

## Speaker Preview 1: Human Upgrades at the 7<sup>th</sup> Annual Biohacking Conference – #856

Announcer:

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Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey.

Today's guest is a board-certified integrative neurosurgeon named Dr. Marcella Madera. Marcella, welcome to the show.

Dr Marcella Madera:

Thank you for having me.

Dave Asprey:

It's actually really cool to be able to chat with you when I'm not post-anesthesia with all sorts of weird goopy things on my head, which I think happened last time. I'd like to start out by saying what made you an integrative neurosurgeon? Because those words sort of feel oppositional to me. Most of the time surgeons are the ones who are like, "I don't know, hit it with antibiotics. And I can stop a human heart. And I'm so tough." And here you are not only doing integrative stuff, you do Dr. Barry Morguelan energy exercises before you operate, you're kind of out there. How do you exist in both worlds? What made you this way?

Dr Marcella Madera:

So I had many years of taking care of patients where I had this rigorous surgical training at Hopkins for my fellowship. And I really had the feeling over and over and over that I wanted to treat patients holistically. And I felt there was so much more that I could offer to patients in terms of their whole life and their whole health, as opposed to just finding a place to cut. So that's how I started my journey.

Dave Asprey:

Can you talk more about nervous systems, surgeries, circadian stuff? What have you learned, especially as an integrative practitioner, that might be applicable to everyone listening if they're going to get any kind of surgery?

Dr Marcella Madera:

Well for surgery, optimizing sleep before surgery is really important and that's something from an integrative perspective, I never talked about that before I was doing integrative work. But certainly surgery is extremely traumatic to your system. And so my entire process leading up to surgery, or even if it's just a small procedure, not a surgery, is optimizing the stress response, inflammation response, and trying to keep people as calm and cool, rested and well, even better than their normal state of health leading up to surgery. So sleep is incredibly important before, and then afterwards, depending on how big the surgery is and how long people are in the hospital.

Most of the things that I do in my integrative practice are actually pretty small surgeries because one of my goals with my integrative practice is to minimize the size of surgery that I do, so I'm actually doing small, minimally invasive things. But if you're in the hospital for a few days or with medications

that you're taking, all of that can disrupt sleep. And the more sleep you get, the better you're going to feel the better you're going to heal, that's very, very well known.

Dave Asprey:

Hospital environments suck.

Dr Marcella Madera:

I agree.

Dave Asprey:

I do my best to stay out of the hospital, that's a statement all of us would say unless we work in one. But I think the only time I've really spent any time in the hospital was maybe four years ago, I stepped on a rusty nail and you're like, "All right, fine, whatever. I had a tetanus shot a while back, I don't know." But I spent [crosstalk 00:03:20] eight hours in the hospital. I'm like, "I couldn't sleep in this hospital to save my life." And if I was going to have surgery, beeping and horrible lighting and constant interruptions, and how does anyone heal in a hospital?

Dr Marcella Madera:

Well, I will say too, so the whole process of being in the hospital sets off a stress reaction, which sets off inflammation. And we do know that inflammation can affect the circadian rhythm, that there are connections chemically between circadian rhythms and inflammation. So what do people do in the hospital? Number one, we try to do the smallest surgery possible to get them out as quick as possible. For my patients who do my integrative program before and after, I actually have them listen to the breathing exercises while they're in the hospital after, really any time, they could leave the breathing exercise on all night and that helps with sleep. I also have another autogenic exercise that came from a neurosurgeon who is a holistic pain doctor now, that helps manage pain with cognitive exercises. So managing pain is a big part of it when you're in the hospital to get sleep, and then keeping your nervous system calm as well. But the number one thing is quick surgery, stay as short time as you can.

Dave Asprey:

Do you envision a future where hospitals actually help you heal by designing their environments to be a little bit human friendly and a little bit less like being inside of a refrigerator? I have no idea how you can describe it.

Dr Marcella Madera:

I do. I think... So that's a great way to talk about a project that I'm working on with the medical school here in Austin. So Dell Medical School has supported me with this project of, how do we reduce pain after a lumbar fusion? And they're actually letting me add some integrative techniques to the pathway before and after surgery. So we're even getting anti-inflammatory diet in the hospital, amazingly.

Dave Asprey:

What do you recommend? So this is something you... Listen to this, you get to talk to an integrative surgeon about, okay, what do you do before surgery? And this doesn't have to be before neurosurgery, before any kind of surgery. So what kind of food changes do you make for people before they go in?

Dr Marcella Madera:

So I really design a food discussion based on how much I think the patient can manage. Some people come to see me and they already know, where the meat sources that are important, what the good ones are? And [crosstalk 00:06:03].

Dave Asprey:

Well, you're in Austin, so any barbecue is fine, right?

Dr Marcella Madera:

There are some places that are better source than others.

Dave Asprey:

Okay, got it. So [crosstalk 00:06:12].

Dr Marcella Madera:

Yeah. But there's some patients that come and have a wide variety of knowledge and other people come and have never heard that actually gluten and dairy can be inflammatory or have never believed it, and have never heard a conventional doctor tell them that it is actually important. So the other thing is, leading up to surgery is stressful. And so I don't want to give people a hundred things to do leading up to surgery, especially if they need to do something pretty quickly, they've got severe nerve compression or something. So I really designed it based on what the patient can feasibly manage without too much stress. So typically what that is, the simplest thing is, very simple, low inflammatory diet, low dairy, low gluten, cutting both of those, if they can.

I do talk to them about fat sources, trying to get grassfed if they can. And the grassfed butter, we talk about butter and cheese. Either European sources or grassfed sources. And in Austin, we're really lucky we have great farmer's markets and whole foods is from here, so people have access to really great stuff here. So I try to keep it as simple and compact as I can, if their surgery is coming up pretty quickly. For patients who want to dig really deep, and-

Dave Asprey:

As in the ones who don't want to die and want to suffer less after surgery, those ones? Okay. Yeah. Keep going.

Dr Marcella Madera:

Yeah. For those, we just do a more intense anti-inflammatory diet. And being a neurosurgeon, I have a lot of colleagues who are integrative and functional medicine doctors, who have very specific... They'll do lab testing and do soul testing. And if people want to get really deep into it, then I refer them to one of my really expert colleagues for that, so.

Dave Asprey:

Today's guest is a dear friend, an advisor, a mentor and someone who is really working hard to change the world on multiple fronts. A multi guest on the show, author of a book and CEO of a company called Viome that I'm a big fan of. I'm talking about none other than Naveen Jain. Naveen welcome to the show.

Naveen Jain:

Well, Dave is always an honor and a pleasure to be on your show and no wonder that I keep coming back. Most people thought that even our immune system actually stops at the blood blood-brain barrier. Now they found the immune system, all the way to the brain-

Dave Asprey:

The glymphatic system, yeah.

Naveen Jain:

The glymphatic system. And also the communication between the bacterial organisms in the gut to the brain... Here's interesting part. What happens in the gut doesn't stay in the gut. When you are anxious, you get the butterflies in the stomach. When you're depressed, what do? You eat or you don't eat. Why is it the digestive system is actually impacting the brain? It may turn out that as you mentioned, that we may be just a wonderful, beautiful container for these microorganisms, for us to spread them around by pooping everywhere, which is literally why they may have created us. And they control our mood, our behavior, and our craving, which I found to be personally just amazing. I used to crave the dessert after every meal, because to me it was an exclamation mark. "My meal is done."

Dave Asprey:

I've seen you eat ice cream Naveen.

Naveen Jain:

Yeah. But here's the interesting part, after I gave up for three weeks, just willpower, I just don't crave it anymore. I don't-

Dave Asprey:

You changed.

Naveen Jain:

... need it. So what is it that happened? First three weeks for the willpower, after three weeks, I killed those bastards who were making me crave that. Don't crave them anymore, don't care anymore. So my point is little that we know they're controlling every part of our body. They are the puppet masters. And one day we're going to realize that... I'm going to digress for a second here.

We talked about humans having a soul and there's something that's eternal, and when we die the soul goes away. I wonder if they were really talking about microbiome, they poop more or less the microbiome move from one host to another host. And the soul just simply merges into the nature and finds a new host, right?

Dave Asprey:

I believe the origins of consciousness are bacterial in humans. Unquestionably the ego itself is a function of mitochondria, mitochondria, bacteria, bacteria talk to each other, the gut [crosstalk 00:10:55] gut bacteria, talk to them, that's how it works.

Naveen Jain:

So microbiome mitochondria are communicating. Microbiome literally every bit in our body is communicating to the bacterial organism. They were there three and a half billion years ago. They had lot of time to think, lot of time to evolve. The humans are only couple of hundred thousand years old, we are still learning to communicate among ourselves. So another thing we really learned is, now we can see the signatures of the diseases just by looking at your gut microbiome, fancy way of saying the poop. We can see the onset of depression, onset of obesity, diabetes, IBS. And then-

Dave Asprey:

Just when your gut bacteria mix.

Naveen Jain:

Just from your gut bacteria mix. We can actually tell you, you have IBS. We can tell you, you have joint pains, you've got arthritis. And amazing things happen as you adjust through the micronutrients, and micronutrients come in the form of supplements and possibly even food.

Dave Asprey:

Yep.

Naveen Jain:

And then you're able to adjust the biochemical activities using artificial intelligence, amazing things happen. Our hope is in the next five to 10 years, we are going to be sitting here and talking about and saying, "I can't believe there was people 10 years ago, who suffered through life. They had cancer and died. They had heart diseases, they didn't know what to do with it." Our kids are going to laugh at us, "You mean people took the drugs for the rest of their life because they just didn't know what to do."

Dave Asprey:

Or everyone ate the same diet? Like, "Wouldn't eat the diet that works for me, it's obvious, right?"

Naveen Jain:

"And mom and dad by the way, had the same meal every day. They sat around the table and eat the same meal. You mean they didn't have the personalized, customized, 3D printed meal just printed for them and they sat and ate together. However, the meals were different for each person?" Because it's going to be personalized. The idea of this consumer packaged goods are going to go away. They'll be no package goods. Everything will be on demand, personalized just for you.

Dave Asprey:

And customized.

Naveen Jain:

And customized for you. That is what you are doing, amazing stuff. Because I really believe Dave, the next 10 years, the idea of people having chronic diseases is going to go away. And that's our mission, to create a world where being sick is truly a matter of choice, not a matter of bad luck, and it will happen. 10 years from now, we won't be discussing this doesn't mean we won't have any other problem. Our kids are going to talk about it and say, "Why do we have to speak to actually transfer our thoughts to another person? You mean, you just had such a low bandwidth, you're speaking thing to transfer? You

mean you didn't have a broadband 7G that just, so everybody understood your thoughts and they were just done? And by the way, you were sat in the class for four years to learn about the thing, you didn't just upload their brain into the... and you were done?"

Dave Asprey:

The world is going to be so much cooler than it already is. And you can see the slope of change if you've worked on it for decades like you have. And if you're new to this going, "How could any of that be possible, I didn't see it last year?" It's because things are happening four times faster this year than they were last year.

Dave Asprey:

Today's guest is someone, if you've listened to the show before you might know who he is, and if you're in Hollywood or something, you might know who he is. But let me tell you a quote about this guy. This is a quote, "Jim Kwik knows how to get the maximum out of me as a human being." You know who said that? Will Smith. So this is a guy who for 28 years has been the primary cognitive performance and brain trainer for huge people in Hollywood. Jim Kwik is a good friend, and he has taught many of the fortune 500 CEOs how to suck in the information the way they have to do it. People who are at the extreme levels of performance, the very top people in Hollywood. And after 28 years of doing this with a fascinating story, he finally said, "I guess I should write a book. I talk to 200,000 people a year in live things about how to make them read faster and remember things and do things that literally normal people say are impossible."

Jim, welcome to Bulletproof Radio. I think for your second time, maybe a third.

Jim Kwik:

Dave, thanks for having me. And thank you everyone who's joining us.

Dave Asprey:

What is unlimiting the way you're defining it in the book? Because I think I almost wish that was the title is that unlimitless, although I understand why you choose limitless. What is-

Jim Kwik:

Well, you've seen the movie limitless obviously.

Dave Asprey:

I'm pretty well know for early use of Modafinil, which people called the limitless drug. So yeah, definitely.

Jim Kwik:

Yeah. So everybody knows that it was a Bradley Cooper and Robert De Niro and he goes from zero to hero. So I don't have the pill, but I have the process. For Bradley, Cooper's able to learn languages, be able to read faster. He had this incredible memory. He had incredible focus, determination, and drive. And but I figured out the processes for those things and I put them in the book. The process of a limiting is the act of removal of barriers and borders around the things that we want to accomplish. And again, limitless is not about being perfect, it's about progressing and advancing beyond what we believe is

possible. And I created a three-part framework that it's easy to understand and very, very practical, where people could see themselves in there and be able to take immediate action.

And so when I talk about this, about being limitless, there's a quote I opened the book with, from a French philosopher that says, "Life is the C between B and D." And people are thinking I'm speaking in tongues or code. B is birth, D is death. C, life is choice. And I really do believe that our life is a series of the sum total of all the choices we've made up to this point about little things that add up to big things. Like what you're going to put in your body, what you're going to feed your body, what you're going to feed your mind. Whether you're going to move today or not, where you're going to live, who you're to spend time with? Are you going to marry? All of these choices. Where are we going to go to school? All those choices. And I do believe that that is the ultimate super power is our ability to make decisions is.

These difficult times that we're in right now, these difficult times can diminish us, these difficult times can define us, or these difficult times can develop us. We decide. And so limitless is about getting our power back. So I want everyone to picture three intersecting circles and it kind of looks like Mickey Mouse. You have two ears that are overlapping and one face, so a Venn diagram. A Venn diagram, three intersecting circles, they all overlap a little bit. And I want you to think about an area of your life where you feel limited. I want you to think about specifically an area of your life where you're not making progress. It could be in your career, it could be in your income, it could be in your impact, your contribution. It could be in your relationships, it could be in your physical wellbeing.

What area of your life? It could be in your learning. You feel like you're not making progress, your memories aren't making progress. Your reading speed, your focus. You feel like you're in a box. So think about one area of your life, and I'll walk you through this exercise. Now this box is three-dimensional. So there are three forces that keep you in that box and these are the three circles. Because these are the same three forces that will liberate you from that box. And the reason why I do this is because you can't change something that's invisible. If you don't give it a name, you can't be able to... you can't influence it if it doesn't exist. So here are the three forces.

The first circle is your mindset, three M's. I alliterate everything, I use acronyms for everything, I use mnemonics for everything to make it very memorable. Three M's. The first M is your mindset. Now I'm going to define mindset as your assumptions and attitudes towards something. Your assumptions and attitudes towards the world, how it works. Attitudes and assumptions about yourself. What would fall in this circle that'd be very relevant, are what you believe is possible. Also in this circle, what you believe you are capable of. Because you can believe something is possible and you could not believe that you're capable of achieving that, but somebody else could. So what you believe is possible, what you believe you're capable of and what you believe you deserve, would go in there also. So that's the first M that your mindset. Now, the last them as a spoiler, I mentioned are the methods.

And this book was primarily a textbook on how to unlock the most important technology, which is your brain. Yet, if I teach you a strategy for learning a language faster or into a room and meeting 20 strangers, remembering all their names, but your mindset says, "I'm too old. I'm too stupid. I'm not smart enough. I have a horrible memory." Then, and you're still going to be stuck in that box, because all behavior is belief driven. People come to me all the time at conferences, they pull me out in private and they're like, "Jim, I have a horrible memory. Let me tell you..." And I'm like, "Wait, wait, stop. If you fight for your limitations, you get to keep them. If you fight for your limits, they're yours." And people are always doing that. And I'm telling... your brain is like a supercomputer and your self-talk is a program it will run.

So if you tell yourself you're not good at remembering names, you will not remember the name of the next person you meet, because you program your supercomputer not to. Your mind is always

eavesdropping on your self-talk. And so that's part of mindset and that's why it's important, because you can learn the method, but you can believe it's not possible, or you might believe you're not capable of it. Or you might not believe you deserve that relationship or deserve that body, or deserve that income. And so you go through a process of unlimiting those lies. And in the book, I point out seven globally, mass accepted lies around learning and intelligence and potential.

Dave Asprey:

Today's guest is Joe De Sena. And this guy is an extreme endurance racer, a radical limit crusher. He made his fortune on wall street, packed up and went off to sunny Vermont. And since then he's competed in over 50 ultra events, including 12 Ironman events in just a year. And he created the Death Race in 2005 and a couple of years ago, he started doing Spartan Races. These are multiple day physical and psychological challenge races, really to push people to the ultimate limits of performance. This is a guy who's about as superhuman as it gets. Joe, welcome to the show.

Joe De Sena:

Thank you. Now my head is so big, I won't be able to get back in my house.

Dave Asprey:

You said something that, it was actually the reason I wanted to invite you on the show, just, it caught my eye. And you said the Spartan race was intended to wake up the world and save humanity, which is kind of a big claim for a Spartan race. What do we need to saving from?

Joe De Sena:

So, and you probably talk about it on many of your previous podcasts. But my big thing is, we've been on the planet let's call it a million years just for round numbers. It's only the last 200, 250 maybe that we live the way we live, climate controlled houses, coffee on demand. We're basically living in bubble wrap some of us, not the whole world. And so what's interesting to me, the reason that's relevant is, as I was building these businesses, especially the construction and swimming pool business, is it intrigued me that foreigners would outwork any American I could hire.

I was a maniac, I want to work 20 hours a day, and very few people could keep up with me, but the foreigners could outwork me. And that just for 12 years fascinated me. And I finally came to realize it's a frame of reference issue. These guys and girls from these countries that don't live in that bubble wrap life, that don't have food as readily as we do, that have maybe... In some cases, you look at Bosnia, they burn the wood in their roof to heat the house until they have no roof. And so that just intrigued me. These were tough gritty people that were just happy all the time to be alive, have water and food and a job. And so Spartan race is a minor attempt to get us, the bubble wrap society, to get a taste of what that feels. Get out of our comfort zone, get in the mud, act like a human, face some obstacles, and maybe hopefully change our frame of reference.

I've had some of my best night's sleep on like a bed of rocks and boulders and thought to myself, "This is so damn comfortable." And I used to think that I haven't pushed myself hard enough until I can lay on some really sharp rocks and it feels good. So yeah I agree. I think taking yourself to that level where your muscles finally relax and give up, and where you get to a place where, I used to say, where you just want water, food, and shelter. That's a really nice place to be. All the other stuff that we live with and all these headaches and all these pressures are irrelevant when you get back to water, food, and shelter.

Dave Asprey:

So you said the phrase, "I can't, doesn't mean anything to me anymore. Not because of my ego, but because I know anything is possible." So you're bringing up the effects of ego on performance there. So how do you deal with your own ego when you're hitting your wall and when your body is saying no, how do you overcome that? What's the strategy?

Joe De Sena:

Well, I try to use my ego to get me through. So what I like to do is, publicly announce I'm going to do something. So it's Sunday and I don't know if I'm ready, but I want to raise some money for hospital care. So I'm saying, "All right, Wednesday, I'm leaving. I'm going to run 300 miles straight." Publicly commit. I send an email to everybody I know. I don't really want to run 300 miles straight, no one does. But I use my ego to trap myself. And so at mile 70, I'm exhausted at mile 140, I can't take another step, but I told everybody and my ego now is the thing that's keeping me going. And so that's how I use my ego. But as far as knowing anything's possible, it's being in those situations where you're completely done, you can't take another step, you lay down and you want to just be dead, and somehow you do another eight days. [crosstalk 00:26:19].

Dave Asprey:

It's a transcendence of the ego. The ego says, "No." And you're like, "I'm just going to do it." And that's the point where you realized that you had limits, you didn't know about?

Joe De Sena:

I didn't even know, you just keep going somehow. Just keeps going until, I guess, thankfully I haven't gotten to that place where you're dead, but some point, I guess you die.

Dave Asprey:

Seems to happen to everyone that I've met, at least as far as I know. Well, do you have some kind of tech? Do you use technology to keep your ego in check or to get yourself into a flow state? Is there any trick there or is this just pure on willpower?

Joe De Sena:

Yeah, I'm not a technology guy at all, I don't want to know. I don't want to know what my heart rate is. I don't want to know anything. I just... less is more. One step in front of the other, small little goals, really, really detailed paying attention to those tiny little decisions. Like, "Gee, I feel a hotspot in my foot. Let me take my shoes off. Let me adjust the situation even if I lose 20 minutes here, because 30 miles from now that could turn into a blister. If that turns into a blister, I'm walking funny, walking funny turns into a hip problem, then I'm out of the race." So really paying attention to those tiny little things.

Dave Asprey:

I've had Steven Kotler on to talk about studying flow states and things like that. So different athletes from different disciplines enter it in a different way. But any other details? So you're hallucinating, you're pushing yourself really hard and you went into this space, but tell me more about what's it like?

Joe De Sena:

For me, it's this ability to go beyond anything I ever did in training or any race before, and all of a sudden you're not running out of breath, your heart rate doesn't matter, you're just moving. But I'm not talking about for 10 minutes, this is for 10 hours. Just you don't need water, you don't need food. I'm seeing all kinds of crazy things, hallucinating all kinds of things, it's just an amazing place to be. You by the way crash at some point.

Dave Asprey:

You said you do crash at some point?

Joe De Sena:

You crash, you come down off that and then you got to recover. But while you're in it, it's pretty awesome.

Dave Asprey:

So what do you do to recover after a race? So you've been in a flow state, you push yourself really far, you've hallucinated, you won, you achieve your goal and then you're sore, you're hurting. Is it Pizza and beer? Glutamine and egg yolks? What do you do?

Joe De Sena:

You're not going to like this one, but ice cold water.

Dave Asprey:

All right. Oh no, I like that. I do cold [inaudible 00:28:55] I'll sit in ice water. It's just one of those things to tell the body to shut up, I support that. So you actually get in ice water?

Joe De Sena:

Ice water. Got to find it. We live in a cold place here and, I got a cold pond that somehow stays in the 40 degree temperature range all year. And yeah, it fixes things fast.

Dave Asprey:

Okay. So you sit in ice for how long?

Joe De Sena:

I might do a half hour, 40 minutes. When I've gone back to back events, I'll do multiple ice baths. I could do 5, 8, 10 of them for 20 minutes, just out, back in, out, back in.

Dave Asprey:

Wow. That's pretty hardcore. So when you're not just recovering from a race, do you normally like every week expose yourself to cold to keep your vagal tone? Or how does that work?

Joe De Sena:

I like to take cold showers just to piss myself off, it just wakes you up. I like to do anything that I don't like to do. Whatever my mind says, I don't feel like doing, I then force myself to do.

Dave Asprey:

That's a lot of discipline, but what an amazing practice, right? Joe, that works.

Dave Asprey:

Today, we're going to talk about something that has a name that you probably aren't going to like, it's called spermidine. Yes. It comes from, or at least was discovered in that which it sounds like. And if you've read my anti-aging book, Superhuman, I talked about my quest to obtain spermidine, and no, it's not what you... There's so many jokes we can make right now and we're not going to make those. But it turns out it's been incredibly difficult to get. And when I wrote the book, you couldn't get it other than as a research chemical. Recently, it has become available. And it has all kinds of interesting effects on your health, on your longevity. And it's something I wanted to talk about, but I felt I couldn't share with you guys. The only way to get it was to illegally import a type of probiotic from Japan, which is what I did for Superhuman. We can do better than that.

So that's what this episode is about. Our guests is Dr. Betsy Yurth, and she's doing research with spermidine, just as an extract, as a natural form you can get. And what it does for aging, for various health conditions. She's a physician who's run the Boulder Longevity Institute for more than 15 years and an orthopedic doctor. And she's a time member of the American Academy of Anti-Aging Medicine. This is the people who created anti-aging medicine. It's actually where I met my wife many, many years ago. And she works with a company called Longevity Labs, that has introduced spermidine for the first time into the US market, which is really cool.

Betsy or Dr. Yurth, welcome to the show.

Dr. Betsy Yurth:

Thanks, Dave. I'm actually really excited to be here. I've been a long time listener of your podcast.

Dave Asprey:

I have long considered spermidine as important as glutathione, but I couldn't get it. Do you think it's as important as glutathione?

Dr. Betsy Yurth:

I think it's more important, quite frankly.

Dave Asprey:

Wow, okay. That's incredible.

Dr. Betsy Yurth:

Again, look at the number of things this does. [inaudible 00:32:15] again and I think it's going to come back to, what's really working right there on that whole inner membrane of the mitochondria, on the oxidative phosphorylation pathway, to change your metabolic health. And I think your podcast, you did with Jason Fung recently, it's going to come down to... metabolic health is a big key player in cancers and Alzheimer's and dementia. So if we can restore normal metabolic health, which is making the mitochondria healthy and that's right where it works. So I think it's working a base layer lower than glutathione is. And it's probably going to be really... Right now, if you were to ask me, is there a one supplement, if I abandoned everything else... and that would be hard for me to do, but if I abandoned everything else, this is the one substance that we can absolutely say... Hey, this is in our diet.

It's across every eukaryotic species. Every single species, every one cell organism, everybody has this. So we know it's critical to life. We absolutely know it's critical to life. Anything that's preserved for that many species, we know is absolutely critical. So I think that when you look at all those things it's doing and how important it is, and we have all these studies now that are showing that it's affecting immune health, brain health, cardiovascular health, joint health, I think you can't really say that about glutathione. So that one substance that I would take, if I could take only one thing, it would be spermidine.

Dave Asprey:

We know that spermidine is protective of the liver. Is this something that you should take if you're going to drink alcohol? I've always told people, "Yes, take glutathione." But should you stack glutathione and spermidine if you're going to have a night of partying?

Dr. Betsy Yurth:

It's really actually very liver protected. Actually the bigger studies that have been done in spermidine is in the liver. And it increases NRF-2, so it's very, very protective to liver, and actually has reversed liver disease in people. We've used it in patients who have just alterations in liver function, sometimes unclear why, the liver is such a sensitive organ. Sometimes I try to figure out why the liver... you start to see elevation in transaminases is a little difficult. You go through eliminating everything they're taking orally and people aren't drinking, and still have some elevation in liver functions. And you can see really nice improvements in liver. So I think it's both protective, but also restorative to liver function. Seeing the same thing in kidneys as well. So I think it'd be a really useful thing.

Like I said, I would take it every day, but I would probably say, "Yes, if you're going to go out for a night of binge drinking, don't advise it." But if you're going to do that, then I would at least take a double dose of it and give some liver protection. And again, is it more important than glutathione, at least equally important in liver function.

Dave Asprey:

Wow. So I have known it's an anti-aging powerhouse and you know about some of the studies I just haven't seen, which this is fascinating to me because I didn't know that much about the liver and spermidine specifically. Talk to me about fat loss and weight loss and spermidine, what do the studies show?

Dr. Betsy Yurth:

So Brian Kennedy, who's out in Singapore, their lab just did a bunch of work on spermidine and fat loss. And it's interesting because the way it really appears to work on fat loss is by actually increasing some of the transaminases that are converting fat. And it works specifically on visceral fat. So it was actually really, really important for visceral fat, which as you know is the more dangerous fat, and sometimes a very hard fat to get rid of. You look at these kinds [crosstalk 00:35:51].

Dave Asprey:

The fat around the organs.

Dr. Betsy Yurth:

Yes. Fat around the organs. And when you look at these... the 50 year old guys who have the dad bods and the big old bellies, that's a really dangerous fat, but it's also a really hard fat sometimes to get rid of. And so what they found was when they took mice and they gave them spermidine and put them on a high-fat diet, that it totally protected them from gaining visceral fat. So it works particularly... and it worked in young mice, it worked in old mice, but it worked really particularly well on that visceral or bad fat and particularly white fat [crosstalk 00:36:24] and not the brown fat. It's a dangerous fat.

Dave Asprey:

That's the fat you can't see around your organs.

Dr. Betsy Yurth:

Yeah. But most people who have-

Dave Asprey:

It hides.

Dr. Betsy Yurth:

Yeah, it hides around your organs, but most people who have that big belly, most of those people have visceral fat. That's why we can measure abdominal circumference and make an estimation of visceral fat based on just abdominal circumference that those people have higher levels. So, yeah. So they found that it increased the lipolysis basically by up-regulating these adipose triglyceride transaminases that are moving the fat out. So it was really protected, even though it didn't directly affect the metabolic status to increase weight loss. It wasn't like it increased metabolism and so your weight was canceled. It really was very specific to working on some of these transaminases that converted the white fat. So it was really interesting.

And his study was, it was across the board. It was not age dependent, it was not sex dependent. And it didn't seem... even though we know that spermidine also works on autophagy in fat cells, it seemed even not related to that. And so there's this up-regulation of all these different transaminases when you look at the [inaudible 00:37:36] pathways. So it was really cool in that realm. So again, is there anything it doesn't do.

Dave Asprey:

We are going to talk not just about probiotics, but specifically about some very interesting research that's coming out about the microbiome and about certain types of probiotics that forms spores. And the guests today were catalysts for my favorite Bulletproof radio podcast title ever check this out, Armor Plated Immortal Probiotics from Space. That was episode number 629. And these are guests from Just Thrive health, Tina Anderson and Kiran Krishnan. Guys, welcome to the show.

Tina Anderson:

Thanks Dave.

Kiran Krishnan:

Thanks Dave. Thank you for having us.

Tina Anderson:

Excited to be here.

Dave Asprey:

You guys are hacking IgGs, and I actually know what they are because some of the things I make are specific increasing IgG, but you've got a new take on it. So define what an IgG is, how that refers to tetanus and just give me the download on this?

Tina Anderson:

Yeah. Well, an IgG is an antibody, as you know. And IgG is one of the most common antibodies that are found in the body. And so its job is to bind to toxins and bad bacteria and viruses and other bad stuff in our gut, and neutralize them and have them safely removed from the body, so.

Kiran Krishnan:

And to add to what Tina is saying, the way we even came across this with the whole concept of utilizing IgG for gut health, is we were part of a small consortium of companies that were working with HIV researchers, to study what we can do about something called HIV enteropathy. So the NIH published a study, I think it was 2014 that showed that the best predictor of mortality in HIV and AIDS patients was the degree of leakiness in their gut, and they call it HIV enteropathy. Because what tends to happen in that condition is you start getting all of this mucosal inflammation, gut lining damage, and then you develop the opportunistic infections that come along. And in fact, the progression from HIV to AIDS is dictated by how leaky that gut is.

Dave Asprey:

Wow.

Kiran Krishnan:

Right? So then the NIH actually proposed a challenge to the research community and said, "If you can find a solution for HIV enteropathy, we could probably significantly reduce the pathogenesis of the disease like, how fast it progresses and mortality rate and so on." So there were a couple of companies, including ourselves that have things that are therapeutic in the gut that work on the lining of the gut, the barrier function. We met this company that has this immunoglobulin product. And at that point they had two published studies in HIV patients. Showing that when you take bovine immunoglobulins, which is coming from the bovine serum, so cow serum, and you introduce it orally into HIV patients, you actually reestablish the formation of the mucosal lining, you bring down inflammatory response in the gut lining, even in HIV, which is an accelerated form of leaky gut. And then it allows for the repair of the gut lining, so [crosstalk 00:40:47].

Dave Asprey:

So what is the Just Thrive IgG... You have ultimate IgG, it's a new thing you guys made. What is it doing?

Tina Anderson:

Well, it's also dairy free, which is a great advantage and it has more IgG than you would find in [crosstalk 00:41:01].

Dave Asprey:

Okay. And so this is a bovine-

Kiran Krishnan:

53% IgG.

Dave Asprey:

Okay. So this is basically a powdered supplement [crosstalk 00:41:07].

Kiran Krishnan:

Yeah.

Dave Asprey:

... element, essentially. Awesome. By the way, we're not doing the Whey protein, that'd be [crosstalk 00:41:11]. Just because I've focused really heavily on collagen and you can only have so many products before your brain explodes. But just saying that the BSA, the research is insane.

Kiran Krishnan:

It is. Yeah.

Tina Anderson:

Yeah.

Dave Asprey:

And it's just an unknown thing in the world, even of biohacking. Bodybuilders in the '80s looked at it. But in terms of restoring gut, I think you guys are onto very potent there.

Tina Anderson:

Yeah. I think one of the things I just wanted to add is, as a company, we really try to bring things to the market that are missing in the market and needed in the market. And we obviously have so many times where suppliers are coming up to us, "This is the greatest product and the greatest ingredient." But we really are trying to find things that are backed by research, backed by science, and bring them to the market. And that are really making a difference in people's lives. That's really important to us.