Introduction and Guest Background

Hello everyone. My name is Doctor Richard Horowitz and I am the co-host for this year's 2026 DrTalks Healing Lyme Summit 3.0. This year we are the neuroinflammation Brain Protection Summit.

That's a handful for those of you who would like to repeat that several times. And it's my pleasure to have a conversation today with Doctor Melanie Stein.

Melanie, I think you and I met each other in Eilat a couple of years ago. If I'm remembering correctly, we were on a boat trip. We did. We actually first met each other.

And your first, deb zone. Training course many years ago at your clinic? Yes. Excellent. And then we had a great time on the boat. Yes, yes. Yeah. That was it was actually a lot of fun. Yeah.

Some of those islets conferences were great. So. So today, I'm really happy to have you join us. Today you wrote a new book, Breaking Through Chronic Illness.

Right. We're going to discuss today the cell Danger response. Like brain inflammation, the cell danger response, cellular recovery. Like why mitochondrial, dysfunction is so important.

And to address it in chronic Lyme. I know you feel comfortable sharing. I asked you this before we got on. You feel comfortable sharing a little bit of your personal story to let people know how you got into Lyme disease and why you're doing what you're doing.

So please tell tell the audience a little bit about yourself and how you got into this. Yeah. So, you know, I got into this. I think much like many of us, either a loved one or ourselves, had chronic illness.

And so I actually woke up one day paralyzed from Lyme disease. So I was honored qigong retreat. And I woke up one morning and I could not move my legs.

And it was probably one of the scariest moments of my life. And being from the Pacific Northwest, I went to the hospital and I had a gamut of tests, and they said, well, nothing's wrong with you.

You must have conversion disorder, go home. And, you know, of course, I had a pretty feisty family who said, well, she's not going home, she can't walk and she's having full body tremors.

And, you know, a couple days into my stay, I feel like I was very blessed because I developed a bull's eye rash. And you would think that means I was blessed.

However, again in Oregon, they said, well, that's not tick borne disease. We don't have tick borne disease out here. And it was it was a really interesting battle of trying to be recognized for what was going on with me and being told by the medical community that nothing was going on with me, even though my life had changed overnight.

And, you know, I it was really interesting because I finally convinced them to do a spinal tap on me. And I actually did have positive spinal fluid for for Lyme too, which is even more rare.

And you would think then at that point still, I would have them convinced. But I will never forget an infectious disease doctor walking in the room and sitting down and going, well, there's two worlds to Lyme disease.

There's people who believe it exists, and there's people that don't. So I knew I had to get out of this, this place. And luckily, you know, I was in medical school and all this happened.

And I had an incredible community and, you know, acute neurological Lyme. I was put right on I. V. antibiotics. And it was it was a long course of, of recovery, about a 3 to 4 year recovery of various different I. V.

Lyme Illness and Personal Recovery Story

antibiotics, oral antibiotics, lots of natural therapies, herbs, ozone. And I eventually did get better, and I was doing really well. I opened up my practice, and then Covid hit.

And when Covid hit, everything kind of changed for me. I got extremely sick. And all of a sudden overnight, I started to develop seizures up to like 20 times a day.

And I had to take a step out of practice. And we retested my infections and sure enough, Bartonella, Busia, Braulio were all there. We were doing all of the best treatments.

You know, it just nothing was touching my symptoms. Can I ask you what specifically for Berbizier? Just because the point is it's from X doesn't work so well anymore for Berbizier micro D, did you try that defending queen protocol or did you do something else?

Yeah, I tried to finish Quin. I didn't tolerate it. I got very, very, very anemic. I did not try Dobson because of what happened with to Quinn. Okay. And so it was it was mostly Matt Brown as Earth crypto.

Lapis. Okay. Yeah. Didn't work as well. Yeah. And for Bartonella, the Bartonella was positive by fish. It was positive by antibody immuno blood. How did you pick it up by fish and immuno blot on hygenic.

Okay. You know, and for the people listening one of the things that is classic and I was speaking to Melanie quickly before we got on when I heard her story of these seizures.

It's a very classic manifestation of nuance, set of seizures and even transverse myelitis. Right. Well, you can't walk. That is classic Bartonella. Right?

So what what surprises me a little about your story, I get the two worlds with Lyme, but any rash on top of a positive spinal tap, you know, you're also entitled to leave Oregon.

If they if they didn't believe it existed in Oregon, people travel to other parts of the United States. So so in other words, the the I. V. or seven antibiotics that you did, it helped put it in remission completely, or you were just better and had some symptoms.

Then Covid just brought the whole thing out. I mean, you know, I was walking again. I was not having tremors. I had some pain and some brain fog, but for the most part, I feel like I was I was doing pretty good.

You know, I did do rifampin. And as if, and I think that's I was actually ivermectin the first time that really changed things for me. That's what got me out of a wheelchair.

But, you know, for the most part, I would not say that I thought about my chronic illness every day. Okay. All right. Good. So how long did this. So after you got Covid, what exactly did you do at that point?

Because I know one of your main focuses is cellular health. How did you approach this? Because you're a natural. Patrick physician, how did you approach this from the standpoint of I did all these antibiotics, I got Covid.

Did did you think it was long Covid? I mean, any evidence spike proteins, right. Hanging around like any evidence of Epstein-Barr v six reactivation. What was going on and and what exactly did you do right.

Everything. Everything happened. My bucket just completely overflowed. So you know, I yes, we did spike t spike protein detox protocols. Nebulizer Bluetooth was probably the biggest lifesaver for me because I could not get my breathing back for a couple months.

You know, we did ivermectin, atorvastatin. We did kind of the whole Bruce Patterson protocol and still, you know, really nothing was touching my seizures.

And that was really my worst symptom. I, you know, I got really extreme pots as well, but the seizures were that was what I was really worried about because I had no quality of life at that point.

And so, you know, I have a dear mentor of mine, Doctor Verner Vassallo, who taught me almost everything I know about the cell membrane protocol. And he said, you know what, get on a plane, mentioned traveling, get on a plane, come out to Utah.

We need to treat you. And so that's where I really started the intensive cell membrane work through the use of IV phosphate title coaling, I. V. butyrate, different mitochondrial nutrients and antioxidants.

We can kind of go into that detail here in a minute. But, and it was brutal. You know, it was a brutal couple weeks of treatment. I don't think I've ever been that sick in my life.

I was having seizures throughout the whole I. V., you know, but I was with someone that I trusted more than I. I've ever trusted anyone, with me. And so I just trusted the protocol, and I stuck with it, and.

And by the end of the three weeks, things started to lift and things started to shift. And so now, when we went in with rifampin and went in with his birth and went in with clear breath, things started working again and my seizures started decreasing and my pod stop meds started working.

And, and, you know, it was still a couple months of recovery. By no means that I just go get three weeks of treatment and feel 100%. But throughout, throughout the course of maybe the next three, 4 or 5 months, I got my life back again.

I was able to come back to practice. And, you know, I have symptoms here and there now, I think there's kind of a lifestyle of maintenance that I do feel great.

I don't have seizures very often. It's been about two months since I've had a seizure. And I feel amazing. Most of it, by the way, these what they're called pseudo seizures, meaning they're not true grand mal seizures or petit mal.

They're they're just like, all of a sudden, these tremors where your body starts shake. Because that's what my patients with chronic Bartonella have had.

Yeah. I get told that my eyes will roll back in the back of my head, and I just kind of sit there and I stiffen up and just shake a little bit. And so, in other words, the Rifampin and Centrum Max, which is part of a Bartonella protocol, it would not work until you started doing a cellular membrane protocol to kind of heal the cell membranes in the mitochondria.

Yeah. Did you use any methylene blue by the way. Lots of methylene blue still on it to this day okay. All right. Because you know in the Hopkins reason I ask of course in the Hopkins research methylene blue rifampin and from Max was like the key components for hitting Bartonella. Yeah. Yeah.

And I think too, when you think about methylene blue the the mitochondrial repair approach as well. So I think we're kind of getting two different aspects or benefits from the methylene blue.

And I think that's one of the reasons why I'm still on it. Yeah. So so why don't you explain to the audience a little bit like what happens to the cell membrane, your mitochondria, once you start getting Lyme and Tickborne infections and even mold because, right.

We, we find a lot of our patients have environmental toxins affecting the membranes. Also explained a little bit like what happens when you get infections and toxins in the body.

Yeah. So when we have so the job of our cell membranes let's just start there. So our cell membranes are these fatty based membranes. They have some proteins also inside of them.

And their job is to protect us so that things that we don't want in such as tick borne disease, mold can't get in nutrients can come in. And then things we want to get out, come out so we can actually detox our cells and get mold out of our cells.

And these cell membranes need to be specially organized. They need to be nice and buoyant, and the fat needs to be perfectly organized. And, you know, the main fatty acids on the cell membrane that we talk about here are phosphate, tidal choline and phosphate, tidal ethanol.

I mean, in the mitochondrial membrane we have another one called cardio lipid as well. That really helps with the folds of the mitochondrial membrane.

And then the mitochondria. The reason that those folds are so important is we need to make energy right ATP, the energy currency of the body. And when we have mold, Lyme, Bartonella, Busia, Covid coming into the body, what happens is our body gets really inflamed.

And that's called oxidative stress, right? So we have oxidative stress happening and those nice healthy fats get oxidized. And now instead of being nice and buoyant they become thick and waxy and toxic.

And so all of those wonderful processes that we need have to happen every day to live and survive and heal. They stop happening. And so now we can't regulate what's coming in the cell.

Infections have just full freedom to come in. And we can't get mold, can't get inflammation out of the cell. And our cell communication stops working as well.

So we're not able to have immune system signaling like we used to have.

COVID Relapse and Cell Danger Response Treatment

And it's really interesting because there's a really interesting study on Lyme and how Lyme actually modifies the fats on the cell membrane as a mechanism to get into the cell, as well.

In terms of the mitochondria, our body goes into this protective mechanism. And so this protective mechanism is it's we need it for survival. Right. So the body kind of shifts from this mode of, hey, I you know, I'm going to be fighting, I'm going to be making energy, and I'm just going to be kind of doing my everyday process to weight some things in my body.

I don't want it here. I need to reserve all of my energy resources. And it actually decreases the output of ATP. And when that happens, we get stuck in this cycle.

And that's really the cell danger response that you mentioned. Where now we're not making energy properly. We're not detoxing the cell properly and we're just creating more and more inflammation in the body.

Right. So and for those again who are listening, and some of you may know about Robert Navios work with the cell danger response. But just to give a quick overview, what happens is, is on your membranes, you've got these things called pattern recognition receptors who prrs.

So when you have infections what happens is they're called pumps or pattern activation. Right? I mean we know about this. It activates these particular receptors on the cell membrane and basically causes a lot of oxidative stress.

And the body responds by releasing mitochondrial DNA and ATP and extracellular ATP. And then also you get toxins like mold acted in. And those are called DAMPs.

Damage associated molecular patterns. And that causes a whole host of inflammatory responses and stimulates something called inflammasome processing, which is one of the major inflammatory pathways, which, by the way, inflammasome activation, since we're talking today about, you know, the Lyme neuroinflammation Summit, inflammasome activation is one of the major pathways in the brain, by the way, that gets activated right by linemen, by these infections, as well as by toxins.

So it's very relevant right to the conversation that we're having. So the key is you go into the cell danger response. You've got these infections, these toxins, these things attacking the mitochondria.

You just can't really get better right now. Regarding how does this all relate to light fatigue and brain fog? When people say, gee, my mind's not working, I just don't have the energy to get out of bed.

Why does Lyme have such a profound impact on the brain? Like how is it affecting the mitochondria this way? I think there's kind of two different ways to explain that in this realm.

You know, one is when we're not making ATP, we're not making energy. And every single cellular process revolves around energy. So every single muscle that fires when we move needs a high amount of ATP that happens.

So if we're, you know, just feeling like, wow, every movement hurts, every movement is exhausting. But then also our brain needs even more energy to function and survive.

The other thing that happens is we have another type of fatty acid called plasma allergens. And plasma allergens are very abundant in the brain, in the heart, in the nervous system, in the immune system, as well.

And I like to think of plasma allergens as kind of these sacrificial fats. And so they sacrifice themselves to try to protect our functioning when when oxidative stress happens, we also have single myelin, which is another type of fat that gets oxidized.

And so a lot of you guys have heard of the myelin sheath right. The myelin sheath in neurodegenerative patterns we actually start to oxidize these single myelin I like to think of them like the the coating around a wire.

It's these fats that coat around our entire nervous system to protect it. And so now that no longer is protected as well. And so that's how, you know, we really start to manifest fatigue, brain fog.

I think that's one of the mechanisms of how we start to get autonomic dysfunction and parts as well. Right. And also with neuropathy of course. Right.

Because in a huge and things like M. S. and multiple sclerosis. And by the way I see anti-missile and antibodies all the time. The anti ganglia side antibodies all the time in these patients which is reflecting, as you said, it's kind of an unwinding of that membrane.

That's that's protecting right. The coil the wire that's transmitting the electrical impulses. So so what's basically happening then you're saying in the brain and in the muscles and stuff is the mitochondria just stopped producing energy, right.

So then it's a question of how do we start it now? One of the problems with Bob Navajo and with, in fact, with the cell danger response, which gets tricky, and I think some of our resistant patients, because I have excellent responses to Dobson therapy and removing mold and hitting biofilms and persistent with these short term pulses.

But I suspect that there's a group of people who have the cell danger response where they've gotten sick, and then they start to improve, and then they get sick and they start and they get these mosaics right, of where the mitochondria, like some are stuck in phase one and some are stuck in recovery and some are like in the middle of, you know, type zero.

And I think I can't prove it because we've sometimes done mitochondrial studies on these patients, but they're

getting a mosaic of mitochondria that some are still sick, somewhere in recovery, somewhere in the middle.

Is that your experience also? That's probably why some of these people are just not getting better. Yeah, I agree, and it's hard to determine which one they're stuck in because I think you're right. Right.

It's not that the mitochondria are stuck in this phase of the response. It's that they're all in different phases and it's like, okay, well what do we do to try to get them out of it?

And how do we heal the mitochondria on a whole? And so that's where I feel like really looking at the core phospholipids of the cell membrane and really replenishing those phospholipids at the same time that you're lowering oxidative stress and inflammation, I think is how how we can do this.

You know, just to kind of talk about the different phases of the cell danger response. We've really been talking about CDR one, right? We've been talking about that first phase of the cell danger response when something's here.

And now I need to shut down all the different processes to protect myself. And I start making energy. In order to go into the next phase, the cell needs to think it's safe.

And so inflammation and oxidation has to be lower for that to happen. And so we can't just heal the membrane. We need to also take care of the infection.

That's what you and I were kind of talking about at the same time is how do we do this? And how do we find this balance between, well, do we treat mold?

Do we treat Bartonella, or are we going after the membranes and the mitochondrial repair? And it's kind of this dance that we're doing with our patients.

Yeah. And by the way so and that's you know, I had tried years ago, Garth Nicholson and I are good friends. And Garth published like the first article, like he's published over 600 articles.

I think he's one of the major researchers on mitochondrial function. Years ago, I think it's literally 20 years ago, he published the first article that about 25 or 1 third of all the Lyme patients had mitochondrial dysfunction, just like those who have chronic fatigue syndrome, fibromyalgia, right, etc.

even long Covid, it's it's showing up in all these different diseases and that he would do mitochondrial regeneration. You know, I use particularly ATP 360.

There's many forms of glycosylated phospholipids. I'll find out your favorites in just a second. But you know, he has his anti factors. I've used his anti factors I like researched ATP 360.

We've used CoQ10. We've used acetyl l-carnitine to shuttle the fatty acids into the mitochondria. I've used mito in R by designs for health with nicotine aside right beside great penetration in the brain.

You're looking in a that we should discuss a couple of these because a lot of these are out there versus just taking probiotics to get the your will listen and a I've tried these but what's tricky is that to get people out of the cell danger response as you said, if they don't feel safe. Now this is also a problem.

If you're in California and Oregon and there's a wildfire going on, your cell danger response is kick it out. So even if you've been starting to address the infections, and what we usually do is let's say somebody is loaded with mold, I may start detoxing the mold if they think they're sensitive, like if they walk into their apartment and go, oh, I smell it, I feel sick, I'll start to detox the mold, but sometimes it takes me a year longer.

So usually what I do is, and I'm curious, you do the same thing or do it a little differently. I might give them a few months of mold detox, get their gut in order, make sure the microbiomes functioning well.

Then do a nine week capstone pulse. You'll do whatever naturopathic you're doing, and then I'll go back to detoxing the molds for a few months, and then I'll start chewing Bartonella pulses.

But it's like treat the infections, stop, detox the mold, stop treating. And I'm going back and forth. And usually after that some pulses I have it like wired into the entire protocol to do mitochondrial regeneration.

We do it after every pulse because you're getting free radical oxidative stress just from treating the infections and giving the drugs. Right. I don't think most people realize that most drugs they take and just living on the planet causes mitochondrial.

Mitochondrial dysfunction. Yeah, right. I mean, even metformin. Well, with the longevity drug, it still causes it, right? Yeah, sure. Does. Yeah. So how is it you how do you balance it in your practice when you're dealing with this.

Yeah. You know I think that's a really good question. And I guess one of the questions I have for you too is if you're using IVC, because I feel like that's where I'm getting the difference is I can only get so far when I'm using oral phospholipids.

So, you know, I mean, I think like many of us, mold is kind of my one non-negotiable. If you're living in mold, I really can't make a lot of progress.

I'll try, but I really can't. So my first step is always please get out of mold. And then the same thing. I'll start detoxing the mold and working on that healing the gut kind of just getting them a little bit more stable, maybe stabilizing mast cells as well, which by the way, one of the mechanisms of mast cell activation is actually membrane degeneration of the mast cells.

And when you know, we're under a lot of oxidative stress in the mast cells, we start to have play to activate. Now we're starting to activate the Cox LOX pathway and creating a lot more inflammation that way.

So sometimes in my most difficult patients where I can't stabilize their mast cells, I'm actually using IV PC to get them stable, to just even get them forward to tolerate an antibiotic.

Cell Membranes, Mitochondria, and Brain Inflammation

So IVC, IVC and IV butyrate are the core of the treatment. So you've seen clear, by the way, I'm you know, I learn from you just like you learn. We learn from each other.

That's how we get better, right? It's the only way this happens, actually, is, by the way. In fact, I'm thinking of even starting. You did the initial training course, but I'm actually thinking of doing a monthly course for doctor now, maybe two hours a month or something where we all get online and I'll tell people about it soon enough.

But I'm thinking we need it because these stuck patients like I don't. I've chosen not to do a lot of IV in my practice. Medical boards don't necessarily look, you know, look at it nicely.

So therefore it's like, and people call me from all over the world and I'm doing consulting, right? I'm not doing so. I want something oral that anyone in the world can take.

But you bring up a good point. I have not done a lot of. I've lost a little colon. Personally, I know Garth has had luck with his energy factors orally, but you're bringing up an interesting point.

So you're saying for those patients that maybe are stuck well in what we believe, we've treated the infections like, I have one guy I'm thinking of, he's now moved on to another physician because they're no longer doing one on one.

We treated his line. But you Bartonella, he took it to and protocol for eight weeks. He took the nine weeks option protocol. He did 5 or 6 pulses for Bart.

And we checked his T labs because his his fish were positive for Busia five times in a row. Until we did that to Fennec, when protocol, his Bartonella fish was positive multiple times until we think H was 56.

Part pulse for two weeks. So before we left my practice and moved on, he was clear T labs had negative Lyme PCR negative for Busia fish, negative part fish.

But he was still loaded with mold. And we checked his nasal sinuses. And you know sometimes the spores show up. And I'm thinking even if it's not showing up there, I spoken to Neil Nathan, Joe Crist about it, maybe it's in the gut.

It's for producing because we checked his home, we could not find a source. Or I'm thinking, is this like heavy metals? It's like you go digging for the heavy metals and you go check six months later in this more because you just unearthed, like a vein in the ground where you found more.

Do you do you think that's part of the problem also? Because maybe in people like most of my patients have done extremely well, but maybe the IVC was the piece I was missing because he wasn't getting effects yet, but he was still loaded with mold.

Yeah, well, the mold piece is a huge one, right? Because if you're producing mold in your body, which is one of the things that can happen when you've been exposed to mold is now you become the colonizer, right?

You become colonized. And so it's just as well that you're living in mold because it's inside of you. But I think with the IVC, you know, I mean, there's limitations with oral PK.

We're relying on a healthy microbiome that the body's actually going to digest it, but also the bulk flow concept of when we flood the cells with healthy fats over time, that is one of the key pieces that actually help the cells incorporate the PC into the cell membrane.

But the second missing piece is the sodium funnel butyrate. You know, orally. We have a lot of tributaries in or butyric acid forms, but those stay in the gut and they're really good to help with short chain fatty acid production help heal the GI tract, help heal leaky gut.

But we really need the sodium fennel butyrate to be able to go into the into all of the other systems in the cell, but especially into the brain. It's the only form of butyrate that'll get into the brain.

And we need butyrate to get rid of that toxic fat Milano aldehyde. Some of the other toxic fats that occur that are just keeping you stuck in that cell.

Danger response as well. And interesting. I just found out the other day that Wellness Pharmacy and is now compounding oral sodium fennel beta eight. So I'm going to start trying that to see if I, you know, we can get away without doing I. V.

forms and see if we can make some progress on all of the oxidative stress to do some of the do some of the lipid panels to see, like the omega six nine ratios and to see, are you running like the Kennedy panels and you're doing some of those panels.

Yeah. Kennedy Krueger. You know, there used to be IGL do you know IGL that was a that was in fantastic lab. That's not there anymore. So now I'm running the Prodrome scan. That's Doctor Goodenough work.

You know he's looking at fatty acid ratios. And you can kind of get the single myelin ceramide balance. And an idea of what's happening in the mitochondria.

Because one of the things that happen when your phospholipids are depleted in the mitochondria, they start to pull phospholipids off linoleic acid and you start to make a genic acid.

So I'm running those panels to, to get an idea. Vibrant wellness oxidative stress panel as well. You know, the problem I had is whenever I would check, people's might swap the one I liked, I learned it from Leo Galland years ago.

I used the Midas swab test, but literally every patient who did this mitochondrial test showed they had mitochondria. And it got to a point. It was like, why am I bothering to tell people to spend 4 or $500 on this test?

Not that it can't be useful, but I was just thinking to myself, well, I'm doing mitochondrial regeneration anyway, you know, after doing my protocols, but now you're bringing up an important point.

Like, although what I'm doing works for the majority of people, the reason when again, this is important, when the mold is gone, the metals are gone. I mean, that's apart from all the hundreds of thousands of toxins we're not even testing for.

But those are the big ones, usually that show up. Assuming those are gone, it might be that this form of butyrate you're saying. So if someone was to do it orally though, give me your your favorite mitochondrial supplements, like in your book Breaking Through Chronic Illness.

What do you what do you advise people to do. Yeah. So I love I love oral, I do use a ton of oral PC. I use return healthy is it has a couple really good different phospholipids and it has you know when we're talking about mitochondrial membrane, it's not just PC.

It's PSP too. So it has a nice little blend of that. And then I kind of go back and forth between body bios and and return healthy as butyrate as well.

And so that's kind of the core two parts of the protocol. And then for mitochondrial support I love ATP 360. That's what I use a ton of because you're kind of getting a lot of those mitochondrial cofactors in one supplement rather than and they're pretty good dosed.

You know, they're they're pretty high dose too, which I take it myself. I mean, if I showed you my kitchen cabinet and it's not even a cab, it's just out there, it's literally I counted it up.

It's like 65 different supplements. And and believe it or not, phosphate, little colon I mean, I take omega threes. I'm not even taking separate phosphate.

Little calling because I take the ATP. But sometimes I wonder because of like the fast video calling steel that sometimes happens with the liver in the brain, like, and that maybe it's something to discuss with people is like, if your liver doesn't have enough, right, it's actually taking it from your brain.

And that that becomes a big problem with people. Yep, yep. And speaking of that, you know, to the liver and the gallbladder is, you know, PC is a major precursor bile.

We need PC to help conjugate bile to help with more detox and fatty acid transport. So I give a lot of Tud and ox bile as a part of the protocol to help with bile flow.

Co Q10 you know, b1, b2, magnesium, selenium to help with gluten and production oral glutathione on everyone goes on or off with the thyroid and then I'll give some.

You know, sometimes if I think they're having problems with the fatty acid transport into the mitochondria, I'll give a C2 l-carnitine. It just kind of depends.

You know, I use a lot of methylene blue as well. It just depends on who's in front of me. And then, you know, really kind of listening to them when I feel like I've gotten the muscles under control and I've gotten the inflammation down a little bit, that's when I start hitting the infections pretty hard.

And, you know, and because again, we're talking about inflammation in the Brain Protection Summit, one of the hypotheses behind dementia and Alzheimer's.

And I was just explaining to Melanie before we got on the call, my article in the Journal of Alzheimer's Disease Case Studies was just accepted. Mitochondrial hypothesis is one of the major hypotheses, apart from the amyloid hypothesis right, of why people are having dementia.

But what is not discussed in a lot of the articles out there is that infections cause mitochondrial dysfunction and mold causes my right. They discuss it, but nobody's really getting to the root causes of why it's happening in people.

But there are some studies now where they've used methylene blue in much lower doses than what I'm using for dabs on between ten, and I think it's 220mg or something they're using what doses are you using when you're doing the mitochondrial protocols?

Anywhere between like 25 and 75 twice a day. Okay. You know, pretty low dose, not nothing like the dabs on, but. Right. And you're seeing you're seeing clinical results in these patients when they're, when they're doing it.

Yeah I yeah. If you're getting their infections to if you're not getting their infections too I'm not seeing results. You know and sometimes we need to go higher for bartonella of what was I going to say? I'm speaking of Alzheimer's too.

And, you know, replenishing the plasma isn't important. So there's prodrome neuro and prodrome glia, which is omega nine, omega six plasma allergens that you can take orally to help replenish the plasma allergens.

Because if you don't replenish the plasma allergens as you're trying to replenish the phosphor, tidal coaling, everything is just going to convert into plasma allergens.

So you're just going to be trying to fill an empty bucket. Explain to people. Again, I think most people, for those people who have not studied mitochondrial function in words like phosphate, little choline, phosphate, dental serine, phosphate, ethanol, I mean, it's like, what is the jumble?

You know, we're talking here. Just explain a little bit of the plasma is just looking to stamp again. You you said it earlier. It's in the. Yeah. It's just explain the bait that are making the ATP.

But maybe just explain to people where it's located and why it's so important. Okay. So within that cell membrane we have all of those different components of the fatty acids.

And in the inner membrane we have our phosphor tidal coli. These are, these are, you know, polyunsaturated fatty acids that have different types of fats attached to them.

So we have our co-leads, our series ethanol amines and a little bit of inositol as well in the cell membrane. So it's just the structure that's attached to those phospholipids.

And those phospholipids get converted in our little organelles. Our cells have little organs too.

Oral and IV Mitochondrial Support Strategies

And so they get converted in the endoplasmic reticulum into plasma allergens and plasma allergens. As we kind of talked about, they're really abundant in the brain.

And they're those sacrificial ones. So when inflammation comes into the body, they're the plasma allergens that are in the cell membrane as well. To help with the function in the structure, sacrifice themselves first to try to protect the cell.

So they're the first ones that might get the oxidative stress and the lipid oxidation and all the things when we're checking, like methyl Mylanta, heightened lipid peroxide and eight hydroxy guanine and protein carbonyl, all the signs of inflammation, right, causing oxidative stress.

They're the first ones that kind of go correct. Yeah. Got it. So so when you've done this you've addressed the cell danger response. You're doing these mitochondrial protocols sometimes oral, sometimes IV, and you're doing it with what kind of treatments you're actually using for the line babies.

You're barred from a from a naturopathy perspective, what are you finding is working well with this approach. So I'm doing a lot of s.a.t these days. I, you know, kind of I like to kind of sit back and watch and wait and see things work with other people for a while before I start doing them.

That's just kind of the doctor I am. And I had so many patients begging me to start doing s.a.t, and I started to see my patients flying to go get it and they would get better.

So I started doing s.a.t. And what I'm finding is that if you do the s.a.t after you do the cellular work, people are having incredible responses to it.

So, you know, sometimes we are needing to do an s.a.t for Bart, do an S.a.t for Bam. If they have two types of Bart, you have to do two types of s.a.t.

So it can get a, it can get expensive and take a while because what works in the body for about six months. So for for the listeners who don't know what S.a.t is, I should probably explain that.

So S.a.t is a is a type of therapy where we send your blood off to Greece, and they sequenced the DNA of the infection that you have. And a lot of different antibiotics, actually target something called mRNA of the infection.

That's the piece of DNA or the recipe book that tells the body how to make hormones, how to make proteins, and how to replicate. And so when the, when this lab in Greece, RGC actually makes something called an Sirena, which is very specific to the species that you have of the infection, and you administered IV.

And what it does is it lives in your body for up to six months looking for the mRNA of the infection, and it binds to it. So kind of like a lock and key.

It just locks the door. So now the cell cannot replicate hormones cannot be made and proteins cannot be made. And so ultimately the infection's going to die.

So do you know, because I haven't seen a lot of good long term studies yet on s.a.t. Do you know if it's putting it in full remission with cures, or is it just knocking down the load of the bugs and people still relapsed needing antibiotics?

Do you know how this is working for the vast majority? So me personally, I'm about two years into doing it. And I'm seeing people still better. You know, every once in a while, maybe I'll do an s.a.t for Bartonella and then their bco will wreak havoc.

And we did the s.a.t. And then there, Bart wreaks havoc again. So I will go in and I'll pulse the pulse rifampin. Or if a normal pulse to a Quinn, to really do the long term cure, which I think is it's, it's another tool.

Right? It's the same with all of the tools as we have to utilize them all to really take care of this. Or sometimes I'll go in with different herbs. Crypto lepers in Haiti are my my two favorite herbs, but, you know, so sometimes I'm going in and I'm pulsing herbs as well for that long term.

And I haven't seen the literature on it specifically. But do you know if it's getting because a lot of these bugs and Bartonella are biofilm persistence, they're kind of under the biofilms.

They're dormant. How does this work? And this is part that I've kind of always wondered, like how is it working with the S.a.t if you've got dormant bugs, it's really only working when they're coming out of hiding and they're replicating for the lock and key to happen, right?

Yeah. So I'll post biofilm agents. But I think that's one of the reasons why when we see one load come down, that the other bug thinks it's safe and it comes out, so yeah, no, I, I look, I think it's another tool in the toolbox, and I think it's important.

I just wish there was more published research on longer term, because I'm having great results with what I've developed. I mean, it's taken me 41 years of my clinical career to figure out short term antibiotic pulses to kill by that many people in long term remission from these two week antibiotic pulses, because I'm very sensitive about not affecting the microbiome of the gut, right.

And giving a massive doses of probiotics to support their gut while I'm doing it. But for me, it was like I wanted the most short term oral protocol that anyone in the world could do.

Not everybody, of course, can afford s.a.t and do it. But you're right. I mean, for some people who have failed traditional therapies, I think it's it's a tool in the toolbox that people need to know about.

Do you and have enough patients at this point to consider publishing the results, to kind of get it out there and maybe discuss, like what you found in these patients?

Who did I found Lyme Berbizier Bard, I found mold, I had mitochondrial, we found pot. Like, you know, I have my 16 point model, right. Like it might be useful actually to discuss also from not just me putting in the literature, but people like you putting into the literature, like what you're finding and what's working, because the more that's published out there, the better this is.

Yeah, that is going to do, I think, between me and Doctor Somalis, I think you've you've met Doctor Smalls, my my colleague. I think between the two of us, we probably would have enough that maybe I'll bring that up to her. That could be our. Yeah. Please.

Yeah. Please do so. So any any other thoughts? I think we've had a very productive conversation on the reason why mitochondrial regeneration is, is so important.

Because the ATP, the energy production doesn't happen again. I think you have to get the load of the infections and the toxins down or the cell danger response is going to continue, but it is a reason why in some people they may not be responding.

Final thoughts to kind of wrap this up and also tell people a little bit about your new book, about how you wrote it, why you wrote it. I mean, I know you had your own healing experience at this point, but for you, this was a breakthrough with chronic illness doing what you did and doing s.a.t and the rest.

So just maybe just give people kind of some closing ideas of hope, because I think it's always good for people to have hope that, you know, oh, there's no answers.

I'll be sick forever, but you've gotten better. I have lots of people that have gotten better. So yeah. Well, and I think that's really what inspired me to write the book, because I think so many of us, when we hit a wall, we think were never going to get better, and then our limbic systems go crazy and we just get in this cycle.

And, you know, I think that people can get better and we just need to keep looking for answers, because I think one of the reasons I both love and hate treating tick borne diseases, there's no one size fits all treatment for everyone.

You need to put all the little puzzle pieces together to figure out what to treat and when. And over time, people slowly get better. And so I think, you know, the the biggest thing of hope I have is just keep looking for an answer and keep trying different treatments, because one day the treatment's going to come that everything's going to start

to lift, you know?

SAT Therapy, Clinical Results, and Hope

And that's really why I wrote Breaking Through Chronic Illness, because for me, it was the phospholipid therapy. And I, I just I don't think that we talk about it enough.

And I don't think there's really a lot of good patient centered resources that can educate patients on what mitochondrial dysfunction is and what the cell membrane and phospholipids are.

And so that's kind of the goal of my book, is to take all of this complex science that we talked about today and break it down for patients so that they can understand it and have some real, actionable items when they're done with the book.

Now that's great, and I'm glad you're feeling so much better. And I know you don't do a lot of antibiotics as as a natural yourself, but if you still have some mild symptoms, these two weak short term pulses that I have with Daptone, I will tell you they're very effective for knocking down loads of bugs.

I have many people in long term remission with doing them, and but what I would love now that I've got this article published in the Journal of Alzheimer's Case Studies, it would be very interesting.

And I don't have to speak at eyelids this year. I put in a submission for it. I doubt you're doing this and we haven't discussed this, but I just was able to start checking the Alzheimer's markers before I stopped one on one clinical practice and moving a consultation medicine.

I was checking beta amyloid 40 to 40 ratios. PTL 181 PTL 217 neuro filament light. These four major Alzheimer's markers, sometimes with genetics like a pony to my surprise, it was getting close to about 50% of my patients with brain fog were ending up having these markers.

I asked a doctor who's using my consultation service quite a bit, who did it on 50 patients, she said. About a third of her patients are testing positive for these Alzheimer's markers.

It doesn't mean people are going to develop Alzheimer's. What it means is that you've got these proteins, peto and beta amyloid, that are, you know, that are there and they're a risk for later on.

But it doesn't mean you're going to get it. But for example, with sorry, no one has looked at checking these markers before and after to see, are we lowering down these pathological proteins that ultimately driving neuroinflammation?

I think it's an important one to do because the randomized, multicenter placebo trial I would like to do, I realize now is not just on this nine week capstone and checking mold and all the M factors, but including these Alzheimer's markers.

So I would just encourage you to start checking your patients because you can get these requests in lab Cornell, see if you're finding them in the patients and then see what you're doing with mitochondrial support, s.a.t therapy and the rest.

See if if you are reversing it, because that's something really important. I think the community needs to know, because we need to know the long term effects.

Alzheimer's at this point is like the fifth leading cause of death. And the estimates are really bad. I mean, it's like 42% of people over 55 years old are now expected to get dementia.

Years ago, they said like 46.5 million Americans had preclinical dementia. We're doing this Lyme protecting the, you know, the brain with neuroinflammation.

Talking about this, the summit specifically because I discovered this and we're finding for the first time we can reverse it. But people need to be checking because it's possible like cutaneous.

Some of these Chinese are they may be doing it. We just don't know. Right. So I would encourage you if you could add that into kind of the practice pattern that you're doing.

And then, think about publishing again, I'm encouraging publications because that's how all of us learn. And just like I say, like I'm going to put I. V.

phosphate, little codeine and using, you know, plasma in the back of my mind for some of these people that are still stuck. Right? I mean, that's what I already know.

I've already referred to doctors that have been doing it. I know it's working for some people, but you're right. I think some of these it's important for us to get together and discuss these things and ultimately get it published.

So thank you for doing the work on this and writing your book. I mean, it, I know it's a lot of work to get the books out and to do it. Yes, I know it's a lot of work, so congratulations on it.

Any any other. By the way, how are people how can people contact you if they want to learn about your work? What's the best way to email and way to contact you?

So my clinic is restorative Health clinic in Portland. We have patients that are flying and all the time to come get treatment. So the best way to contact us is on our website.

There's a contact form www. RestorativeHealthClinics.com. And then as well I'm on Instagram at Doctor Melanie Stein. And I post a lot of little fun health tips all the time.

That's great. Good. Well Melanie thank you for joining us today. It was a real pleasure. And for those of you who've been tuning in, Doctor Melanie Stein and I, we've been talking about the role of the cell danger response in mitochondria regeneration in chronic Lyme and getting some of these really resistant patients better.

Again, for those of you tuned in, my name is Doctor Richard Horowitz. I'm co-host of this year's 2026 DrTalks Healing Summit, the Neuroinflammation Brain Protection Summit.

For those of you who just again joined us for this one, please stay tuned. We have a lot of other episodes coming up, so thank you and have a great day.

Bye bye.