

Announcer: Bulletproof Radio. A state of high performance.

Dave Asprey: You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that your eyes can actually get a tan inside of them. There's a compound inside your eyes called ocular melanin or neuromelanin, and melanin is the stuff that gives you a tan or gives you dark skin complexion but inside your eyes it has a weird ability to increase oxygen levels beyond what we used to think were possible. And melanin is activated by light, which is one of the reasons that getting healthy light into your eyes really matters, and until very recently no one could explain why this stuff was in the eye and no one could explain why your eye had more oxygen than the capillaries could actually deliver to the eye. Well, this is why.

And you'll read about this in Head Strong, my new book, where we talk about mitochondria 'cause it turns out that the stuff that this ocular melanin makes, oxygen, is required for mitochondria in your eyes to function and, believe it or not, your eyes have some of the most dense mitochondria in your entire body. So who would've thought? Light drives oxygen, which drives energy, which drives vision, which then drives function throughout your eyes.

Pretty cool stuff, and that's why you should go to [orderheadstrong.com](http://orderheadstrong.com). All right. Check that out, cool fact of the day and a plug for the book, just like that, which is super cool.

Today's episode is part two with Dr. Mark Atkinson, the head of the Bulletproof Coach Training Program and Medical Director for Bulletproof. We are talking today about the second half of the question from yesterday-

Mark Atkinson: Yes we are.

Dave Asprey: ... which was sugar cravings.

Mark Atkinson: It was, yep.

Dave Asprey: That was from John. And then we're gonna talk about Julia from the UK, 38, she had a question. She says, "Dear Dave and Dr. Mark, I'm tired all the time. It's been this way for nearly four years. It affects everything. Mood, relationships, self-esteem, libido, work performance. Saw your GP, they ran some blood tests, said nothing was wrong." You know what? When a doctor runs blood tests and says nothing's wrong, and you're like, "I feel like I've been poisoned. I'm dying," there is something wrong. It's your doctor. [inaudible 00:02:19]

Mark Atkinson: Yeah. Yeah. You know, when I had [Dallas 00:02:23] ... When doctors say that what they mean is, "I personally do not know what is wrong with you."

Dave Asprey: Yeah.

Mark Atkinson: It's not, "There's nothing wrong with you." It's, "There's a lot of things not right." But they're talking about their personal limitation, because the way you feel is true. It's real. There's always causes. It requires investigation. You have to take on the hat of being a medical detective and that's what we're gonna kind of help you with.

Dave Asprey: I'd be a little more blunt about this. When you have persistent symptoms that you, as an emotionally somewhat healthy person, you don't have to be perfectly healthy at all, and you're like, "I have reliable, repeatable symptoms that are really affecting my quality of life," when you go into the doctor's office and the doctor says, "There's nothing wrong," what you can translate that to, and all of you listening to this, it translates to, "I am a buffoon." That's what your physician is saying to you. He's saying, "I am a buffoon." Because if you have symptoms there is something wrong, and if the lab tests don't pick up the symptoms it's probably the wrong lab tests or the symptoms are caused by something else.

Do not let a physician tell you that you're a nutter. Physicians are trained. If you have more than a few symptoms in medical school they'll tell you, what'll they tell you Dr. Mark? If someone comes in with 10 symptoms what are they?

Mark Atkinson: Yeah, it's supposed to be hypochondria, right?

Dave Asprey: Exactly.

Mark Atkinson: This is one of the reasons so many more doctors are training in functional medicine, integrated medicine, 'cause we've had enough. When you have people coming to you saying, "I've got these symptoms," and your conventional medical training does not allow you to help them, and you realize, "Wow. 80% of the people I actually can't help." What it means is there's a fundamental error in the medical education process. This is why functional medicine is taking off 'cause it's saying, "There's always reasons." But when a doctor says, "I do not know," then you have to find another doctor who is willing to champion you and do what is required to work with you to find out the underlying reasons, 'cause there's always reasons. In the old days it was, "You're a hypochondriac."

Take, for example, chronic fatigue syndrome. If there was ever one clear message, listen really well, chronic fatigue syndrome is not hypochondria, it's mitochondria. If you really get that then it's like, "Wow. Suddenly I can be empowered because there is so much I can do to help myself."

We have fire in the belly around this because millions of people suffer unnecessarily. They were let down by the medical profession, and there are many, many exceptions. Many, many exceptions but a lot of people are let

down and they're left to just, kind of like in the case of Julia, she's had this for four years. That's a long, long time. Four weeks is too long.

Dave Asprey: Yeah. And imagine if you had 10 symptoms. By the way I had 10 symptoms. I've been diagnosed with chronic fatigue syndrome and fibromyalgia and all this crazy stuff and it turns out I believe they were misdiagnoses, I was living in a house with toxic mold. But here's the thing: if your mitochondria are not taking a charge, they can't hold the charge, they can't make enough energy for you, maybe you're gonna have more than one symptom. In fact, you are, by definition, gonna have 10 symptoms.

Mark Atkinson: [crosstalk 00:05:32]

Dave Asprey: Muscle weakness, racing heart, sweating, all sorts of random stuff that seems crazy. In fact, one of the doctors in Moldy, the documentary, and if you haven't seen this moldymovie.com. I guarantee you, if you're hearing this, and you look to your left or your right, one of those two people lives in a moldy house and is probably having some cognitive effects from it, or other effects.

One of the people that touched me the most was a physician, and she was married to a physician. Her mitochondria got poisoned by the stuff in her house and her husband didn't really feel very much. Because they're doctors, and because she had 10 symptoms, she said, "I must be a hypochondriac, but my temperature is elevated by one degree. Therefore, I'm not a hypochondriac." So she biopsied every organ in her body. Okay, can you imagine? Someone sticking like straws into every one of your organs to sample them? Couldn't figure it out. Two years of suffering, just complete debilitation. Her husband's going, "I know something's wrong with you, it's just a mystery."

If she had gone, and she wasn't a doctor, and she wasn't married to a doctor, if she'd gone to a normal doctor she would've basically probably just been disabled.

Mark Atkinson: And put on antidepressants.

Dave Asprey: Yeah. "It's all in your head." And so, Julia, never take it. If a doctor says they don't know that's respect-worthy. "I don't know but I acknowledge a problem." And if they instead say, "The problem is you," yeah, the problem is me, 'cause I'm not paying your ass. That's what you tell a doctor like that and you get out there.

Mark Atkinson: Yeah, exactly. If a doctor says he doesn't know he's just the wrong doctor for you and you have to find someone. This is why functional medicine trained doctors, integrated medicine doctors, are where you want to go because they really get ... And you gotta look to the biology, the psychology, the environment, and if you just systematically work around those you're gonna find out the combination of factors, the genetic sensitivities, the environmental factors, the

dietary things, the gut-related things, the hormones, all these things and they'll work with you to find them but four years is way too long, so I'm really up for making a whole bunch of suggestions for you, 'cause I tell you what. There's a whole bunch of people listening to this who have also been experiencing a lot of fatigue and tiredness and vague symptoms they can't get their heads around, and have normalized it and they've got used to it but they're living at a fraction of potential.

Dave Asprey: They think it's just a personal weakness or moral failing or just how life is-

Mark Atkinson: It's not. It's not.

Dave Asprey: ... it's not that, and so a good doctor who says, "I don't know, let's figure it out. Let's play detective." What we'll do in this episode is, we are not going to be able to get feedback from you, Julia, and we're not gonna be able to ask John about his sugar cravings, but we're gonna tell you where to look as educated detectives. We'll just knock off those low-hanging fruit and see what happens.

This is such an easy one, actually. You want to start?

Mark Atkinson: One of the things I just love is being able to share simple things that you can do that will make a big difference. And there are some core, common, guiding principles that will enrich everyone's life and everyone's health and everyone's energy, and so when someone comes to me with fatigue there's a couple of basic things we need to exclude. These are just given. You've got to exclude anemia.

Dave Asprey: Yep. For women especially.

Mark Atkinson: For women especially. What your iron level is. B12. Folate. Anemia affects over three and a half million Americans, one point five billion people worldwide. So you gotta know what your red cell count is. Diabetes is another big one. 400 million people worldwide with diabetes. Blood sugar levels go up. You need to have a fasting glucose. Just kind of check that.

Dave Asprey: These are things that, I would hope, when she went to a normal GP, that they should knock off.

Mark Atkinson: Exactly. I'm hoping and assuming that was ... But there will be a lot of people listening to this and this will be relevant to you. Because, like, if you're tired all the time, you're thirsty, you're passing urine, you got tingling in your extremities, poor wound healing, you may have diabetes, particularly if you're carrying extra weight. So you'll look at that. If you're losing, you know, heavy periods. If you're B12 deficient you may be anemic.

The other big thing is thyroid function, right? I mean it's like, wow. They reckon about 20 million people in America with hypothyroidism.

Dave Asprey: I think it's much larger than that.

Mark Atkinson: You know what? It could absolutely be a lot. I think when you take into account what I call "functional" hypothyroidism it's gonna be a lot more. And whether they've-

Dave Asprey: Like half.

Mark Atkinson: Yeah, exactly. Half. And basically the deal is thyroid gland sits in the midline the lower part of your neck and it helps to control metabolism, the rate at which you convert the food you eat into energy. It's the master control of metabolism.

Now the most common cause of hypothyroidism is an autoimmune response called Hashimoto's Disease. The thyroid becomes inflamed and affects the production of thyroid. So what happens is someone reads about the symptoms of thyroid, they go to the doctor and say, "I think I may have a thyroid problem. Can you do a thyroid test?" And the doctor will do a TSH, which is not a sensitive way of picking up hypothyroidism. Here's the problem: the TSH comes back normal according to the parameters that they're using and they say to the individual, "You're not hypothyroid." But they absolutely could be.

Dave Asprey: It's a lie.

Mark Atkinson: It's a lie 'cause if you have the symptoms, if you're tired all the time, you have problems with forgetfulness, weight gain, constipation, dry skin, what you need to be doing is ideally getting your Free T3 done and something else called Reverse T3. This is hugely important because if you are experiencing a high level of stress the thyroxine hormone can convert into what's called Reverse T3, which blocks the effect of active thyroid.

So Reverse T3 is like a hibernation hormone. It kind of shuts the system down when you're under stress to conserve energy. So you can have thyroid tests that, according to standard criteria, look normal but have a high Reverse T3, which probably hasn't been measured and you have what's called a functional cellular level hypothyroidism.

Dave Asprey: When you're hypothyroid, in other words you don't have enough thyroid hormone, thyroid controls the amount of energy your mitochondria make. And let's see, Julia, you've got problems with mood, that would be what's going on with energy in the brain. Your problem with relationships, what's going on with energy in the prefrontal cortex to help you manage the emotional stuff that's coming up from the anxiety that you're probably feeling 'cause you don't have enough energy. Self esteem, well you feel weak all the time. Libido? Gee. Do you have enough energy to have sex? No. People who don't have enough energy don't wanna have sex because, god forbid, you get pregnant, right? These are not conscious things you're doing, these are built in to the wiring of

your body to keep you alive and keep the species alive. And, of course, your work performance.

So if we're looking at an energy problem, that describes all of these and the single biggest thing you can do on an energy problem if you have a thyroid problem is fix it. And if you're hypoglycemic every time your blood sugar crashes, and especially if you don't have ketones present, that's one reason Bulletproof Coffee is like, "Woo hoo! Ketones." If you don't have those present, as soon as your blood sugar crashes guess what happens? An emergency signal happens, which is stress. And when stress happens, Reverse T3 happens so you end up on this horrible cycle where you're stuck on this.

That would be the number one thing is look at your thyroid. I gotta mention my friend Izabella Wentz who just did a big documentary about Hashimoto's. It's totally worth looking at [thyroidpharmacist.com](http://thyroidpharmacist.com) if you're more interested in this kind of stuff.

What else could this be?

Mark Atkinson:

Not necessary for you, Julia, unless, I mean, you don't mention about your body mass index. For some people, though, who are quite overweight a really common cause of ongoing fatigue is actually sleep apnea. Affects 18 million Americans so if you wake up in the morning, you got a dry throat, you're feeling tired, you got kind of brain fog, you wake up dreaming in the night and you're gasping for breath, you may have sleep apnea. Not a lot of people know about it. What it means is that basically you get deprived of oxygen during the nighttime, the breathing stops hundreds of times throughout the night, that can be a problem. So if you're tired all the time or any cause of ongoing sleep deprivation could be an issue.

Stress, of course, is such a big one and so you've probably heard of the term "adrenal fatigue." These days we like to think of it more in terms of, it's not so much about the adrenal as it's more about ongoing, chronic stress that affects what's called the HPA Axis. The HPA Axis is hypothalamus, pituitary, and adrenals. Basically they work together to regulate our stress response. They control all the systems of the body and when there's chronic stress the feedback mechanisms break down. So what happens is the body stays in chronic stress. Over time that causes adrenal fatigue.

So when someone's flat lining with cortisol and [inaudible 00:14:49] and adrenal fatigue there's no energy. There's no motivation. There's depression there. The hormones shut down, and you know when I look at those symptoms, Julia, your low mood, relationship, self esteem, libido, you have a metabolism that is shut down. So the answer is to resuscitate your mitochondria to bring more energy into your body. What tends to happen is when you feel low in energy people can start having sugar and refined carbohydrates to give them a little energy boost, and that's exactly the wrong kind of food that you wanna be taking.

Dave Asprey: More corn syrup, more MSG, and stuff like that?

Mark Atkinson: Yeah.

Dave Asprey: And margarine?

Mark Atkinson: Yeah, you're kind of trying to overstimulate your body to feel some sense of aliveness, right? What people seek is aliveness.

Dave Asprey: I was trying to push your buttons and you totally missed it. I was recommending the worst foods you could possibly have. You're like, "Yeah." I'm like, "Mark!"

Mark Atkinson: I was ignoring it. But it is. It's like, that's what happens, so when we feel really bad we turn to alcohol.

Dave Asprey: There you go. That's a big one.

Mark Atkinson: We turn to drugs. I don't know if you're on any medications but, you know-

Dave Asprey: She's on blood pressure meds. That could cause all this as well.

Mark Atkinson: That's the thing. So if you're on blood pressure meds and your heart meds, that kind of shuts down your metabolism. So many medications are actually a toxin to mitochondrial function as well. So it sets up a negative vicious cycle, right?

Dave Asprey: Absolutely.

Mark Atkinson: And so we get sleep deprived, the mitochondria start shutting down, we feel more depressed and then when we feel low and kind of low in mood then we don't engage with the things that matter most. So we'll lose our passion. We lose our engagement with life. We feel disconnected in our relationships. We feel more isolated, and that just perpetuates it.

What I see and hear in you, Julia, is you've entered this negative kind of cycle, this kind of black hole. There's a lot of people listening to this who will resonate with some of what you're experiencing but here's the good news: there's a way out of it. And it just starts systematically with taking charge of your nutrition, taking charge of your sleep and supplements, starting to reengage with what matters most to you, your passions, etc.

Maybe we can talk a little bit about how to bring the mitochondria back online.

Dave Asprey: We can, but there's two more low-hanging fruit that I think might worth mentioning here. Just for people listening, we're answering Julia's question but the idea here is this may apply to you or the people around you.

One is she's gotta get a full sex hormone panel from her doctor because when I see libido and self esteem and relationships and mood, that can be estrogen/progesterone imbalances. You could be completely out of testosterone, you're 38.

Mark Atkinson: Testosterone particularly, right?

Dave Asprey: Yeah. When women run out of testosterone no one likes it. The guys around them don't like it and the women don't like it. It's a really important sex hormone. You don't need as much as Mark or me 'cause we're men but if that's gone your self esteem, your work performance, your libido, all of that will just be trashed.

Let's just, I'll be kind of blunt about it, if your libido is not so good your relationships probably aren't gonna be that good, too, because sex is a part of healthy relationships. Well, at least healthy home relationships. Your work relationships are hopefully different but hey. Whatever works for you.

The important thing here is understand energy mechanics from thyroid and then understand the sex hormones here and see if those are involved. You might also ask for some inflammation markers and this is something that most GPs won't run unless you ask, but if you can get your C-reactive protein, your homocysteine, and something called Lp-PLA2, those are the three big markers that tell you if you're inflamed. And guess what? If you have inflammation you have mitochondrial dysfunction. It's exactly that way. Mitochondria stop working, inflammation happens. If any of those are elevated you need to figure out what the root cause of those are.

The other thing I would ask for this group of symptoms like this is are you living in a place that smells like socks? Are there water spots on the ceiling? Has there been recent water damage in your car? In your office? In your school or at home? Do you feel noticeably worse when you're in one of those locations? If you go on vacation for a week or you're somewhere else for a week do you magically feel better?

Mark Atkinson: Exactly.

Dave Asprey: If so, your body is responding to something in the environment around you and the single most likely thing in that case would be mold damage. Water damage in your house. I'm not talking about drinking mold in your coffee or eating mold, those can be problems for you and they'll be more of a problem if you're in a moldy building. Moldy buildings are present for at least half of buildings in the United States. You're in the UK, the number's probably higher there 'cause it rains all the time in the UK.

Mark Atkinson: The inflammation thing is just massive because, and you're absolutely right. Doing inflammatory markers 'cause if there's, like, an autoimmune disease, if

you have lupus, rheumatoid arthritis, and even if, you know, you're 38 but if someone's listening to this who's in their 60s or 70s sometimes have a chronic disease like cancer or chronic bronchitis or any chronic disease can lead to fatigue over time. If you've experienced chronic stress and inflammation your hormones will be out of balance. That's almost a given.

You can see, when it comes to fatigue, you can't just take some kind of random supplement and hoping that it's gonna happen. You have to deal with the root causes whilst taking the right supplements. You do both at the same time, and that's the kind of real key to this but it does require detective work.

Dave Asprey: All right. I think we really ... Oh, actually let's talk about bringing some of the mitochondrial things back online. Some of the techniques from Head Strong would be really helpful here.

All right. Number one, let's fix your sleep.

Mark Atkinson: That's where it starts.

Dave Asprey: Seems really good. Number one, black out your room. Most cities now have replaced their streetlights, which streetlights have always been bad for us, the real reason we created streetlights 100 years ago when we first started making power, no one needed much power late at night and they needed to burn it off so they're like, "Let's put up some lights in the streets. It'll somehow be good." And then we lost our connection with darkness. But here's the deal. You may not like dark very much because you can't see but your body, the mitochondria, these ancient bacteria that became the batteries in your cells, they require darkness so they can communicate with each other.

That means that if you close your eyes, you don't have to cover your eyes, it doesn't really matter as much as if you actually have physical darkness where you sleep. This means invest in a really good pair of blackout curtains and, when I say blackout curtains, it doesn't mean light blocking curtains, it means no light comes around the edges of the curtains. You actually need to be like in a cave when you sleep. That means every LED light in your room is taped over or, better yet, unplugged so you have less electromagnetic frequencies interfering with you. That can make a huge difference in the quality of your sleep. Just true darkness can do that.

You might consider the TrueDark glasses that are mentioned in Head Strong as well, which could really improve sleep quality because they block all the spectrum of light that your body interprets as being daytime, so you can still see but your brain basically thinks it's pitch black and that's kind of a neat hack. Those are the TrueDark glasses, they're on [biohacked.com](http://biohacked.com).

Let's see, for sleep, cooling the temperature of your room can make a big difference. You may need an air filter in your room if you're having problems

with coughing and sneezing. You may wanna look at your bedding surface. If your bed's too soft, too hard it can make a huge difference as well. There's something on the Bulletproof website called a sleep induction mat where you lay on this mat that's made with special little spikes, they don't actually penetrate your skin but it's kind of prickly. You lay on it and your body goes, "I'm gonna die!" because of these little prickles and you just lay there and go, "No I'm not." After a minute or two of discomfort all of a sudden your body just says, "Oh, I guess I won't," and then a huge wave of endorphins comes and you just kind of melt.

Mark Atkinson: You relax, yeah.

Dave Asprey: Once you relax like that you just toss the mat off your bed but you go to sleep faster and more deeply because you've basically triggered this wave of endorphins. It's a neat way to get yourself into a deeper sleep faster.

All right, so there's the light and sleep thing. What do you think?

Mark Atkinson: Yeah, there's [inaudible 00:23:19] you know, so if you've got a busy mind, so being able to relax the body, you know the sleep induction mat's great 'cause it does. It just relaxes you. But also just some simple breathing exercises, some kind of yoga meditation even. Making sure you're not overstimulating yourself at nighttime. I don't know if you drink caffeine but if you, particularly if you're caffeine sensitive, not drinking after one or two pm in the afternoon. Just having a relaxing bedtime routine, and getting to bed at the same time, waking up at the same time as well so your body gets used to that.

Magnesium at nighttime and during the day is really important. Melatonin, you can look at things like passion flower and valerian. You don't mention about anxiety but if anxiety is there, certainly journaling in the evening, getting things going around your head out into a journal is really important. Not having stimulating conversations kind of late at nighttime. Staying away from screens late at nighttime is really important.

Dave Asprey: Listening to several episodes of Bulletproof Radio every night before bed.

Mark Atkinson: As your ritual.

Dave Asprey: Just kidding.

Mark Atkinson: And if you do wake up during the night, sometimes that can be due to, particularly because you've probably got some adrenal fatigue there, it could be to low sugar levels so one of the things that Dave writes about and I've tried myself and I really like it, is taking a tablespoon of raw honey at nighttime. For some people it actually works really well 'cause it just kind of gives them a supply of glycogen that just releases glucose through the nighttime so they don't wake up.

Sometimes, I don't know, you said it affects your mood so I don't know if you're experiencing depression. Sometimes people who experience depression can wake up three, four in the morning. So there's a lot of things you can do for your sleep.

Dave Asprey: We should pause there for a second. Depression is not a moral failing. Depression is inflammation in the brain. It is simply a biological hardware problem and a lot of people say, "Oh, if I'm depressed it's just me. I guess I should just, you know, I should have a better mood." Screw that noise, no. Fix the hardware, the depression will lift. That's how it works.

Mark Atkinson: And actually you know, fatigue is one of the subjects that I'm just getting loads of more causes for fatigue coming out and, of course, one related to brain inflammation is gut inflammation, gut dysbiosis, if you got fermenting going on in your gut, you got small intestinal bacterial overgrowth-

Dave Asprey: Parasites, yeah.

Mark Atkinson: ... you got parasites, you got yeast overgrowth, there's food allergies, food sensitivities, leaky gut syndrome, all of these can profoundly influence your energy, your mood, everything.

Dave Asprey: We also missed the other two really big causes. All right, Julia. Is there someone else in bed with you? Because if so, if that person snores, that could explain all of your symptoms. Like, seriously.

The other thing is you're 38, are you by any chance a new mom? 'Cause that would also explain all these things.

Mark Atkinson: Exactly, yeah.

Dave Asprey: Those could be the-

Mark Atkinson: There's so many reasons. Yeah. And it's hard because when you're tired and your brain's offline it's really hard to think of all these things. 'Cause you get brain fog and it's really hard to do. That's why sometimes you need to find someone to work with you 'cause when you work with a therapist or a doctor or you just have a good friend or an advocate for you, you're borrowing their perspective and their brain until you can get yours back online. When you're in the middle of it it's really hard to get your head around this.

I know we're kind of sharing a lot of stuff here and this could be quite overwhelming for you, which is why it's really important you find yourself a functional medicine trained doctor to kind of work with because this is challenging stuff to deal with.

Dave Asprey:

Let me walk listeners through how this came to be for me. I was experiencing these problems and more. I was obese, I had mood problems, I had relationship problems, I had self esteem problems, I had libido problems, this arthritis in my knees, stretch marks, and just work performance. I was actually doing well in my career but I actually wasn't anywhere near what I was capable of and I was actually stressed 'cause I felt like I wasn't doing very well. Some of that might have been just self criticism but some of it was I couldn't remember what happened in meetings. Sometimes I just couldn't bring what I knew I had. It brought about this feeling of almost helplessness, where it's like, "Wow. I know the answer to this it's just gone. It won't come when I try to bring it."

So I went to the doctor and the doctor basically said something like what you heard, Julia, which is, "Maybe you should try and lose some weight. Maybe it's your blood sugar." It wasn't, there was only clichés. I said, "You know, this guy is not gonna do it for me," and I did fire him when he basically said it was all in my head.

I spent four years studying every night until I would fall asleep at my desk to learning about what's going on in my body. Every single night I'd just sit there until I would like kind of pass out, which maybe wasn't so good for me. Maybe the sleep would've been better. But I also started taking smart drugs and that's why I know what I know now, because being an engineer and a geek and not understanding that the brain emerges from the biology. You hack the brain last and the biology first. But I started out in the wrong order because that was what occurred to me.

The smart drugs gave me the energy. They let my brain come back online enough to solve this problem and I spent hundreds of thousands of dollars because every night after I studied I would just order whatever I studied and I'd have a box of new supplements or some new crazy device because I was desperate, right? I was fortunate, number one, I made six million dollars when I was 26 so I could do this. I was unfortunate, I lost it when I was 28 so I've been living off my salary like everyone else for most of the last 20 years but I did have this time that really helped me get accelerated there.

You should not have to spend four years and hundreds of thousands of dollars hacking this. I shouldn't have, either. The problem was there was no information like we have today. It just wasn't put together again, or it wasn't put together the way it is now and the way we're still putting it together. And there weren't really functional medicine doctors back then.

Mark Atkinson:

Not at that time, no.

Dave Asprey:

So you can go to a detective, a functional medicine doctor, who will help you in three months and maybe six months. That's about how long it takes to come out of something like this where things will be radically different. And you can take charge and you can do a lot of the stuff yourself, but if it's been four years

and you're doing this, the problem I think here is you saw your GP. Your GP's not a specialist in troubleshooting the system of the human body. That's a precious knowledge base.

And it may cost you to go see a specialist like this. It'll cost you a lot less to use a specialist than it will to do what I did, which was four years of effort, and actually it's been almost 20 years now, but in the beginning it was four years of really focus before I even saw a doctor again, and I'm grateful that when I finally did go back to a doctor after that first doctor kind of broke my trust in the medical system, I went back to a functional medicine practitioner before they even had a name for that. And it was probably 'cause I was smart enough to look around for someone.

I had called the office and was kind of hostile, I was kind of a jerk, actually. And I walked in, I'm like, "Look. I have one of these seven things and I've read medical textbooks on each of them so I want this lab test from this company, and I want this treatment plan if that's that," and this doctor looked at me and she's like, "Can I at least, like, choose the order?" I'm like, "Okay." Then we were off to the races.

So, for you, you'll save thousands and thousands of pounds, or dollars, I guess you're in the UK so we can say pounds, and you'll save hundreds of hours and, more importantly, you'll save countless effort and energy that you would spend unraveling all this yourself by having someone do this. Same thing, you wanna go fix your BMW? You might be able to, it's easier to take it to the mechanic. You need to find a good mechanic and a GP isn't a mechanic. A GP is more like a body shop. "You got a dent in the fender? Let me pull that out for you." You need someone who's gonna go in there and figure out why it shakes and rattles and doesn't accelerate right.

Mark Atkinson:

Yeah. It's probably the single most important thing you can do right now is to find that functional medicine doctor. You can just call them up, kind of just get a sense of are they, do they have energy for you? Are they willing to step up and work with you so you feel like they're part of your team? 'Cause that's what you're doing. You wanna build a team of people around you who want the best for you. You've gotta get the testing, though. You have to look for your hormones, your inflammatory markers, your red cell, you'll look at all that stuff. But then we've got to start looking at the basics. We started with sleep now we're gonna look at nutrition and diet because that is a game changer for a lot of people because so many people are dependent on sugar and refined carbohydrates and they eat kind of damaged oils and the processed foods and that just exacerbates the problem.

So, as you start increasing your intake of healthy fat, you eat kind of more vegetables, you reduce your consumption of sugar. One of the previous questions was around sugar sensitivity and I find a lot of the people who don't feel good, the way they self medicate, one of the many ways, is through sugar

consumption and there is no quicker way, particularly if you're sugar sensitive, to feel low in yourself than to have sugar. It is, for some people, if you come off refined sugar, even just for three, four days this fog can lift and it can be a game changer.

In my experience about two thirds of people who stop sugar will, after a couple of days, say, "That was one of the most important things I did. I had no idea that me eating sugar and cookies and ice creams, all that kind of stuff, was affecting the way that I felt myself." So sugar and healthy fat, making a dietary change, is really important.

Dave Asprey: There's also, try some organic food. If you're eating sugar on a regular basis you're probably getting genetically modified sugar beets, which are sprayed with glyphosate.

Mark Atkinson: That's a problem.

Dave Asprey: Glyphosate is a mitochondrial toxin. We like to say, oh, this glyphosate stuff that should not be sprayed in our environment at all, it is toxic for all kinds of life. We like to say it doesn't affect us because it affects this one bacterial pathway. News flash: 10% of your body weight is mitochondria. These are ancient bacteria and they are affected by glyphosate and, also, glyphosate replaces some of the molecules in collagen in your body and disrupts the electrical flow of electrons on the fascia of your muscles. It's not okay to do that.

So if you're eating sugar it's one thing, if it's organic. It's another thing if you're eating sugar or corn syrup that are contaminated with chemicals that directly affect your ability to make energy. So you gotta not eat that crap. Same thing goes if you're eating industrial meat. You're better off to be a vegetarian than you are to eat these feed lot animals. It's simply not okay to do that. So eat less meat but eat higher quality meat. It needs to be grass-fed or it needs to be wild-caught or it's not food and then you don't eat it.

Mark Atkinson: Yeah. One of the most important things that you can do that will make such a big difference to the way you feel is to provide your body with an alternative fuel supply. Traditionally most people use glucose all the time. They become glucose dependent. One of the ways to hack that is actually to take something like Brain Octane, which provides you with a source of ketones and mitochondria and particularly the brain loves ketones.

Dave Asprey: It's interesting what happens when we look at how we're originally set up to work. You burn sugar and then, if you go into one of these starvation things where you only eat protein you can convert protein to sugar. This is one of the reasons that high protein diets are terrible for you. In fact, they promote cancer. Protein's a bad fuel source and it just goes to sugar anyway but there's a big metabolic burden from that.

Then you could go on a high fat/low carb diet, go on Atkins, or fast for four days, and these are all pretty intense in terms of the amount of time and energy and just lifestyle change it takes, we're talking less than 50 and sometimes less than 15 grams of carbohydrates in order to go into nutritional ketosis. This is a great state. In the Bulletproof Diet, and you should have read it by now if you're listening to episode 360 something it's absolutely explains this stuff for you, there are reasons to go into nutritional ketosis but you don't have to stay there all the time.

One of the most important things that's changed my brain is this idea that some of the cells in your body prefer glucose, particularly in the brain, they're called glial cells. These are the, basically the immune system in the brain. And then the neurons in your brain, they want ketones, but we're wired to either be a sugar burner or be a fat burner and this is why most religions and spiritual practices have a period of fasting involved. So you can get some ketones to wake up the neurons. When you use Brain Octane, which provides exogenous ketones in your Bulletproof Coffee, that's part of the recipe for it and it has been for a very long time. The Brain Octane allows you to have ketones present even if you had some carbohydrates.

You shouldn't be eating loads of sugar. You shouldn't be eating loads of carbs, but you can have a serving or two of carbohydrates and still have, now, in your brain, energy from fat that normally would've required fasting or a restrictive diet and energy from carbohydrates that are clean carbs from the Bulletproof Roadmap. And then, all of a sudden, you're like, "Wait. I'm running on two power sources here, which lowers anxiety," because you have an anxiety about running out of sugar and sugar crashes all the time. So now your sugar's bouncing up and down, maybe, maybe not, but you've got a stable level of ketones backing it up.

Mark Atkinson: And it reduces cravings and that's the game changer, so many people spent the majority of their life at the mercy of cravings. And so they introduce Brain Octane and then within a day or two, or maybe three days-

Dave Asprey: Or a half hour.

Mark Atkinson: ... or a half hour, cravings go.

Dave Asprey: One of my most profound stories was a friend from the UK. She's a client, works for a big investment bank, and she had just this horrible problem where no food in her house 'cause her cravings were so intense and she felt really guilty about the cravings. So she'd have to run downstairs to go across the street to a Tesco in order to pick up a snack, at least that was her, like her speed bump to snacking. In the office she would just eat candy all day long.

She has Bulletproof Coffee with Brain Octane and she calls me that first morning, actually at noon, and goes, "I can't believe this but I went all morning

and I didn't eat any candy." And she was like, "What happened to me?" 'Cause it wasn't, normally she'd have this inner dialogue like, "Oh, I'm not gonna do this," and then every day she'd have the candy and she'd be like, "Just one." But the inner dialogue didn't happen. It was sort of like she noticed she didn't eat candy instead of she chose not to eat candy.

Mark Atkinson: It can be so painful when you live with that inner conflict. You got this, "I shouldn't eat sugar," but then you give in to sugar and it's such a big distraction from living life. Ideally where you want to get to a place is where your diet, your nutrition, the supplements you take, free up capacity for you to just engage with a life that get excited about. That's kind of where we're moving towards.

We've got the nutrition changes, we're talking about sleep, obviously there's exercise as well and I don't know if you're exercising at all. You do need some exercise but a lot of people will do way too much chronic cardio exercise, which is a major source of stress to the body as well.

Dave Asprey: I was actually just talking with Dr. Mercola yesterday, recording another episode of this, and in the episode he's saying, "Well, Dave, yeah. Unfortunately for me I spent 20 years doing chronic cardio before I learned, before I knew better." I'm fortunate that because I weighed 300 pounds and I have a screw in my knee and I had arthritis since I was 14 in my knees, although it's gone now, I'm pretty bendy. I never did much chronic cardio. I could cycle. I used to do a lot of cycling as a teenager, like 20, 30 miles a day I was actually a road racer. A very bad, overweight road racer but I did do that. I think it actually helped me to not be doing that much chronic cardio.

Even when I went into my, "I'm gonna lose weight with exercise no matter what," and I exercised an hour and a half a day, six days a week, half cardio, half weights, the cardio was on a treadmill at incline with a backpack on but it wasn't running. It was walking. There's a very big difference between walking and running.

In Head Strong, by the way, [orderheadstrong.com](http://orderheadstrong.com), you know you're gonna want to read this book 'cause it's full of stuff you haven't seen before, but in the book 20 minute walk a day and, here's a bonus point for you, too, Julia. Since you're in the UK you're not getting enough sunlight because it's gray and it's relatively far north. So when you go outside to walk for 20 minutes a day, just 20 minutes. We're not talking about speed walking, we're not talking about anything aggressive, take off your sunglasses and get as much light in your eyes as you can. If it's sunny and it's summer expose your arms. Wear some shorts. Get a little bit of sunlight. That's actually also going to help with the libido and the mood, particularly.

Mark Atkinson: Yeah. The majority of people are all vitamin D insufficient, that means they just have insufficient levels of vitamin D for good health. In order to feel good, have a healthy, functioning immune system and healthy hormones it's really ... And

I'm sure your functional medicine doctor, if you work with one, will check your vitamin D levels as well as your iron levels and maybe we can talk a bit about supplements because there are just some key supplements that will help a lot of people. The caveat is you're dealing with the underlying cause at the same time.

Dave Asprey:

We've got the top 10 on the Bulletproof website, which is definitely a place to go. Bulletproof top 10 supplements and we actually just launched some of the supplements where you can get things like the methylfolate, what we mentioned earlier, the B12, things like that. But there's some, these actually aren't ones that Bulletproof makes, that would apply both for Julia and for John, who had the sugar cravings.

The two big ones, actually three, that I'm thinking of, and you may have some other ideas. Number one is chromium polynicotinate. This is a form of chromium and chromium can help you control blood sugar swings. So if you have less swings of blood sugar you have less cravings. Now, when you take chromium take it with a meal, for sure.

The second thing is called vanadyl sulfate. V-A-N-A-D-Y-L. And we'll put all these in the show notes anyway, so you can download those on the website. Vanadyl sulfate acts like insulin in the body, so if you take it with a meal that contains some carbs or contains a reasonable amount of protein it can really help you keep your blood sugar stable, but if you take it with a low carb/high fat meal it actually can cause a blood sugar crash 'cause it's a pretty powerful vitamin.

The other thing that can make a difference is cinnamon. A good, quality cinnamon can help you control your blood sugar, too. The problem is cinnamon doesn't taste that good on steak, sorry.

Mark Atkinson:

All those are good. Just as an aside there's a sub-population of people who experience depression whose depression symptoms will go when they take high dose chromium. A dose of about 800 thousand micrograms per day. Particularly if you're insulin resistant, you know, diabetes, pre-diabetes, all of those will help.

The other big ones are magnesium is such an important one, and particularly for mitochondrial issues magnesium malate, [inaudible 00:42:57] glycinate, three and all of those are really helpful. N-acetylcysteine, alpha-lipoic acid, omega-3 fatty acids, vitamin D will help improve insulin sensitivity as well. An alternative to metformin, is berberine, that's really good for bringing down raised blood sugar levels. If you do work with a functional medicine doctor they'll tailor your supplements according to your results, but all of those are gonna help, particularly with sugar cravings, particularly with stabilizing the blood sugar levels, which is so important.

The magnesium, particularly, hugely important for energy production.

Dave Asprey: It's funny, there's about several thousand different enzymatic reactions in the body that use magnesium and it's, I believe, number one or number two on the top 10 list of Bulletproof supplements. As you said, different forms of magnesium are important. What's new in Head Strong, and one of the reasons I think you should read this, is that in the Bulletproof Diet I recommend magnesium for sleep. It's well-known to cause relaxation. There's an argument that I started in the Bulletproof Diet and I, I think, finish in Head Strong about how important mitochondrial function during sleep is. Like, "Your body doesn't do much during sleep," it's like, "No! Your mitochondria make their chemical, they're partly chemical factories and they're partly batteries so they're making energy and, in some cases, making substances you need while you sleep."

There's a case for this. It causes relaxation, reduces restless leg, and things like that. Reduces muscle cramps if those wake you up at night. But it turns out that there's a circadian rhythm to magnesium.

Mark Atkinson: There is indeed.

Dave Asprey: And the time when your body has the most magnesium present is actually noon. So what I've done in Head Strong is I change my recommendations for timing of magnesium and, when you read Head Strong, you'll learn how to divide your intake of magnesium between morning and night 'cause it actually matters.

Mark Atkinson: Yes. Spreading a dose of magnesium is really the key 'cause your magnesium helps to recycle ATP, it converts ADP to ATP. You need it for energy, you need it for relaxation as well 'cause there's a lot of internal maintenance goes on at nighttime, right? So magnesium is a really, really important one.

What about some of the supplements for directly supporting mitochondrial function?

Dave Asprey: One of the big ones is polyphenols and we've got a form of polyphenol mix called [polyphenominal 00:45:20] that's coming out with the book, and this is a really, it's a important thing and polyphenols are the colored compounds that have antioxidant activity but also have direct mitochondrial stimulating activity that are found in brightly colored vegetables, plants and things like that. It turns out that your mitochondria are sensitive to light. These compounds also modulate what light can do, and they have multiple effects in mitochondria so getting your vegetables isn't just about getting fiber.

Mark Atkinson: [crosstalk 00:45:52] isn't it?

Dave Asprey: It's about getting these compounds. And here's the weird thing. If your soil is unhealthy, if the plants are stressed, they can actually have more polyphenols but if they're stressed 'cause they don't have enough nutrients in the soil or they have poor quality light or they're putting water with the wrong stuff in it on

them you end up with plants that are weak and those plants have not a lot of flavor and you don't get enough polyphenols.

So, when someone says, "Oh, here's spinach that's organic and grown on soil that was treated with cow poop from grass-fed cows," that's going to have a higher polyphenol content than the spinach that came from this organic, vegan garden that never had animals as part of its agriculture, 'cause the soil gets depleted, the soil gets weak. We really have to manage the whole system of food. Everything that happens in your mind when you're thinking started out in the soil and it's a cycle, and I hate to tell you, when you die you're gonna go into the soil and then plants are gonna eat you and then vegans are gonna eat those plants. It's disgusting.

Mark Atkinson: Quite a lot of people know that the nutritional content of fruits and vegetables has declined massively over the last 50 years, but what they don't know is that the polyphenol count has gone down substantially as well. Actually we need a lot of polyphenols each day to be at our best.

Dave Asprey: In Head Strong I talk about the amount of polyphenols you need and the variety you need. If you are drinking coffee, which I highly recommend, you might be getting a half a gram to a gram of polyphenols a day. It's the number one source of polyphenols in your diet. The other high polyphenol foods are: spices and herbs, and tea, and to some extent wine but it's really not that high in polyphenols.

Here's the funny thing when you think about this. Throughout history, we established these trade routes. The very first trade routes were for salt. The salt traders, right? Now salt is vital to your function. By the way, for both Julia and John, you guys should have a teaspoon of Himalayan sea salt in water when you first wake up to help your adrenal function. It's a huge thing.

People under stress need more salt. Salt will not cause high blood pressure unless you're one of the 2-5% of people who are salt sensitive hypertensives. A lack of magnesium, a lack of potassium might cause high blood pressure, but it's not a problem with too much salt.

So salt was the first thing. The next thing that we traded was spice. Why were spices so precious? Was it because we had to have our food taste good? No. It's because our mitochondria are screaming for polyphenols because they need them to function. So what did we do? We took the very highest polyphenol things, things like oregano, things like cinnamon, these precious herbs and spices and they would pack them up, the most polyphenol dense foods, and we had wars over these. People died on mountain passes carrying a few kilos of these things for thousands of years because they were so in demand. That's how important polyphenols are for us.

And then we evolved to tea, right? Like the British Indy Tea and Spice Company, I just butchered their name, I forget. I'm not that big of a student of the names of companies from 200 years ago. But a lot of the domination of the world was around spices, tea, and high polyphenol foods and then we switched to sugar relatively recently. This is just a sign, when you see emergent society forming behaviors like that, those all start at the tiniest level and it becomes emergent behaviors that are driven by what we're made out of.

That thing I opened with about neuromelanin, do you know what melanin's made out of? Most people don't.

Mark Atkinson: Oh, I think tyrosine's maybe one of them.

Dave Asprey: I don't know if, tyrosine might be in there, actually. I don't know what the bridges are made out of off the top of my head but all melanin is cross-linked polyphenols. So melanin's a precious compound in your brain and in your eyes and in your skin but ... And it's involved in energy metabolism. In order to make energy you gotta have this stuff.

Guess what coffee is rich in? Something called melanoids, which are partially cross-linked polyphenols. That's one of the reasons coffee's black. And this is why I believe that coffee is far more than a source of caffeine. Every time people equate coffee and caffeine I'm like, "Come on, guys. They're different compounds. Coffee's a super food in and of itself."

Mark Atkinson: Yeah, and this way you can just say coffee's a polyphenol drink.

Dave Asprey: It is.

Mark Atkinson: That's one way to describe it.

Dave Asprey: Yeah. Like green juice/coffee. Nah. Give me the coffee. Give me the black juice.

I'm thinking we answered a lot of questions, gave people a lot of food for thought here.

Mark Atkinson: Yeah, we have, yeah.

Dave Asprey: And some beverages for thought as well. The one thing I will add to this conversation, in Head Strong there are some recipes and one of the simple things you can do is stop being such a wuss with your spices. When you're cooking at home take the little jar of oregano or thyme or rosemary or whatever you're gonna do, and when you would've just put a little sprinkle, no. Just keep going. Just add more of that to your food and you'll be amazed at what a consistent dose of those things does.

Coffee's the number one source of polyphenols in your diet and it's the number one source because you can drink five cups a day if you want to, if you're not caffeine sensitive. I do two cups of normal. I do one cup of Bulletproof in the morning. I do a Bulletproof black at lunch 'cause I put Brain Octane on my food at lunch, usually. And then I have three more cups of decaf Bulletproof. The mold-free part of the coffee's important because coffee that has mold toxins in it, mold toxins are mitotoxins. They kill your mitochondria or at least lower their performance.

So I'm doing this to up my polyphenol count every day, but on a ounce per ounce basis, fennel seeds and any of the flavorful herbs kick coffee's ass up and down. It's just not possible to eat two ounces of oregano. You're not gonna like how you feel if you do that, anyway. So I'm putting every source I can get, including the Polyphenominal supplement, into my diet 'cause my goal is to get at least two grams of polyphenols a day. I believe it's fundamental to getting your mitochondria at full charge.

Mark Atkinson: It's such a good habit to start adding spices 'cause not a lot of people use them, right?

Dave Asprey: Yeah.

Mark Atkinson: And I think, going back to simple things like salt in the morning for most people, and if you're listening to this and you say, "Well, my diet's pretty healthy," you probably need salt because you're not getting salt from a lot of the places. And it can make such a big difference to people with ongoing adrenal fatigue as well.

I think, in a nutshell, what we're saying is deal with the root cause, find yourself to a functional medicine doctor to work with who can do the investigations. Start looking at your sleep, your nutrition, add in the supplements and then that frees up your energy and capacity to then get on with life. To put energy into your relationships, energy into meaningful work, and then you pull out of this dark hole back into life again.

Dave Asprey: Well said. On that note, if you liked this episode of Bulletproof Radio, the thing you can do that says thanks is just share it with a friend on Facebook and leave a review of five stars and then head on over to [orderheadstrong.com](http://orderheadstrong.com) and you can buy Head Strong from whatever your favorite online book seller is. You're going to see Head Strong, very likely, at airports. You're going to see it at the largest book sellers, on the front table at Barnes & Noble, so this is a very big, very meaningful book that's meant to change people's lives.

There is stuff in here you have never read on the Bulletproof website and that you've never read in another book. I've read thousands of studies to pull this stuff together and I realize I've come up with kind of a unifying theory for why so many of the bio hacks that I've done have worked and why people who experience what I experienced with Julia and John on this episode have

experienced, so many different things that seem unrelated are related. Mitochondria are the uniting element and you can have control of those.

So do yourself and me a favor, order Head Strong now. Just go to [orderheadstrong.com](http://orderheadstrong.com). It'll just take you a minute. There's a two week program that tells you exactly what to do to get started on this and you will feel the difference.

Thanks Dr. Mark.

Mark Atkinson: My pleasure.

Dave Asprey: See you next time.