

[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, well, eating a lot of fiber could improve some cancer treatments. One of the problems that's happening in ketosis right now is people make this mistake and say, "Well, if a little of something is a good thing, a lot of it must be even better." And if you do what I did years ago when I was developing the Bulletproof Diet and you go on that no fiber kind of keto diet because you're eating just mostly fat and some meat, bad stuff happens to your gut bacteria, which I wrote about in a couple of my books.

[Dave:](#) Some new research, though, shows that high fiber diets, and by the way, that doesn't mean high grain and things like that. You can get fiber from your vegetables. You can get fiber from different sources, but high fiber diets change gut microbes to make immune therapies more effective and, interestingly, they found that taking probiotics could do the opposite. It doesn't mean they will, it's obviously dependent on what probiotics you'd be taking and what you already have in your gut. The research comes out of MD Anderson Cancer Center. In other words, feed more of what you got instead of adding other stuff in, which is a core thing that I definitely recommend from a Bulletproof perspective. Having enough fiber in your diet will cause the stuff your body needs to grow. It's kind of self-regulating.

[Dave:](#) Researchers looked at people with melanoma, a kind of skin cancer, who were getting a kind of immune therapy called PD-1 Blockade, and the people who ate a high fiber diet were five times as likely to have the therapy halt the growth or shrink their tumors versus people who ate diets low in fiber. The researchers, after looking at a lot of data, including what's actually growing in poop, figured out that the people who had the highest amount of fiber had more of the kind of bacteria that were associated with response to immune therapy, and they got the effects of the therapy.

[Dave:](#) People who ate a lot of processed meats or excess sugar had fewer of those bacteria, and they were more likely to grow despite the treatment. But when people took probiotics, pills or even food supplements that are supposed to have helpful bacteria, those bacteria crowded out the bacteria that the body needed for the immune therapy, so it's not necessarily that they're bad for you, but that you want to make sure that the probiotics you're taking are good for you. And in this case, 40% of the patients said they were taking probiotics, and they had lower diversity of gut microbes than people who didn't take them. So, score one for prebiotics, and I wouldn't say score negative one for probiotics, but maybe if you do both at the same time you'll see some interesting stuff happen.

[Dave:](#) Today on the show, we're talking again with Ian Mitchell, who was a guest on the show about a year ago last summer on episode 514. We talked then about why inflammation matters for your dog and for you and some things that I'm doing for my dog, Merlin, based on what Ian's developed as VP of research at C360 Health. And Ian is just a fascinating guy to interview, which is why I had him back on, because over the past six years he's been using these carbon nanoparticulate molecules as a backbone to do things like joint renewal, hair regrowth, and even anti-metastatic therapies for cancer.

[Dave:](#) And he has a background of doing actual real drug development for big companies, and is looking at how we use this compound in order to do all sorts of good stuff in the human body. And he created something called lipofullerenes, and what that is these fullerenes, these buckyballs, as they're also known, that are suspended in fats. I'll ask him to get into more detail. And he was just recently granted a patent that has important implications for treating humans, which is kind of cool, so we're seeing patents on anti-aging technologies like this. Ian, welcome to the show.

[Ian:](#) Thanks, Dave. Glad to be back.

[Dave:](#) You know, last time you were on the show, you didn't come clean with me.

[Ian:](#) There were probably a few things that I really couldn't talk about just yet.

[Dave:](#) You didn't mention that you were a semi-professional or maybe professional saxophonist.

[Ian:](#) Yeah.

[Dave:](#) And that when you moved to Austin-

[Ian:](#) In a former life, yeah. I was a professional saxophonist, yeah.

[Dave:](#) When you moved to Austin, you were best new jazz musician on the scene sort of thing.

[Ian:](#) Yeah, there was a competition called the Clarksville Jazz Fest, Best New Jazz Artist Competition, which I won when I moved there. It had been a long thing in my family. There's the quite the history of musicians, and it was kind of, the options were be very good or just don't do it. And so I very much enjoyed it.

[Dave:](#) That's too funny. And we'll talk about what being a musician does for creativity a little bit later in the show. But first up, I just dropped a lot of carbon 360, carbon 60 lipofullerene sort of stuff. I want you to define a few things.

[Ian:](#) Sure.

[Dave:](#) So people understand why what we're talking about matters, and what it is. So, define carbon 60. What is that?

[Ian:](#) Okay. Carbon 60, everyone says it's an allotropic form of carbon, which just means it's another configuration of carbon atoms.

[Dave:](#) Actually, everyone says it's allotropic?

[Ian:](#) That's it.

[Dave:](#) All right. If you're listening to this and you're like, "What does allotropic actually mean?" I'm pretty sure that's not what everyone says.

[Ian:](#) Okay, so perhaps that is not what everyone says. So, an allotrope is just a form where it's based on the same atom, but it's configured differently. So, you've got diamonds and graphite and fullerenes, and they are all allotropic forms of carbon. So, just different forms of carbon.

[Dave:](#) So, if you compress your charcoal briquette into a diamond, it's still just carbon.

[Ian:](#) It is still just carbon, it's just configured in a tetrahedron, and hence the value goes up. So, yeah.

[Dave:](#) So, if you're making an awesome barbecue, you could technically make it over diamonds?

[Ian:](#) If you make barbecue at the right amount of megapascals, yes, yes you could. You'd have the best barbecue ever, the most pricey barbecue ever.

[Dave:](#) All right, just checking on that. Okay, so carbon 60 is a reconfiguration of the carbon atom or molecule.

[Ian:](#) That's it. And there are a bunch of them, but the one that we particularly play with is spherical. So, it's 60 carbon atoms grouped together. Carbon 60, buckyballs, buckminsterfullerenes is the tech term.

[Dave:](#) Geodesic domes.

[Ian:](#) Right, that's why the guys who actually discovered it in '85 called it that, is because it looks very much like a geodesic dome. Hence, buckminsterfullerene. So, over the past couple of years, initially, it's been around for about 34 years. But initially, it's been around technically since the big bang. But research started on it in about '85 after it was discovered, and most people were using it just by itself in its raw form. Or, they were combining it in an aqueous form with water and solution, and the results were not so good.

[Ian:](#) There was a lot of thought about maybe you can use it for drug delivery, maybe you can group it with things, but no one had actually come across something that really made it bioavailable. In fact, in an aqueous form, there were actually a lot of issues with it. It had some genotoxicity and caused a bunch of not so friendly effects.

[Dave:](#) All right. So, you make these unusual little spheres, and it turns out these carbon 60 things do occur naturally, just at a very, very low incidence.

[Ian:](#) Right. Lightning strikes, volcanic activity, yeah. Big bangs, things like that.

[Dave:](#) Okay. So, they exist, but they aren't common. So, if scientists made them common, then they would put them in water, and it was bad for you.

[Ian:](#) Yeah. Generally speaking, when you made an aqueous solution with C60, it was not a good thing. But some guys started working with them trying to find other ways that they could solubilize them, and they found, "Hey, look, we can actually adduct these things to lipids." So, they started binding them to fats, and oddly enough, they'd bind them to fats and they became bioavailable. And they'd actually move through the cell membranes. So, in my lab, we took that a couple steps further, and we really started breaking down, how do they work with different lipids? What impact do the different lipid chains have? How can we configure these to get a different response on your hair, in your eyes, in your liver, in your skin?

[Dave:](#) Hold on a second here. Are you saying that different fats do different things in the human body?

[Ian:](#) It's almost like proteins. Different types of proteins, like venom, for instance, does a different thing in the body than, say, a nice steak.

[Dave:](#) Who would've thought? Oh my goodness.

[Ian:](#) It's crazy talk, right?

[Dave:](#) So, what you did though is, the original days, and full disclosure, okay? You and I, we've had time to hangout, and I have, we both have done extensive anti-aging stuff.

[Ian:](#) Yes.

[Dave:](#) That is very cutting edge. So, we're kind of cut from the same cloth that way. And going back I want to say 15 years, I ordered my first olive oil C60 molecules from some crazy brown cardboard thing. I think I still have some in my freezer, but I didn't feel good when I had them.

[Ian:](#) Right.

[Dave:](#) I don't know. I also didn't know what to do with them, so I have these little purple vials of whatever. And so I was a bit skeptical when you told me what you were doing, but I also had seen the research, the same stuff that got you excited. It's like, oh, rats live like 90, was it 95%?

[Ian:](#) 90% longer.

[Dave:](#) 90% longer. And so I was intrigued when you said, "Well, why does it have to be olive oil? It could be any of these other oils."

[Ian:](#) Right.

[Dave:](#) So, what did you find when you started mixing these in different oils, and what did you do differently than that original stuff that kind of gave me a headache?

[Ian:](#) Well, okay, so one, you have to really look at the quality of the oil. I mean, obviously you have to look at the quality of pretty much anything you're going to combine with at a ratio of one to 99, right? So, you're using one part fullerenes and 99 parts oil. So, you've got to make sure that it's really good quality. So, we started finding different effects in terms of, say brain octane, right? It fractions in the liver. So, you're going to get an entirely different biological effect if you couple it, as we had, if you take fullerenes and you adduct them to caprylic acid. It breaks down in the liver, hence it's going to be delivered to different areas in the body.

[Ian:](#) The chain length is a different size, so it's going to be compatible with different aspects of your physiology. And some it won't, some you need long chains, some you need short chains, some you need medium chains. And you're trying to basically figure out what key goes into what look. And so we spent months and months and months breaking down all of those things, and I think I've told you this before. Some of them were really cool, fantastic. Some of them, like vitamin E and fish oil, really disgusting and kind of disturbing at a very visceral level.

[Dave:](#) You take it and you're like, "I wish I didn't take that."

[Ian:](#) Yeah. Fluorescent orange and the worst smelling thing I think we've ever seen in the lab, other than maybe, I don't know, there were a couple of really noxious things occasionally that come through.

[Dave:](#) Got it. So, it doesn't always work. It comes out very different.

[Ian:](#) It's almost like straight glutathione.

[Dave:](#) Okay. So, if you're a longtime listener and you tried the original Glutathione Force that came in a syringe, it was sort of this weird banana-ish flavor with a strong sulfur under and over note. But it worked really well, and since then, we've managed to get it into a powder liposome in a capsule, which is the modern version, which is much more civilized. But that potent sulfur is what pure glutathione smells like, it's nasty.

[Dave:](#) So, you were having problems because you were getting these fullerenes, putting them in different oils, and trying to figure out, where can you direct them in the body using the oils? But some of them tasted crappy. Couldn't you just put the crappy tasting stuff in a capsule and just take it?

[Ian:](#) Yeah. Actually, you could, but you could elicit a certain response from lipofullerenes, which is the term. And there is a big difference, because like I said, with aqueous C60 or C60 in other forms, it's not the same as the lipofullerene. The lipofullerene functions differently. It's bioavailable, moves through cell membranes. So, yeah, we could've put it in a capsule, but that was just part of the process. We were taking it many, many steps further. We were looking at, what happens if we couple this with proteolytic enzymes?

What happens if we couple this with different amino acids, and different tetrapeptide groups? And that's the first patent we had issued, was about peptide group combinations. Because we were able to elicit a whole host of different responses, and the patent office rebuffed it initially, and then we had to go back with more documentation and testing and verify everything.

[Dave:](#) And according to my notes here, and my notes are pretty good because I am an advisor to your company, an investor in your company. I really believe in this stuff because I've seen what it did both for my dog and for me. So, just if you're listening to this, I believe in this a lot. But you found in your university tests that your formula for dogs had a 223% increase in effectiveness for reducing inflammation.

[Ian:](#) Yeah.

[Dave:](#) A cytokine called IL6. And if you guys have read Headstrong at all, you know it's one of the big inflammatory compounds in the body. So, you were knocking this thing down really strongly with this unusual form of carbon that no one had ever heard of.

[Ian:](#) Yeah, and there was a precipitous drop in the span of about two hours. It just cratered the cytokine levels.

[Dave:](#) And you got this patented now.

[Ian:](#) Yeah, we did.

[Dave:](#) Which is a good thing. And a lot of times, the anti-aging compounds, new nutritional substances like that, they either aren't patentable or no one knows how to do it, or no one is willing to do the hard work. But because you've worked in actual drug development for big pharma, you understand that whole process. So, you got the patent issues, and it's now in a good place.

[Ian:](#) Yeah. That was the precursor to the patent that we were just granted the notice of allowance on, which means that it'll publish here in the next couple of months. And that was really the basis for that, because we looked at the effect we were having on IL6 and IL8, and what the implications of that were, and they were surprisingly profound. Because we did, and I told you this, we did a test with mice to basically look for inflammatory markers and see what effect we could have. But we used p53 knockout mice, which are tumor rates. And so the tumor, they were actually rats, so the tumor rates, they developed spontaneous-

[Dave:](#) Wouldn't that be a good name for like a punk band?

[Ian:](#) Incidentally, yes. The name of my new punk band, The Tumor Rates.

[Dave:](#) Sorry.

[Ian:](#) So, yeah, they always die of idiopathic tumors. That's what they're designed for. They have a really defined mortality curve, and that was one of the other things that jumped out at us, is they lived 93% longer than they were supposed to. And after tens-

[Dave:](#) Using your stuff.

[Ian:](#) Yeah, using our stuff, yeah.

[Dave:](#) Which one was it? Was this on just the normal olive oil?

[Ian:](#) This was on, yeah. This was our normal formula that was the basis for Companion60, Revive and Rejuvenate, which are the human-

[Dave:](#) So, it's the lipofullerene that was patented.

[Ian:](#) Yeah.

[Dave:](#) Okay.

[Ian:](#) It's the lipofullerene that was patented. So, the human variety is Revive and Rejuvenate.

[Dave:](#) 93% life expectancy.

[Ian:](#) 93%. Yeah, that was enough to raise our heads, yeah.

[Dave:](#) Does it work on normal, non-tumor rates? Just [crosstalk 00:13:57] rats maybe?

[Ian:](#) It would be great, yeah. I wouldn't leave it around the kitchen because you'll never get rid of them. Yeah, so, I left out the soil and this cheese. Yeah.

[Dave:](#) Okay, but it's working in animals that don't normally die of cancer. Because you could say, "Well, it worked because it stopped the cancer progression. They just lived longer because they were destined to die early."

[Ian:](#) Well, that was the oddball thing is, so, of the rats that we tested, I did the necropsy on the first one. And I found one tumor, but usually they develop tumors all over their body. It's a bit disturbing. But in this particular rat, it had one tumor, but that wasn't the cause of death, not even close. It was a reasonably small tumor. It had died of a femoral hemorrhage. And so I thought, "Well, maybe I'm just missing it because I know they're supposed to die of tumors." So, the next rats that came out we sent out to a veterinary pathologist to do a full histopathology and cellular analysis. And all of the rats came back, two were inconclusive, and then the other three had no incidents of cancer. They died of old age. And so it had entirely stopped in rats that are designed to die of tumors, with no tumor suppression gene, that didn't have a [inaudible 00:15:01] immune system. It was just bizarre.

[Dave:](#) That's kind of a big deal.

[Ian:](#) It was kind of a big deal. It really did raise some red flags with us in terms of, we need to pay attention to this, and in short order. So, we took that data and we continued to develop the idea of going forward with Companion60 and Revive and Rejuvenate, and doing all of the things so that we can get it out to animals and to people.

[Dave:](#) But not for cancer specifically, just for enhancement.

[Ian:](#) Not for cancer specifically, right. Just for enhancement. But the byproduct of that, I mean, it's really great. The holy grail of fixing cancer and doing something like that, it's a little bit off base. Because wouldn't it be better to actually prevent it? I mean, in a perfect world, we're spending a tremendous amount of effort trying to take the hill and plant the flag at the top saying, "Look, we've solved it." Well, really solving it means you stop it from ever happening. And that's really what we're trying to do. I mean, internally, we have, as we've been granted the patent on recently, we've developed something that does in fact entirely inhibit metastatic behavior of cancer. That's pretty cool.

[Dave:](#) Now, is this a drug or a supplement?

[Ian:](#) It ultimately will have to become a drug, I'm sure. But for the uses that we're using it, it's all generally regarded as safe compounds. It could potentially be just treated as a supplement, and the cost is insanely low. So, I'm sure I'm not going to make a ton of friends by virtue of that.

[Dave:](#) So, the name of your patent made me happy. It was cellular enhancements in biological systems through the use of lipofullerene and peptide group combinations. But cellular enhancements? Is this like male enhancement? No, but-

[Ian:](#) We'd make the sales bigger. Yeah, the hematocrit volume changes.

[Dave:](#) I love geek jokes, oh my God. You're making me happy. The idea, though, of cellular enhancements, that is what was in Headstrong, and that's the whole essence of biohacking. If you want resilience, make your cells work better. You can have a crappy little motor in your car that has exhaust coming out of the exhaust pipe and doesn't make much power. Or, you can have a really solid power plant that's highly efficient, highly effective. And when I read cellular enhancements, that's how I interpret that. Is that a good way of looking at it?

[Ian:](#) That is so spot on, yeah. So, in terms of focusing on the idea of abnormal cells and cancer, right? Cancer has to do a couple of things in order to proliferate and spread. So, it has to do this kind of oddball thing where it down regulates mitochondrial function. And it has to simultaneously keep the electron transport chain in a state where it's producing some. Can't produce as much, so your ATP levels drop, the cells are damaged. But simultaneously, it has to make the mitochondria amp up reactive oxygen species production. So, basically, it's making them hurt themselves. And when you do that simultaneously having information, IL6 and IL8 markers, they start spreading. And John Hopkins put a paper out I believe in 2017 on IL6 and IL8 [inaudible 00:18:05] signaling,

and that's exactly what it says. If they hit a certain mass, then the inflammatory markers go up and it sends out a messenger and says, "Spread." And that's what it does.

[Dave:](#) But it's not just cancer. These inflammatory markers happen when you eat French fries.

[Ian:](#) Yes.

[Dave:](#) They happen when you have autoimmunity, they happen when you smoke a cigarette. So, I mean, cancer is a nice thing to take out, but it seems like if you're taking out inflammation from poor choices, given that humans are masters of poor choices, I mean, is this a potential license for me to start smoking and eating French fries again?

[Ian:](#) No, one of the-

[Dave:](#) Damn.

[Ian:](#) One of the people that works in our lab-

[Dave:](#) By the way, I've never smoked, just to be clear. Smoking is disgusting, I don't want to smoke. But anyway ...

[Ian:](#) It's actually, it's a viable point, though, because if you make too many things too easy, people suddenly think that they can just make bad choices. And to be clear, coming up with a serum that inhibits metastatic behavior is a component, but it's only a component. Because you have to have the dietary setup exactly dialed in. That's actually, we've been doing trials in dogs. Initially, we did the studies in rats and mice, and then we moved to dogs. And the trials in dogs work really well in a controlled environment. When it moves out into an environment where people are involved, they far too often want to give their sick dog a treat. You can't do that. They get the ratios on their macronutrient balance off. You can't do that.

[Ian:](#) So, we've actually stopped the trials right now so that we can meet with some dog food makers, so we can actually get a very dialed in diet so that they have exactly the right nutrient balance. So, we can simply say, "Take this food at this time. Take a shot of this medicine at this time." And it's just oral, and that's it, and then you're done.

[Dave:](#) Wow, that's pretty remarkable. What got me interested is, I don't have high risk of cancer that I'm aware of or anything like that. It's one of the big four things that's likely to kill any of us statistically.

[Ian:](#) Sure.

[Dave:](#) But one of the things that the lipofullerenes do in your research is that they up-regulate mitochondrial function at the same time they're decreasing inflammation.

[Ian:](#) Precisely.

[Dave:](#) What do animals or humans, I mean, I take the stuff I've been giving my dog, and now I take the human stuff. But before it was available, I was doing the dog stuff.

[Ian:](#) Yeah, likewise. Same here.

[Dave:](#) Yeah. And what are the effects of just the mitochondrial enhancement, without even looking at inflammation? Or do those just always come together?

[Ian:](#) No. Well, they do seem to run in parallel at least with the use of lipofullerenes, but mitochondrial uptake, we've seen some pretty interesting up-regulation of mitochondrial function and ATP production. And right out of the gate, we were hitting somewhere between 18 on the low end and 58% on the high end, and you just have more energy. It's kind of a whole body feeling. You have more energy, you don't need to sleep as much, you don't need to eat quite as much. Personally, I just feel an overall better sense of wellbeing, which is kind of hard to quantify, but once you've done it, you know it.

[Dave:](#) Yeah. I know what it feels like to turn on my mitochondria, and some of the stuff that Bulletproof makes are designed for that specifically. And I can feel, like Unfair Advantage or KetoPrime, which are both mitochondrial ATP precursors and things, they make the Krebs cycle work better, at least biochemically. I'm not saying that my products do that specifically, but the compounds in them in studies do that. And when I take them, I feel different. So, whatever the heck that means, but I know what it feels like when you get a kick. Even ketones, one of the reasons you feel good, there's many, is that your mitochondria work better. So, there's a, yeah, I could push the accelerator and the car goes faster. It's when you put the high octane gas in the tank versus the crappy gas if you have a car that still takes gas, anyway.

[Ian:](#) Well, when you're looking at some of this, I've had the benefit of being able to see actual animals under these conditions. Because a ketogenic diet was a core component of being able to inhibit metastasis. So, you can't simultaneously put out the fire and pour gasoline on it. And a new paper came out last week, or it was sent to me last week, from Baylor and Cornell, and they very clearly show that high fructose corn syrup is in fact directly stimulating tumor growth. Not that that's a shock to anybody, but it's nice to finally have really clear data. But I had seen it in a lab about four years ago.

[Ian:](#) We were doing a trial, and it was with a company that all they do is cancer trials. And the mouse, the tumors had locked in stasis. And then, they dropped 60% in one week, and then they started to drop, and in the middle of the week, they rebounded and hockey-sticked up, and I couldn't figure out what had gone wrong. So, we started pouring over the data, and I asked the woman who was proctoring the trials what had changed. And she kept saying, "Nothing." Well, eventually we found out that one of the lab techs had swapped out the ketogenic chow with a standard American diet type of chow, in terms of macronutrient breakdown, and it was frightening. That was probably the last time I really indulged in anything that had high fructose corn syrup, because it scared me to death.

Dave: Wow, okay so you saw it in the cancer results.

Ian: Yeah. In the span of three days, the tumor burden, which was almost gone, hockey-sticked up, and we had to sacrifice the animal in the lab.

Dave: Wow, that big of a deal.

Ian: I'll show you the data after the fact. It was insane.

Dave: I'm still sort of spinning because, and we talk occasionally because I'm a hacker, but I'm not involved in the day to day business. And you sent me a text, "Yeah, we got the patent. That's great." But I'm still sort of struggling in my head, all right, it's available as a supplement, but this is the first broad spectrum anti-metastatic therapeutic of its kind, and it's patented? I mean, aren't the drug companies just pounding on your doors right now?

Ian: No. I think at this point, no one really knows that it's there. This will probably change that.

Dave: This might change.

Ian: To a certain extent. But I don't think, I don't know that it will be given its due initially, because it is, it's a very strange concept. Oh, take this lipofullerene and do this change in the diet, and we can completely lock it down. Now, the plus is, with other therapeutics like targeted radiation or targeted chemo or something like that, it doesn't compete. So, it makes those therapeutics work entirely to provide a solution. So, if this weren't going to take it out, and what we saw in the lab was, with a really large primary mass, it may or may not take out the primary mass. But the one thing that we can say with 100% certainty is with can lock down the metastatic behavior because we've simply shut-

Dave: Cancer can't spread, is what you're saying.

Ian: It can't spread, and it's generally thought of that 90% of the deaths from cancer are caused from metastasis. So, this is a benefit. I'm not saying that it's a total solution because we've had circumstances in the lab where we've seen things, and it wasn't a large primary mass or something like that that doesn't entirely go away. But you can use it in conjunction with radiation, you can use it in conjunction with targeted chemo. You can lop it out.

Dave: So, we're in this weird situation where there are tons of people who have cancer and have figured out that being on a ketogenic diet, taking certain supplements, in studies, in animal studies, that they work. There's now holistic cancer practitioners, functional medicine doctors, who are working hyperbaric oxygen. Dominic D'Agostino has been on the show. A guy named Chris, who's a cancer surgeon, who just a year ago went into ketosis and was like, "Wow, this is changing my life. I'm doing it for my patients, and they're getting better faster." So, we have these, I'm going to call it the self-treatment group where they're doing stuff in conjunction with their cancer treatment specialist.

And sometimes it works, or in the fiber study that I talked about at the beginning of the show, it actually doesn't work. So, the probiotics were harming the cancer treatment.

[Dave:](#) Do you see a world, now that this is actually a real compound and that it's been patented, not that it wasn't real before, but it's acknowledged and studied in universities and everything. Do you see a world where people are going to go to their cancer doctor and their cancer doctor is going to say, "Well, you better go in ketosis. You better quit the high fructose corn syrup, and take this stuff based on lipofullerenes, and that's going to stop metastasis," and then I'm going to go into cancer and radiation and chemo, or whatever else is going to take out the primary mass, and we're all good to go. Is that where we're headed?

[Ian:](#) I hope so, because it's the only sort of treatment that I've seen where you actually are stronger at a cellular level after you take it. It's not the idea of saying, "Hey, look, there's something invasive. Let's use chemicals to damage it, and in the process damage your body." This is completely the opposite of that. I mean, as a company, we really strive, and you know us at this point. We strive every day trying to figure out better ways to do things, better ways to optimize. Things that we can do that haven't been tested yet. And I do hope that at some point in the very near future, people can go to their oncologists and say, "Hey, we need to handle this." And this is kind of like a pause button, really.

[Ian:](#) The idea that you can inhibit a metastasis, it may not cure anything, but in some cases it will. But in some cases, if it doesn't, it's at least a pause button so you know that it's not going to run rampant throughout your system. And also, there are, I probably could think of well over 250 different types of cancer, and this has only been tested on about 20. But it's been tested on the broad spectrum things that everyone worries about, and we've done it in canines with hemangiosarcoma, normally that's the worst type of canine cancer. So, in the U.S., supplements aren't allowed to treat cancer or actually treat anything else, or make any claims of anything.

[Dave:](#) Exactly, other than cellular enhancement. Which actually, okay, if you make a cell work better, that's fantastic. You can do that, because unenhanced cells is not a medical condition. So, what we're talking about here is people, I'm sure you're going to get a slew of phone calls after this, people saying, "I have a friend with cancer," or whatever. "How can I get my hands on this stuff?" How does that all work out?

[Ian:](#) Well, for right now, it doesn't. There's a lot more trial, like I was alluding to.

[Dave:](#) So, you're not selling the specific cancer compounds?

[Ian:](#) We're not selling a specific cancer compound right now.

[Dave:](#) But you have lipofullerenes, which are for humans and animals for cellular enhancement.

[Ian:](#) Right, we do have that.

Dave: Are those different than the cancer stuff?

Ian: They are, because we used a targeting molecule. And when the patent comes out, the big benefit of having the patent come out now is that we can actually refer to what we've done. So, we used a targeting molecule, which is a sugar. And when you bind the sugar, the cancer, there are 20-

Dave: Cancer loves sugar, right?

Ian: It does. There are 21 different $C_6H_{12}O_6$ items with that molecular formula. And specifically this, I used one of the ketohexoses, and specifically fructose. Because out of, you drop all 21 in front of the cancer, and it's always going to roll to that.

Dave: So, cancer will always eat fructose first.

Ian: Cancer loves fructose. It's its favorite snack.

Dave: Do you want a glass of orange juice?

Ian: Yeah, sure. As long as it's super high fiber and low sugar, yeah. Yeah, not to freak out about it, because fruits and things like that, they're fine, but they're digested differently. It breaks down differently.

Dave: And they come in with that fiber that was there at the beginning as well.

Ian: Exactly.

Dave: But then you have the straight up juice or the isolated high fructose corn syrup [crosstalk 00:29:20]

Ian: I just carry a pack of raw sugar around with me.

Dave: No you don't.

Ian: No. I actually, in the lab I walked in, and we had bags of fructose hanging out. And I noticed one of the guys using it to sweeten his coffee. And very, very plainly explained to him, "You know, this is perhaps not a good idea because the reason this is actually in the lab is because it stimulates cancer cell growth."

Dave: Doesn't the American Pro Diabetes Association, I think I got the name right.

Ian: I'm pretty sure that's it.

Dave: Don't they still recommend fructose as a sweetener?

Ian: I think it's on the pamphlet Living with Diabetes, and perpetuating its cycle.

[Dave:](#) Oh, yeah. That was dark.

[Ian:](#) I think I may have nailed the name of the pamphlet.

[Dave:](#) Oh my God, that was dark, and perpetuating the cycle. But the argument there is that fructose raises your blood sugar much less than normal sugars, sucrose or glucose. So, you might as well use it. And I remember when I was fat and I was just first getting into controlling my diet, I bought some fructose online, and I used it. And I'm like, "I feel like crap on this stuff." It wasn't fructose corn syrup, it was just granulated fructose. But it didn't feel right, and I was, how about I use xylitol? I like that better.

[Dave:](#) And when you look at the science of what fructose does for fatty liver, what it does for advanced glycation end product formation, basically the browning of your arteries, damaging cholesterol, oxidized cholesterol. There are so many arguments for just ditching that crap, but it's actually very much a hacker perspective to say, "Oh, if cancer loves it, let me just put it on one of these carbon 60 molecules, and here you go, cancer. Eat up." It's kind of cool.

[Ian:](#) Yeah, I jokingly call it the cupcake of doom because it does its thing but it's really, it's taken a long time to even get to the point where we can bring this out and talk about it. I feel incredibly happy that we're getting to finally talk about it, because-

[Dave:](#) Because of the patent, so now it's proven.

[Ian:](#) Yeah, and I want to beat the drum and say, "Hey, you may want to steer clear of high fructose corn syrup, just saying."

[Dave:](#) All right, so that advice is out there and very solid in this episode, and in many others. So, if you're still drinking something with bubbles and corn syrup right now, maybe you ought to not do that. But I know right now, I mean, I have friends with cancer, we all have friends with cancer.

[Ian:](#) Sure.

[Dave:](#) It's rampant. They're all going, "Oh, my God. I need this stuff right now, and it's not available." So, how soon do you think this is going to make it through, I'm assuming full drug trials. Is that the direction it's going?

[Ian:](#) Well, depending on how we approach it, which is as of yet to be determined, full drug trials at best will take 10 years.

[Dave:](#) You might be dead before then if you have cancer.

[Ian:](#) That's quite possible. So, I would do the first thing ... and when I have family members and friends call me that do have cancer, the first thing I tell them is, "Go on a ketogenic diet. Absolutely don't pass go, don't collect \$200, go on a ketogenic diet." And that's still kind of, I think that's, because I know it's a component of being able to stop it entirely,

that's kind of the zenith. That's the apex of the whole thing, is get on a keto diet. Just stop feeding the problem.

[Dave:](#) Well, there's something else that I would recommend, in fact, that I do recommend, when people call me about that sort of stuff. I'm like, "Talk to your cancer doctor. Make sure you actually know what you have. Don't do anything that they don't know about, because they're working with you on this stuff. And then, you go on a keto diet because the evidence is in. Hyperbaric oxygen, for most cancers, the evidence is in." And Dominic, when he was on the show, we talked in great detail about that. But the third thing is, you must have enough fiber to feed healthy gut bacteria, because they're apart of the cancer equation.

[Dave:](#) And Bulletproof is just launching something I've been working on for the last, jeez, almost two years, which is a different blend of different kinds of prebiotic fibers. So, even though you're on a ketogenic diet, if you're doing it right, you eat this massive plate of vegetables that are low in starch, which gives you fiber without raising your blood sugar. Or, you can take a prebiotic fiber supplement, the one that we're coming out with is called Bulletproof Inner Fuel. And I've been doing 50 plus grams of prebiotics a day, which is getting up to, the longest lived people eat 50 to 100 grams a day, and that's what I'm getting from supplements not counting the vegetables I eat every day.

[Dave:](#) And one of the reasons that I've, at least one of the reasons that I believe that I've dropped my body fat over the last year and a half is that I've been taking this stuff every day as part of testing out all the different formulas. And certainly, my digestion works better and my gut bacteria count went from 48 before I started doing this, 48 different species on a Viome test, all the way up to 196 species.

[Ian:](#) Wow.

[Dave:](#) And this is without regular use of probiotics. I occasionally take one of the many different probiotics that are available in my home, but they aren't a daily thing. So, I know that my count is going up, and only one species in my gut that's tested is from a probiotic, a commercial blend that could be identified. The rest of them are whatever was growing in there because I'm eating enough fiber finally. So, ketosis is usually a low fiber diet, which messes you up, especially if you're dealing with cancer. So, somehow, you've got to get your fiber in, but if you go that, "Oh, I'll just eat a whole bunch of toast," even if it's whole grain toast, that's probably not going to be the cancer outcome you want, either.

[Dave:](#) So, we have this damned if you do, damned if you don't, and it seems like the holy grail would be have ketones present, have extra oxygen present, and have something to feed your gut bacteria properly. And then if you can add in the anti-metastatic stuff that you're making and you had cancer, okay, now all of a sudden you can just focus on whatever cancer you've got instead of worrying about, "Oh, it's in my lymph nodes. It's in wherever the heck it goes."

[Ian:](#) Yeah, that's kind of the idea. And I definitely want you to hook me up with some of that, I will start using that on the daily.

[Dave:](#) Inner Fuel is coming your way.

[Ian:](#) Fantastic.

[Dave:](#) And by the way, I have no implication there that Inner Fuel has anything to do with cancer. All I'm saying there is that if your gut bacteria are healthy, everything in your body works better, and I believe that. Cool fact of the day there, they're like, "Hey, when people ate more fiber, they did better." And that's true whether or not you have cancer.

[Ian:](#) Yeah, I would say 100%. I mean, I suck down vegetables at an alarming rate for that very reason.

[Dave:](#) Yeah.

[Ian:](#) And it would be fantastic if I could kind of shortcut that process a little bit, as I am prone to do.

[Dave:](#) The other thing is, we're both traveling. We're recording this live right now at the sixth annual Biohacking Conference. The first one was six years ago with 100 people, and we're looking at more than 1000 people, and it's at the Beverly Hilton in Beverly Hills, which is cool. And this is probably one of the few places on earth where you and I are going to be able to get enough vegetables, because we moved the conference from where it was last year because they wouldn't let us control the meal. And here, the Hilton has been super helpful on saying, "All right, you want Bulletproof food? We got your back." And it helps because Michael, the GM here, knows Bulletproof.

[Ian:](#) Yeah, it was fantastic, actually. In the room, when I checked in, there were collagen bars up there, which I sucked down almost instantly.

[Dave:](#) Yeah, they actually-

[Ian:](#) Thanks for that.

[Dave:](#) They have the collagen bars, and they've got the Bulletproof coffee in all the rooms, just on the menu bar, which is so cool. This is where I stay. But otherwise, though, when you're on the road, you go to a restaurant, "I'd like a plate of vegetables, and here's \$1000." And you still get three spears of asparagus. It doesn't matter what you do, you cannot get enough vegetables when you travel. It drives me insane.

[Ian:](#) Yeah. Actually, I'm a vegetarian, which is a little bit of a trick when you're trying to be a vegetarian and stay on keto.

[Dave:](#) Did you eat a collagen bar?

[Ian:](#) I did.

[Dave:](#) You're a bad vegetarian, bad vegetarian.

[Ian:](#) Right. I'm also a little bit based in science, so I'm not going to be so far to one side that I damage myself in the pursuit of some ethic.

[Dave:](#) I hear you there, and collagen has a different effect than a stake to be perfectly honest.

[Ian:](#) Yeah, it definitely does. So, it's one of those things. Traveling, you very much have to really scan and try and figure out, "Okay, where am I going to eat? How am I going to get enough of this and that?" And like I said, as a vegetarian, it's kind of tricky. But you can tell by my very slight frame, I don't get enough vegetables in my diet.

[Dave:](#) I hear what you're saying there. As a jazz musician and an exceptionally, exceptionally knowledgeable biochemist, who's really looked at mitochondrial pathways, looked at all of these things going on in the body at a level deeper than where I go, in that I'm not formally trained in this stuff. I am actually a hacker. I want to know what else is on your radar, whether it's stuff that you're doing with lipofullerenes or maybe things that you're just doing either nutritionally or supplements or lifestyle wise. Based on your very deep, detailed knowledge base, what are you doing to live longer?

[Ian:](#) Specifically to live longer, which really was the impetus for the entire track that we've been on for the past seven years with the company, I very diligently take the things that we make. Which seems like a shameless plug, but really, before it was even a company, I was taking this stuff. And I couldn't find it, so I developed it myself. I was scratching my own itch. This is what I needed, it biologically made the most sense, so I did it, and this has kind of come out of that. And other than that, the basics. I try and have a really clean diet, I diligently avoid things that have glyphosate in them because I think that is a really, really bad and insidious sort of thing. And I make sure that I exercise with some degree of frequency, and I try and get enough rest. Which, in Game Changers, it seems like a lot of people who are kind of on the cutting edge think that sleep and food actually make a difference with a bit of exercise and some sort of meditation thrown in. It's crazy.

[Dave:](#) It was kind of surprising how given all of the variety of answers I was expecting there, those just radically floated to the top. I almost asked myself, "Are these people saying that because that's what you're supposed to say to be cool?" But the people who are on there are like, "I already won my Nobel Prize. I don't really need to be cool. I've already killed 74 people as a Navy Seal, it's all good, man." And you're like, "Okay." So, I don't think it's a cool factor, but when you look at it, I wish somebody would've just told me that when I was 20, right?

[Ian:](#) Yeah, same thing applies to me. I wish somebody had clued me in, because it's so simple. And the other things that are, and this sounds a little woo-woo from a scientist, but gratitude. It's huge, and you can actually ... I think when the science develops a little further and people are routinely using 24 Channel EEGs and looking at what happens,

you'll see that sort of thing as a commonality between people. "Oh, these guys have a good attitude, what are they doing? Oh, they're grateful for where they're at." It actually has a profound biological impact.

[Ian:](#) I spent a lot of time doing biofeedback therapy as a kid primarily because I was having a problem with headaches. But the outcropping of that was perhaps one of the most beneficial things that I ever was allowed to do, to really see what the results were of, when I think this, this happens, and biologically I'm getting X effect. So, I learned how to control that. It made a profound impact.

[Dave:](#) It's really interesting you bring that up. I mean, my kids get biofeedback therapy, and you're an example, I think, of what happens when a child gets more control of their brain as it's evolving. And you were doing it for a medical reason, but you're like, "Oh yeah, I'm kind of this musician guy." Although, saxophone man? Could you find a more, like electric guitar or something? I'm just saying.

[Ian:](#) I'm not cool enough.

[Dave:](#) Yeah. But, so you've got the brain that can do that, right? And we all know that musical brains and math brains are very, very similar. And you've got some advanced biological knowledge and ability, and you just have this way of looking at the world that's pretty unusual. That's why we got to be friends, why I decided I wanted to back what you're doing, because it's cool, but also, just because I like the way you think. But it's pretty radically different, and you were saying you got some of that as a kid. But I want to know, what do you do now for meditation specifically? Because you talked about that.

[Ian:](#) Specifically, I do kind of a modified version of transcendental meditation, and it's something I've done since my early 20s.

[Dave:](#) And you modified it by adding a C60 molecule and a sugar tab?

[Ian:](#) Right, it's a different moiety of meditation. Yeah, no, I-

[Dave:](#) Which mode of meditation are you using?

[Ian:](#) Yeah, exactly. The radiation version. I go with isotopic meditation. It gives you much more bang for the buck. So, no, it's only modified in the sense that I don't do ... typical transcendental meditation, you do pranayama, and then you do hatha for all the postures. And then, you actually sit down and do your meditation. And I do something similar, but I like doing the sun salute, it's really good, limbers up your spine. Get a lot of energy flowing that way. And then, I do some basic pranayama, not just the standard stuff, I do kind of a variation, sort of an advanced variation of pranayama to make sure that both hemispheres of my brain are syncing up.

[Dave:](#) So, you're blocking one nostril and then the other, stuff like that.

[Ian:](#) Yeah, very rapidly doing that so that I can get the hemispheres in my brain to sync up. And then on the regular just kind of moving through the day, if I have a lot of stress, I'll just simply sit down for a second and do a box breath. Or, I will literally go into my office and cut the lights off and meditate. And if I need to refresh and get a new perspective or I'm trying to tackle something and I can't figure out how to crack the code, that's what I do. I just shut down for a little while. Because it's been my experience that the times when I want to do that the least and want to try and focus the most, what I need to do is just turn off my brain and go back to zero, and then come back fresh. And the results are far better.

[Dave:](#) What's your take on THC?

[Ian:](#) I think if you are over 25, I actually think it's probably quite good. You have endocannabinoid pathways, so my personal preference would be CBD because I'm perhaps a little bit of a control freak and don't really like the idea of being terribly out of control.

[Dave:](#) I feel like crap on THC, unfortunately, so ...

[Ian:](#) I actually have never had it, so I'm one of the rare occurrences where I've never actually had it.

[Dave:](#) But you've tried CBD.

[Ian:](#) Yeah, I have had CBD. And I didn't know a thing about it until a few years back, and then I had started doing some research on it, and wow. What a phenomenal molecule.

[Dave:](#) CBD is an oil. You make fullerenes that attach to oils. [crosstalk 00:43:28] Tell me you've made a lipo of CBD.

[Ian:](#) Yes. Yes, we in fact have.

[Dave:](#) Are you on it now?

[Ian:](#) No, I am not. No, I am not. It's something that's in the works, though, because I've been playing with it for a little over two years now.

[Dave:](#) Oh, wow. Okay.

[Ian:](#) The things that we're doing, we're trying ... it takes a long time to do this. I mean, today is April 4th, shout out to my daughter Grace. Today is her 20th birthday.

[Dave:](#) Oh, cool.

[Ian:](#) But five years ago, literally five years ago today, I was sitting with the head of pathology at a medical school explaining the idea for the lipofullerene saccharide conjugates, and

how they would inhibit cancer. And I wanted to get the med school onboard to do testing for me, and that was quite literally five years ago today.

[Dave:](#) Wow.

[Ian:](#) So, fast forward five years, the patent is out, the test data is in. We know we can make a dent. It's kind of interesting, the timeline that all of this stuff takes, but we're not releasing anything. Getting back to the idea of how long for these sorts of things, we're not going to release it until it's so dialed in that I feel comfortable saying, "Yeah, you do this, you'll get the right result." And there are a lot of factors that you have to cover for that, and the same thing applies to doing a CBD product. It's great, I've played with it for literally a little over two years in the lab now. But I don't think it's really dialed in.

[Dave:](#) CBD is one of those things where it clearly makes a difference. The guys from Charlotte's Web were on a while back, and it was 10,000 families moving to Colorado because they were treating their kids.

[Ian:](#) It's legit.

[Dave:](#) Yeah, it totally works, except there's 1100 receptor types in the brain, and you just kind of want to know which strain extracted in which way is going to work for your specific genetic expression of those things. Which is why I'm not certain that there's the one CBD to rule them all, because it may be a little bit different, right?

[Ian:](#) Yeah, exactly. We don't have the rings just yet, right?

[Dave:](#) You got my Lord of the Rings reference there, I was hoping that would come through. So, you're not a regular CBD user.

[Ian:](#) No.

[Dave:](#) And you've never tried THC.

[Ian:](#) Nope.

[Dave:](#) Why not?

[Ian:](#) Again, part of the meditation focus for me is, it's about clarity. And there are certain states that I like to be in and different responses that I can elicit that are probably a little bit outside of the norm, but I don't find myself being able to do those when I do anything that really takes me off center. I don't drink, I don't do any drugs. I'm probably a little bit too much of a boy scout, but I like the responses that I can elicit just by virtue of being in the right state. And a lot of the puzzles that I'm really trying to solve, this is where we're at right now, and this was a good puzzle. Aging, then cancer, and then there are a few other things on the board.

[Ian:](#) And I really think it happened in that order because the things that I want to contribute to, I have four kids and I'd like to leave the world a better place than I found it. It's going to take a lot of effort and a fair amount of time. So, your idea of living to at least 180, I'm right there with you. Because if I'm going to hit the marks for what I really think are going to make it viable for me to say, "Yeah, good job. That one went well." It's going to take a lot of time. So, hence aging was the first thing to look at.

[Dave:](#) So, you're with me to 180 or more?

[Ian:](#) I'm there.

[Dave:](#) What do you think is actually possible?

[Ian:](#) Based on the stuff that I've seen, probably 300 to 400 years, probably a little bit more.

[Dave:](#) Right on. The first guest ever to have a bigger number than me.

[Ian:](#) Which, I know, I'm sure I'll probably get panned again at the lab for saying it. But based on the things that I've seen, yeah, 300 to 400 seems totally plausible. If you combine nanoparticulate enhanced stem cells with a consistent regimen of the stuff, like the Revive thing that I suck down all the time.

[Dave:](#) Nanoparticulate, you're going to put lipofullerenes and stem cells?

[Ian:](#) Yeah, I've been playing-

[Dave:](#) Where can I get that?

[Ian:](#) I've been playing with it for a bit now, so ...

[Dave:](#) You've been holding back. I thought we were partners, man.

[Ian:](#) I'm always trying to work on something, so ...

[Dave:](#) Oh my God.

[Ian:](#) As soon as it's ready. I think the best thing that's going to come down the pike will be the energy things that we're working on to-

[Dave:](#) You can't talk about those yet though, right?

[Ian:](#) Can't quite talk about it yet, but it's something that I think everybody will benefit from. Because when you have more energy and you're in a happier space, everything functions properly.

[Dave:](#) That's another world changing thing you're working on, for sure. I wish we could share some advanced stuff on that one, but-

[Ian:](#) At a later date.

[Dave:](#) Yeah, at a later date we'll have another show about that. But you're doing stuff, Ian, that is world changing. You're approaching it just from a very different mindset, a different mind state, versus the that's how we've always done it. And I think it's really, it's really paying off, and you're able to do these things that aren't supposed to be possible. And the traditional science approach is, "That can't happen, therefore it isn't." And you're saying, "But look at my rats. They just lived 90 something percent longer. I'm pretty sure that they did, and I'm pretty sure when I send them out to the veterinary pathologist, I'm pretty sure that they didn't have tumors."

[Ian:](#) Yeah. I'm sure my rats just don't know math properly, so they lost track of how old they were allowed to get.

[Dave:](#) So, I would say the big question is, now that we've already kind of handled the end of the show question about how long you're going to live, what do you say to the people who say what you're doing is impossible?

[Ian:](#) It's simply not. I mean, if you asked somebody in the 1500s if it would be possible to fly, something that we take for granted, or use a cellphone, it would've seemed implausible. Nikola Tesla, in the 1900s, the early 1900s, was at the IEEE convention and talked about being able to talk to people around the world, and see images from their perspective in the blink of an eye. And everyone thought he was absolutely nuts, and fast forward a hundred years give or take, in a few years, and we do it every day. It's commonplace, and it's been accepted. And I just think in time, this will all be kind of the standard that everyone uses.

[Ian:](#) Hopefully, people start using more of lipofullerenes on a daily basis. Because the way we've coupled things, it's enhanced, it does enhance your system. And it puts your body back on line so that your immune system does what it's supposed to do. I mean, every day, you know this, every day you have a preponderance of cancer cells popping up, and other abnormal cells. Your immune system is generally in a state that it can alleviate that and take care of it, and knock it out of your system. It's only when your mitochondria get dysregulated and you don't have enough energy at a cellular level to combat the things that are assailing us, that you start to hit that tipping point where you fall to one side or the other.

[Ian:](#) And so for me, I'm going to continue taking the products that I'm taking, and I'm going to continue doing research. Because I know that there are certain acute things, like joints, that are going to break down over wear. That's why I'm working on the nanoparticulate enhanced stem cells, is because I don't really want those to be an issue when I'm 180. If I'm going to make it that long, I better do something the right way.

[Dave:](#) Well, keep doing what you're doing, Ian. Your company is C60 Health. What's the URL people can find out more about the lipofullerenes? This is not the anti-cancer stuff, which is still in trials and all that stuff, but the stuff for cellular enhancement.

[Ian:](#) Oh, C360Health.com.

[Dave:](#) All right. Ian, thanks for doing all the stuff you're doing, man.

[Ian:](#) My pleasure, dude.

[Dave:](#) Keep it up. I love working with you, I love picking your brain. And thanks for sharing all the stuff that you do that's outside of the norm, and also outside of the stuff you're making on the show today.

[Ian:](#) Thanks, Dave.

[Dave:](#) If you liked today's show, you know what to do. Decide you're going to live to at least 180, and just beat me. That would be fantastic. And if you decide not to do that yet today, you could leave a review for the show. Go to Bulletproof.com/iTunes, express some gratitude. Leave a five star review if you believe we've earned it today. I really appreciate that. Have a fantastic day.