Introduction and Guest Background

Welcome back to the Restore Your Mitochondria conversation. I'm your host, Laura, for Ontario. I'm bringing you experts to help you boost your energy and fix your health so you can build the life you love.

Today is a special guest. A friend of mine, Doctor Lisa Song. Hi, Lisa, welcome to our. I'm so glad to be here. Me too. This is really, really important to have you here because in the world of mitochondria, pediatrics is really, underrepresented, I would say.

And that's why I was so, I was so hoping that you would come on to this summit, because I really want you to talk about the cell danger response and reversing chronic disease in our kids.

And, you know, for viewers on this summit, some of you are parents, some of your grandparents, some of you are aunts and uncles. There's children in your life.

And so this is a relevant conversation, probably for you, even if your kids, are grown up, because chances are you're going to have grandkids. So so this is really good that you're coming on.

I want to introduce you to our audience. You're an integrative pediatrician, a pediatric functional medicine expert, and a mom to two amazing, thriving kids.

And you in your integrative pediatric practice, it's called whole family wellness. You've helped thousands of kids get to the root cause of their health concerns, and you've helped their parents understand how to help their children thrive.

And that includes body, mind and spirit. And you do this by integrating conventional pediatrics with functional medicine, homeopathy, acupuncture, herbal medicine, essential oils.

And you've created this amazing resource, healthy Kids, Happy Kids. It's an online holistic pediatric resource to help practitioners and parents bridge the gap between conventional and integrative pediatrics with an evidence based, pediatrician backed approach.

And I know you were a voice of hope and a voice of reason and just a sound voice during all the Covid stuff, and you continue to be. So thank you for being here.

Oh you're welcome. I it like you said, children, really get pushed to the wayside. And conventional medicine and functional medicine. So this is super important.

And what we're going to talk about today really applies to anyone who has a chronic health concern, child or adult. So I'm honored to be here with you.

Yeah. Because guess what? Our mitochondria work the same whether they're kid mitochondria or an adult mitochondria. Yeah, it's all the same. So this is good for everyone.

Now let's jump in and talk about the fact that our kids are getting sicker and sicker. And this is no joke, and we cannot ignore it. We're facing an epidemic of chronic childhood diseases, including mental health, disease, which we've seen just exponentially ramp up in the last couple of years.

I feel like it's suppressed by the media, but we know that the suicide rate, especially of young girls, has gone up. So what are our current numbers right now with what it looks like in our pediatric population?

Yeah. And the numbers don't look good. Right? And they haven't. Look, here's the thing. The numbers haven't looked good for decades. And it's really time that we as a society, as a world that we wake up.

Because that's saying that the children are future not going to be true anymore. If we don't step up and we really need to step up for our kids. So right now about, you know what, a little over 1.2, maybe 55% of kids has some sort of a chronic diagnosis.

And if you have kids or around kids, you probably know a kid who has chronic constipation or asthma or eczema or, you know, behavioral concerns, autism, ADHD, even autoimmunity.

Right.

Rising Chronic Disease in Children

And as, as Laura said, this, this epidemic of mental health illness, you know, of course, or the pandemic, a variety of reasons said that suicide of depression and anxiety have gone up in kids.

But even before the pandemic, suicide has remained the second leading cause of death for our youth 12 to 17 years of age. So secondly, what's the first?

It's accidental injury, which, you know, car accidents just risk taking behaviors which often are associated with anxiety and depression to begin with.

And that if you took influence, the rate of suicide, the deaths by suicide in our youths were 27 times higher than annual deaths from influenza. So we just really need to figure out what are our public health priorities.

Now, the situation isn't really getting much better, and I'm not here to paint doom and gloom because we have we have the knowledge to know how to reverse this. Right.

But first comes knowledge and knowledge and awareness of what the problem is. And by 2025, which is right around the corner, some of the projections are really estimated that maybe one, 8 in 10, eight and ten of our children is going to have some chronic diagnosis.

And I'll tell you my practice, these kids are coming in at younger and younger ages with chronic diagnoses. I used to think this was years ago. As I started my practice, I was just floored when I had an 18 month old girl come in at.

She had been diagnosed with ulcerative colitis. Well, fast forward, this is not too long ago. Maybe about six years ago, I had a girl come in at six months of age, diagnosed with Crohn's disease.

Six months. That's now it's unreal. Unreal. Unreal, right. And fortunately, mom, mom was aware and savvy and thought there's something else that must be going on.

What can we do? And so she came to our practice, and, you know, I'm not going to say it was an easy road, but now she is a thriving almost seven year old attending school.

No diagnosis, no medications. In fact, the gastroenterologist saying maybe she shouldn't have crossed the inlet. Right. So she's doing great. And we we have the tools, if we are aware and we have the motivation to do this and we need to because in 2005, the New England Journal of Medicine, came out with an estimate, that our children with this time in history, it's the first time that our children are expected to have a shorter lifespan than us, their parents.

Right. They're adults. First time ever in history with all of our modern medical advances. And really and the vast majority are due to these lifestyle related, not communicable diseases, which are now, really underlying the vast majority of deaths around the world.

And as we've seen with Covid, it's really the underlying highest risk factor besides elderly age, for serious morbidity and mortality for Covid. So for children and for adults, we just it's it's time to wake up now.

Right. So I'm grateful you're doing the summit to spread the message. So why is this epidemic of chronic childhood disease happening? And I'd venture to say whatever's causing that is hurting adults, too.

Yeah, absolutely. Well, you know, I mentioned it's a lifestyle related diseases, right? This is noncommunicable diseases or NCDs, which are making up again, as the World Health Organization and signals and entities are the leading cause of death around the world.

And it's our ultra processed, you know, ultra sugary, ultra fast world. And it becomes a cliche. But when we think about it, when we think about the, the saying, the phrase that most of you guys listening know that Hippocrates said, all health starts in the gut.

Well, our modern world has created lifestyle and environmental factors and foods that are directly damaging to our gut microbiome, directly causing a leaky gut and as a result, directly disrupting your babies and your child's developing gut brain connection.

Gut immune system connection, gut hormone connection. So very early on from that, from the moment you try to conceive as a that, you know, if your gut microbiome isn't as healthy as it could be and during pregnancy and or labor, and in those early years where we have all of these, what I've been calling microbiome mischief makers, these these things that we don't even think of could be wreaking havoc on our microbiome, but are laying the pathway to disrupting gut microbiome and laying the pathway for a leaky gut at food sensitivities and immune dysregulation that, in those first years of life, could set the stage for an increased risk for virtually every single chronic disease in our kids.

So we need to really think about, you know, how are we living, what food are we creating? You know, what what modern conveniences are we, are we striving for that?

We can have, but without the expense of our children's health and our health. So what can be done to reverse it? Yeah. So, I mean, you know, it's going to take a lot more than just us talking to overhaul, you know, food policies, agriculture policies, you know, environmental policies.

But we start with, you know, one kid at a time, right? We start with one adult at a time, and then we do work for broader change. But it's really, you know, we want to look at, what are what's what are some of the root causes of this.

And I really, you know, as, as we just said, addressing that gut microbiome in your kids, even if they don't have any gut problems. Right. If you're if your kid comes to me with anxiety or ADHD or, you know, rheumatoid arthritis, and, and I start looking at your gut, I want to check out their poop samples.

Right. And and you and your kids. See, there's nothing wrong with their gut. I mean, they're pooping every day. It looks like a nice brown banana. I mean, they don't tummy ache, reflux, no. Bloating.

Doesn't matter. Doesn't matter. You still always start with the gut because of the imprinting and epigenetic modifications that take place when your gut microbiome is disrupted.

Why Childhood Chronic Illness Is Increasing

And if we can reverse that and optimize your child's microbiome, we can then actually genetically change their future health outcomes. So it's really critical to know that's where we start.

And then we see where the other imbalances. Absolutely. This is exactly where I start in my practice. Very first thing you do when you come in is we do gut assessment and we start foundationally.

I was talking to another speaker today and, and a good analogy came up. You got to get your house in order before you fix the other things and really think about your gut microbiome is getting your house in order.

It's foundational. You can't build on a on a shaky foundation, right? It has. You have to have that in place. Yeah. Yeah. So that's a this is a great segue into talking about cellular resilience because gut health and mitochondrial health are deeply linked.

You cannot have good mitochondria health without without sound gut health as well. So what is cellular resilience exactly. Yeah. Now resilience has become, sort of a, a key word through the pandemic, you know, emotional resilience, immune resilience.

And then we need to really think about, you know, what is cellular resilience at that cellular level. How do we make it so that your your cells can bounce back quickly and completely no matter the hit?

That's the definition of resilience. And when we talk about cellular resilience, what I impress upon parents, it's very important to understand that resilience doesn't mean never taking a hit.

It doesn't mean never being stressed, never being sick, never having a fever. Living in that kind of a bubble actually reduces your resilience, right.

And so it's just like, you know, if you have a riding a bike in forever, you know, the first time out of the gate, you're going to be creaky and you may fall over.

Well, we want to be practicing practicing. You know, we want to have our immune system and our cells really build that muscle memory. So cellular resilience means that whatever the hits and I'm talking, psychological, physiological, infectious, environmental, you know, toxic.

All of those create a certain cascade of cellular reactions that are identical. Right. That initial hits doesn't matter what the hit is. Your body can't tell the difference between psychological stress or physiologic or infectious or innate stress.

At least in the beginning. Right. And that and so that cascade gets set off. And we need to make sure our cells are fully able to take that hit, recover at a cellular level.

And then remember even how to do it for the next time. Right. And that's what we want. That's what we want. We do we take that hit, we brush ourselves off, we get back up, and then we're more confident and stronger for the next time.

Absolutely. So it's so interesting because people always discount stress. They think, well, you know, I just have stress in my life. Everything else is okay.

I don't have, you know, a mold infection or a parasite infection or Lyme infection or whatever. It's just stress. But like you just mentioned, your body reacts to that initially the same as if it's any other stressor coming in 100%.

You know, it's fascinating because when you look at, you know, by now living through the pandemic, everyone's heard of cytokines, right? So as we go, as we have a psychological stress, that psychological stress releases of same kinds and amounts, maybe the more of those inflammatory cytokines as physiologic stress or infectious stress.

And then let's take it, you know, the other way. What about being happy, right. We all want our kids to be happy. Well, there's a couple different kinds of happiness.

You know, that's been kind of a philosophical question for the ages. What is happiness but hedonism, right. The simple pursuit of pleasure. I just want what makes me feel good. Right?

That kind of happiness is actually found to be more inflammatory than another kind of happiness, which is call you demonic happiness, where we find happiness in serving others and having a higher purpose and in achieving something good in our lives.

So it's really, you know, we want to think about as parents, so many of us, I mean, all of us, right? We all want our kids to be healthy and happy, but we want to reframe what that means, right?

Being happy and healthy doesn't mean never being stressed, never being worried, never having to overcome a problem because guess what? If you never learn how to overcome it, just like yourself, you're never going to learn how to be get stronger and stronger and have that growth mindset that we want for our kids.

Oh, so good, so good. Now, building on this cellular resilience, you have to you have to understand cellular resistance or excuse me, cellular resilience to understand cell danger response.

So can you talk about cell danger response. Explain what that is and that, you know, happens in all of us. And this is kind of new ish in the last ten years, I think in the mitochondria research, we used to think that mitochondria just made energy, and that was it.

So what is this peace cell danger response. Yeah. So the cell Dangerous Spots is one of my very favorite topics to talk about. Because once we understand what the cell dangerous is, it can change the way we think about chronic disease and how we're addressing chronic disease.

Cellular Resilience and the Cell Danger Response

Those people that, you know, you and I see functional medicine practitioners who are stuck. Right. And you just want to know, how can I move the needle and understand the cell danger response can be the key.

The key. So if you are listening, you're one of those patients. We want to really understand what this is. Now the cell danger response was first described and really elucidated by Doctor Robert Inovio at UCSD.

And he's one of my heroes. I had a chance to meet him in person, actually live during a conference during the pandemic, and I was just so starstruck. I'm like, you are my hero, right?

It's like, you know, we all have our own own stars, and he's one of my stars. I definitely had stars in my eyes meeting him. But so he described the cell dangerous spots.

But more than that, he described this, this complex system of how we stay healthy and how we respond to toxic insults. Right. Quote, toxic insults. And so when we are in a state of good health, usual health, ideally we remain in what's called the health cycle.

The health cycle consists of our wakeful activities, right? Our metabolic activities and healthy movement and restorative sleep. Right. We stand this health cycle, and the foundation is is a healthy gut microbiome, right.

We get toxic kids all the time right. Every day. Right. We get that. We get a little stressor here. Oh my gosh I have to make it to this I have this deadline or oh my gosh I'm like ten minutes late to my kid's school performance.

We get exposed to infections. We get exposed to car pollution. So when those toxic insults exceed the capacity of restorative sleep to heal ourselves, then we ourselves get triggered to enter the cell danger response, which is part of the healing cycle.

Right. It's a sober. Now when we enter this healing cycle and the cell danger response that it's a primitive cellular response, it goes way back to when we were cavemen.

I keep people cave woman. It's a and it's the same cellular response that occurs just as we mentioned. No matter what kind of hit it is, whether it's emotional, psychological, physiologic, infectious. Why?

Because when we were back, you know, in evolutionary days, we're still evolving. But as we were really evolving, we couldn't have an immune response for, you know, if you touched the half fire or if you cut yourself on a blade or if you got an infection, we needed an efficient way to deal with any of these exposures.

So that's a cell dangerous spot. The cell dangerous. That's when that's tipped off. What happens is mitochondria release ATP into the extracellular space, that ATP is a signal for your cells to say, oops.

You know, I got to enter the cell. Dangerous spots. So there's three distinct phases of the cell dangerous spots. And your cells must go through each phase.

Phase one then to phase two. That's successfully through phase three once or successfully through phase three. They can now enter back into the health cycle with wakeful activity and restorative sleep.

Each of these phases is a little bit different. In phase one the idea is to protect us, right? Protect the host. So wherever the injury is, those cells that are injured get walled off, right.

They lose connection with the rest of your body because the last thing you want is a raging forest fire that knocks you down right. They your cells get kind of try to contain it.

And in that during that stage, the cells are trying to neutralize that threat, whether it's environmental toxin or infection, whatever it is, inflammatory cytokines.

If that threat is neutralized appropriately, then phase two can start. And in phase two, any cells that were injured get repaired. That's where all of our functional medicine, core clinical imbalances that have come up in the fighting process, like maybe gut dysbiosis or methylation dysfunction or, you know, mitochondrial dysfunction, all of those need to be addressed.

Mast cell activation and any cells that are just damaged beyond repair get replace stem cells come in and make new cells, okay. Once that appropriately happens.

And in phase three this is one of the most important phases. Phase three those cells that are new or repaired. Remember phase one they disconnected from the rest of your body.

We can't have individual cells working without connection. Those cells need to reconnect to the rest of your body, and that happens via the vagus nerve.

Okay. So we have all of these important components that happen in place. And then as soon as your vagus nerve reconnects your cells to your brain, your gut, you know, the rest of your immune system, you're back into the health cycle.

So when we talk about reversing chronic disease. Interesting. Doctor Nava, you had an amazing point. We actually don't reverse chronic disease. We help patients flow through the cell dangerous spots back to the health cycle.

And that's really important because healing is an active process. And we can help facilitate that. But when we think about all of, you know, the components, it's amazing to see how you know what we're doing it functional medicine really can help foster moving successfully through the cell danger response.

And this is such a good explanation. And when we're in the cell danger response, we actually feel it physically. So can you explain what that's like as the human going through the cell things.

Yeah. Well, so you know in this said what we're going through the cell dangerous. But there's a metabolic slowing. There's a there's a, a quote sick behavior that occurs because your body's not supposed to be going 1,000%, you know, when you're sick, right?

You're supposed to be a couch potato. It's sleep all day, right? You're not supposed to eat so much. And and gorge

is supposed to slow that down, right?

You know, there are all these healing processes that if we listen to our body right? Just if you're a kid, you know, what do they want? Do they want to sleep on the couch all day? Right.

And the parents are worried whether or not they're not acting themselves. I, you know, I, I want them to be happy and running around, but you don't want that, right?

So there's that behavior that occurs that is actually helping us to heal in our modern world. What happens? I have to get to work. I can't miss a deadline.

You know, I can't let my kids down. Right? And so you go, go, go. You ignore those sick behaviors that your brain is trying to tell you to take. And then we perpetuate that inflammation.

Now, when we're in that state and we cannot successfully move through phase one or Face-To-Face through the cell danger response, we get stuck, right?

You might get stuck in in any of those phases. But what's amazing is that Doctor Novio has it's not an exact science, but he's he's mapped out where in the cell dangerous spots.

Many different chronic conditions are stuck. And the vast majority of the chronic conditions that we see in functional medicine are phase three, right?

Whether it's, you know, an autoimmune illness, multiple sclerosis, you know, chronic Lyme disease, chronic fatigue syndrome, whether it's a neuropsychiatric illness like, schizophrenia or.

Right, we're stuck there. And what's what is there? What do we need to do then to move through? This is where, you know, when you have a patient in front of you, if you're a practitioner, and you're doing all the functional medicine work that, you know, should be helping, and they feel better temporarily, but they slide right back.

Well, now remember what happens in phase three. Phase three. It's where the vagus nerve really comes. And it's a champion of healing. So good. So I think some vagus nerve support is really important during this time.

So when you're, when you know you're sick and you, you know, your body's going through this healing process, how do you support vagus nerve? Okay. So this is also, you know, one of the things that I talk to kids about and adults about, not in this scary, oh, you know, the cell danger response away, but you know, your brain when we think of vagus nerve, when we think of that, the, exercise is and the tools that support vagus nerve function, most of them are tools that you actually have to use and do on your own that supports something called heart rate variability.

Right now, when you look at, you know, doctor Navios papers and you see, you know, in a healthy state, you have optical heart rate variability or something called rest oratory, sinus arrhythmia.

And you know what I have parents and kids do, and you can even do this right now. You can find your pulse on your on your neck, or you can find it on your wrist wherever you'd like.

Once you find that, take a deep breath in. And then exhale slowly. Right as you inhale, your heart rate goes up. As you exhale, your heart rate slows down.

That's a normal arrhythmia, right? Arrhythmia that's associated with breathing respiratory sinus arrhythmia. And we have that as a proxy. You know when you have your aura ring it measures heart rate variability.

Supporting the Vagus Nerve

Now in cell danger response phase one and phase two you know necessary watch your vagus nerve engage too

much. Right. Because there is a time for that fight or flight response.

We want your body to be kind of ready to go. Right. So respiratory are with me. How are we variability goes down in those first two phases, right. Just like if you're if you're facing a deadline, there's a normal healthy cortisol response. Right.

You got to get your work done. If you're just sad and you're like, you know, not not really. In that state of, of optimal brain function for, for performance, you're not going to get anything done.

Right. There's there is a certain amount of healthy stress that we need. So during the time when our body is under stress, we need to just, you know, that heart rate variability goes down.

And then a phase three, it must go up in order to reconnect those disconnected cells and get back into the health cycle. And so yes, it's especially important during that stage when we're stuck in chronic disease to engage our vagus nerve.

But here's the thing. It is so much easier to reengage your vagus nerve if you knew how to engage in the first place before you're sick, right? Your brain is a muscle.

You need to give it muscle memory so that if it needs to kick in and you need to get that hurry variability going and optimize it, I start from scratch.

I think about if if you've never, ever meditated and someone says when you're panicking, you know, over a test as a teenager, okay, just go meditate. It's not going to work. Right.

But if you've learned how to meditate or do breathing exercises or do tapping right, you can automatically whip out those tools and use them when you're stressed when you need them.

So what are some of the tools that can help optimize vagus nerve function? There's the one of the easiest things to teach parents and kids. Well, you know, easy is relative, right?

One of the simplest things is diaphragmatic breathing. That belly breathing right where, you know, as your in your diaphragm is, you know, under it's kind of under your ribcage.

And as your lungs expand that diaphragm moves down and your, your belly should be expanding. Right. And in our modern world, we've kind of got to suck it in.

And we keep rebellion. And we breathe up here right through, just through the upper half for our blood. So we want to fully expand our lungs into breathing and keeping our shoulders down, making that balloon in your belly fill.

And then as you're exhaling the balloon deflate and you're fully exhaling it, keeping your shoulders nice and relaxed. What's fascinating is when I go through this with parents and kids, a lot of how do I am I doing it?

I don't know, right? And as a as a breathing in their chest, their stomach is going in and as their exhale their stomach is going out. Because that's how we've kind of learned.

Eventually to breathe. So learn how to do. Diaphragmatic breathing is one of the quickest ways to get into that state of optimal heart rate variability.

There are other exercises like, laughter yoga, right? Just laughing can engage your vagus nerve. Gratitude really does engage your vagus nerve. But there's a loving kindness meditation that I, that I love.

It was really helpful for, for my family and for a lot of families that I, that I taught through the pandemic just to try to stay, feel connected with our world because connectedness is so important for health.

Right. And during the pandemic, we lost so many connections, at least early on. So there's a loving kindness meditation for simple sentences that if you say every day, right, practice this.

If you do this over a six week period, entered a greater state of physiologic calm, improved heart rate variability, improves feelings of joy and connectedness.

And this for simple sentences. So the first thing that that you want to do is as you're thinking about loving kindness and gratitude, we first first extend that to ourselves.

Right. Because for all of you guys listening, you know, as grown up, some of the harshest words you've ever heard for yourself are the words you've told yourself, right?

So the first thing we do is think about ourselves, give ourselves loving kindness, let ourselves know, may I feel safe, I feel happy, may I feel healthy, may I live with ease.

And then you stop and you think about whoever else you want to extend that loving kindness to. Maybe it's your children, or your partner, or your friends coworkers.

In the early stages of the pandemic, and even now, we're sending out to all those frontline workers and, you know, they think community and, you know, ever in the world can come together and just extend loving kindness to them.

May you feel safe. You feel happy. May you feel healthy. May you live with ease. That's beautiful. Right? And I, I mean, even just me doing that, I'm like, oh, I can feel just, you know, just.

And I was going through a quickly when you really just how to do it. You cannot do that without feeling a little, a little more calm, a little more joy, a little a little happier.

And it does increase your heart rate variability. Now, for some people, when they're in that state of illness, it's really hard to do this, right. I get it when you're feeling like crap and you're like, I, I don't want to breathe.

I don't want to meditate, right? Or then you have your kids or like, you can't make them do all of this. There are some other tools, like heart math, is a it's an, it's an app.

You can download the Inner Balance app, and you buy an ear clip that then plugs into your phone and you're just looking at this rainbow flower, and you just focus on your breath.

And as a flower expands, you slow breath in. And as it contracts, exhale slowly and you can then see, are you in the green, blue or red zone? You know, green.

It's going to be your optimal state of heart rate variability. And so that's a more objective way, right. If you just can't think of any good thoughts to have.

Oh you're meditating right. You could do that. Acupuncture can be really, really helpful as well. There's some here acupuncture points that have been found to directly stimulate the parasympathetic nerve, which is the vagus nerve.

We're talking that parasympathetic nervous system. So lots of ways. But I encourage you, no matter what sort of health you're in, your kids are learning some of these tools.

Now, get download you know that the Oak app or Insight Timer or headspace all these apps that can you have also have some kids sections. That can help you learn different meditations, even at an early age.

This is such good advice.

Optimizing Mitochondrial Health in Kids

Now, in the few minutes we have left on this interview together, can you, help share with our parents you know how to support optimal mitochondria function in their kids?

Yeah, 100%. And I'm going to tell you why that relates to the cell danger response. Okay. I mentioned and what triggers a cell danger response is that, the injured cells, their mitochondria release ATP into the extracellular space.

But during the cell, dangerous spots. What is fascinating, right. We have our really healthy, well differentiated mitochondria. These are called, two mitochondria.

They're making energy. They're sustaining, you know, all of the metabolic processes that we need to do. And then as an insult happens and we enter the heal the healing cycle, the cell danger response or mitochondria first in phase one where we're trying to contain the threat infection, whatever it is, become M1 mitochondria, these pro-inflammatory mitochondria.

Then in phase two they become undifferentiated. Right. All of a sudden okay inflammation gone the contained. Now we're going to do mop up a repair. So then they become this sort of multi potential mitochondria.

And then they have to re differentiate become these to anti-inflammatory restorative mitochondria. So supporting healthy mitochondrial function is important for everyone.

Right. But for kids there can be certain signs that they may already have some mitochondrial dysfunction happening. And those signs are going to be, weakness, you know, poor endurance.

A lot of parents say, oh, they have so much energy. I'm not talking about, you know, run, run, run. Energetic cellular energy. So if your kids play soccer game and they are wiped out, they can't have a playdate. They stay on the couch.

You're like, you know, they, you know, that can't play anything else. That's not typical for a kid, right? Most kids can play a soccer game and they go on a play date and they come home and jump on the trampoline. No problem.

If they have low muscle tone, they sit with their shoulders hunched, not related to screen time. They just always us. They can't. They have a hard time pedaling a bicycle.

They can't hold a pencil. Well, if they, if they have, if they're clumsy. Right. Or, if they've had multiple regression. Right. If they, if they have poor reactions to infections and medications, then that's a sign that maybe there's somebody's cognitive dysfunction going on.

Now, we want to make sure we're supporting our kids and our mitochondria to the fullest extent possible, because every day we take this hit. So how do we do that?

We always first go to food. Is medicine right. That those antioxidants what happens with mitochondria gets stressed. They create oxidative stress. Right. Free radicals are produce.

What do we need to to reduce and pop up that oxidative stress. We need antioxidants, right. And to access all those different colors of the rainbow. So that really, really matters.

Sleep right. If you don't get enough sleep, that's going to really stress your mitochondria. Remember to stay in the health cycle. We need restorative sleep.

We also want to reduce, excessive mitochondrial stressors. So don't get too hot. Don't get dehydrated. Altitude can be a problem. Exercise, but in moderation because too much exercise will hurt your mitochondria.

Even as at a younger age, focusing on, like, strength resistance training. Because building more muscle creates more mitochondria. And then there's supplements, right? I often do do supplements.

And I made some of the most. The first supplement often uses CoQ10 right. Coenzyme Q10 as you pick one up. But also use carnitine ribose fossil total choline.

You know, all of your B vitamins, your methylated BS, all of those will support mitochondrial recovery, especially if you're trying to help your kids or yourselves move through the cell.

Danger response. This is so supportive. Any other final tips for our parents as they navigate this crazy world and do the best they can for their kids?

And, what can you share? You know, I would say as a parent myself, I mean, it's, you know, there's so many things in life, everything in life that can make you feel guilty, right?

They can make you feel like, oh, my gosh, I messed up. What did I do? You know, was it the tuna fish sandwich I when I was six months pregnant? I still think about the tuna fish sandwich I ate when I was six months pregnant with Kenzie. Right. And she's healthy and thriving.

And you just think about these things. I would say, you know, we just we don't we don't ever look back, okay? The only reason to look back, because I know some of you guys might be looking, listening as a parent thinking, oh my gosh, I didn't do X, Y, and Z, right?

We don't want to look back. There are there are two reasons to look back right in time. One reason is to really define and tell your child's story. How do they get to where they are now?

So we know how to intervene, right? We know how to move forward. And the second reason, another only reason to look back is to see how far you've come.

Right? Because you listening now you know a lot more than you did an hour ago, right? An hour ago, you know a lot more than you knew five years ago.

Parenting with Hope and Moving Forward

Right? So we always want to know where are we moving towards? But, you know, look back and say, well, I've actually come, come pretty far, right. Because we always want to move forward with hope.

And that's where, you know, summits like this or the work you're doing and really spreading, spreading the message, you know, making sure that we really use knowledge is power.

I mean, that's what's going to change the world. It's going to we can, you know, create a movement of positive change. Kid by kid, grown up, by growing up.

And then as we make that change, you know, stop buying the ultra processed food, swap out the, you know, the artificial red detoxes to the, you know, Trader Joe's rolled up taco, you know, tortillas with without artificial color.

I mean, we can vote, right? We vote with our dollars and one step at a time, we can change the world. Oh, that's such good advice. Thank you for ending on that note.

You're always so uplifting and positive. I appreciate you. Take good care, Lisa. Thank you. All right. Thanks, Laura.