

Dave: In addition to running Bulletproof Radio, I'm also a full-time CEO at Bulletproof. We're a coffee company, we make nootropics and things like that. One of the things that I pay attention to is hiring. Something that I would like to share with you is if you're hiring, do you know where to post your job to find the best candidates? Isn't enough to find quality candidates. If you want to find the perfect hire, you need to post your job on all the top job sites, and now you can.

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Announcer: 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 a normal adult, although, you don't want to be normal, you want to be better than normal, right? A normal adult has about 50 billion fat cells. That means there are more fat cells in one human body than there are people on the earth.

The good news is that the number of fat cells doesn't increase as you age, the bad news is that they just get bigger. They can get to be up to about 10 times their normal size. I like to foreshadow with the cool fact of the day, if you haven't figured this out, and that means we're probably going to be talking about fat today. Which means, before we get going, if you haven't tried the new Bulletproof grass-fed ghee, now is the time.

Ghee comes from butter, but what we do is we cook it gently using traditional techniques to remove the protein and the water. This is pure butterfat. It's really buttery, a little bit caramel-tasting. You can use it in cooking and baking, it has a very high smoke point. This is a stable fat, because it's saturated, so it doesn't get damaged the way, say, canola or corn or even olive oil does when you cook with it.

If I'm going to bake, I'll do this. If you're sensitive to lactose or dairy protein, you can use this in your Bulletproof Coffee. It's not quite as frothy, but it's a cleaner, cleaner fat. It's one of the cleanest fats that you can get; this and Brain Octane. You can find Bulletproof Ghee, that's G-H-E-E, on [Bulletproof.com](https://bulletproof.com), along with the coffee, brain octane and all the other good stuff that you want to eat.

If you're already enjoying this and you just learned what ghee was, if you just head on over to iTunes, where you're probably already logged in, and leave a quick five-star review, I would be eternally grateful. That helps other people find the show. We're at

1,500 views and counting. I'd love to reach 2,000, so thank you for taking the time to do that.

Today's guest is Dr. Sylvia Tara. She's on a mission to educate the world about fat, as a body part that's just misunderstood. After years of research and interviewing with physicians and patients and scientists, sound familiar? Same kind of thing that I did for Bulletproof; just learning from all the top experts in the field is one of the most profound things you can do. She put together this book that has a scientific point of view on the purpose of fat, and how you can beat fat, at least beat the parts of it you don't want.

I would call her a fat hacker. Welcome to the show, Sylvia.

Sylvia: Thank you, it's great to be here.

Dave: Why do you see fat as an organ system?

Sylvia: I think fat is very different than what we think of it as. We think of it as this reserve of calories, and we have to get rid of it at all costs. But really, fat is an organ, meaning that it releases hormones that the rest of our body really depends on. For example, fat can release a hormone called leptin that I know you write about as well. Leptin has profound effects on our body. It effects not just our weight, not juts our metabolism and our appetite, but it affects our brain size, it affects our bones, it even affects our reproductive system, for women, particularly.

It has profound effects all over, it also makes adiponectin, another hormone in estrogen, which is very important for women's health. Fat is doing a lot more in your body than you think it is, and I think when I did this research and I started this research because I had so much trouble managing weight. I really wanted to get to the bottom of it. I spent five years, really, pulling out all kinds of papers out of the scientific literature. I think I read about a thousand, in all, probably even more. Interviewed about 50 [inaudible 00:04:48] researchers around the world. What I found was just so astounding. As I found more about fat, how sophisticated it actually is, how it really functions as an organ, how our body depends on our fat.

That's when I thought "I have to really capture this and write a book about everything I learned. You know, it is very enlightening to really find out what fat is about.

Dave: When I weighed 300 pounds, I had more estrogen and less testosterone, because fat does exactly what you said, it makes estrogen more, or the bigger your fat is, not necessarily the more cells you have, but just the bigger they are, the more estrogen you make.

Sylvia: Yeah.

Dave: Also, in women, that can be a problem as well, though, because, you need estrogen if you go super low-fat, like, the super-lean, I can see my abs and my veins sort of look. What does that do to the hormone systems in a woman?

Sylvia: Yeah, your fat has to be at the right level. You really can't have too much or too little. When women lose too much fat, and you see this with athletes, ballerinas and runners, they don't have enough of that little functional estrogen that helps them reproduce, and they start to lose their menstrual cycle. It's funny because women can actually turn it on and off, their menstrual cycles, with about three pounds. That's how sensitive your body is to the right amount of fat.

You need leptin for reproduction, the ovaries have receptors for both estrogen and leptin, and then you also, if you have too much fat, you're getting too much estrogen, that's throwing the balance off as well. Fat, in a way, it's a kind of indicator of what your environment is, and it's almost a signal to your body that the environment is right for reproducing. If there's not enough fat, something's amiss. There's not enough nourishment in the environment to bring in a newborn.

Again, if someone's not caring for themselves, and they're gorging themselves and putting on way too much weight, that's also an indicator that something's not quite right here. Really, to think about fat, just like you would any other organ, like your heart or your lungs, your colon or liver. Is it healthy, not do we have as little of it as we can possibly have. Do we have the right amount and are we keeping our fat healthy as well.

Dave: When I first met my wife, Lana, who is a physician trained at the Karolinska Institute, and now she runs a fertility coaching practice. When I met her, she was infertile, and she was very low fat, and it wasn't necessarily by choice. She'd always been low fat, ever since she did a 10-day water fast as a teenager. It did something do her body, and she couldn't put weight on to save her life.

I did some Tweets on her diet using anti-aging things, this was before Bulletproof existed, and ended up doing several years of research with 1,300 papers on how to turn our fertility back on, she had to put on 20 pounds. She likes the 20 pounds, because it all went to the butt, the hips, and the boobs, which is what a fertile woman looks like, versus that super lean thing that she had before.

I remember she was like "Wow, I'm warm now, and when I sit down, there's padding." Before it used to hurt to sit, because she was so thin. She looked good, but she also was aware that maybe she was too low on the spectrum. Which, a lot of women are like "I wish I was her." It wasn't comfortable for her.

What's the range of body fat for women? What percentage of body fat do you consider to be within the optimal ranges, just for feeling really good?

Sylvia: Yes, I mean, that varies. I think around 25%, 30% or so for women is kind of what the tables and the norms tell us.

Dave: Yeah.

Sylvia: I also think, like you said, there's variation, and you can have a little bit more than that. Sometimes it matters where is your fat stored. Of course, if you have a lot of visceral fat, that's going to be less healthy. Not all fat is created equal. There's subcutaneous fat, which is the type that we talk about, it's right under the skin. Like you say your wife has, in your buttocks and your thighs and your abdomen. Then, there's also fat that's underneath the stomach wall, and that's visceral fat. That's the type that tends to get inflamed, it tends to affect insulin signaling. It gets crowded, it sends out a distress signal, which causes that inflammation.

That's the type that is correlated with diabetes and with heart disease. If you have it there, it's very unhealthy. If you have it in other areas, you can actually be somewhat above that range, honestly. That fat range, and still be fit, but a little bit heavy. I did give an example of sumo wrestlers who are exactly an example of fat. Of course, sumo are obese, anyone would categorize them as obese, but they exercise six to seven hours a day. Interestingly, exercise promotes the release of adiponectin, which is another hormone produced by fat, and adiponectin actually helps clear triglycerides out of our blood, and it puts it in the subcutaneous fat tissue, which is a safe storage of fat.

Because sumo exercise so much, all that fat you see is actually subcutaneous fat. It's not really visceral fat. They're surprisingly metabolically healthy. When they retire, and come off that regimen, they actually get metabolically unhealthy fairly quickly. They're a prime example of fit but fat. We can talk about fat ranges and how much fat is healthy, but it really does depend on where it's stored.

There's another category of fat of over-fat, I've just been reading about this where people look quite normal, but they have high percentages of fat. Again, depending on where that fat is, they might actually be okay having a little bit extra.

Dave: I did a bunch of really high-end imaging of my body. We did MRI, we did DXA scans and all of that, and my liver is slightly less than three percent fat, which is good. I've been doing unlimited amounts of butter every day for a very long time. Based on research, based on science, but there's that nagging question in the back of my mind, like "Oh my God, am I going to die?" I've done the calcium score, I've done everything I can think of, and all of the markers are phenomenal. Insulin sensitivity is as good as it gets, and glucose tolerance is good, and my visceral fat was not a problem.

The DXA said I was 20% body fat, the impedance, the super-high-end hospital, the greatest stuff said I was 15.3% and my normal range for anti-aging for men is 15 to 20. Does that correspond with what you've seen in your research that maybe men should be shooting for if they want to, not necessarily look like Wolverine, but you want to live a long time and have lots of energy.

Sylvia: Yeah, like I said, I think that's the fat, that's norm, it's considered healthy. It sounds like to me you've probably been eating healthy, you probably low carb, so, although you're having lots of fat, you're not having a lot of sugars with that too. I think the problem

really comes when people try to combine both. They have high fat, and they have high sugar, right? Something like a cheesecake, right? There's nothing healthy about it, because you're getting sugar, which is provoking insulin, right? Then it's going to take all those fats and put it into your fats, and it's not going to be as healthy.

I think you could try either end of the spectrum. Part of what's important to remember is that there's not one diet that fits everybody really. I know people who went on a pasta diet and they lost weight. I know people who do ketogenic, a very low-carb, and they lose weight, too. You can't really combine the two, so you can pick something on the spectrum that works for you, but, again, you have to find something that fits your life, right? It fits you biologically, number one, so you are losing weight on it, but also, it's a diet you can stay on for the very long-term as well. I think people have different psychological needs for diet. There's certain foods I know I really want to have, and I find diets that don't have them. I end up not staying on those diets very long.

Dave: What's your top food in that category?

Sylvia: I got to say, I like a little bit of sugar here and there. I've done ketogenic, I've done it a couple of times. What I've noticed is that I tend to come off after a while, because I really want that, and I don't want sucralose, I don't want something phony.

Dave: Oh, that's terrible.

Sylvia: I want real sugar. Because of that, I've done it twice, and I've lost weight, they work. Those ketogenic diets, I'll be the first to admit, but I find from my lifestyle and my psychology, I like a little bit more variation. What I did find works for me is intermittent fasting, actually, because, I find that the hours that I do eat, I can be a little flexible. It doesn't quite matter as much, as long as I do that overnight fast. I know you're right about this, too, intermittent fasting is great for all kinds of things. Certainly the growth hormone peak, where you're extending that a little bit. I find I sleep better. That also affects ghrelin and leptin and other hormones, too.

I think the key thing is to pick a diet that really works for you, because we know with leptin, particularly, our fat produces leptin, leptin has a direct tie to appetite, it has a direct tie to metabolism. When we lose fat, we lose some leptin, and that actually helps increase your appetite a bit, and it also lowers metabolism just a bit. The one research I cite from Columbia University, they find that people who have lost weight actually have to eat less than someone who's naturally at that target weight to begin with. Say someone who's at 170 pounds, and has lost 20 pounds to get to 150 pounds, they have to eat about 22% fewer calories than the person who's naturally at 150 pounds to begin with.

There's a bit of a caloric penalty, once you do lose some fat. Interesting, I talk about some research on liposuction, even when people have it surgically removed, their fat, they get that same effect; they have a lower metabolism after that. Whatever diet you pick, it's not like you can be on it for six months and jump off and go back to your life.

You have to find something that's going to work that you like for the long-run, then add exercise in, slowly, to that as well.

Dave: That's one of the problems with the ketogenic diets, and I'm a huge fan of cyclical ketosis, especially for women. I gave a keynote this year at the American Academy of Anti-aging Medicine, which was a huge honor, because I'm not a licensed physician. I'm kind of the opposite of that. I'm an unlicensed biohacker. I shared the stage with Dr. Perlmutter, and Dr. Ludwig, who both recently published big books about fat. I asked this audience of anti-aging physicians, all of whom can spell ketosis, all of them have read the literature. How many of you have been in ketosis? The whole room went up. How many of you are in ketosis now? 10%.

I do this at health conferences all the time, and it's exactly what you're saying. To be in ketosis forever requires a huge commitment, and I'm not sure that it's necessary, even beneficial. You talked about blood sugar. I have an implantable blood glucose monitor on my arm right now, and I had rice with sushi for lunch, covered in brain octane, right? I'm at four point nine, so my postprandial blood sugar is very acceptable. This is the equivalent of somewhere around 95 or 100 in the American metrics.

It's totally possible, you have a little bit of carbs, but it's not a full ketogenic diet, if I was to stick my finger on probably around point-four, point-five, on ketones. For people listening, point eight is the level of your nutritional ketosis, but in the literature that I cite in my new book, *Headstrong*, by the way, OrderHeadstrong.com, I would love it if you guys pre-order it, and I'll give you a big coupon for *Bulletproof* if you order before it launches. The cool thing about point-five is that's what resets your ghrelin so that your ghrelin levels, this is your hunger hormone, will match your current body weight, instead of your fat body weight.

This is why, I think, you've had some time losing weight, and then gaining it back. Same as me. I'd say I lost 100 pounds, I've probably lost two or 300 pounds, because you lose 20, gain 30, you lose 30, you gain 40, and you just always do this. It's a ghrelin and a CCK problem. Ghrelin precedes leptin, which precedes insulin, and we have all this crazy stuff that's affecting, in your work, is an organ there. Let's go back a little bit, though.

A lot of people have shame about fat, and you write about this in your book, which is also really valuable, because you're not talking about just biochemistry, and you talk about Newt Gingrich, and when Barbara Walters interviewed him, you actually quote him in your book. They asked him "What do you like least about yourself?" He's like "I'm most embarrassed about my weight." Here you have this powerful government person. I would've said the same thing years ago, and to be perfectly honest, I'm generally happy with my weight now. Sometimes I have more inflammation or less. I still have stretch marks from when I was fat, I'm not really happy about those. I even wrote a book about how to not get them, but you can't reverse them once you get those.

Talk to me about your own path, like, what made you do this book? Because you're a Mackenzie Consultant, you have an MBA from Ward, the same school as me. You came at this as a hacker, and a problem-solver, so tell me your story about fat.

Sylvia: Yeah, sure. I've always gained weight, just exceptionally easy, even as a child, I gained weight quickly. I noticed my friends would be really skinny, you know? Yet, when I wore a bikini, I was softer. Those problems just became more pronounced as I got older. You know, we get more stressed, certainly going to Ward, and then Mackenzie is very stressful, and you have less time to even think about what you're eating.

You're eating snacks, you're eating take-out, you keep going, and also, through the years I gained some weight, just starting a career, and then I had children, and I think I gained about 10 pounds, you know, with every pregnancy, like a lot of women do. Some of the old tricks I was using, they just weren't working that well anymore. All the while, I struggled with fat, I'd notice people who could eat whatever they wanted to and not get heavy.

Honestly, people who could eat cookies, a bagel, whatever, and they really weren't gaining much weight, and they wouldn't even exercise very much. I remember when I was a PHD candidate, one of my advisors says "Unless you have a really burning question, don't go into research. That research requires a lot of sacrifice, a lot of low-paid post-doc position. You have to have a burning question to get yourself through." At the time, I didn't really have a burning question, so I transitioned from research in my PHD program into the business world, and that's when I went to Mackenzie, et cetera.

I found, when I was trying to lose weight, and just having so much struggle with it, that's when I started to have this burning question about what is fat, why does it behave differently on different people? Why can some people eat food plentifully, and other people really restrain quite a bit and they still have more weight. I thought "You know, I'm going to understand this, if anyone could understand fat, I certainly can. I'm a biochemist by training." That's why I decided I'm going to really take this on. That's when I spent the five years, really, just pulling out all the scientific literature on fat. What is it? What does the research world know about fat that I don't?

I talked to a lot of people. I talked to a number of researchers around the world, I talked to their patients as well, and then I talked to doctors, and even obesity clinic experts, too. Then, what I just found out, it was really interesting. What the research has helped me do is, really, knowledge is power in a way, and the first part of the scientific method is observation. My observation is my fat is weird, right? For one, I'm gaining it so easily, compared to other people, and it's a little softer.

You know, I can't go on a business dinner and not gain a pound compared to other people. Observation, if you have an observation where you think you're seeing something, it happens repetitively, it's probably real. Having all the knowledge has helped me make sense of that. I think I learned about the different ways we gain weight. Not only is fat an organ, something very sophisticated, but genetics plays a big part into how much fatness we have, our gender plays a part. Women are definitely predisposed to weight compared to men.

As we age, our hormones decline, that has a big part of it, too. Then, surprisingly, even bacteria and viruses will have a role in our fatness. Even though it feels like you're eating

normally, you might be, compared to what is considered normal, but you might have to really tweak your diet, because of any of those components that affect our fatness.

Dave: It's awesome that you said that. "Well, this sure looks like this happens to me." How do you feel when a naturally lean personal trainer says "That doesn't happen to you, it happens because you're cheating. That didn't happen because it can't." What does that do to you when you hear that now?

Sylvia: Yeah, that's just so funny. It's almost like if we don't know the reason why something happens, it must not be happening.

Dave: Exactly.

Sylvia: Like that's the equivalent logic. Yet, I'm observing, it's happening. What's interesting is so many trainers, many of them have not ever really had a weight problem. They come from body building, and they've always been lean. No, they're not necessarily up on the science of fat, either, and so many of them are male. Yet, I have this body where I have been heavy, I've had children, I'm female. I'm very different.

I've worked with personal trainers before, and I think I really threw them for loop. I think even they couldn't quite understand why their diet wasn't working for me. If I'm doing all these things, surely I should be losing lots of weight. The other thing I used to hear from them quite a bit is that you have to eat calories to lose, you lose weight, and if you don't eat a certain amount of calories, you're actually going into starvation mode.

As I did more research, that turned out to not be true for my body type. What I could learn about myself from all the research is that I have a whole bunch of things working against me. One is that, certainly, coming into middle age, my hormones are a lot lower. I don't have as much testosterone growth hormone as I did when I was young. Even more so, I think genetics are playing a part for me.

My mother was very much like this, she really couldn't eat very much, and I think I kind of inherited that. There are populations of people that have what is considered a thrifty genotype. They accumulate fat a little better, and they're also very efficient with their energy, they don't burn as much energy. I read about the Pima Indians, which is one well-known example of a population with this thrifty genotype.

I'm Eastern Indian. What the Pima Indians thing is that those famines they had through the centuries, that gave them this thrifty genotype. Sure enough, Indians had these same types of famines, so it doesn't surprise me if I have a thrifty genotype. Then there's a number of other things. Being female, I have a whole chapter on the difference between men versus women, and I had to really go into this-

Dave: By the way, just to interrupt you for a second; that's why everyone listening to this should read that. One of the most popular blog posts I've written is the differences in the Bulletproof diet and intermittent fasting for women versus men. This is missing from almost all weight loss literature, and you totally nailed it because you had a self interest.

That's one of the things that stood out in the Secret Life of Fat, and why I wanted to have you on the show. Just thanks for calling out that difference really clearly, because there's lots of women listening, almost exactly 50% of the listeners are women on Bulletproof Radio, and just so you guys know, I've got your back here.

I'm married to a woman, I have daughters. This is no more or less important. It's just different. I think you kind of cracked the code, just the way you wrote that was impressive.

Sylvia: Right, and, you know, women really interact with their fat differently. We use it differently, we partition more nutrients into fat. There's all of these predispositions for fat that women have. Just depending on your makeup, what your age is, what your genetics are, and gender, and then certainly the viruses, microbiome that also plays in, too. That could be reasons why, even when it seems normal, you might be gaining more weight than somebody else.

It's all good to know, and what it does is it helps ... I think it can make you feel better. I always felt like I was failing on the diet. A diet would work for everybody, but somehow it wasn't working for me and what am I doing wrong? Trainers, as you said, they can be saying the same thing like "Surely, you must be doing something incorrectly" Having the knowledge, I was able to tweak a diet to make it work for me. I understood, I just have to ration it up. I'm not normal, if you will, right? There's enough things going on in my body that I just have to make a lot more effort than most people.

Dave: The genetics thing is interesting. I've got a genotype where I'm optimized for Northern European. I'm optimized to basically go into a town, get hit by an arrow or two, so my blood clots quickly. Then, basically, steal everything, and run away, and live to tell about it and not die of the local plague. Overactive immune system, and happy to go without food for a long time. I store fat easily, like you do. That makes me super-susceptible to environmental mold, which immediately affects leptin, and caused me to gain weight. I'd gain 20 pounds if you have me spend a weekend in a moldy building. I won't gain it that weekend, it will take me a week to gain 20 pounds. I'm like "I have to buy new pants? Like, what just happened?"

It's inflammation, and it's actually fat. Like, it's a combination of them. Knowing that there's a genetic difference between you and me and everyone else, and knowing, even the distribution is powerful knowledge. You talked about viruses. Could you talk about the fat virus? Is that something you're up-to-speed on?

Sylvia: Yeah.

Dave: I love this thing.

Sylvia: That's interesting. It's always very shocking to people to hear that viruses have a role in fatness, but it's actually been known about some time. Canine Distemper virus has been known to cause fatness in mice. I think it's [inaudible 00:25:18] associative virus causes it in chicken, and it was discovered in the eighties and pretty accepted. When you talk

about a virus causing fatness in humans, of course, there's a lot of skepticism and worry with that.

I do write about the very interesting research and life of a scientist named Mikil [inaudible 00:25:34] who came from India. In India, he noticed, or there was a virus impacting the poultry industry. It was called SMAM-1. What was interesting is that this virus, when they did necropsy of these chickens, they had more fat, which was odd. He thought that was very odd, because usually, a virus will cause weight loss, not weight gain. He was running an obesity clinic, so he had a bit interest in fat, and he decided to check patients for this, to see if they've ever carried this virus or not. What he found was that patients who carry the SMAM-1 virus actually had more body fat, almost by like a three-to-one ratio.

He really thought he was on to something here, and that the fatness was linked to this virus. I think he did some experiments with chickens, where you put one with the virus, one without, and put them together, and if the other chicken caught the virus, they would also increase their fatness. He decided to just quit everything, quit his obesity practice and come to the United States and he wanted to study viruses and fat. Of course when he got to the U.S., he had a very hard time getting a job on this premise, because most people just didn't believe him. They thought he was crazy.

I think fate intervened in his life. He's got a very interesting tale to tell. He finally did get a post-doc at the University of Wisconsin in Madison, and he was finally able to do this research. He had to find a different virus to study, because the U.S. Government wouldn't allow him to import the SMAM-1 virus, but he finally did find this one virus, AD36, in the United States that has very much the same affect SMAM-1 did in India. This virus, when people catch it, what they find is they tend to absorb more glucose out of their blood, and they create more fat molecules.

They have more fat molecules. The fat cells they have are getting bigger, but they also create more fat cells as well. Right? Through stem cells turning into fat cells. They overall have a higher propensity of fatness, and all the while, he's researching this and going on, there's actually, one of his patients, who, all the while is struggling with this, and they haven't met yet. It's someone who believes he got this virus in childhood, and he's struggled with his weight for decades, and he just couldn't understand it, why he gained weight so easily, it felt like he was hungry, he tried to eat less, and even then, he would be heavy.

He's finally referred over to the University of Wisconsin for their educational program. That's when he meets Mikil [inaudible 00:27:53], who does a test on this patient named Randy and finds out that he is positive for this virus, AD36. The happy ending to this, is once Randy learns about his fat and he learns how complex it is, and through the educational program at University of Wisconsin, learns about leptin, learns about weight set points, learns about the virus, and even bacteria, and how that affects fatness. He really starts to feel empowered. It all starts to make sense why he's had such a struggle.

In a way, it gives him this kind of strength to just throw everything at his fatness to try to manage it. You know, happily, Randy's around, I guess he's six-foot-two, he weighs about 170 pounds now, at 63 years of age.

Dave: Wow, outstanding.

Sylvia: He's really lean. Like I said, knowledge is power, and I think, you can't deny observation, if you feel like you're eating more all the time, and yet you're heavier, there probably is something to it, and it could be any of these factors. I read about four or five of these factors, and there might be even more out there, but it's a start to know how complex fatness really is, how weight gain is very individual for people. Just really about how sophisticated our fat is of even trying to fight our efforts to lose it.

Dave: What this means for you listening is that when you look at a fat person, what I certainly learned, as a former fat person is, it's because they're weak, it's because they didn't try hard enough, and it's because they're obviously eating buckets of fried chicken and ice cream when you're not looking. There are people who do that for emotional reasons, and there are, in my experience, more people who don't do that, and are fat, and are feeling frustrated and they're feeling kind of helpless and feeling shame about it, like I was.

I worked out an hour and a half a day, and I could max out every machine at the gym, and I still weighed 300 pounds and I'm still fat. Like, what's going on here? I don't eat anything? It just sticks with you. Like you, I managed to hack that. It's one of those things where the science is in ... If you have the wrong bacteria in your gut, you can be fat. You have a virus, you can be fat. You have genetic changes, you can be fat. Even if you do everything right. When you look at someone who's fat, automatic story you tell yourself is that it's because they're weak. That's not how it is.

What it means is they're probably frustrated and they may be cranky and tired because their energy balance isn't where it should be. That's one of the reasons I wrote my new book; how do you get energy back in your head, even if you are fat. It doesn't really matter, like regulating mitochondrial function matters. Cut out the blaming and the shaming on people who have fat, because there are variables that no one knew about five years ago or ten years ago that are controlling things.

Let's talk about mitochondria for a little while, though. These are the energy storage cells and creation cells in our body, and they're present in brown fat. In fact, some of my work is how do you increase brown fat with cryotherapy and things like that. This is in the Bulletproof Diet, it's in Headstrong. You actually write in your book that there are disadvantages to having too much brown fat. Talk to me about brown fat.

Sylvia: Right. Yeah, brown fat is different than white fat. White fat will hoard calories, that's kind of its function, as well as producing leptin, adiponectin, and other types of hormones. Brown fat, a primary role is to produce heat for our body. Brown fat is brown because of the number of mitochondria it has. Mitochondria through oxidative phosphorylation, it can produce heat for us. It's considered a good thing to have, and

certainly it burns calories, it keeps us warm, and like you said cold exposure or something that can increase your level of brown fat.

There's actually something called beige fat as well, and that beige fat is capable of turning into brown fat. Exercise will also turn that beige fat into brown, so it will increase your deposits of brown fat as well. Cold exposure, exercise will help increase those levels. There was one case, and it's just a story about how something even considered good, considered beneficial for us can actually go bad. I do give the story of Jocelyn Reese who was a three year old in Britain, and she was born with just very high levels of brown fat, and they had to keep trying to feed her. She was born very underweight, they kept her in the hospital for a while. Then, also, when she wasn't home, she just wouldn't gain weight.

Finally, after six months, they brought her back to the hospital, and she was two pounds, seven ounces, and she stayed in the hospital for a year, and they had her on interavenous infusions of glucose. They had her calorie count very high, and this doctor who was a specialist in endocrine diseases was just really stumped. Even after contacting everyone around the world who might have a clue, no one really understood what the problem was. He finally did a biopsy of her fat tissue, along with some other tissues, and he found that she just had extraordinarily high levels of brown fat.

She was just burning off all the calories that they put into her all the time, to the point that she couldn't gain weight, she couldn't develop normally. Unfortunately, this child passed away. As a toddler, she wasn't able to survive and thrive, but, it shows you the power of brown fat, certainly, but having too much of it is not a great thing either. Again, fat in moderation, so not too low overall, not too high, and even your brown fat levels. That's a very unique case. I don't know that there's been too many of them in the world, but it's an example of how even a good thing can go awry if you have too much of it.

Dave: It's unlikely that using any of the known techniques that any of us are going to get too much brown fat.

Sylvia: That's right.

Dave: At least, in my review of the literature, and my own experience. I wouldn't mind a little more. I did use a research chemical, recently, that is not approved for humans, it's a SARM, and it was GW501516, that increases muscle mitochondria by 50% in about four weeks. Yeah, hacking my mitochondria is interesting to me because I've always had energy imbalances, actually, I've mostly hacked them.

Over the course of four weeks, I took that with some other stuff, but I gained about 19 pounds of muscle, and I lost fat. I don't know the exact amount of fat I lose, but I had to buy new suits, it was really irritating. I wasn't trying to put on muscle, I'm married, I like how I look, and I want to be almost muscular, but not too muscular, because I'm planning to live to 180. What I noticed from the increase in mitochondria was that I was just throwing off heat. I didn't increase my protein intake or anything, but, we're having

an unseasonal snow storm, it doesn't even snow where I live, and there's two feet of snow on the ground. Like T-shirt's fine, just walk around.

I'm just like radiating heat. I believe my mitochondria count went up, but, I haven't drilled any of my muscle out to find out. I wonder, is there something we can do for fat? Like a magic thing other than cryotherapy that will give us a little bit more brown fat so we could enjoy a little bit more sugar and just burn it right off? Give me the hack, Sylvia.

Sylvia: Oh, boy. The hack. Well, cold exposure, I'll tell you what, after I did that research, my husband started swimming in our very, very freezing cold pool every day. He's able to eat more than he already could, because of that. That gets the cold exposure. The other hack, really, just is exercise. Running, and some strength building. There's some research now, but it's too early, where they're actually trying to grow brown fat, or do brown fat transplants.

Dave: Oh, cool.

Sylvia: Yeah, in mice they've done that, and certainly it helps them lose weight, and I think there's one person in Australia who's even growing fat stem cells in a dish, and having them turn into brown fat and reinserting that into humans. That's all out there, but that drug sounds interesting, but I can't help but think there's some downsides, some side effect, too, where you didn't sense anything from it?

Dave: I mean, one of the side effects, it made me better-looking. Now everyone has to go to YouTube and check. I looked at it, and as far as I know from my research, having more healthy mitochondria only does good things to you, up to some upper limit that I'm not going to hit.

Sylvia: Right.

Dave: For me, actually, it made a really positive difference for me, but it is a research chemical and we'll know in a while. You mentioned something interesting about taking fat stem cells. I've had fat taken off of the kidney area via liposuction, and then cultured, and I've had bone marrow taken as well, cultured for stem cells. I have about 25 doses of stem cells banked. I've injected them into my brain, I've injected them intravenously into my face, and pretty much every site of injury on my body there is.

We're not injecting the fat, we're injecting the stem cells that live in fat. It turns out, there's 10 times more stem cells in fat than there is in bone marrow.

Sylvia: That's right, yeah.

Dave: What's your take on the role of fat in stem cells?

Sylvia: You know, it could be a whole new role for fat, and another bit of research that helps us view fat in a favorable manner. Adipose-derived stem cells are actually getting more usage now, because it's an easier access to stem cells compared to bone marrow and

other things. They are starting to get used, certainly for cosmetic reasons. I've seen them use injections in the wrinkles to give people a smoother look on their face. There's also a research where they're using it on bone fractures, and it helps bones heal because it is a stem cell that [inaudible 00:37:16], they can turn it into different tissues.

I think it was Rick Perry, the governor of Texas, the [inaudible 00:37:21] guess heads energy, but he had a back injury and he had stem cells injected into his back, and he was very happy with the result. It wasn't an approved therapy, so I think he got some trouble for this. We went from hating ... I actually went to loving fat, it was around the Civil War time, right after that, that Americans actually loved fat because there wasn't enough of it, there wasn't enough food. Culturally, we went through a period where fat was a status symbol and there was a fat man's club.

Dave: Yeah, live off the fat of the land, right?

Sylvia: It was around the 1900s that it turned into that, that fat became a bad thing, because now, food was more plentiful, people started getting fat, and there was all this caution about "Well, they're getting too fat." So religious leaders thought it wasn't pious to be fat, you know, military leaders thought it wasn't strong to be fat. That's where a lot of negative connotations started being introduced into what fat is, and that the term "fatty" and "slob," "fat slob," these things all got introduced at this time, the early 1900s. We're still kind of in that period, where fat's not just fat. It's a judgment now.

As we learn more about fat, one, that it's an organ, that it's vital to our health, that we can't live without fat. I have a couple stories in the Secret Life of Fat who couldn't make fat for some reason, or they had fat, but it was defective fat. Just the huge impact it had on their health, just all over on their health. We're learning about how sophisticated fat is, but we're also learning that it might be very useful for medical things like getting stem cells out of it. Hopefully, this knowledge does, on what fat really is, is it helps us appreciate it, for one. It is doing some important things, it might have some great uses for us in the future.

Who knows, Newt Gingrich might not be so embarrassed about his fat, as we learn more about it, and what it's really doing for us.

Dave: What about the type of fat that we eat? What role does that play? I talked about the Bulletproof Ghee, and I'm a fan of egg yolks. The old Bulletproof Diet is like "Saturate me, baby." For someone who's listening and hasn't yet bought the Secret Life of Fat, someone who's dealing with 20 pounds or more of extra fat, what would the first piece of advice you have for them [inaudible 00:39:31]?

Sylvia: I think the first piece is first don't despair; there's a lot of people in this situation, I was certainly in this situation. Fat loss can be achieved. I think you have to really understand your fat and what you're up against. Don't just go for what's easy. This won't be easy. I just have to say this off the bat, I know a lot of people, they want some of this easy diet advice. Like "Well, you know, you just leave out this food and you'll lose weight. You can

eat this herb, or you can eat this special food and you can lose weight, and you'll never be hungry, you'll have all the foods you want, et cetera.

It makes for great selling of diet books, but at some point, we really have to face the truth about what fat is, why it is difficult to lose, why we feel hungrier, how our metabolism gets lower because of leptin changes, et cetera. If you're willing to do that, if you're willing to really take the hard step of understanding your fat and being willing to fight with it at its own level, that's quite sophisticated. If you can persist, you can certainly win, but it might be harder to do than you thought. You might have to throw more effort at it than you first thought. If you're willing to do that, it will be successful. The other thing to know is that even though this seems really hard in the beginning is that it gets easier with time.

I do also have a whole chapter on the psychology of losing weight and the habits building up, our willpower and self-control so that we can stay on whatever diet it is we pick. Anytime you make a change to your life, whether it's just to be more punctual, say, or it's to be tidier, it requires long-term behavioral changes, and it's pretty hard to do at first. You can build up that muscle, if you will, by starting on small acts and graduating to larger ones. One example I give is a gym experiment where they paid people to go to a gym eight times in one month. Then, they paid another group of people to go to the gym just one time.

The people who they paid to go eight times, after that month was over, they just continued going to the gym. It's become habit to them now. The hardship is over, it required some real incentive, like money, for them to get going to the gym, but once they did it, it became second nature. There are things we can do to make it easier. I right about something called temptation bundling, where we pair a want activity with a should activity, and it makes it easier to do. One experiment done is where they give people an audio novel, a very juicy audio novel, but they can only listen to it at the gym.

Another group, they give them an audio novel, but they can listen to it whenever they'd like. People who could only listen to that audio novel at the gym actually go to the gym much more often. That pairing of it really helps them. In fact, they offer their own money at the end of the experiment to keep the audio novels away from them so that they only have it at the gym.

Dave: Is there an app for that? It seems like a really good app, as a GPS thing. If you're not in a gym, it won't play this one book. Some [inaudible 00:42:21] listening, make that, you'll probably make a few bucks with that.

Sylvia: Another business idea, there is an app called stick.com, which you get an incentive, you say what incentive you want, if you reach your goal. Then, if you don't reach your goal, we can have an anti-incentive, meaning they'll do something you don't want them to do, like give money to the opposite political party or something like that. That's another kind of reward.

Dave: There's also, Maneesh [inaudible 00:42:45] has a company called Pavlock that I'm an investor in, and if you don't work out, it shocks you. It's like a little shocking wrist watch. Any time you have a habit you don't want, including smoking or anything, it's sort of that old trick of snapping a rubber band, but there are people who have stopped compulsive eating using that. Because your nervous system dislikes the shock more than your rational mind dislikes it. It's sort of like "I guess I won't do that behavior anymore." And the internal desire goes away. That's sort of if you didn't work out, and what you're doing is you're pairing. You get to listen to a novel, and, if you don't go, something bad happens that you don't like.

You're tipping it in your favor. I like what you're thinking there.

Sylvia: Yeah, and just staying out the long-term. It will get easier. I know when I did intermittent fasting at first, it was really hard, and I write a chapter on my own experience. I used to crave foods like crazy when I first started. Especially at night, as I got hungry. I'll tell you, after six to eight weeks, I didn't feel it anymore. Your body adjusts to what you're doing, your mind adjusts to what you are doing. For people who have those 20 pounds, know, number one, it can be done. Number two, it might be a bit more effort than you thought it was going to be. Don't listen to the siren songs that this is easy if you just buy this book or eat this food.

You might have to put some more effort, ratchet up the effort, and then, third, know that it gets easier with time and you can maintain it.

Dave: All right, I've got to ask you, Bulletproof Coffee, and intermittent fasting.

Sylvia: Yeah.

Dave: You've tried it?

Sylvia: I have, I like Bulletproof, my husband's very big on Bulletproof Coffee. I actually get headaches, so I take very small amounts of it, but he loves it and we have it in the house.

Dave: You do do it? I found the same thing with intermittent fasting. That was one of the things that created the Bulletproof idea of intermittent fasting where sometimes you eat nothing for breakfast, but sometimes having just fat keeps your insulin completely flat. For me, it made intermittent fasting completely effortless, even though, yeah, I'm getting some fat, but the mechanisms of fasting remain in place. At least all the non-fat-related ones do.

Sylvia: Yeah, and I think people have said they feel sorry for me because I'm not eating at night, or how weird to have your kids eat dinner and you're not eating with them. There's all kinds of ways to do intermittent fasting. I know people who extend their day fast, so they don't eat until one o'clock or so in the morning, but then, they'll eat dinner. They'll eat something at six o'clock or so. There's a different range of doing intermittent fasting.

I think you could make it work for you. It really isn't as bad once you get into it, and it's extraordinarily effective.

I have very stubborn fat, and I found intermittent fasting just busted right through all of it.

Dave: How about non-intermittent fasting, going a couple days on just water, or even five or 10 days? Have you ever tried that? What's your take on that?

Sylvia: Yeah, I tried it a couple times. It gets too much for me, I think, because I'm fairly busy in the daytime, so I haven't had much success with it, at least. I think there's probably a way to get more attuned to it and get into that, but for me, just the rhythm of the intermittent fasting every day, where I know what to expect every day, I know what to do and can plan for it, that works really well for me. I've stuck with intermittent fasting because I find it effective.

Dave: I do too, I quite often do it. I usually eat my food between one or two and seven-ish. That's kind of where I do it. I just don't want to eat before then. I also know a lot of people who just get religious about intermittent fasting, that's all they'll ever do. Especially women, after a couple months of that without a break, sometimes they get adrenal dysfunction or they just get really tired or their sleep quality goes down. That's why sometimes mixing it up a little bit helps.

It very much depends, but I've noticed that trend, zero-calorie intermittent fasting for long periods of time can cause hormonal imbalance. Not always, but sometimes. Maybe that's what mine did.

Sylvia: When I get uncomfortable, at night or so, I'll have a handful of nuts or cheese. I always keep it to where it's not something that's so hard to do that I just can't get through it. I don't know that I do really strict intermittent fasting. It's for certain hours, but around six or seven, if I really have to cheat, it's still better than having my full dinner and not doing it. It works, still.

I think the other interesting thing is that not all foods affect people the same way, and you were probably aware of that research out of Israel, in the Weizmann Institute where Aaron Segal is testing blood sugar responses to foods of various people. What he finds is that some people can eat something like chocolate and alcohol and they don't get a severe blood sugar spike. Whereas, other people, they can barely have any of that, and they'll get a very big blood sugar spike afterward.

Foods don't affect everyone the same way. In the end, what I did to tune a diet is I just had a spreadsheet and I kept very detailed log about what I was eating, what time I was eating, overall nutrient intake for each meal, and that's where I came upon, really, this intermittent fasting was working. I noticed when I rationed back the hours from night time, if I stayed around three or four, I would lose weight, but if I ate at six, I wouldn't.

I also noticed that there were some foods that were supposed to be terrible to be eating, and so, against weight loss, but I could eat them, and it wouldn't really have an effect. Like say straight chocolate, I can have a little bit of at lunchtime, that doesn't really seem to make me gain weight, but a chocolate cookie or brownie will make me gain weight. It just depends. I also noticed that a little bit of nuts or cheese, like even in the fasting hours of six or seven o'clock, as long as I'm not having a lot of it, it's not really affecting my weight loss.

Everyone is really very individual, and I would just encourage people to really monitor and track what it is you're eating and when, and you'll start to correlate what's healthy, you lose weight, and what's not. Consider timing as much as you are your food content, in that it's in that flow.

Dave: I have a theory about different people's response with blood sugar to those things, and it's only come out in the last little while because I have this implantable blood sugar, blood glucose monitoring thing where I can just track my number whenever I want to. I'm exceptionally stable all day long, but if I accidentally eat a food, either that contains a toxin, or something that I'm allergic to, my blood sugar will go up dramatically. From a fight or flight sympathetic response, what do you do when there's a threat? Well, you flood the body with glucose so that you have energy to run away from the tiger. I believe that in some portion of these people, especially things like potatoes, which for 20% of us are nightshades that have lectins, they actually stress the mitochondria, lectins cause damage to mitochondria in that type of genetics but not others.

The body's like "I'm under threat, give me some sugar, baby." There's something go gon there. I also ate some food that had mold in it. It had been in the fridge for too long, I didn't know it, and I felt like crap. I know what I feel like when I eat mold. I'm highly allergic to it, and my blood sugar just went through the roof. Even though I didn't eat anything that's going to spike my blood sugar. Correlating these things, I think there's a toxin thing going on with fat storage and with blood sugar that we haven't yet elucidated, because we think coffee is coffee, even though, when you look at it, on a mass spectrometer, this coffee has mold in it, this coffee doesn't. The same thing for all these other foods.

This one had glyphosate, this one didn't, and is the body responding differently because of something other than the food? There's so much science to be done here, it's a fascinating time.

Sylvia: Yeah, we're just in the beginning stages of this. I think leptin was made known in the nineties, right? That's pretty young as far as studying different diseases. I'm hoping a taboo against fat kind of subsides, and we understand it's much more than just a reserve of calories. We'll just start finding more and more. The one good thing about the obesity epidemic is it's forced more research dollars into fat and what causes obesity. That's how a lot of these great discoveries are coming out. In the end, we find that some fat's not so bad, and that there's a certain level that will keep us healthy, but we'll find out more about how fat is acting in our body.

As we're learning, it's much more sophisticated than people think. Fat has a lot of defenses at its disposal to try to stay. Even though we want to lose fat, our bodies kind of don't. It depends on fat. One interesting thing I write about too is that fat can actually divert blood supply to itself. Just like tumors. I was in the world of cancer for a while, in research, and tumors have a way of diverting blood supply to themselves. That's how they can grow and get bigger. Fat can do the same thing. In fact, when they give some of these cancer drugs to people who are over ... Not to people, to animals, who are obese, they actually start losing fat.

We're a way long way from using any of those drugs for humans, but it just shows you that blood supply is another thing, how fat kind of sustains. There's more directed blood at it, to help it thrive, and more pathways to deposit more fat, even. We have to think of fat differently, not just as a bag. As a block bag of a lot calories, but as something thriving, and alive, and interacting with our bodies in so many different ways.

Dave: What an awesome view of fat, and enlightened and enlightening, in that it lets people know that they have a lot more control than they thought they might have over their fat.

Sylvia: Right.

Dave: Well, we're up on the end of the interview, which means I get to ask you the Bulletproof question from all the Bulletproof Radio interviews. Based on all the stuff that you know, but also just the path that you've lived, if someone came to you tomorrow and said "Look, I want to perform better at everything I do, what are the three most important pieces of advice you have for me?" What would you tell them?

Sylvia: Wow, that's a great question. That requires some thought, I suppose. Number one, I think, is attitude, really. First know that you can do these things. They did this research on the National Weight Control Registry where they study successful dieters, and one of the things that really motivates them to stay on a diet long is they've had some kind of really epiphany, if you will. They've either had a health crisis, where they're diagnosed with something, and now they have to take this very seriously, or they've seen a picture of themselves where they're an all-time high weight, and they just can't believe it.

These very same people who were cheating on a diet, or eating whatever they want from the grocery store, they're now so motivated that they lose the weight. They keep a log of their food, they exercise every day, and they can keep it off for years, and it's because this epiphany, this one big event that changed their behavior completely. If that can happen for those people, it can happen for anyone. Once you get your mind in the right motivation, you're really aligned with the plan, all of that is possible.

I say, number one, if you really want to live this great life, know that you can. Know that it's within your power to do it. The other thing is stay with the program that's going to help you do that. Again, it's the behavioral and the modifications, it's the practice, it's the habit. It's doing it long-term, don't just do it, come off, do it, come off. It's not really going to lead you to where you think it's going to.

I guess the third part of all of that, the advice I give is take breaks some time. All of what we're doing is not easy, right? Staying on a regimen is not easy, staying well-behaved is not easy. Every now and then we have to loosen up. There's actually, again, research that shows that that's a good thing to do. I know healthcare workers, that they're encouraged to wash their hands all the time. Towards the end of the day, they stop washing their hands. They just get tired of doing it. When they take longer breaks during the day, they stay with it. They stay on the washing hands regimen. The same is very true for dieters. Like, every now and then you need to give yourself a break. The key is don't beat yourself up when you've have a break.

There's something called dichotomous thinking, where, when people have gone off a diet, they think all is lost. It's like the kind of mentality of "I either got an A, or I got an F, there's nothing in between." People who have dichotomous thinking actually fail at diets much more than people who don't. Some of the really good obesity treatment programs, one of their real strengths is that they get people off of dichotomous thinking. When someone comes off a diet, and they come in for the weekly checkup, these doctors, and I write about one at Tufts University, it's very good. They help coach them back on. It's like "It's not a big deal, you went off, you know, let's get back on, it's not the end of the world."

Just that small change in the kind of acceptance, the kind of forgiveness of yourself helps people stay on for the long-run. Really, take into account the psychology of anything it is you want to do. Know that you can do it, try your best to be really persistent in the plan, and then third, if you come off once in a while for a break, just be forgiving about it. Everyone has to come off. You're still a good person for all of that. I think part of it's self-love we have to put back into ourselves, and we're trying to do something that's very hard to do.

Dave: Well, thanks Sylvia, what an awesome answer.

Sylvia: Thanks.

Dave: If you've enjoyed today's interview, you could easily go out and pick up a copy of Sylvia Tara's new book, which is called the Secret Life of Fat. It's worth your time to read it. You'll notice a trend on Bulletproof Radio, where I find really interesting authors who have written books that are worth reading. There's an industry out there where you write a book because it makes you money, and then there's another group of authors who write books because they're meaningful, and because they have something to offer. This book falls in the latter category, which is why Sylvia's on the show.

I would encourage you to go out and pick up the Secret Life of Fat, because you'll learn something. If you're into learning things, time for a quick Bulletproof plug, here. Headstrong, my new book, go to OrderHeadstrong.com, I will give you a coupon, as long as you order this before the book is released on April 4th, I'll give you a coupon for \$25 off the Bulletproof store, so it's a really good deal. That's OrderHeadstrong.com, and if you want to read about the Secret Life of Fat, it's called the Secret Life of Fat, you can get it anywhere books are sold. It's available today.

Thanks for this new Bulletproof Radio, as always, leave a great review, and if you want to say thanks for an amazing interview, buy both books, because we'd both appreciate it. Have an awesome day.

Sylvia: Great, thank you.