Introduction to Mitochondria and Cellular Energy

So we are going to have a great little conversation about mitochondrial function and cellular energy. We can kind of peel back the layers of the onion and go, okay, we all learned about mitochondria when we were in middle school, high school postgraduate, whatever, as what?

These beautiful little kidney bean shaped organelles in every organ of our body that produce ATP, produce energy. Well, there's so much more. So share with us, you know, the power of mitochondria.

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It's a woman who had a babies. So like it's just mother carries so much more meaning. Symptoms are only part of the story. I'm Dr. Drew Kidder. Dr Emily Hernandez.

And on the healing terrain, we explore deeper systems influencing clinical outcomes from toxic burden and microbial imbalance to the foundational factors that drive resilience and long term health.

Hey everyone, Dr. Drew Kidder, and I am super excited to be joined with Dr Stephanie Rimka for this episode of the Healing Terrain podcast. So Dr Rimke, welcome.

I'm so excited be here. We are excited have you here, so we are going to have a great little conversation about mitochondrial function and cellular energy.

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Mitochondria as a Living Communication Network

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But it was kind of like calling a woman who had a baby, not calling her a mother, saying, it is a women who has a babies. Like it just mother carries so many more meaning.

I didn't like my open mystery. How about you? Like, I thought that was the worst class ever. I don't care about the electron transport chain, the Krebs cycle.

To regurgitate? To vomit the 32 to 34 ATP. Like we all did it. But now we love it! It makes no sense to me, right? I did not come to understand the mitochondria and teach courses on it and give speeches on because I was fascinated by the chemistry or the molecules.

I came to care and love and truly adore mitochondrion because people I loved needed help because they got sick because their mitochondrial got destroyed.

And they started not functioning well. And what, how does that happen? We can talk about the science of. The structure leads to good function. Leads to the voltage, which leads the charge, right?

Which is life force. Because when there's no charge it's over. Right? But I think, you know, although we want the structure, good, function and voltage is critical.

I teach that sequence and Cellcore does an outrageous job of dealing with all of that and helping you understand what to do. But there's a story in it that I think a lot of people forget because they want to still deal with the science and they forget the emotionality that mitochondria are sensing organisms.

They are a community of other life. There are not human. Their bacteria that we said like that said, Hey, we need help. It's dangerous out here. Can you protect us?

Yes, baby, I'll protect you if you do something for me. Like, honestly, like a man and a woman saying, listen, we can come together in this beautiful symbiotic relationship.

I'm going to take care of my part. You're going take your part, and we're gonna create a beautiful ecosystem. This family, this home. Conocondria are community, they're organisms and they are in trillions and their sensing, their picking up the light, the sound, touch, love.

They're pushing that out, talking to each other, to the nucleus, or talking the gut biome. All that information that they're getting, they then decide what to do.

They are commanding the cell, which is why it's called cell core. The core of the self is the mitochondria. It's coordinating everything. Right. it saying they decide, are you going to repair or not?

Are we safe? Or are we not they know before everybody else knows they pick it up and they are sending the signals out. Why can you measure a magnetic pulse in the heart?

What Damages Mitochondria

because of the mitochondria, they are pulsing it, right? So they're a community that are dependent upon relationship. They do not heal in isolation, and that is why we cannot either.

So although the structure function voltage are critical, It is all irrelevant if you don't have relationship, connection, community, and dare I say, love.

I'm kind of a numbers geek, right? And I love, I mean, we throw out the numbers of how many cells are in the human body, Right? We estimate 35 to 40 trillion.

Who's counting them? I don' know. But within each and every one of those cells are mitochondria. And we estimate every cell has anywhere from hundreds to thousands of mitochondrion.

We look at the concentrations and I think numbers leave clues. Look at brain. A lot of the work that you do from a neurocognitive standpoint and traumas and all that.

10,000 mitochondria per cell in the brain, roughly, up to 2 million mitochondrial per-cell. Super, super important, but as you said, they're a community.

They're talking, their communicating. they are the ones that are creating the message even for our hormones. The hormones don't create the messages, the mitochondrion do.

Well, you touch on something really important and that is the damage. How does this damage occur to our mitochondria? Yeah. Wow. Well, this is an area that I get very intense about and I will try to be very not super intense because it did.

Oh, we like when you're intense. Yeah, well, I mean, because this personal, right? Right. You know, hit my old family. That's the only reason I do this.

And that nephew was here this weekend, which is mind blowing to me. My nephew hasn't been on a plane since he was three years old. He is 29. he's autistic still, you know, we didn't reverse it, but we took him from nonverbal for years to not leaving his bedroom to where he had to, he couldn't even make it to a bathroom.

So we'll just leave it at that. pulled him out of school, he's never been on a single drug in his entire life. That it comes from these moments of this all trauma is a mitochondrial dysfunction.

It is based on an nervous system overwhelm and at the core of that is the structure and function of the mitochondria. The most profound instigator of all of these without a doubt are vaccines, hands down.

So that's the story I've dealt with for, you know, almost 30 years is the basis of my entire practice, but mold, mycotoxins, Lyme, other infectious things.

We have bio-weapon after bio weapon being created and released, it seems, with the plandemic, scandamic after another. Apparently, that's where we're at in this matrix.

So that's what's doing it most of the time. It's just, it's endless. Deuterium, there I talk about, you know, heavy hydrogen, oxalates. There's so many reasons.

The mitochondria is a beautiful There's machinery inside there that's so delicate, you know, we refer to it as a motor. It's doing such specific exclusion of pumping protons and moving electrons on funnels of light in a quantum way that so It's like a symphony of behavior that has to be orchestrated just right.

And you just, if you throw a wrench in there every now and then, things start to just work, but it's not going to work as great, you know? So that's what's kind of going on.

There's a variety of ways, and it is our job to come in and stop the intrusion, hopefully before it ever happens. and clean it up at the same time. It can be repaired.

I would love to not have the job of repairing mitochondria anymore. But as long as it's going to happen, so we can educate people to stop doing some of the behaviors that we know are going then some things are out of their control.

Low-Tech Ways to Support Mitochondrial Health

There's some, things that are just gonna happen. You have car accidents, just physical traumas. That's why people like us and these products exist that we can come in and say, we fix this because everything is adaptive and resilient.

So we just give it the message it needs, take the poison out. It does know what to do again. Well, I think, you know, super, Super important of doing what you can in your control, right?

Because that damage to the mitochondria from all those mold, mycotoxins, heavy metals, environmental toxins, the list goes on and on. It damages the cell membrane, which is where energy is produced.

So we don't live in a bubble. We're not John Travolta back in the day. I'm aging myself, right? But the way in a bubble. We go outside, we're exposed to all of these toxicants and whatnot.

But what can we do that's within our control to help support our mitochondria? So what are some of the you know, what are some of the things that you do as Dr.

Remka and what do you recommend with your patients? Because I know that's vast, right? From modalities to things like peptides, and I say modality, red light therapy, all the thing, but what can we also do from even a low tech perspective that can support and protect our mitochondria?

Well, low tech are really the most important. So the first piece of this whole layer is information. Information is before structure, information drives how the structure is going to be.

And information are the light, sound, electromagnetic frequencies that are hitting you, the nutrition or lack of nutrition, sunlight or a lack sunlight.

Mitochondria are light sensing, sounds sensing electromagnetic sensing. Africa that are living away from electricity and don't have cell phones, they don t need me.

Their mitochondria are really quite good. They do all of the behaviors, the information that's coming in, and the quality of that signal ends up creating the structure and function and voltage gradient we have.

I start really simply with people. The only reason people want a red light panel is because they do not go in the sun. And the mitochondria respond also to UV light.

Cytochrome-1 needs it, right? So it's like, we have to have all this. So morning sunlight is a basic starter. Barefoot, some grounding, and some earthing.

I want Wi-Fi. Pay attention to EMF and non-native EMS. And I use protective clothing, so I wear clothes that protect me. My entire bedroom is like a sanctuary.

It's as close to sleeping on the earth without dirt and cockroaches. Because I don't like them bugs. I like creature comforts in HVAC too. So I start that way and I started with good nutrition because the membranes are made of what?

Fossil lipids, we need fatty acids. I had to explain to them, you can't live on pop tarts and donuts and protein powders. We supplement if we have to, but I don't want to have use a supplement.

So I start teaching them that, and we start using basic movement because also the mitochondria are incredibly responsive to mechanoreception. You want more cristae?

You better move. There is no pill or modality that's going to do that. So you must exercise and move, so we started where we can, right? If it's walking for someone, it is walking.

If its lifting their arms and legs in bed, because they have chronic fatigue or fibromyalgia, asking them to go to the gym is extraordinarily difficult.

We're trying to walk to mailbox again. So I do start there. I like to flood the system with fossil lipids, DHA, EPA, because most people don't have a lot of that.

I use a variety of little molecules to clean it up because they don't have good signals, like we want to do a little bit of mitophagy, we're going to break down the bad parts.

Like two little molecule like for that, urolithin A or something. But really we start with circadian biology, promoting sleep, getting fats, proteins, amino acids, and a lot of minerals, like CT minerals.

Things like that where we want to build the foundation, give them the bricks and mortar to start making a good structure again. So then we start using molecules and modalities.

I love molecular hydrogen for this as well. Again, I use a variety of different things that will help. It just depends on where you are in your journey.

But I don't jump to extreme things like hyperbaric. In the beginning, that's not where you start. So a lot of people will start an hour in red light beds.

Too much, because I'm actually creating too much voltage shift and you're going to create too many reactive oxygen species and your not going feel good.

There's an order to this that I like to teach clinicians so we slow it down. Everyone's addicted to increasing voltage really fast. And I think you need to deal with the information while you're cleaning up the terrain, flooding the system with things like Tudka, glycine, taurine minerals, bringing movement in.

It might be they have to be touched, adjusted, partial release, because touch makes the body permeable, the healing again, as did the mitochondria. They are very sensitive to touch and movement, right?

So I try to bring hands into the whole thing as well. But clean water is a huge issue because I want to stop the poison. So, distilled water, and I like to run it through often molecular hydrogen as well, because I do a lot of deuterium depletion, which is maybe too advanced for some of this, but it breaks the ATP synthase, so I look at a lotta deuteronium in my practice.

So those are the basics, go for walks, do some breath work, get some sunlight, some Tai Chi or some basic stretching, all of these things are free. Start eating nutrient-dense foods like animal meats and eggs.

Salmon roe is like fighting fish eggs.

Nutrition, Minerals, Fats, and the Basics of Recovery

It is the perfect DHA phospholipid form that goes right into the brain and has zero plastics and zero heavy metals. So if I can get you to eat those things, it's way better than buying a pill.

But I have to deal with people where people are. I love that you numerous times have said basics, right? It's truly about getting back to the basics. People want the, they want to hacks.

They want shortcuts, but get back the basis, basics giving the body the nutrients that it needs. And I'm hearing you say with the minerals, providing the materials that allow normal human physiology, all these beautiful physiological processes to work optimally.

There are 11 minerals. at the bare minimum we know are required for cofactors inside the mitochondria. Your functions are not going to work without iron.

There's things that people don't understand. The magnesium isn't making you calm magically. It's directly involved in the electron transport chain. All of those things are there, and the mineral gradients are what create charge.

But forget, I do talk about it like a battery. In the quality of our life where we are, our battery is charged pretty well right now. to my mom's battery at 81 isn't charged quite as well as it used to.

I understand that this is life. Our mitochondria eventually say, you're welcome, and we're done. And that's a moment we all have to deal with. That's life here, right?

But it's because the minerals, I think, are very underscored for people that understand. We use a lot of those. A lot. You guys? And I'm talking the full spectrum, 78, 80. People sometimes want to think oh, You know, sodium, potassium, an electrolyte pack.

No. That is not what we're talking about. You're taking about what you really are. And I really love, you know the importance of fats, right? The phospholipid bilayer.

We've demonized in so many ways fats within our dietary intake. But you look at how important those fats are for that cellular membrane that you talked about How did we expect?

Well, I mean, it's like, well, go ahead. I was gonna say, how do we get good nutrients into the cell? How do get

toxins out of the cells if we don't have a healthy cell membrane?

And it is being destroyed right now with all the seed oils and the plastics. So people, even if they're eating well like sometimes that's one of those I do usually have to supplement, right?

Because even you're doing great, we travel, you and I. I eat out in restaurants all the time because I can't fast that much for this amount of. So I'm eating seed oils constantly.

I don't. worry about that. I don't want anyone to turn being healthy into a stressful event as well. That's a whole other issue with the mitochondria.

It's neural system coherence. You cannot repair anything if you're constantly in fight or flight stressed out. So again, we might have to spend 30 to 60 days just dealing with vagal tone and breathing before I'm bringing in and just getting them to eat again properly.

Very, very basics, but that those membranes, outer and inner mitochondrial in every cell and in the cell, it's all about the fats and other things are getting embedded and they're ruining the flexibility and it is causing rigidity.

So any rigidity mentally, physically, in body is not going to sustain life very, long. Well, this has been amazing. I love just kind of in wrapping up.

Again, going back to the basics, you touched on so many important pieces that are good nutrition, the quality of food in our bodies, providing the minerals, right?

Providing those fatty acids, good sleep quality, controlling your sleep environment, and the breathing. We are chest breathing, right? We're not getting that full belly breathing.

Whether you like mouth taping for sleep or not, that's a whole other topic. Making sure we're doing good nasal breathing so you've provided some great information as always, great tools for people to really just understand and get back to the basics.

So this has been an amazing honor to have you as a guest on the Healing Terrain podcast and we'll definitely be doing this again. Dr. Stephanie Rimka, we appreciate you, love you for being part of this community and thank you If this episode challenged the way you think about health and healing, please follow, share and leave a review.

It helps more practitioners and curious listeners discover the conversations shaping the future of foundational medicine.