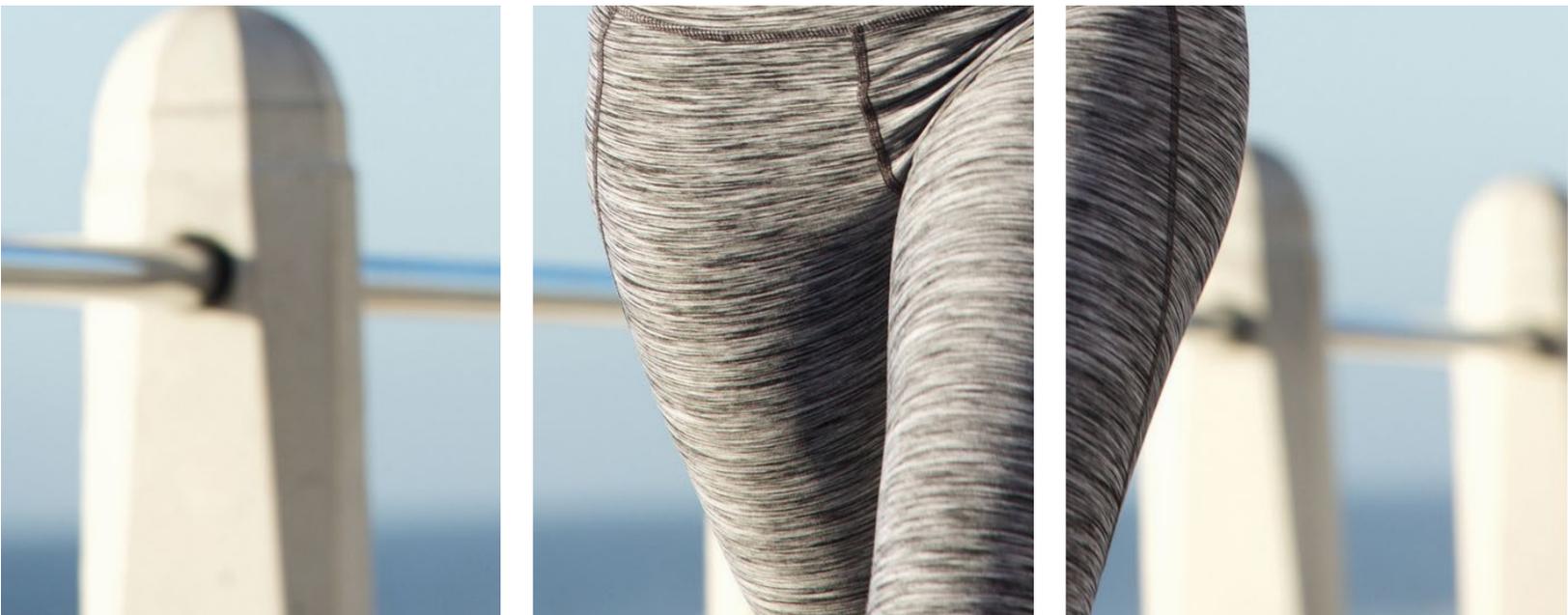


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Switch Off the Cell Danger Response

Niki Gratrix, BA, Dip ION, NANP

Dr. Davidson: Hello, this is Dr. Jay Davidson from DrJayDavidson.com. Thank you for joining me on The Mitochondrial Summit. My guest is Niki Gratrix and we're exploring how to switch off the cell danger response by stimulating the vagus nerve.

But before we do, a little bit about Niki. Niki is an award-winning nutritional therapist, functional medicine practitioner, and transformation coach helping people to optimize energy. In 2005, she co-founded one of the largest mind/body clinics in integrative medicine in the U.K. The results with patients at the clinic were published as a preliminary study in 2012 in the British medical journal *Open*.

In August of 2015, she hosted the largest ever free online health summit on overcoming fatigue interviewing 29 world-leading experts on optimizing energy with over 30,000 attendees. So amazing. Since 2015, she's spoken on over 40 large online health summits reaching over a million people worldwide. Love it! Niki, welcome to The Mitochondrial Summit!

Niki: Thank you so much for having me, Jay. It's a super exciting and important topic so very good.

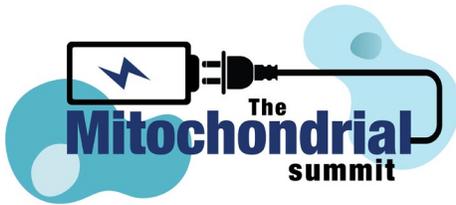
Dr. Davidson: Yes, I'm super excited to hear the cell danger response. Maybe we can dive right in there. First on defining that, what is the cell danger response or CDR?

Niki: Well, it's really important, especially as it relates to mitochondria because most people do have some understanding of the mitochondria are the engines, the power plant of the cell. And most people have that understanding. It produces something called ATP, which is the energy currency of the body, if you like.

But what recent research is showing—and this is the work of Dr. Robert Napor who is a hero of mine and a major researcher in the area. He's really the one who's popularized the term, "cell danger response." We've learned that the mitochondria don't just do this energy production role. They have a major role in cell defense.

So when under threat, the mitochondria switch from being a power plant into a battleship, if you like, with major health implications. So when we talk about the cell danger response, it's very much centered around the function of mitochondria. And in response to a threat, the mitochondria switch from normal functioning into specialized functioning to fight off whatever the threat may be.

And I use an analogy of London, London City during The Blitz, during the Second World War. So during The Blitz and the Second World War, basically the whole city was in lockdown. And there's all kinds of changes that take place that include things like rationing energy. And some of the things that are happening are exactly the



same things that are happening at the cell level.

So some of the changes that we see in London during The Blitz, for example, so you have rationed food. Everybody starts to live down in the tubes like the London Underground Tubes. And we would make sure that the enemy, if you like, didn't get our resources. So this is what happens at the cell level.

So the cell danger response involves things like less production of ATP, partly so that the energy, which might be a bug or a virus can't access that and use it against us. Okay. Things like the cell membranes were thickened in the cell danger response for two things, keeping the energy out, but also providing the defense mechanism so we stop bugs coming in.

And all kinds of things where essentially that the huge thing happening is that we have less energy. And that's why in most chronic complex illnesses, one of the most stated symptoms in medical records is fatigue. And when we have mitochondrial dysfunction, this post-exertional fatigue, fatigue is very much the cause in all symptoms of mitochondrial dysfunction.

So these are the changes that we see. It's all part of self-protection, but it obviously has major implications, especially for illnesses like chronic fatigue syndrome where we've done a lot of research in the area that it's related to post-exertional fatigue.

And that is literally the cell, through protection, shutting things down and turning from a power plant into a battleship, essentially, with all the side effects and the things that we would experience with chronic complex illness, essentially.

But what's very important about the cell danger response, as well, is that it may have been triggered by something. It can be triggered by the usual suspects. It can be by a physical stress,

a psychological stress, chemicals, bugs, viruses, electrical or electromagnetic stress.

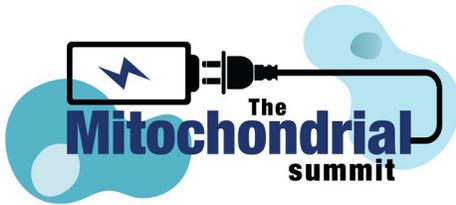
But the key thing is when we get stuck there, so when the cell danger response gets stuck in defense mode, rather than normal energy production mode, this is where the onset of chronic complex illness really starts, and proliferates, and continues, and is perpetuated.

So one of the things we can think about when we talk about the cell danger response, it suggests to us that ask not what caused your illness, because often the triggers are well gone, but ask what is still blocking you from healing? So quite often, something that triggered the cell danger response like a chemical, is now cleared out.

But it's when we get stuck, when the mitochondria are still stuck in this cell danger response, and for various reasons, the healing stop taking place. And that's when symptoms become chronic. So we want to unblock the healing process. And we could talk more about that in the context, also, of how this links maybe to the vagus nerve, as well.

Dr. Davidson: That is awesome! It's such a great description. So I'm immediately thinking, based on your cell danger response of energy factory to switching to battleship, a good example is if somebody gets a, "flu," they usually get very tired. And it's like, "Get your rest." Is that essentially because the mitochondria's switched from ATP production to, boom, cell danger response, and energy production is essentially shut down, and now we've went into more of the immune system mode?

Niki: Exactly that. So the resources that were originally for energy production get siphoned to antiviral, antibacterial, and inflammatory responses. We've only got so much resources in the body. And literally, those resources that were just there when we're generally healthy, and we're not under stress, and we're safe, and



there's no bugs around, then we can fully express in that way, as soon as there is a bug there or there's some kind of trigger, the resources are siphoned into literally the nutrients, the molecules are switched away from ATP into things like an antiviral pathway. Exactly that. And that's why we get incredibly tired when...Well, it's one of the reasons why people get very tired when they have the flu, as you say.

Dr. Davidson: That makes sense. And then if somebody has a chronic infection, bacterial, viral, parasitic, or something, that could then put them chronically into this state, which is probably why it's so common to have fatigue and energy issues when you have chronic illness?

Niki: Exactly that. So this is, it's really profound. This is based on an area of systems biology, which is why, essentially, everything's connected to everything. So when you have poor mitochondrial function, that affects every other organ because you have mitochondria in practical every single cell so you're going to be more likely to have things like leaky gut. When the cell danger response becomes chronic, things like leaky gut, liver detoxification issues, these kinds of things slowing down.

And so it's all a knock on effect. And everything affects everything. So, yes, it's very much a systems approach. And it's very interesting when you're considering it from more of the metabolic health, rather than the old conventional medicine model, which is just one bug, kill the bug, and then you're healed. That's not how modern health and disease really works in the modern age in the types of illnesses that we see that are so common today.

Dr. Davidson: It makes a lot of sense. So where does the vagus nerve fit in? Because in my schooling, we were taught the vagus nerve is known as the wandering nerve that goes to every single organ in the body. So how does this

fit in with the mitochondria and the cell danger response?

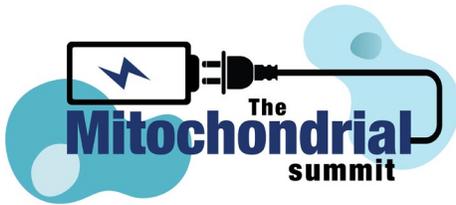
Niki: Well, what's really fascinating, this is so interesting, is that the stages of the cell danger response appear to be matched by equivalent changes in the vagus nerve expression. So there's the work of an eminent psychiatrist called Dr. Stephen Porges who helps a lot of psychology practitioners and helps people with the understanding of the impact of trauma. And so just bear with me because I'll connect this in.

So it turns out most people realize we have the fight/flight response where we have the sympathetic side of the autonomic nervous system that gets triggered by a stressor, fear, and it can be any kind of threat like a bug again, or a chemical. So we can have this fight/flight response, which is the sympathetic side of the autonomic nervous system.

The other side is the parasympathetic vagal nerve side, which is the rest, digest, detoxify side. And so we all think the vagus nerve, we want to stimulate the vagus nerve because that's the rest, digest, detox, or our healing side. But it turns out the vagus nerve actually has two sides to it, as well. This is Porges' theory that Dr. Robert Napior has tied into the cell danger response.

The two sides of the vagus nerve is the ventral and the dorsal. So what we see in trauma is we don't just see people who've had trauma in a fight/flight response all the time. There's also freeze response. Now if you speak to trauma specialists, they'll say, "There's this freeze response. My clients aren't in fight-or-flight, they're in a collapse mode. Almost like a hibernation like shut down like playing dead, exactly like playing dead.

And what Porges did was said, "This is actually the dorsal part of the vagus nerve, which kicks in." Just like when we see animals playing dead, it's a response to threat again. Okay. So the response



to threat is either fight/flight. But if we can't do that, we collapse and we play dead. So it's almost like there's a hierarchy of responses. If we can't fight, we can't fly away, we can't run away, so we play dead. And that's the dorsal side of the vagus nerve.

And amazing, what Napior actually has done is connected in and said, "This seems to be reflected in the cell danger response, as well. There's a stage in the cell danger response where there's a stress response, but then it's also possible for the cell danger response to create a type of hibernation response. And it's reflecting what's happening in the vagus nerve.

So essentially, everything's connected. And what's happening at the cell level is happening at the nervous system level. And I'm just going to use the example of chronic fatigue because that's the area where we have post-exertional fatigue. That is an idea where the mitochondria have gone into what we call a dauer response, which is they've gone into hibernation as a defense mode for playing dead.

And usually, you can correlate that with a vagus nerve that is docily stimulated in a free state. So the point being, we now have the understanding about how psychology plays into mitochondrial function. Essentially, when we think about the stress response, we now have a much bigger picture of understanding stress isn't just about a cortisol response, it's reflected at the vagus nerve level. And that gets translated, it's the cellular level.

So the stress response is now a vagus nerve which wants you to go into fight/flight or it might go into the collapse mode. And then it's just mirrored by what's happening in the mitochondria, as well. So the mitochondria's listening to the vagus nerve.

Now when we talk about the vagus nerve, it's connecting into the brain and it's the

communication between the brain and the cells. So the upshots of all this—so what does that mean for people? —is that when you stimulate the ventral part of the vagus nerve, it tells the cell's danger response, "Everything's okay, you can heal now. It's a fundamental part of healing.

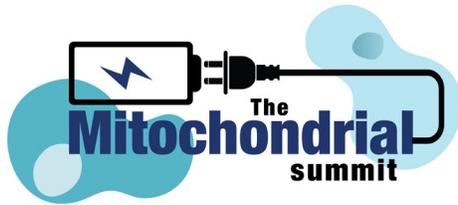
And it's the part that gets switched off when the cell danger response is in full whack, the vagal tone is down and there's a low heart rate variability, which is the test of vagal tone. And so that's when the whole system is either in freeze or stress mode and basically, you're in chronic illness and you don't have energy, and so on.

So one of the key things, how do we reverse the cell danger response? Because of this connection with the vagus nerve, there's a few different things we can do. One is we'll talk about what are the practical ways you can simulate the ventral side of the vagus nerve? We want to shut off the fight/flight response and get out of the dorsal side, which is the collapse side. And we want the ventral side.

The ventral part of the vagus nerve is where we feel good. We feel happy. We feel socially connected. We feel uplifted. We're in a state of well-being. And that literally will get reflected at the cellular level. So the mitochondria's like listening. It's amazing thing to consider. So that's part of it. There's a couple of other things, as well.

Sleep is medicine, circadian rhythm management is medicine, and exercise and the correct pacing, and obviously food, this is all medicine for the cell danger response for the mitochondria to help it reset itself and reprogram itself back into normality. I hope that made sense? It's a little bit of a complex area, but.

Dr. Davidson: Yeah, just see if I'm connecting the dots properly. So if somebody has, let's say they have a chronic stressor, a chronic infection, that their mitochondria switches from ATP production



to the battleship lock down immune system mode, then does that then switch the vagus nerve into the dorsal part, which is essential that playing dead, collapstation, hibernation type mode? So you're saying that the mitochondria then dictates what happens with the vagus nerve in switching that off? And then those work in synergy where you stay stuck in that mode?

Niki: It's probably bi-directional, the relationship between the vagus nerve. See everything affects everything. And it's a bi-directional relationship. So definitely mitochondria speaking to the vagus nerve and the vagus nerve is also speaking to the mitochondria. And the thing that's particularly interesting about the vagus nerve, there's been some stunning research papers done on what happens when you stimulate the vagus nerves?

And there's been experiments where they, they actually did an electrical implant and stimulated the vagus nerve in people with extreme, very severe autoimmune. It was arthritis. The patient was cured in eight weeks. Completely back to normal just with a vagus nerve stimulator. Then they replicated that with an external, not implanted, not a surgical procedure just an external electrical stimulating device. And they've cured fibromyalgia, they've cured depression with this stimulation, vagus nerve stimulation.

And FDA approval for vagus nerve stimulation are a whole range of issues now, whether it's epilepsy, lots of different major chronic complex illnesses like that. So that's how I got interested in this work because I was seeing these amazing results from stimulating the vagus nerve. And I didn't realize how that is directly connected with the CDR and mitochondria, as well, and how you're switching off the cell danger response and helping that healing process so that the mitochondria normalizes again.

And the good news is there's tons of ways to stimulate the vagus nerves that is not using a

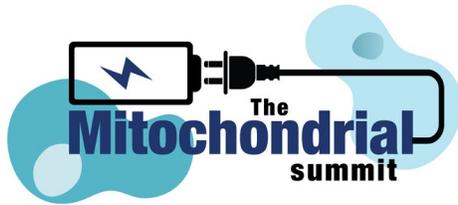
device. And I know we're going to get questions. There's isn't a specific device on the market yet that I would personally recommend that has been tested enough and clinically validated, but they're coming out some of the very expensive. The more clinical data there is behind it, the more expensive, in the thousands. But you'll see more and more of these devices coming out in the marketplace.

But the good news is anything that raises heart rate variability, that increases vagal tone. So this is where it just reinforces how important it is for some of these lifestyle aspects that you can stimulate your vagus nerve every day by having a lifestyle that includes things like meditation, loving, kindness meditation, positive social relations. Exercise if you do it, definitely raises heart rate variability and stimulates the vagus nerve. There're about 40 different things—qigong, yoga, a little bit of fasting does it, as well, so do green vegetable juices, and beets, not too many for the sugar side.

But anything that raises heart rate variability, we need to send these messages to the brain. We need the brain to get the message that it's safe now. That you feel safe. That's the key takeaway. When we feel safe, and calm, and okay, and whatever that may be that we need to create that emotional state, the vagus nerve is the communicator between the brain and what's going on at the cell level.

So this also explains why psychological trauma, early life stress, yeah, especially early childhood stress, the communication is the brain via the vagus nerve and then it's speaking to the mitochondria. And then you get it, it's bi-directional. And you have these knock on effects. So this is why the quality of our social relations, our psychological state is so very important. And that these states need to be cultivated.

So if we don't cultivate joy, if we don't cultivate



meditation time, if we don't cultivate things that raise vagal tone on a daily basis, that's all going to prolong...It's a core part of the healing is that we do those things that stimulate the vagus nerve. And by the way, the vagus nerve, when you stimulate it, it switches off inflammation. The vagus nerve is in charge of doing that.

And what they found is that's why they were able to cure the arthritis client, for example, where they just gave the electrical stimulator. But it turns out, the vagus nerve tells the immune cells, "It's fine, we don't need you to keep creating all this inflammation. Like calm down." But when the communication gets blocked and the vagus nerve isn't being heard, because it's in dorsal state, the information's crazy. So we want to cultivate, not only for healing, but also prevention of daily processes.

And I get my clients to, first thing in the morning, to have like maybe three or four things they do. Gratitude journaling is a great thing. Essential oils increase heart rate variability. Like use everything, sunlight, time in nature, water therapy, these are all nice things to do. But we need to be even more aware about these are practical things that don't cost very much. And they are resetting the nervous system. And that also just helps you beware if you have unresolved trauma that's keeping you in a state of stress.

If you have PTSD, you get the help you need to resolve that because when you don't, your mitochondria are in a stress mode. And it's called the cell danger response. And they are responding to that, as well. Your cells are listening. And the vagus nerve is the communication between the brain and the cell. So we have a much bigger picture now of what we mean by stress response. Right? That makes sense?

Dr. Davidson: Wow! Yeah, it connects so many dots.

Niki: It does.

Dr. Davidson: It simply just makes sense. So do you believe the future then is that there's going to be more of these "maybe some type of stimulator devices that can then trigger that..." Is it the dorsal side of the vagus nerve that's good?

Niki: It's the ventral we want.

Dr. Davidson: Ventral, ventral. Ventral's the good. Dorsal is the hibernation side.

Niki: Yes--

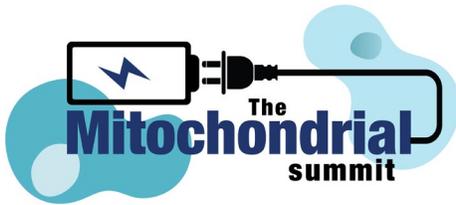
Dr. Davidson: Okay.

Niki: That's exactly right. And there will be more devices due to come out. There's one they're trying to get FDA approval from, it was actually Dr. Norman Doidge talked about it. I think it's called the PONS device. And it's having amazing results with various people who are pretty severely ill. And it's either his first or his second book, Dr. Norman Doidge, who's the brilliant neuroscientist researcher.

And, yeah, they were reversing MS with that. So they literally switch off the inflammation. And it's a device where you actually place a plate on the tongue. And the tongue is stimulating vagus nerve. And that is actually how it works.

Dr. Davidson: Interesting.

Niki: Yes, it's very interesting. But it's putting the fire out in the brain. It's calming both sides of the brain so you get in to a healing state. And then that literally does get translated. It switches off the information. And then see everything is connected in the body. You just can't isolate one area. But I think the beauty of this work is it's the first time with Dr. Robert Napior work where he brought in Stephen Porges, he's a psychiatrist who works with the psychology side, into with the



mitochondria work. And it's like, "Wow!"

So that's true systems biology. It's truly a holistic approach. But we now understand how that works. People have known that things like meditation, obviously, changes the epigenetics for the good side, but people didn't know that it actually is directly speaking to the mitochondria, as well. And people didn't realize the mitochondria have this role to play, which is way beyond just energy production and that it, also, can create the defense response, as well. But we could, also, if we have time can talk about a few of the other practical things people can do to get out of the cell danger response, as well.

Dr. Davidson: Yeah, yeah. First, just for clarification, so we've got sympathetic versus parasympathetic. Sympathetic, the fight or flight, I'm going to either run from the bear or fight the bear. Parasympathetic often gets like you said the rest, digest, like typically, that's why we want to sit down, calm our body down before we eat so we can get in the parasympathetic mode.

But you said, essentially, it goes deeper, that the parasympathetic splits off. And it's not just being parasympathetic, but it's actually being ventral portion of the parasympathetic that you want to stimulate. And is that ventral then side, that's more keyed in with the rest, digest, and healing more than the dorsal?

Niki: Yes, so Stephen Porges' theory, it's actually called Polyvagal Theory meaning we all thought the vagus nerve is like one thing. No, it's poly. It's two things, the ventral and the dorsal side. And it literally is different. Like one of the parts that the ventral side, I believe is myelinated. The dorsal side is not. They start in different areas. And they end in different areas. They almost really are two most different nerves.

Dr. Davidson: Wow!

Niki: Yes, and that's Porges' work. And it helped all of us psychology practitioners understand how somebody, they're traumatized, but they're not in fight/flight. They're not in sympathetic. Oh, they are in parasympathetic, but they're in the wrong side. They're in the collapsed side, which is the dorsal side, which is the play dead mode, which then switches everything else off. And then the vagus nerve isn't doing its anti-inflammatory job or all the other things that it does that makes us feel good.

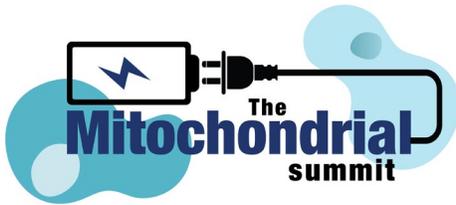
And I know that's quite a lot for people to take on, to know about. But, yes, Polyvagal Theory, that's all it means is there's two sides to the vagus nerve. And the ventral side is the good side, thus we ought to stimulate that. When there's high vagal tone, that means we're in rest, digest, detoxify, healing state.

I think it explains people who are in depression, as well. So someone is traumatized and they've gone into depression mode, they're not in fight/flight. You look at the statistics and you look at the autonomic nervous system, they're not overstimulated on the sympathetic side. They're actually in collapse mode.

And it was Porges who came along and said, "I think that's because they're actually in the dorsal dominant state of the parasympathetic side. So it's an important clarification which has now been applied to the cell danger response, as well, which is Napior being ahead of his time there, I think.

Dr. Davidson: Yeah, I love that. So what are some other things that you would recommend for the listener here as we wrap the interview up, Niki, on just their brilliance? I not only love your accent, you have such a great heart and spirit. And I just love listening to you. And obviously, you're just so knowledgeable. So I'm really enjoying this.

Niki: Well, thank you, thank you, I hope it's useful to people. That's the main thing. Yes, so what are



some other things that are really foundational that people can practically do to help support the mitochondria switch back into normal energy production?

So some really key things is the circadian rhythm management and the quality of sleep, it's so important. Getting the rhythm back so that the cell actually...It's at night when we sleep when this process of autophagy takes place, which is essentially where the body cleans up dead proteins, and old proteins, and cleans them up, chucks them out, and make sure that we're living off healthy proteins.

When we block autophagy, you're living off yesterday's proteins. So we need sleep to help the CDR response, to help it switch back, and reprogram itself, and rebuild cells, healthy cells again that aren't damaged, that aren't out of what. So sleep's really important.

And here's some tips to really help people get really good sleep. I think people may have heard of it or maybe not, but there's certain practical things that you can do to help this. So one thing is when it gets dark, make sure that you're switching all your...Ideally, you have all your bulbs, your lightbulbs to orange. If people in your family don't like that, get your blue-blocking light glasses going. You can buy them for ten bucks at Amazon right. Wear them when dusks start.

I've had people who had insomnia that cured their insomnia just with blue-blocking glasses. They were looking at their iPads, and iPhones, and all the rest of it, which is all blue light. That blue light literally goes into the brain. It's speaking to the hypothalamus, which is then saying, "Oh, it's daylight." No, we want to start retraining the brain to say, "No, we need to calm down. It's going into nighttime." So we want to block the blue when it gets dark.

So use your blue-blocking glasses. But timing of

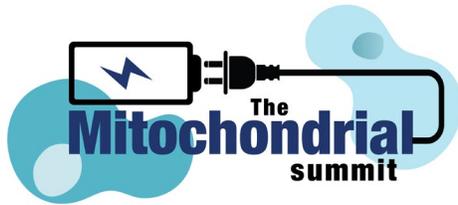
food is critical to this. Ideally, try to not eat about three hours before bed time. So as soon as you eat food too late, too close before bed, the body is looking at that and taking it as a single of, "Oh, it must be daytime because we're still processing food." It's basically temperature, activity, light, and...There's four of them. I'll think of the fourth one in a minute. Light, temperature, activity, and food timing, that's the four. Okay.

So three hours before bed, avoid eating. Light, first thing in the morning, get bright sunlight. So that's telling the brain to switch everything on. And literally, when the hypothalamus gets that message, it's actually going through the optic nerves in the eye. And its real thought that there's another nerve that takes this light information and works on the circadian rhythm.

And we have clock genes. So our hormones switch on in response to these light signals, these temperature signals. So literally, if we don't get that like get it nailed, if you like, so bright sunlight first thing in the morning, first 30 minutes on waking up.

If you don't live in a sunny climate, you can get these SAD lamps from Amazon that's pretty affordable. Ten thousand lux is about right. And you can literally just be doing other things, but shine it about six inches away. The light is coming into the eyes. You're getting the message. It's like a shot of caffeine without doing the caffeine. It's great. And you can micro dose it through the day, as well.

Do your activity earlier in the morning. Get outside and get as much sunlight as you can. Don't wear the blue-blocking glasses during the day. I'm hearing people who are getting these glasses and they're saying, "Oh, my prescription glasses are all blue-blocking." I'm like, "No, we want the blue light during the day. That's important. It's antidepressant, its mood lifting, it's the right message. It's only at night when we



switch off you want complete darkness during the night.

And I know this is different for different people, but I say to people try and go to bed towards...if you are trying to recover from an illness, get into bed earlier towards like nine to nine-thirty. Some people are going to have a little bit of a different biological clock slightly, but most of us, it'll do you really well to go to bed earlier, nine to nine-thirty. And if you're worried about, "Oh, I'm going to lose productivity because I work until midnight," is really bad if you're doing that. You'll be more productive in the morning by going to bed earlier.

So I think that's about five or six things that manage circadian rhythm. But remember the body, everything's connected, everything's speaking to each other, everything's monitoring what's happening. Your mitochondria's watching. So we want to maximize your sleep. Sleep is the restorative time. The brain cleans out the toxins when we sleep, the lymphatic cells. Like the cells of the brain opens up. The debris' cleaned out at night, but only do it when you have good sleep. So sleep is absolutely fundamental to help reverse cell danger response.

I've mentioned activity. Temperature should be cooler at night, warmer during the day, as well. So we want to make sure that the bedroom is completely dark and that we're cool. So in terms of activity, just the pacing side. I think this is more important for people on the bit of the post exertional fatigue side of things. Pacing's really important.

So if you are in boom and bust, like you're doing so much work activity, whether that could be emotional or physical and you're in the boom and bust, meaning you push yourself and then you collapse, that is prolonging the mitochondrial dysfunction. So the pacing's important.

Some people don't really have that issue,

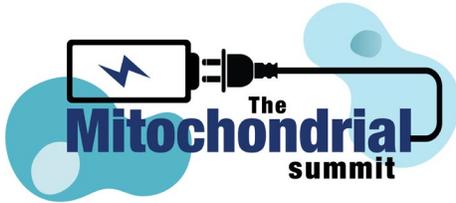
specifically. But if you do have the kind of post exertional fatigue piece, pacing is a fundamental requirement. And if you are constantly overdoing it, you will be doing damage at the mitochondrial level if you're overdoing it and don't do nothing, either because then you've got...

It's a balance. There's a sweet spot. There's a sweet spot. Don't do too much, but don't do nothing, either, because we actually need a bit of hormesis. We need a bit of stressor to keep the mitochondria functioning and adapting to increased demands. Just like when we do weight training, the mitochondria adjust. The same. You need to give them a bit of stress. It's only when we give too much. And then it prolongs it. So there's a sweet spot. So get your activities in balance, as well. And there's no external prescription. It's listening to your own body.

So if my body is going in to stress and I'm going into post-exertional fatigue after an amount of activity, that's your signal it was too much. And if you're pacing good, you're doing plenty of activity, and you're not getting post-exertional fatigue, every now and again bounce the boundary. Do a little bit more and you go, "Oh, I can do this now. I can do a little bit more." And then you edge up and you start doing more.

So I'm always careful about exercise when we're speaking about it to people who may have some kind of illness going on because, although exercise is great and it's one of these major factors, obviously, in the healing state of a mitochondrial dysfunction, you got to play it a little more careful.

Dr. Davidson: Totally, awesome. I'm also thinking about what you said that if you eat late at night, then it's triggering your body that it's daytime. That maybe if you are jumping time zones that maybe intermittent fasting in earlier in the day is not good, that if you're skipping time zones or what not, and that's all off, you actually want to eat earlier to then trigger that it is daylight,



potentially. Have you thought about that with the different time zones?

Niki: Yes. So there's things you can do to really speed up re-regulating the body into the local time zone. So I would get into as much as you can. If you're wide awake, but it's dark outside, don't turn all of the white lights on and all the blue lights on. So it really makes a difference, as well, to connect directly to the earth barefoot in the local time zone. So there's definitely an electromagnetic process going on there when your feet is directly connected to the earth.

So yes, I do all of those things that...If you think about temperature, light, your activity levels, and the food timing, and connecting to the earth in your local time zone, you speed up how quickly your body suddenly goes, "Oh, we've changed time zones." And you'll climatize much more quickly. Yes, people don't realize you can actually hardly have any jet lag if you do that and quickly adapt. So yeah, it's good to know when it comes to the circadian rhythm. If you know about that, you can actually overcome jetlag.

Dr. Davidson: Awesome! You're just so knowledgeable. I want to thank you for coming on the summit and dropping your knowledge bombs. It's going to help so much for the listener to help connect the dots of...Because we've known that a lot of these things are beneficial, but to understand at another level, I think is just going to help us so much.

Niki: I hope so. Yeah, it's a bit of a complex area of systems biology. But it's so valuable. It's an amazing, new, expanded awareness that we have with this connection between the nervous system, and what's going on at the cell level, and what's going on psychologically, as well. So it's all connected. And the good news is it's reversible if you know what the right things to do. So it's good.

Dr. Davidson: There is hope. Well, thank you for listening to The Mitochondrial Summit. Make sure to share this interview with your friends and family and also consider adding this summit to your library by clicking the order button. And don't forget to visit Niki Gratrix at NikiGratrix.com. Maximum blessings. This is Dr. Jay Davidson.



Toxic Mold and Your Mitochondria

Bridgit Danner, LAc, FDNP

Dr. Davidson: Hi, this is Dr. Jay Davidson from DrJayDavidson.com. Thank you for joining me on The Mitochondrial Summit. My guest is Bridgit Danner. And we're going to explore toxic mold and mitochondria. But before we do, a little bit about Bridgit. Bridgit Danner has been a licensed acupuncturist since 2004, a certified-functional diagnostic practitioner since 2015. She has given over 12,000 treatments in her career. Her interest in natural health grew from a concern in protecting the environment.

As a child, she was donating her allowance to Greenpeace and writing cosmetic companies to ask about their practicing, which just shows where her heart is. While busy running Integrative Wellness Center, she developed an environmental illness due to toxic mold in her home.

Already experienced in hormone management and nutrition, she became acutely aware of the powerful impact of the environment on her health. She now focuses on online education about detox at BridgitDanner.com where she also offers functional lab testing and specialized supplements. Bridgit, welcome to The Mitochondrial Summit!

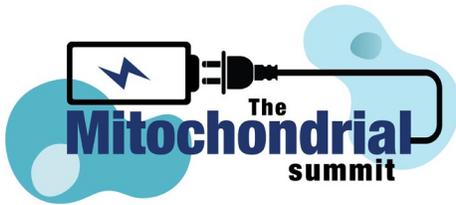
Bridgit: Well, thank you, for including me, Jay. I think mitochondria is such an important topic. So I was just very excited to get involved in this cause.

Dr. Davidson: Yeah, well it's a topic I think we're all learning the importance and how things really connect. It's a lot of times through our own experience, like you said in your bio, you're a specialist in hormones and nutrition. And then all of a sudden, you got exposed to mold. And it's like you were basically forced to become an expert in that to get well yourself. Diving into mold, what is toxic mold? Describe that for us.

Bridgit: Yeah, toxic mold has been around a long time, although some people are just being introduced to the concept. Now there's many types of mold. And many of them are not harmful to our health, but some are. They can be in foods we eat like grains, and rotten fruit, that kind of a thing. But they can also be in our homes, the way we build our homes. What's interesting, Jay, is that some of what we do in our home is due to modern construction.

But actually, mold was even mentioned in the Old Testament about like scraping off this layer of unhealthy stuff and discarding it. And then in the veterinary field, this subject of mold and mycotoxin illness is really common because animals are eating this green feed often that can make them quite sick, and unable to reproduce, or is killing them. So these are things that we've been dealing with culturally for many years.

Just to name off a few names of the types of mold that are toxic just to list a few of the more



common ones are aspergillus, penicillium, stachybotrys, fusarium. What really makes you sick is not the mold itself, although the presence of mold is needed to make the next thing which is these mycotoxins. So some of the names you may have heard are aflatoxin, ochratoxin, trichothecenes, gliotoxin.

So there's a lot of different names, and species, and stuff. You don't have to memorize all that, but having some awareness of where molds could be present in your home, in your workplace, in your food supply. And then learning a little bit about symptoms can let you know could there be any tie-in here with my own health and my own energy levels as we get to talk about mitochondria today.

Dr. Davidson: Awesome! Yeah, mold's such an important topic. I see it that the idea of, "Oh, yeah, I had my house checked a few years ago for mold." But in reality, mold could surface at any time because you could develop a leak, or some water overflowing, or water infiltration somewhere and not even realize it. And now all of a sudden, you have an issue when you ruled it out previously. Was that at all like in your history?

Bridgit: Ah, no, when we checked out house, it was full of mold so it wasn't like an old thing came back. But one thing interesting that I have found in the last couple of years is some people are testing their bodies for mold and have mold present or mycotoxins present. And they don't know even where it came from. So sometimes we know, "I get sick when I'm in my apartment, I'm at work, whatever." For some of us, we don't even know when we were exposed, which is scary to me. So I didn't really know that was possible until I started seeing it in some of my clients.

Dr. Davidson: Is that where food sourcing of mold comes from?

Bridgit: Sometimes it's the food sourcing, yeah.

And then other times, it was somewhere that you were living or working. And you just weren't aware. It's not always so potent that you know right away. It's this chronic exposure is really the most dangerous. I was in my house for almost 10 years by the time we found mold.

Dr. Davidson: Wow!

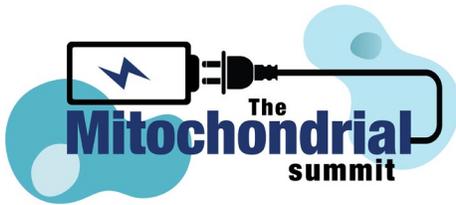
Bridgit: Yeah, it's a long time. So let's just say hypothetically we had moved out of that house a couple of years sooner or we never knew about the mold, I wasn't one of those people. I didn't know we had a mold problem. So I think that's possible, as well, to just not even know where it came from.

Dr. Davidson: In your household with your own story, being in the house for 10 years, was it just yourself that ended up with symptoms? Did anybody else in the household have them?

Bridgit: So I was the sickest, for sure, and for the longest. But when we had the question come up, "Should we check for mold?" My husband was very suspicious of it just because of some things in our house. And as he started to learn about it and we got more exposed through our remediation, which we can talk about, he was definitely like, "I'm affected by this, too. This kind of explains why I need five cups of coffee a day. And like I'm so tired."

So and my son, luckily, was seemingly unaffected. We did test his urine later. And he did have some mycotoxins present in his body. Does it maybe make him more fidgety? Maybe. He's also 10, they're fidgety. It's hard to say. But kids can have ADHD as a symptom of mold. There's a wide spectrum of symptoms and manifestations.

But mostly, my son seemed to be okay. We never did the genetics test for the three of us. But it could be that he has better genes for it. Or it could just be that he's younger and just has a healthier system still.



Dr. Davidson: Interesting. So what do you see being major symptoms that might be a red flag for the listener because you're like, "Oh, my son's ten and he's fidgety, but ten year olds are." I'm like thinking of my daughter like, "Yes, let's work on spelling." And she's like sits down for half a second and she goes and runs around. And you're like, "Just sit down for a second, would you?" And I don't think we have mold. So I'm thinking obviously it might be challenging to identify that just with kid behavior, but.

Bridgit: Yeah, and as you know, you have so many symptoms overlap. So I'm going to tell you what I experienced and I'll tell you some other group of things that I didn't experience that I do hear about. So, for me, honestly, I think, really the first thing for me was just my immune system not working well, getting sick a lot. I had pink eye. I had Epstein-Barr. I was just sick a lot.

And then I got again really, I got strep throat. Closer to when I got diagnosed, I got strep throat. I didn't recover well. And then I really hit this extreme fatigue. Just really tired. And this was another, what I would say is a clue, like if you're eating well, you're going to be on time, you're doing yoga, you're doing all the things that you're supposed to do, and you're just bone tired, or sick all the time, or whatever, something else is going on.

And that's, I think, often is a toxin. If they're just like, "We can't figure this out," I often think that's a toxin. Insomnia for a long time. When I got the sickest, really horrible short-term recall, like horrific. For years, I was also dealing with digestive issues, hormonal imbalance. And then again, as I got sicker, when we opened up our home, muscles twitching, like my eyelids just spontaneously twitching, more asthma.

And then I became so tired, Jay, like so completely exhausted, I just started to not want to wake up in the morning, which is a scary thing to start

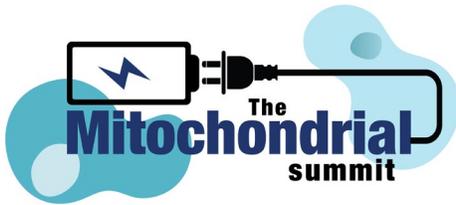
thinking. And it really was physical. I was just so tired on the cellular level that we'll talk about. Just the idea of like having to get up and having to do it all over again was pretty depressing. So luckily, we got out of that stage. I recovered my health, for the most part. But those are some things that I experienced.

Some other things that happened are rapid weight gain, muscle wasting, and complete loss of motor function. People end up in a wheelchair and don't know why. Different psychiatric diseases are linked to mold. Skin rashes, diabetes, blood sugar management, Parkinson's, MS, these are more diagnoses and symptoms, but it could be involved in cancer, heart disease. It's just such a big disruptor at the cellular level that it can go to a lot of different systems of the body.

Dr. Davidson: Did you struggle with brain fog? You mentioned memory recall, but I'm just...As soon as you said memory recall, I was thinking of my wife when we were exposed to mold ten plus years ago. And she was trying to study and she just couldn't remember anything. And there was definitely a lot of brain fog, though, too. So she was like the flashcard queen, we'd always call her. But it was hard for her to remember things. And that just brought me back because you said that symptom.

Bridgit: Yeah, at my worst, I was just in a fog all day, for sure. But something that really stood out to me that I don't deal with anymore is like I would have a thought. And then I would have to think it five more times to remember it. I could eventually remember it. Like if I was going to write an email and I'd be like, "Oh, wait, who was I going to write to?" And then I'd have to retrace my thoughts and be like, "Oh, yeah, I'm writing to Jay." And then I was like, "What am I writing?"

So I could do it, but it would just every time, it would take me like various repetitions to remember what I was about to do. And that was



pretty scary. You can push through a lot of that and function. We have to function. So it was just very slow going.

Dr. Davidson: Yeah, mold's such a scary thing, though, because it suppresses your immune system. So any underlying things in your body can potentially flare up and you can contract more things and just magnifies that situation. So you mentioned mitochondria. What's toxic mold or mold impact on our mitochondria?

Bridgit: Yeah, so this is really, really interesting. And you have a number of guests, I don't know how many have gone into the structure of the mitochondria, but mitochondria are within your cell. And they have their own DNA and their own membrane. But they're not very well protected. They don't have a great protection against outside toxins. So the toxins can come in and they have a whole list of what they can do.

So, first of all, is they hit the membrane. Toxins can disrupt that membrane's ability to transmit messages. It can become swollen. The nutrients can't get in. So that's a big deal. As you know from the detox world, that membrane needs to be healthy. And then they can get in past that membrane and disrupts what's called the cristae, the inner membrane, that are all like folded up, those can be disrupted and dysregulated.

The toxins can attach to it. It's called a DNA adduct, which can create further mutations like cancerous mutations. It can prevent the mitochondria from reproducing or reproducing in a healthy way. You don't want to reproduce mutations. First, it's going to affect the mitochondria's just ability to do its job, which is making ATP. So you can have less energy for that particular cell or whole body systems.

So if you're exposed to these toxins, and now your liver isn't working right, your brain isn't working right, it makes it a lot harder to overcome them.

I know that's something you address in your practice, Jay. And I think it's just how people feel, right. If you don't have the batteries, you don't have the energy to fight what's going on right when they need it the most. So it's a pretty scary situation.

A few more things that it does, it inhibits protein synthesis, RNA and DNA synthesis. It can create cell death. Let's see what else I have in my notes here. It creates oxidative stress, which is again the opposite of what you want. So someone's probably talking right here, the mitochondria create some oxidative waste products. So it's good to have antioxidants. But when you have toxins in the system, it's creating even more oxidative stress at exactly the wrong time you need it.

So it's quite a cascade of what happens with mitochondria with toxins. I think it's like one of like the top three things going on with mold is it's this interaction with the mitochondria. And yeah, again can make just so many diverse, different symptoms because potentially any cell in the body isn't getting enough energy, isn't reproducing this energy source correctly, etcetera.

Dr. Davidson: So summarizing a couple of the notes that you said, toxic mold negatively affects the ability for mitochondria to make ATP, and then it also affects its ability to make more mitochondria or more factories that make ATP, essentially.

Bridgit: Yes, yes, yeah.

Dr. Davidson: Okay. And then on the membrane, you were talking about it affecting the membrane. So if we look at like the human cell, you have a double fat-layer membrane, but then you have mitochondria inside the cell. That mitochondria have a membrane or a wall around it, as well, just like the cell does, too. Correct?

Bridgit: Yes, and that membrane can be



damaged. And then nutrients can't get it. I would imagine I have seen this written, but I imagine toxins can't get out correctly, either. And there's just different mutations can happen in the structure of the mitochondria, which again could potentially replicate. So people don't need to memorize all that, necessarily. But I think it helps to understand it a bit better. And, to me, as I learned some of this stuff when I was sick, I'm like, "Oh, yeah, this is like kind of how I feel. You know, I feel this, this drain to my body."

Dr. Davidson: So you just gave a sigh of relief to the listener that's got brain fog, "Okay, I don't have to memorize this. I just, I didn't hear that." So moving in to more practical things, if you will, less academic type stuff, what would you recommend if I'm suspecting that I might have mold in my home, where do I start? Do I test myself? Do I maybe test my home? Are there some distinctions or obvious things that may be considered first?

Bridgit: Yes. Do you mind if I say one last thing to that last question before we go?

Dr. Davidson: Oh, sure.

Bridgit: Okay. So I mentioned that I think that mold and mitochondria is one of the top dysregulators, the way it dysregulates the mitochondria. I just want to briefly mention the other couple. One is that mold is really a potent neurotoxin. And when the brain, just like the mitochondria directs so much, the brain directs so much, too.

So when the brain's affected, then the digestion can be affected. So many things can be influenced. And mold likes fat so it goes to the brain, which has a lot of fat. And this gets really a pretty scary thing. And as we talk about things to do for the body, it's important to keep in mind that mold... Well, I think, the neuroinflammatory effects of mold is something to give a lot of thought to and work on that system.

And then the last one that people know about mold that's heard of is just the chronic inflammatory response syndrome. So we talked about the brain, we talked about mitochondria, but just creating this chronic inflammation everywhere that can re-flare so easily is just an important mechanism to know about when it comes to toxic mold. And it's again, we have a hard time working against that mechanism. Once it turns on, it can be really slow. And you have to be very patient.

I still can get retriggered by things that I'm exposed to because I still haven't completely shut off that system for myself. And to be honest, I may never fully because of the way my brain was affected from 10 years of chronic exposure. So I'm just primed to react to things in my environment. Not to say I can't get a ton better, but just to also know that I may never get to a point where I can work until one in the morning or drink five glasses of wine.

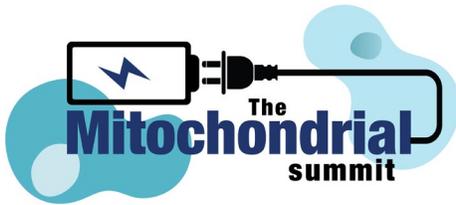
Like there are certain things that I think will always trigger me. And I'll always have to be conscious of that. I don't know if that's your wife experience or not. But yeah, I just wanted to mention those other mechanisms besides the mitochondrial effect.

Dr. Davidson: Well, 10 years is a long time.

Bridgit: Yeah.

Dr. Davidson: And my understanding of mold is that basically every exposure you have, your body heightens its reaction that it just had. So if you're continually exposed, your body continually reacts higher, and higher, and higher to more inflammatory type responses, more things that are going on with the body negatively.

So clearing the environment, pulling yourself away from it, or remedying the environment is one of those first steps to just let the body calm down. So I think time is an important factor in the healing journey, at least things that I've seen because my



wife definitely was real sensitive for a while.

When we were living in Wisconsin at the time, she wouldn't even go into this natural health food store because they had, and you could smell it, they had mold issues. They had a leaky roof. So she'd go in there. And she'd be like brain fogged for the next two days. And so I'd run in there quick. Grab some items that we need. Come back in the car. And we'd go on to the next type of grocery store.

But what I've seen over time now, as time's definitely, it's been probably five years even since that, she's less reactive. So we can jump on a shuttle in the Orlando airport. And there's one specifically that, we'd get in there, it's like, oh, man, just horrible mold. And she doesn't feel great, but she bounces back within like 10 minutes, where before, it would probably knock her down for a week. You know what I mean? So...

Bridgit: Yeah. And I want to specify, too, it's not just the mold that can knock me down. It's other things, as well, I'm sure you're discussing. So beyond mold, just chemicals can really affect mitochondria, and heavy metals, and alcohol, I think is a really big trigger so lots of things. But, yeah, it's good to hear that story. And just to know like some of this is slow go, but you can keep getting better. And why wouldn't you want to? So I just keep experimenting. I'm happy to share what I've done.

But yeah, to talk about testing, let's start with the home, which is often really where I suggest to test. If you think your environment currently, it is compromised, that's really where you need to start because unless you address that, you really won't get better. Often, it's the home because that's where we spend the most time. But it could be a car. Cars can get wet and moldy. Or it could be your workplace.

So there's four different options I know of

currently. And I want to just briefly mention all of them. If you own a home, you may want to get a mold inspector to come in. And they can see where you may have leaks or moisture in your home. They can test the air, which has its pros and cons. So they can also test for like drywall samples and send that in. So it is pretty thorough, but not probably something worth doing if you're renting.

If you are renting or want to test more for health reasons, there are a few things you can do. The cheapest is to get a mold plate like a petri dish. And there's a company called ImmunoLytics that you can buy the plates and talk to them afterwards. Initially, I had not heard the best thing about doing the mold plate, it doesn't test for mycotoxins as much as mold growth. But I've since heard better things about it and to have someone talk to you, I think is really valuable. You can run multiple tests, which is valuable. And you can still get some information pretty quickly at a reasonable price.

A couple of other options, the one that we did at our home was a mycotoxin dust test where you collect dust behind your fridge. And you need a good amount of dust. And you mail that in. And it tests for mycotoxins that are the ones that make you sick. And then lastly, you can run an ERMI test, which is also a dust test usually involving doing some vacuuming. And they can assess the level of risk that you have in your home. And this is the test I'm leading towards the most now, even though it's not one that we ran ourselves because there is some grey areas.

For instance, I had a client whose home wasn't too bad. He had a little leak in his bathroom. But his workplace was the worst. So that was good information to have to just get that assessed. Do you have any questions about that before I go on to the body?

Dr. Davidson: Well, so I was thinking the dust



test was the ERMI, but it's actually a different one then. So another company has a dust test and then there's ERMI companies that, also, they're checking?

Bridgit: Yeah, I'll just give names because I know people like that. The test that we used for dust and mycotoxins, by the way, was by RealTime Lab. And there is another company I'm getting familiar with called Envirobiomics, yeah, Envirobiomics, that runs this ERMI test, which doesn't just test for mycotoxins, it tests for like other toxins, as well, like endotoxins. I'm just still getting familiar, but it seems a little bit more comprehensive in some respects. So yeah, there's just companies doing a little bit different things.

But I think what's most important is to know if you have a problem because it's a big decision to move, or to sell your home, or move your workplace, whatever it is. So we don't always need testing. But I think this is a pretty important one because you're not going to make bad decisions just like on a whim or a hunch. You're going to want to see some data to let you know, "Yeah, we have a problem."

Dr. Davidson: Well, maybe, maybe one person in a relationship might, but the other one might be completely opposite, where it's like, "No, I love this house. There's no way I could ever move." You always get that difference of the person struggling like, "I'll do whatever." And then the other person's like, "No, no, there can't be, there can't be mold."

Bridgit: Sometimes or sometimes it's reversed. So I was the sicker one in our home. And I really wanted to bury my head in the sand. And honestly, I was extremely tired. And I see this with people who reach out to me, too, you just have this like inertia to like stay where you are. You don't want to do all this work. You're exhausted. So sometimes it's that.

Or yeah, sometimes it's like you said, it's tough

when you're in a relationship and one person is unaffected and implies that you're crazy. That's a rough thing. But if they can, yeah, if they can see this data, that's helpful for them or helpful for people like me who are like, "Ah, I don't want to have to go through all this." "But, you know, here's the information, our home is really making us sick."

Dr. Davidson: Why do you think our mind always wants to find like what's the test that's 100%? So if you were to rate, "Oh, I'm going to go get ERMI testing or dust testing, zero percent is it's not effective or not accurate at all and 100% is it's perfect every time, where would you put that clinically now, just in your opinion?"

Bridgit: Well, I'm most interested in this more comprehensive ERMI test right now. But again, I ran a mycotoxin. Just a straight mycotoxin dust test. So I'm more familiar still with the mycotoxin dust test. And I think it's good because mycotoxins are what make us sick. But as I learn more, I'm pretty interested in the ERMI and how it rates things. And I'm going to interview these folks soon.

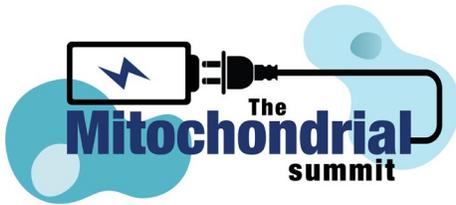
There's more to mold than just spores and mycotoxins. There're other categories that make up the weight of the mold and the toxins that I don't even fully understand yet. It sounds like this test tests for... Because you don't want to miss things. So it sounds like it just tests more categories of toxins and molds.

Dr. Davidson: I guess my question is can you rely just off of running one test to rule mold in?

Bridgit: Oh, I see what you're saying. Mmm, I think these are--

Dr. Davidson: Because it would be awesome if we could.

Bridgit: Yeah, it's pretty good. It's pretty good. You



want to make sure you're collecting in an area that you think is affected. You don't want to go to the cleanest area and test in there. So that's a great question. I think it's more common that you get false negatives in body testing than in the home. I haven't personally run into someone being like, "I thought my home was making me really sick, but now it seems like it's fine." I haven't really seen that.

Dr. Davidson: Okay. Well, if mold shows up in a dust test, or an ERMI test, or you find mold in a test you run for your body, does that mean we have to move right away? Can we actually clean the environment so that we can stay where we're at?

Bridgit: Jay, this is a highly debated issue, but I will give my opinion. I didn't understand all the steps when we found out our house had an issue. And I had just replaced myself at my practice to work from home. So I was home all the time. And we talked to some people. And I know you had to tent off the area and stuff. So we knew a few basic things, but we made some major, gigantic mistakes. And many contractors also made mistakes because they don't really get the health implications of it. So can you stay in your home?

Sometimes, again even with the ERMI test, you could wall off an area and be another part of the house. But if you're quite sick, I would say no. And if you're doing a major remodel, I would definitely say no. There is nothing convenient about going through this mold stuff. And you just have to accept it. So we ended up moving into my parents' home, which was like 30, 40 minutes away. It was like a huge pain in the butt commute after we did that, but it was definitely the better decision, but initially, we didn't make it.

I was home while all the remediation was going on. This was a giant mistake that even when I say it, it's embarrassing. We were told, "We'll move everything out of your basement into the

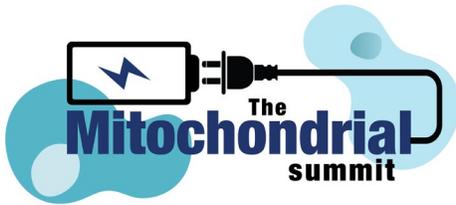
main floor of your house so we can work on your basement." So all that stuff, it was full of mycotoxins was now in our main living space. Like I can't even believe that happened. But that's the kind of thing that a contractor may not think of, they were like, "Oh, let's put up the tent and blah, blah, blah."

And that stuff is covered in toxins so I got way worse, three times worse, once we started remediating. And then the process of getting sicker and realizing we had more areas of the house we wanted to work on, that's when we moved out. And that was a good decision. But then we made another dumb decision, which was to bring some things with us. So we didn't bring a lot of things, but we brought some of our clothes, some toys for my son, whatever, enough that we re-infected the new space we were in.

So whereas, at first our health felt really good there, after a while, it started to not feel as good. So it can become a very paranoia because that's a weird process where, "The mold is following me," but you have to be really careful. We ruined both of our cars. We had to sell both of our cars from transporting stuff around. So I tend to tell people, please err on the side of being really, really caution. Don't stay in the same spot. Don't bring things with you.

However, you can potentially remediate the original space enough to move back in. I used to also not say that. We didn't move back into our home in the end. But I've seen people, again be incredibly, incredibly careful, cleaning out ducts, getting rid of couches, washing walls, doing everything right and being, yes, able to move back in to the same space.

To be honest, I think it's almost is easier just to let things go and move on because you have to just be so careful. And I think we just felt like, "Well, why risk it? Why after being so sick, would we risk moving back in?" It's fine for the next person, but



we are very sensitive to whatever was growing in that home. So if there's any of it left, why take on that risk?

Dr. Davidson: Have you heard any statistics on how many buildings or homes could potentially be affected with some type of toxic mold?

Bridgit: Yeah, I think it's going to usually say one in four. It could be higher. And then one in four of don't have the genes to identify mold toxins in our bodies enough to tag it and move it out. So the odds are pretty high. Places like, unfortunately, school buildings that aren't maintained properly with budgets.

I remember in Puerto Rico where we were living after the hurricane. I was caring about recovering schools and how there was water damage. And it just made me so sad because it's often in those settings that people just don't understand. And they sign the budget. And then our kids are getting exposed. So there's definitely more places to it, yeah, about one in four.

We live in Arizona now, that's on purpose because the moisture level is very low. The mold can happen anywhere. There are some houses we've toured here that have mold because they're older construction. If you're in a more humid environment, greater chances, you want to keep your humidity down. That's one thing I learned. And you want to properly maintain your home, things like drainage, and gutters, appliances. But accidents happen so just if you have something, dishwasher, drain, leak, or whatever, you need to make sure you do a really careful job of fixing it.

Dr. Davidson: Yeah, it really makes you think like, "Oh, my child's struggling in school and can't pay attention." It's like, Well, it might just be the environment they're in. It might be that their classroom's got mold. And they're affected." It's really, it's like a rabbit hole when you really open it up.

Bridgit: Yeah, it's a very depressing rabbit hole. Some people feel like, "Well, is there any place that's safe?" And, "Yeah, there are places that are safe?" Luckily, like your wife, you get this mold-sniffing nose when you've removed yourself. So we actually toured a school for my son when we moved here. And I couldn't even finish the tour. I'm like, "This school is full of mold. There's no way I'm sending my son here."

So you do get better identifying. But you can also make repeat mistakes. I've had people move into a new condo and they felt, "Well, this will definitely be cleaned." But sometimes things are behind the walls. And you just don't realize.

Dr. Davidson: Yeah, I agree. We looked at something before we moved into the house that we're in now. We must have looked at probably 20 to 25 houses finding something that we liked. But then so many of them like, "Sniff, sniff, nope, not, nope, I can smell it in the closet. Nope." And I immediately took it off the list because obviously after what we went through, just like what you went through, it's like it doesn't matter how much, "Oh, that house really seems cool," if it's a risk factor at all for health, not going to do it.

Exactly. Wow! Were there any key, as we're wrapping this interview up, Bridgit, were there any big things for you in your journey that really helped as far as maybe something you did in your home, or something you took supplemental wise, or diet wise?

Bridgit: Yeah, I know this can be a depressing conversation, but there's a lot of things I found that have helped. And that I'm still doing. And that I'm helping a lot of people, which makes me really happy. I actually got an email just today saying, "Well, I've been in this new apartment for a couple of months. I thought I'd be doing better, but things seem to be getting worse."

So why could this be, right? Because your



body finally is having some space to work on detoxifying the load that's in your body.

So I remember having that same experience when we moved to Arizona. I subconsciously hoped I'd be completely cured. But the fact is now, I'm the mold, it's following me around. So it is a process. First it's only getting out of the environment. Learning all about that. But then it's cleaning out your body.

My top three, and I have a long list for you, but my top three things are dry brushing. I think that's a really helpful thing for creating some energy in the morning and moving your lymph. Sauna, which probably is coming up in this summit, I think it's so powerful. It helps you to detoxify from all sorts of things. And if you can't afford to have one or you're in, like we were in a transitional space, just use one at a gym. It doesn't have to be fancy, but just get some sweating done.

I really like doing green drinks. Just giving your body some nutrition to detoxify. I just do a light... Actually, I'm drinking one right now, but it looks ugly because I added blackberries, but usually it's green. So there's lemon, little baby kale, and spinach leaves, cilantro, honey, and then some blackberries. And then I just strain it so it's very light, but it's hydrating, it's alkalizing, it's giving me some like chlorophyll for oxygenating my cells and supporting my liver. So I'm a big fan of like having that be a part of your morning routine. And it only takes a few minutes. So those are some of the things I start with.

I've got a bunch of supplements that helped me, personally. And I was really quite sick. So I'm not just like, "Oh, I heard this helps." Like I know this helps because it helped me. And we're all a little different when we're inflamed or what's happening, not every single thing I'm going to mention is going to help the person listening, but some of them will. So you just have to experiment.

So just straight fish oil, clean, not from Walgreens, like nice, clean fish oil. I do a liquid because you can get more of it. It's really helped me when I'm inflamed and flared-up. Sometimes I'll do a couple scoops of that a day when I'm really flared up. It's an anti-inflammatory for the brain that we talk about earlier, for the gut, which is always affected when there's mold.

Magnesium, again I do a powdered magnesium that you mix in water. And it's a magnesium chelate. So it's not to help you have a bowel movement, it's to actually get it into your cells. Magnesium has been very helpful for me when I feel inflamed and the brain likes it. It does a lot of different things in the body. It helps you sleep. Phosphatidyl choline is, I think, very helpful in acute situations.

And for that brain fog you mentioned, of everything I've used, that's been the most powerful for my brain. Again, I do a liquid. And if I'm really flared-up, I'll do it even two, three times a day. And it's not cheap, but if you're really flared-up and you can't even function, why not dose at a few times a day and get that under control.

We do a CoQ10. We're talking about mitochondria here so we do one that's water soluble and has a positive charge so it can really get into the cell. I found that pretty late on my journey. But when I found it, I was really impressed. I was almost at that point where I was like, "Ah, I can't try anymore supplements," but I still take it every day. I really like it.

I think like chlorophyll or chlorella not as much for binding and detoxifying, but just getting oxygen to your cells is really great. So if you don't have time to make a drink just supplementing with chlorophyll, as tolerated. Some people don't do well on chlorophyll. B12. Just doing like a sublingual B12 seems to give me some energy. It works for red blood cells and getting that oxygen delivery. So that's something that's helped me.



Binders, as you know about, Jay. You manufacture binders. It's just important to just move toxins out. And again, we're all a little different. I've had some clients not react well to binders, but I've never had that. I've always been fine with binders. And just as a daily clean up or when you're flared-up is great.

Silver is something that's helped me with my immune system being weakened from mold. Doing colloidal silver.

Dr. Davidson: Colloidal, okay.

Bridgit: Yeah. And olive leaf, I've also used. Everyone's different, but for me my immune system really is often what took the hit. And in the winters, I'd have to take a hot bath every night because I was so cold. I just always felt like I was on the verge of being sick. So vitamin D, silver, olive leaf are three things that helped me.

And when you talk about the gut, and you do a lot of work on gut infections and biofilm, that's an important area to address. Who knows what came first, if it was like the mold or the brain that weakened the gut? But if you've got now these infections, you do need to treat them. You're going to get some relief. We also do immunoglobulins and spore-based probiotics for gut health and even in conjunction with some of the things you do with parasites and bacteria. And that works a lot.

When I was really sick, I remember someone saying, "Well, all these other things don't matter, I just need to detox." But really, you have to do everything all at the same time is what I find. So you can't just like ignore the gut while you detox. You guys may have more procedure in your program, Jay, but I think it's okay to like just have some overlap. Of course, you don't want to be taking 50 supplements at once, but sometimes you need to manage the symptoms while you work on another piece.

There's a lot of symptom management when you're in the thick of mold because you can't breathe properly, you can't sleep, your periods are off. So I don't know, it's almost to me you can almost organically focus on what's off. Like sometimes, I'll be more focused on my gut, then I'll be more focused on my hormones. And I'm always gently detoxing because it does take a while, like you said.

I have a little bit more on essential oils and foods, if you like?

Dr. Davidson: Yeah, yeah, if you want to fire them off quick for us, that would be awesome.

Bridgit: Yeah, a few things to be careful to avoid. I see alcohol is quite a neuroinflammatory thing. And it can lead to leaky gain. Avoiding gluten, dairy, and potentially moldy foods like cheese, and grains, and coffee. I was just reading about apple juice can be moldy so we talk about kids.

And essential oils can be a really nice supportive thing. Some of them kill mold directly if you're cleaning your home, but not necessarily toxins like thyme, cinnamon, oregano, clove. And then some of them can just help with some of the symptoms like I said like something as simple as peppermint as an antihistamine and can help you with breathing. And then something as simple as like grapefruit oil can help move lymph while you're going through the process.

Dr. Davidson: Awesome, peppermint for histamine and grapefruit for the lymph, got to remember those.

Bridgit: Yeah.

Dr. Davidson: Yeah, there's so much to the topic, but there's hope. Identify if you're in an environment that is not safe and start learning about it. Obviously, you dove in deep into this, Bridgit, because you're living it for 10 years. And



now it's like you have experience to share with the world and what helped you to get through.

One of the interesting things that Dr. Todd Watts and I found just in some testing, if you run the urine test to see if you have mold or mycotoxins in your body, the gliotoxin and the trichothecene group, if that comes up, one of the number one thing to support is liver bile duct drainage. That fungus, that mycotoxin, just seems to absolutely just clog that liver bile duct uo.

Bridgit: Mmm, yeah, I didn't talk about that. But yeah, that's a great tip.

Dr. Davidson: I thought that was really interesting, those specific mycotoxins if anybody runs a mycotoxin test. But yeah, I just want to thank you so much for coming on here, Bridgit, and sharing your knowledge and experience. Just being open to it. And I'm sure the listeners got just a lot of gems.

Bridgit: Great! Well, I'm really happy to share. And if people need more resources...I know it's a lot. You just have to dig in and learn it. And we've got a lot of resources on our site you can find, as well.

Dr. Davidson: Yeah, definitely. Well, thank you for listening to The Mitochondrial Summit. Make sure to share this interview with your friends and family and also consider adding this summit to your library by clicking the order button.

And don't forget to visit Bridgit Danner at her website. Really easy to remember, BridgitDanner.com. So Bridgit is B-R-I-D-G-I-T and then Danner is D-A-N-N-E-R, so BridgitDanner.com. Maximum blessings. This is Dr. Jay Davidson.



Mitochondrial Solutions

Todd Watts, DC, PScD

Dr. Davidson: Hi, this is Dr. Jay Davidson from DrJayDavidson.com. Welcome to another interview of The Mitochondrial Summit. Today, I have my good friend, one of my best friends, Dr. Todd Watts. And he's going to be discussing solutions for mitochondria. Welcome to the summit, Dr. Watts.

Dr. Watts: Thanks for having me here.

Dr. Davidson: So every interview, he's got to throw some biochemistry in. I know he wants to talk about solutions. But why don't we dive into biochemistry first because, of course, that's your passion.

Dr. Watts: So looking at what the whole summit is, is the mitochondria. That's what I love to talk about all the time, anyways. So the big part is how does it operate? And then why is it important? And what's affecting it? Because once we understand the deeper part of why it's not working right, then we can go and find the solutions.

Dr. Davidson: Which means you want to explain the biochemistry first?

Dr. Watts: Yes. Like, I want to explain the biochemistry, which is what I love to do. So looking at how to make energy, there's two parts to energy. There's the aerobic respiration, right, that we do, which is within the mitochondria. And there's the anaerobic respiration. So there's, in the

cell outside of the mitochondria, there's a process called glycolysis where we take a sugar, break it down into a pyruvic acid or pyruvate. That's the end part.

And that's the part that comes into the mitochondria. During that process, we make a little bit of energy, a little bit of ATP, right. And as long as everything goes well, then that pyruvate molecule will enter into then the mitochondria. Once it's in the mitochondria, it goes through this process to be converted to Acetyl CoA. And Acetyl CoA is the molecule that will go into what we call Krebs cycle.

And that Krebs cycle is where we create molecules like NADH, FADH₂, these are things that will help to, basically, fuel the electron transport chain that will allow us to then attach a phosphate on to an ADP molecule to make ATP. And that's the end thing, right, we want ATP because ATP is going to be the energy molecule that fuels all these 500 plus enzymatic reactions in our bodies, as well as the signaling molecule that helps our immune system understand there's something we're fighting for.

Dr. Davidson: So backing up just to see if I'm clear on this. Pyruvate, is that made outside of the cell?

Dr. Watts: Yes.

Dr. Davidson: Okay. And then it goes inside the



cell to then get converted to Acetyl CoA?

Dr. Watts: It's made inside the cell in the cytosol. And then goes into the mitochondria.

Dr. Davidson: Okay. And then that's where the Acetyl CoA comes in to further. So essentially, pyruvate is the initial step of energy or movement for mitochondria to make ATP?

Dr. Watts: So it is the process of taking a sugar molecule or a protein, which gets converted to a glucose molecule, and then breaking it down into a three-carbon molecule. And that process will happen through the glycolysis reaction. And so it's just the end, what we call end metabolite or end product of glycolysis.

And then if we have enough oxygen at that point, then it can be converted and go into and be utilized to make ATP or energy with oxygen called aerobic respiration. And lots of people understand jogging will get that aerobic respiration. But if you do, let's say, a sprint, you do what we call anaerobic respiration that basically takes pyruvate and converts it to lactic acid, which most of us understand, "Oh, my muscles are sore. Like, I worked out a couple of days ago." We're all sore from that workout that we were doing because of the anaerobic respiration.

So we weren't jogging, we were lifting and pushing our bodies really hard, fast. And we know our muscles ran out of oxygen and in that point convert it to lactic acid.

So when I'm working with somebody that has chronic illness or somebody that say with Lyme disease, or mold toxicity, or chronic fatigue, a number of different things, what I look at is are they producing energy? Because if they can't produce energy how are they going to perform all these enzymatic reactions that need to occur?

Now the other thing we look at is fat, "How do we

get energy from energy? Because the Ketogenic diet is really popular out there. Or fasting's really popular. And it breaks down fat. So we take fat, and that's, when it's broken down, it's converted to a molecule called fatty acid, so three fatty acids and a glycerol molecule. Those fatty acids are what are transported in to the mitochondria. And then from there are broken down into Acetyl CoA.

So it goes through this process called fatty acid oxidation, basically breaking down that fatty acid launching carbon molecule into the Acetyl CoA molecules that go through the Krebs cycle and then the same process as a sugar. It's just that sugar does it from a standpoint of glycolysis.

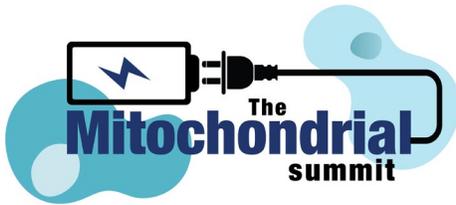
Dr. Davidson: So you can either use sugar, which could be protein, two sugars or a carbohydrate, obviously is sugar, to ATP. You could use fatty acids or fat, basically to then make ATP. What happens when it's anaerobic and you make lactic acid, is there an ATP production in the lactic acid?

Dr. Watts: No, lactic acid then is recycled back through the liver and then converted back to pyruvate and goes through its process of breaking down.

Dr. Davidson: Okay.

Dr. Watts: So it really comes back to the liver takes care of lactic acid. The thing about it is we don't want to go towards lactic acid because people can get the buildup of lactic acid. And there's a condition called lactic acidosis that other doctors talk a lot about. But it's the process of why do they have it? So is it a lack of oxygen? So it could definitely be a lack of oxygen, especially if they have a lot of mold in them, right?

But the other thing it could be is toxins. So there's that reaction called the PDH or pyruvate dehydrogenase complex that takes pyruvate and converts it to Acetyl CoA. And stuff like heavy metals can cause a breakdown in that process. So



lead, arsenic, mercury, other radioactive elements can all break up that process or inhibit those enzymes that are supposed to convert that.

So then the pyruvate, what does it do? It has to go back into and convert to lactic acid. Or if there's a lack of oxygen, it can't convert. So it then goes over into lactic acid.

Dr. Davidson: Does that overburden the liver then if you are constantly making a lot of lactic acid?

Dr. Watts: Absolutely, because this is occurring in the liver, right, is typically there's a lot of infection going on in there. And the liver's overwhelmed in this process that's happening. So if the liver's overwhelmed because of all these infections, which infections seem to have a high infinity for the liver with everything that happens there, then the function of the mitochondria is really brought down.

And that's what we want to look at is, is okay, how many mitochondria are in each cell in the liver? How many mitochondria in each cell of the heart, in the brain? Well, we're looking at somewhere between 2,000 to 10,000 per cell. The mitochondria is really important for utilizing oxygen in the cell. The mitochondria is really important for creating energy. And then not only that, but also cell signaling and immune response.

Dr. Davidson: You hear people talk about how many cells we have in our body and how huge of a number in the trillions it is, but you just said that some individual cells have up to 10,000 mitochondria per cell.

Dr. Watts: Per cell.

Dr. Davidson: So does that mean our mitochondria are astronomically way bigger than even our human cell number?

Dr. Watts: Exactly. And that's why when people talk about bacteria by being so much more of bacteria and microbiome than our own cells within the body, and part of what contributes towards that is the mitochondria. So with being multiple types of mitochondria per cell...

And you know, what you see with athletes is they have more mitochondria, right, because they have better utilization of oxygen. When they're working out, their cells are creating more mitochondria or more mitochondria come into those cells to help with all that aerobic respiration.

Dr. Davidson: So clinically with the clients that you guys see in your office with your doctors and things, what are you seeing as far as like infections and toxins that damage the mitochondria most? You listed a lot off. Is it that whole gamut or other specific things? Like, even for instance, the liver, you said infection really tends to like the liver. Are there certain infections that you find clinically?

Dr. Watts: Yes, so what's coming into my clinic, at least that I'm seeing, is people that have Lyme disease, the co-infections, Babesia loves the liver, also Epstein-Barr and many viruses really love the liver. There's parasites that can affect it. Liver flukes, strongyloides can get up in there, sometimes roundworms. So it clogs it up and then it backs everything up. And the key part to having successful liver is to having a non-toxic liver. That means things have to be moving through. And as things aren't moving through, and things are backing up, these infections put out byproducts like pneumonia, for example.

And that suppresses the body's ability to make energy. And it suppresses the function of the mitochondria so they don't work so well. So if you think about being and you want to have all this energy to work out, but you're in a super-hot, hot climate and lots of humidity, then you feel sluggish because of that. Well, the same thing with the mitochondria, if they're in an environment



that's not conducive to them, then what happens with that environment is that it's going to be less functional.

Dr. Davidson: Okay. So essentially, the cause of what's diminishing mitochondria at the cellular level and with all the biochemistry pathways you went through, chronic infection, toxins, those are the main things. And obviously mold lowers oxygen, but mold produces toxins like biotoxins.

Dr. Watts: Exactly. So it's really important and it suppresses oxygen utilization. And then you consider some of the radioactive elements where that really breaks down the cell. And when you have all these free radicals going on, oxygen is our final electronic sensor so it binds under those free radicals and then help them then get converted to water. And glutathione's involved in that process. And there's catalase and a number of other enzymatic reactions within that process. The key part is taking that free radical, and then binding that oxygen on there, and then clearing it out.

So we could be using a lot of oxygen just fighting these radioactive elements, these toxins, these chemicals, whatever you want to call them, these infections, and instead of being able to utilize it to make energy. And that's the thing, it's like, "All right, are we utilizing mitochondria to survive and our energy to survive, or are we utilizing it to have optimal energy, and feel vital, and be able to function, and do everything we want to do?"

I know you've worked with a lot of people in the Lyme disease world. And in my clinic, we see these people have suppressed energy. Why? Because these infections, like Lyme and Epstein-Barr, they suppress your energy levels down so that they can thrive.

Dr. Davidson: Is there a way to measure clinically oxygen in the body for a client?

Dr. Watts: I think that there are some ways, but

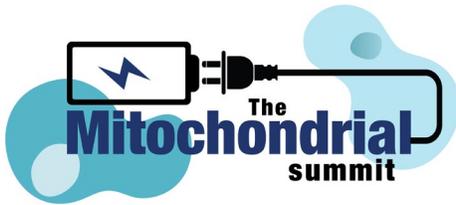
we can look at it. One, you look at saturation. Being sure they're able to get the exchange through their lungs. Two, there's that perfusion index that you can look at. And so diving into the research and how accurate that is and moving that forward, that's helped me, at least get some gauging of where somebody may be. And then later on, see how much better it is. Yeah, there are some other things we're looking into of how can we measure this to be a higher level than just oxygen saturation.

Dr. Davidson: Yeah, because you'll see oxygen saturation typically is pretty high for most individuals. But the perfusion index seems like that's not quite like, "Oh, everybody's got great levels of that." When they have chronic health issues, it seems like that level could be actually really low.

Dr. Watts: It could. And what I think that is, is how well is the blood getting throughout the body? So the blood's not getting throughout the body very well. Or if somebody has edema, and their swollen and things, they're not going to have great perfusion. So with that process, their blood pressure's going to go up higher to try and push that perfusion out, right. And that's going to be another way to look at that.

So that's where when we're analyzing blood pressure, a lot of people maybe that has Lyme or Babesia or some of these other viruses and infections, tend to have low blood pressure. So then they're not getting enough blood throughout the body. Or other people that their heart's working good, blood pressure is really high because they have a high need for oxygen, so their body's trying to push out the blood through the body. So looking at both high or low is a way to really consider what's going on with these people.

I had low blood pressure for a long time. And mine's come up and it's doing a lot better. Of



course, I have a lot better energy now, too, with that because oxygen's getting through the body and nutrients are getting through the body.

Dr. Davidson: Well and you, you've had a history of maybe not having the best energy in your past.

Dr. Watts: Yes, severe fatigue, for sure.

Dr. Davidson: What happened in chiropractic school when you were going through school?

Dr. Watts: There was a Facebook page that was created called *Sleeping in School*. And it started with some of the guys in my class taking pictures of me not being able to stay awake. Even at 7:30 in the morning, I was so affected by certain things, one gluten, so it would set my brain off. And I'd just fall asleep almost within 30 minutes of eating that. The fatigue I had was muscular fatigue, brain fatigue, and an overall general malaise of fatigue.

Dr. Davidson: You've come a long way.

Dr. Watts: I have. And that's why mitochondria is so important, right, because it's just a vital part of this process. And, for me, it was a journey. First, what I did was I cleared the parasites that we've talked about before. That helped my overall general toxicity come down and my overall energy started to come up. But I still couldn't work out.

As I went further in clearing other infections and toxins, my brains starting turning on better, working better. I could function and have good brain capacity until ten o'clock at night, where before it was still four o'clock. And I was burned out. And then other times even earlier, it would vary day to day also what I was exposed to or I ate.

Up until a year and a half ago, I just couldn't workout. Well, the energy generated within my muscles and stuff was very low. And as I cleared out the radioactive elements, radiation and toxins,

all of a sudden, my mitochondria turned on, energy turned on, and I could work out. And now I feel phenomenal and much better than I have in 15 years.

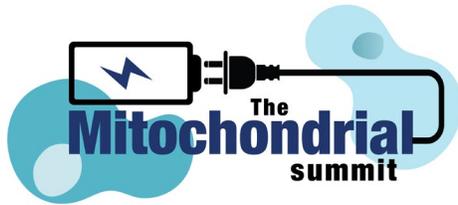
Dr. Davidson: Well, I can attest to that because we were up, probably until 9:30 or 10:00 talking last night. You were very with it. And then we were up early this morning working out, so living the life. Clarify radioactive elements because you've said that a few times. What does that mean when you say radioactive elements?

Dr. Watts: When I'm looking at things that are really harsh to the body—now we've heard about heavy metals quite a bit and we've heard about infections. As I researched and worked with people, what I've noticed is that there's exposure to radiation—radiation is the hardest or the worst things to our cells.

The types of radiation, now there's non-ionizing and ionizing radiation. And the ionizing radiation will actually rip apart our DNA, rip apart our cells, creating lots of oxidative stress. So with that oxidative stress, your cells can't function, you're using up all your oxygen, you're not making energy, it just destroys everything.

So that is, really with disease, I think one of the worst things that we're seeing today. There's Fukushima. There's all the different things that we know of in that manner. And there's exposure with those. But also, it's within our soil and our water. So when we look at, there's uranium, there's cesium that we see on heavy metal testing, thorium. And uranium and thorium break down to radium. And radium's about 3,000 times more, actually radioactive, than uranium is. And then from there, it can gas off into a molecule called radon, which people will have in their basements or in the environment.

We just don't realize, because it's not measured in the heavy metal test, when we started researching



this, there's radium melts like in Wisconsin, and in Illinois. And then you see in Texas, there's lots of people exposed to a lot of radium. It's in the municipality water.

So there is the Environmental Working Group that did a compilation of a number from the EPA that showed where you're at and how much radium was in the water sources there. And so it does naturally occur within the earth's crust. Then, it's hopefully getting pulled out. And that's why it's important to look at the water you're drinking because that could be a major exposure of radiation.

Dr. Davidson: And once you have these radioactive elements inside, the half-life could be hundreds, thousands of years. So essentially, they can just continually be emitting damage to your DNA until you pull them out.

Dr. Watts: Exactly. And what we've seen with radium is that it's a bone seeker. So it's like lead, it goes into the bones. And then what's in the bone? Well, you got a bone marrow, our immune system. So it can hide the effects and suppress immune function and/or distort that process. What I started seeing is, as we worked with people, all of sudden their white blood cell counts that were low for years and years and years, started coming up again.

Dr. Davidson: Yeah, and then just thinking about the Environmental Working Group, 170 million Americans have radium in the water. And you said Texas, 80% of Texas. And that's a huge state.

Dr. Watts: That's a huge state. It's a huge amount of population.

Dr. Davidson: Just crazy. And then thinking about the rise of osteoporosis. And you said radium loves bone, loves to compete for calcium. Like lead, heavy metal does. So at what point do you think radium is actually more impactful

to osteoporosis than lead or do you think it's a combination?

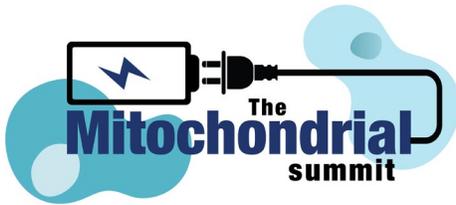
Dr. Watts: It could be a combination. But I think that radium's more impactful because radium would affect the cells that are trying to rebuild the bones more so, in my opinion, than lead. Where lead deposits are radium with the radioactive, it's like, "Okay, why aren't they rebuilding the bone?" It's the osteoblast. So why aren't the osteoblast working? Maybe it's the radiation. It's theory. That's what we're working through and learning about. But it makes a lot of sense to me now because it's like, why do they just magically have osteoporosis? Why do they have osteoporosis?

Dr. Davidson: Because they're not consuming enough calcium.

Dr. Watts: Right, exactly, the countries that don't consume the calcium, don't have osteoporosis, either. So it's more something that displacing the calcium. There again, we do have a lot of lead in our water, as well. But what we're not looking at is the radium that's in the water source, too. So it could be a combination. But I really think that the radium would have more of an effect on the cells that build the bone and prepare the bone.

Dr. Davidson: Is it wrong to assume then if somebody is struggling with health that probably their oxygen levels in their body aren't optimal and that we just need to focus on improving oxygen?

Dr. Watts: I think that's really important to look at. So are they very highly energetic or are they lower energetic? What's their blood pressure? If their blood pressure's low, then probably they're low energetic, as well. And then you get people that have this POT Syndrome where they get light headed, they get dizzy really well, they might black out a little bit. And with that what I found, on helping these people, is parasites have played a major role in that sometimes viruses like Epstein-Barr.



And then looking at some of the radioactive developments that are processed there. So there are a variety of radioactive developments. We had mentioned the cesium. There's radioactive lead. There's radioactive iodine. There's radioactive strontium, the radium, the uranium, the thorium. I think people that have it in them are more sensitive now to other nonionizing radiation.

So the cellphones, maybe the 5G that's coming out, all this stuff here, these people are going to be more sensitive and more reactive to it.

Dr. Davidson: So if I'm hearing you correctly, a lot of attention has been given to heavy metals like you said, but I'm hearing that really more attention needs to be given to the radioactive elements.

Dr. Watts: Yes, exactly. And I think when we address those issues, you're going to see that the radioactive elements cause more damage to the cells. Because they're destroying the DNA, they're ripping those things apart. Where the other stuff is toxic, but not necessarily as damaging. They create free radicals, but not ripping things apart. They're both important. Arsenic's not healthy because it stops the electron transport chain. It stops the ability to make ATP.

Glyphosates, and pesticides, herbicides also block that process of that free radical coming across or that electron coming across to create ATP, it ends up creating that free radical that starts to break the cell down, and the body down, and creates oxidative stress, which then can go into all kinds of problems from that point on because now you have low mitochondrial function, which means you're going to have a higher infection issue. And then you're also going to have low energy.

And then you also then you look at all these cells, all these mitochondria within these organs, like your brain needs a lot of mitochondria to function, now the function of it is lower because

the mitochondria's not working at the capacity they need to.

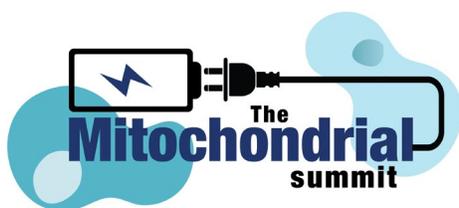
Dr. Davidson: Backtracking to all of the biochemistry pathways—and I don't want to call stress a listener—but backtracking to that, what are the takeaways clinically? Are there certain like supplements that you look at that can help to improve the pathway? Or is the main takeaway that toxins and infection can hinder that whole process?

Dr. Watts: There are a few nutrients that I would consider and look at. One is, are we transporting the fatty acids from fat breakdown into the cells? So if you're struggling with adrenal fatigue or a thyroid function, and you go to fasting or you go into a Ketogenic diet, some of these people swell up, they gain weight, they don't feel well. So they're probably struggling to get that fatty acid inside the cell and break it down to create energy. So they may need something like an L-carnitine product because the carnitine amino acid will transport that fatty acid into the mitochondria from the cytosol of the cell.

The other thing we look at is your B vitamins are necessary. So with the conversion of pyruvate, and the conversion of Acetyl CoA, and also then taking Acetyl CoA through that Krebs cycle, there's the B vitamins—B1, B2, B3, B6, B5 more so. B6 is more on the fatty acid side. Then you look at alpha lipoic acid. So there's lots of complexes out there that support it.

But, to me, what's important in the process is we get a lot of those in our diet. We eat that stuff or you should be eating nutrients that have that. You should be eating well. It's the process of what's inhibiting the functionality of those systems. What's causing the problem?

So my approach is, to this process, let's be sure we're draining the body well so we can get the toxins out of the body. Let's get that toxin load



down. Let's then get the right binders in there and the right energy in there to clear it out, so support it. I use a lot of bioactive carbon molecules to go in and support the processes, and to feed the mitochondria the right foods, and the nutrients, and support the amino acids, and the other things it needs to do enzymatic reactions within that.

And, also, at the same time pulling out those heavy metals, the toxins, the radiation, clearing the infections out of the body. By clearing the infections out of the body, that helps to reduce the toxic load in the body. So it's going to be hard to get mitochondria function if you have high mold in you, or if you have a high amount of parasites or viruses. So it's a balancing act. The first process is drainage and energy. The next process is pulling this stuff out, the toxins and everything out that's in you build up.

Dr. Davidson: So you mentioned radiation. Radiation, radioactive elements, is that essentially the same thing?

Dr. Watts: Same thing for just different types of radiation that we're exposed to. And the ionizing's usually more severe than the non-ionizing.

Dr. Davidson: Yeah. Non-ionizing would be microwaves, Wi-Fi, Bluetooth, that thing.

Dr. Watts: Exactly.

Dr. Davidson: But the ionizing, you're saying is actually where it breaks DNA bonds, which obviously have a lot more damaging effects.

Dr. Watts: And it also affects the membranes of the cells, too, and create a lot of free radicals. So with that, we're looking at X-rays and those types of imaging. You're looking at the exposure to, let's say if you're near Fukushima, or that stuff coming across the ocean, or in the atmosphere, people that don't maybe detox well or they're already having issues and struggling, may not be able to

process it well. And then just having exposure to or drinking the water or these exposures that you don't even know of that you're getting that's causing the problem.

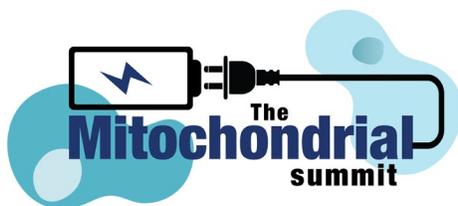
Dr. Davidson: So going back to the biotic carbons, you were talking about binding toxins and then also having a like respiration effect on that. Can you explain that a little more?

Dr. Watts: So these extracts of fulvics and humics that we have that are the biotic carbon molecules, these things also have poly-disperse, polyamines, meaning that high energetic molecules that will help energize them, as well as electrolytes. So we call them polyelectrolytes meaning many electrolytes within that process to help then the carbons and hydrogen oxygens that are bioavailable and heal the body.

So we have parts that would bind and remove and then the other parts will actually get in and repair. And these things are all made up of what? Carbon, hydrogen, and oxygen. Sugars are made up of carbon, hydrogen, and oxygen. Fats are made up of carbon, hydrogen, and oxygen, proteins same thing. So they may add some amino acids on there and change what the proteins look like. But essentially, the building blocks are carbon, hydrogen, and oxygen. And the minerals are about almost 4% of what we utilize in the body and the rest of it's the organic material.

Dr. Davidson: So giving the body the more organic material—the carbon, hydrogen, oxygen—is the building blocks versus maybe just where I've seen many clients where it's like, "Got to take my minerals. Got to take my minerals." But you just lightly said, "Oh, it's like less than 4% of our body."

Dr. Watts: Yes. And you look at the type of minerals. So are they minerals that are plant-derived and are they bioavailable? That process is what's the charge or valence of those minerals? Our body utilizes the one that's bioavailable



meaning that there is a specific charge. So say copper that's needed in the body, that could be either toxic to us, or it can be very vital for our brain function and for other parts of the body.

Is it a two plus, three plus, four plus? What is it bound to, as well? So how that comes into the body and how available it is to be able to be utilized is really important. And that's why plant-derived minerals, to me, are the best utilized because it goes through a process to get to where it's now bioavailable to us humans, compared to just eating minerals from an inorganic source.

Dr. Davidson: So you mentioned copper. So I'm thinking immediately copper pipes in a house. The water's coming through it. It probably has copper leaching. That copper, not plant-derived.

Dr. Watts: Correct. Another one that I commonly see with females in my clinic is the IUDs that are copper IUDs. And I had a gal I worked with, I said, "Look, you know, you're having some of these neurological issues that are occurring with your eyes, and brain, and things, you need to get that removed." So we joked about it. And after about two years, she finally removed it. And within a week, her eye issues that were going back and forth at night and some other neurological issues completely went away.

Dr. Davidson: Wow!

Dr. Watts: So those things aren't necessarily safe for everybody, especially if people cannot process them and move them out of the body.

Dr. Davidson: So talking about copper in the pipes, clearly you can become toxic of a mineral that your body can't digest. But if it's a plant-derived, like if it's a copper from fulvic acid, can you actually become toxic of a plant-derived mineral?

Dr. Watts: I don't think so because it has innate

nature of understanding what it is. So it's bioavailable and our body needs it, it'll utilize it, otherwise, it'll get rid of it.

Dr. Davidson: So essentially, if somebody says, "Hey, I'm copper toxic. I can't take this mineral because it's got copper in it." If it's plant-derived, that actually changes everything?

Dr. Watts: Well, there are people that are copper toxic, but at the same time copper deficient. So that means that they don't have the right type of copper in their nutrients or their diet that they're able to utilize.

Dr. Davidson: And does a plant-derived copper have the ability to kick out the copper that's not able to be utilized in the body?

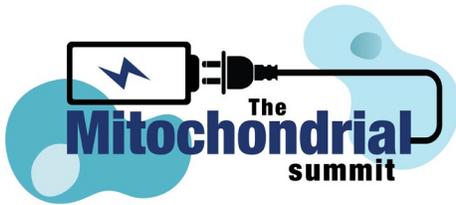
Dr. Watts: Yes, but with the fulvic molecule, it'll be able to bind and clear that copper out that's toxic to the body and then replace it with the right type of copper.

Dr. Davidson: That right there is just mind blowing because, "Oh, Doc, I have excess of this mineral or this mineral so I can't take it at all." But you're saying that if you're excess, you could actually still be deficient so you actually, you still need a broad spectrum of plant-derived because the plant-derived will essentially help to balance things in the body.

Dr. Watts: Correct.

Dr. Davidson: Okay. That makes it a lot simpler than how do I customize my minerals and keep testing if I'm under or over a certain mineral.

Dr. Watts: Well, it changes quite a bit with that process so to be able to check it at a specific time, and know where we're at, and how things are moving. Part of the process that utilizes the minerals, that just depletes them, is the fact that we have toxins or other things that our bodies are



having to use to just clear them out.

So with oxygen, with other nutrients, are we just having to burn through them so much because of the fact that we're toxic? Well, maybe we need to focus on the toxins, or the infections, and the body's ability to drain, and clean, and make energy, then naturally they're going to have a sufficient amount of nutrients.

Dr. Davidson: So clinically then, as an actionable thing for the listener, are you primarily then going after infections and toxins and not even worrying about the mitochondria? Or it would be the mitochondria needs some type of support? And if so, like what do you do?

Dr. Watts: So I use an extract from mitochondria. One that our company made. And that mitochondrial product is composed of multiple extracts of fulvics, and humics, and other parts that have come into it to support the whole process of Krebs cycle. Also, some of the other parts of that system that goes on within the mitochondria at the same time, it helps to clear out some of the toxins within that. So it's that whole clear it and support process that we do within that product that makes it amazing.

And we'll have people go slow because some people, if they're more toxic with radioactive elements, tend to be more sensitive to that product. So we go slow. And we slowly remove things. And then all of sudden, now their energy starts to come up. And they come up. And they get better and better over time. But some people want to hit it right away with a ton, "You know, it's taking everything. "I'll just take a bunch of it." And as we know, that's not always the best way to do it because now, all of a sudden, now they're really tired when it's supposed to make them highly energetic.

Dr. Davidson: I've heard some practitioners say, "Well, you don't want to support the mitochondria

too early because that could cause issues." Where do you see the implementation of giving attention to the mitochondria?

Dr. Watts: I really like that question because in the whole process, we have to help them, first of all, to drain and clear toxins out. And the organs that do that need to create energy. If they're not creating energy, say the liver, and the liver has maybe 1,000 or 2,000 mitochondria per cell, and it is suppressed and not functioning well, then how well is the liver going to work? How well are your kidneys going to work?

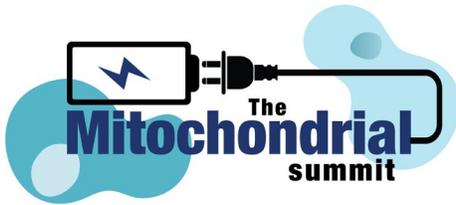
So I think that the energy production at the beginning with the right kind of thing is going to actually support those organs to help drain and clear the toxins in the body. And then we can go after detoxification. So I utilize that at the beginning processes.

Dr. Davidson: So mitochondria support and drainage is early on?

Dr. Watts: Yes, that's the key part. Why? Because if you get the drainage going, you eliminate the toxin load in your body. So you make sure the colon's moving. You support the kidney, the kidneys, the liver, the lymphatics. You get that whole process moving, now we can empty out stuff. If you start to bind and clear things when you don't even have drainage, it'll just recirculate. And not only that, but we've got to energize those organs that need it.

Dr. Davidson: And then you mentioned you can push mitochondria, though, too fast too hard right away, potentially?

Dr. Watts: You can. And that's what their concern is. You just have to understand that you want to go at a level that you're not having these severe reactions. So if you feel like, "I'm getting severe headaches. I'm super tired, fatigued," maybe you're just going too fast, and you need to slow



down, and allow drainage to happen more so.

Dr. Davidson: So it's customizing it based on you individually. If you're doing pretty well health wise and you're just looking to take it to the next level, you might be able to push it harder than somebody that's maybe been struggling for 20 years with a chronic illness?

Dr. Watts: Exactly. I've had people that I've said, "Okay, you're doing one drop." Me, I'm doing two dropperfuls because it turns my brain on. And now I have this brain that works so much better all the way throughout the day and until ten o'clock at night, my brain's still functioning. I'm not wanting to go to sleep and just can't function anymore because my brain's so tired. It's just amazing the difference it's made in me, as well as my workouts.

And I know you're going to be talking to some other doctors about this product and some of these things about how well it's affected their performance in Spartan races and other people in training for marathons, but I'll let them talk about that. But it's amazing how it is phenomenal in recovery, phenomenal with oxidative stress. Because if you're not binding, that's why we bring the oxygen in, we have our oxygen product that we bring in to bind our free radical to then take through the process, you have to have oxygen.

Dr. Davidson: So to summarize then, oxygen's needed throughout the process?

Dr. Watts: Yes.

Dr. Davidson: Mitochondria support though, I'm hearing it's awesome right away. You just might have to be careful on not trying to push it too hard, depending on your state. It's important during killing of pathogens. Really during the heat of detoxification. But I'm also feeling that it's also a good maintenance thing.

Dr. Watts: It's a great maintenance thing. It's

a great performance thing and anti-aging. If you're breaking down your cells quickly, then you're aging faster. So our goal is to sustain the mitochondria as best we can so that you slow down aging in that way. The other thing that you're looking at on the support the phases of dealing with infections or pathogens is because it's part of the cell signaling process.

How are you ever going to get on top of dealing with these infections if you're not getting your mitochondria functioning that signals your immune system to fight them?

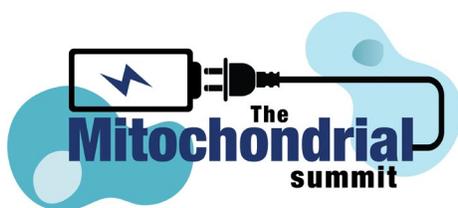
Dr. Davidson: In class, because I've got a biology degree, I was always taught mitochondria, they make ATP. Now, you're saying that there's an immune system component. Dive into that for me.

Dr. Watts: So it also helps the cells utilize oxygen and it also is part of the responsibility in signaling our immune system to fight infection. So it's part of also the process of apoptosis, which is telling our cells, "Like hey, you need to...You're mutated. You need to die."

Dr. Davidson: Which would be important then in the cancer side of it.

Dr. Watts: And the cancer side of it, right. These chemicals and toxins we're exposed to create a lot of this mutation of cells that can drive problems. And that's where those studies...You've seen these lawsuits on glyphosate and cancer recently. That's what the molecules do when it's destroying the mitochondria, then they're not signaling properly to kill off the mutated cells that then are just then taking over.

So that's why the mitochondria is so important to address and have healthy because then we're able to do apoptosis. We're able to say, "Hey, immune system, we're signaling. There're these guys here. Go get rid of them. Now, we can focus on energy."



So sometimes we're so focused on that, these people that have chronic illness, so focused on dealing with immune system function, that they're not able to create energy.

So they have no energy. So if we can support them, now they can really go after the infections because their body's immune system is functioning properly the way it's supposed to and being signaled to do it. And it's creating energy due to all these enzymatic reactions to be able to function the way it needs to.

Dr. Davidson: Is that the reason in the chronic illness world with chronic infection that we see fatigue being one of the most common symptoms is that the mitochondria, instead of making energy, they're just trying to signal immune system, "Hey, fight this infection?"

Dr. Watts: I believe so. And I think that's a part of it. And I think the other part is that there's an overload of toxins and radiation, radioactive developments that overwhelm our cells and create all these free radicals that then we're having just to use all these other things to clear that out, too. So it's a combination of, not just infection, but toxins.

Dr. Davidson: So instead of maybe somebody getting a diagnosis of chronic fatigue syndrome, it should be chronic infection, chronic toxicity overload, and deficiency of mitochondria syndrome?

Dr. Watts: Yes. And what's interesting, I've been reading and researching stuff. And the research in mitochondrial function and disorders are the big cause of a lot of the disease today. And this is a big area that that research is going into of why is this happening?

The comment one of the doctors made was the fact that today, we have so many more chemicals that we are exposed to that we're creating all

these mitochondrial disorders that now we're seeing all these new diseases. And we're seeing a lot of the diseases that were very rare become more common.

Dr. Davidson: And then more toxins than ever because you're known as the parasite guy.

Dr. Watts: Yes.

Dr. Davidson: More toxins than ever also creates an environment to let parasites thrive in the body, essentially, too.

Dr. Watts: Yeah, all infections. That's where we see with SIBO, right, or SIFO, so small intestinal bacterial or fungal overgrowth, we're always trying to kill it off with antibiotics, "Bam, bam, bam," where really the problem isn't the fact that those bacteria are imbalanced there. It's usually an issue with toxicity that we have these chemicals that are killing the good bacteria. So they have an overgrowth of bad bacteria where we don't have the flow of the bile coming out with congestive livers that aren't properly creating the right microbiome that we need.

Dr. Davidson: That's such a different approach because, in the pharmaceutical side, it's, "Yeah, here's an antibiotic to bug bomb to try to kill off the SIBO or the SIFO." In the functional medicine world, well, it looks at herbs that have that same effect. But you're saying also toxicity load has a massive impact on that.

Dr. Watts: Well, let's look at what's creating the problem in the first place. There's a reason why it's there. Okay. It's not just magically happening that we just now have an overgrowth of bacteria or fungus there. It's actually playing a role or is being destroyed by something. And that's what we have to go look at and then clear out. And I found most success of dealing with these cases that, as we cleared the toxins out, the balance came back in nature by itself.



It's like the research they did on probiotics versus fermented foods versus doing nothing. One of the research articles took, and they said, "Okay, here's a round of antibiotics. How quickly did that person recover, the microbiome recover?" And in two months, it recovered doing nothing. Within half that time, it recovered by eating fermented food. And then within three times the amount or six months, they recovered from taking probiotics.

Dr. Davidson: So the probiotic was actually slower.

Dr. Watts: It was slower because of the fact that now we're trying to give just a hyperfocused type of probiotics instead of realizing like, "Maybe we should do more in a natural way in foods, in fermented foods." And we can't outguess nature of what specific probiotics we need. And so that's why I don't really do very much of that stuff. It's more of how can we get that naturally? And then how can we remove what's creating the problem in the first place?

Dr. Davidson: So for the listener, because this has been awesome information, what do you see as actionable items? "Okay, I just listened to Dr. Todd Watts. I'm on his wavelength. But now, what do I do?" Is it supporting drainage and starting to support mitochondria first? That's the go-to?

Dr. Watts: That's the go-to. And then from there, you really make sure the bowels are moving. You're clearing the toxins out of the bowels. And you're clearing parasites. So that's the second phase I go into is really going in more gut, parasite realm. And then the third phase is when I go in after further infections and toxins.

Dr. Davidson: Let's say I support drainage, I support mitochondria, I clear parasites out, I detox, what does wellness look like or how do I prevent myself from ever going back to this horrible state I might have been in?

Dr. Watts: A lot of people call it maintenance or preventative. I like to optimize my life. So as I am approaching here this, in a couple of weeks, 51 years old, I want to live my life to the fullest. I have young kids. My youngest is five years old. What do I need to do? I need to keep young for a long period of time and have energy and vitality.

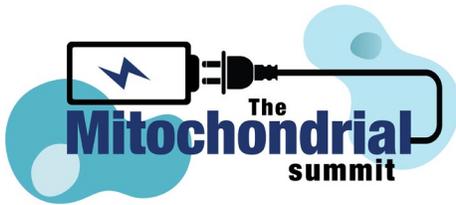
So that's where working out, eating properly, and then taking products that are going to keep my mitochondria super healthy. I'm going to rotate and make sure I take binders that will clear out things that I'm exposed to on a daily basis. I'm going to do things that are going to rotate through, and always support liver and kidney function, and make sure I have optimal drainage through the liver.

The liver's vital for hormone, it's vital for enzymatic reactions, and vital for so many parts of detoxification. That is a key thing that I like to focus on quite a bit.

Dr. Davidson: Where does infection fit in? Or like, after you clear parasites out, and infection, and detox, where does infection fit into the—and I love the word optimize, by the way—where does it fit into the optimize word?

Dr. Watts: So I'm always, every couple of months, rotating and taking a product that helps to support digestive system, but also, supports clearing out parasites, or bacteria, and things. A lot of the great things about the natural herbs is they're great for the stomach juices. They're great for the liver. But they're a bitter or they're a spice that helps to push these organisms out. You don't have to go harsh. You don't have to use harsh things to push them out, or to maintain, or optimize.

So I think it's really good to always come in each year and do a parasite protocol or every six months and do a parasite protocol and clear things out. You don't have to use harsh things



once you've gotten on top of it. So, for me, I used a year where I pounded parasites, personally myself, to clear these things out. And now I just rotate through different products to help me. I think it's not only beneficial for clearing them out, but it also has other health benefits to it, too.

Dr. Davidson: So as you continue your journey in optimize and getting deeper in the body, you could bring out a deep infection that you need some help with, but then also just daily exposure that the periodic parasite cleansing can just keep that down so that it never gets out of control where then you get in a predicament where you originally were?

Dr. Watts: And that's what I liked about addressing the parasites affects the immune system because within the immune system we see parasites upregulating TH2, which are T-helper 2 cells, which is part of our immune system. Now, if you go up, it secretes these proteins that then bind on to macrophages over here on TH1. And when it does that, it suppresses our immune system to fight viruses and bacteria. At the same time, it turns on viral replication. So if you had Epstein-Barr or if you had other viruses in the past, it can activate them and within that process, then start to try and treat these guys.

But what you need to do is clear parasites. And as I cleared the parasite load, now I never get sick over here. I don't get the colds. I don't get the flus in the wintertime, where before, I used to catch it all. I'd be the guy that, "Oh, yeah, somebody's sick, oh, man." I would get it. And it would be twice as long as everybody else because I had weakened TH1 immune system on this side. So as I cleared toxins, as I brought that parasite load down, and I brought my immune system up, functioning better, I'm just a healthier person overall, by far. And I can sustain not getting sick.

Dr. Davidson: Yeah, I'm sure the listeners are still thinking, "Wait a minute, he's 50, 51 years old.

What?" You age well, my friend. You age well. So as we wrap this interview up, any final words of wisdom for the listener?

Dr. Watts: It just is living and dreaming what that life needs to be. I want to live a maxed-out life. And I want to live this charged life. And how do I do that for a long period of time? How do I have a high-quality life when I'm in my 60s, and 70s, and 80s? So that's being actively approaching exercise, diet, make sure I eat good. Make sure I'm taking these products that will help optimize my body.

I also want to make sure I'm optimizing my mindset, and how I think, and the people that I'm around. Optimizing my spirituality, how God affects my life, how it's a part of my daily life with myself, with my family, with my kids. How my relationships are because relationships can actually destroy your health. And so making sure that I nourish those relationships that are in my life with my spouse, my wife, my children, with my broad family.

As you can see, I have seven siblings, my parents. There's like 39 grandkids my parents have. I'm very blessed with an amazing family and friends like yourself. I just choose to be around people that can really bring me up and lift me up. And that's important. Almost as important as what you're doing inside and taking into your body.

Dr. Davidson: Words of wisdom. Words of wisdom. Well, in order to reach out, if you want to reach out to Dr. Todd Watts' clinic, it's TotalBodyWellnessClinic.com. He's the clinic director there and has a couple of amazing practitioners that coach one-on-one. And he oversees all the cases.

Also, the supplement company he was referencing is MicrobeFormulas.com. I hope you enjoyed this interview. Dr. Watts, thank you so much for dropping your knowledge today. It's just awesome how you can connect complex biochemistry things



and still have actionable items for us.

Dr. Watts: Well, a pleasure to be here.

Dr. Davidson: Awesome! Well, hope you enjoyed the interview. And we'll see you on the next one. Maximum blessings.

