I hope you enjoy this.

Understand, there's going to be a lot of slides, science, most of the sources, everything should be on the slides, if you want to dive into it, but I have to credit Dr. Bob Naviaux for just the amazing amount of research and science and his team has done to really figure out that the mitochondria does so much more than just generate ATP. But it comes back to this, it comes back to the idea that there is a roadmap to health. So this is what my friend, Dr. Todd Watts, and myself have continually worked on over the years. He's played a big role, along with scientists on our team, as well and even getting input from hundreds of, if not thousands, of clinicians in what's working and what's not.

And there's an order to getting well. I believe the very first phase, as you can see here, it's about energy, which is at the mitochondrial level, and drainage. Drainage is the normal pathways to be opened and moving. So that when you move into killing, on phase two, phase three, even phase five; that those pathogens and debris have somewhere to go. Drainage is important as well to establish before you detox. Detox is pulling chemicals out of the body. Drainage is the normal pathways they need to move.



If you just jump into detox, if you just jump in and try the killing thing, try to kill pathogens in the body and the drainage pathways aren't open, you potentially are going to have a hard time. This is where Herxing comes in. This is where a lot of problems arise in a protocol. So if we establish this from the get go, we support the mitochondria. And you'll understand a little bit more why from a cell danger response side, throughout this presentation, but also support drainage that comes along with us for the journey. It's going to make everything so much better.

So, phase two is primarily geared toward gut pathogens and specifically, parasites. Then phase three is systemic parasites primarily. Then that allows us to move into detoxification of chemicals. Chemicals can be heavy metals, radioactive elements, glyphosate, etc., in that category; toxins, toxicants, as well. And then phase five is where I would put the smaller, chronic infection side of things. This is where I'd put Lyme disease and the co-infections, and viruses and things in this category. So this is just where I'm at clinically, and I obviously want to share that with you.

But if you find out that you have Lyme disease, the first thing you want to do is typically not just dive in to kill it because there's many things that actually protect Lyme to allow it to thrive and survive. Toxins protect it. Lyme disease can live inside of parasites safely. So again, there's an order to this. But getting into the crux of this and again, if you need to watch this multiple times, that's okay. Consider owning the Chronic Lyme Disease Summit 4. So you've got this for your library, you'll get the transcripts and everything as well too, along with the slides.

But cell to cell communication. So all chronic diseases produce systems, abnormalities that either block communication signaling or send alarm signals between cells and tissues. Cells that cannot communicate normally with neighboring

or distant cells are stranded from the whole. They cannot reintegrate back into normal tissue and organ function, and are functionally lost to the tissue, even when they're surrounded by a normal mosaic of differentiated cells. As this process continues, two different outcomes are produced, depending on age.

So essentially, when a cell loses communication, even though it's still in that same location, it's being disconnected. And so if the block in cell to cell communication occurs when you're a child, this changes the normal trajectory and development, leading to alterations in the brain structure, function, and changes in long term metabolic adaptation of other organs like liver, kidney microbiome, and immune system. If the communication blocks occur as an adult, this is where organ performance degrades over time. More and more cells with disabled or dysfunctional signaling accumulate and age related degeneration or deterioration of organ function happens, such as senescence and even cancer can occur.

So, blocked communication, miscommunication, from a cell to cell standpoint, inhibits the progress through this healing cycle and prevents normal energy information and resource coordination with the other organ systems. So I just want to lay the foundation here, oftentimes, you'll hear people quote, "Oh, we're more bacteria than human cells, a 10 to 1 ratio." And from a science side, that's actually not accurate. This was Nature in January of 2016. This is also the PLOS journal in 2016. And essentially what they found in this research is that the ratio between our microbes in our body and human cells is actually more likely 1 to 1 ratio.

So if you look at a reference man, 70 kilograms, about 20, 30 years old, 1.7 meters tall, contains on average about 30 trillion human cells, and about 39 trillion bacteria. So you're looking at about



69, 70 trillion total cells, if you're considering human cells and bacteria, but those numbers are approximate. So for another person, it might be half as many or twice as much bacteria as another person but it's definitely a lot farther away than the quoted 10 to 1 ratio. And I just want to really lay down what the latest research is showing, so that we can have these concepts, what we understand is a more accurate foundation moving forward.

So the numbers are similar enough that after they say you go number two or defecate, after you poop, that you can actually flip to become more human than bacteria. That you, you know, dump a lot of bacteria out in your stool. So it's kind of funny. But the 10 to 1 myth was really started back in 1972 by the microbiologist, Thomas Lucky, and it's very outdated, but just laying that down.

So when we look at the mitochondria, oftentimes you hear, "Oh, you have to heal at the cellular level." What I want y'all to start focusing on is we need to be healing at the mitochondrial level. Mitochondria are inside of our cells. So if we have 30 trillion human cells, roughly, and about 39 trillion bacterial cells, most of the cells in our body have anywhere between 1,000 up to generally 10,000 mitochondria per cell. So the technical range is hundreds to about 2 million mitochondria per cell, and I'll show you that in a slide. But essentially, roughly about 1,000 to 10,000 per cell, you have mitochondria. So you have a lot of mitochondria.

They're often shown as capsule shaped structures, like when you're actually looking through textbooks or research, but they're constantly morphing. They fuse together, they form a network; they're changing a lot. So how many mitochondria do you have? Eyes, brain, heart, around about 10,000 per cell. The liver is about 2,000 mitochondria per cell. Your red blood cells actually don't have any. So this was research

from Neuron in 2017. And they found that a single neuron in the human substantia nigra, which is part of the brain, very closely linked with the whole Alzheimer, dementia category, has an estimated population of 2 million mitochondria per cell. So one neuron in your brain in the substantia nigra can have about 2 million mitochondria per cell.

They found that the female egg or in science, they call it the OO site, can have 100,000 mitochondria within that egg and can even have 50 to 1.5 million copies of the mitochondrial genomes. This was published in 2017. Again, all the sources are right here on the slides. So if we look at, okay, well, how many mitochondria do we have in the body? Well, research shows about 30 trillion human cells, 39 trillion bacterial cells. About 24.9 or almost 25 trillion of our cells are red blood cells. Those don't have any mitochondria. So we have about 5.1 trillion human cells that have mitochondria in them.

And if you take on average... and I'm just taking my ballpark, just on what I'm seeing, you know, 2,000 per cell. So if you take 5.1 trillion human cells that have mitochondria in them... because a bunch of cells, the red blood cells don't, there's a vast quantity of red blood cells, they don't make up a big, actual physical portion of the body. But there's huge from a cellular number standpoint. But if you take 5.1 trillion cells, times about 2,000 mitochondria per cell, now you're in 10.2 quadrillion mitochondria. So we've got million, we've got billion, we have trillion, then we have quadrillion. Quadrillion is a huge number, it's almost hard to fathom.

This came from Sayer Ji's book, Regenerate. He's the guy on GreenMedInfo. He said, according to Douglas Wallace, PhD, one of the world's preeminent researchers in the biology of mitochondria, each mitochondrion stores energy within an electrical field with 180 millivolts



of potential energy. There are 10 to the 17th mitochondria in your body, according to Douglas Wallace. So he's actually saying there's about 10 times the amount that I was estimating, 100 quadrillion. But here's the cool thing, he said, taken together that sums up to about the potential energy of a lightning bolt of stored potential energy inside of our body, just from the mitochondria. It really shows the capacity, the ability that our bodies have; just amazing.

So other mitochondrial facts. Your body produces about 40 to 100% of your body weight in ATP every single day. The highest concentration of melatonin, melatonin is that thing that gets you tired at night and allows you to stay asleep as well too, but it's a super high antioxidant. And there's a lot of free radicals that can be created in the whole ATP process. But the highest concentration of melatonin in the cell is actually the cell membrane. And the second highest is inside of the mitochondria itself.

So here's where we get into the cell danger response. And again, I'll summarize this as we're going. There's going to be some 'sciency' stuff here but as we grasp the idea that mitochondria are so much more than just making ATP, this unlocks the ability to really understand the body at a deeper level, and the immune system. So power plant versus battleship. We're taught that mitochondria are energy factories of the body, but they're so much more. They're actually the canaries in the coal mine that communicate with our body.

Mitochondria are either calm inside the cell, keeping everything in tip toe shape, the power plant mode, or they go into battleship mode, where they're scrambling out of the cell to signal the immune system. So here's an image. So if you imagine the whole blue thing as basically a cell and then you have mitochondria inside the cell, those mitochondria are producing ATP and they're inside the cell. As soon as there's an immune

system threat or as soon as the cell danger response is engaged, ATP actually leave the cell; they call it eATP, as a mitokine signaling molecule. So ATP is actually used as a signaling molecule to engage the immune system.

So again, there's two functions to mitochondria, energy, which is really about the metabolism within the cell. And then we have this defense and communication, the innate immunity inflammation control and metabolic memory side. This defense and communication is that that we need to understand and this has only come to light within the last, especially... I mean, the research started about a decade ago, but really just in the last few years, it's starting to come to light. And so my job is obviously to help get this message out there, on Bob Naviaux's work, and you can see the research down there, 2019. You can see how recent it is.

But as far as ATP, inside the cell, it is an energy carrier in the metabolism. Outside the cell, well, the image I just showed, it's a signaling molecule, a mitokine; it's eATP. So this is really relevant in the chronic Lyme side and the chronic illness side. "How do I heal? I feel like I hit a wall. I feel like, as soon as I stop taking supplements or products or stop doing stuff, I crash. Like, I don't feel like I can heal." This explains it right here. How healing gets stuck. There is a cell danger response healing cycle.

So at the top of this circle is really where we want to be, this healthy state. As soon as there is stress, injury, toxins, infection, you know, pollution, any type of stress that happens to the body, our body at the individual cellular level, will engage in cell danger response. It'll start shooting out the ATP, depending on how big of a response it is, it can be very local or can start going systemic throughout the body, as a signaling molecule; to enter into what's called cell danger response, phase one.



Now here's the key. As soon as you enter into this healing cycle, as soon as you enter into cell danger response, phase number one, you have to finish that phase, move on to two, finish that phase, move on to three, to then get back to healing. So there's three stages to the cell danger response, and you'll see this abbreviated CDR1, CDR2; CDR3. This really comprises the healing cycle. And these stages, again, are triggered by stress or injury and are controlled by changes in the mitochondrial function and metabolism.

So as you look at an overview of the healing cycle that you just saw, the healing process is a dynamic circle that starts with injury and ends with recovery. This process becomes less efficient as we age, incomplete healing results in cell senescence and accelerated aging. Reductions in mitochondrial oxidative phosphorylation, and altered mitochondrial structure are fundamental features of aging. The circular nature of healing seems obvious, from daily experiences with cuts and scrapes, and common colds. But here's the bridge, we need to extend this into the chronic illness side as well, into the chronic complex disease. And this has really only become possible recently.

And as far as, if you're wondering, well, mitochondria, as I age, what's the health? Well, research has shown, this is in 2005, in PNAS journal; that in humans, the ATP producing capacity, as you age, basically decreases about 8% per decade, starting around when you're about 30 years old, typically. So you start losing your capacity to produce ATP as you age, which makes you even more of a risk factor. So, from a science side, three stages with the cell danger response, and they each have checkpoints.

These checkpoints are energetically and metabolically distinct. They're sequential meaning once you finish checkpoint number one, then you move on to checkpoint two, then you move on

to checkpoint three, before you actually get into the recovery mode. The checkpoints, according to science, as of now, in 2020, when I'm filming this, and this can change next year, this can change in 10 years. So, this is what we understand now. Is that the checkpoints appear to integrate mitochondrial and cellular function. The completion of each stage of cell danger response appears to decide largely on a cell by cell basis.

And these checkpoints, they're not regulated by one single thing, determining the signaling molecule. Checkpoints are considered as gates controlled by synergistic effects of multiple things, multiple permissive and inhibitory signals, and this is both systemic and local. So, I'll make more sense of this here as we go. But essentially completing the process for any given cell, one step in the healing cycle cannot be entered into until the previous step has been completed and mitochondrial function in that cell is ready for the next step. Restoration of normal communication between neighboring and distant cells is the last step of healing cycle.

So remember, at the very beginning, I said that if a cell is there, but it's actually lost communication, that's not good, even if it's in the right location. Well, reestablishing communication is the last piece of the cell danger response. So let's get into this. So cell danger response one or CDR1, is devoted to damage control, innate immunity, inflammation, and cleanup. So this is where Lyme disease would fit in. The level of inflammation produced in CDR1 is adjusted according to need. So if it's a very small thing, there's going to be a small cell danger response locally in that area. If it's a major thing that's going on, you could potentially have a whole body systemic cell danger response that happens. So again, it can vary, depending on what's happening.

So the triggers include bacteria, like I mentioned, Lyme disease, viruses, fungi, protozoa, biological,



even chemical, toxins or toxicants. So, CDR1 disorders. So this is what research has shown. That if you are stuck in a cell danger response phase, and for instance, cell danger response phase one, research has linked, allergies, asthma, sarcoidosis, and even skin issues. And I'll show you some pictures here, tinea pedis, we've got versicolor, we've got corporis, which is really ringworm and also even barbae. So these different skin conditions are linked with your mitochondria being stuck in cell danger response phase one.

Other disorders associated with cell danger response one, aspergillosis, candidiasis, chlamydia, toxoplasmosis, bartonella, syphilis, Lyme disease, H. pylori or Helicobacter pylori, mycobacterium, malaria, protozoan parasites, schistosomiasis. All these are linked with cell danger response phase one. Now, as that cell mitochondria heals through cell danger response two, if you get stuck, and this is basically... these disorders, just to be clear here, these disorders will come up when your mitochondria are stuck in a phase. So when there's trauma, when there's a stressor, it's normal for the mitochondria to activate cell danger response, it's just a normal thing. But it's normal to go through and heal, go through that whole healing cycle.

Disease, symptoms, conditions happen when you get stuck. So if you're stuck in cell danger response two, this is what's happening essentially in cell danger response two. You've got the CDR2 support cell proliferation for biomass replacement and blastema formation in tissues with augmented regeneration capacity. So this is all about stem cells essentially. So once CDR1 damage is contained and cleared, these cells need to be replaced and CDR2 stem cells are recruited.

So if you get stuck in CDR2, cell danger response two, these are the conditions and diseases, and disorders that are associated with it. And

these are big ones; diabetes, hypertension, heart disease, dyslipidemia, inflammatory bowel disease, and Crohn's and ulcerative colitis are in this category, benign prostatic hyperplasia, cancers and leukemias, leukemia is basically blood cancer, affecting the bone marrow, cirrhosis, NASH or nonalcoholic steatohepatitis, it's basically a type of fatty liver, and then pulmonary fibrosis. So these are cell danger response two.

If you look at what happens in CDR3 or what happens in cell danger response three, this is when the cell proliferation and migration has stopped and now the mitotic cells can begin to differentiate. Basically, these stem cells that were produced in CDR2, can actually differentiate and decide what they're going to turn into, to take on very specific functions and organ functions. So, this is what research has shown. If you get stuck in cell danger response phase three, autism is in this category. We've got POTS, PANS, PANDAS, chronic fatigue syndrome, post-traumatic stress disorder, fibromyalgia, obsessive compulsive disorder or OCD, generalized anxiety disorder; major depressive disorders, bipolar, schizophrenia, migraine headaches.

These are a lot of things that get associated with chronic Lyme disease and other type of co-infections as well. That seems like they cause so many other things or so many other factors. And continuing, there's a lot of things in the cell danger response three. We've got Parkinson's and Alzheimer's, multiple sclerosis or MS, scleroderma, Sjögren's, polymyalgia rheumatica, Hashimoto's thyroiditis, autoimmune in your thyroid, AS or ankylosing spondylitis, ALS, traumatic brain injuries, and even certain post stroke disorders.

And continuing, this is again cell danger response you're stuck in. Then these different disorders have been linked to it; psoriasis, eczema, alopecia or vitiligo, RA, osteoarthritis or OA, macular degeneration, presbyopia, presbycusis;



so essentially this is just the loss of elasticity in your eye, the presbyopia. The presbycusis is the natural loss of hearing, auditory system as you age. Diabetic neuropathy, diabetic nephropathy, and then irritable bowel syndrome are all cell danger response three disorders.

So this is another graphic that can give you a little bit better idea from what's happening. So when a stress injury is triggered, you enter into cell danger response. The mitochondria are entering the cell danger response, CDR1, and you can see, boom, big drop down. Now you have to work through that cell danger response, phase one, clear the checkpoint; move on to two, and you can see it's a stair step. Well, here's the really cool thing. This is what we should be excited about. It is not just recovery back to where we were. There is the possibility to actually get even healthier than we originally were because of the idea of hormesis.

Hormesis, and you can look this up, essentially hormesis is how a stressor can actually cause you to have a positive response beyond where you were. So this is just another visualization to kind of give you an idea. And from a science side, the different cell danger response phases are associated with different things. So for the cell metabolism, we're looking at glycolysis in CDR1. We're looking at aerobic glycolysis in CDR2. And then in CDR3, we're looking at oxidative phosphorylation. And then of course, we want to enter the health cycle.

But key in on that ventral vagal autonomic tone. So there is the parasympathetic nervous system and the sympathetic. What has been shown with the polyvagal theory is it's not just two things; that there's actually two parts to the parasympathetic. So you've got the sympathetic, which is the fight or flight. And then we've got, if you stay in that fight or flight for an extended period of time, now you'll actually move into what's called the dorsal

portion of the parasympathetic nervous system. You actually start becoming this hibernated, dormant, hunkered down; survival mode. This is where a lot of people that are struggling with chronic illness get stuck in, especially in chronic Lyme disease.

So where we want to be is in the ventral portion of the vagus nerve or the parasympathetic, that's where healing is. As soon as we have a stressor, usually we enter into the sympathetic and if that doesn't get taken care of, then it'll move into the dorsal or the dormant side of the nervous system. And so if you don't have a lot of energy, if you're wiped out, your body's just tapped out, you're not stuck in sympathetic, you're stuck in parasympathetic, but not in the good part. You're stuck in the dorsal portion. So the ventral portion is where we want to be.

As you can see, CDR1 and 2, you can see are low, meaning you don't have the good ventral portion of the parasympathetic nervous system. You can see it starts increasing in CDR3, but in the health cycle, that's where health is at. So we want to get people to the ventral portion of the parasympathetic nervous system. Hormones are also very intricately linked with mitochondria. So hormone release, target cell hormone metabolism, and intracellular hormone signaling can basically be attenuated by cell danger response, or reduced. So as soon as the cell danger response is triggered, essentially what's happening is your hormones are going to start being reduced. The longer that you've had cell danger response going on in the body, the longer you're stuck, most likely, the worse your hormones are going to be. And hormones all start at the mitochondrial level, which we'll get to in a second.

And organ resistance during the cell danger response can affect all major endocrine systems, the thyroid, adrenal corticoid, glucocorticoid, and



mineralocorticoid. And renin-angiotensin system attenuation or reduction states are common in patients with chronic fatigue syndrome. Instead of... and here's the big thing to get from it, from a research standpoint, it doesn't actually appear as if adrenal fatigue is really a real thing. Looking at your cortisol levels from urinary or saliva, more is dictating your circadian rhythms. What we're looking at though is if somebody has chronic fatigue syndrome, it's not most likely coming from your adrenals, it's actually coming from low functioning mitochondria or dysfunctioning mitochondria, or more importantly, cell danger response mitochondria.

So here's some summary on the mitochondria. Mitochondria, they store calcium ions, needed for muscle movement. They form heme, needed to carry oxygen around the body as hemoglobin. They have a big production in steroid hormones. They signal the cells' time to die and make room for new ones. And they're about 90%. So the mitochondria make about 90% of your energy are generated by the mitochondria. So just to go back to the hormone thing for a second. So when you dive into research and look at mitochondria and the hormones, all hormones come from cholesterol. If you have bad hormones, you've got to make sure your cholesterol is actually high enough.

If you drive your cholesterol down too low, you don't have the backbone of what actually makes hormones. So cholesterol has this side chain that gets cleaved off or cut off. This side chain, when it leaves cholesterol, now it becomes pregnenolone. This happens inside of the mitochondria. And according to research, the rate limiting step in hormones in our body is going from cholesterol to pregnenolone, which means that the mitochondria are responsible for the rate limiting step of hormone production in the body. And also, as we look at like, aldosterone to cortisol and cortisol production that actually

happens, not only inside the adrenals, but inside of the mitochondria within the adrenals. So the mitochondria are really important in the hormone side of things.

So you need well-functioning mitochondria, so your body can produce pure water for your cells, up regulate detoxification, they can stimulate death or apoptosis of damaged cells to prevent mutations that lead to cancer. They're really important for viruses. They're very important for carrying out cell signaling, which is vital for immune function and cell death. They also produce heat and they repair DNA; lots of things. So what damages mitochondria? Viruses, parasites, heavy metals, radioactive elements, medications, severe oxidative stress. All these things in the literature have been shown to damage mitochondria.

What do I mean by severe oxidative stress? Things that are pro-inflammatory, processed foods, having an unhealthy microbiome or gut bacteria, consuming toxins that cause oxidative stress, such as plastics, phthalates, pesticides, smoking cigarettes, chronic just psychological or emotional stress will actually create oxidative stress within the body, radiation, radioactive elements, chemical cleaners, chlorine, deodorizers, alcohol, high blood sugar levels, mold toxins or mycotoxins, and Lyme disease. These are all causing oxidative stress that has been shown to damage the mitochondria.

So I kind of went through this already but the polyvagal theory, essentially the takeaway, it's not just sympathetic and parasympathetic, there's two things. It's sympathetic and there's two branches to the parasympathetic. Now, here's the cool thing, your mitochondria directly communicate with your nervous system and your nervous system directly communicates with your mitochondria. They talk back and forth. So let's say that you go into cell danger response



and you get stuck, by activating the vagus nerve, the ventral portion, you can help unstick the mitochondria.

And the same thing, if you get stuck in this dorsal portion, the dormant portion of your parasympathetic nervous system, and you're basically in survival mode, you can communication that happens. Mitochondria coordinate over 500 different chemical reactions as they monitor and regulate the chemical stuff that's going on within your cells. All sex hormones, like I mentioned, are controlled by your mitochondria. And chronic fatigue is a hypo metabolic state. That just means that your mitochondria have shifted into hibernation mode, into cell danger response. They're hunkered down trying to survive, which unfortunately means that you're not going to have energy; you're not going to thrive.

So, Dr. Myhill, a medical doctor, she's quoted on saying, "Organs are shut down in terms of priority. The skin first, then the muscles, followed by the liver, gut, brain, and finally, the heart, lung, and kidney. As these organs shut down, this creates further problems for the body in terms of toxic overload, susceptibility to viruses, which damage mitochondria further, thus exacerbating all the problems of the chronic fatigue sufferer."

What does that mean? When you start having a health issue, one of the first areas to shut down is your skin, which means that you typically stop sweating, you have dysfunction in the skin, you can't handle temperature changes. As you lose the ability to sweat and have function in the skin, your body becomes more sensitive to temperature, you have a hard time handling heat, you have a hard time handling cold. Your body then... this is the nugget, your body's core body temperature will start to lower because it can't handle the fluctuations. So if you're running a low body temperature, it doesn't just mean thyroid dysfunction, it underlyingly means mitochondrial

dysfunction that could have actually stemmed from the skin dysfunction that's happening.

So here's the summary. Mitochondria, they're energy creators; ATP; this is the energy currency of our body. But they are critical in activating your immune system. Those that are stuck in chronic illness are stuck in cell danger response. So I hope that kind of makes some sense. I am super excited as research continues to pour out in the mitochondria topic. Once you understand cell danger response, now as we look at the research that's coming out and pouring out. So for instance, this came out earlier this year, January 19th, 2020. 'Researchers find cell free mitochondria floating in the human blood'. So they thought mitochondria had to be in the cells and that they would use their mitochondrial DNA to signal.

Now, we've actually found research that mitochondria can be functioning and free floating in our blood, which has a lot of things to think about. I mean, if somebody has a blood transfusion, you could be getting other people's mitochondria. And you might be saying, "Why is that a big deal? Maybe that's good." Well, you're actually getting... you have DNA, you got DNA from your mom and you got DNA from your dad. You also got your mom's mitochondrial DNA. There's three sets of DNA, essentially, there's mitochondrial DNA, and then your mom and dad, you know, normal human DNA. So there could be human DNA or mitochondrial DNA in blood. These are just things that we want to consider and understand.

So I am super excited for you to be listening to the Chronic Lyme Disease Summit 4. I'm so glad that you made it this far. As a host of this event, I take this responsibility very heavy, and I hope that you get a ton of value from it. I encourage you to make notes. I encourage you to make sure to share this with your friends, family, and loved



ones, and to post this online. I also encourage you, you know, if you are able to, own this for your library so that you can come back to it with the transcripts and the notes. I think you're going to get a ton of value from it. And if you're looking to connect with me personally, you can just go to drjaydavidson.com.

I also have a retail supplement line, it's called Microbe Formulas™, for the public. And then if you're a practitioner, we do trainings and workshops where we actually train practitioners specifically, as I'm not able to work with anybody one on one anymore at this point, with the demands of my schedule and research, and working with our scientists and things. So if you're a practitioner, you can check out cellcorebiosciences.com. Thank you so much for being part of this community and engaging in the Chronic Lyme Disease Summit 4, and I'll see you on all the upcoming interviews.



Vagus Nerve Infections

Eva Detko, PhD, MSc, BA (Hons), mIAHT

Dr. Jay: Hello, this is Dr. Jay Davidson from drjaydavidson.com, host of the Chronic Lyme Disease Summit 4. According to the CDC, there are more people affected with Lyme disease each year than breast cancer. My guest is Dr. Eva Detko. And we're going to explore vagus nerve infection and its implications. But before we do, a little bit about Eva. Dr. Eva Detko is a natural healthcare practitioner, author, and speaker. She has studied natural medicine and the human mind for over 20 years.

Dr. Eva successfully recovered from chronic fatigue and fibromyalgia, and reversed Hashimoto thyroiditis. She now helps others recover their health. Dr. Eva has an extensive knowledge and experience in the field of human physiology, biochemistry, nutritional sciences, and bioenergetics. She also uses a wide range of mind transforming modalities, including havening techniques, brain working recursive therapy, psycho analysis, hypnotherapy, mindfulness, NLP, and applied psycho neuro immunology. Eva, welcome to the Chronic Lyme Disease Summit 4.

Dr. Eva: Oh, hello. Hello, everybody. Thank you for having me. Good to talk to you again.

Dr. Jay: Yes, well, I am psyched to talk about not only the vagus nerve but vagus nerve infection. So maybe before we get into the infection side of it, maybe you can lay the groundwork of what the vagus nerve is and what we need to know about it.

Dr. Eva: Yeah, I do think that's an important place to start, that's for sure, just to give a bit of a background. And when I actually talk about vagus nerve, I kind of take it even a further step back and just give a bit of an overview just to remind everybody on the sort of division of the nervous system. So on the one hand, we've got the central nervous system, we've got our brain and spinal cord, and then we've got our peripheral nervous system. And that peripheral nervous system is further subdivided into the voluntary and the involuntary, so the autonomic nervous system. And then within the autonomic nervous system, we've got a few divisions as well.

But before I go there, I just wanted to say that when we're talking about chronic disease, a lot of the time and what we're going to be talking about here today, it is really the dysregulation within the autonomic nervous system that really plays out. And basically messes up the body and the mind because of that mind body connection that we will discuss. And so the autonomic nervous system has got the sympathetic branch, so that's the fight or flight that everybody has heard of probably. And then we've got our parasympathetic, but within the parasympathetic, which is basically the vagus nerve, we're going to talk about that, again, there are really two branches of that.

So we have the older vagus, which is the dorsal vagus and that's really the free shutdown response that again, people might have heard of.



And then the vagus nerve that we talk about, in the sense that we want to stimulate it, we want to make it stronger, we want to make it activate more readily; that vagus is really the ventral vagus. And that's the main component of the rest, digest, detoxify, and heal response. So, in a normal, everyday situation, at least that's how it should be, when people are relaxed and going about their days, and everything is peachy, we say, come across people and we connect with people, we speak to them.

And then in those situations, if everything is nice and friendly, we activate that ventral vagus nerve, ventral vagus complex, if you want to call it that. And this is called also, a social nervous system. And this is really how we're supposed to be most of the time, the issue is, we're not. I mean, most people are not, right? We know this. Most people are stressed out of their heads, most of the time; those perceived threats are everywhere. So when we engage our social nervous system, so the vagus nerve, the ventral vagus, we can have a nice conversation, we feel connected to people, and it all goes well.

And then when a threat, a real threat, or a perceived threat, it could be real, it oftentimes isn't real, what happens is that we activate a fight or flight response. So the fight or flight will mean we're either trying to fight the danger or we're trying to run away from the danger. And if we are successful, then great, and what should happen after that threat has passed is that we then go back to being in a rest, relaxed, healed, digest state. But what can also happen, and that happens in a lot of chronic illness, by the way, is that the fight or flight, we kind of get past it, the body gets overstimulated so much that it shuts down. So it's really that shutdown, freeze, hibernation response. That's the old vagus, that's the dorsal vagus.

And obviously, we don't want that to be switched

on all the time because in chronic disease state, oftentimes you'll see that with chronic fatigue, people are not necessarily in fight or flight; they're just basically in shutdown mode. So obviously, that's bad news. So what we really want is to have enough of a balance within the autonomic nervous system, that if the threat is indeed there, we have enough capacity within the system to switch on the stress response, deal with the threat, but then what we want immediately afterwards is to come down to what should be our baseline, which is the ventral vagus state; the rest, digest, detoxify, and heal.

Now, here's an issue and the issue is, as we know, most people do the exact opposite. So they actually spend most of their day in the stress response or in the shutdown response, and not really accessing enough of the rest, digest, detoxify, and heal. And here's the problem. I compare this to going to the gym and just training one muscle group and then not bothering with the rest. I mean, you're a chiropractor, you know that's the struggle because you get that imbalance. And anybody who has done any training will know that.

So when we train the fight and flight and we activate it and we activate it, and we activate it, the more we activate it, the more readily it activates. So we're starting to lose the ability to activate the other side more readily. And so this is where a lot of people are these days. Some of it is to do with early stress and trauma. So, we know that early emotional trauma will do that to you. It will rewire your nervous system so that suddenly, everything is a threat, and you start reacting to absolutely everything; whether it is actually a threat or it isn't a threat.

So we've got all of that going on, but why is this important? It is important because the vagus nerve is supposed to be the brakes of the nervous system. We've got the gas pedal, which is fight



or flight, but we need the brakes to work as well, and a lot of people, they don't. So the reason why we want to get that balance right is because the vagus nerve is the 10th cranial nerve that connects to pretty much most of the internal body organs, except for the adrenal glands. So we're talking about connection to heart, lungs, pancreas, gallbladder, liver, the gut, right? There's a lot going on. So it's a very busy nerve, it's got a lot to do. It's got a lot of functions.

One of the key functions of the vagus nerve is switching off inflammation when it's no longer needed, via the cholinergic anti-inflammatory pathway. So obviously, inflammation is the right response of the immune system when there is a threat, but it needs to be turned off and when it's not, because the vagus nerve can't really do its job properly, we end up chronically inflamed; that's at least one of the reasons for it. And additionally to that, if the vagus is not working properly, that rest, digest, and detoxifying key is not working properly, we're going to have an impact on digestion because like I said, there's a connection to the gut, liver, gallbladder, pancreatic enzymes, blood sugar regulation, by the way, as well, because of that pancreatic connection.

The vagus nerve is one of the key components. It's not the whole story, but it's one of the key components of the gut brain axis, as well. So that communication between the gut and the brain, a lot of it relies on the vagus nerve working properly. So there is a lot of consequences to that vagus function not being right. And I don't think we're talking enough about it, which is why, as you know, I did a whole summit on it because I think it needs to be something that we focus on more.

And in fact, Dr. Klinghardt, who many people know and respect, a well-respected medical professional in our community, he focuses a lot, obviously, on vagus nerve infection, which we'll talk about in a minute. But he will tell you that

over 95% of chronically sick people that they're treating at the Sophia Institute will have some form of vagus dysfunction. So, it's a big deal. I quote him because it's actually a big number and we all need to realize that this vagus nerve stuff is really rather key to health and healing.

Dr. Jay: Yeah, wow. So much information there. Going back five or six minutes, when you mentioned autonomic nervous system; that issues with the vagus nerve, essentially and with health, oftentimes rely on the autonomic or otherwise known as automatic, which is kind of the unconscious, not the conscious layer where things are just automatically happening in the background with the nervous system. So my first question is, is there something that we can actually do about it, then if it's something that's automatically happening in the background?

Dr. Eva: Yeah, it's that involuntary part of the nervous system. And it's, on the one hand, the stress, on the other one, the relaxation. By the way, we can't be in both at the same time. It's either one or the other. So that's another important thing. So we're not going to be able to do any healing at all because when we're in fight or flight, that's not the body's priority. The body's priority is to run away from danger or fight it. To your question about, can we do something about it? We absolutely can because we know that there's actually a massive number of strategies that have been shown to regulate that vagus function and to strengthen it.

And there are both body approaches and mind approaches. So we can get to the strategies later on. But there's actually not just one thing, there's probably in the region of 40 different things that you can do. So, a lot. So, in other words, if somebody doesn't like meditation, sitting down, [inaudible] do that, do something else because there will be something in that bunch of strategies that will appeal.



Dr. Jay: So essentially, then we've got from the conventional thought, there's the parasympathetic and the sympathetic, now we're starting to understand there's a polyvagal theory, there's two branches. You said the ventral is really where we want to be. And the dorsal is where we get stuck, this freeze kind of mode or you know, what I would say kind of like the dormant side of it. Where does infection fit into the vagus nerve?

Dr. Eva: So, the vagus nerve infection, there is a vagus nerve infection hypothesis, and the guy behind this is Dr. Michael VanElzakker, a difficult name, VanElzakker. And he basically proposes that nerve tissue is basically, as we know, actually quite an attractive tissue when it comes to toxins and infections. Toxins, for instance, have a massive affinity for nerve tissue. And he says that when there is an infection in or around the vagus nerve, that can quite easily be the case from things like Lyme disease, Epstein Barr, but also from, for instance, oral toxicity. You know, oral toxins can travel via trigeminal nerve and into the vagus; that that has been observed to trigger this immune response which produces this broad range of symptoms, things like fatigue, brain fog, pain, that sort of thing.

So that kind of exaggerated sickness behavior that people can't be able to shift. And basically, like I said, this can be due to bacterial infections, viral infections, or toxins attaching themselves and traveling up the vagus, not to the brain. And once that happens, in the brain, you've got your glial cells, which are neuroprotective. They're supposed to protect neurons from such events like toxicity. And so what then happens is when those cells activate and start releasing pro-inflammatory compounds, like these pro-inflammatory cytokines, then that signal just travels back and forth, and it causes symptoms of systemic inflammation.

But he actually believes that a lot of those

symptoms, those kind of, like I said sort of vague type things like fatigue, aches and pains, the brain fog, that sort of stuff, is to do with the vagus nerve being in some way, affected by either pathogens or toxins. And I think Dr. Klinghardt, he talks a lot about the vagus nerve toxicities specifically, and as you know, he deals a lot with oral toxicity and the knock on effect of that on the system. So, there seems to be something in there. And what you notice in people who have addressed a glial cell hyperactivity and they straighten up their vagus function, they tend to improve their symptoms. So that's the important thing, is that, "Oh my God, I've got a vagus nerve infection. What do I do?" that there are obviously strategies that we can then employ to have a positive impact on people's symptoms.

Dr. Jay: So essentially then, there's different types of pathogens that can basically infect the vagus nerve and cause neurologic issues. So if somebody is having then neurological problems and a lot of brain type issues, it could actually be infection in the body that is then impacting the nervous system through the vagus nerve that way, to exhibit those type of symptoms?

Dr. Eva: Yeah, yeah. Yeah, exactly. Exactly. So yeah, it is very interesting really, and he does talk specifically about Lyme disease, with this hypothesis. And as well, obviously, we know Epstein Barr, in relation to chronic fatigue as well. But what is also another thing that I found that I thought was interesting, relating vagus nerve to Lyme disease or vice versa, there is some sort of a connection there. There was this research that looked at respiratory modulation of cardiac vagal tone, and I did say vagus nerve supplies the heart or goes back and forth but it is connected to the heart.

And they look at this cardiac vagal tone in patients with Lyme disease. And what they concluded was that cardiac vagal tone was impaired in Lyme



disease patients. And therefore, their conclusion was that Lyme disease may directly affect the vagus. So, they kind of looked at it from a different angle, but kind of arrived at the same conclusion, if you will.

Dr. Jay: Yeah. Interesting. So the infection, obviously Lyme disease, you said, can be part of it and then there can be viruses, and other things. How much do you feel like it's the actual infection that's causing the problem versus the, if you will, maybe infection byproduct or like, for instance, the Lyme disease or the spirochetes' poop that we react to the toxin? Because you said, there's the toxicity impact, there's actually the infection impact. Or do you believe it's probably both, as far as the vagus nerve?

Dr. Eva: I would say, I wouldn't like to venture a guess in terms of percentages, but I would imagine it's an accumulation of all those different factors. For sure, I would say. And obviously what people need to understand that when it comes to the signaling of brain, via the vagus nerve to the body and then from the body via the vagus nerve to the brain, this is something that goes back and forth. So, what he actually says, Michael VanElzakker, is actually, it's not necessarily about super overload with any infection, it actually is about small amounts in the right place.

It's not necessarily about that bacterial load or whatever load, toxic load; it's just that it is in the right place to cause those problems. That right or wrong place, if you will, is in or around the vagus nerve. And it's sort of travels up, excites the brain, the brain goes on fire, then it sends signals to the body, the body is inflamed, the gut is inflamed, and it just kind of winds itself up. I think that's probably likely what you're seeing is that it kind of... you know, it starts somewhere, but then it starts to wind everything up by going back and forth.

Dr. Jay: Okay. Yeah, that makes a lot of sense. I mean, if you look at the vagus nerve, a lot of it, its function is actually taking information from the body. So, where somebody may be, especially like in the chronic Lyme, that they feel like, "Oh, my body's just not healing," or, "it's just not functioning," it could be an infection or a toxin in the right place, affecting the vagus nerve. Which is actually affecting the input and then causing the misfiring in that manner, don't you think?

Dr. Eva: Yeah, definitely. And also, we said at the beginning that one of the key roles of the vagus nerve... did I say that? Maybe I didn't, but I was meaning to get to that. I think I did say that actually, the switching off of the inflammation. So if you now have the vagus nerve that is directly impacted by something, this is just not going to fire appropriately. So now the information that would otherwise be switched off is not going to be so easily switched off because the vagus nerve is directly impacted. And then yes, you rightly said, you know, that there's a lot of feedback from the body and yes, I think it does all go together in the end.

Dr. Jay: Wow. So many intricacies in understanding health. It's just unbelievable. I guess where this is probably always my favorite part of interviews, is okay, if I have been suspecting infection or diagnosed with infection of the vagus nerve, what can I do, like what solutions? Or how do I begin healing this to kind of get that individual out of the fear, you know, the world's coming to an end, to like, stepping into power and realizing, "No, hey, we can actually do something about this,"?

Dr. Eva: Yeah, absolutely. That's really what it's all about, isn't it? I do approach health from three different angles. I do that with everything really, not just this particular problem. So, we could look at physiology, then we could look at energetics, and we could look at emotional psychological



factors. So first of all, when it comes to the vagus nerve, we have both body based approaches and mind based approaches that affect it. And before we even go anywhere, the vagus nerve, I want you to realize that pro-inflammatory diets will for sure, make this problem worse because we're talking about the body struggling to switch off inflammation now because the nerve that is supposed to be doing it is infected. We need to help it along.

So just purely, on a basic, basic level, we need to be thinking, "I need to lower inflammation in the body through what I put or don't put in my mouth." Then of course, we could look at... I did mention the glial cells and how they kind of can just get all hyper and start just over firing, and it will result in this massive inflammatory, whole body response. So, there are obviously certain flavonoids, certain nutrients that we can use to specifically counter that glial cell activity. So now we're a little bit more strategic, and things like curcumin, we know has been shown to do that; resveratrol, cinnamon, cannabidiol as well. So there are a number of things that people are looking at in relation to glial cell activity.

But when we're talking about addressing this problem holistically, we obviously mustn't just stop there and just take some flavonoids and think we're done; because what we need to do is we need to help the vagus nerve to get back online. And this is where all the strategies that can stimulate the vagus nerve in a positive way, stimulate it, make it activate more readily. That will help it shake off that inflammation and actually can help it work properly again, by doing those different exercises. Applying those different strategies that can help the vagus nerve restore its health and capacity.

Dr. Jay: That's awesome. So the nutrients for glial cells, you said... so my understanding is that when we are awake, the glial cells basically build up fluid

from the inflammation of the brain activity. When we sleep, they essentially, kind of like sponges, squeeze out the fluid; they drain. That's why if you don't get great sleep, usually you have some brain fog and like memory issues and, "Wait, can you say that again?" You know, things aren't clicking all the way and obviously, there's an intricate connection with the vagus nerve. What are some go to's, things that you like for the glial cells, though, specifically? Besides just optimizing sleep to help with that activity.

Dr. Eva: The flavonoids, obviously, I think most of them will probably do the trick. But also, like I said, things like curcumin, cinnamon, they have specifically been shown to have that effect. So if you want to be kind of more strategic and specific, and stick to the things that have already been researched, those are some of the things, and CBD as well. But you're right, another basic, basic thing that people need to dial in at this point if they really want the recovery, is to improve their sleep and circadian rhythm, really. And there may well be that the reason why they have this problem in the first place, it's stopping them from sleeping clearly, but also, really, a lot of people can't get a good night's sleep because their mind is overactive.

And if that's the case, then again, we need to be looking at what's stopping us from switching our mind off when we go to bed because that will go back to chronic fears, chronic anxieties, chronic negative emotional states, emotional trauma, and so on, negative beliefs. And these are things that maybe people think, "Oh my God, I don't even want to go anywhere near that and address that," but actually, as far as your sleep is concerned, it's super important to get it right. And those things I am telling you, are not that difficult to address.

So you could be jumping ahead quite a bit in this whole issue. If you actually think, "Well alright, now it's time. Maybe I will look into my traumas or



my chronic anxiety or my chronic fear of whatever or indeed, feel shame, or self-worth," you name it. All of those things are stopping people from sleeping, that's for sure. And one other things, I did mention energetic as well, one beautiful strategy to really get the vagus nerve to activate is anything to do with sound. And if people haven't tried sound healing before, then that would be one of the things that if you haven't tried it yet, go and look it up, find some stuff, maybe on YouTube.

People do it in a variety of different ways. Some people use instruments, some people use their own voice. But that resonance that is associated with sound is massively powerful. And of course, if you make your own sounds, you activate the vagus nerve as well. So singing out loud is really great. So there are loads and loads of different things. Obviously, when it comes to the vagus nerve, things like deep breathing, cheap and cheerful, and really, really easy. There's obviously loads of breathing techniques out there, but you don't have to overcomplicate it.

And things like gargling, even. So even if you don't want to even go anywhere near mind stuff because you're not ready for it, fine. Do some gargling or take some cold showers; that has been shown to activate the vagus nerve. So there's loads and loads of things we can do to get the vagus nerve back online and engaging a little bit better. Now when that starts to happen, the chronic inflammation starts to ease off. And then we're going to obviously have a knock on effect of that on our energy levels, brain function, you name it.

And so then we can possibly get enough energy and motivation, and enthusiasm to dig a little bit deeper and actually, perhaps go and address some early life stress or early life trauma. So, I would like to see people approach their healing more holistically and really engaged with this

vagus nerve stuff because it could make a massive difference, particularly if you're one of those people who have been going from practitioner to practitioner, from protocol to protocol, you still can't seem to be able to shift your inflammation no matter what you do. It's time to look at this.

Dr. Jay: Yeah, I agree. And there's such an evolution, I guess, in timeline as well too, looking at somebody that goes into the medical model, the typical medical model, thinking that they're going to get healed and they realize that's not what that's for. Then they go more into the alternative, natural world, but they're still using the same principles that, "I have a headache. What can I take for a headache that's natural, not a prescription?" And then there's this almost like, moving on and realizing, "Wait a minute, what's the source?"

And then moving into the source and then being so oriented typically just with supplements that then they're like, "Wait a minute, I kind of feel like I hit a plateau. What am I missing?" And then it's got this big thing just hanging over there that's just been waiting for you. That's really that emotional side. So I would I agree that the sooner you dive into it, the better off you generally are. So just backtracking, I guess, for clarity then, the things that you mentioned that help with the vagus nerve infection are those very similar to what will actually help to stimulate the vagus nerve or the ventral portion. Is there a lot of overlap in that?

Dr. Eva: Yeah. It looks like it. It looks like there's a lot of overlap, absolutely. Well, that can't be a coincidence, right?

Dr. Jay: Yeah, yeah. So, activating the vagus nerve, you mentioned gargling, you mentioned gargling, you mentioned singing, I've heard humming; anything that is kind of doing that can help. Are there any other things that are top of the list that you also like, in the idea of activating our vagus nerve?



Dr. Eva: Yeah, top of the list, of course, will be breathing because one of the issues and this is one what can go wrong with the vagus nerve, it's in that pile of a lot of things can go wrong with a vagus nerve. Infection is just one of those things. One of the things that can go wrong with the vagus nerve is if you have a chronic dysfunctional breathing pattern, because what you do when you have a chronic dysfunctional brain pattern... which by the way can go all the way to birth or early stress and early trauma or various things like people just trying to keep their stomach in to look better. Then they start breathing in a more shallow way.

That happened to me at school, by the way. My gymnastics teachers kept telling me that, "Suck it in, suck it in." And the more shallow your breathing gets, what happens is, you could feel that I'm talking here and I'm talking about stressing you, and you can be thinking, "I don't really feel that stressed." And maybe you don't have a lot of things in your life that you really feel stressed about. But here's the thing, when you have a dysfunctional breathing pattern, which a lot of people do, it coincidentally is the same sort of breathing pattern because it's very shallow, that we display when we are in fight or flight. That's when the breathing goes like that. And a lot of people just breathe like that in their normal life.

So what that does is you constantly send signals to your brain that there's some sort of stress and there's some sort of activation necessary. And unknowingly, you're actually winding the whole thing up, just by breathing dysfunctionally, if that makes sense. So, so learning to breathe properly and getting that pattern reversed, is not just going to do wonders for your vagus nerve, it actually will just make you feel less stress because you're not now sending this constant signal to your brain. And obviously, that will have a knock on effect throughout the body.

One of the things that people do sometimes because obviously during the day, you can be more conscious of it and I certainly do encourage people to be more conscious of their breathing, but at night, you're not because you just breathe, you're asleep. And a lot of people have dysfunctional breathing in their sleep, which again could be a reason why they're not sleeping well because they activating all the time, whilst they're sleeping. So a lot of people tell me a lot of great things about mouth taping, it works for a lot of people to force the change in that breathing pattern. And after a while, hopefully it becomes your new normal and then the whole system works so much better. So that's a really good one to try.

And so I do obviously talk a lot about the mind, body approaches because research has shown that whatever puts you in a positive emotional state is good for your vagus nerve and it activates the vagus nerve. So, if meditation is your thing, go for it. But if meditation frustrates you, and you can't do it because you can't sit still and you think, "Oh no, no, I mean, oh my God, my mind is going places, I just can't do it," well dance, it's not going to stimulate your vagus nerve, it's going to stimulate your fight or flight. But maybe, maybe you should try movement meditation, moving type meditation like qigong because then you focus on the breath, you focus on the movement, you focus on so many things, that you can't really be focusing on the fact that you're stressed out about meditating. So that works better for some people.

And anything like what I talk a lot about, havening techniques because it's a brilliant technique to get on top of any stress, any anxiety in the moment. And obviously, also, techniques like this will actually stimulate the vagus nerve, EFT is another one. So there is certainly loads. Gratitude journaling has been shown to increase heart rate variability, which is the measure we



use for vagus nerve function. Again, because it promotes positive emotional state, I'm sure of it, I'm sure that's the reason why. So, loads and loads actually, that we can do.

Dr. Jay: What type of journaling was it?

Dr. Eva: Gratitude.

Dr. Jay: Gratitude. Love that. Okay, awesome. Yeah, and one interesting thing, maybe just for the listener, is a neat thing. The power of just breathing properly, as you so eloquently explained, I mean, it's just so powerful. But the cool side of it too, is when you breathe through your nostrils, your nostrils are naturally vortexing the air. They're naturally basically structuring the air. So versus being a mouth breather, you're not getting any structuring of the air but especially when you do breathing techniques, where you can actually pitch a nostril, you know, and breathe in. And do both sides, where you're actually breathing that air in, it vortexes it.

And one of the things, I don't think I've ever shown anybody this but I've had these for a few years. They're actually like gold plated but their funnels, you can put a funnel on the top, that what it's really designed for, and you pour water through. And it structures the water, if you will, it's like a portable one, but I actually use it for breathing. So when you breathe in with something like this, it actually helps to structure the air.

So I'll do generally, in the morning or especially if I have like some big presentation online or something, and I'm starting to feel a little energetic, if you will, or people will classify it as anxiety, I'll just take a couple, expanding my belly when I'm doing it. Hold it for five seconds, release for five seconds, and do that again. It's amazing how quickly that can change your state just by breathing. So I really want to thank you for doing that because that's something that doesn't cost

anything. Yeah, I've got this thing but you don't need that; you can just use your nostrils, you know.

Dr. Eva: Absolutely. That's an excellent one. And you know what, many, many years ago, before I got into this whole mind, body stuff, I suffered from really bad panic attacks. And it was because a doctor told me, it really was a long time ago, I still went to doctors; that there may be something wrong with my heart. And the moment I heard that I basically freaked, completely. And I had such bad panic attacks that I would wake up in cold sweats in the middle of the night. I couldn't sleep. I couldn't eat. I was just so terrified because I was waiting for them to do the test but I had to wait my turn. And in the meantime, I was going loopy.

And I actually looked up a hypnotherapist and I went to her, and in that one session of hypnotherapy, when she taught me, she said, "You really need to start breathing. You're not even breathing. It's like you're spending most of your time like holding your breath and then gasping for breath. This is why you're so freaked out." And in one session of hypnotherapy, I thought, "Okay, that does really make sense," and we did some breathing techniques, and we did some hypnosis stuff also. But that was the end of my panic attacks because I took on board that I can actually stop any panic attack in a matter of moments, just by changing my breathing.

And this is just simple physiology. Anybody can do that. So the moment I knew that I could get myself out of a panic attack, just by changing my breathing, I wasn't scared anymore because I knew I had a tool to deal with it. Because what happens with panic is the more... it's a spiral, isn't it? It's a spiral. So you kind of trigger the panic, then you're sending the signal to the brain, saying, "I'm panicking, there's something really bad going on," then you have more physiological responses to the body; whereby the brain says, "You are



panicking, there's something bad going on." And then you're going again, back and forth, back and forth, and you're winding yourself up and you're winding yourself up. You can stop that just with a few deeper breaths. It's that simple. Sometimes we don't need to overcomplicate things, the simple tools that we have are still the most effective a lot of the time.

Dr. Jay: That's awesome. Such great advice. As we wrap this interview up, Eva, is there any final words or things that you want to tell the listener here on the Chronic Lyme Disease Summit 4?

Dr. Eva: I always say that people can heal and there's always something they can do to improve their situation. Even if you currently not believing that I am telling you, unless you're six feet under, there's always something you can do to improve your situation, and there is always something else you can try.

And maybe this is something you haven't tried before, vagus nerve stimulation. Maybe it's time to engage. And I would like to say that if you commit to this, this is not by the way... nothing in health is a one off thing but this is not one of those things that you can just do once and then forget all about it. We do need some consistency with this.

But if you commit to 30 days of doing some sort of vagus nerve stimulation, whatever suits you, cold showers, gargling, singing, meditation, whatever it is for you; if you do this for 5, 10 minutes every day, maybe even less sometimes, every single day for a month, you will see a positive impact on your health.

I will guarantee that actually. You will see the changes. You'll probably see them sooner than that, but give it 30 days of consistent practice, and things will change. So that may be just what you've been looking for. So, don't wait, do something today. I think too many people are waiting for various things before they action whatever it is that they're supposed to be doing next. So, just start today. Just do something and carry on.

Dr. Jay: Love it. Yeah, its fire, aim; then you're ready. Not ready, aim, fire. So just take action. Well thank you so much for joining me on this summit, Dr. Eva. It's been a pleasure to speak to you about vagus nerve and the implications of an infection in there, and just even some of the simple things that you can do to help remedy that.

Dr. Eva: Thank you so much for having me. It's been a pleasure.

Dr. Jay: Awesome. Well definitely share this with your friends, family, and loved ones and consider owning this by clicking on the banner beside or below to add this to your library. And don't forget to visit Dr. Eva Detko. It is dr-eva.com, and doctor is D-R, and then it's a hyphen, Eva; E-V-A. So, D-R, hyphen, E-V-A dot com. Maximum blessings. This is Dr. Jay Davidson.



Herbicide Hiding in Your Collagen

Allan Lindsley, DC

Dr. Davidson: Hi, this is Dr. Jay Davidson, host of the Chronic Lyme Disease Summit, number 4. I'm with Dr. Allan Lindsley, a man that has checked over 25,000 people for Lyme disease, treated over 5,000. This man has walked through chronic illness and Lyme disease, healing and helping people across the country. So I'm super excited to be speaking with him today and we're going to be talking about the herbicide that's hiding in your collagen. Allan, welcome to the summit.

Dr. Lindsley: Hey, thanks, Jay.

Dr. Davidson: So you've checked a ton of people in the Lyme space.

Dr. Lindsley: Yeah, thousands now.

Dr. Davidson: What was it that got you into Lyme disease? You just woke up one day and said, "Hey, I'm gonna start studying Lyme disease,"?

Dr. Lindsley: No, I had been at age 10 or 11 and unknowingly, it was a Lyme positive tick and my knees were very sore and swollen that summer. So, just went in to the local doctor back in 1980 or '81. And I was hitting it with ibuprofen at the time and of course, it didn't change the fact that my liver enzymes were always elevated and I had sore joints, and all kinds of craziness. And never really put together that it was Lyme until many, many years later, after my father had passed in a farm accident. Which now, I understand he probably

had Lyme at the same time, the chronic fatigue and the foginess; that I really committed my life to become a doctor, from an engineer.

And in doing that, I began to understand the whole process of what was happening, by seeing all the farmers coming in. And so I started looking at the Lyme thing a little bit closer. And it wasn't until I was on an electronic machine one day and these analysis and they said, "Oh, you've got Lyme disease." And I said, "What? I've never had Lyme disease." And as I began to think about it and all the symptoms coming up, I began to read more and more about it. That was about 12 years ago. I was like, "Wow, that tick probably in '80, '81 was Lyme disease." And I chalked all that stuff up to being tired, to working too hard, to pushing too hard.

Like probably most people do out there when they go in there, and they're told that, "You're crazy. It's all in your head. And it's part of the aging process." You know, you're 40 or 50, or 60, "So you should see deterioration of your joints and your thought process." None of that's true. And that's how I got into it, by my own personal interaction with Lyme at a very young age. And seeing my father become ill and dying like that; that pushed me on that pathway that I kind of put together, finally.

Dr. Davidson: It's amazing to think how easy it is that, "Other people have Lyme. Not me." Like,



maybe the person listening right now is listening to this summit because they're looking for help for their spouse that has Lyme disease, but they could be dealing with it at the exact same time.

Dr. Lindsley: Yeah, I get calls from all over the country and if you lined up 100 people, I would say over 90 of them would have some form of Lyme hiding there. And if you say, "Well, that's impossible. The tests don't show that," you're right, the tests don't show that. But chronic Lyme, as we know it, doesn't stay in your bloodstream, it leaves pretty quickly. And it dives deep into what I find to be the collagen, the white tissue of the body and that's where it's going to hide. And it hides very well there. And I treated a pharmacist and she came in one day and she said, "I want you to check me for Lyme." And kiddingly, I said, "Why? You're a pharmacist, you have access to every pharmaceutical out there, as far as an antibiotic." And she says, "Yeah, I read all the white papers on them. And I don't think they penetrate deep enough into the tissue, into the joints, and across the blood brain barrier to actually get rid of it."

And that was exactly what I'd seen for after thousands of cases; that most antibiotics do a decent job of getting into the muscles and into the actual intestines, and into the organs but really, it doesn't penetrate deep enough where we have a real low blood supply. And literally in the body, if you think about it, there are compartments that really have very, very low blood supply. So that'd be your synovial fluid, your collagen, your cartilage in the joints, and you have a blood brain barrier, of course, that's where it seems to hide and stay very, very well.

Dr. Davidson: So in other words, if you kill Lyme in all the other areas, but don't penetrate the deep down areas, it can still replicate, come back, and still end up with Lyme type issues and some things.

Dr. Lindsley: Exactly. And for years, I've been trying to figure out, why does it hide so well in collagen? And that was something we discovered last year, after really looking at it. One of the things that I have found with so many patients that have Lyme, and you're seeing it at a younger and younger age now, and we're seeing collagen problems at a younger and younger age, we're seeing reproductive problems at a younger and younger age, is that it gets into the collagen. And so I was asking myself, "Why can Lyme hide so well and the co-infections... how can it hide so well in the white tissue versus the bloodstream?" Of course, in your bloodstream, you have a pretty good, circling immune system and it's able to get hold of it. But then we discovered one difference in the collagen, in the connective tissue in the body that was different than any other part of the body and that was what I would call hidden glyphosate.

Dr. Davidson: Wow. So before we go into that, because I think that's going to be a whole can of worms here we're going to open up, I want to backtrack a little bit on the Lyme side of it. So you've made formulations, the Immune BORR, you have a Bartonella one, Babesia as well. And Dr. Todd Watts, our good friend, you diagnosed him actually years ago with Lyme disease. He took the Immune BORR, cleared it out, basically. I nearly lost my wife to Lyme disease. She almost died a couple times.

And then about a year or two ago, we saw each other, then you were like, "Hey, let me check you." And you held up an ammonia vial and I was like, "Whoa, I can feel that," and you're like, "You have Lyme." Like, "What?" People have called me the Lyme guy." I'm like, "How does the Lyme guy have Lyme disease?" And I think through all the detoxing, killing of parasites... I grew up in Minnesota, the heartland of, you know, tick and tree. But, I didn't have Lyme, my wife nearly died. And right when you said at the beginning, when



I was kind of alluding to, it's so easy to say, "Oh, that's not me," and yet it ends up being you.

Dr. Lindsley: Yeah, they say that Lyme is the great imitator. I don't think it imitates anything. It's the creator of all the diseases in the body. And that being said, if I can take a bacteria and parasites... I mean, that's what Lyme is, right? It's this bacteria and parasites, there's a few viruses involved, but it penetrates into areas where you just can't seem to get rid of it. Now, was it created, you know, from a standpoint of being potentially engineered or was it just, it happened? And so, I don't know for sure, and maybe somebody does, but the reality of it is that it seems to be in so many people today.

There's so many different ways in, like I've read articles and seen information that mosquitoes also carry as much as ticks do. They're finding it in maybe the food, potentially now. And I always get people in my area, we're a big venison eating area up there in Wisconsin, Minnesota. And I always look at them and I say, "Would you eat undercooked pork?" "Oh gosh, no. I wouldn't do that." And I say, "Well, don't ever eat undercooked venison," because these parasites and bacteria live in the tissue. And of course, if you eat that if you have low hydrochloric acid, they can penetrate right through the intestinal wall, just like any other parasite or bacteria can. And no one thinks about that. So there's multiple sources for that Lyme bacteria or any of the co-infections to get into the body. And when it does and it sets up in your tissue, it's really difficult to get rid of.

Dr. Davidson: Yeah, I just want to thank you, first of all, for all the work you've done, the formulas you've created, because three bottles later, Lyme cleared out of me. And I've tried all kinds of stuff on clients and it's your stuff, the Immune BORR; that clears it out.

Dr. Lindsley: I think when we developed that, we

were muscle testing everything. So we literally got a kit in with hundreds of different herbs in it. And one by one, painstakingly, we went through, and you read information on it and say, "Well, the book claims that this particular herb will take care of that particular bacteria." I think that's great in the book but the reality is you have to actually apply it in the clinic. And that's what we did over and over again. So, through hundreds and hundreds of patients over and over again, we were able to bring that group of herbs in that we thought were really doing a great job.

And then we would move the formulations around and then we came up with some really nice formulations through basically, muscle testing. And then patients coming back to us and saying, "Hey, it really cleared out." And literally, I see Lyme move out of body in six to eight weeks typically, on a treatment. Now can they go into L-form? Can they hide? Sure, and it's really neat to be able to use some of the CellCore products like the oxygen and the carbon minerals because they go in there and they really do a good job of breaking biofilms. So not only can we elevate the mitochondrial function, we can also go in there and break these apart, and get these layers that are hiding there, much better now.

Dr. Davidson: Yeah, it's just amazing that those that struggle with Lyme, if they don't know about what you formulated, how it's kind of the easy button to clear it out. Now, there's obviously more to it than just Lyme. So, let's shift gears back into the collagen thing with glyphosate and Lyme.

Dr. Lindsley: Okay. So one of the things that I've noticed in the last 15 years in practice, is that chiropractic, as we know, it's become very difficult to be effective in the clinic because there's so much collagen issue there. And I mean, I'm talking like ligaments and tendons. And what I realized is that we're seeing more and more people coming in at a younger age, with torn ACLs, torn



meniscus, torn labrums, hip replacements, knee replacements, rotator cuff surgeries. And I'm asking myself, "I don't ever remember seeing any of that, growing up." I was a three sport person through high school and we'd get to pack thousands of hay bales in summertime. And even though I had Lyme, I don't remember the actual collagen being so weak in people or the connective tissue in the body.

And so we've been seeing all these non-contact sports injuries coming in and I could say, I think a lot of it is related to Lyme and it was. And I would put somebody together and I would reconnect the ligaments and tendons, and do the normal chiropractic thing, and I'd wipe out the Lyme. And I was like, "Man, the Lyme is gone. I've fixed them," and they're back six weeks later, the same problem. And I could not figure out what was going on. So I've been looking at glyphosate and other things now for about two years.

And after meeting Don Huber out in Boise, Idaho and actually watching a lot of his lectures, and going back through his material, he said a couple really key things that set me off. So I'm always one that's studying pathways. So, how do you make collagen and what minerals are affected by glyphosate? And one of the things he said stuck in my head. He said, when copper gets near glyphosate, it binds it. It binds it a thousand times harder than any other mineral in the body. And that just goes into your memory and you're like, "Oh, that's interesting."

And as I saw all this happening, in the last few months, we've been really doing a lot of testing at the clinic and what we found is that people are terribly deficient in copper in their collagen. And when I began to look at that, I looked at the pathway and I was muscle testing, we realized that lysyl oxidase is the last enzyme in the pathway to take your amino acids into pro collagen and into the triple helix, into collagen.

And this is again, hair, skin, nails, ligaments, tendons, bones are 90% collagen. And then on top of that, all your basement membranes and your linings. So we'll talk about your uterus down, your sinuses, your gut lining, for example. How important is that to keep the leaky gut stuff out?

And what we found is that when we were treating with some of the CellCore products to remove the glyphosate out of the body, we were finding pockets of glyphosate still in the body, and where it was mostly holding out is in the collagen. So we were finding it in the shoulders, in the elbows, in the wrists, in the knees and the hips, the lower back, the SI joints, because these are huge collagen areas; ligaments and tendons. And then of course, the cartilage surface. And what we found was that glyphosate actually seems to substitute for glycine because glyphosate is an analogue of the amino acid, glycine. So it actually sneaks in.

So if you want to make collagen, what do you do? You take glycine and a lysine and a proline typically, and you'll repeat that same pattern glycine, lysine, proline. And you make a chain of collagen. And you'll make two, three chains and you put it into what they call a triple helix. And then you hold that and then you use lysyl oxidase, which is a copper based enzyme, to cross link these fibers.

Dr. Davidson: To make them stronger.

Dr. Lindsley: Yes. And when you get the glyphosate in there, it's got an extra phosphate group with some hydroxyls hanging off it. So it's like having an arm sticking out of the actual chain. And you go to cross link and put it together, it's not actually binding together properly and it's also grabbing all the copper. So you may have very few cross links. What you have is a rigid collagen, a rigid ligament, a rigid tendon, but not one... you see, they'll always be able to stretch, like a very



thick rubber band, for example, collagen should stretch but not break. And so I began to see the Lyme be able to hide right behind the glyphosate and then join.

So if we go ahead and treat somebody for Lyme and they have a flare up, we always find it in the joints. I mean, if somebody comes in and they complain, "Oh man, my Lyme is back. Can you check me for the bugs?" that's a common thing in my clinic, "Hey, check me for the bugs." When I do, I'll find it, you know, in the knees or the hips again, or up into the brain again. And these are collagen rich areas of the body. And I was like, "Man, why is it there?" So as we started seeing the glyphosate being there in the collagen, I began to understand more about blocking the copper part that glyphosate does bite into.

So it actually suppresses the immune system. It suppresses mitochondrial function because there's a lot of copper in the electron transport chain, we can talk more about that. But when you can suppress mitochondrial function, suppress immune function, make collagen rigid instead of flexible, and you've got the Lyme bacteria there or the Babesia or Bartonella or whatever is trying to live in that collagen, and they're actually secreting pretty good amounts of ammonia, which really creates a high pH in the tissue, and that tends to cause the tissue to almost melt. So you have the wrong pH and you have the copper deficiency, the glyphosate there, it's just an absolute recipe for disaster for the collagen in the joints.

Dr. Davidson: Wow. So let me try to summarize this and make sure I'm following. So as you look back, when you were in athletics in high school, nobody is really blowing knees out or you know, ripping rotator cuffs, or any of that. And now you look today, there's, I mean, half of a high school varsity sports team for football is going to be injured by the end of the year, essentially.

Dr. Lindsley: Absolutely. And it seems like you can go into the weight room and you can bench-press several hundred pounds or squat several hundred pounds in a slow position. Put an athlete on the field and ask them to run on the field and do a quick turn left or right, jump, do these powerful movements, and now you see all the tearing. I'll give a great example, I'm giving my age here, I graduated in 1987. We had a playoff football team and we had 47 guys in the team. Not one single person, I can remember today and I've asked my friend about this, that actually had a torn anything, we were healthy all through the season. It just was almost unheard of back in the 80s.

Glyphosate didn't really get rolling until the mid-90s because that's when they started doing the GMOs, genetically modified organisms, they started splicing it and you could spray it on. By the late 90s, they started spraying it in the wheat fields and in the oats out there. So they were spraying it as a desiccant to try to basically ripen the crop faster. And nobody really understood what was actually happening there. So now we're having multiple ways of this to come into the body. We fast forward, I had a patient in a few months ago, he graduated from the same high school, grew up in the same area; graduated in 2014. I said, "Hey, how many years have you been out of school?" "Six years." I said, "How many guys in the team, the football team, were injured?" He said, "By the end of the season, almost half the team had something pulled, something strained, something torn."

I go to watch a football game today and these guys are on crutches, and they're wearing knee braces and I'm thinking to myself, "What...?" And of course, what you hear, "Well, we're bigger and we're stronger than you guys were 25 years ago." No, you aren't. And the parents say, "Well, my child is in sports and they're playing year round, and they're pushing them too hard." Look,



somebody who's being trained on a regular basis, who's eating right and exercising, according to what we learned in school, what's lost is that, "Hey, the more you push, the more you strengthen your tissue, the thicker the tendons become, the stronger the bone becomes, the thicker the muscle becomes," you should have less injuries, not more injuries.

So the hinge pin there that we've not been really seeing here is the fact that glyphosate can get in the tissue. Anthony Samsel's figured this out and Stephanie Seneff, they've done a lot of papers on this, and it's very true. And we're seeing it, we're seeing it in the clinical aspect. We're actually seeing the tissue break down here. Now you put Lyme on top of that. And so, maybe Lyme has been around a lot longer than we've ever thought about. But if we had a good immune system, when we had a local immune system in this tissue, it would be able to take care of it.

But if I bring glyphosate in and it binds the copper up, which suppresses my immune system, suppresses my mitochondrial function, I cannot overcome that bacteria, that parasite in that tissue. And so it hangs out and waits for me and your bugs talk to each other, "Hey, how's Jay doing today?" "He's looking tired. I think we can get him." And then you're at your weakest moment. So I see, him being in Wisconsin, his vitamin D drops throughout the wintertime. And your immune system actually drops.

People don't realize this, but in colder climates, we have what they call the uncoupling effect. So come fall, the sun goes to the south, we lose a lot of the spectrums of the sun. We get that first chill in the air, and our body says, "Ooh, its wintertime. I remember this." So you actually uncouple your mitochondria and your immune system actually takes a lower function in the wintertime. The same viruses are in the air in January as they are in July. But who gets a cold in July? It's pretty

rare. So, I see more shingles in the wintertime. I see more influenzas. They're always there, more colds. And actually, I see more Lyme flares in the winter than in the summer. That's interesting.

Dr. Davidson: Even though it's Lyme tick season, more spring, summer.

Dr. Lindsley: Exactly. And people say, "How can my Lyme be back?" And I say, "Well, number one, your immune system is suppressed. Are you taking any vitamin D?" and they'll say, "Uh, no." Well, now you're probably in the 20s because you know, a level of blood. And all of these things add up to a suppressed immune system. Now we're going to localize tissue into the joints, into the collagen there, and I'm actually able to... what we forget about a little bit; that copper is used in hundreds of enzymes in the body. And the electron transport chain, the fourth complex, actually uses copper in there. And when you combine that copper and glyphosate, believe it or not, can get into the mitochondria, it goes that deep, it actually suppresses the energy pathway. So everything is weak in the tissues; repair ability, energy to the cell engine, the mitochondria. So it is really a great place for it to live.

Dr. Davidson: Essentially, glyphosate is a chelator of binding on to good minerals, like copper.

Dr. Lindsley: Right. Yeah, so glyphosate binds to positively charged minerals, so calcium, magnesium, zinc, copper, and manganese. And when it does that, it actually can cause huge problems in the enzyme pathways because usually, you're using that mineral to help that enzyme work at a normal, ordinary speed. And when the body is deficient in that particular mineral, the collagen pathway runs slower, the collagen pathway can't actually complete itself. So what we see today is much, much less cross linking.



So after you make these three different collagen fibers and you wrap it into a triple helix, what really makes it strong but flexible, is the bonds in between there, in between the strands. Those aren't able to be made properly. And when the glyphosate does come in there, because it's making sort of flexible, but very strong, it's making it rigid and that's why you're seeing these tears. Okay, it's not somebody going off for a jog typically. But what you do see happening as we age... now, I'm over 50 now, so I can say, as we age...

Let's take your hip, for example, and this would be a hip socket, this would be a 45 degree angle of your femur coming in. Now normally you've got these really big muscles crossing that joint, the G max muscle [gluteus maximus], the piriformis muscle, and then you have ligaments across, femoral ligaments, and they're supposed to hold that hip in place. All the weight from your body comes through that socket to your lower body. So if you're doing a lot of lifting, you're going to have more weight coming through. If you're jogging, think of the pressure you put on it, if you're jogging, compared to walking.

So all of a sudden I become active, and I'm trying to be active and doing some elliptical, and doing some jogging, where I'm actually putting some more pressure through that; if my collagen is not strong, and this is what's happening today, I tend to ride to the top of the socket. I use about 50% of my socket and if you look into the journals, they call it camming. And a cam on a camshaft of a car is a flat spot, okay, for the valves to open and close. So I go up, I cam, I flatten it, and then I slide out; I'm displaced.

And by the time you see the orthopedic surgeon, because your hip is really hurting at 43, they go, "Well, Jay, geez, you know, this is about malformation from birth. This is congenital." No, it wasn't. It was years of the collagen being weak, copper deficiency, glyphosate potentially being

in there, I'm just going to label it what I see, Lyme disease being in there, making that collagen weak, and it's just been riding on top of that socket. And I see it all the time. I've had people as early as 39 years of age, now having hips being replaced. It's crazy.

Dr. Davidson: That's amazing. So let me back the train up just a little bit. So we've got glyphosate replacing the amino acid, glycine.

Dr. Lindsley: Correct.

Dr. Davidson: Which makes our collagen not healthy essentially, which is what's linking to tears and all these correct extremity issues, if you will, and you know, injuries.

Dr. Lindsley: Correct.

Dr. Davidson: Where does Lyme fit in? Is Lyme using glyphosate as a protective mechanism? Is it attracted to an environment like that? Is Lyme just in general in the joints, so you throw glyphosate plus Lyme, and then it pushes it over the top?

Dr. Lindsley: So I muscle test and I'm always challenging in different ways there. So when I find Lyme in a joint here, for example, and this is really interesting, and I was able to take the Lyme or any of these other co-infections, and we're muscle testing this, when I add copper back to it, which seems to be what glyphosate is stealing, it neutralizes the Lyme. It completely neutralizes the Lyme. And I said to myself, "How's that possible?" So I dig a little deeper and I find out that, "Oh, it's also part of the immune pathways and part of the mitochondrial function."

So essentially, if I can make the tissue tired, if I can make it so it's weaker, I can't fight the Lyme in the joints. So the glyphosate in the... and what I'm seeing is in the background, is actually allowing the Lyme to be able to live there, very successfully



because I have weakened the immune system, weakened the mitochondrial function, unbound a few other things. So it actually lets it live there, only because it's taking away the copper, it looks like, and really pushing down the mitochondrial function. So it all ties together.

So, ATP with the body makes for energy and you can also take ATP and muscle test with the actual Lyme in and if you have enough energy in a tissue, Lyme can't live there. But you're not converting ADP to ATP in the mitochondria because of the copper being bound up and the electron transport chain not flowing properly. It comes down to, again, the most basic thing; if my cells make perfect energy, disease can't live there. And the minute I can't make enough energy, I start getting 'itis' there. Let's go label it, arthritis, tendinitis, bursitis. I mean, I hear it all day long, cellulitis, encephalitis, hepatitis. It's always an 'itis', right?

And that's always right back to the fact that if I have good ATP energy in my cells, it works really well. And then that same path, one of the interesting things is glyphosate also blocks an enzyme called lactate dehydrogenase. And if you look at some of the workout there, you'll see that lactate dehydrogenase actually helps you create and regenerate your NAD. Now, why is NAD important? Nicotinamide adenine dinucleotide, it's a D3 in its final form, that's when the cell is going to rock and roll. If you want to make collagen, you need NAD.

If you want to take sugars and bring them down to a usable form of fuel for the cell and turn the Krebs cycle, and make energy... NAD is used in, I believe, eight different places in the actual cytosol, from glucose down through. So guess what I've just done? I've actually decreased my ability to turn because NAD is the key B vitamin in the activated form. If I can't activate NAD, that nicotinamide adenine dinucleotide, fast enough, my whole energy pathway slows. So, I've

just paralyzed the mitochondria, I've paralyzed my immune system, because the glyphosate stopped an enzyme from working. And as we age, every decade we're alive, we lose about 10% of the NAD available in the cells.

So that's where the endurance comes in. You take someone like myself at 50, compared to a 20 year old, and put me on a track, they're going to beat me pretty bad. What they've found in studies, is when they supplied NAD back into the cells after a few months, the 50 year old guy could run fairly well like a 20 year old guy again. They did it in mice studies first, now they're trying to prove it out in human studies, which is more difficult because you have to eat the same and do all the same things. Mice are easier to control.

But the fact is, is that if glyphosate is blocking your NAD from being made, I've just paralyzed your energy path way, and all other things that we require to beat the Lyme out of the tissue. So yeah, I think that glyphosate, in many ways is paralyzing that tissue from actually doing what it should be able to do, which is take the Lyme out or any bacteria.

Dr. Davidson: Well, it's really big right now in the functional medicine, anti-aging world of NAD supplements, injections, IVs, all that. But what you're saying is at the fundamental level, if you just remove glyphosate, that whole pathway is going to function astronomically better.

Dr. Lindsley: Much better. And so let's take somebody who's 50, who wants to be a better athlete or have more endurance, there's probably some need for some supplementation of NAD in being there. But if my ability to actually create it on my own has been blocked by this... so say, I'm 50 and I've lost by definition, 50% of my ability to make NAD, and then I throw glyphosate on top of it, we don't have a number but how much more, is it 10% more, is it 20% more, is it 30% more loss of



NAD? And I get to the point where I can't keep up anymore.

So, I mean, the first thing I always check is, when people are sitting on my table, and I say, "You're an idling car. Like, you're idling in the parking lot. Can you make energy sitting here?" and by the vast majority of people walking in, they don't. Just sitting here, having a conversation, their muscles are tired, their brain is tired; they have a hard time following you. So you know one thing for sure, that that particular person is so tired that they're actually going backwards right now. So, what do you feel? You feel fogginess in your brain. You feel tiredness.

Remember, the brain uses 10 times the oxygen per cell and 10 times the energy per cell, in a resting state than any other tissue in the body. So the first thing to go to south in your body is usually the brain first because there's a lack of oxygen or nutrients, or mitochondrial function, ATP, followed by the heart, followed by probably the liver, kidney. And so guess what, you can't detoxify, you can't excrete. The whole thing shuts down.

Dr. Davidson: So I'm thinking of, I interviewed Dr. Don Huber, and he was talking about using the bioactive carbons to bind on to glyphosate. And he's running pre and post tests and in the pretest, you know, people are just loaded with glyphosate. They can go on the bioactive carbons, within two to three weeks, it's undetectable in parts per trillion. And I immediately am thinking, "Oh, it's two to three weeks to clear out glyphosate." Now I'm hearing what you're saying about glyphosate inserting into glycine, into our collagen and I'm thinking, "There's no way its two to three weeks to clear glyphosate out of the body then."

Dr. Lindsley: Let's add, you know, times a factor of 10, maybe. So what you do, you try to protect your water, you try to protect your food. And

then, "How can I bind?" So I think what we're going to do next is to try to develop a product that we can actually apply topically and orally, that might be going into the areas that we're talking about here and actually helping speed that up because collagen's half-life is probably six months. So if you're not a real active person, your collagen turnover is going to be even slower. So we want to be able to go in there and break that apart, pull it out of there, get the copper back where it's supposed to be, and get the body functioning again.

And we talk about water, if I can talk about it for a second. I was in Webster City, Iowa a few weeks ago, speaking to a bunch of farmers down there. And there was a gentleman there named Vatché, and he has a company called Pursanova. He's the only five stage RO system that takes it down to the billions, down to .3 parts per billion. And I was really interested in seeing that because all of a sudden, now we have a home system that we can actually put underneath our sink or a whole system that he's developed that actually is one more way to get it out.

So we can eat organically but even the large amount of testing shows that even though you can eat organically, it's still there because in three years you can qualify, the land has been sprayed with Roundup for years or glyphosate for years. We're organic but what we know, as Don Huber says, what happens? If we spray the plant, it absorbs into the plant; 95% misses the plant and goes to the soil. Then it resorbs and then desorbs. You have absorption, resorption, and he calls it desorption. And we're actually seeing it come up because of course, where does the minerals come from in a plant?

Dr. Davidson: The soil.

Dr. Lindsley: From our soil. And it's locked on. Remember, glyphosate is a chelator of minerals. So here comes my calcium, my magnesium, and



my zinc. It comes up in the plant. I'm going to put it into the fruits, into the nut, into the seed, into the tissue. I've dragged the glyphosate with me. So even though I've qualified as organic, I'm still pulling that in and Don will tell you that he can go out to any soil that's been sprayed with glyphosate and years later, he can tell you how many pounds have been sprayed on there.

Dr. Davidson: Because it's still there.

Dr. Lindsley: It's still there.

Dr. Lindsley: So there are humics and fulvics that tend to go in there and bind that, and speed that process up. But that being said, we need systems, like a water system for our house, that will actually go in and lower it down to parts per billion, versus parts per million. Because one of the big things we see today is the autism level going up. And I think that runs right along with... and everybody that was on the vaccination wagon, I think that is part of it. But if I have, as Don would say, one part in 10 million, of glyphosate coming in through your tissue and through your food, and I would say drinking water being an easy way to say this... and I just had my water tested, by the way.

I'm in a farming community and it showed for glyphosate, at a few parts per million. Which is concerning because I have little kids at home and they're very young. And if I have one part in 10 million coming in on my food or my water, that's enough to wipe out our bacteria in our gut system. And they call it the shikimate pathway, it's a much longer word but everyone says shikimate pathway. Big deal. What does that mean to us? What it means is that we actually have three amino acids that get blocked. They're called aromatic amino acids. So it's tryptophan, tyrosine, and phenylalanine.

So what do I do with those three? I make GABA, I make dopamine, and I make serotonin. 90%

of your serotonin is made in your gut. So here's what I'm doing, just to kind of play this out a little bit. I've got hidden Lyme all over. And these young kids, we know that it can come across the placental barrier, it can come into the tissue. A lot of babies today are born with Lyme, no doubt about it. Okay? It's in their brain, it's in their tissue. And then I start feeding them the Cheerios... or I shouldn't say any particular brand but I start feeding them cereals that have been sprayed.

Or I start feeding them foods that have been potentially sprayed with... or an oat, a wheat. Now it's coming in. It's coming in through the water supply and it's wiping out my daughter or my son's bacteria, and my gut system. Wiping out their aromatic amino acids and wiping out their ability to make the neurotransmitters. Every 30th child born today, autistic or spectrum. Why is that? It's because we actually have weakened the collagen wall on the gut, it has become part of that.

What do I leak through most often? I'm going to eat some cereal. I'm going to eat some wheat. I'm going to eat some oats. I'm going to eat some eggs. I'm going to eat some dairy. And what am I allergic to today? All these foods slip through as proteins, instead of single amino acids. And my body tags it and tags it, and eventually what happens? I become allergic to it and I react all over my body to it.

Dr. Davidson: Yeah, autoimmunity.

Dr. Lindsley: Exactly. That's it in a nutshell. Exactly.

Dr. Davidson: So then just for just for clarity, detoxing glyphosate is something that's going to take time because your body has to turn over the collagen to replace the glyphosate that's in where glycine is, with the actual amino acid that is supposed to be in there; glycine.



Dr. Lindsley: Right. So I think we need to just step back for a second and say, "How do we do this?" We have to protect the water as much as possible, we're 70% water, roughly, and then the food coming in. So I think we need to look long term at binders, like these HMETs, CellCore's HMET, or the biotoxin binder, or the foundation stuff. So, we have to do more of a long term detoxification there and protection. Growing up, I never heard of a probiotic. "Pro-by-who? Pro-by-what?" I'd never heard of probiotics and we didn't have the problems we have today. And if you just look around, everybody's on a probiotic today.

And I think that's the reason, is if we're wiping out our colonies of good bacteria, and literally the bad bacteria are using it as a fertilizer against us, it's almost impossible, long term, to really root the parasites out of our system or these bacteria that aren't supposed to be there, if we don't continually work on the actual side of the glyphosate. And that being said, it's going to take time, probably years, maybe decades, to really turn this around. But if we don't, we're just going to keep losing our young and our old actually too, to these neurological diseases that shouldn't be there.

Dr. Davidson: Glyphosate is basically a killer have our good bacteria.

Dr. Lindsley: Correct.

Dr. Davidson: And it feeds the bad bacteria.

Dr. Lindsley: Yeah.

Dr. Davidson: So you can take all the probiotics you want but until you remove what keeps killing all the good stuff, you kind of get a standstill.

Dr. Lindsley: Yeah, exactly what's happening. And I don't think people recognize that. They say, "Oh, I ate some yogurt today," or, "I took my probiotic

today," and if it's still coming back in, you cannot colonize. And that's why people are kind of stuck on probiotics today. Not that it's a bad thing but I think they're kind of stuck on the probiotic because they just can't colonize with that much glyphosate being there. And again, probably in a month, as Dr. Huber was saying, you can probably show nothing coming out in the urine or very little amounts.

But we need to reach a little bit deeper now because what my biggest concern is where Lyme hides the best is in your collagen, in your cartilage. It burrows in, across the blood brain barrier. It gets into the ligaments and tendons, and the joints outside the bloodstream. And that's where we're seeing the glyphosate load up there too. And it's this perfect storm that no one's talking about. We're seeing it. You know, we say, in these non-contact sports injuries, "Oh, you must have worked too hard. You actually used your body. You should have no hips at 55." That's just the most nonsensical thing I've ever heard in my life. But we're accepting it. It's this, you know, we've all drank the Kool Aid. And now we're all slowly being put in that thing, "Well, we're diagnosing it differently," or, "People are just wearing out today."

Dr. Davidson: Yeah, baloney.

Dr. Lindsley: Yeah, baloney. I mean, I grew up on a dairy farm and you want to see people work, the hardest working people in the world, these farmers, and it was morning, dusk till dawn movement, physical. And I look back to it, no, no injuries there. They were strong people, lived long and healthy lives. Now today, they're the first ones to go because they had the exposure to the chemical. They're out in the woods, they're eating the venison, and all the things.

And no one is seeing that because it's a level of craziness today. We have a chemical in our



system. We go in to our standard care system, healthcare system, which is not a healthcare system. And they grab another chemical and say, "Oh, you're depressed. Here, take a chemical." Well, treating a chemical with another chemical doesn't work. A chemical toxin on top of a potential chemical toxin is just craziness. But that's what we're seeing today as standard of care.

Dr. Davidson: Yeah. Wow. It just puts the pieces together so well. It just makes sense when you say it.

Dr. Lindsley: I've been looking for about 10 years now. I've seen, I'm going to say, about 5,000 patient visits a year for the last 15 years, so that'd be 75,000 patient visits. And Dr. Todd and I were talking earlier and it's like, all I do in the clinic is fix ligaments and fix tendons. And I'm like, "How is this possible?" So I figure, 75,000 patients, I've probably fixed a million ligaments in 15 years. It sounds crazy. But what I have said, okay, yes, Lyme was a part of this, and I can give them minerals and I would test and find small variations. But now, when I look at Anthony Samsel's work and Stephanie Seneff's work, and I say, "Wow," and I start testing, I really believe it to be true. And so we can reverse this and if we don't, I don't have a lot of hope for the human race.

Dr. Davidson: Wow. This is just amazing information. This is an interview that the listener is going to want to listen to multiple times. It just puts the pieces together.

Dr. Lindsley: Yes. I had my 'aha' moment and where does it come from? We'll just say it comes from God. Then, all of a sudden you just have this, "Aha," and you go, "Oh, my gosh, let me check that." And really, being a doctor today is really about connecting dots and putting pieces together. And that's what we try to do here, working with you and with Todd, and bringing this

together, and Don. Is trying to connect all these dots together of what's happening. And I feel really fortunate of my perspective. In my area, I'm one of the last generations to be raised on a small farm. They are gone.

In my township today, was 22,000 acres roughly, of land, 12,000 farmable, there's three farmers left. The rest of its being farmed by people that are doing... and we had a two or 300 acre farm. Now they're 4,000, 5,000 acres and I can tell you how they farm it now. It's not with manure from the cows and taking off the land and putting it back into the soil. They come out with their 30 year old planters and they spray the fields and they don't till it in, and then they spray again after it comes up out of the ground that far. So its chemical farmers, chemical fertilizers, and it's destroyed the flora on the ground.

The earth is a live organism and we've killed it. We've killed the small farm. We've killed the food. We have the cheapest food in the world in this country. We've spent, I believe I heard it was 1.7 trillion on food, and 3.7 trillion on medicine in this country. That's a problem, when you spend over twice as much on medicine, on healthcare as you do on what you put in your mouth, there's no way you're going to get ahead of that. And we can't afford to have, in 10 or 15 years, every other child born with autism. Who's going to pay for that? Dr. Donald would say, there's no civilization known today that could actually support that.

Dr. Davidson: Wow. I am sure glad I'm on your side. This is just amazing information. And I really want to thank you. Now, you still work with clients?

Dr. Lindsley: Still working with clients.

Dr. Davidson: You're quite busy.

Dr. Lindsley: Yeah, I like to have them in office,



it's much easier. This testing, it's nice to be one on one with somebody. I know a lot of people want to be treated remotely and that is possible. And I think as we put these pieces together, it's going to become more and more available to anywhere. As we teach this stuff that we'll be teaching, we can do that and have more success because we're putting more and more of the pieces together. And it just takes being in the trenches and seeing a few of these things happen, and putting these patterns together, and I literally connect the dots. That's all I'm doing is connecting dots. But if you can do that, I think we have a chance to turn this for the United States and for the world.

Dr. Davidson: Awesome. What's your clinic website?

Dr. Lindsley: Lindsleychiropractic.com, I believe.

Dr. Davidson: Lindsleychiropractic.com.

Dr. Lindsley: You asked me the tough questions at the end, didn't you?

Dr. Davidson: Yeah. If you're a practitioner and want training specifically from Dr. Allan, and understand the intricacies, obviously that...

Dr. Lindsley: Come to ECO.

Dr. Davidson: Yeah, yeah. Come to ECO, Exponential Clinical Outcomes. But you can go to cellcorebiosciences.com. If you are just a member of the public, you can check out microbeformulas.com, where he's got his formulas on there as well. So, thank you so much, Dr. Allan.

Dr. Lindsley: Great to see you again, Jay.

Dr. Davidson: Just an awesome interview. Definitely re-listen to this and share this with someone you know, especially those that are farmers. Get this message out there because it's going to change the world.



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