Introduction to Circadian Rhythm and Mitochondria

Welcome back to the 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.

And today, my special guest is Doctor Christine Schaffner. Hi, Christine. Welcome to the summit. Oh, thank you so much for having me, Laura. Oh, I'm with you. It's so good.

And I really wanted to bring you on this, summit to talk about something really critical to mitochondria function dysfunction, chronic disease and that circadian rhythm.

And, I think this is something that people don't realize how important it is. And also, we don't realize once it's screwed up how to fix it. So we're and I know in my personal practice, I've worked with people that this piece alone will hold them back from their healing.

If this piece doesn't get addressed, would you agree? Yeah. I think that's such a great point in that, you know, with the work that we do and the people that we see, sometimes we can overcomplicate things that really go to that kind of really, you know, targeted therapy that, you know, is going to, you know, be the thing that unlocks the key, but that, as we know, if we don't have the foundations of help with.

Yeah. With, you know, dialed in on people, this is an obstacle to cure, in my opinion as well. Oh, yeah, it is, it is. So I'm so glad we're on the same page.

And I want to introduce you to our audience for those people, viewers who might not know you, which is hard to think because you know your way around the summit circuit.

You've you've been on many hosted them. Everything. So, Doctor Shaffer, you are a board certified naturopathic doctor who's helped thousands of people recover from chronic, complex illnesses and through online summits.

Your Spectrum of Health podcast, a network of eminence health clinics and renowned online programs. You go way beyond biological medicine and you pull from all systems of medicine and healing modalities, and you really help patients reclaim their wellness and reveal their brightest light.

So we're going to get into this. Interesting. We're talking about light today, right? It's all perfect. You help me come up with that. She's very, you know, creative with words. Right.

It's so good. It's so good. So, before we, you know, kind of dive into the problem and how to fix it, would you just unpack for us what is circadian rhythm and why might we be interested in the importance of this?

Yeah. You know, I think it's a really important topic, especially in modern time. We have so many things that take us out if we choose of our natural rhythm.

And this is a topic around, you know, our biological clock and this, you know, rhythm that we have around the cycle of the day. And the more that we learn about health, I find that the more that we connect with natural rhythms, that's where we really connect with our inherent ability to heal and repair.

And so the circadian rhythm is that daily rhythm throughout the day. And it has a lot to do with our sleep wake cycle.

What Circadian Rhythm Is and Why It Matters

And then there's a whole other field called chronobiology where we actually have different times a day in the Chinese medicine, ancient Chinese medicine philosophy knows this really well, that there are different times of the day where our different organ systems are going to be, you know, working or balancing.

And that's a great time to either, target therapies or supplements during that time. And so just think about this, very simplistically is your biological clock.

And it's very, very, dependent on the light input that we get from the environment. And so that's the briefest summary I can give you. That's good. That's good.

So now tell us, since we're on the Mitochondria summit, what's the link between circadian rhythm and mitochondria? And then we'll go from there. Yeah. You know I think there are many things.

And I think, you know, I'm so glad that you're giving more awareness around the mitochondria. I mean, it's a hot topic, but there's so much as we dive deeper into it.

And I like to look at the lens of mitochondria through a few different things. There's one, aspect that we look at biochemical reactions in the mitochondria, but we also know that some parts of the mitochondria are what we call chromosomes.

And they're actually very sensitive to light input. And so it's this combination of biochemical signaling and also light input from our external environment that allows our mitochondria to function best.

So one of the things that we use in the field of photo bio modulation and photodynamic therapy is, we know red light, which is, you know, something that we can, you know, biohacker our way around in 660 or roughly, but all of the wavelengths that we get through different applications of light are actually widely available through the sun.

And the sun is the biggest, I will say, coordinator of our, circadian rhythm. And it's going to be, you know, those changes in between, you know, sunrise to, you know, throughout the day and then sunset that we're getting different wavelengths of light and why, you know, it's a hard time right now for our circadian rhythms because we're often in indoor environments where we're getting that circadian rhythm mismatch when we're basically around a lot of blue light technology that might be, you know, a mismatch for the time of day with a lot of junk lighting through fluorescent lights, even LEDs, if they're not, timed at the right time of day.

And so when we think about the, you know, connection with the mitochondria, you know, my first kind of wanting to educate is that, you know, we if we're not exposing ourselves to proper wavelengths of light, especially during the day, we might not be getting that other input if we don't have a red light device, you know, in our home to support our mitochondrial activity.

And so that's kind of one quick way.

How Light and Mitochondria Are Connected

I mean, there are many others, but I, I think that, you know, when you think about the mitochondria, and they're obviously they're, you know, abundant within our body and you correct me if I'm wrong, but I'm very aware that the brain has the most mitochondria in the body.

And so when we think about really our brain health and our circadian rhythm and how that's tied into sleep, there's a huge connection to the health of our mitochondria, in our, in our sleep cycle and our brain health and preventing, you know, cognitive decline or, you know, recovering from a neurological illness as well.

So I see it from all of those angles. Yeah. And so I, I always think of also with circadian rhythm when it is not functioning and when you're not, when you are not functioning in your life in accordance with circadian, with the natural circadian rhythm that's, innately built inside of us, it really makes it hard for cells, any cells in the mitochondria inside the cells, to actually do their job, to actually create new cells, to sloughed off old cells and get

rid of them.

And this just sets us up, I think, in the cascade of problems that set us up for chronic disease. And I always say we have a word for mitochondrial dysfunction.

And in fact, we have several words for mitochondrial dysfunction. It's called cancer. It's called heart disease. It's called autoimmune disease. It's called, you know, on and on.

So that is at the core what is the end result of mitochondrial dysfunction. So when your circadian rhythm is not when you are not in sync with your circadian rhythm, it just sets you up for all that to happen faster am I right?

Yeah. No, I think that's a really great, angle to look at. And, no, I, I love that and I would add to that list of many illnesses, you know, neurodegenerative diseases as well because I see a lot of that.

And yes. Yeah, the mitochondria are very important. Yes, yes. So, can you talk to us a little bit about melatonin in this and how it, how it plays a role with circadian rhythm and the functions of it too, because a lot of people think that melatonin is just to help you sleep.

But there's a lot more to that hormone. And our circadian rhythm being in sync with our circadian rhythm helps us make sure that we have adequate amounts of it.

Right? Yeah, absolutely. So melatonin is a key factor in, you know, our sleep wake cycle. And we're learning more about melatonin. So the first kind of point that we want to get across is that when we're getting ready to sleep obviously, we are hopefully in the nighttime, unless you're in the night shift work or and that, you know, is actually known to be, even a carcinogen, working the night shift because of the detriment on people's health.

And you can see that impact on circadian rhythm just from that statement there. And so when we, you know, go to bed, there is light that we get that input through our eyes and then that connects to our brain and that that can signal to our pineal gland to produce melatonin.

Melatonin helps us and begin to process. And so a couple points I'd like to make is that our pineal gland unfortunately is under assault as well. And so, you know, just as much as our mitochondria, I feel like modern day is really having an impact on our pineal gland.

And we're very exposed to so many toxicants that are disrupting our production of melatonin through our pineal gland. So that can be, to name a few, fluoride in the water, glyphosate in our genetically modified foods and really everywhere.

Now, even if you eat organic, unfortunately you are exposed to the same, aluminum, which is really, ubiquitous in a lot of our personal care products, our medicines, also our food, water, our air.

Melatonin, Pineal Gland Health, and Brain Detox

And enough so EMR for EMR is that, electromagnetic radiation that we get from cellphones and smart meters, and you know, all of these things that are really, having a huge impact in even, calcifying the pineal gland.

And I actually, over for I do a lot of, dental referrals in my office because I look at the oral microbiome in the dental, dental health. And I think that its role in chronic illness and on what's called a cone beam scan of the mouth, one of the dentists that I work with can point out that they see calcification of the pineal gland.

And so that is actually radiographic ical, you know, sign. And so it's not just, you know, you Google things. Oh, does my pineal gland really calcified.

That's actually what we're seeing it. And so what that means is that just it's it's repairable. There's many ways to help it. But what that shows is there's a reduction in function.

And so I wanted to just set that up because we're in like a melatonin deficient time. And then through, you know, just another kind of like hopefully, you know, hopefully, understanding too is we don't just make, melatonin throw pineal gland or mitochondria that actually make melatonin.

We need melatonin, mitochondrial melatonin to help, stave off, basically the reactive oxygen species that are generated. Our gut microbiome actually produces a lot of melatonin.

So we have Mother Nature's equipped us with this very potent and powerful chemical to really help us with our circadian rhythm. And again, helping you with sleep.

And then just to kind of go back on that and then I'll flesh this idea out a little bit. So that helps you go to bed. And melatonin actually is very helpful not only for circadian rhythm, but it's very what we call neuroprotective.

It's a very potent antioxidant and used in cancer therapy. It's used in helping to detox the brain. And it has two functions. I find that why it detoxes the brain.

And then it helps again into sleep and during our sleep state art lymphatic system is that that's when it's most highly active. And that's the, lymphatic system in our brain.

It's called the glial dependent lymphatic system. So all of those things that I just mentioned that are affecting our pineal gland, we need the natural ability for our bodies, and our brains to detoxify at bedtime to get those things out of the brain.

So melatonin is assisting in that and that it actually helps to shuttle. There are papers to show that it helps to actually remove heavy metals and other pathogens out of the brain.

So it's that two fold kind of use. And then when we wake up and we get the signal from the sunrise, which is, you know, if you take anything away from this talk, you know, having your eyes look at the sunrise in the sunset every day can be very, very helpful for your circadian rhythm.

And when you look at the sunrise and then that signals your body to breakdown melatonin and kind of get that increase in energy to, you know, meet your day.

So, that is the long winded question, your answer to your question, but I'm happy to take that in any direction. But, you know, the bottom line is I think we're our circadian rhythms are definitely affected by modern times.

And that and also of itself when a melatonin deficient time, because of all the stress that we're up against. Yeah. I'd love for you to unpack. I think people are unknowingly sabotaging their circadian rhythms.

And obviously, you mentioned somebody who works night shifts. It's a known, carcinogen. It's a known disrupter to your health. And so if you could unpack some of the other causes of why circadian rhythm becomes disrupted, I think there's a lot of things that our modern environment that people don't realize is actually contributing to the problem.

And probably there's some simple solutions as well. So if we could talk about what's why is this, why is this a problem in our modern world. Yeah. You know, so many reasons. Right.

And you know, I think, you know, lighting is again the number one, I think, you know, issue in modern life in that, if you're not cognizant of it, you can very much be in a lighting environment or junk lighting environment that is not mimicking in the natural rhythm of the daylight.

It's just an aside. There's actually I am an, architecture, an architect who actually does circadian lighting for office spaces. And, you know, and I really think that's a feature, you know, and I, you know, I think that we feel better naturally when we have that connection to, the light that we're exposed to that's mimicking the day.

So often if you're working a lot or you're in front of a computer, you can very much, miss the signals of sunrise and sunset. And you can, especially in the evening, because sleep is so important, you can have that overstimulation, especially in blue light.

Blue light is more, peaked in the morning. So in natural lighting, there's more, blue light in the ambient atmosphere in the morning. And so for giving people that input that night, the pineal gland is confused and the biological clock is confused.

And, that is going to be, you know, very much, you know, working against us. And so one, you know, hack there that I really like as many people know about screensavers now that can take out the blue light, you know, in your devices, I mean, really the the name of the game.

I think we need to, go back to culture where people actually don't work after dinner, you know, but I, I, I haven't figured that out yet, so I, you know. Oh, you mean you work after dinner?

Modern Causes of Circadian Disruption

Do I know I know, so until then, the you know, what I do in my office, in my home is, I have one of those light bulbs that, that changes, light. So during the day, it can be just, you know, natural, incandescent, you know, yellow light and A and B in the evening, I can turn into red, and the red light is actually what, you know, when think of a beautiful sunrise.

There's a lot of, pinks and reds, and, you know that that is, really the, wavelength, the light. That's very helpful for, signaling or circadian rhythms.

So I use that real quick question. So sunrise light and sunset light are important. Right. So, so that we hear about getting your eyes on the sunrise.

Get outside. Don't just go straight to your office and start working, but that, those pinks and reds or sun set. Right. Okay. Exactly, exactly. So, you know, if I'm working with each other and after, you know, put my daughter to bed and, you know, it's clearly the sun is setting in Seattle right now, it's lovely.

We're recording this in the summertime, and, you know, the sun is out or the sentence sunset until 9:00. So it's kind of a little different situation, but, you know, having that red light, at night is really helpful.

You can also use, blue blocking glasses that are usually amber tinted. And that also can give you that feedback. You know, I like the Himalayan salt lamps.

I think there's something to them, you know, that can be like a nice to create a natural environment. I also have my red light therapy, the I have a sort of space filter and whatever brands.

I mean, there's so many brands out there and vision kind of what I have, which is red and infrared, and I use that in mind as well. And so all of those things create a kind of more, circadian mimicking lighting scenario at night.

So I think that's really important. And then I think, you know, we mentioned before we got on, you know, grounding, it's a lot of attention. And, you know, there's different ways to understand why it works.

And, you know, one of the biggest ways that I think that, grounding works, of course, it connects us with nature. It helps to, us to feel good and get that benefit.

But, you know, we're in this, very toxic time. And I mentioned that melatonin is an antioxidant. And with that, on the other hand, means is that we're, really full of either free radicals or we're also depleted in electrons.

And so to mitigate the stress that we're up against. And so, Doctor James Ashenden mentioned so beautifully, he calls it, grounding helps us to increase our elect run reservoirs, basically in the fashion, the extracellular matrix, so

that we can be prepared for the stresses at hand.

So I think, grounding is a really, wonderful way as you're getting back in the circadian rhythm as you're dealing with that, you know, you know, stress.

And then, one of the things that I think is really important, to amplify and support your sleep is to create a safe sleeping environment. And that has evolved over the years as technology has changed.

But one of the biggest things that you can do is to turn off your Wi-Fi router at night, because Wi-Fi can, essentially interrupt your sleep in. You're in, your pineal glands, production of, melatonin.

There's of these actually around out depletes melatonin and so forth. And so yeah, people turn off their Wi-Fi router at night. Some people up to not have Wi-Fi in their home environment and even creating an even more healing environment.

And then really, having blackout shades, of course. So really having a kind of a cave like dark environment. And if you can, you know, definitely not bring any devices in your bedroom.

You know, some days are better than others, but not to bring your cell phone in or if it's, you know, in your bedroom to turn on airplane mode or make sure it's a night shift if you're checking anything at night.

Because I think that's another, you know, really important, aspect for, getting good quality and all the phases of sleep. I also, you know, in a band there's a technology called the iPad, but there's different ways to do this.

But having a core, cooler body temperature and I can make sure that you can get into not only all the non-REM, but also REM stages of sleep and enhance sleep quality.

To enhance, of course, all the benefits that sleep has on your body. So, and then not have anything plugged in around the bed that can affect, that can create an electrical, field and not dirty electricity.

And so just having that, you know, having your bedroom be a sleep sanctuary and having it, you know, really be a safe place that those are really geared towards, you know, sleep.

And so those are some ideas to really support, circadian rhythm and sleep. Can you go back to grounding for a minute? You were talking about grounding being important now.

I mean, I'm, I'm lucky I live, on a beautiful property with a gorgeous yard, and I can in between appointments when I'm, you know, in my office for hours and hours at a time, I'll run outside and I'll just pace my big, long lawn on my bare feet.

And I will just, you know, go in there and feel the grass free. My feet and connect with the earth. But if you don't have that ability, if you live in an urban jungle and there's not a place where you can go put your feet on the earth, or maybe you just don't want to go bare feet where you live for a while because it's yucky.

What do you recommend to people? What can they do for, for grounding? Yeah, it's a great question. And, you know, again, we're all people. You know, you and I are blessed somewhere.

We have some grass to go on. And yeah, that's not always the case. This is where, you know, I think a lot of biohackers come in. And so, there's a couple strategies that I'll share.

One is what we call a grounding pad.

Grounding and Sleep Sanctuary Strategies

So it actually is going to be mimicking, the, energy that you get from the Earth in a pan. There's one, from a

company called Sanmina. They have a one called locus on.

It's essentially from the, I think Austria, and it really works. But when you use your grounding pad, you want to make sure it's grounded. Yeah. Number one, I think mistake people make, if they lay on a grounding pad and they don't feel better, they feel worse.

There's two ways to ground a pad. It's actually you actually putting a stake in the ground and grounding. And so you're getting that connection to the earth or plugging it in, which is way more common, especially if you don't have access to the, you know, patch of grass.

And so you can plug that in to an outlet, but you want to make sure that the outlet is grounded, and you can get one of those little, detectors to see if it's grounded from Home Depot.

They're inexpensive, and you want to just make sure you have it grounded out. So that's a technology, that I do think it's worth. I think it is a, you know, investment to consider, especially if you are struggling with a chronic illness and, you know, really focusing your energy and recovery.

I think it's important, I don't know, scientifically if this would essentially, be considered grounding, but I think it mimics the idea a lot. I mentioned those in my in salt lamps, and they have actually ones that you can put your feet on.

So you're actually putting your feet on, Himalayan salt stone, which are these ideas of, having kind of a little either stone or natural substance that it's not to be quite, you know, getting, the same energy as Mother Earth.

But there is this kind of idea of getting, electrons, you know, from those, from those stones. And so that's kind of a, a less expensive option as well.

And then if you really, you know, are not into either one of those, you know, you can biohacking the idea. Right? So the idea is, again, to get in connection with Earth, to get the energy, especially the, electrons from Mother Earth, so you can improve blood flows, circadian rhythm, decrease inflammation, you know, support all these aspects to our health.

So one way, you know, that, again, is a hack is they have these hydrogen tablets which are, you know, called hydrogen water. And so they're these, magnesium tablets that dissolve hydrogen gas, in the water, and you drink them within about 10 to 15 minutes, you know, when you are in, when you've, prepared it.

And that can help, again, increase electrons to help support you, in that way. And so, there's also hydrogen water. And that's again another expense because you have to, get a filter that will make hydrogen gas in your water.

But it is, it's a great, tool as well. So, hopefully people can find one of those tools helpful while there. Yes. So I want to point everyone on this summit, we actually have a hydrogen water specialist.

It's called pallbearer. Tarot is with us. So find his talk because he talks all about the importance of hydrogen in water. It's it's just like the Segway into what you just, said Christine.

And then he talks about all the different ways and different products you can use to get hydrogen in the water as well. And then for the hydrogen tablets, the one I know of is Quicksilver Scientific's H2 elite.

Is that what you're talking about? Yeah, I use that one. Currently. There's a few on the market, but that's the one that, I think is most widely available.

Yeah. It's amazing. So if I'm feeling like really if I need a, if I have a 2:00 slump, which is unusual for me because I have my energy pretty dialed in.

But if I'm really just go, go, go, or, you know, when it happens is when I eat something, I should so. So if I eat

something and my energy is, it just goes boom!

Because I ate too many carbs and not enough protein and fat. I will dose myself up with some of that H2 elite hydrogen and it just like, boom, it just like brings you back up.

It's, It's pretty. It's pretty remarkable. Yeah. It works really well. There's a, you know, there's a lot of research. I'm sure, going into this on hydrogen water.

It's not just a new idea. Yeah. Institute and people on Google I think it's molecular hydrogen Institute and tons of research. So you can find a lot of what you're looking for there.

Yeah. It's not a fad. Hydrogen water is the real. Yeah. Yeah. It's not it's not like alkaline water fad. It's not. Yeah. It's actually therapeutic. You up. Yeah. So All right.

So any other pearls on circadian rhythm. And the big takeaway maybe if you could just summarize the big takeaway that you want people to get about circadian rhythm.

Because we covered a lot of ground. There's a lot of information here. If you could summarize it into these are the pearls of information that you should really take away from this talk.

Yeah, definitely. So circadian rhythm is again our biological clock that is really driven by many inputs, by the light being, in our environment, I think one of the main inputs that helps to, be in sync with our circadian rhythm.

And we have circadian biology essentially, that, you know, we have different functions during the day that are optimized based on timing of the day and input of light from our external environment.

And so think about how can you you know, again, and what we said in the beginning, you know, things are complicated. But at the same time, if we go back to those principles of nature, we're usually light in the right direction in many ways.

And so think about ways that you can get more in, touch with the natural rhythm of your day so it can you wake up and, you know, even if you can't run outside or take a walk, can you at least look out a window or open your front porch and get that input of the sunrise and those beautiful, you know, colors to start your day, that it's going to have a profound, profound effect on helping to break down your melatonin and to also give you an energy boost to start your day.

Melatonin Supplementation and Paradoxical Reactions

And then on the flip side, or even in the middle of the day, let's not forget, get outside even, you know, whatever. You know, you can. But, don't stay inside all day and get outside and be, in the sun, you know, to get that input as well.

And then at night, make it a ritual to see the sunrise, you know, make it with your loved ones, you know, in just a few minutes a day. You know, getting that and putting highs, I think is very important.

And then to, you know, again, if you're trying to recover from the chronic illness or really trying to prevent one as well, consider melatonin supplementation.

I think there's a lot of natural ways that we can increase and boost our melatonin production, but also given our circumstances, melatonin supplementation is something that I think is really warranted.

So I like liposomal products under a couple on the market. There's Quicksilver and Bio Pure and they just kind of get absorbed you a little bit better.

And they can help just not only help you fall asleep, but also help your brain detoxify at bedtime. There are also

high dose melatonin products that I cautioning to only use with a practitioner.

Who knows how to use these very well just to make sure there's no contraindications. And then if you're having trouble adjusting, knowing how to navigate.

And so there are, melatonin suppositories anywhere from 50 to 400mg that we have access to. There's also, melatonin creams that you can get compounded around the same dosage.

The caveat for that is because it's a detox agent. You know, you can feel that melatonin hangover in the morning. And we found that that actually is a detox sign.

So, whether you use binders at night when you're using a high dose of melatonin or even, coloration, if you're working with somebody who knows how to use DMC or EDTA, that can be a good parent.

Some time. So that is, you know, something to explore. And then just really, you know, create a sleep sanctuary and a home sanctuary that really takes into account circadian lighting.

And really, you'll be surprised about how good you feel when you start doing these things. Oh. So good. This is such a wealth of information for those people.

You know, people always ask me, you know, might have this melatonin hangover and that could be a sign that you need some more detox support. But what happens when people get, can't sleep, when they take melatonin, when they feel wired, or they keep waking up at night on melatonin?

Can you explain what's happening there? Because I'm sure some of our viewers are having the opposite effect. Yeah. That happens, you know, and you know, we don't understand always why.

We like to say it's a paradoxical reaction meaning like, that's not what we anticipated and that's not what the majority of things happen in there can be, you know, again, different, pathways that are being pushed a little too much.

But what I have, people do is sometimes take their melatonin actually in the morning or midday. And because it's stimulating for them, they're still getting that effect.

Final Takeaways and Where to Find Dr. Schaffner

It's not going to obviously help with the sleep cycle, but really get all those wonderful effects of neuro protection and detoxification and supporting your mitochondria, your microbiome.

So I do think, that is, that's a hack that we've learned. You know, I love that. That's so good. Yeah. Just taking a different time. Yeah. Fine. You're you're the it's like you're the person.

You know, there's always a random person who doesn't get, it doesn't get, you know, more energy off a caffeine or they just they aren't affected by it.

They can even drink it at night. And it, like, does nothing to them. You're just one of those. Yeah. Interesting people with melatonin. So yeah, it will probably learn to snap down the root of why that happens.

But yeah. Yeah, I had a weird one at this point. Curious because that's come up, recently in my practice and I was scratching my head going, oh, well, I'll ask Christine because she knows a lot about melatonin.

So I'm glad to know that it's paradoxical. We don't know. If anyone out there wants to educate me, I'm totally open that as well. Yeah. Me too. Yeah. Let us know. Drop us an email.

Yeah. There's refineries in the coal mine these days, you know. Oh, totally. Totally. Christine, this has been

incredible. You're always a wealth of knowledge.

You are. So you're just the go to person. For all things naturopathic and functional medicine. So tell our audience where, because you work with you work with patients, you have, a virtual and a I think you have a virtual and a brick and mortar.

Am I right about that? So, yeah. Tell tell us where we can find you, where we can find your podcast. Where can our audience hook up with you? Oh, thank you so much, Liz.

So I have a, brick and mortar practice in Seattle, Washington. It's called Eminence Health, and we have a team of providers and physicians, and you can find us there.

We also do telemedicine. So that's my website. And then I have a website doctor, Christine schaffner.com, where you can find my podcast, The Spectrum of Health.

So good. Thank you, doctor Christine, you are amazing. Thank you for being here. Thank you. Take good care. Now I.