



EPISODE 947

How Sunlight Deficiency Destroys Your Health

With Guest Dr. Alexis Cowan

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SHAWN STEVENSON: Prepare to have your mind blown. My mind was, I didn't even know. You can have your mind blown multiple times, so like I, I have my mind blown. I grabbed it back, put it in, and it got blown. Again, this guest today, our expert, is going to detail the impact of something that is hidden in plain sight that can radically improve your health or radically degrade and even destroy your health if you are unaware. She's a Princeton trained PhD with a specialty in metabolism and mitochondrial biology and the intersection with that and physics and light. Now listen, this episode is where we have to really tune in, get our thinking caps on and follow along in these details. So she's gonna go deep, alright? And really unpack how a lot of this stuff works with our biology and circadian biology in particular.

And she's gonna be talking about the impact of light on our physiology. But not only that forms of light that we don't think about when we hear terms like electromagnetic fields or EMFs, radio waves. We don't think in terms of light, but she's going to detail how and why those are some of the most concerning spectrums of light for us to be aware of. And so we're gonna be talking about how light impacts our hunger and satiety, how light impacts our melatonin production like light. Triggering or increasing melatonin production, which we generally attribute melatonin to all things sleep related, right? So how can light, and there's a very specific form of light that can increase our melatonin production.

And with that being said, we're gonna be looking at a potential deficiency that you might have in light, in a very specific form of light yet again, and how it can absolutely transform your health by utilizing it. And as mentioned, we're gonna be looking at the impact of EMF, these electromagnetic fields, and we're going to get into a conversation about electricity and the body's electricity and chemistry. How it's interacting with things in our environment that we have normalized and we kind of take for granted even if we have an electric vehicle that we might be driving. You definitely need to hear this. Alright, so I'm so excited about this episode. Such a brilliant thinker. Again, she's gonna go deep, so you gotta be ready.

So hold on to your seat. Hold on to your hats. Make sure you keep your brain from just exploding. This is so mind blowing and so powerful, but yet, let me say this, incredibly practical.

Your health and your longevity will be dramatically impacted and extended as a result of not just listening to this information, but putting it into play in your life. And without further ado, let's get to our special guest and topic of the day. Dr. Alexis Cowan is a Princeton trained PhD from one of the top metabolism research labs in the world. Dr. Alexis affected from academia post-graduation after falling down the rabbit hole of quantum and circadian biology.

Now her focus and efforts lay at the intersection of a light, mitochondrial biology and biophysics. She works with and educates professional athletes and sports organizations, schools and individuals who've been disenfranchised with the centralized approach to facilitate the understanding of real science, practical science, and health and performance. Let's dive into this conversation with the one and only Dr. Alexis Cowan. I've been looking forward to this for some time now, and you know, just to be able to unpack. What's going on. And for years I've been saying circadian medicine is really the future circadian biology, paying attention to that. You and I have a very similar story, like I came into this with a big emphasis on food and I made food like everything.

And obviously it's a big part of our health and wellness, but I just continue to move additional layers and to look at those things that are controlling even what we're eating. And this is why I'm so excited to talk to you today. And if we could, let's start off by talking about circadian biology, like, just for people who aren't aware of what that means and how, because when I was in college hearing about my biological clocks, my quote circadian clocks, they sound like a soft science like I don't have clocks in me. You know? So let's start off by talking about that.

DR. ALEXIS COWAN: Yeah, sure. I'd love to. So, I mean, at a very basic level, circadian biology refers to the 24 hour cycles that are within our biology and with other, within other animals and organisms as well. There's different timing mechanisms that go into the body, but with regards to the 24 hour cycle, that's what we're talking about with regards to circadian health. And there are multiple inputs that control the circadian rhythmicity, like how that clock keeps time, essentially. But the most powerful time giver or zeit gaber, what it's called in like the literature, if you look at circadian biology research, they're gonna look at what inputs into the system dictate the timekeeping abilities of that system.

And the primary timekeepers for circadian biology are light and dark cycles. And so of course until, you know, maybe the past a hundred, 150 years light and dark cycles were primarily dictated by whether the sun was up or not. And with the advent of, I mean ultimately fire indoors and even in cave settings, if we go way back, was already somewhat disrupting the circadian cycle to a much lesser degree for reasons we'll talk about in a little bit. But especially with the invention of the light bulb and in particular the invention of the fluorescent tube bulbs and LED bulbs and device screens and all of this that has emerged over the past few decades, this is where we really started to see very important and impactful circadian disruption in a way that is actually, you know, messing with hormone levels.

It's messing with sleep quality, it's messing with stress tolerance, exercise performance, your ability to digest and assimilate nutrients, your ability to use your cognition effectively, your mood regulation, your ability to learn and to have learning and memory. So many different systems are affected by circadian biology and with the advent of these newer blue light enriched light sources, including the LEDs, fluorescence, and device screens, we really started to see this circadian disruption take kind of the front and center. And so the reason I highlight the blue part of the light spectrum in that case is because blue light is the primary input into our eyes, but also onto our skin. That is telling the body what time of day it is because in the evening time, you know you have moonlight, which has a very small level of blue light and it, but it's also just very low lux or low brightness.

And so that dark darkness input in the evening allows melatonin to rise, cortisol to go down, which allows you to get sleepy, get good quality sleep, allows your mitochondria to engage in their appropriate quality control mechanisms, which we can talk about later as well. And then, you know, as you're sleeping throughout the evening, as the sun starts to come up, light starts to go up. And naturally that would start to suppress melatonin, allow cortisol to rise in a healthy way that helps get your body up, your metabolism turned on, your cognition turned on, your digestion switched on. And all of these happen in accordance with the light entering into the environment. And in particular in the morning, we have a particular ratio of blue and red light in the spectrum that also helps with the repair of, this is a little bit technical, but there are heme, pro heme containing proteins in the body and the electron transport chain within the mitochondria within our red blood cells.

And these proteins require maintenance to keep them functioning well. And that red and blue ratio in the morning really helps to turn that quality control mechanism on. But in addition to that, we're getting that blue light rising. As I mentioned, cortisol starts to rise and does all the beneficial things that it does in a circadian context. Of course, people like to demonize cortisol today because if you have a rampantly high cortisol throughout the day and into the evening, that's a problem. Cortisol and melatonin are supposed to be on opposing cycles. So when melatonin's high, cortisol's low, and when cortisol is high, melatonin is low. And that is primarily dictated by the circadian environment, the light environment.

And so with the rampant blue light exposure that we're exposed to as modern humans living an indoor lifestyle, not only from the lights and the screens, but even from our window glass. So even if you have quote unquote good natural light in your home window, glass filters out. Almost all near infrared light, it filters out about 30% of UVA light and almost all of UVB light. And so in effect, even just our standard energy efficient window glass is already concentrating the blue light portion of the spectrum to a certain extent that is also inherently harmful with regards to the ratios that we're meant to receive from full spectrum natural sunlight. That is, you know, what we evolved and our ancestors experience just by going about their lives in nature.

We're missing that whole full spectrum light environment. Not only that, but we're also demonizing parts of the light spectrum that play very important roles in creating health and sustaining health as well. And of course, we're gonna probably get into the specific parts of the solar spectrum that are important. But I'll pause there because I've been going for a little bit.

SHAWN STEVENSON: This is so awesome. So amazing because again, even the concept of indoors and outdoors is sort of a new thing in the human story. And you know, just being able to have these insights even about windows and having natural light come in, yes, that is better than nothing, but what we really need is EL natural. We need to get outside and get real sun exposure to get that full spectrum. And with that said, you mentioned a couple of things there. One of them being, you know, I don't think that a lot of us think about our

hormones and our neurotransmitters. There's a lot of conversations around these important aspects of human biology, right?

These, I think about them as like metabolic dms. You know, just being able to send messages throughout all the cells in your body to keep your system on the same page essentially. And how light can throw off that whole process or we'll say fractured light or maybe deficient light and how getting access to real natural light that we evolved with can kind of sink everything up if that is starting to make sense. And so my question being, are we, would you say just based on even what we learned so far. Is the average person light deficient?

DR. ALEXIS COWAN: Yeah, I would say we're not only deficient in specific wavelengths of light that you would find within sunlight, in particular, UV and infrared and red to a certain extent as well, but we're also deficient in total brightness. So, as you alluded to with regards to neurochemistry, neuro hormones, neurotransmitters, this is a really important area that the light story touches on as well, because a lot of people may not know that serotonin is made in the pineal gland. Serotonin gives us feelings of connection, kind of, you know, feeling upbeat, feeling motivated in a different way than dopamine in some ways, but it's more of a social neuro hormone that plays really important roles in how we move through the world.

And serotonin ST is stimulated. Its production is stimulated in the pineal gland in response to not only the right parts of the light spectrum, including UVA, but also total brightness is very important when it comes to stimulating beneficial neurochemistry that makes us alert, awake, able to learn, able to have a, you know, an upbeat mood, et cetera. And if we're living an indoor lifestyle, most people aren't experiencing more than 10,000 lux of light at a given time. Lux is a measure of brightness. There's like a couple different measures of brightness people might see. Lumens is like the total brightness. Lux takes into account your proximity to the light source.

And so the closer you are to a source of light, the more lux you're experiencing, the brighter that is sensed by your body. The farther you are, the less bright. Sensed as by your system. And so bright light is really important for stimulating serotonin production in the brain. And if we're outside on, you know, a bright sunny day midday, we're talking upwards of a hundred

thousand lux or more compared to the max around 10,000 lux that you would experience if you're in an indoor environment with your basic lighting. And so ..

SHAWN STEVENSON: Can you say that again?

DR. ALEXIS COWAN: There's...

SHAWN STEVENSON: Say that again? Indoor light is how many lux versus natural light. Say that again?

DR. ALEXIS COWAN: It's about tenfold less tops. Like a lot of people are walking around or living in indoor environments during the day that are around a thousand to 5,000 lux. At best, you're looking at around 10,000 lux outdoors. If you're out on a sunny day or even a cloudy day, you're looking at 50,000 to a hundred thousand Ls. So you're looking at a tenfold difference.

SHAWN STEVENSON: Holy moly. So, so many of us, especially not on a consistent basis, aren't getting bright light, period.

DR. ALEXIS COWAN: Yep.

SHAWN STEVENSON: Holy.

DR. ALEXIS COWAN: Exactly.

SHAWN STEVENSON: Yeah.

DR. ALEXIS COWAN: So that's number one. The brightness of the light is a problem. Number two is the spectrum of the light. So there are ways that we can kind of hack this, so to speak as well, and we'll talk about that, like even just simply cracking windows. If you're able to do that, letting that full spectrum light in is going to make a difference with regards to this. But the UVA component of light is also really important. So UVA stimulates a photoreceptor on our skin and eyes and other parts of the body as well called melanopsin. Melanopsin is specifically a UVA

light detector. It is a protein receptor that's on our surfaces that's looking for UVA light. That's why I always kind of like laugh when I hear the dermatologists and ophthalmologists saying, you need to avoid UV light at all costs.

When our bodies are literally coated with A-U-V-A-U-V, a light sensing protein that is looking for the stimulus to help set local circadian clocks. So I kind of alluded to the fact that blue light through the eyes is what is, and through our systems in general is kind of what's telling our body what time it is. I didn't mention specifically that. The back of our eye, the retina is directly connected to a structure within the hypothalamus in the brain called the schematic nucleus, or the SCN. This is the master timekeeper for the body, the master clock, and so the blue light comes in through the eye, stimulates the retina, is propagated back to the hypothalamus, to the SCN.

That master clock gets set. It says, okay, based on the intensity of this blue light, it's x, y, z time of day. Then the downstream effects are, you know, we're basically telling the peripheral clocks throughout the rest of the body. Okay, this is what time it is. Now that signal from the master clock should sync up to the signals that each clock is getting locally as well. So like if you're getting sunlight on your skin and on your eyes that is creating a coherent signal that's providing the same information both at the local tissue level as well as at the central level in the brain. So now it gets a little bit messy when we think about, okay, if we're just, let's say wearing blue blocking glasses indoors, but we're still around all this bright blue light, it's not ideal because our skin is still receiving this kind of conflicting information.

It's still better than not wearing anything at all, and we can, you know, talk about that of course, but anyway, master clock, Nesin, UVA light detector setting, local circadian clocks in the skin, on the eyes, also in the testes. And so people will message me about this as well, because they're like, okay, there's this trend, you know, like sunning your buttohole, what is this? Like, is this actually rooted in science? And anyway, and it's actually kind of surprising, but we have data to show that nesin is expressed in the testes where it actually plays a role in testosterone production and fertility in men. And so there actually is some validity based on the science, just at a basic level to show that actually might do something with regards to boosting testosterone levels and libido and fertility, in both men and women as well, because

the ovaries and the sex organs in women also will express neurop in two. And so we have this kind of interplay between central circadian control in the brain as well as local circadian control in the peripheral tissues that is dictated by the light we're exposed to.

And, you know, that's considering both the spectrum and the intensity of the light, as I alluded to. And I wanna definitely talk about UVB light as well as red and infrared. But maybe I'll pause there and see if you have any questions.

SHAWN STEVENSON: Amazing. I mean, just the, with the sunning, the butthole movement, people were just aiming a little bit off, you know, with the testicles. And if you just think about this like certain parts of our bodies just never see the sun, you know?

DR. ALEXIS COWAN: Yeah. And it's just like, actually, I always laugh and kind of poke fun at the fact that like the phrase where the sun don't shine is actually propaganda. Right?

SHAWN STEVENSON: Oh my goodness. That is so true. So powerful. But then I know that a lot of people might wonder like, why does this area of the body tend to be darker? And it's this concentration of

DR. ALEXIS COWAN: Melanin.

SHAWN STEVENSON: You know, which is, you know, again, like nature finds a way. I think maybe even, you know, your body is I don't know if it's like being proactive at putting it there, knowing that you're not gonna get as much sun or it's like ready there with the melanin concentration for the sun exposure, you know?

DR. ALEXIS COWAN: Well, we need to talk about melanin. I don't know if you want to, actually, it'll weave into the UVB part of the story for sure. It's a very interesting molecule that we're kind of at our infancy and understanding, but it is so much bigger than sun protection as we're led to believe it truly plays a role in bioenergetics and powering up our systems. We really are solar powered in many ways that we're still, you know, kind of beginning to understand because there's been just this stigma around UV light and the harms of it.

And a complete ignorance of and of lack of research around studying the benefits of it. And in general, I like to tell people, whenever you hear anybody saying something is always bad and never good, you can know that they're wrong because there's always a risk benefit analysis, especially when it's from a stimulus that is ancestrally consistent across the evolution of our species.

SHAWN STEVENSON: We are here with Dr. Alexis Cowan. And I wanna ask you, does a light impact our hunger?

DR. ALEXIS COWAN: Hugely. So, a lot of people think that hunger's a willpower issue. It is not. It is controlled by the brain through many complex mechanisms. But this is also why I really wanna talk about UVB light, because when we're exposed to UVB light, it creates a neurohormone in our brain and our skin called Proopiomelanocortin. So this is a complex prohormone that's cleaved into 10 different hormonal products. One of these products is Alpha MSH. So MSH stands for Melanocyte stimulating Hormone. So as the name implies, alpha MSH is responsible. It's one of the factors responsible for telling melanocytes to turn on melanin production in response to UVB light.

And so that's one reason why you get a tan in response to the sun because your melanocytes are getting the signal to, Hey, we need to make more melanin. And this is not only from a protection standpoint, but from an actual harnessing of the energetic capacity of UV light standpoint as well, which we can talk about in a bit when we're talking about melanin. But with regards to hunger control, appetite and energy expenditure control, alpha MSH also plays a very important role. So Alpha MSH actually binds in the hypothalamus of the brain, which is like the kind of the control center for metabolism appetite, bioenergetics, like it is the hub that is telling you when to eat, when not to eat, when to move, when not to move.

And Alpha MSH, when it binds to receptors in the hypothalamus, suppresses appetite and increases energy expenditure. Which should sound like a holy grail with regards to the obesity epidemic and you know, a lot of the issues that we have as a result of that diabetes, et cetera. Because if you're getting that UVB light input, you're naturally going to want to eat less and you're naturally going to not only wanna move your body more and have more

energy, but you're just gonna burn more energy at rest through an elevation in your basal metabolic rate.

So this is just one factor from POMC that is having all these effects. We can talk about the others as well, but light plays an absolutely critical role in regulating appetite and energy expenditure. And when you learn that modern humans, especially in America, are spending over 90% of their time indoors, not getting any of those UV rays, and when they are going outside, they're told to wear sunblock, sunglasses, protect themselves from the UVB light. Then it makes so much sense that as a result of that we are basically having a bioenergetic collapse and a lot of kind of frayed system that is not able to regulate its appetite and energy expenditure effectively to yoke that to the environment. So it's a absolutely huge issue in a crux of the problem.

SHAWN STEVENSON: Wow. Oh my gosh. So it just makes sense with dis, with dysregulation and hunger and we jump to, instead we're trying to treat the symptom with all these new innovations GLP ones and you know, all the like.

DR. ALEXIS COWAN: Well, it's actually interesting, but the GLP ones like ozempic work on this Pomc pathway. They actually stimulate pomc production in the hypothalamus to reduce appetite when you could have just gone outside and gotten the UVB light to get a very similar effect. So, you know, big pharma companies, they know what they're doing. And my mentor, Dr. Jack Cruz talks about this a lot as well. Like back in the nineties, there were a couple pharma companies that were working on patenting the cold receptors and understanding the leptin system. And this whole issue with leptin and the GLP one drugs, like they have been teeing this up for literally a couple decades.

Like this is not just some explosion. Now it takes a long time to get drugs through the pipeline, first of all. So there's a lot of foresight that goes into the development of these drugs and also the market for these drugs. Like it was teed up for literally over 15 years. It's been a long time in the making.

SHAWN STEVENSON: You just blew my mind. You just blew my mind.

The overall nutrition in our food has taken a nosedive in recent decades. In fact, an analysis published by scientists at the University of Texas made an alarming discovery. 43 foods, mostly vegetables, showed a marked decrease in nutrients from the 1950s to 1999. According to that research, everything from vitamin A to calcium to iron, and more has significantly declined. Again, if it's not in the soil, it's not in the food. It's the unsustainable farming practices that have obliterated our soil quality. But this is changing thanks to farmers who are dedicated to regenerative farming practices.

And this is not easy to do in a market that is slanted towards quantity over quality, but select farms are stepping up to do the right thing. And this is especially seen in the domain of animal foods. Research published in the British Journal of Nutrition found that beef from animals fed an abnormal diet of conventional pesticide laden grains that decimate the soil quality contain up to five times less. Omega-3 fatty acids than what's found in grass fed beef and research from the College of Agriculture at California State University has found that grass fed beef contains elevated precursors of vitamin A and E, as well as increased disease fighting antioxidants like glutathione and superoxide dismutase activity compared to conventionally raised grain fed beef with unsustainable farming practices.

Whether you're eating plant foods or animal foods, you'd better know the difference when it comes to organic practices and regenerative farming, and this is what I truly love. About wild pastures. Wild pastures delivers 100% grass fed and grass finished beef pasture raised, pork pasture raised chicken and wild, caught seafood directly to your door. All born, raised and harvested entirely in the US and raised on regenerative family farms. These pastures are free from synthetic pesticides and other chemicals. There's no antibiotics, no added hormones, and right now with the Wild Pasture subscription, you're gonna get 20% off for life, plus free shipping.

And \$15 off of your first order, absolutely incredible. Go to wildpastures.com/model. That's W-I-L-D-P-A-S-T-U-R-E S.com/model. 20% off for life free shipping and \$15 off your first order. Head over there. Check them out. [Wildpastures.com/model](https://wildpastures.com/model). Now, back to the show.

SHAWN STEVENSON: So just to backpedal a little bit, you know, you mentioned also how this circadian timing system also influences our digestion, right? So it's just kind of making sense on how it's impacting our metabolism and, you know, just even how our body's processing the calories we might be exposed to based on, you know, our bodies are basically trying to figure out what time it is and what it should be doing. And so just to emphasize this one point again, when we are focused on having healthy hormone function, right? Just like this kind of blanket term and it, you mentioned serotonin in our mood, right? And good mental health and all these things. We are fixated on these very like, tangible, you know, trying to take something, do something and essentially what we're learning today is we're missing out on what is, I mean, I'm just gonna say it, it is the number one controller of the circadian timing system, right?

Food does influence the circadian timing system as well when you're eating. But this is the master regulator. And here's, this is the point, and this is what I wanna pass back to you. Light and dark. Light and dark. And so we could be deficient on either and both for most people, true darkness and also getting these light exposures.

And so, you mentioned earlier, and then we're gonna transition back to that. But I don't wanna leave this spot without talking about melanin because we just think it's, you know, the, it's a chocolate factory, you know, it's make us a little bit, you know, darker and all the things and get a nice tan and to be just kind of even, you know, superficially in a way just sun protection. But it's far more than that. I'm passing it back to you. Tell us about it.

DR. ALEXIS COWAN: Yes. Thank you so much for bringing it back. 'cause it's one of the most important parts of the light story in my opinion, because it sheds a lot of light on like the evolutionary history of our species and how we were sculpted. So if you look at the cradle of humanity, it's thought to be in eastern Africa, kind of in this rift in this area. And that's where humanity is thought to have emerged from. So, you know, obviously that part of the world is highly associated with very dark marination at the level of the skin and the eyes.

And a lot of people will think of that as, oh, you know, if the UV rays are really high, we need to protect ourselves from that by creating more melanin. This is purely a protection factor,

but the work of Dr. Arturo Solis Herrera is increasingly shutting light on the fact that melanin is not simply playing a role in protection, that it's actually able to make free energy when it's stimulated by high energy UV rays. And that energy is able to power our biology to a certain extent. So the more obviously you need to still eat food, but human photosynthesis. It's increasingly looking like it's a very real thing. And I want to talk about a little offshoot in a moment around more evidence for that in mushrooms specifically, which is interesting.

But for now, I just wanna say that, you know, latitude is associated with skin Melan nation. The lower the latitude and the higher the altitude, you see the darkest skin. So if you look at like Nairobi, Kenya, it's not only smack dab on the equator, but it's also at a very high altitude. And the higher you go up, the thinner the atmosphere, the more UV rays you're exposed to. So if you look at the individuals from this part of the world, their skin is very dark, super pigmented, adapted to this very intense but high energy environment. And if you look at that and then you look and say, okay, who are the best marathon runners in the world? Well, they just so happened to overlap.

And it turns out that if you are able to harness that UV light. Through your melanin, you can totally kick butt at pretty much any aerobic activity because your body has access to far more free energy than a counterpart who doesn't have that level of melanin and UV stimulation because you're just basically missing one third of the bioenergetic equation. And we could talk about the other third, which has to do with grounding and electrical connection to the earth and availability of electrons through that. But food is only one third of that equation. And so if you can harness. Your melanin in a high UV environment, you can totally kick butt at basically any sort of athletic activity, but in particular aerobic activities.

And so to circle back to the work of Dr. Arturo's whole . Arturo Solis Herrera and his work on human photosynthesis, there was another supporting research team that did some work at Chernobyl back in the nineties that really served as a primary intellectual catalyst for studying this phenomenon in humans. And the phenomena is that this research team went to Chernobyl, the nuclear fallout zone. Like they went in and they found these mushrooms that lived in this fallout that were pitch black. They were like, what are these mushrooms? So they

took them back to the lab, they did this research on them, and they found that they were full of melanin.

Then they did some studies to find out why is this melanin there? And they found out that these mushrooms created an adaptation to synthesize melanin, to be able to harness the gamma radiation from the nuclear fallout to make free energy. Now, mushrooms are actually more closely related to animals than they are to plants. And so I think, I haven't talked to Dr. Herrera, but I imagine that this research was a major catalyst for him to wonder, okay, is this also happening in humans? And they're working on laying down the, you know, the theoretical and experimental frameworks to prove that this is happening. But if we think about the response of the body to UVB, light exposure, as I mentioned, decreased appetite, increase energy expenditure from a first principle standpoint.

Doesn't it make so much sense that if your body's getting energy via another mechanism that it doesn't need to eat as much and it can have more energy available to move more to expend more. So just looking at this from a first principle standpoint, it made total sense to me when I first started learning this information and this research that yeah, these dots are connecting. This makes a ton of sense. And like experientially, you know, every time I go to the beach or you know, get some sun, I'm not really hungry afterwards. In fact, a lot of people will get super sleepy after going to the beach because you actually make a ton of melatonin in your peripheral cells. So we talked about pineal melatonin, that plays an important role in creating sleep pressure and getting good quality sleep and, you know, sleep duration, et cetera. But every mitochondria and every cell of your body makes melatonin as well for a different reason. It serves a really important role in maintaining the quality of mitochondrial health and function.

But some really great work from Scott Zimmerman, who's actually here in Jersey with me, he is about an hour north. He teamed up with, I believe, a research team in Texas to create a real time sensor for melatonin, cortisol, and I think like TNF alpha or one of the inflammatory cytokines. And they basically made a continuous glucose monitor, but for those molecules instead. And they found that you stick people outside in the sun. Take them out, they get a huge boost in circulating melatonin, and it turns out because the melatonin that's created in

your mitochondria in response to near infrared light, which we haven't talked about yet, much other than the fact that glass filters it out, and I didn't mention this, but all of our fluorescent LED and device screens, none of them contain any near infrared light because it's seen as inefficient energetically because it's heat.

It's also known as heat. Infrared light in general is heat, but the near infrared component in particular is the most important, arguably for human physiology because it penetrates the deepest into our bodies. It bathes every single mitochondria and every cell that contains mitochondria with this stimulating force near infrared light directly stimulates and supports mitochondrial function, which includes energy production, metabolic water production, as well as endogenous light production.

We didn't talk about bio photons yet. We'll go there for sure. But suffice to say for now that near infrared light is an essential input into the body to help stimulate and create kind of this constant state of activation for our mitochondria during the day. And from sun up to sundown, near infrared light is present whether you're at the North Pole or you're at the equator near infrared light does not vary with latitude in the same way that UV light does throughout the seasons. And so we are meant to be bathed with near infrared light as long as the sun is up and modern indoor humans are not getting any of this near infrared stimulus, and it's creating a mitochondrial crisis partially by way of not engaging that melatonin synthesis that plays such a critical role in mitochondrial quality control in virtually every cell of the body.

SHAWN STEVENSON: Okay, I didn't know my mind could be blown twice like this is just so incredible, so par. Number one, again, being proactive, this near infrared light input, we can, it's priceless. This is priceless stuff right here. And this really for me, speaks to why technology, you know, these new innovations with near infrared, light therapy, red light therapy, they have all these incredible therapeutic benefits, but we're missing, we're still missing the point. We need to get that natural exposure. But is this the reason specifically I want to ask you about this, the impact on the mitochondria, why red light therapy and near infrared therapy is so effective for everything from like, you know, helping to reduce wrinkles to accelerating injury from wounds and tissue damage and thyroid issues, you know, helping

with autoimmunity. You can go on and on. Tons of data on this stuff. Is this like the foundational reason why, is it the impact on the mitochondria?

DR. ALEXIS COWAN: Yeah, absolutely. So there's something called chromophores in the molecules that make up the mitochondrial respiratory chain or electron transport chain, which is what's responsible for making a TP in the mitochondria. So these chromophores absorb light at different frequencies and the red and near infrared components are particularly powerful at stimulating these. I will say that, you know, most red light panels virtually all red light panels that are LED based are only gonna have a few frequencies present.

Typically, you'll get a couple red and a couple near infrared. I just wanna contrast that briefly against what you received from sunlight, because let's say in a red light panel you have 600 nanometer or 620, 660 and then maybe you have eight 10 and eight 60 something like this. So a couple red couple near infrared. If you're going outside in the sun, no matter what time of day it is, it could be at sunrise, sunset, midday, you're getting 600, 601, 602 dot all the way out to 810...86, all the way out to 3,100 far nanometer, far infrared light. So you're getting the broadest spectrum possible of light all the way from UVB to far infrared.

And I really like to think about the light that we receive from sun as a morse code that is being so, the information is encoded into the light based on the ratios of different wavelengths. It's being interpreted by the body, and it's allowing the body to understand something about the environment and the time of day. So in nature, we never receive red and near infrared light by themselves, first of all. So at sunrise, there's a very highly enriched portion of red and near infrared, but there's still blue, there's still some shorter wavelength light. And then UVA comes in a little bit later. UVB comes in a little bit later after that.

We're really always meant to receive red and near infrared with some balancing short wavelength light that helps to tune the response of the mitochondria. And so I think there is a time in place for using red light therapy sauna bulbs. I use my sauna bulb all the time. I love it. That's more of a broad spectrum. It's an incandescent technology, so it has more similar to

the distribution of the spectrum like you would receive from the sun versus a panel. But even the panel, it's gonna be beneficial in certain contexts, especially if these individuals are living indoor lifestyles and they're not going outside or they're not able to prioritize that for whatever reason at a given time.

But I think if we were to redo some of these like red light studies with people who are regularly going outside, we probably wouldn't see much of a benefit because they're already getting that stimulus from, you know, the way nature intended it. So there's a time and place to use them. I think it's great, but I think we can't let that detract from the real solution, which is just to spend more time in, you know, under natural light at whatever times of day we can get out, essentially. But sunrise is particularly important from a circadian perspective. As I mentioned earlier, we're getting that right ratio of red and blue that helps with the heme protein repair that helps with anchoring in that circadian clock and the cortisol rhythm. If you stay out until UVA rise, now you're stimulating the local clocks via neurosis stimulation, as I mentioned earlier.

Then UVB comes in and we're engaged in that pomc system, the bioenergetic system, Milton in production, et cetera, and then it kind of wanes throughout the day and repeats itself and goes back towards, you know. UVB set, UVA set sunset. So you get two chances each day to get that heme repair, that circadian anchor. But the morning is in particular important 'cause it's setting the tone for the rest of your day. So just wanted to highlight that. 'cause there is a lot of craze around using light devices and I think there's certainly a time in place and there way better than doing nothing at all. But as my mentor, Dr. Cruz says, why settle for A, B, C, or D when you can have an A.

SHAWN STEVENSON: Exactly. So looking at these things is supplemental.

DR. ALEXIS COWAN: Yes.

SHAWN STEVENSON: Exactly. You know, same thing with food. There's wonderful supplements out there, but it does not replace the real thing. That's right. And so keeping

that in mind, and also again I think there's a great place for these devices, especially people know they're not doing certain things.

Yep. And that tends to be the case, you know, even with food. Right. But we have access. Just go outside, you know? It's free. And it's free. It's free. And so now let's talk a little bit more about. The darkness. Yes. Because again, these light inputs are critical for our biology, but so is darkness. And you mentioned earlier, and this should be just another aha moment for everybody, and an experiential thing as well, going to the beach and becoming sleepy and having this uptick. You know, it's not just what's going on with our, you know, pineal gland, it's also, as you mentioned this kind of peripheral system. And we can kind of bank even some of these hormones and neurotransmitters and even something like serotonin, we know is a precursor to making melatonin right. And we get an uptick with that, with certain spectrums of light, and in particular just sunlight.

And so having all of that said. Knowing that sun exposure when you go to the beach is going to help boost melatonin. Doesn't sound like the melatonin that we are aware of. What we do know most people at this point is that we need a couple of things checked off in order for us to produce ample amount of melatonin at night. Darkness is one of those parameters, and another one is having a consistent cycle as well. Because that can really throw off how much melatonin you're producing and when, so let's talk about darkness in relationship to our biology.

DR. ALEXIS COWAN: Yeah. So our biology is a decentralized system, meaning there's not one centralized single controller. So light is not more important than dark. Dark is not more important than light. They're equally important for regulating and kind of co controlling the system. And so as you alluded to. Making that serotonin from getting bright full spectrum light during the day is going to tee you up to be able to make ample amounts of melatonin later. Because that serotonin actually, as you said, gets converted into melatonin in the pineal gland, which then, you know, helps you go to sleep and get good quality sleep and you know, all the beneficial things, deep sleep, rem, all the things. So that darkness at night is really important. Most people don't sleep in dark environments.

Some people, god forbid, sleep with like the TV on or like lights on. And there was a really powerful study that came out, I believe in 2021 that showed even very low levels of light in the sleeping environment under 10 lux are able to actually mess with your melatonin production and impair your sleep quality. And the next morning, the people who were exposed to even low levels of light had increased insulin resistance markers. Decreased HRV increased fasting glucose. That's from just a single night of sleeping in a low lit light environment during sleep. Now imagine if you do that every single night, you're literally fomenting mitochondrial dysfunction and insulin resistance on a day-to-day basis. The other thing I wanna hone on here with regards to dark darkness at night is the light that we can't necessarily see with our eyes. That is also important. And of course, the light I'm referring to there is non-native EMF, which are primarily radio frequencies in the modern world.

So this would be our wifi 5G, Bluetooth 4G LTE, all those things. Those are all radio frequencies. They are long wavelength light that's passed infrared on the light spectrum. So short wavelength would include gamma rays at the most, you know, extreme. We have X-rays, gamma rays, we have the uv, then we have the visible spectrum you know, blue violet through red.

Then we have infrared, and then after infrared we have microwaves and then radio frequencies. So the radio frequencies are on the electromagnetic spectrum. They are called EMFs because they're electromagnetic frequencies. All light is an electromagnetic frequency technically, but the non-native component is referring to the fact that before the technological advancements of the modern day, we didn't, we weren't exposed to radio frequencies, very small levels. We'll get in from like cosmic, you know, radiation from the, from space, but it's basically none. Compared to today we're bathing in them 24/7, 365 essentially, especially if you live in an urban area. The 5G rollout that occurred around like COVID times in especially urban areas, used millimeter waves, which are overlapping into the microwave range.

And because 5G waveforms, they're a bit shorter wavelength of the radio frequencies. They're not able to penetrate as well. And so they have to use a stronger wave with more repeater towers in order to keep signal high for people that are in urban environments. And

so that's why 5G in the city is completely different from 5G in the suburbia or in the countryside because they're using a different wave intensity. And so the people who are exposed to City 5G service, they're exposed to a totally different kind of beast to a certain extent. And so doing our best to protect ourselves from this light that we can't see with our eyes, but our cells are seeing. For anybody who thinks this is like woo or not rooted in hard science.

This research literally goes back to the 1950s and the work of Robert O. Becker and Dr. Allen Fry. Both of them were kind of at the forefront of the non-native VMF research scene starting in the fifties. Becker's lab was from like the fifties through the seventies. He actually ended up getting canceled on 60 minutes, like the nighttime talk show after he blew the whistle on a military antenna that was going up in the Midwest. And he showed in his lab, like without a doubt that these frequencies were causing mitochondrial harm, that they were causing issues with the cardiovascular system, the nervous system, et cetera, creating abnormal growth. And his books, the Body Electric and crosscurrents are incredible. We actually have read both of them in my book club and gone through all the incredible data that he generated literally over 50 years ago.

Showing unequivocally that these frequencies are causing issues. Alan Fry's work was focused primarily on the harms of non-native vmfs and not the solutions. Becker was primarily focused on both actually the harms and also solutions and ways to kind of mitigate and avoid the issues. But Fry did a lot of work on like Havana Syndrome and like these targeted EMF weapons that were being used to. You know, in a lot of cases for these delegates that were at the embassy in Russia, they kept coming back. I think this was in the sixties or the seventies with leukemias, like these really rare leukemias and they were dying and they were having all of these like, psychological effects and it was crazy stuff.

But he did the research to show exactly how that could happen and be propagated with these EMF weapons essentially. And so anyway, suffice to say that there is decades of work showing that these frequencies can harm. Fry's work also showed that in the radio frequency range of like our 4G 5G wifi, Bluetooth, that you can actually open up the gut and brain and blood brain barriers, make them leaky. And then when you have these hyperpermeable membranes,

we start to get things moving through these membranes that shouldn't be. So we get more systemic inflammation because now basically, you know, our microbiomes become dysbiotic, we're getting leaking of lipo, lipo toin, and endotoxin from bacteria into the bloodstream, fomenting inflammation in the fat tissue, and in the organs with regards to the blood brainin barrier.

Hyperpermeable blood brain bears associated with brain fog, psychological mood disorders like cognitive decline, all of these things. And you know, we're led to the belief by the public and by our institutions that the only harms that can come from EMFs are thermal. But all of the effects that were documented going back to, you know, mid 19 hundreds, showed that these were non-thermal effects. These had to do with actual changes to the cellular functions and the mitochondrial function that were fomenting these both acute and long-term issues. And so when it comes to non a mfs, the most important thing to understand is the inverse square law. This is a physics concept that basically says that the closer you are to a source of EMFs, the stronger the stimulus will be.

So whenever you can put some space in between you and the source, you're going to be benefiting yourself. So that would include putting your wifi router in a room you don't spend time in or better yet, using ethernet versus wifi. Not keeping your cell phone on your pocket, in your pocket, not putting your laptop on your lap. Reducing proximity wherever you can. And then wherever you can't, there's technology and like, you know, stuff out there now that you can use to help mitigate those frequencies. So like EMF, blocking paint curtains, clothing, like there's a lot out there. The best thing to do is reduce proximity, but when you can't, you can go these other options just to try to block the frequencies.

I don't necessarily recommend the harmonizers that are out there. Like, I think they're mostly bs. If we're talking about things like Aries Tech and other technologies like that, they don't have any way to prove what they're doing and what they say they're doing. And basically what they say they're doing is they're like changing the waveform to harmonize it to our biology. And it's, there's no way to prove that. You can look at long-term outcomes, but you can't out, like, you can't rule out the placebo effect in those cases either. So I think when it comes to EMFs, you either wanna create space or block it with an actual physical blockade that, you

know, physics could prove. You can use a meter, you can show that the levels go down when you put this up. That's what I would recommend. If people wanna mess with Harmonizers, they can do it, but don't be lulled into a false sense of protection. That's what I would say.

SHAWN STEVENSON: Amazing. Triple mind blown. This is just, so, proximity is obviously, again, the most important thing or most valuable thing that we can utilize. And you know, this I've got like 10 questions that are bouncing off this one topic, but you know, again this is something that even when we hear something like radio waves, for example we might relate that again to something that we can hear, you know, the radio station. But we're talking about light and we've already, we set this whole conversation up with how influence and susceptible we are to light inputs like that's basically how our biology is run. All right? And so just because we can't see it and humans, I've been talking about this for, you know, maybe 20 years now at this point, but we're tinkering with things. That we've never messed with before and we don't know what's gonna happen.

We're swimming in all of these, in all of these waves that it's gonna get. It's not that they're newly invented, the kind of artificial versions of these things are and we're swimming in them. They're definitely penetrating going through in and out of our bodies. And as you mentioned, we're seeing all manner of health issues arise from these things. And we can be relating it to something completely different when we are seeing a manifestation of cardiovascular damage. Intestinal permeability issues, cognitive issues, cancers, the list goes on and on. There really isn't a part of human biology that's not affected. I said electric because I wanted to ask you about, okay, I'm gonna do it. This is controversial. I want to ask you about electric cars.

DR. ALEXIS COWAN: Oh God.

SHAWN STEVENSON: Is there an issue? Because again, just thinking about this stuff, because it's invisible and it's a big part of our culture now. Could our health be at risk when we're sitting in an electric vehicle or even a hybrid vehicle for a long stints of time? I'm just gonna, I'm gonna pass it to you. I'm curious, please.

DR. ALEXIS COWAN: Yeah. I'm thankful that you went there because part of Becker's really important work was not only on the radio frequency front, but also on other forms of non-native EMFs, including. Non-native electric fields and magnetic fields. So when we're talking about electric vehicles, we're really talking about these electric and magnetic fields. There are radio frequencies as well. The cars are, you know, Bluetooth laden and they're communicating with towers and they have all these modern conveniences. But you know, that comes at a cost, in my opinion. And so if you just simply get like a tri field TF two meter, they're like 200 bucks on Amazon, and you turn that thing on and you go sit in electric car, you'll never wanna sit in one again because it literally blows the meter, flat lines it at max on both the magnetic and the electric front.

So when it comes to batteries in general, they make a very strong magnetic field. And interestingly, actually, Becker's work in cross currents and the body electric, he highlights the effects on growth. Basically creating a Barrett growth or changing cell cycles from magnetic fields and electric fields. Even the AC power grid itself creates non-native MFS in the form of dirty electricity of these non-native electric fields. So whenever you're plugging something into a wall, that thing is going to have some level of, you know, detectable electric field coming off of it. Now again, proximity is king when it comes to this.

So the closer you are, the stronger it's gonna be. When it comes to electric vehicles in particular, if you're sitting on the driver's side or the passenger side in the front seat, you're getting bombed compared to somebody in the back seat. They're getting a little bit less, but it's still quite high.

And I believe in like Teslas and a lot of like the popular electric cars, the battery is basically like right underneath the driver's seat, irradiating your sex organs and just going basically straight up your body. So they're a huge note for me. I will never drive an electric car. Like you couldn't pay me to buy an electric car or to use one. Actually I remember the first time I sat in one, I got like this massive migraine, and that was actually about a year and a half after I fell down the quantum and circadian biology rabbit hole. And one thing that people will notice when they start engaging in these practices, when they start, you know, getting out at

sunrise or first thing in the morning when they wake up, getting some midday sun blocking blue light at night, only using red light, candlelight getting dark darkness in the evening.

You start to build back your sensitivity because something that we didn't talk about is the artificial blue light. These, this higher energy, blue light you can get from LEDs, fluorescent device screens, et cetera breaks the photoreceptors on our skin and our eyes, our surfaces. And so the photoreceptors, there's one called Melanopsin. We talked about neuros in the UVA light detector, but Melanopsin is the blue light detector and it's held into place with a special form of vitamin A. In our skin and our eyes, and when we're exposed to that blue light in isolation without the balancing effects of UV and infrared, that bond between the vitamin A and their photoreceptor breaks down.

When it breaks down the free vitamin A goes on and it breaks down more photoreceptors. So it creates this feed forward loop in the negative direction. Our photoreceptors are what allows our body to sense the environment, in particular, the light environment. And so the longer you're in a toxic, poor light environment with non-native e mfs and you know the toxic soup you're eating, junk food, dot, do, now suddenly you're not as sensitive to your environment in general. You're not as attuned to your environment because your ability to receive that information actually has broken down. So as soon as you start engaging in healthy practices with regards to your light environment and your light dark cycles, you build back that sensitivity. So exposures that you wouldn't have thought twice about in the past.

Now suddenly it might make you feel sick or like you can palpably notice that this doesn't feel right, and you might wonder, okay, like why am I sensing this now? This is why. It's because you built back that sensitivity at a molecular level. Now you're able to detect an environment that's not healthy for you, and that's actually, you know, a blessing as inconvenient as a convenience. You know, sometimes it's actually. You know, it's good information to have so that you can make the choice to, you know, change that environment in some way to make it a bit healthier for, you know, everybody it's affecting.

SHAWN STEVENSON: Yeah. Thank you for that, because again, we don't want to turn a blind eye and just, you know . I'm a big fan of, and I know how it feels like some, sometimes, like, I

just don't wanna know. Like, yeah, ignorance is bliss. But there are people, and there's, there are many stories of this, a lot of anecdotal data, but we've got some sound science on this now too, but just people who are driving electric vehicles and experiencing nausea and headaches. And, you know, chronic health issues. And again, they're trying to find out, look into all these different places to what it is, not knowing that the vehicle that they're sitting in, maybe they're, you know, a long commute or they're an Uber driver, whatever the case might be. And so it's just to be aware, like we're tinkering with stuff and technologies and we don't know the impact that has on our body.

So, but also, I don't wanna freak out people. There's a lot of people with the Teslas out there, even if they got the little sticker the other day, I saw a sticker that said felon. And I'm like, why would it say felon on their Tesla? Oh, it was F Elon. All right, buddy.

DR. ALEXIS COWAN: Oh my God.

SHAWN STEVENSON: Yeah. Yeah. So, you know, people, maybe they're on that energy. And they're maybe wanting to get a different vehicle, but this is just something to be mindful of if you're in the market. But you know, sometimes we're trading one problem for another problem and not looking at like, what is paying attention, putting human biology as the priority. Right? When we're making things alright, part of future.

DR. ALEXIS COWAN: We have to.

SHAWN STEVENSON: You know.

DR. ALEXIS COWAN: 'Cause our government's not gonna do it for us. Like the regulatory agencies do not care. They're actually making a killing by us being sick and broken down and you know, dumbed down. And actually, if you look at some European countries, including Italy, Switzerland, France, and Russia, they all have much more strict policies as it relates to 5G towers and non-native mss. For example, here in the states, the cell companies can legally put a cell tower on top of a school, a nursing home, a hospital, you name it. It is criminal. It is criminal. If you look at the policies and the legality overseas in those countries that I just

listed, they're not allowed to do those things. So it is acknowledged that these are particularly harmful for people who are sick.

Fragile developing, but we just we're choosing to selectively ignore certain information here at the level of the regulation, at least because it's inconvenient. And so we have to look out for ourselves because nobody's gonna come to save us in that department. And like you alluded to, not knowing about it and choosing ignorance is not going to protect you from these exposures. They have biological effects that are independent of what you believe to be true. And so doing our best to inform ourselves and reduce proximity and exposure when possible is it's the best approach to make in this kind of very novel, hyper novel, novel hyper novel modern world that we're living in.

SHAWN STEVENSON: Yeah.

One of the fastest ways to impact your gut health is through the things that you drink that liquid medium is a fast delivery system to improve your energy, boost your metabolic health, or to straight up mess you up. When it comes to gut health, one of the most powerful things seen in clinical data to instantly uplevel the health of our gut are polyphenols. And these are incredible compounds that have antioxidant and anti-inflammatory properties that are out of this world. And this is just one of the reasons why in that liquid delivery form, teas like green tea and black tea are noted in thousands, literally thousands of peer reviewed studies to have a variety of health benefits.

Now, my favorite tea is absolutely abundant in polyphenols, and it's been found to have remarkable impacts on our gut health. A recent study published in their peer view journal Nature Communications uncovered that a unique compound called Thea Brownin found in the traditional fermented tea called pu'erh, has remarkable effects on our microbiome. The researchers found that Thea Brownin positively alters our gut microbiota that directly reduces liver cholesterol and reduces lipogenesis the creation of fat. Another study published in the Journal of Agricultural and Food Chemistry found that pu'erh may be able to reverse gut dysbiosis by dramatically reducing ratios of potentially harmful bacteria and increasing ratios of beneficial bacteria.

So much of these benefits seen in these peer-reviewed studies are due to the incredible concentrations of polyphenols. That are found in pu'erh, and the only pu'erh that I drink is triple toxin screened for purity. It uses a patented cold extraction technology and it's wild harvested, making it even more abundant in polyphenols. The pu'erh that I'm talking about and against the only pu'erh tea that I drink is from the incredible folks at Pique Life. Go to pique.life.com/model and you're going to get up to 20% off. Plus they're going to hook you up with a free starter kit that includes an electric frother with some of my favorite bundles and my favorite tees over at Pique.

Again, go to pique.life.com/model. That's P-I-Q-U-E-L-I-F e.com/model to take advantage. This pu'erh Tea is in a league of its own. It's absolutely incredible. You can enjoy it, either hot or cold, and there are multiple studies affirming its benefit on our overall metabolic health and supporting fat loss as well. It's truly special. Again, head over there, check 'em out, pique.life.com/model. Now back to the show.

SHAWN STEVENSON: Well, with the current the way that our society's structured, it's very difficult for the average person to quote, escape all of these EMFs, and you called it earlier, dirty electricity or Christina Aguilera electricity. All right. That's a little Easter egg for everybody and. You know, it's very difficult to to escape it. And so what are some things that we can do practically to, you know, maybe protect ourselves, insulate ourselves? I know you mentioned proximity, but what are some other things? You mentioned grounding earlier.

And, you know, I was talking, I've got an episode of the Model Health Show from 13 years ago, you know, talking about grounding and some of the science that was in peer reviewed journals. Just like, this is interesting stuff here. And, but then again, it just seems like very soft science, a little like whatever. It can't be that easy, you know? So can you talk about some things that we can do to insulate ourselves, to protect ourselves, maybe even if we're in an electric vehicle? Like is there anything that we can possibly do to make it a little bit less toxic for ourselves?

DR. ALEXIS COWAN: So I'm gonna circle back to grounding in a moment because it is important. The first thing I wanna highlight with regards to protection is actually kind of

hearkening back to the conversation that we had already about melanin. So I mentioned that melanin can absorb UV light and it can use that to bio energetically power mushrooms, people, other organisms. I mentioned that they can absorb gamma rays, these mushrooms in Chernobyl, but what I didn't mention is that melanin absorbs virtually every wavelength of light.

The only exception is in the near infrared LA range. It actually allows near infrared light to pass through, which allows even a melanated individual to receive a lot of those, you know, nourishing rays deep in their systems. The purpose of me mentioning that is that the more melanin you have on your surface, the more you're able to absorb radio frequency RA waves, for example, and prevent them from interacting in deeper tissues of your body. So despite the fact that mainstream dermatology, it will say there's no such thing as a healthy tan in the modern non-native EMF soup. Melon is an incredible sponge for these frequencies to help protect your internal organs from exposure. So that's a really important one. With regards to grounding, I actually wanna mention something 'cause this kind of really gets into, it's not only is it not a soft science, it's probably one of the hardest science sciences because it's rooted in physics.

So if we look at a lot of this work with light biology, circadian biology, quantum biology, we're really talking at the biophysical level, like how molecules are working, how electrons are flowing, how charge is separating. And Robert O. Becker was actually inspired by somebody called Albert St. Georgi, who won the Nobel Prize, I believe in 1938 on his discoveries around vitamin C. But St. Georgi had this pet hypothesis that every gene in the human genome encoded a protein that had an electronic structure. So in other words, he believed that all proteins expressed in the body were semiconductors.

Now, of course, today, when people think of semi conduction semiconductors, we're thinking about electronics and things like this. Of course also, semiconductors means that basically electrons can flow through a material under certain conditions. And so Becker actually went on to prove that indeed the proteins within our body, including the major ones like collagen, which makes up, you know, by weight, it's the most abundant protein in the system.

It's the, is basically a hydrated collagen system that's piezo electric, meaning when you squeeze it down, it can create light and charge, or if you flow charge through it, it can basically, you know, create mechanical changes. So that's one example of a semiconductor in the body. But if you wanna prove yourself that this is true, you can go outside, wear a sneaker on one foot that has like a rubber synthetic sole barefoot on the other foot. You can put your barefoot on the grass. You can use a simple volt meter. And I have a, like a video of me doing this and like a highlight reel on my Instagram where you can prove to yourself that you're grounded.

It's gonna read zero on the meter. You take that barefoot off the grass, it's gonna read some positive number. You put your barefoot back on. There's somebody next to you that's wearing also sneakers. They're ungrounded. You simply touch fingertips with them. Now they're grounded, the smallest fraction of your skin needs to be grounded in order for your whole system to receive that electrical grounding, that benefit, because we really are electrical beings. And that's why Becker's book was called The Body Electric, and he went on to prove that very beautifully. But modern humans are walking through life ungrounded 24/7. And this is a very new thing. Like this only goes back maybe 75, 80 years because prior to that we didn't have synthetic materials that are like these plastics and things like this, that block a grounding force.

Leather, cotton, wool. All these permit, the flow of electrons essentially permit the grounding force to interface with your body, whether it's, you know, whether you're inside or outside. So this is really a very modern problem because homes in the past would've been grounded. They're made of wood, they don't have polyurethanes coating everything like they're made of stone slate, whatever it is. You're still gonna be grounding by interacting with these materials. And so whenever you can introduce more grounding into your life, it's gonna be beneficial. Like there was a study done maybe three, four years ago, showing that just 25 minutes of grounding dramatically reduced the inflammatory burden of individuals, and they used thermography to prove it.

They looked at people that had inflammatory conditions on a thermograph, you can see the inflamed joints and areas are hot. They're red. You ground them for 25 minutes. Those areas

have cooled down, and that's just 25 minutes. Now imagine if you're, you know, grounding as much as you can every day, whether it's through grounding sheets, mats, et cetera. The only caveat that I would say is if you're gonna try to ground inside and bring these like mats or mattress toppers or sheets or whatever inside, is that you ideally want to still ground them into the earth and not through an outlet like the ground on an outlet, because outlet grounds aren't necessarily grounded all the time.

There's something called jump conduction that can happen where basically maybe you test your outlet, it says it's grounded, but when you turn on a big appliance washing machine, dryer dishwasher, now suddenly there's jump conduction and there's charge flowing into that ground that shouldn't be there. Now, if you're grounding on that mat sheet, et cetera, you're getting that charge now and you're getting the opposite of a benefit. You're actually being harmed by that. So in order to rule that out. What I'm doing, like right now, for example, my foot's on a grounding mat and I just have the wire running out the window.

And for me I had needed to extend it a little bit, so I basically got some insulated copper wire, stripped the ends, wound the wire around the probe that would've gone into the wall. Little electric tape, sent the other end into the yard, buried it a little bit of ground. Now I'm grounded when I'm inside, but it's as if my feet are on the earth outside. So it is very kind of easy. It just takes a little bit of planning and forethought to make it happen, but. There's a major benefit there for people, and as I said, we're meant to be grounded all day, every day. So any amount that you can introduce is going to be beneficial.

SHAWN STEVENSON: Amazing. 20 years ago I was, I had a grounding rod outside and I was utilizing these grounding bedsheets for years. Oh, I love that. And, you know, I kind of strayed away from that because of my concern when I moved, because I started to plug it, put it into the wall. Yeah. That, you know, because I didn't my bedroom was like really high up. And so, but one of the things, and I had this like little tester as well, like, you hold it in your hand and there's, you know, there's a little light sensor thing on there, but it doesn't light up unless you touch the grounding sheet or the grounding mat. And literally, like you just said, like just touching your toe, just the tiny bee barely even touch it. And it comes right on because it's indicating that it's grounded. But yeah, being aware. Thank you for sharing that, because it

can be kind of this cross-contamination in a way. And so the ideal way is to get it directly from the ground and also just spending some time barefoot outside.

DR. ALEXIS COWAN: Yes.

SHAWN STEVENSON: You know, just this is how you get it I natural just from the source. And so that's a great tip for everybody to be mindful of. Now what about, as you mentioned earlier, you mentioned curtains. So what about clothing and curtains? Do any of these things have impact with kind of protecting us from EMFs?

DR. ALEXIS COWAN: Yeah. I would say if you're gonna be I in like a high MF environment, like a plane or something like this. You can think about maybe wearing EMF blocking clothing on particular parts of the body, like maybe you wanna protect your sex organs 'cause they're particularly vulnerable. Maybe you get like EMF blocking underwear or something like this could be a good idea. Personally, what I tend to do is just like live a lifestyle in general that will buffer me against a harsh environment when I am in there. So like when I am flying, I, you know, I know my lifestyle has me, you know, doing really well so that when I'm in that environment, it's not going to affect me as much.

Another thing that I do to prepare for flying and to like help support my mitochondria in an environment like that is. A deuterium depletion protocol, which it's a little bit, I mean, people might have heard of deuterium depleted water. It's a little bit complex, but I'll do my best to just kind of distill it down. So I mentioned earlier that our mitochondria through the respiratory chain make metabolic water so that metabolic water is deuterium depleted water deuterium is a heavy form of hydrogen. Our mitochondria are a battery that separates hydrogen protons from electrons. That's exactly how a regular battery that powers your remote control works as well.

But those protons that are being separated from the electrons have to be proteum. The light form of hydrogen deuterium has doubled the mass increased size, and it messes with the transport mechanism that allows those protons to come back into the inner part of the mitochondria, which is what powers the spinning of this rotor called a TP synthase. That is

what's making a TP. So the pore that goes down the middle of that a TP synthase. Is made to fit proteome, not deuterium. And so the reason I mention that is because mitochondria are racist against deuterium. They do not want deuterium anywhere near them. And doing a deuterium depletion protocol before going into a stressful environment like a plane, for example, or for disease remediation, we now have data showing that in cancer patients and people with diabetes that doing a three month deuterium depletion protocol significantly well reduces fasting glucose and insulin levels in diabetics, reverses insulin resistance to a certain extent a significant extent, and also improves outcomes in cancer patients who are receiving the DDW, the deuterium depleted water with some adjuvants like radiation, chemo surgery.

And so the way that's working is it's helping to improve mitochondrial function the way that I see it. Every chronic disease that we're facing societally is rooted in dysfunctional mitochondria. It just depends which tissue is most affected, and that's really dictated when you're born to a certain extent. So when you're born, you get all of your mitochondria from mom. And this is the work of Dr. Doug Wallace out of Children's Hospital Philadelphia. He's the pioneer of mitochondrial biology. He's the one who discovered, you get all the mitochondria from mom. He discovered mitochondrial eve, which is basically, if you trace back the mitochondrial DNA, you can trace it back to one woman, essentially.

And he's also the one who determined that hypoplas is a biomarker of disease, and HeLas is rates of mutation within the mitochondrial DNA. So. People probably know that there's DNA within the nucleus of the cell that encodes a bunch of genes that make proteins. But there's also DNA within the mitochondria that's special. It's circular. It actually looks like bacterial DNA because for people who don't know, there's a theory called the endo symbiant theory, which basically states that mitochondria evolved from bacteria in like the ancient landscape. And so mitochondria and bacteria share of out in common. That's also why antibiotics are harmful for a multitude of reasons, not only for the bacterial death of the good microbes, but also of direct harm on mitochondria as well.

But that DNA in the mitochondria can accumulate mutations and when mutations accumulate, the proteins that are encoded by that DNA are what make the electron transport

chain complexes that allow for energy production, water production, and biophoton production, which I do wanna circle back on in a little bit. So maybe you can remind me. So this hypoplas burden, this mutation burden in the mitochondria. Dr. Wallace has shown that, you know, if you look at basically any disease state, you could look at autoimmune diseases, cancers, you know, IBD liver disease. And you look at the mitochondria from the affected tissues, they have a ton of hypoplas.

They have all these mutations within the DNA and that is due to insufficient quality control mechanisms being engaged for those mitochondria. So that's mitophagy and MIT biogenesis mitophagy is the process by which damaged mitochondria are selectively broken down and gotten rid of MIT biogenesis is the process by which you can expand the good mitochondria that are left. And so a lot of people may also not know that aging is a mitochondrial disease. It's just an inevitable one. So hetero plasmic accumulates about 10% per decade on average. So if you're lucky, you just, you know, accumulate 10% per decade until you pass away of quote unquote old age. But if you're exposed to a toxic environment that is stressful on your mitochondria, now suddenly you could accumulate mutations this HeLas at a much faster rate.

So let's take the example of childhood cancers. A baby can be born, they could seem healthy. They develop a retinoblastoma like two years old, and they pass away at like five. So if you actually looked at the mitochondria in, you know, in their retina, in their brain, you could see that the mitochondria that they were born with, even though they were only a couple days old, the mitochondria may have looked like a 60 year olds in that tissue. And that has to do with the mitochondria that we're gifted by mom. So depending on mom's environment, lifestyle stressors, traumas, and grandmas as well. Because this propagates through generations that's dictating the hand of mitochondria that's being given to the next generation, which dictates which tissues are most vulnerable to disease in an individual.

So I just wanted to highlight that because you know, a lot of people will think that, you know, this stuff kind of just happens random, and it's these random tragedies, but it's actually, it's happening in a very systematic way. It's just a way that centralized medicine doesn't really look at though Dr. Doug Wallace has been clued onto it for a long time now. So that's what I

will say about that. I don't actually remember what the initial question was. I hope I answered it, but maybe we can cover bio photons if we have time.

SHAWN STEVENSON: Yeah. Well this is, my mind is blown completely. This is the fourth time you have no mind. This has never happened before. Just another round. Another round. I want to ask you, you know, we are coming up here on time, but there are two things I want to ask you as just kind of practical walkaways for everybody to utilize this. And this is an episode right here. This interview is one that I know many people are gonna listen to over and over again to unpack what you shared. And this is, you know, I spent a lot of money going to a conventional university and. It, what you're teaching today is so far more valuable and applicable to our lives here on earth than anything that people can pay for. It's priceless and I really do appreciate that. So you mentioned the deuterium depletion. How do you do that?

DR. ALEXIS COWAN: Yeah, great question. So you can buy some really expensive deuterium depleted water. Light water is one brand. They sell like five parts per million deuterium depleted water. It's like 150 bucks for like a case of six 16 ounce bottles. It's pricey. That's what they're using in the clinical trials and like people with cancer and with diabetes. But there's natural ways that we deuterium deplete as well. One of those is sweating and so I guess to circle back, standard drinking water, like if you, it depends on latitude, but if you live at the near the equator, your standard drinking water's gonna have around 155 parts per million of deuterium.

If you live in Greenland your water's gonna have about 130 to 135 parts per million deuterium. The research would suggest that for longevity and protection against disease or remediation of disease, that. Around 120 parts per million between 105 and one 20 is looking like the sweet spot with regards to living a longer life and living a healthier life. So yeah, we don't really have water sources that will get down that low just yet, though I am working with some investors to hopefully make some at-home units that could make this a bit more affordable for people. But outside of that our bloodstream is the most concentrated in deuterium in the body.

So if you look at the water within our cells, within our mitochondria, very low deuterium. Ideally if it's a healthy cell, healthy mitochondria. The bloodstream is what concentrates the deuterium. So that's a good thing because it helps to keep the deuterium away from the mitochondria. And many people may know that red blood cells don't contain mitochondria, so it's a good place to keep your deuterium is in the bloodstream. And of course when you're sweating, you know that water, that fluid is coming from your bloodstream. Ultimately the blood vessels expand towards the skin and then it can evaporate off the surface of the skin and form droplets. And so that is deuterium enriched water that is playing a role in helping to deuterium deplete the cells because the body needs to maintain that blood volume.

So it's gonna pull water out of the cells in order to get back to that point. Obviously you can hydrate externally as well. So that's one important mechanism is sweating. There's also some interesting data also coming from Dr. Herrera's work and a couple others showing that UV light and sunlight exposure also helps to deuterium deplete the water of the body as well by basically melanin splitting water. So one of the mechanisms by which we're making energy, free energy from the melanin in our system. This is the same way that photosynthesis works in plants, is that light comes in, stimulates chlorophyll in plants, which then stimulates water splitting, which then allows for energy production by basically separating protons from electrons.

That's how it works in plants in humans. Melanin basically replaces chlorophyll, but melanin is actually even more efficient at splitting water than chlorophyll is. And so anyway, it's kind of technical, but the point being that water containing deuterium doesn't get split versus the water that is low deuterium that doesn't contain, that contains the proteome is going to preferentially be split. And there's some, you know, kind of whole mechanism that they're working out with regards to that. But anyway, suffice to say that. It seems like getting out in the sun is also an inherent way to reduce your deuterium burden which can also help you sweat as well, especially if you're working out outside.

And I didn't mention this earlier, but one of the best things you can do if you're really trying to get like jacked and really good at being an athlete, working out outside is gonna be your best friend, especially if you do it barefoot with as much skin as possible exposed because

you're not only getting the grounding force and those free electrons from the earth, but UVA light directly stimulates the production of nitric oxide and it does so in a way that's proportional to the amount of skin exposed. So the more skin that's exposed, the more nitric oxide you produce, the more nitric oxide you produce, the more you get that pump, you get that vasodilation, you get nutrient and oxygen delivery to tissues. Waste removal from tissues you can get type tends typically more pumps in because you're able to clear that metabolic waste more efficiently.

And so nitric oxide is a really important part of the story also for cardiovascular disease. So nitric oxide deficits are one of the primary, well, I would say they are the primary cause of hypertension, high blood pressure, but also cardiovascular issues in general. So for anybody that has, you know, high blood pressure or a history of a family history of cardiovascular disease, getting outside and getting that UVA light with the full spectrum sunlight is gonna be hugely beneficial. With regards to that, and actually my stepdad was submitted to the hospital with like heart failure and super high blood pressure. And then he was sitting in the hospital for days. His blood pressure wouldn't come down. They had him on like three different meds. We were like, you know, this was last spring.

So we're like, check yourself out. Go home, get a lawn chair, sit outside. He does that within an hour of sitting in the sun. His blood pressure's down to normal for the first time in a week. And so it's just, it's pretty powerful. And old hospitals used to have so decks on the roof for a reason. Obviously post flexner report that was removed as quackery. But you know, this wisdom and this information is rooted in longstanding history of use. And it's just a matter of kind of rediscovering that. Does that, did that answer your question with regards to like how to do it?

SHAWN STEVENSON: Yes, absolutely. Yeah. You know, and also, again, massage therapy was common in hospital settings. Nurses, nurse practitioners. Again, just getting sun, getting outside and getting sunlight. These were known to be healing conditions. And so, you know, this is, again, this is so practical as well, like it still comes back to getting adequate sunlight and you just mentioned. Getting those extra pumps. I'm a big fan of getting extra pumps in. That's right. I don't know about anybody listening, but that's what I was doing today. You

know, before I came to the studio, I was outside training. I wasn't on the, you know, training barefoot, you know, I was on the ground doing some tank sled pushes and pulls.

Nice. And probably, I think I did maybe 500 jump rope skips today, variety of that. But, you know, I just, I felt it, you know, I was out there in the sun, you know, my shirt was off. Just soaking it up to the best of my ability. That's, and you know, I can't, it's just priceless. It's priceless to be able to do these things when we can do them. Now we all live in different conditions and, but we don't wanna make that an excuse. We can find a way. Life finds a way there. What everybody's learned today from you. There are so many different things that we can take on and implement in our lives. Right? Everybody can walk away with something they can implement right now to improve their health.

And, you know, it is not often that we have somebody like you, you know, just I can't even put this to words. How incredible you are and thank you to be able to understand these complex things and to make them simple for us. And also, you know what I've noticed about you as well? Like, you really do practice what you preach. And I do. I can't wait to have you here at the studio because we got so much more to talk about and to share and to teach everybody. And grateful because, you know, it just with like life finds a way I love the statement. There's nothing more powerful than an idea whose time has come. And also that.

Whenever these things are happening in our society as a species, there are these counterbalances, you know, that, that emerge at the same time. And this medium of, you know, podcasting and this kind of right use of technology and people that are asking different questions, who are investigating, who are applying, you know, we have access to this right now and it's special and we can determine how cars are gonna get made in the future. Our relationship with light and how we're building our buildings and the clothes that we're wearing and all these things with conversations like this and with people taking action on what they learn. So I appreciate you so much. Can you let everybody know where they can follow you? Just kind of get more in information, get into your world?

DR. ALEXIS COWAN: Yeah, absolutely. So, I'm at Dr. Alexis Jasmine on Instagram, J-A-Z-M-Y-N. And on Twitter or X, but mostly on Instagram. I'm teaching actually a really fun course right

now. It's called Quantum U, but I'm basically distilling what you would receive in an undergraduate science degree, but in a way that's kind of oriented towards our advanced lectures, which will come in a few months on quantum and circadian biology. So we have a chemistry lesson tomorrow. We just did some intro biology, genetics and like protein biology the last couple weeks, and it's been really fun. So anybody who wants to know about the science more and like really build a foundation of information, then it's been a really fun program and I've gotten good feedback.

So I would definitely recommend that for the basic basics. I have a quantum health ebook that goes through all the basics of light, dark water and magnetism in order to optimize just like the, you know, the foundational aspects of your day-to-day lifestyle to improve your health. Also leveraging temperature. We didn't talk about that, but cold really compensates for a lack of UV light. So that's why in the wintertime we're meant to get cold, you know, regularly in order to stimulate internal light production, which we'll talk about next time we, we end up podcasting. But, so I wanna mention that. The other thing that I'll say just briefly is that like people will probably see if they're watching that I have like lights on in here.

They're incandescent bulbs and the ban on incandescent bulbs is not lifted. There's been like some kind of rumors online that with the new administration that ban was lifted. It is not. There's actually petitions going around. One of them is led by Scott Zimmerman, who's a colleague of mine and maybe I can send you the link if you wanna share it in like the show notes. But the issue is a 2007 energy bill that sets the requirements for energy consumption per visible, light exposed. And so essentially through those through that stringent guideline, they're going to be phasing out not only incandescent bulbs, but even warm white LEDs will not adhere to this stringent guideline.

Virtually every public space you go in, if this ends up going through in 2028, will be cool white LEDs, which are the most disruptive to circadian health and overall health. And so we need to make some progress on that front. And so people wanna learn more about that. Anyway, you can just gimme a follow, I'll be posting about petitions and ways to kind of help counterbalance that. I have a podcast called Indoctrinate Yourself on Spotify, YouTube, and I think it's gonna be basically everywhere pretty soon as well. What else? I have a book club

called The Incubator. As I alluded to, we're doing Becker's books, so we finished the Body Electric. We're finishing up cross currents now.

We're gonna be doing some other really good books and bioelectricity, quantum biology, et cetera. And I think that's mostly it. I have a quantum health travel ebook too, for people who travel a lot. So if they wanna implement specific strategies like the deuterium depletion, lymphatic support, circadian support, avoiding jet lag, that's a good ebook resource as well. But all of this people can find in my link and bio on my Instagram, or feel free to email me at Dr. Alexis, Jasmine at gmail if you have any specific questions. And I'll be happy to help.

SHAWN STEVENSON: Amazing. So many great things to take advantage of. And we'll put all of that for everybody in the show notes. And again, I can't wait to continue this conversation. You are so amazing. Thank you. And yeah, just thank you. Thank you so much. Thank you.

DR. ALEXIS COWAN: Thank you so much for having me. It was a long time coming. I knew we would hit it off. We have, we share a really wonderful mutual friend who's wanted us connect to connect for a long time. So I'm glad it at least happened virtually, but I'm excited to do it in person sometime as well.

SHAWN STEVENSON: Yeah, it shall be done. The one and only Dr. Alexis Cowan, everybody after being in the field of health and wellness for 23 years now, I'm telling you. And with access to all of these incredible thinkers, some of the leading experts in the respective fields and education like this from Dr. Alexis Cowan that you just went through today, you can shell out over a hundred thousand dollars in conventional education and not get these kind of insights. As mentioned, she went deep. This might be something to go back and listened to again, but this is all very practical and applicable science.

Quantum science is the most validated and all encompassing form of science today. By far. Nothing compares to it. Everything else, every other. Aspect, every other framework of science sits beneath that. And so understanding some of these dynamic interactions, because when we're talking about light impacting yourselves, we're talking about quantum science. All right? Now, this isn't like some ant man quantum realm type stuff where everything gets

super weird and freaky, but it kind of is. And so we even just are scratching the surface in this education today. And to further that education, I highly recommend following Dr. Coen on social media, following her work, checking out her ebook, and just taking advantage of some of the resources that she's created.

Because again, it's truly, it's priceless. Priceless. If you enjoyed this episode, please share your voice. If you're watching or listening on Spotify, you could leave a comment. Below this episode, share your voice, share your insights, apple podcasts. You can leave a review for the show that really does mean a lot. You could pop over to the YouTube channel and join the conversation over there, or just wherever you're listening. Thank you so much for spending your time with us today. It really does mean a lot, and we've got some epic masterclass and world-class guests coming your way very soon. So make sure to stay tuned. Take care, have an amazing day, and I'll talk with you soon.