

Speaker 1: Bulletproof Radio, a state of high performance.

Dave: You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that the Gurage people in Ethiopia raise something called Zebu. These are cattle that are mostly kept for their butter and the typical household has a huge amount of spiced butter aging in clay pots that hang from the walls of their huts. By the way, this would be like Disneyland for me. And for this tribe, butter is believed to be medicinal and the Gurage often take it internally or they even use it as a lotion or a poultice. A proverb in that tribe says, "A sickness that has the upper hand over butter is destined for death." They use a different species of Ensete, or actually, I'm probably saying that wrong. Ensete, which is commonly known as an Ethiopian banana are also part of how they alleviate illness because that would have a lot of fermentable fibers to feed healthy bacteria in the gut.

It's kinda cool that you have a whole people who realize, "Oh, butter has interesting stuff in it," probably mostly butyric acid and vitamin K2, and you got to have some fermentable fiber. And if you're all keto all the time, the way I certainly have experimented with when I was writing The Bulletproof Diet, I think there might be something to be said for having some fermentable fibers so you have healthy gut bacteria, and you're not going to get that from one serving of vegetables a day or an all meat diet. When I tried that, I gave myself food allergies. So, I'm a huge fan of keto. I always have ketones present because I use Brain Octane, but I don't eat no fermentable carbs, and even if I lived in this amazing tribe in Ethiopia, I still would be eating fermentable carbs along with my butter.

Before we get into today's show, speaking of that strange combination of amazing fats and fermentable fiber, if you have not tried the new flavor of Bulletproof collagen bars, we have chocolate chip cookie dough and mint chocolate chip. These things are over the top amazing. They're the best tasting bars, not just I've ever created, that I've ever eaten. And yes, I am the CEO so maybe I'm just saying that to sell you except I'm not. They're that good. When you try one, you're going to know what I'm talking about. And you'll get one of the top ingredients in these bars. It's inulin fiber, which is a fermentable prebiotic source that your body can use, or the bacteria in your body can use, to grow. So, even though you're getting the ketones from the Brain Octane or XCT oils that's in the bar, you're also getting these fermentable fibers. If you haven't tried these new flavors, seriously it's like dessert except you're full when you eat it, and it's awesome and amazing. Go to bulletproff.com and check out the mint chocolate chip and chocolate chip cookie dough bars.

Today's guest is a guy who was on stage at the Bulletproof Fifth Annual Bio Hacking Conference in Pasadena. He talked about something that I was really glad to bring to our attention as bio hackers, and it's generational toxicity. In other words, what's going on with you, even if you're performing really well but not as well as you want, it's probably what your mom and your grandma did, so that whole blame grandma thing might have something to be said for it. In my case, both of my grandparents actually worked in Los Alamos, New Mexico, on the basically nuclear engineering programs on nuclear power and things like that. And my grandfather was exposed to almost every element on the periodic table and was one of the guys who helped to co-discover americium, one of the

short-lived radioactive isotopes. You want to know why I'm so weird as a bio-hacker? Maybe it's radioactive multi-generational toxicity.

And to dive deeper on that, and all this, I've got a guy here for you. This is Doctor Dan Pompa, who's a big leader in health and wellness. He's looked at all these things like weight loss resistance, like when I couldn't lose the 100 pounds of fat I had, thyroid, diabetes, chronic fatigue syndrome. But I want to talk specifically with him today about what the toxins in our environment are doing for our performance now, later in our lives as we get old, and hopefully don't die of chronic degenerative diseases, but also what they do to our kids and our grandkids. Doctor Pompa, welcome to the show.

Dan: Yeah, thank you for having me. It was hard for me not to chime into those interests. Those are some great topics. We could've stayed right there and I would've been happy. That was great and you made me laugh as well.

Dave: Awesome. So, if people who are super bio hackers, or just really interested in [inaudible 00:04:33] performance, might've seen you at the conference, a few thousand people, but this is a much bigger group of people who might not be familiar with your work on this. What got you into, as a physician, looking at something that's almost considered unimportant or just kind of freaky zone to most doctors now, like there's low level toxicity thing. What woke you up to this?

Dan: Yeah, pain to purpose story. I didn't say. "This is a great idea." It didn't happen that way. I got very sick. I was actually in the best physical shape of my life. I was training for these bike races and racing at the expert level, and fatigue hit, so like most of your listeners that are athletes would say, "I'm over-training." And I took time off the bike and came back and I was actually worse, if anything. I went from fatigue to insomnia to panic attacks to ... My adrenals were shot. I couldn't even deal with loud noises, let alone any stress. My thyroid was gone. I mean, my hair was thinning. I mean, all these things were happening that ... Unexplainable, had no clue why. It took me some years to figure it out.

In that process, I was downstream like most people, trying to help my adrenals, my thyroid, my hormones. I was getting skinny fat. I was losing muscle, gaining fat. All these things that you mentioned, yeah, I experienced every one of them. And in it, I was led to the answers that I teach today. That's the pain to purpose experience, so that's what inspires me about the topic.

Dave: A lot of the guests who've been on the show, who've really gone on to discover new and important things that matter, that no one ever noticed before, had to deal with, "Okay, I'm skeptical of these things," or it's not a point of what I'm taught as I'm going through a training in healing. And then all of a sudden, like, "Oh geez, I hit a wall." And you realize the patients who are coming in, who are sick and don't get better, the typical doctor's like, "Oh, they're actually lying to me. I know they're eating Snickers bars every day." Like, clearly it's a compliance thing or they just have something like, "Let's put them on antidepressants," like they're wacky.

Dan: It's told to me, yeah.

Dave: Me too, right? And in it, I was led to the answers that I teach today. That's the pain to purpose experience,

Dan: What you just said happened to me. The very frustrating part, I would go and my blood work would be relatively normal. It was very frustrating. Honestly, I wish cancer would've showed up because at least I would know what I was up against, and that didn't happen. When the blood work shows up normal, even my thyroid blood work, even though I had all these thyroid symptoms, of course then you're told it's all in your head. It was in my head all right, the toxicity of mercury was in between my ears is what it ended up. Unfortunately, it took me three or four years to figure that out, but in it, I learned a lot through the process.

It all had started few days, as it turned out, after I got two silver amalgam fillings drilled out. As you know, your audience probably knows that they're 50% mercury, but I was building up the mercury in my tissues even before that, and obviously I had a mouthful of amalgam, so even when they removed those two, I still had at least six others. They'd put gold in, which created galvanism it's called. It's basically a battery effect. You have two opposing metals and an acid and that created a current that the mercury was pouring out. I wore contact lenses basically through the '70s, 80's, and early 90's. It had mercury in the saline solution, and I was putting that directly under my brain, so multiple sources. But as I looked back, as today's topic, a lot of it also came from my mom, and so generational toxicity plays a role. Even for those who are listening to this that don't have the sources that I had, that just added to my bucket overflowing. That's what happened in a nutshell.

Dave: My very first book was called The Better Baby Book. It was what do you do before and during pregnancy to have the healthiest possible kids, and I looked really deeply into epigenetics and what we know, what we don't know, what we think might work. I'm like, "Let's just do all this for my kids," but it's actually for my grandkids, where I think the biggest impact might be, because my kids are paying for what my wife's background was before she got pregnant, and for her mom, and for my mom. It's not like dads don't have a role here, but there's more of a maternal problem with this than there is paternal, although the quality of the father's sperm is definitely influenced by environmental toxins as well.

Dan: Absolutely.

Dave: How did you go from, all right I hacked myself, and now you're full of energy and you're on stage all the time and helping a lot of people. How did you go from there to looking at mothers and grandmothers, and in traditional Native American seven generations back. What shifted your gears there?

Dan: It's actually a great question. No one's ever asked it quite like that, because there was a progression. I learned, I got myself well, and then it led to where my wife started having different hormone challenges, I would say like most women. However, her mom had

just died of breast cancer. Well, no, she was a breast cancer success survivor and 10, 12 years later, because she never got to the cause, important message there, she ended up with uterine cancer and died two years after that. Because of that, we ran a 24 hour hormone test on my wife, urine collection for 24 hours. Her estrogen metabolized, one of which is very, very toxic, called 4-Hydroxyestrone, which was through the roof. That is known to be linked to cancer, especially breast cancer. She was going to end up just like her mom.

Her methylation, on this test, was depleted. Now, your audience, methylation is used for a lot of really important things in the body, including detox, and including detoxing toxic estrogens. When this gets depleted, not only are you going to build up toxins, but you will absolutely build up toxic estrogen and turn on bad genes, so very important. So, her methylation was very low. We were trying to support that. She didn't have the gene that would indicate that it would be hard to support, so she didn't have that SNP, but we couldn't get this methylation up. I ended up doing a heavy metal test on her and my mercury was off the chart, and I had high lead. However, her lead was ridiculously off the chart. And so when we ended up addressing her lead correctly, then we were able to get her methylation up, and then her hormone test came next as being normal.

Here's what ended up happening. My children, who were raised perfectly ... My children weren't vaccinated, born at home, unbelievable diet, nursed, the whole thing, started getting some GI stuff going on. We were surprised about that of course. And I said, "I'm going to test their lead," because I'd read that the number one source of lead is mom. They're lead was off the chart. They got it from her. My wife, guess where she got? From her mom. As it turned out, that was her mother's hormonal deterrent. The bottom line is, that's what got me interested in generational toxicity, and that's what really ... but I'll start ... and knowing now that mercury is generational The number of fillings, ladies, in your mouth, is proportional on autopsy studies, how much is in the baby's brain. That's the [Duress 00:12:19] study.

Dave: Now, what's happening here, and I'm kind of guessing about this because there's parts of the science of how mercury transmits that I don't know, so tell if I'm wrong or right, but this is a hypothesis. As the baby's brain is being formed, do you have all these things that are attracted to the brain, like mercury, and lead more into the bones, and all that.

Dan: Correct.

Dave: You have this eight or so pounds baby that comes out, maybe a little bit more, a little bit less, but the baby is going to soon be a 75 or 150 pound human. It seems like not that much mercury would be in there, but it's already concentrated in the brain and it never leaves. Is that kind of what's going on?

Dan: That's exactly what's going on. When they looked at, like the Duress study, the number of fillings in mom, they found that, not just in the brain but in specific parts of the brain like the hypothalamus, pituitary, which runs your endocrine system.

Dave: And your adrenals.

Dan: And the adrenals. By the way, when I was looking down here trying to fix my adrenals and my thyroid, I realized certain things would get better, but certain things would get worse, like my sleep. I realized that this had to be something upstream in my pituitary hypothalamus. I just didn't know what, and then finding out that that's exactly where the mercury had bioaccumulated, and that's why a lot of people can't fix their hormonal challenges. It's because there's something further upstream that's really causing and driving the problem.

Dave: I [inaudible 00:13:42] people who are, say pre-menopausal or guys under 50, where we have a "normal" hormone decline, one that I'm not planning to experience by the way, but those are basically things that happen with aging. People having hormone problems before then, and it's an epidemic right now.

Dan: It is.

Dave: The number of people who are having erectile dysfunction, testosterone levels, and heck for me, I had less testosterone than my mom when I was 26 years old. I was crashed. You think that that could be, as a result of the effects of toxic metals, I'm guessing maybe some of these other toxins like volatile organics and BPA and things like that, that these are affecting the hypothalamus, which affects the pituitary, which affects the adrenals, which affects [pregnenolone 00:14:27], and progesterone and estrogen and testosterone, all those things. It's one of those three steps up kind of things.

Dan: If you look at where toxins potentially can affect hormones, you realize this is the number one driver of the hormone epidemic. You think of a cell. On every cell, there's the receptors to hormones, whether it's thyroid hormone, leptin, insulin, testosterone, estrogen. The hormones need to attach to these receptors to get their message in the cell so you feel good and normal.

Here's the problem. Toxins make their way in and around these cells and the membranes because they're fat, so it pulls in the toxins. It blunts these receptors. It drives inflammation of the cell, which blunts the receptors. It's like shouting at your kids. You could shout louder, meaning taking more hormones, but evidently our kids listen less and less. So, everyone's taking bioidentical hormones, this hormone, and there's a time and a place, but the point is, unless you get the cell to hear the hormones better, it's not going to make you feel better. That's one other place that toxins affect hormones.

Here's another one, and let's use thyroid hormone as an example, but it could be many. You have to convert hormones from inactive forms to active forms. So doctors are giving T4, which is an inactive thyroid hormone, it needs to be converted into T3, which is active, which connects to those receptors on the cell. In that conversion, most of it happens in the liver. Toxins affect the liver and now you're not making the conversion. Here's the frustrating point. Your blood work can look normal because you're not converting. And just like if it's affecting the receptors here at the cell, the blood work can look normal but it's not getting its message at the cell. This is a problem.

One more place it can affect is the fact that epigenetics ... We know that toxins can turn on certain genes in utero, driving problems later. So, four places that toxins can affect your hormones, and obviously your health.

Dave: It sounds like this is a word that's been misused, like the old Betty Ford clinic, you have to detox, which means you've been drinking and smoking a little too much and maybe snorting some things. I feel like it's still almost a meaningless pejorative word.

Dan: I agree.

Dave: [crosstalk 00:16:42] water could be toxic if you have too much of it, you know, you basically get rid of all the salt in your body and then you die on mile 20 in a marathon. This actually happens when people drink too much, right?

Dan: Absolutely.

Dave: So water's toxic. What are the specific classes of toxins that are having these profound effects on our hormones, on our brains, on our biology?

Dan: Let's look at three because I think people can understand these three. As we discussed, generational toxicity. We have scientific literature that can support this. I already said that lead, the number source of lead is mom. Our parents grew up in the lead generation. My wife got her lead from her mom, who probably got it from her grandmother, passed it into my children, who if I didn't know what I know, would've had issues throughout their life. Lead is no doubt a big player even though 1978, we got rid of most of it in the environment, so if you live in a house before 1978, yeah, the dust in your house still has lead so I'm not saying there's not exposures, but generational. Listen. Dave, you said something. You said that lead, most of it is stored in the bone, and you're right. But what do we lose during pregnancy? It's very normal.

Dave: Bone density.

Dan: That's right. It's normal, but out comes the lead. That's why we see so much, so then lead is an issue. Mercury, big issue, right? Silver fillings. We're inheriting our mercury from many different sources, from mom. Again, this is what we find in the studies. Now, here's a new problem. There's a 2012 study. Stephanie Seneff, senior scientist at MIT.

Dave: She's been on the show.

Dan: She's been on my show as well.

Dave: Awesome. Yeah, she's great.

Dan: Yeah, she is great. Her 2012 study, she was the first to do this. Now, I think it's been proven out a few other times, but in this study, she showed that glyphosate, I'm sure you've talked a lot about this on your show, the main active ingredient, in Roundup, sprayed on most of our food supply. It is allowing these metals, lead, mercury, and even

aluminum, to cross deeper into our tissues, therefore now we have a new problem. We're driving these metals that we're already exposed to deeper into the brain. She believes, and others, that it's leading to dementia, to Alzheimer's, even as a part of the autism ... why they're saying 2032, one out of two boys, if it stays the same right now ... Look, this is a massive problem. Just lead, mercury, and glyphosate, in this new generation, we're talking about something that we've never been exposed to like this, and it's going deep in the brain. The toxicity's here.

Dave: I hear a lot of people say, "I don't take supplements because I think I should get all my nutrients from my food." The response to that that I've had, I used to believe that myself as well. The response is, "Well, in that case, you should also get all of your toxins from mother nature." And so, the idea is we are exposed to more toxins now than we have been, and these are like real, well-identified biological poisons. I've said there's no debate that these are dangerous. There is debate about whether the levels we're exposed to is meaningful, however, if you look at a huge body of research, there shouldn't be any debate. The debate mostly comes from people who haven't looked at the research.

Dan: That's right.

Dave: But there's no way to avoid mercury. If you eat, you're getting mercury. If you breathe, you're getting mercury. Seafood has mercury, and the same thing as other things. Is your focus on teaching people how to remove these from the body, how to block them coming in, how to be exposed less? What are the things that listeners could do to say, "All right, maybe I have a problem. Maybe I just don't want a problem." What do you do about this?

Dan: You bring up a good point. I just drew this as you said that, and I'll talk about that a bit. All of us, we could argue, have a ... that's a bucket by the way. And we genetically have different sized buckets. If we started drawing exposures from utero that we're talking about here, then vaccinations, over vaccinations, all the different exposures, then one day the bucket overflows, and that's when our symptoms start. Again, some people genetically can handle more than others. No matter what, your point is right. We're going to be, from the womb to the tomb, exposed to toxins.

Then the next question is, how do we get it out of our bodies? I think most of your listeners, like mine, are very educated. They get that toxins are causing the hormone disruption, even weight loss resistance. The reason why people struggle to lose weight today, it's a hormone issue, but then we have back up and say, "What's disrupting the hormones?" I think we addressed that already. Toxins are definitely the number one thing.

Look, people are doing more and more colon cleanses, far-infrared saunas, the 10-day herbal cleanse, I don't have a problem with any of these things, but unless you get up to the cell, you're not going to get well. That's where real detox is. The cell has these abilities to detox itself, but the problem is these things start to shut down. If we don't fix that, if we don't fix the cell and its function to detox, that's not real detox. Again, you can do these things down here, the colon cleanses, I like to call them poopiers, when

every health food store, they have all the colon cleanses. But unless you get to the cell, that's not real detox.

Dave: So, you might be able to capture some things as the cells are excreting them. I do things like charcoal, we make a charcoal.

Dan: I love it.

Dave: But other things like bentonite clay and even cholestyramine, which is a prescription drug, because as your cells are detoxing, you don't want it to be reabsorbed through the colon. It's like there's a place for that stuff, but it doesn't cause the cells to dump it. If you don't do something to cause the cells to let go of the toxins or be able to process them better, those things, I think, are very limited value, at least they have been in my own research, my own path.

Dan: Yep.

Dave: How do you fix the cells?

Dan: I've been teaching for many years my 5Rs. It's a roadmap. I teach doctors and I've been blessed to teach many doctors my process, but my 5Rs became a roadmap of how you fix the cell and ultimately detox it. The 5Rs, once we upregulate the cell functions, will start moving toxins out of the body.

Now, here's a big failure in detox. People aren't using true, real binders. So we have one that goes from the cell, once we upregulate cell function via the 5Rs, and it carries the toxins out, most of which end up in the liver and most of which end up grabbed onto bile that you need to digest fat. So when you eat fat, the bile is dumped in your gut, which carries the toxins. And you mentioned carbon, which does a great job, at least of binding at least inorganic, or I should say organic toxins. Now, I like to take other binders to bind organics and inorganics, so we kind of use multiple types of binders that don't leave the gut, so when the liver dumps the bile, you have a catcher's net sitting in the gut so you don't reabsorb or auto-intoxicate. That system is actually [inaudible 00:23:46] ... You know who I took this from is Ritchie Shoemaker years ago. Remember? You know who he is? He's the mold doctor, if you will.

Dave: [crosstalk 00:23:56].

Dan: Yeah, you mentioned cholestyramine. He used cholestyramine to bind up the biotoxins from mold patients.

Dave: That was how I discovered cholestyramine.

Dan: [crosstalk 00:24:06].

Dave: It was his very first book. I think we run the risk of sort of finding a problem that everything is this problem and there's ... Microtoxins are a huge thing. It's another

genotoxic multi-generational toxin, but it's one of dozens of things you have to pay attention to if you're either recovering from something that's ... like, you don't need to just knock you out, like, "My brain doesn't work. I'm tired. My hormones aren't working. Life is crap." Or you're like, "I want to continue performing at a really, really high level and then make it better." Either way, you pay attention to those, but that binder works for way more than just microtoxins.

Dan: Exactly. So, I took that work. I said, "I don't want to ingest or have my clients or patients ingesting resin," because as you know, cholestyramine, what he was using, worked great, but one of its side effects was severe constipation. And I don't want to ingest plastic for a long time. Of course, we started developing other binders, like you have as well, that sit in there and act as the same thing, [inaudible 00:25:06]. But when we started combining that with upregulating the cell function, using a real binder from the cell down, and then using the binder of the gut, that became a process, a core process of what we call true cellular detox.

Dave: You do something that I've built into my work as well, which is increase pretty dramatically the amount of healthy undamaged fat. Why does increasing fat have an effect on the cells and on bile flow?

Dan: My R number two is regenerate the cell membrane. Regenerating the cell membrane, really, which is ... I feel like scientists understand this, or guys like you more so than treating doctors. The key to detox really is this membrane. The membrane allows the good stuff and the bad stuff out. The membrane also ... Bruce Lipton wrote *The Biology of Belief*. As a matter of fact, it's so funny, I have the book sitting over here because I'm just pulling out a quote.

Dave: What a guy.

Dan: Yeah, what a guy. He was one of the first to show the membrane, if you don't fix the membrane, you're not going to turn off your bad genes, epigenetics and that link, but the membrane, it's key. I mean, life starts and ends on the membrane. I love that saying, but in it, I would agree with detox as well. If you don't fix the membrane, you're not going to really impact, and I don't want to just talk about the outer membrane of the cell but the mitochondrial membrane, vital.

Dave: Bile flow is a big thing in the Bulletproof diet, like that's one of the reasons you want to do this. And then fixing the membrane, you want to hack your mitochondria, [Headstrong 00:26:38] was all about that. You're one of the few guys who's just openly out there saying, "Membranes matter." You got Gilbert Ling and Gerald Pollock and a few other unknown maverick scientists out there, but for people listening to this stuff, you got to understand these are the interfaces of the cells in your body to the world around them, and if you have a gunked up interface, the mitochondria that sense the environment around you, they can't do it right and they'll make bad decisions. And if you fix it, it's like someone wiped all the snow off your windshield and all of a sudden, they can sense and react to the environment with way less energy. And the extra energy, they're not wasting goes back into your brain, so you do something useful. That matters for all of us.

Dan: Look, it's an epidemic of people with low energy, and if you have low cellular energy, you're not going to detox right. That mitochondrial membrane is vital to the process of making ATP cell energy and detox. Then the endoplasmic reticulum, that's where you fold proteins. You are not a healthy human. And by the way, a lot of the membrane is right there. We're talking about membranes not just out of the cell but in the cell.

Fats are critical. You were one of the very first people to talk, at least make more popular the fact that eating fats like saturated fats, cholesterol. By the way, we talked about the hormone receptors on the cell. Those receptors ride on something called a lipid raft. That's a raft made of fat, folks.

Dave: But fat's bad for you, oh wait, except the body doesn't work without it.

Dan: And by the way, that's what stabilizes that hormone raft, is cholesterol unsaturated fats, which stabilizes the membrane for your vital life, are these saturated fats and cholesterol. Adding that to your coffee, the Bulletproof coffee in the morning, does more than you actually think. And by the way, I don't want to ...

Omega 6 gets a bad rep. Omega 6, as it turns out, just so happens to be one of the key fats of fixing the membrane. Here's the problem. It's the key fat to fixing the membrane but we're getting all adulterated Omega 6 and everything, vegetable oils, canola oils, everything, the corn oils. I believe it's more important than even the Omega 3 as far as fixing this membrane because we're all getting adulterated Omega 6. Those are some of the key fats that we need.

Dave: It's awesome that you're saying that because when I'm looking at ... Okay, how do I teach millions of people what to do who aren't going to go into biochemistry the way you or I might would, I'm like, generally minimize Omega 6s because you don't get good Omega 6s in your diet. They're almost always bad.

Dan: It's true.

Dave: And then I'm like, "How should you cook your food?" Well, when you're cooking foods, you want to cook foods in the way that doesn't damage these delicate Omega 6s or Omega 3s. If you do eat a whole food that contains Omega 6s, which pretty much everyone does, if you cook it right, you don't deep fry it, you don't sear, you don't char, you don't barbecue, you don't overcook it, then suddenly you are going to be getting enough Omega 6.

I don't see many Bulletproof people get Omega 6 deficient, but it's possible. If all I eat is Brain Octane and butter for the rest of my life, it's like, "Have some avocados. Have some olive oil. Have some nuts." Maybe not too many nuts, because too many nuts have their own issue, but if you do that and they're not roasted and fried in peanut oil, you're probably going to be Omega 6 sufficient. Or do you not agree with that?

Dan: Look, I believe that you're right in the sense that we're bombarded with adulterated Omega 6 in everything that we're eating. I mean, even your roasted nuts. It's very

fragile, so I agree. I think that if we start eating the better nuts, if you will, the raw nuts, if we start paying attention to what we're cooking food in, at least we're eliminating these adulterated Omega 6s, which are very damaging and dangerous to the cell membrane. Here's another threat, is the fish oils that people are taking. They are so often damaged, and I know you agree with this ...

Dave: Oh yeah.

Dan: ... because I've heard you speak about this. And even we have a new generation, and this is most of our listening audiences, is we can even ... We're starting to see Omega 3 dominance in the sense that people are taking so many fish oils that it's unloading a really important fat called cardiolipin, it's an Omega 6 fat, in the mitochondrial membrane. Just something new that we need to watch out for as well, but these fats are vital and they're important.

Dave: It's so cool that we could talk about cell membrane composition. I found this study when I was writing The Bulletproof Diet. It showed it takes about two years for you to refresh the fat in your cell membranes. Actually, it's about the half-life, if I remember right. Half-life is two years. In other words, if you start eating undamaged fats, including enough saturated fat and all these other fats, and you do it every day without eating crappy oils for two years, then you're going to see a shift.

And I actually noticed this when I really went on Bulletproof coffee to say, "What's going to happen if I'm doing 10 tablespoons of butter a day? I don't really know but I'm going to track my blood levels, and if it's doing bad things, I'm going to change things." What I found is I couldn't get enough. And after about two years, I'm like, "You know what? I got enough." And I went from six tablespoons of butter, it was just like a desperate need, to a tablespoon or two. I moderated this after I think I'd just detoxed and after my cell membranes got recomposed, but along the way, there was a time going back to the very beginning when I was really bio-hacking. I'd buy a bottle of high-end fish oil and I'd just take three glugs. I would like everyone listening to hear what you just said. I'm going to repeat it because it's that important.

If you overdose on fish oils, it will mess up your cell membranes. You overdose on alpha-GPC, these things that are in almost all of the smart drug formulas out there or whatever, nootropics, the supplemental forms ... You take a lot of that stuff, it can disrupt your cell membranes. So it's about getting undamaged fat, first and foremost, and about the right ratios. And that leads to my next question. What are the right ratios, according to your research, between saturated fat, Omega 3, Omega 6? Where is your [inaudible 00:32:45] now?

Dan: When you look at the Omega 6 Omega 3 ratio, most of the organs in the body are around a 4:1 ratio of Omega 6 to 3. However, if we put it all in context, it could even be up to 11:1. I think when you look at nature, you find 1:1, you find a lot of different ratios, but some of the studies show certain ratios can target certain things in the body. For example, 4:1 ratio seems to target most of the cell membranes. 4:1 ratio seems to target the brain. Here's what you have to realize too. It's the skin doesn't really have DHA receptors, so when we're looking at skin issues, I've seen people overdose on

Omega 3 fish oil and actually end up having skin issues, so you have to really be careful. These ratios are important. I think when you look at the studies, I think that every ratio has some purpose because we have different cells that really have different ratios and different receptors. The brain is different from the skin, the skin is different from the rest of the body.

Dave: It's pretty amazing that this stuff isn't out in the mainstream, but it's also maybe ... This is from my perspective. It's also not that surprising because it's inconvenient. There's a body of researchers out there, mostly like 1970s era "fat must be bad for us", "let's all eat a whole bunch of sticks and twigs and processed grains", and "let's drink limitless amounts of sugar water" because it has no fat in it. And so we have this economic incentive to do that. What would happen if we shifted our food supply so that we had undamaged fats in all packaged foods? What impact would that have on the world?

Dan: Gosh. That's a massive impact because as we're talking about the cell membranes, it's where life begins and ends, we're going to fix that. The brain between our ears, the brain in our gut, all these are impacted by good fats and bad fats. I used to do a ... it was a PowerPoint that I had years ago. I called it 102 Days of Dysfunction. Meaning, when you get exposed to these vegetable oils that ... By the way, if you go into Whole Foods or other places, they're still ... you have to read labels. We know that. 102 days of dysfunction, meaning it integrates into your membranes, and it takes about 102 days for basically your membranes to do the right thing. It's damaged for 102 days. I just read a recent study. It's probably more like four and a half months, so maybe a better put would be 132 days of dysfunction, when you're exposed to these bad oils, which by the way, some believe that it's more damaging than smoking cigarettes and-

Dave: I'm one of them.

Dan: Yeah, me too. These oils. And by the way, our audience, our healthy audience, this is where I feel like we ... they go wrong in the sense that we pay attention to a lot of really good things, but it's the oils. It's these hidden bad fats that are disrupting our cell membranes and therefore keeping us from the performance or the level of health that we deserve or trying to desire.

Dave: Here's something, if you're listening right now and you're going, "I'm doing pretty well." If you go to a restaurant and you eat the fried Brussels sprouts, 102 or 132 days. You eat the French fries, "Oh, because I've just had some alcohol and I just thought French fries would be good." Don't eat fried stuff especially at restaurants. It's worse than smoking, and smoking isn't a really good plan either. But honestly, if you really need advice, maybe it's better to smoke than it is to regularly eat fried food, but seriously, smoking's gross, but so is fried stuff. The fried calamari, I don't care if it's fancy as parmigiana. Don't eat it. All right, there we go.

Dan: There's the fat talk. We align.

Dave: All right. Thank you for sharing that, Doctor Pampa. It's something that is just missing. Going back to that question, what would happen in our food supply? I want to find out.

That's one of the things I'm doing at Bulletproof. We'll disrupt the people who are trying to feed us bad fats mixed with cheap carbs because it doesn't work for anyone. It never has. And if you mom ate that stuff or ... We used to like, "This is amazing. We get a coupon for buy one get one free whoppers," when I'm a kid. "Let's go out and we'll celebrate." But I'm feeding my brain, as a child, with junk fats, but no one knew back then, and the fats probably weren't as bad back then, but now, God, it's like if you're doing that even once a week, it's a continuous drain. What does that do to your ability to remove mercury or to remove these other toxins you talked about, if you're basically flushed with bad fats?

Dan: Well, that's just it. My R number two is regenerating the cell membrane. It's critical for detox. It's critical for turning off bad genes. So, you impair the cell's ability to function, and that impairs all of the detox pathways that I talked about. The endoplasmic reticulum, I mean that's really one of the keys that your cell uses for detox, and it's impaired so easy because the membranes are so fragile.

My R number three, by the way, is restoring cell energy. And that's the mitochondria. And that mitochondrial membrane is more fragile than the outer membrane of the cell.

R number five, just to skip so I could prove my point, is re-establishing methylation. Look, all of these cell functions are critical for detox. Fat affects every one of them directly or indirectly, so very, very important subject, and most people don't understand.

There's a picture on the wall back there, and you probably can't see it but I actually have one here. This is my family years ago. I don't know who that young guy is there but anyways. These two, we adopted later in life when they were seven, so this was right after the adoption actually. They're 21 years old now so you get an idea of the picture. He was vaccine damaged and on the autism spectrum, Aspergers [inaudible 00:38:46]. You could even tell by the picture. If you met him today, you would say, "Holy cow." You wouldn't even know. He's just an amazing young man. He has his own business going. Just incredible. Lives in San Diego.

The point is this. Fixing his membranes with these fats was, I would say, the tipping point for him because I was ... We were doing some detox and things and it just wasn't resonating. It was because of him. I mean, I took some of my knowledge of getting my own life back to that, but it was really him that convinced me that the trick was in the fats. And boy, I had that poor boy eating fats like nobody's business. He would cry. I remember the day I sat down beside him and said, "Do you want to get well?" And I said, "You're going to have to trust me." He remembers that day when I had that conversation. And so he was slugging down some of these things that I concocted, but Dylan's an amazing child today. That's how important that is.

Dave: Aspergers runs in my family. It's not common to have a grandmother with an advanced degree in nuclear engineering. If you look at engineers, you see a lot of people on the spectrum like that, and of all my aunts and uncles on that side, six of seven test relatively high. I had Aspergers, I wasn't formally diagnosed but certainly behavioral stuff like OCD, ODD, all those things. When I started tweaking my fats and getting rid

some of the toxins, my brain changed. I'm a very different, like neurological, but even just emotionally different human being because of all this detox stuff. It absolutely works. What I see happen over and over with very successful people as well as people who are just working on being successful, and success isn't economic success but people who are succeeding at doing what they want to do, whether it's parenting or teaching or whatever's important. They're feeling great, everything's working, and then all of a sudden, everything quit working. And it's almost always a toxin. Sometimes they got sick and a lot of the ...

Dan: It's true.

Dave: ... diseases, the bacteria make a toxin that causes cell membrane dysfunctions. It's called LPS.

Dan: Absolutely.

Dave: And then it's still a toxin issue. It's just generated onboard versus from the environment, and when they stuck in this for six months or sometimes, like I was for years until you figure it out, like you were too, then they get inspired to do this. But I want people to not have that happen in the first place.

What are the protective things that you might be able to do? It's like, "All right, I want this kind of shield walking around with me so that if and when I am exposed to toxins," that we know are a normal part of just being in the world, "that I'm going to have extra resilience ahead of time." What are the lowest hanging fruits? What are the things I can do, or anyone listening could do right now, to have that shield?

Dan: I think when we talk about what we're doing day in day out, of course the fats ... By the way, that's a really important shield because the blood-brain barrier, your gut barrier, these are fat barriers, and your cell membrane is a fat barrier, so we hit that conversation. However, let's put it in this category as well.

Dave: Okay, so eat more fat. All right, I got you. I believe that, okay.

Dan: Absolutely, of course you do. I think again, my detox represents ... There's a preparatory phase, there's a body phase, then there's a brain phase. To this day, I still do brain phases periodically because I don't care. You've made the point earlier that no matter what we do, we're exposed. I got my life back. So, periodic brain phases. But things like far-infrared saunas, keep a detox pathway open. I mean, it does. I do coffee enemas; I do it periodically as well. Keep my liver opened up.

All these things that we're talking about, cell function, my 5Rs, I take many of these formulas to keep my cells functioning. That is my guard. This is, no matter what, we're going to be exposed. Your carbon product. These things that keep your bile moving out so you're not auto-intoxicating. I think that's a huge thing that you can do, something very simple to keep toxic bile moving out, is a big deal.

Avoidance. Again, I think that's huge. We have to look at the toxic top 10 in our life and make those changes. Every one of you listening should. If you haven't, do that, and I think most of your listeners have. But we need to.

Dave: Do you recommend a periodic chelation therapy, things like EDTA or DMPS, or DMSA, these are compounds, if you're not familiar listening to this, if you're out of the field of medicine, and you haven't been really sick, you don't know what these are. These are things that are used to heavily and aggressively bind to metals in the body to cause you to poop or pee them out. I've often wondered, is there a case for relatively healthy people to do a course of this every six months or something just to keep levels low, or is this something that you would hold off, or if you were really sick?

Dan: I love this topic because it's controversial, number one, so let's go there. I have three things that I call real detox. Number one, it's not real unless you get up to the cell. Real detox has to be at the cell as a starting point. We have to open up. And keep downstream detox pathways open is the second point of what real detox is. And thirdly, we have to use true binders, and that's the topic you're bringing up. I said that from the cell out, we use true binders. One is called CytoDetox. It has the ability to penetrate some of these cell membranes. I love DMSA.

Dave: Is CytoDetox a product that you make or is this one that you use?

Dan: It's one that we brought out. It's a product that really came out of some newer technology.

Dave: It's basically, for people listening, it's micro particles of zeolite clay.

Dan: By the way, not all those are created equal.

Dave: I did use CytoDetox for a while and I never ... I know a lot of people are like, "I felt it." I kind of did half the bottle and I still didn't feel it, so maybe I didn't have anything to deal with at that point, or it was too deeply bound.

Dan: It's a binder. It no doubt holds on and doesn't let go, but that's only part of the detox. We upregulate cell function, or we used a real binder, but we'd also ... I love DMSA as a binder but I don't like the injectable. Here's why. Whether it's DMSA, DMPS, or EDTA, you mentioned a couple of those, those are real chelators, which is ... No doubt they work. They hold on, they grab hard, but typically they're used incorrectly. If you do an IV, for example, of say DMPS or EDTA, it goes in, it grabs, and it goes away and pulls a lot out at once. The problem is it sets up a concentration gradient. The body keeps releasing metal and people can get very sick. They don't typically get sick from the agent, they get sick from the redistribution of metals. Therefore, if you take them underneath their half-life in the body, you can minimize a lot of that problem.

So DMPS, for example, you have to take it every eight hours to minimize that and take it for at least three days, so when we use that as a group of doctors, we use it within its half-life and we use it correctly, in this whole system by the way that I'm talking about,

using binders in the gut, upregulating cell function. The DMPS can be used to help these things move out of the body. DMSA has to be taken every four hours.

Dave: This is basically Andy Cutler's protocols you're talking about.

Dan: Andy Cutler was right, exactly. He didn't do it within this whole system that we do, but at least he used the binders correctly. I could tell you from clinical experience, I'm not a guy that hangs around in the laboratory, but I am a guy who trains hundreds of doctors around the country, so we have a lot of experience using different binders. Then there's the binders ... this is another topic. Then you have Chlorella, which it binds but it's not a really strong binder. It can create redistribution. I would put Sealantro in that category as well. Number one, you have to use a real binder, and you have to use it correctly, and you have to use it in the system that we're describing, that I described as true cellular detox. Then we can have a much better outcome without having redistribution and creating more problems.

Dave: I want to double down on that. I do regular chelation, like a couple of times a year, because I think it's worthwhile and I know what happens when my metal levels get high. I did this a couple of months ago, and I did EDTA, not intravenously, but I forgot to take charcoal or any other gut binders, and it absolutely redistributed stuff.

Dan: Absolutely.

Dave: And I'm like, "There's that pain in my upper back that I've just dealt with half my life. It came back. It will go away in a little while. I'm just binding the toxins again." But all I had to do was stack the protocols properly and it wouldn't happen.

Dan: That's right.

Dave: And I really just didn't think before I went to bed I needed to take a handful of another supplement. Now, one could [inaudible 00:47:55] it's like, "What the hell are these guys talking about?"

Dan: I know. I was hearing that actually.

Dave: But here's the deal. I don't know. I feel like I'm kicking ass. I'm a hundred pounds less fat than I used to be. I'm writing books, into podcasts, and I'm a dad, and running Bulletproof, and helping a lot of people, and I have more energy at 46 than I ever have, and I'll do anything, anything necessarily to maintain that. It's the most precious thing on earth. If you don't have all of your energy, and if you're listening, you probably don't even know all your energy feels like because you probably never had it.

Dan: It's true.

Dave: And so, yeah, that's unusual, and not everyone needs to do what I'm doing, but if you don't like the level you're running at right now and you feel like you have the

accelerator all the down and you're not going any faster, something's wrong, and it's probably toxin related.

I want to talk about this, Doctor Pompa, because people need to know. Okay, granted, I am a professional bio-hacker on the fringes, but millions and millions and millions of people have done chelation, and they've had great results from it. Even if you go to your regular doctor and they say, "Chelation is a scam," like no. I'm sorry. There's abundant evidence. The military uses chelation when people get depleted, uranium poisoning, and cadmium poisoning. It works. We've known about it for 50 years.

Dan: Listen, I do probably six of my brain phases using these chelators. I'll combine, with the CytoDetox, with DMSA or DMPS, with the cellular stuff that we do, with the gut binders. I do that at least six times a year. When I was getting my life back, I did it consistently, brain phases consistently for two years, and I would say purposely, more inconsistently, for another two years after that.

Look, that's what it took to get my life back, but like you, I'm never going back. I'm 52. I have better health, more energy at 52 than I was in my 20s and 30s, and that's the truth. I'm leaner now than I was in my 20s because again, it's all about the cell, how do you stay lean. The fact is you're going to get fat as you get older and it's harder. It's baloney. My cell function is that good that I'm an efficient, fat-adapted, fat-burning machine, but I've earned it, Dave, just like you've earned it, right?

Dave: Yeah.

Dan: I was sick at one point in my life and I'm never going back, and I love the high function that I have. Detox is a massive portion of what I do every day.

Dave: Very well said. Now, if you're listening, hopefully you'll feel a little bit bad that you were thinking that this is so wacky and now you're like, "I should go do it." I'm just kidding. The idea here is that you don't have to be super aggressive with coffee enemas and intravenous or oral chelators on a regular basis, but knowing that this matters, there are probably some simple things you can do.

Doctor Pompa, you mentioned Chlorella. For years, when I eat sushi, I take Chlorella because sushi fish has mercury in it and Chlorella can bind to mercury. The way I thought about this, geez it's a long time ago, and I was doing a lot of yoga at the time. I noticed I could do a [inaudible 00:50:59] pose with my eyes closed, which is usually you tip over when you do that, and I was good at it, but if I ate sushi the night before, I would always tip over. Like wait, okay. I made a weird event correlation machine in my head, so there is a thing. I kind of tested it. I said, "All right, this is a factor I didn't know about from my subtle ability to balance," and I found if I could take Chlorella with the sushi, that I was probably pooping out the mercury instead of absorbing it, and it wasn't affecting me neurologically. I recommend that. Do you think Chlorella is strong enough to eat with fish or do you need something stronger if you're going to food that you know has mercury in it?

Dan: I don't think it's really strong enough systematically.

Dave: No, not systematically, just a binder [crosstalk 00:51:37] in the gut.

Dan: Yeah, in the gut. Honestly, I think that in the gut, I think you're better off with it, and using it with your charcoal, using it with another gut binder would be another great combination between the two because oftentimes, again there's organics and inorganics that can be stirred up and distributed. Taking it with some other binders would be another great combination.

Dave: There you go. Does this mean that people listening should never eat fish without binders?

Dan: Yeah, no.

Dave: Exactly.

Dan: I mean, some people are going to be genetically better to get rid of it than others as well, but yeah, absolutely not. But you and I do, because I don't ever want to go back. And again, there's a certain level of mercury that genetically maybe I'm not so good at getting rid of it, maybe I reabsorb mostly. But listen, we don't have leaky gut like I did when I was sick, so the chances of us redistributing or reabsorbing some mercury is far less than others. But if you do have leaky gut, which basically 95% of America does, I'd be a little cautious.

Dave: Let's talk about genetics for a little while. There's an interesting study of people who worked in a mercury mine. What they found is most of them had no problem at all, and so they're like, "Well, there you go. Mercury is not poisonous." But then they looked at the number of people who started and quit after a month, and that changed the data very substantially because it turns out the people who were genetically able to handle it could work in the mine and do well. Other people who were like, "I'm out of here. I'm too sick. I can't work." So there's a pretty broad distribution. Some people are great methylators. They're just great at excreting toxins. It seems like they can swim in mercury and lead and spray it out of their mouth, like in a Cinderella movie or something, and it just doesn't affect them. What makes them superhuman detoxers and how do I get some of that?

Dan: I think that we're still discovering a lot of that, honestly. We used to think it was these genes, and this SNP and just methylation, and we're learning more. It's a lot more complicated than you think. A lot of it, too, is other burdens, other body burdens of toxins. So you have a genetic component. Some people no doubt genetically have better pathways of getting rid of it, but some people also have other stressors, physical, chemical, or emotional, that now they don't get rid of certain stressors. Meaning, they're working in the mine and that one thing sends their bucket overflowing. Total exposure plays a role. Genetics plays a role. No doubt someone who has leaky gut can play a role, they're absorbing more of it.

But you know what? I actually know some of the studies that you're referenced in. An interesting thing. Because what they find is a lot of these people, they bioaccumulate it, they bury it so to speak, only come out later. And all of a sudden now, they end up with Alzheimer's. They end up with MS. They end up ... I think how the body handles toxins becomes a whole other topic of what ends up happening later to those people. I think how we handle toxins is very different so arguably, sometimes the more sensitive person actually lives longer because they're ... I mean, there's another way of looking at that as far as what is the body doing and what will happen later to their life.

Dave: Unquestionably, you can learn what it feels like to be toxic, and you can develop the ability to be like, "I don't exactly know why, but my body's telling me not to do that." In my case, I just spend a lot of time with people who've been exposed to toxic molds. You live in a water damaged building, mold will very effectively turn off your detox pathways, so then everything else, everything else-

Dan: That's what I was talking about.

Dave: And mercury sticks in you. Or heck, just childhood trauma. I've worked with people-

Dan: That's what I'm talking about.

Dave: They're like, you know, when someone does psychotherapy or transpersonal workshops or whatever, suddenly the level of mercury they excrete when they're detoxing is five times higher than it was before they let go of a childhood trauma. It's so complex, but your body holds on to this stuff, and your body will tell you when you're getting more. But for me, I, as an engineer, every signal below the neck from the body is just noise, like it's all about thinking. And over the years of just personal development work, like now there's a great and fine-tuned environmental sensor, it's your onboard hardware, that will tell you ... If you have an intuition and you don't want to eat that, it's okay to just not eat that. It has nothing to do with flavor. I find that kids under five, they routinely know. Like, "I don't want the broccoli today." I don't know. It turns out the broccoli was maybe not that fresh. You make them eat it and then they feel like crap, and they get digestive problems that night, and, "Oh, they knew." But we know as well.

I would encourage people listening, hey, if you just have an intuition that says this food or this building or licking this lead pipe isn't a good thing for me, maybe you ought to just listen to that intuition because it's not going to harm you to listen. And maybe if it's all in your head, in which case, you didn't do any harm.

Dan: I love that. There's a principle that I teach called diet variation. It's oftentimes not what you're thinking. I also refer to it [AKS 00:56:49] feast-famine cycles. One of the things that I'd learned was some of the criticism of staying in ketosis, or a low carbohydrate diet, is just that women with thyroid can't intermittent fast, sustain ketosis, or hormone challenges.

One of the breakthroughs that we had was, it was something my wife and my son's girlfriend were having a conversation about the week before their period and they get

the cravings. My response was what you just said, "Listen to that." They get their carbohydrate cravings. Listen to that. So they did, and the feedback was actually tremendous. With my group of doctors, I said, "Try this. You have your low carb group. Try one week before their period. Put them on a high healthy carbohydrate diet." Eat more yams, sweet potatoes, or berries, et cetera. Sure enough, magic happens. So we do that even weekly oftentimes. We'd put those higher feast days in with famine days, and it works. We're emulating our ancestors.

You have to understand. What happens is if you get chronically low insulin for a long period of time, you need insulin to make hormone conversions from T4 to T3, right? That's thyroid hormone, you used that example. T4 to T3, the active form is T3, insulin plays a role in that conversion. When insulin gets very low and you have high heavy metals, you're not making that conversion, so having those ... Popping that insulin up, you don't have to keep it up all the time, but even just for one week a month, it will transform your hormones for the rest of the month. Diet variation, feast-famine cycles, is something we learned as a group of doctors. It just works. It's an answer to that.

Dave: That's why the Bulletproof diet is based on cyclical low toxin ketogenic stuff, and it has to be cyclical. I'll post pictures of me eating sushi and I'm pouring Brain Octane on there. It converts to ketones, so I know I have some ketones, but I'm eating carbs, which yes, I have some insulin. It's not going to cause a huge spike because I'm eating it with fat and because it's not that much rice. People are like, "How dare you eat rice." I'm like, "Guys, did you read the book? You need some of this and cycling is okay. Go three or four days with no carbs, but then have a day of carbs."

Dan: That's what I do.

Dave: But don't eat Snickers and cheese cake and beer and pizza, that's not low toxin carbs. You do the cycling. Everything works, and if you're all keto all the time ... I know a few people who just kick ass in that state and I'm blown away by them, but their gut bacteria just can't be very healthy. Their detox pathways over time can't be, and women, I think, are more sensitive than men, in my experience of just working with a lot of people.

Dan: I agree.

Dave: I will just say, do you see variations between carb and fat sensitivity amongst women and men?

Dan: Yeah, I think they are more sensitive, especially today because their hormones, like we just explained the thyroid hormone. Oftentimes, they're having it need, at different times, for more hormone, more hormones during their period, et cetera, and therefore they need that insulin at times, so therefore their body does give them cravings. So putting them in a low carb situation permanently too long will affect the women more, even than men.

Dave: I'm convinced that there's actually carb and nutrient and even fasting timing that would most be functional for women if you synchronize it with the monthly hormonal cycles. I

don't have the research done on it yet, but I'm talking with ... My wife, Doctor Lana, who does a lot of fertility consulting for [inaudible 01:00:12] types, and I think there's a right answer to this that says having more carbs, on whatever day, 22 or ... I don't know a day, I'm just making that up. But there's different days of the cycle and we're like, "Okay, something's happening biologically," and there's probably a detox thing too, where chelating at a certain point of your cycle or binding toxins is going to matter more. Do you know when you should bind in the cycle?

Dan: Clinically, what we found was, listen to your cravings that week before the period, or even when you're more hormonally, right? So if you have PMS the week before, some have that more during the week. Really, that's all we've narrowed down, and then the topic becomes men. I say, "Men, you have a hormonal week too. If you pay attention and ask your wives, ask your girlfriends, whatever it is, find out when that time when you're most moody," and oftentimes it goes right along with your wife's cycles. Those are the times when it's really good to shift your diet, increase your healthy carbs. That's what we've found clinically.

Listen, this is what happens. The body, the cells can use two things for energy, sugar and fat. When we get to the body's so efficient at using fat, eventually it says, "Wait a minute. I want to survive." That's its number one goal in life, is to survive. So it will say, "I'm going to slow down my fat metabolism because it's a fuel that I may need to survive and to live, and to run from a lion," or whatever it needs, but it wants to slow down its number one in fuel source. So what it does, it will blunt the insulin receptors just to slow down that fat. It will even plug, push water into fat cells, and that's when you start getting that kind of dimply fat that you don't like. I don't care how skinny you are, we will get it. Happened to me. But when we put in these days when we feast and throw healthy carbs at it, even once a week, it does work, Dave. It does.

Dave: Oh yeah, once a week is what I recommend. I love it.

Dan: I'm going to tell you, the body [inaudible 01:02:11] do this stuff. There's nothing new under the sun, but it works, because all it does is it reminds your body that it's not starving. That's it. It's like, "Hey, you have more. We have plenty," so it fires up that fat-burning machine again. But throw in some fast days or low protein days a week.

Feast-famine. Really, that change causes what I like to call hormone optimization. When every time you force your body to change like that, hormones have to be optimized to make that change. Your microbiome has to be optimized, so you're forcing adaptation, but you're forcing a hormone optimization. That's why these feast-famine cycles, even during the week or monthly, seasonally, they work.

Dave: What this has done, for me, is interesting. I recently had a bunch of blood work done, although I guess I could say almost every month, I could ... I recently had a bunch of blood work done. They tested my insulin sensitivity, and it goes on a scale of 1 to 160. I had perfect insulin sensitivity. Now, people who are on long-term low carb diets typically get insulin resistant for a while.

Dan: That's right.

Dave: I was quite sensitive, which is what you want to be, but normally if you're that sensitive to insulin, your glucose tolerance is relatively low, which means your ability to have glucose in the body, like glucose will knock you out. But my glucose tolerance was medium high, and when they saw these labs, they're like, "This doesn't make any sense. You're not supposed to be able to be insulin sensitive and glucose tolerant." I'm like, "Yes, that's what metabolic flexibility is called."

Dan: Absolutely.

Dave: That's what functioning cell membranes are called. I think this is something that everyone listening should strive for, which is the ability to be just an amazing fat-burner, and you got to be burning the right fats or it doesn't work. And you want to be able to handle carbs, but if you eat carbs that are laced with all sorts of artificial crap and corn syrup and glyphosate and who knows what else is in there, you're probably not going to get what you want out of it either. There is no shorter way of saying it than that, that I know of. Do you know of a shorter way?

Dan: No. And I love what you said though because the metabolic flexibility is the key. If I'm eating carbs, I burn them and I use them in ... A healthy body can go back and forth between these energy sources, and I believe this diet variation feast-famine cycles is a way to build up that flexibility, which brings us to the conversation of fasting, which you and I love. I love intermittent fasting. I love block fasting or extended fasting periodically. When we look at our ancestors, they were forced to do these things.

I had the opportunity of visiting a tribe in Africa. They had just recently come out of the mountains. It was in Zimbabwe. I visited them three times, but the first time, it was really unique because first thing I said was, "Where are all the men?" It's like I saw women and children and they're, "They're out hunting." They get up at 4:00 in the morning when it's cooler and they go, and they go all day. And I said, "Gosh, what do they eat? How do they bring food and water?" They said, "They don't eat." This tribe literally ate one meal a day. Granted, it was three hours, so whether it started at 3:00 or 4:00 in the afternoon and went for three hours, they ate. Very similar to my Italian ancestors. And the women gathered all day.

This was the first experience I had with intermittent fasting. Back then, I was probably talking about eating four to six meals a day, I don't know. I have a saying, "You don't want to eat less. You want to eat less often." That's what they did. And they had no disease. These gentlemen, they were athletes who would go all day fat-adapted, and then they would come home, and they would feast. It was a remarkable experience to see that. Believe me. When they had more carbs, I'm sure they ate them. And when they didn't, they were also forced, in many times, of fasting, by the way. I believe that we can emulate that today, and we need to, I believe.

Dave: We can and we'll live longer, but more importantly than just living longer, you'll have more energy now, which would just [crosstalk 01:06:10].

Dan: Oh yeah.

Dave: Speaking of having energy and things like that, we're coming up on the end of the interview. I want to ask you that Bulletproof Radio question. If someone came to you tomorrow, Doctor Pompa, and said like, "I want to perform better at everything I do as a human being, what are your three most important pieces of advice for me?" What would you offer them?

Dan: Gosh, we hit them all. Detox. You and I have detox. Cellular detox, I'll be more specific, is the key today. I believe that, I really do. I believe we said about your fats. Pay attention, even you healthy people, about these hidden damaging fats. These fragile fats, whether it's the fish oil that you're putting in your mouth, whether it's the Omega 6, the vegetable oils, pay attention. 132 days of dysfunction. You don't want it, you don't need it.

And I believe incorporating these ancestral ancient healing strategies is critical. Ketosis is one of them. You said you always have some ketones, whether higher levels, lower levels, I believe today we should do this. Ancestors were forced. Fasting intermittently, extended fast. I believe our ancestors were forced to do that. It resets our DNA. It creates autophagy, where your body gets rid of all the bad cells, and then it activates stem cells that we need for healing.

I put myself, and so do you, in those states to create that type of healing that comes from the innate intelligence that's in every one of us. By removing the interference through cellular detox, our innate intelligence has the ability to heal and survive, live 100+ years healthy, not just live it. If we put these right fats in that are crucial for the membranes, we'll hit 100+ years. It's that important.

And if we practiced these ancient healing strategies, these fasting strategy that create this autophagy, getting rid of the bad cells that we all create, activating our stem cells that people will pay thousands of dollars to get injected, and you and I may do these things, but we can create them naturally through a stage of autophagy by fasting and implementing fasting in our cycles. And now, we're getting rid of bad cells and creating new ones. I believe those three things will transform your life and your health.

Dave: Very, very well said. I love that answer. Definitely a true bio-hacking answer. Just to double down on that. Here's a deal. You want to be a better human being? It takes work. And work comes from energy. And energy comes from cell membranes. If they're not working, your cell membranes don't allow oxygen and nutrients into the cells and they can't use them. So, all the power of everything you do comes from what Doctor Pompa just talked about there. That's a very nuanced, a very bio-hacker. and kind of biochemist answer, but I would double down on that. I think it's great advice. Doctor Pompa, thanks for being on this show. Where can people find out more about you, your work, et cetera?

Dan: It's D-R, like Doctor. DR then my last name, P-O-M-P-A dot com. And you can connect with my Facebook, which by the way, we have over 3,000 people doing Fast with our

Facebook. We have growing group called Fasting for a Purpose. But drpompa.com, you'll hear all my articles and my podcast, Cellular Healing TV, so join us there for sure.

Dave: Beautiful. Thanks for being on Bulletproof radio. Thanks for pushing the world forward on these relatively unknown but shockingly important things. You're doing the right kind of work.

Dan: Thank you, Dave. So are you, so thank you for your work and your contribution.

Dave: Thanks. If you liked today's episode, you know what to do. Head on over to, say, Amazon and leave a review for one of my books, or for Doctor Pompa's book, or head on over to iTunes and leave a review. One of the quickest you could do to make yourself have more energy and just be a good human being is to bring gratitude into your life, and when you leave a good review, you're showing gratitude. And hey, I'm grateful for it, so you just got double the ROI on that, right? Anyway, if you appreciate this kind of work, if you appreciate Doctor Pompa's work, just say thanks. And say it in a public way we can count it, so we know we're doing the right things. Thank you.