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Dave: You're listening to Bulletproof Radio with Dave Asprey. This is the second part of the interview with Dr. Mercola, done right after he got off stage at the 6th Annual Biohacking Conference, which was held down in Beverly Hills. We are now going to talk about some of the other things he shared with the audience on stage. Dr. Mercola, welcome back to the show.

Dr. Mercola: Yeah. Great to continue with you, Dave.

Dave: Let's talk about the other things that you shared with the audience. People were just abuzz with all the stuff you talked about, especially during your breakout session at the conference, but what else was on your main stage presentation that we haven't talked about in the show so far?

Dr. Mercola: Well, before I answer that, if you haven't listened to that episode one, please do. Because I had some comments about how I felt about what you did with the conference, and just to listen to that if you haven't. But extending the conversation, we all know that not eating for a few hours before bedtime is a good strategy.

Dr. Mercola: I think there's very few people who will dispute that, at least rational people. But I never really understood why that was. So, I mean, obviously putting your gut at rest is a good idea, but what happens when you eat close to bedtime? Well, I was doing some reading on one of my favorite new molecules NADPH, we talked about in the last episode that reduces oxidative stress. And it turns out that the one of the largest consumer of NADPH, like the largest consumer of NAD+ is PARP activation the largest consumer of NADPH is making fatty acids.

Dr. Mercola: So if you are eating food before you go to bed, you're not going to burn those calories, because you're not that active. So your body has to do something with them. It can't eliminate it magically through the air. So it has to store them and it stores them as fat, and to produce fat, it's making fatty acids. So you're consuming NADPH and you're lowering your NADPH levels, which is the last thing you want to do in the middle of the night when you're regenerating and repairing.

Dr. Mercola: So, it's just crazy to self-sabotage and eat before you go to bed. That's my belief is probably one of the primary reasons I haven't had a chance to discuss it with some of the resources, but I was actually right before podcasts. I needed to ping [inaudible 00:02:30] and see what his thoughts are on that, but I'm pretty sure-

Dave: He's the top guy.

Dr. Mercola: Yeah.

Dave: Definitely. When I interviewed him, the evidence is really clear. Eating after dark is not a good strategy. What is less clear though is that if you're planning to go to bed at 2:00 AM whether it's okay to eat at 10:00, is there a window? Do you have a thought on that?

Dr. Mercola: I do. I think it's, you need three, I think it's a minimum of three, ideally four. I do five or six hours before. So it's just when, it's before you go to bed. So if you've optimized your circadian rhythm, and I think you've changed since you had your stem cell makeover, you're going to bed earlier at least from what you shared on previous podcasts. So that's good. So, it's dependent upon your personal bedtime.

Dave: So three or four hours before bedtime. And I got to say, even if you are, what's Michael Breus, the author of "The Power of When" and a friend, and a guest on the show, when he talks about whether you're a wolf in one of the people who stays up very late at night and it was probably evolved to be the night shift to protect the tribe, or whether you're a lion, the people who wake up at four in the morning ready to kill, it doesn't really matter. You're somewhere in there. It's still ideal to eat before it's dark.

Dave: But there are other eating strategies. For instance, if you're working in the emergency room and you're going to stay up all night, or you're a student who's going to study till dawn, you probably do want to eat because you're going to get some stimulating things from it, but you're not sleeping, so you're going to use those calories. But otherwise, even if it's going to be a 2:00 AM night, and you're going to be writing till late in the evening, I would still say, eat before the sun goes down.

Dr. Mercola: Yeah.

Dave: You tend to agree?

Dr. Mercola: Yeah. I mean, ideally, that's the prescription for optimized circadian rhythm. One of the things, I almost always get perfect scores on my Oura ring or the circadian rhythm. It's like, it's 100% almost every time unless I'm traveling.

Dave: Oh, I got a question for you. All right. So we both use an Oura ring, and I'm making my very best, anytime I talk about something where I've become enamored of it. I'm an investor in Oura, I've become an advisor, I've become friends with Hapreet, he's been on the show. So I call that out, not to brag, but just so you guys know, I may have a bias, but with the Oura ring, I have found that I'm getting, it's very common to get an hour and a half of deep sleep, an hour and a half of REM sleep, even in six or seven hours of sleep. And sometimes I'll even get two hours of those, which is better than I've ever had in life. What's your average amount of time that you're sleeping, Dr. Mercola, and what are the typical amounts of REM and deep that you're getting?

Dr. Mercola: Well, I'm a bit older than you, and clearly, and I'm certainly not an expert in sleep, but I listen to a lot of people who are like Matthew Walker, and it seems that the amount of deep sleep tends to decrease with age. And it seems to be-

Dave: It does.

Dr. Mercola: ... the observation. So I'm not as optimized as you. One of my goals and I'm pretty sure I'll be able to hack it, would be to increase the deep sleep. There are many nights where I get zero deep sleep. But it would be-

Dave: Oh.

Dr. Mercola: ... but they've changed the algorithm. I don't know if you know this, but people like me [inaudible 00:05:33] getting five, six hours of REM sleep, but not that much deep sleep. But they changed the algorithm. Now I'm not getting as much REM sleep, so that you know, we're making assumptions here. They're using correlations between your rate patterns, because they're not measuring your EEG, it's just an estimate. So it's one of the best estimates we have now, but it's not an EEG assessment. I think Walker is working on some companies that are doing EEGs. I tried the dream, which is a little more accurate, but it is so cumbersome and the company's just-

Dave: Too heavy.

Dr. Mercola: It's terrible company. It really is.

Dave: Dream is, it's an EEG head helmet almost seriously.

Dr. Mercola: Yeah.

Dave: So, there may be a hack for you. I just interviewed Dan Gartenberg from Sonic Sleep. This is not the company. I find stuff-

Dr. Mercola: I like that. I haven't investigated it yet, but I've got tab opened up on my browser to look at it.

Dave: Try it on your phone. You'll have to put your phone on airplane mode or maybe run it through speakers from another room so you don't get EMFs from it. But I, especially when I'm traveling, I really noticed an improvement in my deep sleep from it. That was why I, this is another way of us. I'm an advisor and investor in that company too, because I find cool stuff and I'm like, "I have to help." So it's, that thing I think is very real and he's got \$1 million of NIH grants behind it. He's a professor at Penn State or University of Pennsylvania somewhere. I'd say it's the real deal as far as I can tell you, for deep sleep and thoughts.

Dr. Mercola: Yeah. I know. I was intrigued. It's intriguing. I just haven't had the time to go forward with it. That was on my list of things to do. But I've got an interesting

bite that you might be, it'd be interested. I just took a while, took me about a year to get it, but I just actually had it installed then completed yesterday. It's a float tank.

Dave: Oh, you have a float tank? Nice I have one downstairs too, you know that of course.

Dr. Mercola: Yeah. So it's magnesium sulfate and that has seemed to help dramatically. Now, this is a float tank constructed to do, it's structured water, and it's disinfected with ozone. But I believe this company has the potential to create a device that will put in nine to 10 parts per million of hydrogen concentration. So I could be soaking in hydrogen water. I mean they haven't developed it yet, but I think they will.

Dave: I want that.

Dr. Mercola: I said everyone like us is going to want one of those things. But I'll be the first to have it though.

Dave: Okay. Here's an interesting hack. I've been a little bit hesitant to try it online, but if you go to the back of a typical float tank, you can control the temperature. And normally we keep it around 94 95 about skin temperature. But if you wanted to do some of the heat shock protein kind of whole body hypothermia, there's nothing that stops you from putting it at 104 and floating in there. It's going to be a little hot. It's going to raise your body temperature, but you can actually have a short term fever, which is really good for getting down viruses, certain parasites, some slow growing gram negative bacteria that accumulate as you age. So I've been wanting to play around with it. The problem is I don't want to be alone in there, because if you end up having some sort of a heat shock issue, you don't want to wake up in the morning as a sous-vide.

Dr. Mercola: Absolutely. So that is a good segue into heat shock proteins.

Dave: Yeah. Let's talk about that.

Dr. Mercola: What do heat shock proteins do? Because you hear everyone bantering is about, oh and it's like every one of us is supposed to know what they do. Well I sure the heck didn't. So I had to look it up. So what do you think they do?

Dave: Heat shock proteins are things as far as I understand it, and I haven't dug in on some of the stuff other than looking at like the beneficial effects of some and hot cold exposure, but certain proteins in your body will denature, even at relatively small increases of this. And denaturing of a protein is when the protein changes its shape in response to heat. So as far as the understanding heat shock proteins are made when denaturing happens, but they're as repair systems. But there's probably a lot I don't know because like you, I am not an expert in them.

Dr. Mercola: Yeah. No, no. That was more than my understanding, but when I looked into it, and I've done quite a bit of review on it, and I certainly don't claim to be an expert, I believe, but I think I understand at a deeper level. It's actually, it's not denaturing, it's actually misfolding. And what shocked the heck out of me, but I've seen it from multiple sources now, that 30% of the proteins that you make right out of the box, right out of the box, 30% of them are misfolded.

Dave: Wow. I did not know that.

Dr. Mercola: Yeah. I didn't think you did. Not many people know that. So 30% are misfolded, and the mechanism your body has to repair that damage is heat shock proteins. And actually you'll appreciate this, because heat shock proteins are actually a corollary to autophagy.

Dr. Mercola: So what happens is that the heat shock proteins goes into, tries to repair the damage and to refold it. If there's so much damage that it can't refold it, it will tag it with a substance called ubiquitin. And a polyubiquitin is set molecule and then it goes through the UPS, the Ubiquitin Proteasome System, which actually degrades it and recycles the constituent elements to very similar to autophagies. It's a parallel course for autophagy.

Dr. Mercola: So the [inaudible 00:10:40] proteins are tops are really similar, I never knew that. But that's why it's so important to increase these heat shock proteins. And what else? Other nutrients I took during fasting sulforaphane, not only does it increase Nrf2 pathway, but it increases heat shock proteins and also it's a class II inhibitor.

Dr. Mercola: So these are the types of things that you want to do. So heat and that's why I use the sauna as part of the Keto Fast program, this is the sauna. I like the near infrared because I think you get the photobiomodulation with the two. So I use that, and then you can combine it with [Colt genesis 00:11:13] for sure. But there's other stressors. Exercise probably increases heat shock proteins as even some other oxidative stresses. So there's a lot of things that increase it, but I think heat is probably one of the most important ones.

Dave: I like that explanation, but essentially come on in and repair stuff. And it's funny what happens when you lift heavy? The same thing.

Dr. Mercola: Absolutely.

Dave: What happens when you use ozone therapy? Oh, here's a big spike in free radicals. I guess the Mitochondria that can't make protective antioxidants should die and be replaced by young ones that can. So all of these things are just extra stimulants that tell the body, you need to be able to handle more than you would if you were just lazy incidentally, and you weren't in a constantly sick, quickly changing environment.

Dave: So heat shock proteins are yet another way to do it. What's your take on the old Swedish technique that my wife's a fan of? Roll in the snow, get in the sauna, roll in the snow, get in the sauna.

Dr. Mercola: I haven't seen any research publish on it, but it seems to make sense because it's all about cycles, which kind of breaks it back to one of the other elements of the benefits of partial fasting as opposed to fasting mimicking diet, or water fasting, is that you can do it more frequently.

Dr. Mercola: Now, one of the cautions that those who should not partial fast or regular fast for a certain would be anyone with an eating disorder. Anyone who's underweight, or who is breastfeeding, or pregnant. Because pregnancy and breastfeeding are anabolic phases and you don't want to compromise those at all.

Dr. Mercola: So, assuming you don't have any of those things, then you really want to activate autophagy, and it's best done by a fasting. Intermittent fasting can do it some, but it's a really only a mild increase it'll get. You can get close to maximum with the keto fast partial fasting. But you can do that twice a week unless, you go below your preset ideal body weight.

Dr. Mercola: My case, it's about 180, 181. If I'm below 181, I will not partial fast, because I'll lose too much weight and I just don't want to lose weight. So, most of the times I can do it at least once a week. And if I'm at home when I'm not traveling, I could do it twice a week. That's another major benefit. So ideally you can get partial fasting autophagy benefits, and then the refeed benefits, which is according to Longhorn and I believe him, is most of the benefits from fasting occurs during the refeed. Especially if you have integrated it with the strength training and growth hormone benefits.

Dr. Mercola: Then you're going to do that over a hundred times a year. And no way are you going to be water fasting for a hundred days a year unless you're a morbidly obese, your body can't support that. It will make you very unhealthy, or even fasting mimicking diet, you're not going to do it that much. Most people do it and maybe once a quarter, maybe a little bit more, so you get a lot more benefits by doing it, and collectively you'll radically over increase the number of times that you can get it.

Dave: What's the lowest percentage body fat for men and women that you consider to be in the healthy range?

Dr. Mercola: Oh, that's a good question. That really depends on your individual goals. But if it's pure health and it's not some type of competition, because you can't dissociate that... Because people have a lot of competitive goals, and some people would take a pill that would kill them in two years if they could be a world champion. So we have to separate those two out.

Dave: So for people who just want to be healthy not people who are fitness models or something?

Dr. Mercola: I think for men, I really wouldn't go much below eight or 10% probably for women, maybe 15 to 20, somewhere in there. And I have a book. I think it's probably the ranges. I mean, maybe you can go down to 12 for women, but I wouldn't go much below. I think below 12 you start losing your period.

Dave: I think it's also problematic for women because some women have big breasts and they're made out of fat. And they can change size as you lose your weight, but if you just genetically have more fat there, your percentage of body fat, is going to be higher than someone who's smaller. So the range has to be a bigger range for women.

Dave: And then there's also a question of I think age for women because of fertility. Women are storing EPA and DHA on the inside of their thighs and on their hips. And most of that gets used for their first baby. So if you're young and in the fertile years, you probably should have some extra fat and it has a benefit there. So I think it's much harder to say what it is for women.

Dave: But for guys, what I've seen, below 10 is probably not ideal for anti-aging, may be eight. I have one friend who's been on the shows, is that he showed me his scans, he was like 2.3% or something. At that point your lungs can actually adhere because there's no padding in there. Your lungs can adhere to parts of your rib cage or your fascia in there and actually be torn. But he feels great. He looks good and he's in amazing shape. And I'm like, "Man, maybe you should eat more carbs or something."

Dr. Mercola: Yeah. Well, this is the whole thing. It's very clear to me that you just cannot do, well you can, but I would not recommend it if your interest is health, is to do chronic keto. It's a bad strategy. You can do it to attain metabolic flexibility and for some people might take a month, maybe even better part of a year. But once you got it, you do not want to be on a contingency. Your body needs carbohydrates on a regular basis.

Dr. Mercola: And in my case, I use a lot of healthy fruit, I've actually got a garden. I think it is bigger than yours now. I've got, I'm growing mangoes. I'm harvesting a gallon of blueberries a day now for like the last few weeks, I've got a little blueberry farm, and cherries, and peaches, and avocados.

Dave: But you're eating those seasonally though. I mean you're in Florida where it's very sunny. So a seasonal fruit, I get it. It's that at least where I am, I'm much further north in Canada. So we have, our blueberries haven't hit yet, but I'm going to be eating a ton of blueberries in summer when I get sunlight. But the rest of the time I don't use fruit. I use prebiotics because that works better.

Dr. Mercola: It's what is available. So especially if you can pick it off of your property, that doesn't get much better than that. But the key point here is that you're cycling in and out, cycling in and out. You just don't need it. You don't want to fast continuously. You certainly don't want to stimulate them to work continuously. You want to cycle between the both of them. And I think that's when you're going to optimize your health.

Dr. Mercola: And the frequency is based upon your specific body and you've got to learn to listen to your body. So, sometimes it might be more than twice a week. You want to do it or sometimes it's once every two weeks. So there is no right or wrong.

Dr. Mercola: We're just offering guidelines in the book and encouraging people to honor what their body's telling them. Listen to that feedback and then apply it and see how it works, because it's a work-in-progress and I don't think anyone's really come up with the ultimate research backed solution to do this. I mean we just have print general generic principles to guide our strategies by.

Dave: Anyone who does do it is going to have to have a copy of your genetics, and they're going to have to have a copy of your gut bacteria at least where they are now. And when you implement changes, three days later you'll have different gut bacteria. And so we will have predictability here. That's why those general principles that you're talking about in keto fast and just on your website and stuff, we're talking about these matter.

Dave: But this is the most important thing. If something works really well for your spouse or your friend, try it. But if it doesn't work well for you, it's not because you didn't do it right, unless you didn't do it right, it's because you're different and you have different circadian rhythms, and you have different everything.

Dave: So follow principles in tune for yourself. And that was the biggest mistake that I made 20 years ago when I was working on. I was like, "This seems to work really well." But guess what? Most people aren't a 6'4" formerly obese, almost muscular guy. So all of that really matters.

Dave: And so if for me to do the same thing, that would work really well for one of my friends from South India where they have a totally different genetic heritage, and a different diet that evolved over the course of tens of thousands of years, they might handle the goons better than I do, right? And that's okay.

Dave: And neither one of us is right or wrong. It's that mindset that I think that you carry well in your work and you've evolved your diet substantially over time based on evidence and based on what works. Where did you start out from a nutritional perspective? Like when you started Mercola.com in 1997, just walk people listening, how much you've changed? I'm really impressed by that.

Dr. Mercola: This basically started before when I was in like grade school and I was having margarine on white toast.

Dave: Yeah. Me too.

Dr. Mercola: Sprinkled with cinnamon sugar. Then I graduated to oatmeal or Quaker oats or something. That didn't get much better, it was definitely low fat. My fat intake was so low. Now admittedly I have a genetic defect for a hemolytic anemia called thalassemia Beta-thalassemia. So my cholesterol levels are low, but I got my cholesterol down to 75, which is-

Dave: That's bad.

Dr. Mercola: Yeah. That's criminal. That's not bad, that's criminal. It wasn't intentional, it was just an artifact of just following a low fat diet for me. That was pre-med school. But Med school wasn't much different. I didn't really understand this until I was mentored by Rosedale in 95. He helped me appreciate the, Ron Rosedale, a physician who has really popularized the insulin concept. And he was one of the first people advocating the importance of insulin because it was-

Dave: He pretty much discovered insulin resistance and he called it syndrome X, right?

Dr. Mercola: No, no. Syndrome X is a different-

Dave: Different author?

Dr. Mercola: Metabolic Syndrome.

Dave: Metabolic Syndrome. That's what I'm thinking of. Yeah.

Dr. Mercola: That was I think Gerald Raven.

Dave: Okay. Got it. I confused it.

Dr. Mercola: He's popularized it certainly in our community. There's no question he was the leader in that. And I was I remember in a lecture hall with him with like 15 of us. He was just explaining how insulin works, and it changed my approach, and really I started getting much better results in my practice clinically. But then you just learn more and more of the recent stuff as lectin issues that was promoted, widely spread by [Dr. Steven] Gundry.

Dave: And lectins were in the Bulletproof Diet too in 2014, but they're like one of five big things in food, but they're an important one.

Dr. Mercola: You were ahead of the curb, no question. Well, before I appreciated it. And now it's a definite part of any strategy I'm going to recommend if anyone for an

immune issue, no question to remove the lectins. But with respect to diet. I think the keto was like relatively recent, four years ago or so.

Dave: You were also mostly raw and kind of veg, not vegetarian-ish, maybe is the way to describe it for a while. I think it's evolved, and I did too when I was a raw vegan for a while I was like, "More raw's better."

Dr. Mercola: I was a raw vegan, but I did believe in raw foods and I still eat a lot of raw foods. But, it's not exclusively raw foods, I think it's not a sin to cook, especially some of these vegetables or to remove the lectins. It's really important to do that. So, it just evolves and you learn, and then I thought that regular continuous keto was so good. I mean, it was the best diet out there, so you should do it continuously. And my body taught me otherwise, and I realized it had to be cyclical, and then integration of the partial fast and I think is the newest revelation.

Dr. Mercola: And really I think is such a magnificent strategy to optimize your health. For people like us who really want to live as long as we can, at least 200 with having all of our functioning and intact and not being frail and having really good cognitive function, I think these are the strategies you've got to do.

Dr. Mercola: And addition to the one thing that I did talk about on the stage, which is my book for next spring, which I'll probably be back onto discuss when we have a lot of details, is the EMF. Because EMF, the biggest issue there, and I won't go in details because we really wanted to finish this conversation on the fasting, but it's another source of oxidative stress.

Dr. Mercola: It's a massive source and it's one that's surprisingly almost universally overlooked by almost every researcher. You can review the studies and they all talk about it, but no one is talking about the oxidative stress, the peroxynitrate, the carbonate free radicals. They're just ignoring it.

Dr. Mercola: And I'm interviewing David Sclar in about two or three weeks and I'm going to definitely have that discussion with him, and I'm going to see. I'll bet, but I'll bet he doesn't, he's not aware of it. It's not that he's foolish or anything, he just doesn't know. But it's a big issue. You can increase NAD all you want, but you've got to, before you remediate the damages, we all know that prevention is better. So you don't want to have the damage to begin with.

Dave: I remember going back a long time in Mountain View, California at the, I think it was called Red Rock Coffee, I don't know if it's still there. I sat down with the guy who held the first patent on ADA 211 B. The first Wi-Fi patent. And at the time he already was a senior researcher, had been working on this stuff for 20 plus years and he said, "Well, I'm retired now, but I'm taking the million-dollar test equipment that we had used in the lab to look at what these Wi-Fi schools are doing. And I turned it around and I pointed at humans."

Dave: And he opened up his laptop and he said, "Look at all these signals coming off of people. Isn't this amazing? I know there's health data in here. I think I'm going to be able to predict something."

Dave: And I've lost touch with him, a long time guy, wish I'd recalled his name, but this was 20 plus years ago. And that always stuck in my mind is like, "There's something going on here." And then you read electromagnetism in life and Robert [inaudible 00:25:02] books and all and you realize, "Okay. There's something going on here."

Dave: There's a book from 1984, the head of the Karolinska Institute, one of the top 10 hospitals out there, wrote a book about electricity in the body. And he wouldn't publish it until he retired. He's like, "Oh, they're going to try and take my license for writing this." And it's 800 pages of craziness.

Dave: So I've always, I believe that there's something here and it feels like your book may be one of the big factors in this, your next book in, in making people just pay attention to it, because it's absurd to think it doesn't matter.

Dave: This is a long lead up. But here's my big question for you. Do you think it's possible that we could build a communications infrastructure that use the right type of EMF, that it was actually biologically neutral or even beneficial for life instead of harmful?

Dr. Mercola: I'm pretty confident there is. It's just that there is no interest in this because of the perversion of the focus of the research from the wireless industry. It is absolutely in the exact opposite direction, but the first step is really implementing things that we did early on. I mean, when I started a networking computer at our offices, I think is the early nineties, we ran ethernet cable. Wireless didn't exist. All our computers internally were by Ethernet cable.

Dr. Mercola: We could do that in our home easily. You don't need wireless in your home. So that's a big part of it. The challenge to the more extensive challenges, especially with the introduction of 5G and the satellites distribution of that, which is going to make it essentially available over the entire planet, and wireless frequencies don't just affects humans. They affect every form of life on the planet, animals, insects, birds, bees, you name it, they're affected by it.

Dr. Mercola: So it's not just humans that are going to be impaired is, we're really destroying our environment. So I don't know, there probably are some ways to remediate it, but it would require some really bright scientists to understand that. Certainly part of the damage is due to the pulsing of the signal and the frequencies. So it's not going to be done though. I mean, big Pharma and vaccines are a big issue. But boy, I'll tell you, wireless is going to drop way after those things do.

Dave: Maybe I'm hopeful about it, but I think there's a \$500 billion plus business opportunity. The networking company that comes out with hard science that

says, use this networking protocol and people don't have this oxidative stress. There will be governments and small countries probably like Norway or someone will start at Finland or Sweden, and they're just going to say, "You're not allowed to use this stuff. That's like smoking."

Dave: And maybe there will be an insane amount of money, insane enough amount of money that a very large company's going to say, "If we can be the one to do this, all the other guys are going to have to get our patents. So come on engineering friends listening. I know there's a lot of you out there. Somebody get on this."

Dr. Mercola: Yeah. Well, there's certainly enough income in it, because the tobacco industry, farming industry, and wireless are a wall about the same role, over a trillion dollars revenues every year. So the revenues are there, and you're more of an electrical or electronic expert than I am certainly.

Dr. Mercola: But I would think that the wireless signal is one issue, but the more challenging one is going to be the cell phone radiation, which is a different set structure completely, I believe. Because I think remediating the wireless isn't that much of a challenge because you can obviously get rid of it.

Dr. Mercola: And I think that one of the biggest crimes we have is the introduction of wireless radiation in the classrooms. I mean, of any population that is at most at risk from this damage from this, it is our kids, it's thinner skulls, their brains have more concentrations of water, higher concentration, so they absorb this radiation more easily. And they're in the developmental stages of their brains so they're more susceptible to damage.

Dr. Mercola: And we are just decimating our youth. I mean even if we have our home as a safe haven, we send them to schools where they're getting bombarded with wireless. I mean it is worse. There's not a micro doubt in my mind, Dave, it is worse. The situation classrooms then every kid in that classroom is smoking. And we would just scream in horror if that was to happen now.

Dave: Yeah. People just, you look at the typical school lunch, and it's just deep fried God knows what. And I'm telling you as a scientist is really clear on that, eating fried stuff creates 24 hours of oxidative stress in the body, and smoking cigarette is only about 48 hours. So the fact that people aren't up in arms over the fact that we're feeding garbage to our kids, that seems like a low hanging fruit even compared to putting an Ethernet Jack on the desk, which is what we do at my house.

Dr. Mercola: Yeah. I couldn't agree more. You nailed it. It is to me the worst food you could possibly eat as a damaged oil, which is typically processed, industrially processed, and then heated. You have the sick policy, the cyclic aldehydes and trans fats, and these bad fats get embedded in your cell membranes, and the consequences are much longer than having sugar, which is like short term

typically and maybe increases your insulin level, but it's gone. It doesn't stick in your cell membranes for days or weeks.

Dave: It's a really, it's just an interesting perspective when we can talk about that and there's a lot of people listening right now and I know a lot of you are saying, "I'm going to go to the restaurant, but they have those really good deep fried Brussels sprouts or I like the Calamari or whatever."

Dave: Here's the deal. You can train yourself to just look at that and have a little thing that says not food. So if they set a wicker place mat on the table, you wouldn't want to eat it. And if they set the fried Calamari down, it's not that, "Oh, I really want to eat it, but I'm a good person. I'm not going to." You can literally train yourself like, "The interest isn't there. I want to eat the stuff that tastes good and makes me feel good because it's possible to do it."

Dave: And that just reduces pain in your life a lot versus walking around wanting the fried stuff all the time. You just realize once you don't ever eat it at all for a while, you have a bite of it. It tastes bad. It's not even as good as you thought it was.

Dr. Mercola: Yeah. There could be that element. But to me, once you're convicted, like we both are, and you know that in a molecular basis, what it's doing to your body, your aversion to it is beyond strong. It's like far worse than electric shock, and so much so that when you see someone eating it, you almost want to scream and warn them the damage and the danger they're doing to their body.

Dr. Mercola: But obviously you have to be socially correct, but especially, I mean, if it's a stranger, it's not a big issue you can't be screaming. But if it's someone you know and care for you just, Oh, I mean I just get so frustrated with them seeing this happen.

Dave: Yeah. I just realized I'm just going to keep doing what I do and I only talk about it now when people ask. Otherwise-

Dr. Mercola: Probably the safest strategy. But back to the EMF, my book's not going to be on until next spring, and so I hate to talk about something and inform people of the danger without giving them some resource. Before my book is published, the best resource out there, I'm pretty convinced is The Non-Tinfoil Hat Guide to EMF, and it's written by... Have you interviewed Nick?

Dave: I haven't. I've chatted with him a few times.

Dr. Mercola: Okay. Yeah. Nicholas Pineault. So he's a good guy. Kind of hard because he's a French, get that thick French Canadian accent. But his books and his work is really good. He really covers it very well. It's written in a very easy to understand language. So it's simple because it tells, because he'll walk you step by step on the strategies you need to remediate and protect yourself and your family.

Dave: If you're listening to this thing and you're saying, "Oh my God, I'm so overwhelmed. If these guys are doing all this crazy stuff." Just keep in mind our job is to find all the things, and stacking them in order of importance on what they're doing to your health. And then figure out the strategies that are least annoying to prevent the harm or to cause more good.

Dave: And that's just a very basic summary of the thinking process that's gone through in your 20, 30, 40, 50 years of just careful analysis because there are some things that you could do that might cost \$100,000 and take two years to do that might give you a little bit of a benefit.

Dave: But no one's going to do it because of the time and the money and all that. So knowing that it's possible is cool, but knowing why that might work and what could you do in five minutes and two bucks, that gets you a little bit of the way there, that's the stuff that I feel motivated to share.

Dave: And on the EMF stuff, I'm damn grateful that was cell phone. It is really useful and it's changed the world, changed my life. And I wouldn't want to change having one, but I would like to have all of those amazing benefits with the least possible harm, and maybe even with some benefits and like that's the direction. And that's the way to think about it.

Dave: So don't let perfectionism and fear come into your mind from hearing what we're talking about. This is playful curiosity and a desire to do all this. And here's my question for you, Joe. Do you do everything that we talk about now consistently?

Dr. Mercola: Well, nothing's 100%, but pretty close. Pretty close to it.

Dave: Yeah. You're pretty close, but you're still not. Yeah.

Dr. Mercola: Maybe plain no like having French fries. No, I'd never have French fry. That would be like suicide for me.

Dave: Okay. Yeah. And you know you wouldn't die if you ate it, but you'd be a little bit closer to dying, and so to consciously take a choice you're like, you know there's a better one. Especially when you don't have fear of starvation. And it's funny-

Dr. Mercola: And I don't think it's Orthorexia. I mean it could. People may think we're off the [inaudible 00:34:33] or the equivalent for lifestyle of Orthorexia but I don't think so.

Dave: No. It's also, Orthorexia, there's a fear involved, and there's a phobia where you're saying, "I can't do it." Here, I'm choosing not to do it because I don't like how I feel when I do it. And that's a very different awareness perspective. And also I can recall a few times in the past 10 years when I actually put the phone

up to my head when it was on and it was usually for me to say, "Hold on a second, I'm getting my headset."

Dave: But people probably saw me at the Biohacking Conference walking around with a phone up to my head. I'm going to just disclose a trick that I do, which I probably shouldn't, I put the phone in airplane mode and I stick it up to my head so people think I'm on the phone so I can actually get from one end of the conference to the other so I can be on stage on time.

Dave: Otherwise everyone wants to stop me and tell me about all the cool stuff. So that's just a signal that, "Hey, I'm not available." But I'm not cooking my head because I don't want the phone, I've never had a conversation with the phone by my head in the last, I got to say probably the last 10 plus years, because it's just not worth it.

Dave: But I also spent 10 years driving with the phone up to my head because we did it back then, because I didn't know any better. But bottom line is, perfection is not required. Don't be afraid if you do something wrong, but next time just work on doing it better. So, a little bit of preaching there, but I don't want to create fear.

Dr. Mercola: No. That's a good frame. I really appreciate you sharing that Dave.

Dave: Yeah. Because I have fallen into that trap where, like we live in a blue lit microwaved world, and it's the end of the world and you get this apocalyptic sort of hopeless sort of thing. That's toxic man. Just that mindset alone raises cortisol, and it's just-

Dr. Mercola: Oh, no question. I think to emphasize the importance to your body a few things, one is your body is designed to stay healthy. If you give it the things it wants, it needs, and requires, and avoid the things that are toxic to it, you have no other path. You just move towards health and away from disease. But part of that is this conventional society, is to create that safe haven at night, especially in your bedroom so that you can have this repair time there to recover from the damage you've done to yourself during the daytime.

Dave: Yeah. It just makes sense. That's how to do it. All right. Let's talk about one more big set of knowledge that you can share with listeners before we get to the end of the show. And that's, let's compare notes on lab testing. I'm working on my next book. My anti-aging book comes out in September.

Dr. Mercola: I'm looking forward to reviewing that. The book after EMF will be anti-aging, but it won't come out until 21 or 22, and it actually will probably be three or four books because it's already like 600 pages.

Dave: Yeah, it's amazing what's out there. And it's like, how do you choose what's worth it? And there's some things around water. For instance, you could spend thousands of dollars a month and get a 5% benefit, I'm like, "I'm not putting that

in there." But there are other things you know that maybe people haven't heard about it like, "Oh, frats live 30% longer than that." Pretty sure that that's worth it. Yeah. So maybe I'll try that.

Dave: All right, so lab tests. What are your, we'll say top five or seven recommended lab tests for people listening. So you're listening and you say, "I haven't really quantified myself." What should I be paying attention to?

Dr. Mercola: Well, there's no question on mind. The absolute number one and I feel very proud that I can be so egotistical for having catalyzed the interest in conventional medicine about this about 20 years ago was, vitamin D.

Dave: Yeah. Yeah. You really did that.

Dr. Mercola: Yeah. I don't get the credit for it, but that's fine. I'm just in it for the end result. But I was really the early adopter in spreading that message. And so vitamin D, if it's low, ideally it means you go outside and get some exposure, means you don't swallow a capsule. I haven't swallowed vitamin D capsule in 10 years, over 10 years. And I still, my levels are still 70 nanograms or 60.

Dave: You've got good genetics. I cannot keep my levels up from sun without also taking supplements. But I did some genetic analysis that showed that I pretty much wear white skin, I probably have the genes of a Pacific Islander or something like that, I need a lot of sun to get some vitamin D.

Dr. Mercola: Well, it's hard to get it where you're at, and you're in the lab. I have the opportunity, I get to choose to go outside of my home, ride my bike for about five minutes. I'm on the beach and I'm walking for an hour doing my reading. So if you were in that environment, I think you would optimize your vitamin D pretty rapidly.

Dave: Yeah. [inaudible 00:39:04] it'd be different. I tried to do the same thing and I just walk in a rainstorm.

Dr. Mercola: Yeah. Your latitude is too far north. So that would be the first one. Your blood sugar levels are really important too and you can-

Dave: Before we go on from D3 to get to the sugar one, what about vitamin A and vitamin K2?. It seems like those are synergistic. They work together. Do you test for all three or just D3?

Dr. Mercola: Well, K2 is really important and it works synergistically with vitamin D. In fact, many of the side effects or symptoms of deficiency are pretty similar. And certainly the benefits are most are really comparable. But K2 cannot be measured directly is the best of my knowledge. You can measure it indirectly through osteocalcin levels, but you can't really measure K2 direct. There is no commercial assay that I'm aware of for it.

Dave: Yeah. I think you're right on that. Yeah.

Dr. Mercola: Yeah. So vitamin A or retinol is useful. I don't bother with it because if I just eat more of a paleo type diet where I'm getting regular vitamin E sources. I have raw grass-fed butter nearly every day, and I don't go out of my way. I mean, if you're taking [inaudible 00:40:14] to be even better, like liver, I don't tend to eat liver, I don't particularly care for it. So I don't take that vitamin. I don't typically screen for that.

Dave: You don't screen for either one of those?. So just straight up D3 is what you go for. All right.

Dr. Mercola: Yeah. Because that's your biggest bang. I mean, that is such a profoundly crucial, and vital nutrient and it's just criminal not to know what your level is.

Dave: Okay. So number one is D3. Now, what do you do for blood sugar?

Dr. Mercola: Well, you can measure that yourself, easily and ideally you'd like to get it below 90. Now, just like ketones the higher the better. Well, the blood sugar, the lower the better. Not necessarily. I think that probably the optimum for a blood sugar, somewhere between 80 and 90, maybe mid 80s, maybe low 80, somewhere around there. I mean, it's not that the 70s is terrible, but it may not be optimal.

Dave: But below 87 is what the Life Extension Foundation has advocated for, for at least 20 years as a fasting blood sugar. And it's \$10 or \$20 for a meter. It's very easy to get that number. So you recommend people test that?

Dr. Mercola: Yeah, you can get the bare contour. I think it's \$7 and the strips are like 25 cents, and you might even get 10 free when you buy it for seven bucks. I mean it's pretty, it's basically free. Then as an extension of that you can do insulin. And if you really are curious, you can get a book by the now deceased Joseph Kraft who wrote a book on Diabetes.

Dr. Mercola: And in that book is a series of diagrams and illustrations and tells you, explains how to do the analysis. You can do an oral glucose tolerance test where they give you a 70 gram glucose load and then sequentially measure your glucose and insulin levels between like 30 minutes, one hour or two or three, four hours. And based on the rise and fall of that, you will be able to determine if you're insulin resistant, because 85% of the population is insulin resistant.

Dr. Mercola: So it'd be nice to know. It's not imperative because if you are able to generate ketones, you're probably not insulin resistant. So you can just measure your ketones as an alternative to that, just to determine that you're metabolically flexible and continue to be. Because you can fall off the wagon and not be metabolically flexible anymore, it's possible.

Dr. Mercola: I like ferritin and I had recommended it for a long time to measure your iron levels. But one of the other cool people I met at your event was Joe Cohen, who, I don't know if you know of him but he runs this-

Dave: Yeah. I know him.

Dr. Mercola: ... Self-decode or Self-tact. And so I was able to meet him. He sought me out, specifically went to the event this year event to see me, and he changed my mind on ferritin. I actually had just a phone call with him for about an hour last week.

Dave: And I used to think it should be below 40 nanograms per deciliter, but I think or similar to the levels of vitamin D, which we didn't say the optimum. It should be over, at least 40, it should not be lower than 40. If you get your number back, and ideally I think between 60 and 80 is a sweet spot for the vitamin D, or 25-hydroxy D levels is the actual name of the test.

Dr. Mercola: And there probably is some benefit to measuring the active form of vitamin D2, which is 1,25-dihydroxy D, and I forget, there's another name for it. I just forgot the name. Bob Miller's associate, Emily Gibbler was just giving me some insights on that recently, the value of measuring that I'd always discounted in the past, but I'm going to start looking at that.

Dave: But it turns out that there's a bacterial thing that can happen that affects your ability to create active vitamin D. There's a really interesting paper that came out about that last year saying that there might be something going on, either microbiome or infectious that's affecting what's called VDR vitamin D receptors.

Dave: So that could be why measuring the active form is good. And they found people with more bacteria have less activation of vitamin D and found pretty strong correlation. So basing, what's your D3 and is it active? Would be really good. Got a ferritin test under 40.

Dr. Mercola: That's what I thought until I talked to Joe, and I was basing it on a number of things, that typically people who donate their blood a few times a year tend to die less from heart disease and cancer. And that may be one of the reasons why postmenopausal women have less heart disease because they don't have their monthly menstrual cycle, then they dump a lot of the iron.

Dr. Mercola: But it may be that the sweet spot for fair to it might be between 100 and 150. And based on that conversation, we've reviewed a lot of studies and I haven't had time to go and independently review it because I'm just busy, but maybe between 100 150 and I actually, I've started eating red meat again as a result of that because [inaudible 00:44:54] iron is the best way to increase your ferritin. Because I had gotten my ferritin down to 25 and I think that was too low.

Dave: Yeah, it can be too low. You don't want to be anemic.

Dr. Mercola: No. Well, it's hard for me to tell because I have this beta thalassemia, which makes it virtually impossible as a diagnosed anemia because of the confusing impact it has on your red cell indices. Yeah. Because I am 100% every single time blood test anemic because of the thalassemia. There's no way around it unless, well that's not true. Some of the gene editing techniques from [inaudible 00:45:26] could do it. But then I might be candidate for that sometime in the future. I don't know.

Dave: All right. So give me two more tests. We got ferritin, insulin, blood sugar, and D3. What else?

Dr. Mercola: Well, as an extension of the ferritin, you could measure GGT. That's a liver enzyme, Gamma-glutamyl transpeptidase, and ideally in men it should be about 15 or 16. And women, it should be below 10. And if you have severe oxidative stress, that will go up. Yeah. So that's-

Dave: Okay. So to look at oxidative stress, I'm surprised thyroid's not in here for the average person.

Dr. Mercola: You could test for it, but it gets to be complex and to help people understand, and debug it, it's like a whole two or three podcasts by itself to explain it, because that's something-

Dave: Yeah. Understanding T3, rT3, and T4.

Dr. Mercola: It's not something that I monitor on myself every day or all the time, because it's not.

Dave: It's not.

Dr. Mercola: It's not. I like-

Dave: For daily monitoring, I'm just thinking a lot of people haven't gotten into the daily or weekly or monthly sort of thing. But subclinical hypothyroidism is just so common, and even a very slight decline in thyroid as you age increases or cause mortality, especially on the cardiovascular front. I almost feel like if you're over 60 you should be taking a quarter grain natural thyroid because you'll probably live longer.

Dr. Mercola: Well, I wouldn't go that far. I'm over 60 and I don't take a quarter gram.

Dave: Yeah. You know you're also exceptionally healthy for your age too.

Dr. Mercola: I would take iodine. I do take iodine every day.

Dave: Iodine and tyrosine might be enough by themselves, right?

Dr. Mercola: Yeah. Yeah. So and not having any autoimmune issues, addressing that. So part of it is vitamin D, but I think you're right anyway. TSH would be a simple thyroid screen if you want to keep the costs low, and the traditional standards for normal would be above five. The higher the TSH, it's a negative feedback loop hormone. So the higher it is the worse your hypothyroidism, but that's probably the wrong number. It's probably like 1.5, anything above 1.5 is potentially problematic.

Dave: Yeah. Agreed.

Dr. Mercola: That would be a good one to screen for it. I mean you could do a chem panel profile, it's just a general screen and CBC. I do those every month just to make sure that I'm, because I test my blood every month, every month. And I measure, here's what I think everyone should look at I neglected, would be, it's a general screen for inflammation, which is a high sensitivity CRP.

Dave: Yes. That's on my short list for sure.

Dr. Mercola: Yeah. So and ideally the lower the better on that one. And ideally you'd like to get it down to 0.2. Now if you've got a cold, or a cough, or you're recovering from something.

Dave: Or you just lifted.

Dr. Mercola: Yeah. Or you just lifted, it will go up. That's another good point. Thanks for that question, because I learned that lesson. Your insulin level will, everything goes up. Do your blood work before your exercise, not after.

Dave: In fact, I had this weird thing, this is going back a while. And I was really experimenting cold therapy. I had kept my hsCRP levels exceptionally low for the last couple of years before that. And then I went to sleep with some ice packs on accidentally, and I got first degree ice burns on 15% of my body.

Dave: Two weeks later I did my panels on my hsCRP, it was just through the roof and it's because I had pretty substantial systemic inflammation from the ice. It was kind of scary until I realized the correlation there. So, if you have a onetime thing there, it's a problem.

Dave: I usually tell people, if you're going to do inflammation, which is the underlying causes of almost everything, even low vitamin D is going to reflect an inflammation. So hsCRP is a top one for me and I look at homocysteine, which is a substantial cause of inflammation for people as well.

Dr. Mercola: A little more expensive to test on a monthly basis. That's one of the pricier ones actually.

Dave: Yeah, I guess that should qualify if you're going to do your annual thing, because a monthly homocysteine is expensive, but if you've never had a lab test, you want to know, if there's a problem.

Dr. Mercola: Yeah. I couldn't agree more, but just the monthlies would not be homocysteine.

Dave: It won't change that much monthly anyway. You do that twice a year. And then the other one is Lp-PLA2, which is expensive, but if anything you're doing, whether it's lectins, metals, lack of vitamin D3, excess calcium, doesn't matter. If you have damage to the lining of arteries, Lp-PLA2 goes up because it's an enzyme that's released from damage in the arteries. So I look at that as one of those important, but expensive tests. Thoughts on whether that's worth doing. If you've never done any of that stuff.

Dr. Mercola: I think it's fine. No problems with that at all. I mean, it's certainly better than do a total cholesterol, which is close to worthless. I mean, it's absolutely close to total cluster. You can do ratios and stuff. I've interviewed Malcolm Kendrick for his new book and boy he is just, I mean it is not cholesterol. He described 10 patients to me with cholesterols over 600 to 900 that were like in their '60s to '90s. They had no evidence for heart disease, none.

Dave: There's familial hyperkalemic.

Dr. Mercola: Hyperkalemic, which I thought was an indication for status, but it's not. Absolutely not.

Dave: Yeah. One of my good friends, I've worked with them a lot on it, and he's gone around to some of the top experts in the field, and privately most of the physicians working on this will say, "We just don't know, but it doesn't appear that this is going to be harmful for you. And we do know people who live longer when they have higher total cholesterol on. It's correlated with longevity and they handle toxins better."

Dave: So I kind of think it might be a superpower if you have that, but there's probably some cardiologists listening going, "Dave, you're a total jerk." Because I said that. I don't know. But having gone really deep on that, I'm pretty sure that at least in some of those cases it's completely non harmful, and if it is harmful, you should see it in your Lp-PLA2, and your hsCRP, like if it's a problem, show me the next step, which is inflammation.

Dr. Mercola: Yeah. And there may be these people's justification for the encouragement of the use of statins that they do provide some benefit. But virtually I'm absolute certain that any benefit biologically they provide is not related to lowering cholesterol. It activates the Nrf2 pathway. I don't know if you knew that. It increases nitric oxide.

Dr. Mercola: So it does some beneficial things, but there's so much less dangerous, and more effective, and certainly less costly ways to do that than to taking a stat and drug. I mean that's the last thing you'd want to take. I don't think there's any indication ever to take a stat and drug, and one out of four adults over 40 in America are taking them.

Dave: Sounds like a good marketing deal to me.

Dr. Mercola: Yeah.

Dave: All right, Dr. Mercola. I've got one more question for you. It's my new question on the show. You remember my last one, probably three most important piece of advice that was the basis for game changers?

Dr. Mercola: Yeah.

Dave: My new one is because my next book on anti-aging. How long do you think you can live and how long do you want to live?

Dr. Mercola: Well, I was waiting for that question today because I've given you a lot of thought, and you've been a real inspiration to me, to motivate me in the right direction. But I'm pretty confident that I'll live to at least 100, but not just at least 100 in a specific way, having basically my hope and I believe it's fully possible to sample all the functioning I have right now, if not more, both in mobility, a lack of pain, cognitive function, and lack of frailty, and muscle strength.

Dr. Mercola: So that's my goal. And the primary goal to do that is because I believe pretty strongly that in the next 30 years or so, we're going to have access to technologies which will bridge us to your goal of 180. I've met some interesting individuals that give me great confidence that this may be even much sooner than the next 30 years.

Dave: It's happening.

Dr. Mercola: It could be the next few years. And I know you've done your stem cell make over, and I'm sure that provided some benefits. I'm not a big fan of stem cells for a number of reasons because it's DNA that you're putting in your body, the exosomes are much more favorable though.

Dave: But talking about those, this is my own stem cells.

Dr. Mercola: I get it. I get it. If you're going to do a stem cells, it should be [inaudible 00:53:27]. But then you still, you're draining your own stem cells, stores you're going in and basically, and taking your adipose tissue from your bone marrow, and bone marrow is not an unpainful procedure.

Dr. Mercola: So exosomes I like better because there's no DNA involved. But still, I think there's levels that are beyond that. And in order to magnitude most. I mean, you know about the Horvath clock, right? The DNA methylation clock?

Dave: Yeah.

Dr. Mercola: So Horvath and another guy, actually I'm working with the guy now, who's pretty good friends with Steve Horvath. And Horvath thinks this guy's got one of the best shots figuring this out, because that's probably the best genetic or genetic marker that we have of how old you are.

Dr. Mercola: It's your DNA methylation clock, better than telomere length, which is so flawed with inaccuracy, it's ridiculous. So I think these strategies exist, and we're talking about change. In 2012, the Nobel Prize was awarded to Yamanaka. Are you familiar with that Nobel?

Dave: I don't remember the guy's name. What was it for?

Dr. Mercola: It was a set of activity. He found a gene set that were activation factors that when they were implemented in inserted into cells, they essentially reset the biological clock to zero.

Dave: I've got to get me some of that.

Dr. Mercola: Yeah, yeah. That's what I'm talking about.

Dave: I'm planning that in my coffee tomorrow.

Dr. Mercola: Well, no, no, no. This isn't model's very sophisticated gene editing test scores.

Dave: Of course.

Dr. Mercola: But, one of the researchers I'm working with is actually, works out of George Church's Lab who is a professor of genetics at Harvard, and actually I think he's still one of the co-inventors of the CRISPR-Cas9.

Dave: I think so.

Dr. Mercola: So using these gene editing techniques to insert these activation factors into [inaudible 00:55:19] stem cells to reset your stem cell back to aging zero. So even though you're 70 years old, you can get stem cells reset down to zero.

Dave: In fact, I wrote about this in my upcoming book.

Dr. Mercola: Oh, you did?

Dave: That's why the name was there, and there you can already get, I'm just trying to remember. They were doing some sort of interesting, they were reversing adult stem cells, back so they can do whatever they wanted with them and turning them into NK cells. And then introducing those to cause rapid reduction in the aging of your immune system.

Dave: And it turns out you can culture your own NK cells and do something kind of similar. And I've actually done that, and I wrote that up in the book. So I took out my stem cells, cultured them in a lab and put them back in.

Dr. Mercola: Interesting. Well, you mentioned a point that I didn't appreciate until recently, but your immune system is enormously responsible for how long you're going to live. And in fact, it's an impaired immune system that takes most elderly people out. We're talking about the '90s or 100 year old people.

Dr. Mercola: Usually they get an infection, they're healthy and just full of vitality and they get an infection, they're dead like in two days. It's because of some type of impairment in their immune system. It seems to be the major reason that they're taken out.

Dave: It sucks because if you're going to make it to 90 or 100 in good health, it means you didn't have an overactive immune system when you were young. Because a highly active immune system is going to create a lot of tissue adhesions, and a lot of essentially cellular level scar tissue throughout the body that slows things down and makes you likely to die of a bunch of different amyloid plaque related things, not just Alzheimer's, and other kinds of plaques or sorry, other kinds of amyloids.

Dave: So if you have a low to normal immune system, you can live a long time, but then you get taken out by a bacteria. If you have a high immune system, when you're young, you get a much more of the different causes of aging, they get made much worse. So you have to be able to reverse that stuff.

Dave: But then when you're old, how do you stimulate the immune system? And there's some really cool peptide things that I do that I think most old people should be doing, that I put in the book, where can you get the thymus gland of a 20 year old into a 100 year old? Well, peptides, you can get pretty close to it without having to transplant the thymus gland. So that seems like it would appeal to me.

Dr. Mercola: I couldn't agree more. Another issue I've neglected to mention that's partially related to this is the removal of senescent cells. And I'm sure in your book there's eight strategies that most all anti-aging researchers agree on. And removal of senescent cells is one of them. And there are some centers that have therapies now.

Dr. Mercola: James Kirkland of Mayo clinic is one of the primary researchers, and he just published the first human trial earlier this year. He used courses in the [inaudible 00:58:01] but [inaudible 00:58:03] probably works even better I think. But you've got to use it either, you can either reject it or you can use a transmucosal rob. So removal of senescent cells, if you're going to do that, the question is, senescence therapy is not something, you do it a lot less frequently than autophagy. Probably only once a month. You don't want to do it more than just a month.

Dave: That is definitely something that I'm also writing about because there are cheap ways to remove this. And I mean, senescence of course it's one of the big ones, but yeah, you do it too much? Maybe you don't want to do that. So we're still in the early days of figuring out the right timing and all that. And I got to ask you, this isn't a normal part of my question at the end of the show, but you said only 100 and-

Dr. Mercola: No, no, no. That was the bridge.

Dave: Oh.

Dr. Mercola: Yeah.

Dave: Oh, 100 until you get the new tech, that's going to get you up?

Dr. Mercola: Yeah.

Dave: Okay. And I believe that more.

Dr. Mercola: I'm hoping I have the new tech before. I don't know that I put a limit on it. Now it's interesting. There are many animals that live hundreds of years old. I mean whales and [inaudible 00:59:09]. So there doesn't appear to be any biological limit or need to die. It is not some biological law.

Dave: Yeah. It's built into our species. But I'll build that right out.

Dr. Mercola: Yeah, I think it's doable. I think you're right. It's doable. I certainly wouldn't want to hang around being frail and demented. But I think it's possible to at least, I think your 180 is rational. And certainly not as out there as Diamandis' seven or 800, but even that, might not be irrational either.

Dave: I love Peter and I hope we're hanging out when we're both in our '800s. I really hope he's writing and I do put the last phrase, at least 180. So that's my floor.

Dr. Mercola: But I'm telling you, you know Peter better than I, I don't know him at all really.

Dave: He's great.

Dr. Mercola: But, anyone who's got the strategy to do it. I think it's you and not him. I really do. I think you're more tied in to what's going to do it than Peter is, but I could be wrong. He's got Craig Venter relationship, and as these does a human longevity institute, but I don't, I've never, if he does have the strategies, I've never heard him discuss it, like you do.

Dave: Peter, he's a dear friend and I just love being around him because of his energy, his true great love is space.

Dr. Mercola: Space. Yeah.

Dave: He's part alien. I think he just wants to go home. And in the best possible sense, I'm saying that. And he also cares a lot about longevity. But man, when you put one thing where the thing that makes his eyes sparkled, it's space, and discovery, and science. And this is one of the many buckets that he plays in.

Dr. Mercola: Yeah. But he doesn't have it nailed on like you until he gets your strategies. And I think you're really on top of this field. He's not going to get there, because you just don't do this by wanting to. This is not [inaudible 01:00:55]. This is, you have to be pragmatic and implement these strategies or it's not going to work. And that's why I wrote "Fat for Fuel". That's why I wrote "Keto Fasting". And "The EMF" book. But because in my view, those are the foundational strategies that are absolutely prerequisite for you to get the base to do the next step.

Dave: Yeah. You got to dial those, and I agree with you, and I think there's the least known about EMFs, right now. I know that there are risks, and I know some of the mitigation factors, but we're going to know a lot more. Because even though the industry doesn't really want us to talk about that there's enough people doing research, that isn't paid for by industry all over the planet.

Dave: Look, it either is or it isn't just like tobacco, just like asbestos. And here's the deal, there are benefits to asbestos. There really are.

Dr. Mercola: Sure?

Dave: It doesn't catch on fire.

Dr. Mercola: Yeah.

Dave: For one thing, right? So you can use it safely, in some locations, and it has to be encapsulated, but you have to know the risk, and you have to choose a risk reward. And if you deny that there's a risk to anything, and it doesn't matter what it is, then you've become religious instead of scientific.

Dave: So let's figure it out and continue to be curious on every front on everything and maybe we'll learn something we didn't know 20 years ago. And that's the progress of science in every discipline, it's based on curiosity.

Dr. Mercola: Couldn't agree more.

Dave: All right, Dr. Mercola, thank you for being on two episodes of Bulletproof Radio. It's always fascinating. I love getting to hang out in person like we did at the conference, and there's so much cool stuff to learn, and thanks for your kind words.

Dr. Mercola: Yeah, absolutely. And I look forward to connecting later this year when I'll be up in [inaudible 01:02:33] with you.

Dave: Absolutely.

Dr. Mercola: That should be-

Dave: Talk with you soon. If you like today's episode, you know what to do. You should check out "Keto Fast" because Dr. Mercola knows what he's talking about. And if you didn't know that beforehand, now you know. Have a great day.