

Dave Aspey:

A lot of people on the Bulletproof diet or people who are controlling their own biology by doing things to take control of their health are having trouble because they overpay for life insurance. Life insurance companies haven't caught up with new science studies that look at how different diets affect how long you're going to live. For example, you're on the Bulletproof diet, you have your Bulletproof coffee, and by design, your HDL cholesterol may go up. HDL is called good cholesterol is protective, but life insurance companies believe all cholesterol is bad, even though inflammation is the problem, not the cholesterol. That means they may charge you more or they may not give you discount on your life insurance, even though what you're doing is going to make you live longer so their cost will go down.

There's a company called Health IQ that advocates for health conscious life styles. They use things like science and big data to get lower rates for people who are paying attention to their health. Things like cyclists, runners, people who exercise, vegans, vegetarians, Bulletproof diet. Doesn't really matter, people who are paying attention. They have a proprietary metric called a high health IQ. People with a high health IQ are 42% less likely to be fat and at a 57% lower risk of dying early. Most of the time you don't know your health IQ and you probably don't know you can save some money on life insurance by getting your health IQ. Right now, people who listen to Bulletproof Radio can get a free life insurance quote and learn their health IQ by going to HealthIQ.com/bulletproof. Just go to HealthIQ.com/bulletproof to learn more about how you can get life insurance for people who take care of their own biology.

Speaker 2:

Bulletproof Radio. A state of high performance.

Dave Aspey:

You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that the most predictable cause of mitochondrial function decline is actually getting old. That's because between age about 30 and age 70, your mitochondrial efficiency decreases by about 50%. Your mitochondria are like the batteries in your cells or the power plants. If they only make half as much energy as they used to, you're probably going to feel old. It's kind of a good thing, if that's [inaudible 00:02:17] the average 70-year-old that I have no interest in being average. If you're listening to Bulletproof Radio, you probably have no interest in being average either. Just because it happens to most people doesn't mean it has to happen to you. You can take control of that stuff.

In fact, if you were to have the mitochondrial function of a 25-year-old when you were 70, you'd probably be the most ass-kicking 70-year-old on the planet. That sort of thing is totally possible. That fact, and a bunch of other cool facts like that, are things you'll find in my new book, *Headstrong*, which is coming out on April 4th. If you go to OrderHeadstrong.com, you can actually get the first chapter sent to you right away. It is totally worth it and if you pre-order it, I'll

send you a bunch of other free stuff as well just to say thanks. When you take the time to pre-order Headstrong, it helps my publishers know how many copies to print for the actual run. It's a huge gift to me as a writer, so thousands of hours of work went into this book and I would love to share it with you. If you're going to order it, please order it now. You'll learn more about mitochondria just like we talked about there.

As we get into today's show, about a quarter of Americans don't get enough vitamin A in their diet. Vitamin A is essential for the human body and it's been shown to help with inflammation, immune system, maintaining strength and integrity of your bones, and it's part of having a healthy sex life. One of the best sources of vitamin A is a type of cod liver oil that Daria Imports called droppy. Droppy is one of the purest cod liver oils on the market today. It's made exclusively from wild cod that's caught and processed in the oldest fishing village in Iceland. It's cold processed, which preserves its natural fatty acids, including Omega-3 and vitamin A and vitamin D. It also, because of the way it's processed, qualifies as a raw food instead of a processed food. The people over at Daria are really passionate about wellness and peak performance. One of their guys, Ash, is now working on becoming a Bulletproof coach they're so passionate about being Bulletproof. You might want to check out the new cod liver oil called droppy.

Just in celebration of Ash's hard work becoming a coach, my friends over at Daria are giving Bulletproof listeners 20% off any order. Head on over to DarialImports.com/bulletproof and check out all the cool products they've got in the cod liver oil space and you'll save 20%. Don't wait. This is a limited time only offer. Just go to DarialImports.com/bulletproof. If you're a long time listener, you've probably heard about my history with toxic environmental mold exposure and the countless stories I've shared from friends and family and coworkers, and even in the documentary MOLDY that I filmed. Hopefully, you have a chance to stop by the Air Oasis booth at the 2016 Bulletproof conference. What I've found is that the Air Oasis technology provides the most advanced protection that I've been able to find against mold and other environmental contaminants that are airborne.

Unlike a conventional air purifier, Air Oasis sanitizes the air and surfaces like door handles, countertops, and even your iPad screen. It neutralizes microtoxins and mold spores in air and prevents mold from replicating on your walls and surfaces, and it removes about 99% of air allergens, odors, bacteria, and viruses. The way it does this is pretty cool. It's based on a NASA technology that was designed for deep space missions. It's compact. It's really low maintenance, and it's energy efficient. There's about 10 years of university lab and field studies backing it up, and they currently sanitize 100 million square feet of occupied space, including the tallest building in the world, hospitals, and professional sports teams. It's not an ozone generator, so you're not breathing ozone which isn't good for you, although injecting ozone might be. It's made right here in America, so you know it's the highest quality. Head on over to

AirOasis.com/bulletproof20 and you'll get 20% off and a special offer on an indoor air quality test kit. That's AirOasis.com/bulletproof20.

You know Bulletproof coffee. You've got the lab-test coffee beans, you've got the brain octane oil, but you can make it iced. When you make it iced, you can add the upgraded whey protein to it. Grass-fed whey is really, really important. When you get whey protein in hot coffee, it damages the whey, but if you put it in cold coffee, you can get this ice cream-like consistency. If you go to the Bulletproof blog, you'll find brain octane whey protein in the online store, so just head on over there. There's some really cool stuff. That combination is amazing. Here's a hint. If you just use butter in coffee, it won't work. You've got to have brain octane because of its thermal properties at low temperature. It completely changes what it does. You can get a perfect ice cream flavor. I've given this to my kids for breakfast and they feel great. Today's guest is a friend, a guy I've come to admire and know over time and a guy who'll be speaking at the Bulletproof conference this year. It is none other than the number one most influential guy online in health, Dr. Joseph Mercola. Dr. Mercola, welcome.

Dr. Joseph M.: Well, thank you for having me, David. It's a great privilege to be here, connect with you.

Dave Aspey: That was a short introduction because, in addition to being the number one guy online, you're a family physician, an actual doctor for 25 years with tens of thousands of patients. You went online early and you've relentlessly shared information that I've been able to use, information that helped influence *The Better Baby Book*, my first book. Just information that I think has helped the lives of tens, if not hundreds of millions of people. You've been incredibly high integrity about some of the things you've done, particularly around talking about how important light is for the health of humans. I have great respect for you and I'm happy to have you on the show today, so just thank you.

Dr. Joseph M.: Yeah. Well, it's great to be here because it's unusual to dialogue with someone who understands health as much as you do, and I speak all around the country at a variety of difference conferences and it's never a problem to put the PowerPoint together. When I'm going to speak in October at your Bulletproof conference, I've got to dialogue with you because so much of what we teach is the same.

Dave Aspey: Yeah, I'm counting on you to bring something new. I'm out of new ideas myself.

Dr. Joseph M.: You were kind enough to send me a copy before the publication. I read it word for word. In fact, I gave you one correction. There was a mistake in there, but it was great. I really enjoyed it and I think anyone who decides to purchase it will be really rewarded. To me, one of the best investments you can make are books. You just mentioned there were thousands of hours into this, and for thousands of hours for 15, \$16 is just crazy. I read about 150, 200 books a year. I

get that on steroids. I love to gather information that way. It's so much more efficient.

Dave Aspey: It's one of those where, if you're listening to this right now, you're spending an hour of your time. That's 25% of what it takes to read a book that has thousands of hours in it. Between Dr. Mercola's gazillion hours of experience and my substantial, but not that big, amount of experience, you're getting a pretty good concentrated drip here. It's nowhere near as concentrated as you can get in a book.

Dr. Joseph M.: I would just caution you not to sell yourself short because, believe me, you've achieved a remarkable status of, not status, but a collection of knowledge that can really and radically revolutionize a person's health. There's no question about it.

Dave Aspey: Thank you.

Dr. Joseph M.: You've done a great job and I appreciate what you're doing for the health community.

Dave Aspey: That's a huge compliment, Dr. Mercola. Truly, because I think ...

Dr. Joseph M.: I wouldn't say it if it wasn't true.

Dave Aspey: I believe that, and that's why it's a huge compliment. I also know that some of the ideas I talk about, you're the first person I've seen to talk about them. You've also really moved the needle. You and TS Wiley, the woman who wrote Lights Out: Sugar, Survival and Light.

Dr. Joseph M.: She passed away, you know. She passed away a few years ago.

Dave Aspey: It's too bad. She gave me my copy of her book she handed to me in person at an [A4M 00:10:19] meeting. It was the two of you who really got me thinking about light even back in the late 90s.

Dr. Joseph M.: Then you took it the next step. I understood it, but I never really dug deep. Then I started to get it just within the last year at a far more profound level. It's right up there with diet and food. I'm not sure which one's more important, but they're both way up there.

Dave Aspey: I'm going to send you gift very soon, in fact, I'll show you what they look like.

Dr. Joseph M.: Oh, I read about ... Yes. The true dark glasses?

Dave Aspey: True dark glasses from the book. These are the patented ...

Dr. Joseph M.: You can't but them yet. You can't find them anywhere.

Dave Aspey: They're one pre-order right now on Biohacks.com and they should be shipping in a couple weeks. They'll be up for sale in other places.

Dr. Joseph M.: Does it block everyone from 550 below?

Dave Aspey: There's actually a set of different filters where it's not every. What is every single frequency that affects your circadian rhythm, the things that affect sleep, are all blocked out. Literally, the mitochondria in your eyes believe it's pitch black even though you can still see. The sleep impact, it's really huge. What it came from is that lights that go through blue blockers, they go through the non-optical sensors. They receive light, but they go into your non-visual sensors. They're optical sensors that just go straight to the SCN in the brain and tell your body to wake up and to turn off melatonin. They're different than the visible blue.

Dr. Joseph M.: You're an innovator. That's what I respect about you. You take it to the next level. That's fantastic. Look forward to getting that, but the question of the day is can you see your PowerPoints when you're lecturing in a dark lecture hall? Which is illuminated by fluorescent or LED lights.

Dave Aspey: If you're wearing these glasses during a lecture, you can see all but the red font. Don't use red fonts, you'll be okay. If you're doing color correct work, they don't work, but for reading at night, I wear those if I'm going to read on any electronic device. During the day, if I'm sitting in a crappy lighting, fluorescent, LED light, I might wear them for a few minutes. They allow relaxation of the brain and the eyes in a way that I've never been able achieve.

Dr. Joseph M.: I very much look forward to testing them out. I've got, actually, a spectrophotometer, so I can measure the wavelengths coming through, which is pretty cool.

Dave Aspey: Oh, very cool.

Dr. Joseph M.: One of the reasons why I wanted to be on your show is to talk about my new book, which echos your book. I mean, they really are a phenomenal complement. We had some challenges to connect with your staff, so I'm going to be interviewing you on my site too, so we can co-promote our books, but they really do complement each other really well. My book is Fat for Fuel.

Dave Aspey: It is. In fact, this'll probably be your fourth New York Times Best Seller because we've talked about Effortless Healing before and Fat for Fuel is a great name for a book. You're talking about really big stuff.

Dr. Joseph M.: Not as good as Bulletproof. It's pretty good. You got another gold star for that one. It's one of the two best health names I can think of. The other one is Eat Right for Your Type by D'Adamo.

Dave Aspey: The writing on that is good.

Dr. Joseph M.: Yeah.

Dave Aspey: Yeah, the Bulletproof roof, I couldn't pull that one off.

Dr. Joseph M.: It was good.

Dave Aspey: Fat for Fuel is a really powerful book because one thing you do and you've always done is you reference the science. Even when people say, "That didn't happen because it can't." You're like, "Here's the five studies that show it can," and you've always been like that. Here, you're talking about combating cancer, making your brain work better, and giving it more energy by using fat. People listen to Bulletproof Radio, they all ... Okay, geez. Should you guys read this book? Of course you should read this book because it's going to have information. We're in alignment, but there's different takes, there's different information on these things. This is how you learn, by learning from different experts.

Dr. Joseph M.: Yeah, they said they compliment each other really well. The motivation for me to write this book was I was incredibly emotionally inspired after reading Tripping Over the Truth by Travis Christofferson, the metabolic theory of cancer. I don't know if you've read that, but it's just an unbelievable magnificent book that really exposes the truth of the fallacy of the genetic theory of cancer is just fatally flawed. It really is a mitochondrial disease. Mitochondrial function is the core of it, which is why I so fondly embrace what you're teaching because it addresses the cancer. Literally, Dave, we have one in two males in this country that are going to have cancer in their lifetime. This does not count skin cancer. The women are not far behind, are one in three. That's just crazy. It's almost always related to mitochondrial dysfunction, which is so easily reversed if you understand what to do.

Dave Aspey: I'm seeing parents of kids, people my age with cancer. It's a regular occurrence now.

Dr. Joseph M.: Even their kids.

Dave Aspey: Yeah. It's scary and it shouldn't be happening. Like you said, it's mitochondrial and it's a system of things that affect it. In your book, you're focusing on fat. What makes you think or believe, or say, what evidence do we have that cancer is indeed a mitochondrial disease? What's your take on that?

Dr. Joseph M.: Well, we could spend two to three hours on that, but I think if you like the brief synopsis, I would read Travis' book. If you're a biochemical hacker, as many of your viewers and listeners are, then I would definitely go get the definitive book on that, which is Thomas Seyfried's book Cancer is a Metabolic Disease: the Metabolic Theory of Cancer. Unbelievable man. In fact, a good portion of the

revenues and the profits from this book are being directed to continue the funding for Dr. Seyfried because he is revising the protocol on how to treat cancer. In fact, I just interviewed about two weeks ago a group of oncologists from Turkey who are treating stage four cancers with his protocols and were getting 50% improvement in people who are given a few weeks to live. That's just incredible. They don't even have his latest revision, so we're funding some of the research he's going to be doing on rats. He's got the best rat cancer model in the world. No one would dispute that.

It takes some time to do it, but we're going to revise the therapy because it's not just lowering the carbs. It's also making sure that you understand the protein point, and you do. You're one of the only people. Virtually no one in health, I mean, all these paleo people talk about the low carb and it's great, but they're not talking about controlling the protein. Then they're not talking about cycling, which you get. That is just a profound innovation is that you have to understand cycling because if you don't, you're going to ruin it up. That's what this group in Turkey did. They understood the cycling, so they would give these people bursts. Even though they had stage four cancer, they would still burst them up. That's where you get the magic, the metabolic magic occurs in that receding phase.

Dave Aspey: It's shocking what happens if you do the same thing all the time, and it doesn't matter what the same thing is. Ketosis? High sugar? It doesn't matter. If you do the same thing all the time, the body will lose its flexibility. It's meant to be stressed metabolically by temperature, by light, by vibration, by sound. All of these things are supposed to fluctuate. If you put them constant, what's going to happen? Nothing good.

Dr. Joseph M.: Yeah. There's no question. One of the interesting features of this book, you know very well from reading scientific papers that most science journals require a peer review processes where they send it out to some independent, objective third parties, preferably, unless you're in the drug industry. Drug influence. That's the ideal. I thought that really is a marvelous model when it works well. I thought I'd replicate that with this book. These aren't just my ideas or something I read in a book or online or saw a video. I sent it out to over two dozen of the top researchers in the country on this, and so it's carefully vetted. The information of this book is solid. I mean, there's no mistakes in it. Now, at least mistakes from the perspective of the state of the art of the knowledge of when it was written, which was the end of last year. Of course, we're going to learn new knowledge and we're going to revise it and improve it. I mean, that's just the nature of science. It's solid and you can trust the information in there.

Dave Aspey: One of the other theories of cancer, and this is something that we didn't talk about last time, is something that really caught my attention. You were kind enough to screen MOLDY, my documentary, for your listeners or your viewers, your blog visitors. Whatever your call that large number of people who read your stuff. There's the fungalbionics series from AV Costantini presented a

pretty compelling case that at least some cancer is actually a fungal infection or at least tied to fungal toxins, which themselves are mitochondrial toxins. The old mitochondrial R bacteria. Ancient bacteria. Fungus and bacteria have had war for their entire existence. It's no wonder that out here a fungus could affect mitochondria and make it a mitochondrial disease. Do you believe that some cancer is actually a fungal infection?

Dr. Joseph M.: Whether I believe it or not, it doesn't take away from the truth. They clearly are. I've actually read Costantini's books. He's done that for a while. I think in the 90s I read his books and saw him lecturing. Is he still alive? I don't know.

Dave Aspey: No, his children or grand children are running it. I ordered his books from Germany when they first came out. They were like \$500 a copy and arrived hand wrapped and all that. They changed by thinking about cancer, realizing that okay, I see people who I know have a fungal infection. If they would just go on antifungals, they wouldn't have cancer. I see people who have mitochondrial disorders, and I don't think, it's not a sac fungus growing in their brain. It's something else. For people listening, when we say cancer is a mitochondrial disorder, I always want to put a little asterisk in there and go, "Yes, and sometimes it's not cancer. It's fungus."

Dr. Joseph M.: Well, I believe the mycotoxins actually cause mitochondrial dysfunction, if I'm not mistaken.

Dave Aspey: Oh, they absolutely do.

Dr. Joseph M.: That's the mechanism. It's still mitochondrial dysfunction.

Dave Aspey: I guess, to be really specific in the question, Costantini and Doug Coffman, another friend.

Dr. Joseph M.: I just lectured with him a few months ago.

Dave Aspey: Oh, you did? Cool. I've been out to visit him in his studios. A good guy. He was also in MOLDY. His perspective, and what I think I'm leaning towards is that sometimes cancer is actually the fungus itself growing, which shares a lot of DNA with us. On a microscope you don't really see it, but you would see it on genetic analysis. Maybe 20% of cancers are actually fungal infections that look like cancer, but they act like fungal infections. Then the rest of it is just mitochondrial disorder that spreads in the body. Do you by that perspective, or is it just that the fungus cause mitochondria?

Dr. Joseph M.: I haven't studied it carefully enough. I read Costantini's work about 20 years ago or so, and I don't recall the details. From my perspective now, it would make sense because the treatments are pretty similar. The treatments from Doc Coffman's perspective is to clean up your diet. Everything we're talking [inaudible 00:21:58] in Headstrong, so that's going to eliminate most of the

mycotoxin, but it won't eliminate your exposure if you're in a moldy environment. You obviously have to address that.

Dave Aspey: You got to fix that.

Dr. Joseph M.: You got to fix it or move or remediate or whatever. Get the water intrusion out of your system.

Dave Aspey: Your book is about the mitochondrial side of it, clearly, but I just figured of all the health influencers who would know, okay.

Dr. Joseph M.: Yeah. That's what we focus on and really specific details on what you can do. Doctor Seyfried is probably the leading expert in the world on this whole process. He's a researcher. He's a PhD, he's a scientist. He does not treat patients, but he's had a lot of people contact him and he refers all those patients to a nutritionist. The nutritionist helped me co-write the book. She's treated 4 or 500 of his patients in the trenches with this program. Her name is Merriam [Calamian 00:22:54] and she has actually had a son who actually died from a very aggressive brain cancer. She didn't know this information at the beginning. That's what catapulted her into this whole process. If she knew now what she knew back then, her son would still be alive, but she didn't. It's a process. She helped me write this and it's one of the reasons why it's so good because there's a lot of good, practical, real-world experience in there.

Dave Aspey: I probably should've looked at the subtitle there, or the co-author there, I didn't realize her background.

Dr. Joseph M.: She's not a co-author.

Dave Aspey: Oh, [crosstalk 00:23:30]. Okay.

Dr. Joseph M.: Yeah. She's sort of a ghost editor.

Dave Aspey: Oh, someone who helped. I get it.

Dr. Joseph M.: Yeah. Interestingly, the division for this book is to create a massive demand in the country for this type of service in appreciation of that. What we're doing at the same time is we're working with the American College of Nutrition and Merriam has developed a certification course so that other healthcare professionals, nutritionists, physicians, chiropractors can become certified and start helping people with it so they can have a health coach and walk them through it. I know you've got your own Bulletproof certification program, but this is a little bit different.

Dave Aspey: Yeah. You're doing medical certification. We're doing people who want to be coaches. It's only some food. It's actually more around mindset and food and how the physical hardware affects mindset. Totally not in anyway competitive.

In fact, very complementary. Get a lot of doctors who come to our thing, but it's not a continuing medical education. It's not CME. It's none of that. It's [crosstalk 00:24:33].

Dr. Joseph M.: This is professionally certified, so you get the whole darn thing.

Dave Aspey: There's a ton of doctors who listen to Bulletproof Radio, and so I would hope that if you're listening, this is the kind of thing to do because what I've learned ever since I really started repairing myself in my late twenties, 15 years ago, I knew even back then the mitochondrial things worked, that whatever I could do in a study would do things. The very early coconut oil, moving into the brain octane and things like that. They all worked, but I hadn't put it all together until I wrote Headstrong to realize that every single thing that mattered was mitochondrial.

There is nothing that I have ever done that improved my performance or brought me back from being a fat, unhealthy, tired, brain-foggy guy that was not a mitochondrial biohack, like every one. If you distill everything down to root causes, and you're a doctor and you care about getting the maximum benefit for a patient whether you have three minutes or three hours with a patient, if you understand that there's just one thing that affects everything, that's where you have the most leverage for your time. You spent 12 years in medical school and hundreds of thousands of dollars in your training. If you can get more return on every minute invested with a patient, you get it from mitochondria. That's why the program you're talking about would be something every doctor should go to.

Dr. Joseph M.: No question. Fortunately, I went to medical school. I graduated in '82. That was a while ago, about 35 years.

Dave Aspey: Could they spell mitochondria back then, Dr. Mercola?

Dr. Joseph M.: I'll tell you what they couldn't spell and they did until the 90s was MTOR, which is still not in the consciousness of most people. I couldn't agree more with your assessment of the importance of mitochondrial function, but the sad reality is, only a handful, and my guess would be, I couldn't imagine anything but far less than 1% of clinicians appreciate what you just said.

Dave Aspey: They will after they hear this.

Dr. Joseph M.: They know mitochondria. They know what they do, but they don't get the full picture. I know I didn't fully appreciate it until I read Travis' book and started digging deep in this. I literally read thousands of papers, dozens of books to put this book together. It's an important ... One of my strategies, I've got to share one of my personal strategies.

Dave Aspey: Sure. Please do.

Dr. Joseph M.: I think you'd like this. I, again, fully embrace the photobiology and I live near the ocean in a very nice environment, a little bit different than Vancouver. Most of the year I'm able to go out, I'd say, almost all the time. Even if it's cold, you can still do cold thermogenesis. I get about 90 minutes or longer a day walking on the beach. Most of the time barefoot and without a shirt. Almost all the time, actually. I'm getting the photons, getting the electrons, getting the negative ions from the ocean. Actually getting microbes from the seabirds that are there, the fish. That's just improving my microbial diversity. The obvious question for most busy professionals would be, how the hell do you justify that time commitment? Well, that's when I do my reading. That's why I was able to read 150 books. I read the books. A neat hack, I don't know if you realize this, many people may not so I'm going to share it, that if you have a Kindle, and I love Kindle the best because the healthiest light device [crosstalk 00:27:54].

Dave Aspey: Yes.

Dr. Joseph M.: There is no light. It's just reflected sunlight.

Dave Aspey: By the way, you don't mean Kindle Fire. You mean the paper Kindle, the ePaper one?

Dr. Joseph M.: Oh, no. Yeah. I personally use the Oasis, which is their high end one, but they have a whole series of different ones. The beautiful thing about ...

Dave Aspey: The ones that don't have an LED screen is what I'm saying, just for people listening.

Dr. Joseph M.: Yeah.

Dave Aspey: Right.

Dr. Joseph M.: Well, there is an LED light in there. They have a light source, but you just turn it off and the battery lasts longer too. You just use the reflected sunlight. In fact, the brighter it is, the easier it is to read. What most people don't realize is you can read other books, other materials on there other than books that you purchase on Amazon. You actually have in your Amazon account, you can into the device settings and you'll get the email address for your device. I must have 10, 15 Kindles I've purchased, so you have to figure out which one it is. Then you can set that as your default and then you could send PDFs, you can send web pages, 300-page Word documents. I'm just reading Merriam's. We read about the first four chapters of her book today and it was a Word document. It was a 600-page Word document. You can download those to your Kindle and you read them. It's just great. That's an interesting hack where you can optimize your photobiology and improve your mind.

Dave Aspey: You live in Florida, which gives you all that amazing sunshine. In your book Fat for Fuel, you talk about photobiomodulation, about light exposure.

Dr. Joseph M.: Absolutely. We talk about the photobiology, not so much the photobiomodulation, which is the artificial inducement using ... Typically, the newest ones of course are the infrareds and the reds to improve metabolic function, but specifically mitochondria. 660 to 630 and then 810 to 830, somewhere in that range.

Dave Aspey: It's interesting this morning because I live in Canada where it's a little darker than in Florida. Before this interview, I was downstairs and I stood on the Bulletproof vibe. I'm not going for a walk, but I'm vibrating, which stimulates mitochondria the way a piezoelectric way that walking does. I'm standing in front of a wall-mountable, high ultraviolet B tanning lamp. It actually is something that you used to manufacture because you were the first guy to talk about these.

Dr. Joseph M.: That's true. I can biohack that for you, but to give you an update on that, unfortunately, the FTC thought that I failed miserably and deceived the consumers by not warning them it can cause skin cancer. One person got skin cancer and then we used the FDA guidelines, which is physically impossible to get skin cancer because it said use it only for five minutes. Even though we had all those cautions in there, they still said, "No, you failed to do that. You've got to send out letters to everyone you sold this to. Then we get to write the letter. You can't write it." It says, "Dr. Mercola lied to you. You can get your money back. Just say yes." It was \$3 million loss on that one. Just the criminal nature of the FTC.

Dave Aspey: It's amazing. People listening to this usually have no idea what's going on. There's the FDA and they can tell you you're not allowed to say, even if there's 50,000 studies about something, if you sell it you're not allowed to say anything truthful about it other than whatever's in these narrow rules, so there is no free speech on that. In fact, it's called controlled speech. That's actually the word for it. The FTC, and so the FDA can come in and they can take your inventory and things like that. FTC can just give you millions and millions of dollars in fines without a warning. They're the ones where guys like you and me, who are working on moving the needle, we have an extra burden to speak truthfully about the things we sell. In fact, sometimes I want to say more about coffee or I want to say more about brain octane or whatever.

Dr. Joseph M.: [crosstalk 00:31:50]

Dave Aspey: In fact, if I told people the truth about those, that's backed by phase two clinical trials, I would no longer be allowed to sell them. I make good stuff that makes you happy.

Dr. Joseph M.: Or worse yet, throw you in jail.

Dave Aspey: They might try. Fortunately, I live in Canada. It's hard to get the SWAT teams up here. They can't swing at me.

Dr. Joseph M.: Is that one of the reasons that motivated your move up there?

Dave Aspey: Not at all. It was my wife's medical license. We thought it would work up here. That was it. I'm not paranoid about that. In fact, [crosstalk 00:32:15].

Dr. Joseph M.: Let me give you a hack for that ultraviolet B radiation that you're getting. You probably realize, and you've interviewed Alexander [inaudible 00:32:24] in the past, who I think is one of the top photobiology experts in the world. I love that man. I've interviewed him a few times. I'm going to interview a few more. If you can get past his thick German accent. What I would do is combine it with the red and the near infrared. 810 to 830 and the 660, 630. Somewhere in there. When you get into the sunlight, you're getting all those rays. You're not just getting UVB.

Dave Aspey: In fact, I have something called the red charger here, which is 40,000 red and infrared LEDs.

Dr. Joseph M.: That's all?

Dave Aspey: It takes 220 to power the thing. It's a lot.

Dr. Joseph M.: 220 volts? Oh my gosh. Crazy.

Dave Aspey: Well, it's a lot of lights.

Dr. Joseph M.: How many watts is it?

Dave Aspey: I don't know over the top of my head.

Dr. Joseph M.: Must be over a thousand watts. It's a kilowatt.

Dave Aspey: It's LEDs, so they're relatively [inaudible 00:33:16], but they're high power LEDs.

Dr. Joseph M.: Yeah, but it's 40,000 of them.

Dave Aspey: You lay in it and you get warm. It feels like you're in the sun. Something happens for me. When I do things that really stimulate my mitochondria, whether it's pulsing electromagnetic frequencies, I've got a pulse wave XL pro, which is solid state power systems out of jet fighters that control these coils. When I lay on that or I do really high power ...

Dr. Joseph M.: Yeah, I've seen your interview with that. You put your feet on them and you can light up a light bulb.

Dave Aspey: That's a tesla light. That's even different. This other thing is like those big coils for magnetic therapy. I'm sure you've talked about those in your content, but it's a whole math that does that. I go into this weird altered state when I trigger

my mitochondria sometimes and I get that from that many LED lights. You sort of go somewhere and it's like a bizarre meditation. I hope it's good for me.

Dr. Joseph M.: Try combining it with UVB. I think the combo is going to be better because you'd know when you get UVB, it's beneficial of course. It makes vitamin D. It also causes ROS, [inaudible 00:34:22]. What the red and the near infrared do is they have repair and restorative functions, so they compliment each other really well. They're designed to be together.

Dave Aspey: I'd have to take apart the red treasure, but I could probably hang one wall of that. It's frustrating because one thing that I thought was really cool that you did and I know this is a small part of your Fat for Fuel book and there's more I want to talk about with you there, but one of the things that you did that I thought was very, very high integrity was you actually said, "Screw it. I'm not going to sell these tanning lamps anymore. I'm just going to talk about how important sunlight is. I'm going to talk about how important they are. I'm going to turn down the money to maintain my freedom of speech," because being able to talk about this to a million people on your list is actually more important than being able to make a few million dollars selling lamps, even though the lamps help. A lot of people don't think about it like that, but as an entrepreneur and a healer and physician, you actually took the high road, which was, "I'll take less money and I'll speak more truth." That's literally putting your money where your mouth is, so I thought I admired that from afar.

Dr. Joseph M.: Thank you, but how much money do you need, really? I've got more than I need for a life time, so it's just a matter of learning and how to optimize and distribute that in the best way possible. One of my missions is to catalyze the transformation of healthcare in the United States so that so many people don't have to die needlessly and suffer needlessly. 1,600 people every day die in the United State alone every day. You know, Dave, the vast majority of those are absolutely needless. Probably 1,500 of them could've been reverse if they knew the information in your book and my book. No question, and applied it. Not just knew it, applied.

Dave Aspey: Yeah, and applied it. That's a good point. The thing that really just bothers me is that before all those people died, for the 25 years before they died, they were in a state of mitochondrial decline. The less your mitochondrial function, the more of an asshole you're going to be. I don't usually swear on Bulletproof Radio, but that's the word for it. I say that because when my mitochondria didn't work, that was a really good description of me because you don't have enough energy to regulate your emotions. Then you yell at your kids and you cut the guy off in traffic and you do all these things.

You miss out on life that you could've lived because you were too tired or foggy or because your joints hurt or you just couldn't do it. That's the real cost of this. Death is just the end result, but it's the life not lived because your battery was at half charge all the time. That's an unacceptable state for humanity. What

you're saying about money there, yeah, once your needs are met and your family's safe and you have a place to live and good quality food, the rest of the money, it pays for a microphone to help more people or to drive some sort of social change. What else are you going to do with it?

Dr. Joseph M.: Right. People think of a lot of crazy things to do with it, and they do as you well know. That's the most rational approach, I think.

Dave Aspey: How many Bugattis do you have, Dr. Mercola? None, right? I drive a pickup truck. I don't know about you. That said, I wouldn't mind driving a Bugatti. I just don't want to buy one.

Dr. Joseph M.: Yeah. They just released the latest one. I think it's two and a half million dollars. I forget the [inaudible 00:37:51] or something, but anyway ...

Dave Aspey: At least your friends at the FTC can afford it.

Dr. Joseph M.: Yeah, yeah. Well, just to be clear, they did not collect the funds themselves.

Dave Aspey: Oh, they didn't. Okay.

Dr. Joseph M.: They forced us to rebate that to the consumers and we didn't get the bed back in exchange. They got to keep the bed and they get what they paid for it is what resulted. They confused and misdirected them. They didn't explain the whole situation and what the process was. If our people who purchased it knew that, I don't think they would've [crosstalk 00:38:22].

Dave Aspey: They wouldn't have asked for their money back, right. I certainly didn't ask for my money back. I like that thing.

Dr. Joseph M.: Did you get the letter from the FTC?

Dave Aspey: Yeah, absolutely. I threw it away.

Dr. Joseph M.: Another man with integrity.

Dave Aspey: Why would I do that? That's not okay. Then again, I saw what was happening. You were causing some discomfort with the content you're sharing.

Dr. Joseph M.: The problem was is that the surgeon general was a dermatologist. He was for six months or so, but then he issued all these declarations and catalyzed this movement in the FTC to really obliterate anyone who was selling tanning beds. We happened to be one of the bigger providers.

Dave Aspey: Is there a brand of light that ... I get this question all the time and I'm hesitant. I mean, I know some brands on Amazon and all that stuff, but I haven't done EMF research to really fully endorse a good brand for people. I'm thinking about

putting a reptile light that's full spectrum in my dining room so my kids are exposed at breakfast. Is there a kind of light that you recommend?

Dr. Joseph M.: We've got to be careful because excessive UV can contribute [inaudible 00:39:30].

Dave Aspey: I'm concerned.

Dr. Joseph M.: I think the photobiomodulation units that [inaudible 00:39:36] discusses are probably ideal where they're balanced with the red and the infrared and the UV. I really haven't carefully looked at it since we got out of that. Here's another component and you understand this, but I just wanted to reinforce it for your viewers and listeners is that the UVB, of course, makes vitamin D and that is the best and most ideal way to increase your vitamin D levels. I have not swallowed a vitamin D pill for 10 years and my typical vitamin D level is well over 50, typically much closer to 70 nanograms per milliliter.

Dave Aspey: Wow, Florida life.

Dr. Joseph M.: Yeah. I'm committed to it. I moved down here to healthy and it's been very useful. Now, you can swallow vitamin D and if you don't have any other option, then probably your best [crosstalk 00:40:22].

Dave Aspey: I think so.

Dr. Joseph M.: The next best would be the UVB exposure, if you're in a vitamin D [winter 00:40:27]. Ideally, you'd like to structure your life so that you can get your butt to the place where you're in a subtropical area and you don't need to do it, and hopefully not high density population because it has its own artifacts. I live in a place where there's virtually no traffic and I have access to the beach. It's pretty wonderful, actually.

Dave Aspey: Yeah. It's something I've considered. I really appreciate sunlight and where I am is beautiful. I have sock eye salmon and grass-fed beef and my own garden and all. The light isn't so good here, so I supplement light as I would [crosstalk 00:41:01].

Dr. Joseph M.: [crosstalk 00:41:01] you can figure it out. We could discuss privately and maybe brainstorm different things for your audience and for your personally.

Dave Aspey: Sure. I just wanted to pick your brain on that. Let's switch gears because all this light we're talking about is directly mitochondrial-based. In Fat for Fuel, you talk about mitochondrial therapy. My mind goes here because you're one of the few people out there who's really up to speed on light in mitochondria. You said it's part of your book, but it's not the main focus. Tell me about the mitochondrial therapy that's in the book that physicians and listeners would be interested in.

Dr. Joseph M.: It essentially echoes most of what you've been talking about. There's three important components. One is that you've got to shift your metabolism to burn fat as your primary fuel. That's something I didn't appreciate. My first book was a New York Times Best Seller written 13 years ago. It was No Grain Diet, but I didn't understand this concept. I just knew you had to have low carbs. Low carbs, continuously is not a good either. We talk about, essentially, this transition period because I would say, not your group, probably. The majority of your viewers are probably burning fat for fuel, but well over 95% of the population, certainly 90%. By guess, probably 95% of the population is not. They're burning carbs as a primary fuel, which leads to mitochondrial metabolic dysfunction. Getting them to lower their carbs for a period until they are able to do that, we gave you the specific monitors and how to address that, and the replacing it with high quality fat and paying very careful attention to the protein, and you're on the few people who get this.

The my recommendation is a gram per kilogram of lean body mass, which for someone like you and me is probably 60 grams a day. If you're a half weight woman, it might be 30 grams a day. Not forever, just until you burn fat for fuel. When you do, then two, three days a week when you're doing your strength tea, maybe double that. Certainly by 25, 50%, especially with the [inaudible 00:42:54]. Then you have some good healthy carbs, like a sweet potato or something. That will give you a real anabolic stimulus. Especially if you're treating cancer. As I mentioned, I interviewed a group. Maybe I didn't mention it when we were online, but I interviewed last week or two weeks ago, a group ...

Dave Aspey: The Turkey group.

Dr. Joseph M.: [inaudible 00:43:12] group from Turkey who are treating metastatic stage four cancer patients that were literally a week or two weeks to live. They're getting 50% resolution rate. They were even doing this, so there's some concern not to [crosstalk 00:43:25].

Dave Aspey: Protein restriction? They were doing recycling.

Dr. Joseph M.: They were doing the cycling, which kind of shocked me. I almost fell off my stand here because I just couldn't believe that they were doing it, but they were getting incredible results. The cycling is crucial, but only once you've been able to burn fat for fuel.

Dave Aspey: How long?

Dr. Joseph M.: It could be a few weeks to a few months. If you were really metabolically injured, like you were when you first started this process, it might take six months, better part of a year. It depends on how aggressive you want to get. We talk about integrating fasting. I think you perhaps have interview Jason [Fung 00:43:57] before, the [crosstalk 00:43:58] from Toronto.

Dave Aspey: Yes. Absolutely.

Dr. Joseph M.: Great guy. Love that man. We integrate his work. He's one of the guys that proofread the book too for us. If you integrate fasting, you can do it a lot more rapidly. I love fasting. Actually, I'm on a mini fast today. I try to do that once or twice a week, especially after my feast days, which I love feast days.

Dave Aspey: Aren't they good?

Dr. Joseph M.: We call it feast/famine cycling. There's a number of different ways, but it's the same thing. It's cycling. That's the crux of it. We go into specific details. You may not know of this. You probably do, though. You're pretty bright. There's this website, it's a nutrients tracker. It's called chronometer.com.

Dave Aspey: Yeah, Chronometer.

Dr. Joseph M.: Yeah. I connected with the developer of the site, Aaron Davidson. He actually modified the software for us. If you go to chronometer.com/mercola, it's specifically adapted to a ketogenic diet.

Dave Aspey: Oh, cool.

Dr. Joseph M.: It's free. There's no charge for it. It's a marvelous piece of software because it's really, really difficult to implement this treatment program unless you're very precise and methodical and disciplined about measuring and carefully entering some type of nutrient tracker so you can see exactly what your calorie distribution is.

Dave Aspey: It's amazing when people get quantitative about it what can happen because you realize you're eating a lot more protein than you thought you were, and you're also probably burning your protein if you're on paleo. Like you singe it until it's nice and charred on the grill. It has a different effect on your mitochondria, depending on how in tact the fat and the protein is.

Dr. Joseph M.: It's burning up your cells too. All that mitochondria is activating MTOR, which is just one of the worst things you want to do is you want to live long. I mean chronically activating it.

Dave Aspey: I was just going to say there's muscle mass. Okay, right.

Dr. Joseph M.: Yeah, yeah.

Dave Aspey: You want spikes of MTOR and then low MTOR the rest of the time.

Dr. Joseph M.: I really don't know anyone else. I'm sure there's others, but I don't personally know anyone else who understands this and is teaching it like you are.

Dave Aspey: I think Paul Check is probably the other guy. Do you know Paul?

Dr. Joseph M.: I have not studied his ... I know him personally, but I have not studied his work for a while. [crosstalk 00:46:07]

Dave Aspey: He's the only other one I've come across. You get it and I get it. I'm kicking myself right now, but one ...

Dr. Joseph M.: It's not many people.

Dave Aspey: Yeah. There you go. One of the guys behind Cell Gene also I think gets this stuff. It's a random kind of fact, except when you're looking at body builders like, "Oh, more MTOR." Then these are the guys who are unfortunately dropping dead of heart attacks and cancer with alarming regularity.

Dr. Joseph M.: They were one of the first ones to understand cycling too.

Dave Aspey: They were.

Dr. Joseph M.: They were the first group of individuals who got cycling. I don't know that they integrated the protein component to it, but they certainly got it from the carbs.

Dave Aspey: They did. In fact, I've learned more from the body builders than, at least early in my thing that I did for anti-aging people. I consider them to be like opposite sides of the same coin where they both want profound control of their biology. One group wants to get swole, the other group wants to live forever. I want to be in the middle there. I'm happy to live almost forever and be almost muscular. That seems like a good plan.

Dr. Joseph M.: Yeah. One of the common interventions for many anti-aging groups is to use metformin. It's pharmaceutical of course. It's an oral hypoglycemic that helps control your blood sugar, essentially. It's a mitochondrial toxin. It's a mitochondrial poison. I think I heard you talk about it, what, your British physician who's one of your consultants.

Dave Aspey: Yeah, our medical director Mark [Gakninson 00:47:38]. Yeah.

Dr. Joseph M.: Yeah. I couldn't agree more with this. We talk about this in the book too is berbering is an alternative. Most people don't know that. They just are using this ... It's just crazy to use a drug for almost anything unless you're going to be dead because you don't. Certainly not to extend your life.

Dave Aspey: I would use a drug to extend my life if the risk reward was there.

Dr. Joseph M.: Yes, but the likelihood is not.

Dave Aspey: You're correct. The likelihood is low on that. I took metformin for three years as a life-extending supplement when their research first came out. I remember I met with a team from BioMarker Pharmaceuticals, the guys who did the original research on mouse and gene expression with metformin. I walked into the room with these people and I said, "Oh, I've been on it for three years." They looked at me like, "You're the only person we know who's done that." They said, "Do you mind if we ask how old you are?" I said, "Yes, I'm 62." You could've heard a pin drop in this room.

Dr. Joseph M.: That's how old I am.

Dave Aspey: That was 10 plus years ago. Then I said, "Guys, come on." It was a good conversation, but what I didn't know is in addition to the mitochondrial damage, and I was suffering from mitochondrial, it also can permanently alter your ability to absorb B12 even after you stop taking it.

Dr. Joseph M.: [inaudible 00:48:55]

Dave Aspey: I'm scared of metformin and I don't use it. Here's a question you may know because you're talking about getting metabolism back on track. I do all the Bulletproof stuff and you and I are in similar alignment on our recommendations. I had my glucose tolerance and I had high glucose tolerance. I had my insulin sensitivity tested and I had perfect insulin sensitivity, like one out of a scale of 160. I handle insulin and glucose simultaneously better than the [crosstalk 00:49:29].

Dr. Joseph M.: How did you determine insulin sensitivity? By fasting insulin levels?

Dave Aspey: No, or was it?

Dr. Joseph M.: Was it a challenge?

Dave Aspey: It wasn't a challenge. It must've just been fasting levels, because fasting levels don't tell you that much. I have to pull up the data. This is from Human Longevity Inc., Peter Diamandis' company, HLI.

Dr. Joseph M.: Oh, sure. You had that test done? It's a \$25,000 test.

Dave Aspey: Yeah, I had that done.

Dr. Joseph M.: You had it done? Oh, boy.

Dave Aspey: The full human genome high resolution [inaudible 00:49:54].

Dr. Joseph M.: I just couldn't justify it. I said, "No way."

Dave Aspey: It helps that I was one of the very first people to sign up for it, so I got a discount.

Dr. Joseph M.: If it was like \$10,000 [crosstalk 00:50:02].

Dave Aspey: It was a more reasonable price. I'm not even sure what it was, but it was ...

Dr. Joseph M.: It's 25 now.

Dave Aspey: Yeah. Man, one thing I learned, you'll love this because you talk about mitochondria in Fat for Fuel. I had the whole body bone density thing done. My bone density is very high because of what I eat, vitamin K2 and D3 and sunlight exposure to activate the things that we're talking about and that you talked about in your book. I carry my cellphone on my right femur, it's like a thigh pocket. I will not wear pants to put my phone by my junk because I don't want to fry that stuff. There's a lot of delicate stuff there that I plan to keep using until I'm 180. The part of my femur where my phone sits has 10% less bone density, and that's my dominant leg. Like, ah! Where do I put this thing? Because I kind of use it.

Dr. Joseph M.: You can put it in the same place as long as you put it in airplane mode.

Dave Aspey: I tend to put it in airplane mode. That result showed me that I should put it in airplane mode more than I had been. It's something I've been dreaming about.

Dr. Joseph M.: It's a necessary evil, but you want to limit your exposure to that. Additionally, there are some protectors you can put around the phone. It's essentially the same thing. You won't get the cellphone signal in, so you'll essentially put it in airplane mode.

Dave Aspey: My new plan is that I'm going to be building a RF shielding into ... I'm just going to have someone add some fabric to my pants and see if my bone density comes back. I'll tell you in two years.

Dr. Joseph M.: Then you won't get the phone calls.

Dave Aspey: Oh, it'll just be built between the phone and my body, not between the phone and the [crosstalk 00:51:39].

Dr. Joseph M.: Oh, okay. Not in the opposite side. Okay.

Dave Aspey: By the way, I have no idea if this is going to work.

Dr. Joseph M.: Basically, there is something that's called radiant barrier. It's very thick aluminum foil. You could just cut a slice out and have someone sew it in your pocket and put it on the outside of it. Yeah, that's what we need to do.

Dave Aspey: Maybe there's an entrepreneur listening. Do you guys want to make me some pants? Let's talk.

Dr. Joseph M.: That's a good idea. An interesting thing that I learned in doing the research for this from one of my editors, not editors by the science collaborators, Dr. [Levali 00:52:09] out of Texas and Nova Scotia. Looked up and could see he was confused about how insulin works. We looked up some papers that were published in the late 90s and it turns out most people don't understand how insulin works. It does not work by lowering your glucose levels. I mean, it works for lowering [inaudible 00:52:25], but doesn't work by driving your glucose into the cell. Do you want to know how it works?

Dave Aspey: Yeah, please explain. Yeah, I'm curious.

Dr. Joseph M.: This is the reason why feast/famine cycling works, because insulin works by suppressing hepatic gluconeogenesis. In other words, the liver's ability to generate glucose. I was wearing like you were, a 24-hour glucose monitor 24/7 when I wrote this book so I can understand this. It was amazing. I'd be having 20 grams of carbohydrates and my blood sugar would start rising. It didn't make any sense until I realized, okay, the insulin level's too low. [inaudible 00:52:58] level is like 0.1, essentially like no insulin. There's no insulin to shut off that liver from making glucose. The surprising thing is even though your blood sugar is starting to rise, when you eat healthy carbohydrates like sweet potatoes, a whole big sweet potato, or lots of healthy fruit, your blood sugar will actually drop and your ketones rise. It's just the most amazing thing. Now, you can't do this all the time, but if your insulin level's really low, that's the type of reaction you get. It confirmed the importance of the feast/famine cycling for us.

Dave Aspey: There's a study that looked at cardiac mitochondrial efficiency. It might've just been cardiac efficiency or it was muscle output, but they looked at it in the presence of pure ketones, the presence of basic glucose and insulin. The pure glucose was 4% higher. It was like 28 versus 24%. It worked a little bit better, but ketones were 24%. Of course, they're more stable, but the combination of the two is like 36%, so you've got to have a little bit of insulin and a little bit of glucose at least some of the time versus what happened to me when I did no carbs. It was like one serving of broccoli a day for three months. It gave me egg allergies. I couldn't make mucus to line my gut. It was a horrible experiment, but at least I learned something. Man, I still have to hack that.

Dr. Joseph M.: Another part of that, Dave, and I'm just developing a deeper appreciation of is the fact that the lining of our intestinal tract actually goes from our sinuses all the way to our rectum is only one cell thick. That's the only distance between you and the inside. It's really easy to damage that barrier. You can do that with things like glyphosate. I mean, that's one of the most toxic ones. Obviously gluten can do it too, but it's even worse with glyphosate. Even if you're eating completely organic, I'm not sure if you're aware of the statistics, but it's like five billion pounds of glyphosate are spread in the environment every year.

It goes up into the wind and it will spray down on your organic crops if they're outside, unless they're in some type of greenhouse. Virtually everyone's exposed to this and they're decimating their intestinal epithelium, so we talk about that. I mean, obviously if you're eating organic, you're going to have a lot less exposure and cause less damage, but there are some things that can be done to address that, which we don't have time for here, but I'll talk to you offline and recommend some [inaudible 00:55:22] experts in this.

Dave Aspey: Are these in Fat for Fuel? Do you talk about this?

Dr. Joseph M.: No, we don't because it was too new. I just learned about this late last year and we're still in the process of validating it. It seems to be one of the more important mechanisms. An interesting artifact of a therapy that addresses this is that it also decimates circulating cancer stem cells, which is what kills you when you have cancer. It's not the cancer itself. It's the circulating cancer stem cells that transfer to other tissues in your body.

Dave Aspey: Interesting.

Dr. Joseph M.: Wouldn't that be nice to have a little therapy for that? I don't want to confuse anyone upfront. The optimal diet, as you and I both understand it, implemented most likely will not cure cancer. It'll probably prevent it in most people, but it won't cure it. You need these stack therapies and I talked about some of them in the book. Some of them would be like hyperbaric oxygen or exercise with oxygen therapy, glycolytic inhibitors, insulin potentiation therapy and a variety of [inaudible 00:56:20], intravenous vitamin C, which I know you've interviewed Dr. [inaudible 00:56:23] recently. These are types of [inaudible 00:56:26] when you add those together, which is what the oncology group in Turkey did, then you're going to get unbelievable results, even in stage four cancer. If you've got stage one, two, or three, the likelihood of a complete resolution is very, very high. The foundation is a diet. The absolute core is a diet.

Dave Aspey: It's the diet. One of the most inspiring things in the early days of Bulletproof that happened to me is that I got contacted by a Fortune 500 CEO. It's confidential who he is, but he was diagnosed with pancreatic cancer. No, this was not Steve Jobs, but that's what killed Steve Jobs. We sat down for breakfast at the Rosewood Hotel, which is right across from all the venture capital firms on Sandhill Road where all these big investments happen. He told me what he did.

He said, "Dave, as soon as I found out I had this, I didn't tell my family. They told me the tumor was too big to operate and they gave me six months to live." He said, "Screw that. I quit eating all sugar. I went into full ketosis, like very heavy duty ketosis." He did do very low-dose chemo because he was at the point where he needed to shrink it. They wouldn't do insulin potentiation therapy, so he brought his own insulin with him and was injecting himself with insulin

during the thing. His doctor's like, "What are you doing?" He's like, "I'm a CEO. Shut up. You will deal with it."

Dr. Joseph M.: Is he still alive?

Dave Aspey: Yes, he is. He shrunk the tumor in three months to where it was operable, had it taken out, never told his family the true extent that he was almost dead because he didn't want to freak out his little kids. To this day, he's a happy, healthy, incredibly high vibration guy. Taking control like that and using ketosis, but he also treated it. I'm not a huge fan of chemo. Neither are you. There are times when it can be useful.

Dr. Joseph M.: This Turkish oncology group, just because of the laws and everything, it's just very, very difficult to implement. You could do it in nano models, but you can't do it in people, so you've got to use these chemotherapy agents. They used it at the lowest possible dose, which radically decreases the side effects. When you're entering this, and they fast them before they get the treatment, I mean they have virtually no side effects from the chemo, which is just remarkable.

Dave Aspey: Wow. This is the future of cancer and I love it. I don't talk about cancer much in Headstrong. I talk about essentially every ...

Dr. Joseph M.: That's why your books complement each other.

Dave Aspey: They're so together. Because you're a physician, I think you have more credibility. What do I know about treating cancer? I know about the system of the body and where it goes awry in cancer, but treating cancer? Good God, that's outside my A grade, but not yours.

Dr. Joseph M.: Your biohacks are what treats it. It's not just cancer. It treats heart disease and diabetes and Alzheimer's and neurodegenerative disease, seizures.

Dave Aspey: It's lifestyle that does all of those. For me, the thing that shines through in your book as well is always mitochondria. If your mitochondria are a problem in your heart, you're going to have heart problems. If you they're a problem in your brain, you have brain problems. They're a problem in your circulatory system, you can have problems with endothelium. In your nervous system, you're going to have peripheral neuropathy or Parkinson's or ALS or demyelination. Like wow, but it's always the battery. Everything streams down from that. The recommendations in Fat for Fuel, and they're complementary, but I would just encourage people listening, if you've gone through the 300 or how ever, 50, 60 episodes of Bulletproof or even some subset of them, I recommend a good number books for you. There aren't that many books where you can learn about this kind of stuff and there aren't that many written by people with a pretty darn stellar track record of breaking new health news reliably. You're 20 years now. You opened in '97, right?

Dr. Joseph M.: Yeah. This is our 20th anniversary. Yeah. We opened our site before Google.

Dave Aspey: You did? You probably hosted with us. When Google had one server, they put their server in my company's buildings. I didn't own the company. I was a mid-level engineer and I became a little miniature executive there. I remember back in the day going to your website going, "Wow, this guy really knows it," and just watching the 20 years progression. That's why your book is worth reading because not only have you been doing this for 20 years of cracking new news here, but you've also been talking to people that whole time. It's not just your knowledge.

Dr. Joseph M.: I get a lot of criticism for selling things on the site, but as you know, it takes something ... As you also know from the beginning of '97, we didn't sell anything for the first four years. I was just paying for it out of my pocket as a practicing physician. Then we realized that doesn't scale very well, so we had to support it. Then the first thing we sold was a cookbook, which you made a whole five or \$6 on. I did not go into this as an entrepreneur to earn large amounts of money.

Dave Aspey: It's exactly the same thing. By the way, if you want to criticize someone for selling things, here's the deal. Someone's writing you a paycheck, right? Either that, or mommy and daddy gave you a lot of money. Either that or you're homeless. That's the way the world works. You're subsisting off something that was sold as well, so you need to do some self-reflection on this. My deal was I was a VP at a publicly traded company. I was head of Global Evangelism with stock options and a quarter million dollar a year salary. I started a blog because no one told me this stuff when I was 16 years old and I could've avoided arthritis in my knees, three knee surgeries, obesity, brain fog, being a total jerk because my brain wasn't working.

All that stuff, no one told me. If I tell five people and they only read my blog, I win karma points. That's why I started Bulletproof. Then I'm like, it's expensive to run this and it's taking all my time. I want coffee. Maybe I'll make this special coffee and maybe someone will buy it. I don't know. Lo and behold, now I can afford a microphone and I can drive disruption of big food. We're going to make corn one of those things like, "What do we do with all that poisonous corn? No one wants it anymore." That's how big it is. Yeah, that takes more than six bucks. Sorry.

Dr. Joseph M.: We do live in the 21st century, which is you get it better than most people because of your tech background, but you understand the power and the influence of the internet. We are true Davids, you and I and all the others. That's why we need to align together and collaborate because they're enormous, powerful, mind-blowing deceptive influences that are seeking to deceive the general public about the basic truths and facts through especially a lot of astroturfing and front groups and everything that they're using. That's why our voices are so important to give people the truth and the lifesaving truth that literally can turn their entire life around. Your book is every bit as important as

mine with respect to providing the details they need to understand the truth and apply it to their lifestyles to reap these health benefits and take control of their health.

Dave Aspey: It's funny because hackers are ultimately about taking control of a system that they don't necessarily have full knowledge of. One of the reasons that I decided to call this biohacking, that I didn't trademark the term, which I could have or copyrighted or [inaudible 01:03:33] trademark. I wanted a name for the community. If you look at what real computer hackers, my old cyberpunk friends do, Edward Snowden. We just released a huge treasure trove of hacking tools that the CIA has been using. The thing hackers do is they find the tools that others will use against you and they use it against them. That's why I call it hacking because if we know about this and we're in charge, no one else can feed us stuff that makes us dumb in our diet.

That would be called fluoride in our water, by the way. You can't do that to us because we know about it and we have the control. In fact, we might do it to you because you don't know what we're going to put in your water if you're trying to put crap in ours. It's a balance of power thing. I don't really go into the politics side of it there, but part of being hacker is that it means you're aware of what tools can be used against you so that you can then have counter measures.

That's why when I fly, I wear my special true dark glasses. That's why you live in a place where you don't have excessive EMF. We choose our environment because we're aware. If we're unaware, someone else will choose our environment for us and eventually they'll choose one that makes us weak because that makes them more money. It's not even they do it on purpose. It's an emergent behavior that happens when you're focused on just making a buck. I'll get off my soapbox there, but that's why reading these books is so important because then you know.

Dr. Joseph M.: Information is powerful, especially if you apply it. No question.

Dave Aspey: Let's see. We have a couple more minutes in our interview. There's so many different things I want to ask you about. In Fat for Fuel, what are the other things besides eating fat that stand out most for mitochondrial therapy?

Dr. Joseph M.: Well, there's two other things. As I said earlier, the two most important ones are the foods that you're choosing and then the light exposure. I don't think I need to belabor that because your audience really understands it. Then third, and I think you talk about it somewhat, but really has been one of my focuses and really one of the primary motivations for me to go into medical school was to apply exercise therapy to improve health. Unfortunately, I made the mistake of using chronic cardio for almost four decades before I realized that strength training and a whole variety of other components were really unhealthy. Movement I think is the more accurate component and it's something that you

want to integrate throughout your entire day is just moving as much as possible and not sitting.

I'm standing right now, but standing is almost as bad as sitting if you're not moving. You want to break it up. Those would be some of the more powerful things, and giving the tools that people need to actually implement this thing. You can have the knowledge and understanding, but if you don't know how to integrate it and apply it, it's going to be challenging. I noticed in some of your recommendations, you just provide general ones, which is fine. We get into details, like which glucose meter do you need? We tell you the one that's \$7 and it's only 23 cents a strip, so you don't have to spend an arm and a leg, and how to use the ketonics instead of the glucose. The ketone strips are \$4. I try to make things as least costly as possible for people in order to implement them.

Dave Aspey: That stands out in your book. I'm always torn about that because I'm writing books that I'm hoping will sell hundreds of thousands of copies. The Bulletproof diet's hit about a half a million. It's in 10 languages. Number one best seller in Japan.

Dr. Joseph M.: If it's hit a half a million, Headstrong should hit a million.

Dave Aspey: I'm hoping. That's global sales, not American sales.

Dr. Joseph M.: It still counts.

Dave Aspey: Yeah, it still counts. It means that someone read it and it helped them. When I went to Japan where I didn't do any marketing and I signed books, people were coming up and lifting their shirts to show me their six packs from the Bulletproof diet. In Japan, people are so conservative. I felt really good about that. I want Headstrong and I want Fat for Fuel to be read by everyone. The concern I had is that if I put something in there about a specific ketone, like I used the Accu-Chek thing, but they'll change the model as soon as I publish the book and then the book becomes less useful. That was why I didn't do it. I just put it on the website.

Dr. Joseph M.: That's why I never wrote a book until 2004 because of the fear that it would become outdated real rapidly. Throughout the book, at least my strategy is to encourage people to go to the site and sign up for the newsletter so they get the latest information and we can always update them. That's the strategy that we use.

Dave Aspey: I imagine a good number of listeners are on your newsletter because you send that reliable news every day.

Dr. Joseph M.: That's our goal. [crosstalk 01:08:16] to do that.

Dave Aspey: Well, let's see. There's a question. I asked you this last time and I bet your answer is different this time.

Dr. Joseph M.: Yes, it is.

Dave Aspey: The question is, if someone came to you tomorrow, Dr. Mercola, and they said, "Look, I want to perform better at every single thing I do, what are the three most important things I need to know," what would you tell them now?

Dr. Joseph M.: Well, it's certainly modified from the last time you asked me this question. The two most important I've addressed earlier, which is the food that you're eating. Pay really careful and close attention to the quality of the food to get the macronutrient composition correct, but also to make sure you're avoiding any GMO products and any glyphosate, which is going to decimate your tight junctions and your intestinal epithelium and cause a whole sort of metabolic havoc. That would be the first one. Then to pay really careful attention to your light exposures to minimize the artificial light exposure, to get plenty of healthy light, optimize your vitamin D, all those things that we both know and love so well. Then for third, it's really hard to describe one. I think I would probably make three choices for the third one, which would be the movement in exercise, which we've talked about. It's absolutely crucial. You probably now that exercise increases PGC1 alpha, which is the key critical metabolic signal to improve mitochondrial biogenesis. That is just crucial, if you're interested in increasing your mitochondria.

Dave Aspey: Seems important.

Dr. Joseph M.: Yeah. Then following close behind is something near and dear to your heart, which is toxin exposure. You want to minimize your toxin exposure. If you're living in a moldy house, you're doing the diet and the exercise and sleeping well, you're not going to get better. You got to get rid of toxins, so molds are important, but there's others of course. There's not enough time to go into that. Then water. I think water is key. Most people are clueless because they've been manipulated by the deceptive media, they think fluoride is healthy, and as we both know, it's a dielectric blocker and probably one of the most pernicious toxins among many others that are in water, such as chloride and disinfection byproducts and arsenic and a whole variety of pharmaceuticals. You want to have clean, healthy water. There's a lot of ways to optimize that. We talk a lot about those in the book. Those are the five that I would recommend, but the two most important are food and photobiology.

Dave Aspey: I love it that you put light there. Few guests have said that. I believe that they're equally important. Light's a drug.

Dr. Joseph M.: That's interesting. I haven't figured out the relative importance of each, but it's way up there. I know they're really close and I don't know enough.

Dave Aspey: It might be 60/40. There's equal [inaudible 01:10:55] standard deviations on either side.

Dr. Joseph M.: Yeah, it's really close. It's really close to each other. No question.

Dave Aspey: Here's the thing. If you go to McDonald's every day and you're in the sun all the time, you're still not going to like your life. I'm sorry, if you super size me with a tan, no. Sorry. Food trumps light in that case, but that's a pretty extreme case. You've got no healthy fat because it's all damage fat. If you move the food into not that crappy and the light into really good, you might be able to subsist. It tell you, if you nail them both, you have this whole capacity that is ...

Dr. Joseph M.: Energy.

Dave Aspey: It's not visible to you. You won't know it's there until you feel it and you're like, "Oh, that's how I want to feel." You get people there with the advice in Fat for Fuel and it's just worth reading.

Dr. Joseph M.: Yeah. Well, thank you for your kind words. Appreciate it.

Dave Aspey: You're welcome. Before we go, I normally end on that question, but we're talking about glyphosate and there's issues with GMOs in and of themselves. It has to do with plasmid-level genetic drift and things like that that I'm concerned about, and I'm more concerned about glyphosate. We've talked about the disruption of the lighting of the tight gap junctions. There's some humic acid liquids you can drink that have evidence that show that they'll help you with that. One of the things that concerns me is that there's evidence that glyphosate replaces glycine in collagen.

Dr. Joseph M.: That's where the gly- in glyphosate comes from, glycine.

Dave Aspey: Exactly.

Dr. Joseph M.: Yeah, so it's just a metabolic inhibitor. It's one of the worst things you can do to your body is expose yourself. We're doing it to billions of pounds per year. It's crazy.

Dave Aspey: What that means is as you're forming connective tissue, your fascia, which communicates information around your body, allows you to have flexibility, allows you to recover from injuries. If you're eating even bone broth that's made with non-organic bones, guess what you're getting a lot of? You're getting a lot of this and your connective tissues will be electrically insufficient, not to mention functionally insufficient. You should expect to feel like crap when that happens. That's something I wanted to call out for listeners. It's not just that it ruins your digestion. That's just where it starts. We've got to stop that. I can tell you, if your neighbors are spraying Roundup on their lawn, it's an act of war

against you because it's not just on their lawn. They would be really annoyed if you started spraying pig manure into their lawn. I wouldn't suggest doing that.

Dr. Joseph M.: Well, typically they won't spray it on a lawn because it's targeting for weeds is what they do, maybe in their driveway and stuff, but it's still a problem. Most likely, if they're a normal consumer, they're going to be getting more from the food they eat than [inaudible 01:13:43] what their neighbors spray in the driveway.

Dave Aspey: That's a fair point. I guess my old neighbors didn't like mowing their lawn. They just sprayed their whole yard with it around every three months. Drove me nuts.

Dr. Joseph M.: That's unusual.

Dave Aspey: I'm like, "Guys, I have kids. You can't do that." They're like, "We have kids too," and then they're having bone marrow problems or whatever. You can only do so much. Dr. Mercola, it's been a pleasure to have you on for the second time. I'm really looking forward to having you at the Bulletproof conference. For listeners, if you like what Dr. Mercola had to say, you should come this fall. It's September-October Bulletproofconference.com and register and come here at Dr. Mercola's keynote. It'll be stuff you haven't heard before. That's hard to do because we put everything I know out there. It'll be a lot of fun.

Dr. Joseph M.: I'm currently, based on the discussion with your MC, thinking about doing all my biohacks, especially ones that you haven't mentioned in your books already.

Dave Aspey: Oh, very fun. People would just love to hear that.

Dr. Joseph M.: Yeah.

Dave Aspey: Awesome. Well, thanks, Dr. Mercola. People can find out more at Mercola.com. You've got a newsletter and the name of your book is Fat for Fuel. If you like the Bulletproof stuff, you're going to like Dr. Mercola's book, so it's definitely worth your time to read it. While you're at it, I would not be offended if you went out to orderheadstrong.com and pre-order the book because it helps. By the way, is your publication date, it's already out, right?

Dr. Joseph M.: No, no. It's May 16.

Dave Aspey: May. Okay, cool.

Dr. Joseph M.: We have a website, fatforfuel.org, where they can get a few special bonuses. They can't buy it on the site, so we don't sell it directly, but they can purchase it and show proof of purchase and then we give them some videos and other things.

Dave Aspey: Oh, same sort of thing that [inaudible 01:15:26] over Headstrong, and so fatforfuel.org. You can head on over there. It's the same thing. Dr. Mercola and I both have the same desires. If you order our books before they go out, it makes everything easier for the whole getting books to the right book stores and all that. If this is something you're going to do, don't postpone it because then essentially it's like not tipping the waiter. When you pre-order, you're giving us a tip and we give you a free stuff.

Dr. Joseph M.: [crosstalk 01:15:51] pretty well. The books been in the top 10 of all books on Amazon for the last few days, which is pretty cool.

Dave Aspey: Well done.

Dr. Joseph M.: It's two months out.

Dave Aspey: Very well done. I think we've hit top 50 with Headstrong, but not top 10, so good work.

Dr. Joseph M.: Yeah, so hopefully it'll be number one. I think these are both going to be some of the most important books this year because they're addressing foundational core issues that we need to help restore health and to help take control of it.

Dave Aspey: It'll happen. You heard it, everyone. Read Dr. Mercola's book and read it now instead of later, at least order it now instead of later. All right. We'll talk soon.

Dr. Joseph M.: Okay.