

Speaker 1: Bullet Proof Radio, a state of high performance.

Dave Asprey: You're listening to Bullet Proof Radio with Dave Asprey. Today's cool fact of the day is actually not that cool. It's a little bit troubling. It's that today we're going to talk about kids, and right now, only about 2% of American children eat a healthy diet. Researchers say that childhood obesity could reduce life expectancy by five years or more over the next decades. It's already happening, by the way, right now. We just had a reduction in that that you'll hear about in the show.

I want my kids to have the ability to live to at least 150, given that I'm going to live to 180+, or at least that's my plan. I also want your kids to have that same opportunity, because I believe it's entirely possible given our biology, given our technology, that we can extend our human life span very meaningfully. Not so that you're old and decrepit, but so that you're old and full of energy, and then eventually you die, but you don't spend thirty years in that retirement home. Unless that's what you want to do. It's that level of freedom, that level of control over our biology, and that's what has my attention. Because right now, forty-five percent of children diagnosed with diabetes have type two diabetes, just because they are obese.

When I was an obese kid, I was never diagnosed with type two diabetes. In my early twenties, I had a fasting blood sugar of 117, and I was definitely pre-diabetic, pretty much on the cusp of type two diabetes. I know that that was not necessary, and it wasn't because my parents didn't care, they were actually actively taking steps to improve my health, they were just the wrong steps.

Experts believe that if the current adolescent obesity rates persist, they'll be more than a hundred thousand additional cases of heart disease connected to obesity in about twenty years. This is just not okay.

You are going to hear from a guy on the show today who is doing something about it. A guy with some of the most impressive credentials you'll ever come across. A New York Times #1 Best Selling author who has been on the show before. This is not meant to scare you as a cool fact of the day, this is meant to inspire you that there's something not so cool happening, but there's stuff you can do about it.

Before we get into the show, there's something that can help, and it's called Bulletproof Get Some ice cream. This recipe is something that I developed to help my wife want to get pregnant. It's something that we used to help turn her fertility back on by just loading the body up with healthy undamaged fats. What it uses is ... Well, no sugar, and it uses Bulletproof XCT oil or brain octane oil, grass-fed butter, and egg yolks, and zero sugar. This is such a nutritionally dense and satisfying ice cream that it's called Get Some ice cream, because about an

hour after you eat it, adults bodies get a signal from the food that says, "There's every ingredient you need to make a healthy baby, maybe now's a good time to go try." This is kind of a well known recipe amongst long-time bulletproofers or people who read the Better Baby book. It's something I haven't talked about enough.

You can use Bulletproof Vanilla Max, which is our lab-tested vanilla. Vanilla's neat, because when you use real vanilla, not that fake stuff that about 95% of vanilla flavoring is made of, real vanilla is full of these dark polyphenols that are really good sources of antioxidants. You put the vanilla, you put the brain octane, you blend it all up and you make it in an ice cream maker.

Here's why I'm telling you this in a show that's going to be about obesity and about kids and about fat. My kids eat Get Some ice cream for breakfast. They're like, "I get ice cream for breakfast?" You can make it with chocolate, you can make it with vanilla. Check out the recipe on the website. It's called Bulletproof Get Some ice cream, and if you ever happen to be in Santa Monica, we make it in the Bulletproof Coffee Shops. You can go there, and we'll make it for you. It sounds too good to be true, zero sugar, really creamy, amazing, and good enough for breakfast for your kids, where they'll want to eat it, it's there, and it's what we do in my house. You can find bulletproof XCT oil, brain octane oil, and vanilla max all on bulletproof.com, and I always appreciate your business. It's one of the ways you can say thanks for what we do on the show here.

Speaking of the show, if the show's really beneficial for you, I'd love it if you took just a minute to give us a five star rating on iTunes. I know it takes a little bit of your attention. It maybe takes ten seconds, but it really helps other people find the show, and it helps to inspire me. I'm grateful for your feedback, grateful for your comments, grateful for your support. However you choose to express it.

You ever have one of those times when you're in a really big meeting, really big stakes, and you start to sweat because it's sweat or maybe even because you're nervous? It's certainly happened to me, maybe in one of my first Silicon Valley pitch meetings, and I never liked that. It was really a problem for me when I was heavier. Turns out now, you no longer need to worry about under arm sweat or the embarrassment of sweat appearing through your shirt with an undershirt from Thompson Tee.

The Thompson Tee with hydro-shield sweat-proof technology's a patented undershirt guaranteed to completely block underarm sweat, preventing those embarrassing wet marks and yellow stains. They are hand-crafted in the USA. The undershirts come in a variety of styles, sizes, and colors. I like these because there's no chemical treatment, so the effectiveness doesn't wash out over time, and they're machine wash and dryer safe, so they are as convenient as normal stuff without all the weird chemicals. Every shirt comes with an unconditional thirty-day money back guarantee regardless of if it's been worn, so you wear it,

wash it, and try it. Everyone should have at least one Thompson Tee for that special meeting or event where you need to look really good. Thompson Tee serves over 50,000 loyal customers in eighty countries. Visit thompsontee.com/bulletproof right now and enter "bulletproof" at checkout to get 20% off your order. That's thompsontee.com/bulletproof, and enter "bulletproof" at check out.

Now onto the show.

We are filming live from the American Academy of Anti-Aging Medicine in Las Vegas, which is the preeminent event for anti-aging physicians really in the world. This is a very well-respected organization. I have one of the keynote speakers here as a guest, which is a good honor. We get to meet in person. If you're a long time listener, you already maybe heard the podcast with Doctor David Ludwig. Dr. Ludwig is a giant in our field. I'm going to have to read this, because there's too many affiliations for all of you. If you're watching on our YouTube channel, obviously I'm looking down here.

He's an endocrinologist and researcher at Boston's Children Hospital. He's a Founder of the Optimal Weight for Life Program, a professor of pediatrics at Harvard, and a professor of nutrition at the Harvard School of Public Health. You don't see a lot of endocrinologist, physicians, nutrition professors out there. It's pretty amazing just academically and the things you've tied together, Dr. Ludwig. Welcome to the show.

- David Ludwig: Thank you. It's a great pleasure to be back with you, and congratulations on your great work.
- Dave Asprey: Oh, thanks. It's funny because I'm also keynoting at this conference, which is an honor for me, because I'm the only non-physician to do it. To share a stage with you and Dr. Perlmutter.
- David Ludwig: David Perlmutter, so we talked about the three-Ds, the three Davids.
- Dave Asprey: Exactly. It's kind of ...
- David Ludwig: You've got nutrition in 3D.
- Dave Asprey: It's kind of crazy, and the reason I wanted to talk with you today and to share your knowledge with our guests is that last time you were on the show, you talked about your new book, *Always Hungry*, which is ... If you guys haven't checked out this book, if you liked the bulletproof diet, if you're interested in what fat can do for you, here's the guy with about ten thousand times more academic credentials than I have, who has some good stuff to say about fat. You're one of the people leading the national conversation along with Nina Teicholz, I always say her name wrong.

David Ludwig:

Teicholz.

Dave Asprey:

Teicholz. Nina and I are friends as well, even though I say her name wrong, who has also written some books about fat, but there's this national conversation where you have the old school low-fats, mostly paid for by big grain sort of research out there, and you're refuting some of that using very strong academics, randomized controlled trials, and the things that everyone wants, but no one has paid for except for maybe big drug companies and things like that. But there's something else you've done. It's something that I actually really value, and I wanted to talk about that as well. Your very first book was actually about combating childhood obesity. So I wanted today to touch on what are we going to do in order to get randomized controlled trials, like really good research to support the things that are in your book, things that are in Doctor Perlmutter's book, and the things about what fat actually does for our brains and our metabolism. That's part of it.

The other thing is what can people listening do for their kids to combat childhood obesity? As you know, I was an obese child, and I still have stretch marks all over the place.

David Ludwig:

Wow. [crosstalk 00:09:14]

Dave Asprey:

Quick plug, by the way, the new stretch marks book is on Amazon. It's like a buck or something. It's really cheap. Everything I know about stretch marks in one place.

David Ludwig:

So you don't have to stretch financially.

Dave Asprey:

Exactly. But this is the sort of thing if someone had told me when I was a kid. I was desperate. You know the three rippled stomach when you're fourteen, and your self-esteem is affected by that, and you feel crappy. My parents were giving me bran muffins and squeeze margarine, because that's what the doctors said, you know? What should people listening do if they are dealing with fat kids to help them?

David Ludwig:

Yeah, well, part of the tragedy is not only is the main prescription that we're telling people to follow the low-fat diet doesn't work. Not only does it not work for most people, and we can talk about why, but it blames people for the failure. If losing weight is just about calorie balance, just eat less, move more, than anybody should be able to do it, and if you can't do it, there must be something the matter with you.

Dave Asprey:

Like a moral failing, right?

David Ludwig:

Why is it that society treats people with a weight problem with more stigma than with almost any other medical issue? It's because there's this implicit sense

that weight is simply a matter of wills, will-power, discipline, and sticking to a diet. If you can't do it, there must be something the matter with you.

Dave Asprey: Yeah, you're weak.

David Ludwig: Poor disciple, poor willpower, or a character issue. You know? Think of gluttony and sloth among the seven deadly sins. My message and so many others, including yours, is that body weight is more about biology than will-power.

Dave Asprey: Oh, yeah.

David Ludwig: Talk about kids in school to this day, children can get fat-free, sugary pink or chocolate milk. It doesn't matter they dump in loads of sugar, as long as it's fat-free, but children are prohibited by national policy through the USDA from getting plain whole milk.

Dave Asprey: It's offensive.

David Ludwig: This is what I call the persisting harms of the low-fat diet era. Even though the USDA came forth with its new recommendations 2015, quietly lifting the limit on dietary fat, almost nobody knows about it, because the low-fat diet was launched with massive fanfare. Government, nutrition societies, doctors, dietitians have been telling us for so long that if you don't want fat on your body, don't put fat into your body, and yet that whole low-fat diet era has sort of been ended with no publicity. The public consciousness is still colored by that fear of fat and food policy. National nutrition policy, as we were just discussing in the schools, and there are dozens of other examples, is still infused by the low-fat message.

Why is that wrong? I mean, your audience has heard you talk about this, but it's simply because when we cut back on fat, if you restrict calories, and low-fat diets are the way to do that most quickly, yes you'll lose weight, but your body fights back. The brain perceives calorie deprivation, and what does it do? What every dieter recognizes. Your hunger goes up. Your metabolism slows down. You go into starvation mode. Stress hormones are secreted. That then further erode your lean tissue, and that's a recipe for failure. But we've got to reverse that. Actually, one of the best ways is instead to focus on the processed carbohydrates, which are raising insulin and driving fat cells into a feeding frenzy. Once fat cells calm down, the calories you eat stay around in the blood stream longer so they're there to nourish your brain, they're there to nourish your muscles and your organs, and so your brain can say, "Wait a second. All right. I can calm down. I don't have to worry that the fuel supply is limited."

Hunger decreases, metabolism speeds up, and then you get to lose weight with your body's multi-million year evolutionary system working with you, not against you. That's a message that's important for everybody, but it's critical for the children.

Dave Asprey: About two years ago, I sat down at a conference with Nina Teicholz ... I don't know if I said that right. There's an "r" in there?

David Ludwig: Teicholz, I think.

Dave Asprey: Teicholz. Sorry, Nina, if you're listening to this. She and I sat down, and we actually discussed whether there was a need for a class action lawsuit against the American Heart Association for their bad advice. I'm so troubled by this. The very next day, I gave a talk in Malibu to a room full of very high-end Hollywood TV producers about the bulletproof diet. I went through reverse T3 and cortisol and the case for a high-fat diet, and there was a cardiothoracic surgeon in the audience. At the end of this, she stood up, and she was one of the very Senior Executives at the American Heart Association. I thought, man, she's just going to tear me apart. She's got a lot of credentials. She turned around and she looked at everyone. She said, "I agree with everything he just said. We changed our fat recommendations a year ago based on the science and no one will listen."

I honestly almost had a tear in my eye, because it's not them. It's that there's a momentum that's happening from this bad advice from years ago that's been built in, but even the leading voices now are starting to talk about what you're saying. In fact, you're one of the leading voices about fat.

David Ludwig: Well, I do have to congratulate the American Heart Association. They have ... Like every other professional association, the government, they advocated a low-fat diet, but they were quick to recognize within the last decade. Not only did they recognize it, but they've come out with some very powerful policy statements targeting sugar, and recognizing that the metabolic syndrome, which is the soil out of which diabetes and heart disease rose, is fueled by insulin resistance. If you're insulin resistant, what sense does it make to dumb in so much carbohydrate?

Dave Asprey: I would have put them on the list of bad guys ten years ago, and I am also truly impressed that the American Heart Association is moving ... They shouldn't be a leading edge thing. They need to be a little bit conservative, because they are a very large voice. That actually gave me great hope.

The second thing you said about how low-fat diets cause obesity, one of the things that I dealt with when I weighed 300 pounds ... I could lose 20 pounds, and then I'd gain thirty. Lose thirty, gain forty. It has to do with a hormone called ghrelin, one you're certainly familiar with. What I discovered after recognizing that bulletproof coffee had an unusual effect, but not necessarily understanding what the effect was, I came across a couple studies that showed that when you could raise your ketone levels even just a .5 on a blood stick, which is below nutritional ketosis, that it would reset your ghrelin levels to your current body weight. Ghrelin's the thing that makes you have cravings and hunger all the time. So that instead of having ...

If you use a low-fat diet to lose weight, if you're three-hundred pounds and you lose fifty pounds, you will have the hunger and craving levels of a three-hundred pounder. You'll lose eventually. You'll start eating. That's not a moral failing, that's just running out of will power. But, if you go into very mild ketosis, just a little bit, that that flips a switch, and all of a sudden your hunger levels now match your current body weight, which is kind of liberating. Do you think this increase in fat that you're talking about in your book, do you have to go into ketosis for this to help people?

David Ludwig: Let me just first say that I don't say ... I'm not arguing that every low-fat diet is wrong for everybody.

Dave Asprey: Agreed.

David Ludwig: There are populations that have eaten relatively low-fat in quite a healthy way. The Okinawan diet is said [inaudible 00:17:13], but let's keep in mind that this is a very physically active population. It isn't burdened by obesity and insulin resistance. We're talking about what to do with a population in the United States, and increasingly throughout the western and now the developing nations, that has obesity as it's leading nutritional problem with insulin resistance. The ultimate expression of that is type two diabetes, the ultimate metabolic meltdown. People with diabetes are still told to eat a high carbohydrate diet. Type two diabetes is by definition glucose or carbohydrate intolerance. It's like telling somebody with lactose intolerance to have a lot of lactose. It doesn't make sense.

Your question ... Ketogenic diets are now increasingly the topic of very interesting research. Humans are designed to be ketogenic when they are starving, when they are fasting. We can trigger that also with a very low carbohydrate diet, as long as the protein intake isn't too high.

Dave Asprey: Or exogenous, like the brain octane oil that I make.

David Ludwig: Or, yes, you've focused on ways of hacking the ketogenic pathways. These medium chain triglycerides, especially C8 and C10, are very ketogenic. The body wants to burn them. It goes right to the front of the fuel shuttle and raises ketone levels. Ketones pass the blood brain barrier. My own experience on a ketogenic diet was really nice mental clarity. Because blood sugar ... When you are dependent on glucose so feed your brain, changes in your blood sugar could potentially affect your mental function. We see that in people with what's called reactive hypoglycemia. They eat a bagel for breakfast, they feel good for an hour, couple hours later, you can see their blood sugar is down, at or below fasting, and they're fuzzy. Ketones, if you get into that state, are stable. They're a very efficient fuel. Question is, does everybody need to be ... Is it advantageous for everybody? We don't know. We need the research.

I think what I'm especially interested in is people with type two diabetes. The possibility that a ketogenic diet could comprise an alternative to bariatric surgery has to be researched. Why do we spend a billion dollars to develop a drug for just one diabetes complication? A cholesterol or hypertension or control blood sugar. We need to be spending a billion dollars for high-quality long-term big-scale randomized, controlled trials, but most of the research we do in nutrition suffers from a shoestring budget. So we can't get definitive answers. I think that that's one place.

Another big question is whether the ketogenic diet will have advantages for the broad population, or whether we can get most of the benefits just by cutting down on the processed carbs, building up on the healthy fats. Ketogenic diets are restrictive, although maybe with some of your preparations, a little less so.

Dave Asprey: I've come to the conclusion, and this ... Jeff Volek, who is one of the preeminent ketone researchers is actually here at the A4M. I'm going to hopefully get a chance to chat with him as well. There's a crowd of very vocal ketone advocates online, who are all ketosis all the time, glucose is the devil's work, and I don't believe that's borne out biologically. After having been in extreme ketosis for a while, I believe that there's a pretty good argument that everyone, with maybe some weird genetic exceptions, would benefit from being in ketosis at least occasionally, at least mildly.

What I'm finding on my own blood sticks is that if I use brain octane in my bulletproof coffee, I can get to .8, which is the edge of nutritional ketosis, as long as I don't have any sugar in the morning. Even if I had sugar the night before. I just want a little bit of ketone present, because it provides that mental clarity and by varying things like that, I just measured my insulin sensitivity, and it's on a scale of 1 to 120. I don't remember the metrics off the top of my head, but 120 is type two diabetic, and 1 is as insulin sensitive as you can get. I used to be pre-diabetic, and I'm 1. I'm as insulin sensitive as you can get, and I'm highly glucose tolerant at the same time, which is unusual. I think that's cyclical ketosis doing it, but I want to see the research [crosstalk 00:21:55].

David Ludwig: Yeah. You know, we need to have a one billion dollar institute. Let's create one in Harvard, to do the definitive studies to answer these questions. Whatever the answer is, we need it. We need the answer. Maybe there are some areas that we ... I cherish my own hypothesis. Maybe we're 50% right, maybe we're 80% right. Even if we're 10% right, let's find that ten percent, and prove it. Then, finally, the percentage where maybe we didn't get it right, but out of failure of a research study, sometimes you get a much greater discovery, like penicillin, was discovered out of someone's failed experiment basically.

Dave Asprey: Right, right.

David Ludwig: It just makes no sense that we are investing so massively in drug development and have so many fundamental questions about food as medicine. Every time

we eat, the hormones in our body change ... Hormones are the most potent substance we have. They change the very expression of genes in the body, and you can influence that based on the amount, but also the type of foods you eat. Why aren't we taking advantage of that? Why aren't we thinking of food as the ultimate medicine without side effects? There's no multi-billion dollar company that stands to make huge profits from food research.

Dave Asprey: It's true, at least not yet. Bulletproof is very far from a billion dollar company, but I'm willing, as the company grows, to fund research on things like that.

David Ludwig: I'm coming back in five years.

Dave Asprey: Even maybe less than that, because there's a difference when you are making foods that are meant to have a specific effect. One of the problems that I run into though is that if I, say, carefully crafted a coffee beverage that I knew had medical effects, even if I can show in one of your Harvard studies very strong effects, let's say on Alzheimer's, cancer, diabetes, or heart disease. Any of the really big diseases of aging, there are legal limitations that make it illegal to say a food can do that. Right? It doesn't matter how much data. It doesn't matter if everyone in the country knows it, if I put it on the label, it's not okay. Do you think that there's maybe room for a policy change of when food is proven to be healthy, we might actually call it healthy?

David Ludwig: I think when we've got ... The problem is there's so many supplements with commercial interests that have been marketed in scurrilous ways.

Dave Asprey: Very.

David Ludwig: That's the whole point, if we've got the data, then we can base recommendations and claims on that. Now, I want to bring this around. Comment on something that you just said, and then bring this back to children, where you started. We've passed a milestone this year, which is that life expectancy for the first time, essentially since the Civil War, increased year after year, a few blips, a flu epidemic of 1918 is one. Basically, it's been going up ever since. Yet, lately, the last couple of decades, it's been going up, because we've been using more powerful drugs and surgical procedures to deal with the consequences of our diet, of obesity, of insulin resistance. We've really ... We've just hit the tipping point. We saw that increase in life expectancy slow down in the last few years. Last year, you've got the first statistically significant decline in life expectancy.

Dave Asprey: It was about two months, right? The difference in life expectancy went down by about two months?

David Ludwig: Yeah, that sounds about the right ... This is ... Many of them were food-related diseases. Most notably, cardiovascular disease and diabetes and a few others. What's happening now? We've got the first generation of children that were ... I

should say that the most notable declines wasn't spread across the population. It was in middle age. Not the old, not elderly. They are doing all right for their age. It's the middle age where we're seeing that going up. So what do we know about the middle age? Well, this is the first generation born with industrial foods, born in the 50s and 60s just as the fast-food, industrial processed foods were really invading our diet. Then, the low-fat diet on top of that. That generation is now beginning to be the canary in the mind shaft here.

It emphasizes the critical importance of starting in childhood. This is an age when both behavioral, but also biological plasticity is at its greatest. Whether it's developing that relationship between the palette and the brain and the sensitivity, or the gut microbiome that's training the immune system to tolerate the right foods, not develop leaky gut, or unfortunately, with the wrong influences, get the wrong microbiome and the leaky gut and the consequences is systemic.

To get effective prevention for children, we need three things. We need the right diet. We have to give them the right message. You've got to line up biology with behavior. We need the right approach to physical activity. Kids don't want to spend twenty minutes on a treadmill. We need to make physical activity fun again. Then, we need parenting practices that will guide change. We live in this toxic environment with all the wrong influences. So until we can actually get the policy changes to make the world a healthier place, the family has to be a bastion of protection for children in the home. You create this protective bubble. Parents do that in two key ways. One is modeling. You do it, they'll do it. Unfortunately, if you don't do it, they won't do it. Actually, what we would call protecting the home environment. If it doesn't support health, don't bring it in the home. That applies to food, that applies to the hi-def wide screen TV in every room. Not that a kid can never have an ice cream cone, just don't have it in the home.

We get these three things right, the right approach to understanding of food, the right approach to physical activity, and the protective home environment, we can get [inaudible 00:28:33] into the obesity epidemic during those first few years that I think would prevent a massive, massive public health crisis to come.

Dave Asprey:

There's part of it too, it starts about three months before conception. It really starts with your grandmother from an epigenetic perspective. My very first book was the Better Baby Book with Dr. Lana, my wife, and it's what we did to turn our fertility back on. What came out of that really clearly, and here we are at an anti-aging conference, if you really want to live a long time, have a super healthy grandmother and mother who ate great foods. I think a lot of this dying in middle age that we're seeing now is because our mothers were eating processed foods. We know that this passes down. Even if you start with making an environment in the way we did in our home, everything possible. We live in a forest. My kids can play outside. We grow our own organic food.

David Ludwig: No lyme disease?

Dave Asprey: No lyme disease. Yeah.

David Ludwig: All right.

Dave Asprey: Just lemon. But we do so many things to try to do that, but they're still paying for the genetic sins of my parents and their parents.

David Ludwig: It's funny, in the bible there's this quote saying, "The sins of the father will be visited for seven generations." If you just do bible studies, that sounds pretty harsh, but maybe from an epigenetic perspective, the elders knew something.

Dave Asprey: I think they did. Certainly for two generations, it's very dramatic. You look at the kids and grandkids of people who experienced extreme trauma in World War II, and it affects their type two diabetes rate. What you're saying now to people, if you start young, get your kids going and they'll do really well, but the real gift of that is in addition to seeing your kids thrive and not be obese and have brains that work so they can be calm and focused is that when you have grandkids, your grandkids will absolutely shine.

David Ludwig: We'll get a victorious cycle rather than a vicious intergenerational cycle.

Dave Asprey: Very well put.

David Ludwig: Let's emphasize that it's never too late. You're a beautiful example of ... You talk about in your book and your public speaking how you had developed obesity. You had all sorts of ...

Dave Asprey: Arthritis when I was fourteen, yeah.

David Ludwig: ... Chronic diseases, yeah. You've ... You look pretty good to me. I don't think I want to meet you in a dark alley.

Dave Asprey: I'm forty-four, and I'm literally ... My brain works better now than it did when I was twenty-four, and this is the power of changing our environment so that our biology does what we want, and what you're saying is to parents, you change the environment in the home and the kid's biology will follow.

David Ludwig: Yeah, and that's why I wrote my most recent book, Always Hungry. First we had a three-phase program to first jump-start metabolic change with a very high fat, although luscious diet. It's the easiest way. When you dump in high-quality fats, you can displace the processed carbs without craving them. We have some research to suggest that it actually turns off the nucleus accumbens, the craving center. Transition to something that's going to be sustainable. The epilogue of my book is policy prescription. Once we've brought healing into our own lives, and into our own families, we have to turn that outward and fight for policy

changes to detoxify the environment. The most effective way we can do that is having made those changes in our own life, because then we can speak with credibility and authority having struggled and showing success. That just communicates with people very effectively.

Dave Asprey: Something else that's affecting kids, and affected you, is environmental toxic mold. When we first met, when I interviewed you for Always Hungry, you were going through a personal mold experience. Are you open to chatting about that real quick?

David Ludwig: Well, I'll just say that we had after this horrible winter a few years ago all throughout the northeast, I believe, massive amounts of snow. We got ice dams around the house, and turns out that we had leaks through the chimney down and had a ... Through several floors through the house, very extensive mold. As we began to look into this more, our air handling system had a lot of mold.

Dave Asprey: Was contaminated, yeah.

David Ludwig: [inaudible 00:33:11] picked it up, but also air handling, if you've got air conditioning, you've got water. If that's not being ... In most homes, that's not something you've talked about, unless you're really paying attention to where water happens. For many homes, even if the roof is solid, it's the air handling or the air condition system. Mold can grow. I, myself, was experiencing some joint aches and muscle aches and ...

Dave Asprey: Did you gain weight?

David Ludwig: I didn't gain weight.

Dave Asprey: Cognitively, what happened?

David Ludwig: I think I just didn't feel like I was at my best.

Dave Asprey: It's like kryptonite. It didn't kill you, but it made you weaker. Is that a ...

David Ludwig: Sure. We fortunately got some good advice, and we found where the problem was. We mediated it, and happily our insurance coverage is ...

Dave Asprey: Beautiful. You're fortunate.

David Ludwig: Covered for that, you know. You really wonder about families that don't have good insurance coverage or ...

Dave Asprey: Or just don't know. Most of them have no idea.

David Ludwig: Yeah, don't even know.

Dave Asprey: That's one of the things that triggered my obesity. I know from all the other mold symptoms I had, like constant nose bleeds and bruising. I lived in a moldy basement when I was getting to be an obese kid. Mold in a certain population of people triggers weight gain. Other people it triggers autoimmunity.

David Ludwig: The problem is these symptoms are so generalized. Is it mold, is it lyme disease?

Dave Asprey: Or both.

David Ludwig: Is it food allergies? Is it chronic stress? Is it ... It could be so many things, and I think that that really speaks to a couple things. One is we need good research. We need research ... There's a lot of vested interest against mold research, because it's potentially a trillion dollar problem. In the housing industry and the insurance industry, don't want this information out, because they don't want to be paying for ...

Dave Asprey: That's terrible.

David Ludwig: Why aren't we thinking about environmental exposures more effectively?

Dave Asprey: Let's see. Food and then air. The number two source of public threat in my mind is mold ... Allergic response to mold, and the toxins, the direct toxins that mold manufactures.

David Ludwig: We need the ... Going back to ... We need the research.

Dave Asprey: We do.

David Ludwig: We don't know. Maybe ... Of course, there's individual differences. Some people can live in a relatively moldy environment. Other people are highly sensitive.

Dave Asprey: It's very variable.

David Ludwig: We know that. There's literally ... Just look at food allergies. Some people can eat peanuts all they want. Other people, a whiff of it could send them into an anaphylactic reaction. It's not enough to just say there's a problem. We need to understand it, and take a much broader view of how food, stress, environment influence our immune system and influence our microbiology.

Dave Asprey: Part of the thing that's exciting here is that the technology is coming so we can test the air in your home, or in my home, and understand what's in it. We can test food the way that I do with the coffee, and other problematic foods where agriculture research they're at high risk. Then we can cross correlate those things and some people have less reactivity, however, there are some toxins that are hormetic, take a little bit, you get stronger. There are other ones where it causes oxidative DNA damage. It just does more for that guy than for that woman, but maybe we ought to just pull this out of our environment when we

can do it cost effectively. That's the direction I'm pushing, not perfection, but just awareness of problems, more research, and I've got about 900 studies on OTA and 1,200 on aflatoxin. We know they're bad, but the dose and the individual variations, it's like a big open hole of research.

David Ludwig: A huge question mark.

Dave Asprey: Before we wrap up, something that we talked about, you're interested in doing real, randomized controlled trials of nutritional things that don't have any vested interest, because they are not pharmaceuticals and things like that. I know that we have a very substantial number of highly successful people who listen to the show, because I've spoken with many of them. People with hundreds of millions to billions of dollars at their disposal, and thank you for listening by the way. Some of you I don't even know, I'm sure, but others I've been fortunate to meet. If any of you are looking for some philanthropy, this is a good human being with all of the right academic affiliations. This is the sort of thing that I'm really interested in.

David Ludwig: And no relationships with the food industry. It's important that we do the research without conflicts of interest. That's why you don't want to turn to the food industry for the millions of dollars.

Dave Asprey: Well, we know what General Mills and all the grain companies have done to further research. Canola oil ...

David Ludwig: Even if the food industry has the greatest of interests, you know, well motivated, we need the research to be impeccable.

Dave Asprey: At arm's length, right?

David Ludwig: I'm proposing that we create a quarter billion dollar institute at Harvard for intensive, state of the art nutrition research, where we begin to think of food from its ability to influence our metabolism, the expression of our genes in ways that may make all the difference between a lifetime of good health or chronic disease.

Dave Asprey: Maybe with some luck, someone who is looking for a good cause might want to fund some of your work at Harvard. If so, you can probably find either one of us on social media, or just send an email to support@bulletproof and I'll hook you up in the right way, because this is the sort of thing that can change the world in a very meaningful way.

Dr. Ludwig, your book is *Always Hungry*, and I already said this at the beginning of the show, but if you haven't read the book and you're interested enough to be a regular bulletproof listener, this is one that belongs on your bookshelf. It's very worthwhile, and it comes from someone who is the opposite of me, the unlicensed biohacker. Incredibly well-credentialed, well-experienced professor

in multiple fields that are all coming together to provide you with the knowledge you have now.

Thank you for being on Bulletproof Radio. Any other URLs or things you'd [crosstalk 00:39:17].

David Ludwig: Sure. I invite your viewers to find me on drdavidludwig.com.

Dave Asprey: Okay. D-R David L-U-D-W-I-G?

David Ludwig: Yes, drdavidludwig.com. There, you'll find links to my social media. We also have a Facebook community of I think now 7,000 plus people who are following the Always Hungry program and giving each other support. It's free and non-commercial. You don't have to buy the book to join the community. Our perspective is we're trying to heal ourselves, and then create a grassroots movement for social change where we can then begin to demand that the healthy options are the convenient and the affordable options too.

Dave Asprey: Amen. Thanks from Bulletproof Radio, and it's always a pleasure to get to hang out. We just finished lunch with Dr. Perlmutter, and it's been an amazing day.

David Ludwig: Okay.

Dave Asprey: Really appreciate your work and appreciate you.

David Ludwig: Thank you for having me.

Dave Asprey: Thanks.