Dave: You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that people with a variation of the CYP1A2 gene metabolize caffeine more slowly, and if they drink more than a couple cups of it, they have a higher risk. And fact number two, the ACTN3 gene influences your muscle fiber type. The more fast-twitch muscles you have, the lower your capacity to burn fat, which is one reason sprint and power athletes tend to be a little bulkier than endurance runners. And among the six DNA variants that influence your heft, the most critical is called the FTO gene. And you may also have different genes if you're a redhead that makes you more tolerant of certain types of pain than other people, and you might require way more painkiller than people who are not redheads.

Dave: So genes do a lot of cool stuff, and the reason I'm bringing all of this up is my new book "Game Changers" where I've distilled the knowledge from more than 450 interviews on this show into a set of 46 laws for high performers, which you can order now. And I would ask you, if you love the show, please support the show by picking up your copy of "Game Changers" online, now.

Dave: One of the laws in there is called Track to Hack, and the idea is that if you want to change something about the way your biology performs, the way your body serves you, the way you show up in the world, you might want to measure it because then you'll know what to do, and you'll know whether what you're doing is working. And because I am almost now a certified master of the art of foreshadowing, you can imagine what we're going to talk about, data.

Dave: we're going to talk about what you can track, and some really, really cool new things. And I'm going to tell you about the results of my test with the company called DNAFit, and I'm going to be interviewing an Olympic athlete who actually helped to start the company, which is a really cool way to look at not just what genes do you have. I've actually got my full human genetic, like everything you can do without any distillation or filtering. I've the whole profile. It's a giant binder full of data that isn't that useful.

Dave: This is a much more nuanced view that let me confirm some things I'd already figured out through trial and error, and also gave me a few other new ideas.

Dave: Andrew Steele is the Olympian who's coming on the show, and I'm live with him in Los Angeles today.

Dave: Along with Avi Lasarow-

Dave: ... who's the founder of DNAFit. Andrew is a retired Olympic track-and-field athlete who represented Great Britain for 12 years, and has been part of national teams European, Commonwealth, World, and Olympic levels. So basically he's the guy who's kicked a lot of ass and now has zoomed in on, "Okay. What do genes do for this?"

Dave: Andrew, welcome to the show.

Andrew: Thank you so much, yeah. Really happy to be here.

Dave: All right. You placed fourth in the 4x400 meter relay team in Beijing in 2008, and what happened after that?

Andrew: I placed fourth at the time, and just recently, that fourth actually got turned into third. So, we finished fourth in the relay behind the Russian team who, some eight to nine years later, were embroiled in the Russian doping scandal. Basically, they retrospectively were banned, and I was quite happily, after I retired from the sport competitively, upgraded to become an Olympic medalist at nine years after I had actually run the race. So, in 2017, I got an Olympic medal for a race I ran in 2008. So, now I can, yeah, quite happily changed my social media bio to Olympic medalist as opposed to just Olympian, and actually got the physical thing as well. So, quite a nice ending to my career, actually.

Dave: We're going to zoom in on what you've learned as an Olympian about your performance levels, and about what works and what doesn't work, and eventually I want to know what you learned that you hadn't already figured out as an athlete. But first I want to talk a little bit about what it's like to be an Olympic athlete. More about mindset and of body awareness.

Andrew: So, I say like, a lot of sports people, they come into this sport like super young. They're really, really early in their life. And so you tend to, it's only once you actually leave the sport where I can really sort of zoom out and look back at the lessons that it taught me, what I gained from this sport when I was actually doing it. I think, you know, I took a lot of stuff for granted. Thought actually I was pretty excellent at a very specific task, and I was pretty sort of able to travel the world, and perform this task at a really elite level. And it's only now, sort of I'm a few years out of actually calling myself a competitive athlete, that actually really, I can look back and see what I've learned there.

Andrew: I think the key for me is that you, as an athlete, you end up sort of just being so invested in your performance at work as it were, so yeah, it's your job. And I think the emotional, the physical investment you have to do for one single piece of time which is so small, you know like I would run for hopefully under 45 seconds, and that's what would matter, and that would define whether my previous four years were successful or not. And you absolutely have to nail it on that day. And the sort of the awareness that you have to have of working towards a goal, and having a number of process goals along that route, even if you took them for granted at the time, it's so extreme. And that this is something I think we can all probably try and apply in daily life, if we can.

Dave: How did you know what to eat when you were training?

Andrew: With difficulty, right? So, a lot of athletes, I think, were a lot more talented than me. Naturally talented, like born just better at the thing. And I was always thought of myself as actually, I have to work harder than the next guy to be there. And one of those factors was I found very early in my career when I was about 18, that I was a bit chubby for an Olympic athlete. I was a little bit, you know, a bit too high body fat percent.

Dave: Me too. 300 pounds. 300 pounds.

Andrew: So, I wasn't naturally lean. Like I wasn't naturally just this guy in shape, and so I actually enlisted a nutritionist pretty early in my life, and I was kind of ahead of the curve. So, I ate pretty low carb for an elite athlete, and I remember [inaudible 00:06:33]

Dave: I can do those [inaudible 00:06:32].

Andrew: Yeah, yeah. And before, from 2003, actually. And that really wasn't trendy at the time.

Dave: No, no.

Andrew: It really wasn't known.

Dave: It made people mad.

Andrew: And thankfully I had this great nutritionist who sort of got me on top of that.

Dave: So you hired an expert.

Andrew: Exactly, yeah.

Dave: And a lot of Olympians now, I think, do that or they get access through their countries and their teams and all. But it wasn't data driven. It was you had the opinion of the person you worked with, or-

Andrew: Yeah.

Dave: Did you measure, "I have more energy, I'm faster today?" Or was there an awareness that you got from this, or was this pretty much whatever the expert tells me?

Andrew: So, there's an element of trust, absolutely.

Dave: Okay.

Andrew: You know, this guy had a good track record, and you know, he's a good-

Dave: Did you say track record?

Andrew: Yeah. No. [crosstalk 00:07:13].

Dave: You do that on purpose.

Andrew: ... intended.

Dave: Sorry.

Andrew: He's backwards in rugby, actually, so a pitch record, right?

Andrew: But actually, of course, the beauty of competitive sport is you get the most definitive data which is, did you get faster or not? And that's really all that matters and that's quite interesting because in normal life, it's not quite as clear sometimes, those [inaudible 00:07:32].

Dave: There's some guesswork. You hired someone who's an expert, an then you test it, you run, and you see what work, and that takes a very long time. And then, when it came time even for what sort of training to do, there's, "Well, this is what we've done since the original Olympics in Athens 2000 years ago," or whenever it was. It evolves a little bit, but did you follow the same process there?

Andrew: No, no. So, really like the trial and error was hard work, right? You've got four years for one Olympics. Four years to the next. And so basically, when we sort of look back over my sort of time as an athlete, I had two shots at success. So basically, I had four years running into Beijing, four years running up to London 2012, the home Olympic games. And the moment came for me when I look back at it now, when I didn't necessarily have enough data about who I was, enough sort of personal metrics if you will, whereas after the Beijing Olympic games in 2008, I did quite well there, and there was a conversation to be had about how do I get better? How do I get to London 2012 in four years time, and get half a second quicker? So literally, like half a second quicker. That's all I need to do.

Andrew: And one of those things was actually I need better understanding ... I need to change to sort of the average advice. I need to say, "Everybody else at the top level, they do it this way. You do it the other way. You should switch to the way they do it." And that was the decision made at that time, basically.

Dave: So you and I, and Avi who's in the room but not on a mic right now. Avi Lasarow, the DNAFit CEO. We all did our DNAFit tests in preparation for this, and with this data, if you were still competing, it looks like I'd kick your ass. Is that-

Andrew: Well, we can try it out afterwards, that's for sure.

Dave: It's interesting. So, your recovery speed was average. Your trainability of VO2 max was average. Likely to be injured, low response to fat, so you can eat fat, doesn't do anything. Super high response to carbs. You metabolize caffeine like a boss, and you shouldn't be having milk because it makes you poop on yourself.

Andrew: Yeah, so-

Dave: Those are all useful to know, isn't that right?

Andrew: Sounds great. Yeah, yeah, yeah. So, let me jump in on one here. You mentioned the ACTN3 gene before. Let me zone in on this, and my story there.

Andrew: So, generally consider the top level for 400 meter training, they say you should train like a sprinter, like a 200 meter runner who does some endurance on top. Right? You should be a sprint guy. And I didn't do that. I just did it the old fashioned way. I had an old school coach. I'm from Manchester in the North of England, where we're meant to be salt of the earth grafters, and just do lots of work, right? And it worked for me to Beijing.

Andrew: But afterwards when we said, "Hey, he's got faster. You need to do what everybody else does." That basically didn't work, and I went from number one in the UK in 2008, and I went downhill over the next four years, and actually missed out on making the team for the home Olympic games, for London 2012.

Dave: Whoa. Okay.

Andrew: So it was a big, big issue.

Dave: So the do what works wasn't what was supposed to work. Like the story of my life.

Andrew: Yeah, like the "correct advice" in inverted commas, might be fine for a lot of people, but-

Dave: Did you say, "inverted commas?" That's so British. Oh my God.

Andrew: Well, I am British, hey, so.

Dave: Those are called quotes here in the West.

Andrew: In quotes, in quotation marks.

Andrew: The correct advice was incorrect for me and it took me eight years to find out, actually. Four years, and then four years to London 2012. And only at that time, just after I dealt with the pain of missing out on London 2012, somehow Avi found me and sent me a swab of this new technology that he started this business around looking at exercise and genetics, and nutrition and genetics. And I was like, "Okay. Well, cool. I need some answers at this point in my career. What can I learn from this?"

Andrew: And one of the big things that stood out for me was there's this ACTN3 gene, and a certain variant of this gene is present in basically every Olympic-level sprinter. There is a [inaudible 00:11:35]. 99% of Olympic-level sprinters have this C version of this ACTN3 gene. So CC or CT genotypes. And I didn't have it. I was the TT.

Dave: So you were sprinting without the sprinter gene?

Andrew: Basically, yeah.

Dave: If you'd have known you didn't have the gene from your DNAFit profile, would you have picked a different sport?

Andrew: Far from it, no. Very much not. I think that's the key is that people think of genetics is going to be like your destiny [crosstalk 00:11:58].

Dave: But it's not.

Andrew: There's no basis for this. Just like there wouldn't be a basis for making what your goal decision just on another metric. This is one of the metrics that you use to help you reach that goal, rather than change the goal itself.

Dave: But you could have changed how you trained if you'd have known that?

Andrew: Or, validated the training that I was doing first, which was the wrong way, right? So basically, the un-average advice was more applicable for me as a result of a few genetic factors, ACTN3 included.

Dave: The results that we got on our DNAFit profiles, it's interesting. I'm at 55% power, 45% endurance. You're 52% power and 48% endurance. That's why I said I could kick your ass, that 3%, right?

Andrew: You could beat me, yeah, yeah.

Dave: But Avi here, man, I mean, he's like a total wuss. At 10% power and 90% endurance? I mean, I could pick up the bear that was chasing us and just throw him back, but you'd be running longer than I would, but I would sprint faster than you, right?

Dave: But here's my question, before you yell at me. You have probably the biggest biceps in the room, so you don't look like one of those endurance string beans. What's going on with that? If I look at your genes and I looked at you in your t-shirt, I'm not sure that it matches. What's happening here?

Avi: Well I think I, you know you have genetics, and you have environment, of course. That's the key message, and in the UK, you have a very famous athlete, Mo Farah, who's a 5,000 meter runner. He's become a, sort of recently I think, just because of his work to the sport, but actually, not many people realize he has a twin brother. And the twin brother is an engineer, and no one ever talks about him, or even knows about him. And I think that just hones into the point that genetically some people, yes, are better, but environment actually plays a very important role. In Mo Farah's particular instance, he had the right environment, but actually, his brother didn't.

Avi: And I think, just to emphasize what Andrew was saying, genetics isn't everything. It's definitely part of the picture, but knowing what we know now, it's so important.

Avi: And Dave, you know, you talk about my 90%, 10%, I guess split in terms of power and endurance, that's a really, really important metric, and as a company, last year we were invited to ... This year, in fact, we're invited to Buckingham Palace to pick up an award, The Queen's Award for Innovation, because that particular metric is the only validated algorithm that a genetic-testing company has ever done, where they combined genetics with an exercise intervention. That's really, really important.

Avi: So, just to give you a quick rundown on what that is, we took a cohort of approximately 100 people, and we put them on to an intervention once we understood their genetics, and we took two measurements. One was a counter-movement jump to measure explosive power, and the other was an aero-bike test to measure, I guess, endurance. And what we found is, put these people into two separate, you know ...

Dave: Cohorts.

Avi: ... cohorts, exactly. Put them on a 12-week intervention. And after the 12 weeks, we remeasured those individuals, and we found that the ones that were matched to that award-winning algorithm, actually had three times the performance increase that the ones that didn't. And that was remarkable for us as just changing, really changing sport. But we're talking about sport here, because, of course, Andrew, he's a medalist and we work with a number of sportspeople and teams and such, where we making a big difference to the game, and different sports.

Avi: But ultimately, these are things that everyday consumers can do to get benefits out of, for example, in this case their training regime. So, why would I go to the gym and do things that don't work for me, when I can clearly get biceps like these by doing things that do work for me? And stuff like that, right? Because I'm very busy like you are.

Avi: Time is everything. And you want to make sure that what you do, you do well. And you make sure you get results, and what we're learning now through the acceleration of research in the world of genetics is by applying the right learnings that we find from genetics to whatever you're doing can optimize the outcomes.

Avi: Another small example, you talk about lactose intolerance. I'm pleased to say, I arrived here very safely today, and what I mean by that is for years, I'd get on a plane and blimey, my fellow passengers like myself were uncomfortable as a result of myself. And I could never find out what that was. And this is a confession here, of course, and openness. But actually, so, over the years I started eating fruits and ordering fruit platters for the plane so I wouldn't have the unknown outcomes, or what could happen, and ultimately-

Dave: I love this British politeness. I'm having so much fun here.

Avi: And clearly-

Dave: Can you just say the word fart for me really quick?

Avi: Fart.

Dave: Yes! He did it. Sorry.

Avi: And I don't share this story with many people, but it's a very relevant one because ultimately, when I understood that I had a lactose-intolerance issue through, you know, genetically, that one small piece of information really changed everything, and it really has changed everything. And ultimately, that's an example of, you know, lactose. We talk about the power-endurance stuff, how you can optimize your outcome if you're training. But actually, as the research continues to accelerate, we're finding out so much more. And we can do so much more with that to apply to our lives to get better outcomes.

Dave: It is profound what just knowing one little thing like that, and for me, I had dozens of things that I wanted to tweak because I didn't start out biologically very strong with the arthritis, and all the gut problems, and things like that. Turns out I'm not lactose intolerant, but there's a bunch of other things that messed up my gut, and I'm more tolerant of them now than I used to be. But I had a similar problem on airplanes you did. In fact, I'm going to confess this on air, as well.

Dave: Coming back from Heathrow one time, I had such a bad mismatch between what I ate and what I should be eating, that there was a passenger five rows behind me who started screaming every time I would-

Avi: Fart.

Dave: I was going to try and say fart with the right accent, but you nailed it for me just right. So, this actually did happen to me, and if you were the guy who was screaming, thanks for waking up my baby, man. I really appreciate it.

Dave: Now on that note, I'm saying that because if you can cut out the learning cycle, which from an Olympic-athlete perspective, you're looking at years of well, this works, but you don't see the results. And for me, I'm lazy. And I'd rather just do the thing that's most likely to work and then tweak from there, instead of just guessing or doing what that one guy said.

Dave: And when I got my DNAFit results, I'm actually pretty stoked where you guys are saying I'm highly trainable on VO2 max, I recover fast, and like some pretty interesting capabilities here. But I was also interested in that you go pretty heavily on the diet side, and you look at things like carbohydrate sensitivity, and you're looking at genetics, not necessarily gut bacteria or something like that. And you're not looking at blood sugar levels which is how we normally do this, which change 20 minutes after you eat, they're very different than two hours after you eat. And it's not that reliable of a marker other than fasting insulin. So you're saying, "What is your genetic predisposition?" So if you can eat carbs all the time, are you likely to get messed up from that?

Dave: How do you know from a carbohydrate-sensitivity thing whether someone's high or low carb?

Andrew: So basically, all of us are, entire like experience as humans, is built on this interaction between how we're born, and what we do. So our environment, our choices, our lifestyle, and there's a static part to that. There's our genetic component. We're very used to, like you mentioned, looking at a lot of those variable bits. So your blood markers, and might be looking at your weight, your heart rate variability, any other of these bits which change quite regularly. But we only ever traditionally made like an assumption on the static part. "I think I'm built a bit more this way," or "I assume this is the right sort of area for me."

Andrew: So what we're doing is just shining a light on that nature part of this nature-nurturing and sort of interchange. Everything has both factors, but what we're doing is saying, "Let's consider the static part so we can better personalize and tweak the variable parts here."

Andrew: And so your carbohydrate sensitivity has many factors about how you respond to carbs. When it comes to the genetic part, there's a selection of genetic variance there which have a role in the way we assimilate glucose, more food, etc. And so what we're doing is let's just say here's you, and this is how you are from the static part. Now you can integrate that into your life where we would traditionally only look at the variable parts.

Dave: It's that definition of biohacking, which yay, now it's an official word in the English language. Thank you Merriam-Webster's, this year.

Andrew: Well done. Well done.

Dave: What you can do is you can change the environment around you so that you have control over your biology. So even if your genetics say that you're highly sensitive to carbs, you can probably blunt that. And in my case, I was medium sensitive, but I think you were highly sensitive to carbs, right?

Andrew: Yeah, I was a very high respondent to carbs, yeah.

Dave: And so that means that if you're not exercising or taking chromium or vanadium or eating fiber or fat with your carbs, etc., etc., you're more likely to get a blood sugar spike, and then a crash.

Andrew: That's right, yeah.

Dave: And so knowing that, knowing what blood sugar spikes do for aging, and Alzheimer's, and all that, you probably ought to eat ice cream instead of sorbet, because the fat would slow down the absorption of the sugar. I'm actually serious.

Andrew: Yeah, yeah. For sure, yeah. You need that fat content there, especially I'm a lower responder to fat, as well, right? So you know, let's get a bit more fat in there, balance that out. And even as an athlete, you would think that you would know what was the right advice, but we didn't. And I needed this, you know. That's the learning there.

Dave: There's definitely some humans, I'm not even just going to talk about athletes because there's just a study that said being a CEO took as much energy, I think using calories, as being an NFL Quarterback. And so people who are performing at a certain level, if you know these numbers, you can say, "Do I need a Honey Stinger high fructose corn syrup injection pack, or should I just take a big bite of butter?" Okay, not really. You'd probably use Brain Octane. But you know what I'm saying. There's a big variance in there, so you could probably be guided as to how you're going to best respond to fuel during an intense day, or an intense event. Is that how you can use this data?

Andrew: Yeah, so it's tempting to think of this as like, oh this is just something really at this kind of high achiever, elite level, but actually, the people who are even more confused and don't have as much guidance, so it's earlier on in that journey, they're actually ... It's not their job to be an elite athlete, and they need a little bit more help 'cause the evidence sources that they currently would consume is what did my friend do, what did I read recently, you know.

Dave: Here's the thing. I think that having been an obese person, and I think that everyone works really hard at what they do. So if you're working an eight or a 10-hour day, and you have an hour commute home, and you have kids at home, and chores, and maybe a second job, and all that, you are actually pushing your limits in the same way that a pro athlete's pushing the limits. I think people don't get respect for that.

Dave: And so then, it's like, "Look. How do I move the limits out?" If what I put in my body when I'm taxed, and you just maybe taxed like, you just go home and you're tired, and "Mommy, mommy. Daddy, daddy. Come play with me." That is a serious energetic crises, right? "I want to show up for this. It's important to show up for my kids. I'm not showing up. I'm not fueled right."

Dave: So, knowing this stuff is actually going to be as valuable at that, when you hit your wall. Just the wall is different for a pro athlete, but the wall is there for everyone every day, isn't it?

Andrew: Yeah. Yeah. And I think you've got to think of this as like, there's really interesting research around increased adherence to change when you know genetic data, as opposed to not knowing it. So, breaking out of this average advice. There's so many general advice which we've been given for a long time, but people can't stick to it. They can't engage in that. So how do you engage in these healthy habits? And a much better reason to eat more broccoli than the next person is to say, "Well, actually, I don't generate this enzyme genetically, so I need to get this enzyme from somewhere else, and one of the reason I'm going to do that is because I've understood how I'm made here," rather than just saying, "It's good for me."

Dave: I look at everything that I do and everything that I recommend from an ROI perspective, and the I, the Return on Investment, the I can be dollars but it's actually much more time and energy. Right? It's free to meditate, but if it takes three hours a day to meditate for 10 years to get a difference, the ROI on meditation is no good. Right? And it doesn't take that, fortunately.

Dave: But for something like this, the return is exceptionally high if you figure out, like I don't have this enzyme. If I take it, I am ... like the quality of life can be different for 50 or 100 years. What is the I, though, on the DNAFit test? What does it cost to get the, just fill in the data?

Andrew: Thankfully, thanks to genetic technology and the lab process becoming, just the price of that just come down and down, down. To do this profile, as you know, like 15 years ago, you'd be paying hundreds of thousands of dollars.

Dave: Oh yeah.

Andrew: Suddenly the investment is resource and we go from like $49 if you've already got genetic data via 23andMe or via AncestryDNA, and up to $99 if you need to get a kit.

Dave: But $49 isn't your normal price. That's for Bulletproof listeners. It's dnafit.com/bulletproof is where you will go. I didn't say that earlier on in the show, sorry about that. So, if you decide you want to do this, dnafit.com/bulletproof. And a kit is, you spit in a tube.

Andrew: Not even that. Just a rough-

Dave: Just a swab.

Andrew: ... swab on the inside of the cheek. So even easier, right? The investment is so easy. It's such a low barrier to get into this. And you have this data for the rest of your life.

Dave: That's a really high Return on Investment, and it goes back to that track to hack, that this is something that the hightest performing people that have been on this show, that they generally agree on, is that if you're going to improve on something, you should get the data. So I would say, for anyone listening who's thinking about improving something, a diet, exercise, supplementation, etc., etc., knowing your predispositions here, and also that they're not written in stone, can give you a head start. And if this was $20,000, I'd be like, yeah right. But it's a relatively small amount of money, and I recommend this idea.

Dave: You guys told me something that I was pretty excited about. I've known for a long time that one of the problems with the standard American diet and with Paleo is burning the crap out of your meat. And in "The Bulletproof Diet,"

Dave: I talked about the compounds that are made, how they make you older, how they increase cancer risk, and how you might want to maybe turn that heat down a little bit and not have that caramelized, charred crust on your steak. It's not a good thing. But you actually go through here and say genetically whether you're more or less likely to be able to burn the crap out of your meat and not die from cancer. How do you do that?

Andrew: That's right, yeah. So, the same enzymes, the CYP1A2 that plays a role in caffeine metabolism, also plays a role in what's called Phase 1 detoxification. And this is basically how quickly you metabolize. Let's say that input is char-grilled meat, seared meat, rich in PAH and HCAs, which can be potentially toxic in excess. If you metabolize-

Dave: They're probably not good in any levels.

Andrew: No. Yup. Yup. For sure, yeah.

Dave: They've never been official, but the more you get, the worse they are, right?

Andrew: Yeah. So the richest source of those, and if you've got so much of those that actually that's a buildup, if you're a fast metabolizer, that buildup is more pronounced. So you're going to get an excess of these potentially sort of toxic compounds there through your Phase 1 liver detoxification on a chronic basis.

Andrew: So in your case, you're the fast metabolizer of that, which is actually the higher risk. So it's saying, "This is why you need to be particularly careful compared to the next person."

Dave: It's counterintuitive because you would think if you metabolize things quickly, you wouldn't have a problem here. Why is it backwards like that?

Andrew: The best way I always put this is, imagine you've got a trashcan, and if you fill up that trashcan really quickly, the garbage, it ends up overflowing. You've got these garbage bags hanging around.

Dave: Kind of like our oceans. Right.

Andrew: Yes. Yeah. There you go. That's right. Yes. So, your Phase 1 liver is like our oceans filling up with this garbage, Dave.

Dave: We gotta fix that, guys. By the way, I'm working on it.

Andrew: So that's exactly the process. You say fast metabolizer but turning the metabolizer of that into its harmful waste products, basically. So we need to either do something to change the nature of that garbage that we're putting in the trashcan, or we need to put less garbage in the trashcan overall. And that's by reducing that consumption of char-grilled, seared meat below the average guidelines.

Dave: Now, I figured this out through trial and error. I'm like, okay if I eat X, do I have lots of energy or less energy? And I tracked it just obsessively over years just to figure out why do I have brain fog. What are all the variables that are there. Fortunately, by background's computer science, and it's something called event correlation, and a subset of artificial intelligence I call decision-support systems. So I was well trained to do this, develop the bodily awareness, and came up with a set of principles.

Dave: But when I looked at the PubMed biology, I couldn't find anything that said HCAs are good for you, or PAHs are good for you. And so, it's true that as a fast metabolizer, your risk levels go up, but if you're a normal metabolizer, and you also reduce the amount you eat, do you still get benefits?

Andrew: Yes. Yeah. Absolutely, yeah. So, it's a case of like, say, okay the average guideline is here, but where do you need to deviate from that as in where do you need to pay even higher priority, like place an even bigger importance on that?

Dave: So what that means in practical advice is that if, and you're not a fast metabolizer too, are you?

Andrew: I am, yes.

Dave: All right.

Andrew: Yeah.

Dave: Are you?

Avi: Yeah. Same gene. Yeah, same gene. Yeah.

Dave: Okay. So we all have that. Let's pretend that one of us doesn't. So we sit down at a table, and there's bacon that's way overcooked. And longtime listeners, people who have read "The Bulletproof Diet," bacon can be a religious experience and pretty good for you if it's cured properly from a healthy pig, and it's not burned. So we're talking like the dark, crispy bacon that's completely just bad for you.

Dave: Now, there are things where we could choose to cheat. Like I have a medium carbohydrate sensitivity, and I'm actually in real life, I'm perfectly insulin sensitive, so I can handle sugar, but anyway. So now there's some kind of sugary whatever, and there's some bacon. And based on this knowledge, I could actually say, "You know what. That sugar is gonna cause advanced glycation end products, but I really wanted it," vs. the overcooked bacon, where for me, it's gonna be extra toxic.

Dave: So this is a way of teasing out what is your personal kryptonite. Right? Just saying, "All right. I know this is going to make me weaker than average, so this isn't really part of my food pattern." Do you do other stuff like that in your own life now?

Andrew: Yeah. So it's like a risk-benefit analysis, whatever. So you know, hey, if you really want to eat this, the high sugar food, you know, okay, I really want that thing, so I'm gonna eat it, right. But if you're like actually, do I mind if I don't have this bacon which is overcooked here, and I know that for me, particularly, having that repeatedly with my genetic data is going to cause an increased risk of a pretty serious health condition, rather than this one-time approach.

Andrew: So that's how we use it. It's just like put this into the picture. Integrate how you're made. Your static, genetic profile into your decision making. And sometimes you will eat that overcooked bacon, I'm sure. But if you know that that's a higher priority for you to be aware of and take care of more than the next person, then that's a really good motivator to keep hold of that change. Whether your goal is actually, hey, I want to win an Olympic medal, or it's just I just want to live well, and for a very long time. So it's just integrating this into the decision making process.

Dave: So would you consider the DNAFit profile results something that you would use in maybe an aggressive anti-aging plan to live to at least 180 like I am?

Andrew: Well, you can use this in any realm of life, basically, so it's been used by professional sportspeople, used by absolute beginners when it comes to like just, I want to work out, I want to eat better. People are confused. That motivation's fragile, and so we're saying let's understand and avoid this trial and error. Let's get better at this.

Dave: How long are you going to live, anyway?

Andrew: Well, probably I'm ... Seeing as you're-

Dave: You got the data.

Andrew: Looks like your genetics, you might get a few years extra on me, Dave, but I'll aim for 160 maybe. 160, 150.

Dave: All right. Let's race.

Andrew: Yeah. Okay. Let's go.

Dave: It's actually a really serious question. And I know I'm putting you on the spot. No one likes to talk about death. But, you've been a pro athlete, and ... but now you know a lot about your DNA, and you doubtless get access to extra analysis that people didn't, like I probably didn't get in my results 'cause you have geneticists and labs, and you can do whatever you want. I know 'cause, well, I have a neuroscience lab, right, do that for my brand. I know stuff that people don't normally know.

Dave: So given all that stuff, and given how you live and all that stuff, realistically, 160 is a great answer, but, do you think you have a chance of breaking 100?

Andrew: Yeah, I do. I actually think my sporting career probably shortened my-

Dave: Probably.

Andrew: [crosstalk 00:32:35], which it does with elite sportspeople. Now I'm trying to live in a much more sustainable, healthy way than actually my elite sport career got me to. So I do want to live for that. And I'm sure Avi's trying to beat me as well, and get over 160, too.

Avi: Or beyond that, by far, right. So I think what's really important just to communicate, is that genetic research is moving at such a rapid pace, and what we're finding is in all aspects of who we are, how we operate is based on genetics, right, and I think that in the next 10 years, more and more's going to come out which is going to help us make the tweaks that need to be made to live longer. So companies like 23andMe, who we have a API connection with, and you can connect your results into our system. These guys are spending $90 million a year just on their marketing.

Avi: Similarly, Ancestry.com is doing the same. They're spending $150 million a year, and what's that's doing is, is it's helping the industry. It's helping people understand the power of genetics. And as the research therefore accelerates and comes out, people are going to make those changes because genetics by virtue of the power of this marketing that's happening in the background, is just going to become a defacto standard, everyday thing.

Avi: So to answer your question, I think we'll all be living a lot longer, and it definitely starts with the blueprint of who you are, and that's based on genetics.

Dave: That is a powerful answer, but specifically for you.

Avi: It's got to be 180.

Dave: 180? For real? You think you can do it?

Avi: Sincerely, I haven't even thought about that until today, but I do know for sure that if you pitch in at 160, and you're definitely a man that's in the know of, sorry when ...

Announcer: You have 180.

Avi: 180?

Dave: Well, these are American years. They're a little bit shorter than British years.

Avi: But certainly as someone who has the depth of knowledge of all these additional parameters, I think that we're going to have to align ourselves to yourself, Dave.

Dave: Here's the thinking on that. And a lot of people are like, "Oh, that's sensationalist." No. Here's the deal. The three of us on a Bulletproof Radio day, we have more knowledge about our biology than anyone in all of human history had, even going back five years ago. And so we can make better choices, and we're in a position where ... and this isn't fair, and we will change the world so that it becomes fair, but we can choose quality food. If we would just stop making crappy food, and that's my job with Bulletproof, disrupt big food, but if we get there, and so right now, not everyone can do that. But we can. So we can choose the right food. We can get enough sleep. We can drink clean water. We can do stuff like that. We know people who make it to 120. More than one. So that's possible. And they didn't have the advantage of the knowledge we have. So, 120.

Dave: Now, between now and the next 60 or 80 or 100 years, I'm pretty sure, given that I interview these people and I know them off camera, I'm taking stuff that extends rat lifespan by 93%, and that's kind of an interesting thing. Maybe I'm not a rat, but I'm pretty sure all I need is 30% from that. Right? I know the technologies are coming, and I was just at the XPRIZE Foundation. So if we can't get another 50% in all this time, then it's because something really bad happens like in the environment or something. Otherwise, it's just gonna happen. It's not going to be just us here. It's going to be hundreds of millions of people who are able to do this, because the cost of these things are going to drop just like the cost of cell phones did.

Dave: So everyone who hears this goes, "Oh, that's not for me." No. If you're listening to this, the odds of you knowing your name and not needing a walker when you're 90, it's much higher. And the way you get there now is you get the data, and you follow the advice in "Game Changers," which is not an anti-aging book, it's a book about what people who perform better do, but the people who perform best, they track what they're improving. And DNAFit is about tracking these very basic things about what you put into your body. What you do with it. And I think that is going to give me, having this knowledge, another little bit of a bump just to let the new technologies come in.

Dave: So I'm pretty serious about that. I really do think that those of here in the room can do that, but everyone listening, maybe you won't live as long as 180, but your quality of life will be massively higher. But if you don't do this stuff now, you might just miss out. If you're too far gone before the latest innovation comes in, I know from having been old when I was young, from having run an anti-aging nonprofit group, reversing aging is actually hard, and I'm doing it now on some variables, but it's terribly expensive and difficult and sometimes painful.

Dave: But not doing it in the first place because you didn't eat meat, you couldn't detoxify because now you have your data from DNAFit, not exercising in a way that breaks you because you're not genetically meant to do that, and knowing you have a genetic need for more B vitamins that the average person, so you take them. And knowing you have, this is by the way, I'm going through my results, that you have more Omega-3 requirements, so you take those because that's what you're body wanted, but it didn't come with an instruction manual.

Dave: I just fundamentally believe, okay we're talking 49 bucks to know these things, and frankly, I'm going to forget a third of these, but the other two thirds I'll probably incorporate, right. And it's high value, low friction, it just makes sense. And that's why, it's an inflammatory question about how long you're going to live because no one wants to face mortality, but I think you guys can do it 'cause you have an unfair advantage.

Avi: I think we're definitely aligned, and more importantly, I think as a company, we play a role and actually take that mission more forward, and how we're doing that is integrating, for example, blood, integrating microbiome, and we're looking at the data behind your genetics together with blood, together with microbiome, and your environment, and I think what our mission has become, I think we'll use that data to help people like ourselves to live longer, stay healthier, and ultimately live a happier life as a result.

Dave: So there's a dark side to this you're not going to like me asking you, but I have to ask you in the interest of watching out for our listeners best interests. Does MKUltra, the CIA, and all the other bad people including the Darth Sith have access to all of our genetic information or not?

Avi: And we love the topic of data and the reason why-

Dave: I do too.

Avi: Actually, as a company, we're one of the few genetic companies which are accredited to something called ISO 27001, which is the international framework standard for data information security. So, one thing we take very seriously is who has access to data, how it gets handled, where it goes, and where it flows, and most importantly, our customers' data really belongs to them unless they've given us specific permission to do something with it at a point in time.

Dave: So your customers' data belongs to them. Okay, so that puts you more in the realm of like an Apple perspective, where Apple's like, "I'm sorry I can't respond to your subpoena because I can't access my customers' data because it's their data." So you have that mindset. It's very different, though, than some of the other genetics companies that are out there who say they own your data and they're selling it like crazy to pharmaceutical companies without compensating you, without permission, and things like that.

Dave: What do you think is going to happen when you put on your 20-year-down-the-road hat, and now I've got bio-monitoring stuff from the Xbox at my house that could read my pupil dilation, and there's stupendous amounts of data, and I'm going to want to be able to stitch it all together, and I want to have this. I don't want my insurance company to necessarily have that, or maybe I do. What does the world look like when we have 10,000 times more data about ourselves in 20 years than we do today? And that number is actually a real number.

Avi: Yeah. Well, certainly, as long as you're in control of your own data, and the companies that you give your data to, or you undertake testing with, for example, is very clear on what they do with your data, I think that's fine. You decide what you're going to do with it and how you're going to use it. So if you give permission to Xbox, Microsoft, to use that to give you access to a system of some sort, then if you've made that decision, I think that's okay.

Avi: In terms of insurance, however, I think people have always thought that insurers could use genetics for a negative preselection of your policies and such. And actually, that's quite a potential positive area because insurers want to have different conversations about genetics and managing your health as opposed to actually adjudicating your policy based on health. So I think, generally, it's going to go in a real positive direction, as long as the companies are responsible with how they work with you and your data.

Dave: I'm really encouraged that DNAFit has the perspective that I own my data. It pisses me off when someone takes my lab data and my other stuff like my birth date, and my gender, and all that, and thinks that because I paid them for my data, that then can then sell my data. It feels like data theft to me. So I'm grateful that you guys are disclosing what you do with the data, and you have the mindset that the customer owns their data because if my body generates it, I'm pretty sure I own it.

Andrew: I think where we ... People are very familiar with companies like 23andMe and AncestryDNA, and where we come in, which also is very much actually different and complimentary to those. So, you study, you'd see these reports, and they're just almost like reports for the sake of data. Right. So you say, "I've got this wetter than average likelihood of earwax being wet," or "I've got curlier than average hair." There's no real action you can take off that.

Dave: Hold on a second here. I have the Neanderthal variant that says I have less back hair than average, and I actually put that in my online dating profile. Oh wait, no. I don't do online dating.

Andrew: Who would you recommend?

Dave: What was that guy's name? Something 54. Some guy's using my photos on Tinder. It's not me. And I just Tweeted about it and asked everyone who's following him to ask him out on dates and then stand him up. Anyway, that's not me if you saw me on ... Was it Tinder? Whatever it was. But anyway, I do have less back hair than average, but this is just a joke to say, "Yes. Who cares?"

Andrew: And I think that's the point, being a solution rather than just being data for data's sake. Right? Giving this action. So what we do is basically, somebody yeah, even if they've done it through 23andMe, they can upload that data file. We can then say, these are the particular actions we recommend taking. And we only report on factors which have a modifiable lifestyle and environment change that you can make. So there's no bad news in this. There's just, here's something that you can do to either support or cancel out this genetic activity here.

Andrew: And so it's about changing that conversation, say. You've always been able to get lab data. But it's been up to you just to somehow figure out what that action was, or what the solution was that you took from that. What we're doing is we're taking this, and turning it into actionable wellness like longterm health, sports, exercise, nutrition changes that somebody can make based on that data, rather than just saying, "Here's a lab report. See you later."

Dave: The future as I see it for this is that there's great value in having a set of data, but the real value is in how do you interpret the data. So I like the idea that I can plug DNAFit in on top of my 23andMe results, and you'll use your algorithmic understanding to interpret that for me, and I can also go somewhere else, and if there's someone out there who says, "You know, I looked at your genetic profile, and your astrology sign, and your crystal vibration level, and I'm going to tell you your psychic abilities." Hey, maybe there's some validity to that, I have no idea.

Dave: But if I want to pay them for that algorithm and have them crunch my data, more power to them, right? It gives me a choice to say, "I want to look at this with this lens or that lens, and have a freedom to be able to do that. Because you could look at these results with calories in, calories out, saturated fat is bad, and you know the stuff that made me fat and obese and tired all the time, and it probably wouldn't work. So the ability to have flexibility like that is cool.

Andrew: So one of the things we did as a company is actually, we built a whole team of dieticians to support scientists who are there to speak to every customer through their report to put it in context for them, and that's exactly the point is that we don't want to just give, "Here's a blanket piece of advice." There's the whole point of what we do is personalization. So we actually have this whole team available. Every customer can get a free talk when, health-coaching session with these dieticians and support scientists to put this into action for themselves.

Andrew: We have a whole host of other things we've built later on. Genetically guide the exercise plans, and nutrition advice, etc. But having that personal connection with an expert to talk through these in context has been really powerful.

Dave: I was a little bit skeptical on the diet stuff. And the reason is that there's basically three buckets. You can be on low carb, low fat, or Mediterranean. No one I know has ever been able to clearly define the Mediterranean diet. What the hell is the Mediterranean diet?

Andrew: Somewhere around this kind of 30-40-30 split of starch to protein to fat is the sort of middle ground between reducing that carbohydrate slice, or reducing that fat slice.

Dave: So it's just a ratio of fats, proteins, and carbs?

Andrew: Yes.

Dave: So I could basically eat like margarine to get my fat, and corn syrup to get my carbs, and I guess soy protein for my protein? That's Mediterranean, right?

Andrew: You'll have a tough time if you stick to that for long.

Dave: Well of course, but I guess sort of what it really comes down to in the advice here is, you're someone who if you're exceptionally sensitive to fat, you're going to tell them to eat more carbs. So, a low fat diet equals a high carb diet because we all know what a high protein diet does for you. It makes you old and gives you cancer if you eat lots of protein as your primary fuel source.

Dave: And then, if you're someone like me who's relatively tolerant of both, even though I didn't used to be, but apparently genetically I am, you're going to say, "Well, eat some carbs, eat some fat," etc., etc., but in terms of getting down into like the real specific types of fat, do you need more olive oil, you know do you need more polyunsaturates, or is this kind of protein good for you, bad for you. I don't think we have enough genetic data yet to know that.

Andrew: Not for a lot of factors. There are for some. So for example, individual genetic variance you associate with a particularly increased response to saturated fat as opposed to unsaturated, for example. The FTO gene you talked about before has a role and then there's some pretty good evidence around that. So it's about delving into this in detail, so we don't just provide like, "Hey, here's a pretty picture of your results."

Dave: The report is pretty detailed.

Andrew: Here's the detailed stuff. Here's the expert to talk you through that and draw out things particularly that are relevant to [crosstalk 00:46:34].

Dave: But if your experts are dieticians, this is another thing. Dieticians traditionally are the ones who give you Jello and popcorn in hospitals, wherever like hospital foods comes from dieticians.

Andrew: Not our dieticians.

Dave: Okay. Because there are nutritionists and there are dieticians. I know some Bulletproof fans who are dieticians, and I'm sorry I just offended your whole profession, but go to a hospital and eat. When hospitals serve real food, dieticians, as a general rule, are competent. Until then, I'm sorry guys, the American Dietetics Association, it's causing diabetes. It's not fixing it. So as a group, dieticians, the certified ones, you guys need to get your you know what together ... I almost want to ask you guys to say that with a British accent, but I won't. And there are good dieticians, but as a general principle, the teachings from dietician's school are very much in line with like 1970s wackiness, and I think we can do better.

Dave: But you guys don't hire people like that. You're hiring well-rounded people is what you're saying?

Andrew: Where we are is that we have obviously we know what the evidence is, what's out there, we are this company that involves, is exactly this. We are a cutting edge technology. There's a [inaudible 00:47:41], so we're not stuck on old data from the '60s-

Dave: [crosstalk 00:47:46].

Andrew: ... which would be the average advice that you're given and what your example of being fed Jello in hospital for example. So yeah, we're very much not that. We have the best advice experts there to give that, and then also, a deeper understanding of the customer that we'd never have had before. So if you found a hospital that was using genetic data to personalize their dietary advice, I'm sure you wouldn't be in this sort of Jello and corn syrup, [inaudible 00:48:11] of that.

Dave: It's actually funny, I'm picking on Jello because it's full of sugar and coloring. Gelatin itself, which is basically not predigested collagen, and Bulletproof put collagen on the map as a high-performance protein food, so it's actually not that bad of a choice if you would just cut the crap out. Anyway. We'll get off my dieticians' come on, get with the '90s at least kind of perspective.

Dave: But I did get real value from my DNAFit profile, and I thought it was exceptionally affordable for the quality and type of data that it got, so I just wanted to have you guys on the show and thank you for comparing my results with both of yours which was highly enlightening. I can now put on my thing that I have a 2% genetic advantage over at least one Olympic medalist, which is definitely going on my LinkedIn profile.

Andrew: Good. Good. [inaudible 00:48:56]. Let's let the battle commence when we ever get a chance to race, and we'll see if I can make a 2% [crosstalk 00:49:04].

Dave: There's this whole training effect. That's after genetics. I didn't say anything about that. All right guys, actually, I'm going to ask you this question. This question that's been on every episode of Bulletproof Radio. Someone comes to you tomorrow, based on your experience as an entrepreneur, as you guys study your genes, as an Olympic athlete, just as a human being, three pieces of advice to make me perform better at everything I do as a human being. What matters most? Three things.

Andrew: So the first one would be that we're all different, and you need to find your own way to that. There's not going to be one set black-and-white piece of advice to get you there. So, that's number one. Secondly, I would probably say, that it will require more dedication and sacrifice than you expect, so be ready for that, and be ready to be [inaudible 00:49:49]. Number three, Avi, do you want to drop me a number three in there?

Avi: Yeah, number three would be have good emotional support around you to help you perform better emotionally, 'cause I think that's very important in the scope of everything else we've been speaking about.

Dave: I appreciate that advice very much. And thank you guys for being on the show.

Andrew: Thanks, Dave.

Avi: Thank you.

Dave: If you liked today's show, there's a couple things that you ought to go do right now. One of them is pick up a DNAFit test because the Return on Investment for you there is going to be very good. The other one is order "Game Changers" right now. I've put just so many thousands of hours into boiling down what I learned from this show so that you could pick it up in four hours, and you'll of course read the rule about track what you're going to hack, which is really good for you, and a bunch of other advice that you're not going to get anywhere else. The book is called "Game Changers" and you can order it wherever you like to order books, and there're going to be some really cool prizes associated with the launch of the book as in oh, a hundred thousand dollars worth of stem cells which sounds pretty exciting.

Dave: Follow me on Instagram, dave.asprey, and I'll tell you more about the prizes for the book. And just order the book now, and I would love it if you would just DMed me a picture of your order or a picture of you reviewing the book when it comes out and you get a chance to do it because I look at reviews. I read every single one of them on Amazon and whatnot, and I just appreciate when you take the time to tell me what you actually think of the work. This is a very powerful read for you, and since you know you're going to read the book, you know you're going to like the law in the book, you know you're going to want a DNAFit test, as well. So to get your test starting at $49, go to danfit.com/bulletproof. It's a special gift for Bulletproof listeners. Thanks guys.