

### **3 Dimensions of Longevity That Will Extend Your Life – Sergey Young with Dave Asprey – #852**

Announcer:

Bulletproof Radio, a state of high performance.

Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey. As usual today, we have a live audience from the Upgrade Collective. Go to [ourupgradecollective.com](http://ourupgradecollective.com) if you'd like to be in my mentorship and membership group where you get access to authors and speakers directly to ask questions at the end of the show. Today is a returning podcast guest, and a friend, and a major investor in longevity and anti-aging. And now a new author of a very cool book about aging. It is called, believe it or not, The Science and Technology of Growing Young. That's funny because Sergey Young is our guest. So he named the book after himself, which is the world's biggest dad joke. Sergey, was that your intent when you named your book?

Sergey Young:

Yes, a little bit.

Dave Asprey:

All right. The truth comes out. Well, welcome back. And we are airing this on the date that your new book comes out and actually hits the shelves, I have the advanced reviewers copy. And in pre-sales though you're killing it right now. How's the book doing before it's even out?

Sergey Young:

Yeah. It's interesting. We are number one new release on Amazon in three categories, preventive medicine, aging, and longevity. And we're even competing between number one and number two bestseller even before book is sold with some of the existing books in preventive medicine. So I'm very happy. I mean, you know it better than anyone. Every book is like a baby. And this is my first baby book. And I'm very excited that's getting well. And obviously it comes down to support I receive from you and a lot of people in our field.

Dave Asprey:

Following that, let's see your foreword is by Peter Diamandis and Ray Kurzweil. Some big names. And there's some quotes on the back from like Tony Robbins, and some other big names when relatively small guy on there on the back is Dave Asprey guy. But basically, I have endorsed the book, and I'm sure of many other leaders in the field, because Sergey spent years connecting with the world's anti-aging research leaders, that's how we met years ago. And he believes that we can live to 200 years old and beyond, that it's inevitable, not just possible. And that makes me very angry because my number is 180. And here he is, and I'm going to do 20 years more than you. So, Sergey, I mean, was this an intentional slight?

Sergey Young:

Yeah, I think what we see in our field is this certain inflation of life expectancy and lifespan targets. So I know one guy from China, he wants to live to 300 years. I think it's just typical Chinese stuff, better, bigger, longer, etc. But otherwise, I do think it's obviously well beyond the sound barrier of 122 years,

the maximum lifespan that we had on Earth, for the record. And all of the technologists and scientific breakthroughs that we're expecting in the next 10, 15 years within the near horizon of longevity, will give us an opportunity to break the sound barrier and live beyond 122 years, well, up to 150 or even 200 years.

Dave Asprey:

Well, I agree with you 100%. And it's funny, because our mutual friend, Aubrey de Grey, who's been on the show. He's 10,000 years and like no one ever heard of that, because no one can grow a beard like Aubrey. So we just know that he can be like the Merlin of anti-aging. So I'm good with I just come close to that. It's okay. Now, you're uniquely credible because you run the Longevity Vision Fund. So you're putting \$100 million toward accelerating life extension technology, and making it affordable for all of us, which is a big theme in your book, big theme in my aging book as well. Okay. It starts with the crazy people willing to spend more money like enough money to go to space. Now I'm going to spend it on hacking myself. But that's what enables it to be much more affordable a few years later, so it just evolves that way like phones did.

And you've also managed a \$2 billion private fund. You and I are in the longevity or in the XPrize donor thing where we help to select and create X prizes. You did the longevity Xprize, I did the Carbon Capture one that Elon Musk ended up funding which was pretty cool. So we care, but you've been in this for a long time, which is why I want to dig in on your take on the science and the technology so that our listeners and our Upgrade Collective members can ask questions and just learn And how real is it and what are they going to have to do. That's the scary thing. I don't know, should I go plant based? Should I fast? Should I inject stem cells? Or should I do what Craig Venter says, let's have pizza and beer while we wait for more data. There's a lot of options here. Well, let me start with you. You mentioned it's possible to live to 200 years, have you staked a number for yourself?

Sergey Young:

Well, yes, I do. So my plan is to live to 200 years.

Dave Asprey:

Okay, it is 200? Okay.

Sergey Young:

Yeah, 200. So partly because I'm a typical placebo guy, if I'm going to believe in something and it's called psychological aspects of aging, then I'm going to do it. And as insecure overachiever, I do everything to achieve this number. Unfortunately, all of the technology that we have today, what we've been doing so far, we were just avoiding early death on Earth. We were fighting cancer, heart disease, diabetes, we're trying to find newer genetic diseases. But it was enough just to move a statistical average of the lifespan. I mean, we've done a lot, it's up from 35, 40 years, 100 years ago, to 75, 80 years of average lifespan today. But we never actually cross this barrier of 122 years of maximum lifespan.

And this is where technology is, that we expecting to be available to us in 10, 15 years from now, like gene editing and gene therapy, organ regeneration, longevity and appeal, we're going to see a new class of drugs, which we're going to tackle and fight the aging at its core rather than go disease by disease. So it's going to be like super helpful for us finally to expand the maximum lifespan and having the ability to live to 150. So this is near horizon of longevity. But to enjoy that, in 10, 15 years from now, you need to stay on longevity bridge, as our mutual friend Ray Kurzweil say, so you just need to keep

your body and your mind in a state which is worth expanding its resource. And then it comes down to full horizon of longevity, which is going to be available to us in 25 to 50 years.

But we're going to be redefining humans by this time. We're going to be heavily influencing our DNA, we're going to stop or even reverse aging processes in our body, influencing all 3,000 longevity genes that we already know in our DNA. And it's going to be world of human avatars, human brain AI integration. And we're going to talk about concept called internet of bodies, similar to internet of things, we all going to be full of sensors. I'm full of sensors today, you probably as well, but people around the Earth all go to be interconnected to this distributed artificial intelligence run system, which is going to be responsible for our health. So that's like three things, three steps that we need to take to enjoy 200 years of healthy and happy life.

Dave Asprey:

Okay, you dropped one really important piece of advice that I think we glossed over and the first actionable thing from this, and I'm going to share what I do for it. This piece of paper, it says 28% on it. And it sits right here under my camera. What's 28%? Well, this year, I'm having my 28% birthday. Because I don't think in years, that's minimum expected lifespan. And what Sergey just told you, there is a placebo effect. In fact, it's as powerful as a lot of pharmaceuticals within five or 10% of them. So if you don't tell... By the way placebos work better if you tell everyone about them. Like literally oh, yeah, I'm doing this, even if they crap over it, it doesn't matter.

So you need to pick a number, this is the minimum acceptable thing. You need to tell yourself, I am not old, I am actually this percent of that. And the cells in your body, I believe, will listen, that's part of how placebo works, that really stupid really fast systems in the body that pick that stuff up. So you actually really do need to pick a number and make that your reality. And that's a part of it. And Sergey does it. I do it. And I'm pretty sure a lot of the other leaders anti-aging are like this is my number and I'm sticking to it. If you tell me I'm wrong, it's because you're dumb. And we go on, am I right?

Sergey Young:

I love it. Look, when I started to do my mantra every morning and every evening, which is I'm going to be living to 200 years in a body of 25 years old man. My life has changed. Exactly. As I mentioned, every morning I wake up and like 3/4 of my life is ahead of me. I'm full of dreams, I'm full of energy. I'm so young in lifespan terms, and I like it, my body responds to that.

Dave Asprey:

Your body will. In fact, there's a very old Russian, with a meditation technique where you look at pictures of yourself when you're 12, and then 11, so you do it every night until you're like a baby, and just tell everybody, this is me. This is me, this is me. And you can explain all the mechanisms there. But whatever it is, I think it's important that you set your expectations that way. But the rest of what you talked about sounded like you've been watching Altered Carbon a little bit too much.

Sergey Young:

Yeah, well, obviously, we are thinking that to solve the aging problem, it's going to be one silver bullet. But the human body, and human biology is probably one of the most complex things I've ever seen in my life. So I'm still learning how it works. So it's just very likely that it's not going to be one thing, it's going to be combination of the things, whatever horizon you take, all you need to do today, or what are you going to be doing in 10, 15 years from now or 25 years from now, it's always going to be a combination of things both on a physical side, and then psychological side as well.

Dave Asprey:

I 100% agree that to live way past the built in expiration date that we have today, it's going to require a little bit of editing of biological processes, right? And I see zero ethical problems with doing that as long as you're not changing the germline. So if I do it to my body, after I've had kids, it's my body my choice. If I do it in a way that's going to pass it on to another generation that could spread around the planet, we might have some issues there. All right, so back to Altered Carbon and all this. I come from the computer security industry, I was a computer hacker, you are familiar with the technical capabilities of certain governments for hacking, who shall not be named, but are pretty much all global governments.

I'm not naming anyone in particular other than Russia, China, the US, and North Korea, and Israel as probably the most effective hackers. If I forgot your country hackers, I apologize. I'm sure there's good hackers in other countries too. Please don't DDoS me. But here's the thing. If you have implantable stuff, guys like I used to be, are going to get in there and we're going to put banner ads in front of your eyes that you can't take out. By the way, I didn't make that up. That's a Bruce Sterling in a Neil Stephenson novel from the mid '90s in the cyberpunk genre. But seriously, you want to implant all this stuff? Do you trust those guys any more than you trust, I don't know big pharma companies to not lie?

Sergey Young:

Look, I'm for experimenting.

Dave Asprey:

I'm with you there. Okay.

Sergey Young:

I'm cool with that. They're like, do you want to do experiment with the whole global population? Probably no. But with few of the people like us who are like super positive and less risk averse like us, yeah, we should do it. Yeah.

Dave Asprey:

If it's open source, I'm down for it. I just don't want code running that I cannot see and control because there's great evil that can happen from that, especially when you have an algorithm that you didn't get to tune that decides what you see, and it's in your eyes and you have augmented reality built in. That's pretty scary territory. We're going to get there, bad things are going to happen, I promise you, and really a lot more good things will happen as well. That's how tech always works. Right?

Sergey Young:

Yeah, I think we've made this trade off already. We traded this all expectation of data privacy with how helpful our smartphones are. So in a way, the same thing will happen where internet of body and outsourcing a lot of decisions and a lot of monitoring to artificial intelligence. And I don't think it's going to be human intelligence contradicting AI, we're going to be working in combination. And it's going to be very complimentary, either or, so it's not going to be like one fighting with another.

Dave Asprey:

Yeah, it'll all come together, eventually. And there'll be little camps like we have today, Apple versus Microsoft and things like that. All right, back to bad stuff might happen, but you'd be willing to do it.

Right? What about Neuralink? Would you do an Neuralink if Elon called you tomorrow and said Sergey, I've got a spare one?

Sergey Young:

Well, every time I'm scared about the new technology. I'm always thinking about the cohort of people, which actually do need this technology. And I don't know if you've watched this movie called The Father with Anthony Hopkins, and it's pretty recent movie. So the whole movie done through the eyes of someone who suffers from dementia. And if you think about this people, so for them, integrating their brain, their human intelligence with artificial intelligence, that's like the only way to sustain the quality of life in the last five to 10 years of their lifespan. So every time I'm scared by technology, I'm just trying to think about, what is the best use of this today?

Even gene therapy, when it was invented, and gene editing, like CRISPR was invented a couple of decades ago, what's available to some of the people with rare genetic diseases? They had nothing to lose. For them, it was like perfect solution because there were no other solutions. So I do think if you think about Neuralink, it's going to start with this particular core, right? Which really requires help in integration with artificial intelligence. So then we'll have an opportunity to test it and then roll it out. So we at Longevity Vision Fund, we've been struggling to find, what are we supporting? Should it be like invasive integration, or non-invasive?

And yeah, I'm a big fan of non-invasive way of doing that. But this is not the first and probably not the last time when Elon Musk was right and I was wrong. So I'm not going to argue with Elon. And who knows, probably the invasive way, similar to what they do in Neuralink, and what I've heard, they're going to be starting human trials pretty soon and in human germs might work better. I'm waiting for this in combination of excitement and fear. But in the end of the day, it's a viable piece of technology. And I can see a lot of people on earth, which do need that.

Dave Asprey:

For someone who's nearing end of life, you should experiment like crazy, because what are you going to do, die? You have a sacred right to do what you want then and share what you learn. Even if you die a couple years earlier, or maybe a couple years later, that's totally the time. Right? So I'm with you there. I'm not betting against Elon, although I will say, I believe there are a lot of EMF risks that are ignored in all the implant industry that affects mitochondria, which are very dense in the brain. And having run a lab testing company that looked at rejection of implant materials that is not mediated by antibodies, I think the problem might be different than what he thinks it is.

I'm not eager to have any implants, including breast implants. I mean, look, how many people are getting those taken out. I thought about it, but I just it wasn't the right look for me. But you know what I mean, like any implant material can be a problem. So I'm going to probably hold off on that because I think by the time we get really good there for non-sick people, there's so much data coming off the brain, we can pick up without implants that we can probably do the same thing. Or at least some of that. And besides, what would happen if you didn't pay your Neuralink bill?

Sergey Young:

I can imagine that.

Dave Asprey:

I don't know. But it's like your Tesla drives slow and drives into a tree, I'm not sure. One of the myths that you have in the book that I love you busting is that longevity is dangerous and selfish. Why is longevity not dangerous and selfish?

Sergey Young:

Well, I think the mental model of aging that we have today in our minds is pretty outdated. So one thing about longevity, we are assuming that we are going to add last 5, 10 years of our life when you are in the most fragile state, when you require a lot of support. And like every technology that I know that we invest in, is working on inserting 10, 20, 25 years right in the middle of your life, just extending the productive part of it. So that's one. Second, I also think we have a wrong role models here. We always look in the centenarians, people who already live 100 plus years on this planet, and we just trying to learn from them. I actually think and there's a lot of studies supporting that, they've just been lucky in the genetic lottery.

And obviously it's combination of environment or lifestyle changes pre-determined by the environment where they live in. But otherwise, I think it was Nir Barzilai who's just done study on centenarians, saying 70% of their secret is genetic luck. So therefore, the whole model of longevity that we have is based on the wrong assumptions. And we are well, pretty social species. And wherever we invest in for Longevity Vision Fund, is making amazing changes and transformation of current healthcare procedures and interventions and solving problems, like efficiency gains that we get from investing in early cancer diagnostic or in affordable ultrasound devices is like the improvement is 10 to 20. Not percent, but times.

So therefore, we're going to democratize this whole access to the healthcare. It's not going to be... I'm not interested in building something for a billionaire with people who can pay millions of dollars to live longer. I'm actually interested in bringing the scientific discoveries and technological breakthroughs to almost a guarantee to everyone access to the most efficient and technology-based version of healthcare. So well, that's going to happen.

Dave Asprey:

It is going to happen. And it's a similar thing to what I'm doing with 40 years of Zen, it's a five-day intensive \$15,000 program with neuroscientists hovering over you doing stuff to help you change your brain. Probably a little expensive and not that scalable. And there's an executive chef there too, because you have to eat the right stuff. When we get enough data, and we're done, it'll be available in high schools without the chef, right? And that's the path for all of these technologies, as far as I can tell, where you make it as cheap as you can, right? And you make it so that you can show it's possible and you learn how to do it. And every year it gets cheaper, just like processors, just like phones, just like cars, just like everything.

Sergey Young:

Yeah. Even like sequencing the human genome. I think it took us like 30 years ago and \$3 billion. They even thought they would stop the experiment and the project after the first two years when they managed to decode a 1% or 2% of human genome because they thought they're going to be doing this for like 100 years. And then this whole democratization and exponential increase in computing power and processing power arrived. And here we are. Right now, I think sequencing the human genome. I just got my genetic review with Human Longevity Center in San Diego yesterday. Well, it's probably a few hours and few hundred dollars and that's it. And you can even buy a tool kit for your kids to amend the DNA of bacteria. And it's \$170 toy. Well, this is where we are and we can also talk like gene therapy,

Moderna, AstraZeneca, many COVID vaccines are the outcome of gene therapy. We just don't realize that, we all participating in a global and hopefully positive, I do think it's positive experiment of using gene therapy on mass population. So this is happening and changing every year, every decade.

Dave Asprey:

It is changing for sure. I mean, when I was a kid, if you're mean, you might dye the hair of your friend's cat but now my kids are making their friends cats glow in the dark actually through genetic engineering. It's just like a prank you do. It's totally crazy. He's trying to figure out whether I'm pulling his leg but he's totally got a poker face. Totally, didn't do anything there. He's like, is he telling me the truth. All right. I can tell you're like Dave, you're nuts or you're like I don't want to tell you, you're stupid. I was trying to read you but you were flat there, I don't want to play poker against you.

Sergey Young:

So many crazy things that you just tend not to be surprised by everything which is happening. Like we'd invested in this company called LyGenesis they're based in Pittsburgh, and they use our lymph nodes to regrow organs.

Dave Asprey:

Yeah, I heard about that.

Sergey Young:

Yeah, well, this is amazing. Today liver transportation is very expensive procedure. As far as I know it's 600 to \$800,000, people wait for six, nine, 12 months for your liver donor. And some people die just in the process of waiting. So what they do in LyGenesis, they take donor liver, they split it to 50 to 75 basis and they use very simple laparoscopic operation, to put it in your lymph node, it's actually here. And in the course of three to six months, with a little support, the new liver is just regrowing in your body. And it supports the function of your liver which is not working properly today. Well, that's amazing. And they've done it with pigs, dogs, primates, obviously mouse. And this year, they're starting human trials. This is amazing. So you tend just not to be surprised by everything which is happening in this space.

Dave Asprey:

It's totally one of those things that could be real because they have made glow in the dark cats. But you can't do it to an existing cat as far as I understand, but you can make part of it glow. But also, it's mean to do that to your friends' cats. You make another reference in here, and it's a TV show that needs remaking, The Six Million Dollar Man, which I watched as a teenager, you've got a part of your book, there's a \$6 million you. So it was really making the case that part of this is going to be some pretty aggressive upgrades. What's your timeline on that? Is this a 10-year, 20, 30 year? When is this really going to become possible? And when is it going to become common?

Sergey Young:

Okay, so I think it's going to be possible in 10, 20 years from now. But my biggest concern is actually ethics and regulation. In 10, 20 years time, the biggest obstacles is not going to be in science, and they not going to be on the technology side. It all will come down to human ethics and ability and desire to our society to accept that. And this is the biggest problem because we never started the conversation. So how morality of immortality should look like. And if you ask people in US and UK, and I have these

numbers, 65 to 80% of people, when they offered to extend their lifespan, they say no. And while this is counterintuitive for you, and me and our audience, right? I was really shocked when I first heard that.

But so what is happening, and I just did a TEDx Talk on that, we've created the science and technology to extend our lives, but we haven't created lives that we want to extend. And that's why we're living in a world of physical health problem, mental health problem, and people are trying to search for meaning of their life, the purpose of their life. And therefore, it's just not a lot of people who have enough plans, enough ambitions, and understanding what they're going to do with this extra years. And this is all multiplied by myths that we just discussed that we all think that we're just going to be like older for longer, but that we're not going to be growing young.

So that's the part of the problem. And that's why the whole ethics of today's and future world is important as well. And we need to have a global conversation on this whole thing. How we're going to sort out inequality gap. My favorite one is actually, to one, all these social constructs that we have today for our society has been developed for the average lifespan of 35 to 40 years. Well, think about career. Think about marriage, 2/3 of the marriages go through divorce in the first five to seven years after beginning in the developed world. Or what if I outlive my finances? This whole concept of retirement when it's like binary, when you either work full time, or you retire full time.

And if you listen to Dan Buettner, the author of The Blue Zones book, he says, two most dangerous years of your life is the date of your birth and date of retirement. We need to be less binary about all these social contracts. But my favorite one and I don't know the answer to that is when you talk about radical life extension, or as some people talk about immortality. I'm not a big fan of immortality, because I do think life should have an end to be meaningful.

Dave Asprey:

Because it's done. The universe will collapse on itself. We're all going to die.

Sergey Young:

Yeah, I agree.

Dave Asprey:

Immortality is a false promise unless we prove something about the nature of the universe that's different than we have today.

Sergey Young:

In isolation, but you don't live in isolation. You're going to be exposed to external shocks anyway. So well, what I'm saying, this whole life extension paradigm going to be based on you making decision every five to 10 years to extend your life or not. And in the current society, it's called suicide. It's called playing God. And I don't even know if I will have a bravery, once every five to 10 years to make this decision.

Dave Asprey:

But it'd be interesting if that little survey you talked about earlier that I find offensive where 65% of people say I wouldn't choose to extend my life. Well, what if it came with a free cyanide pill? Well, seriously, if you don't want to extend your life, why are you here and you don't have to be here, right? And I'm not advocating for suicide, and you wouldn't want to do that with people who have mental illness or depression or at risk and all that kind of stuff. But honestly, why are you putting one foot in

front of the other if you can't say I want to be here? It does not compute for me, I don't understand. I guess it's fear of being weak. They see aging as weakness, which it isn't.

Sergey Young:

Yeah, yeah, I agree. Well, we're going to change the whole paradigm of aging, because everything we work on and we invest in is about influencing health span, adding more healthy years to our life, rather than just artificially extending last five to 10 years.

Dave Asprey:

I was interested when I read your Science and Technology of Growing Young. I had identified seven primary causes of aging in my aging book, but you've got 10, which was interesting. So can you walk through the 10 and I'm going to ask you to go in on a couple of those, but just hit what they are. These are the big things, we've got to stop these if you want to live forever.

Sergey Young:

Yeah, so I mean, when you talk about nine hallmarks of aging. And well, that's the concept which is known to us starting from 2013 I think. You and Aubrey de Grey speaks about the same stuff but you group them in seven. And within these hallmarks, there's just a lot of disagreements. Some of the people I think there's some of them like are primary sources and some of them are just the outcome of this. So in the end of the day, and you know it better than I because I'm investor, I'm not a biologist. It goes from our genetic setup, genomic instability to telomeres to epigenetics to deregulated nutrient sensing, what else? Stem cells exertion.

Yeah, and there's so many things that we got to think we know about what drives aging and what do we need to fight, but I do think it's not going to be like one hallmark that we need to sort out. It's just going to be combination of the things that we need to address. But my favorite one is still genetic one, because I do think if we will be able to amend our DNA and influence our longevity gene. So well, it's almost like the only fundamental way to redefine humans. And that's why I'm very optimistic about the scientific and technological side of that. But obviously ethics and regulation is a huge obstacle similar to I think what is happening in stem cells.

Dave Asprey:

That's not a problem. You just have to go to one of the many countries without ethics. I didn't name any of them so that was okay. Right? It's going to happen is what I'm saying. It is just going to happen and so we need to know about it because it's inevitable because the technology exists, someone will do it somewhere, and it'll probably be sponsored by government. I will bet you.

Sergey Young:

Yeah, I agree. But my mission is to change as many lives as possible. So obviously, you and I can do that but what about people next door? And if I'm going to be doing my second book, it's going to be a book on longevity gaps. Some of these zip codes which are close in US has a lifespan difference of 15 years. In London, some of the two parts of London close to each other have longevity and lifespan gap of 18 years, like why we have this on Earth. And no one looks at the different dimensions of longevity even difference between men and women in lifespan. Half of the medicine is like white males are doing research and trials on the other white males, and they assume it works for everyone.

Dave Asprey:

It'll happen. The number of studies done that recognize the difference between men and women in the last 10 years is higher than it's ever been. And we're starting to notice oh, that's funny. There's differences in genetics and differences in gender that make a big difference when you're doing studies, so you have to do that. One of the things that you talked about, and we're going to get in a minute into what's actionable? What can we do right now? One of the things you talked about that I didn't cover in as much detail actually really in the same way you do, in my look at it, and people in the Upgrade Collective longtime listeners have heard my list of seven. They are already taking action on some of them. But you talked about deregulated nutrient sensing as a major part of aging. So what is that one specifically and what do we do about it?

Sergey Young:

Look, I think it really comes down to our inability to accept and use the nutrients inside our body. So this is very much related to microbiome. And the fact that, when we think about ourselves as a one integrated body, we're actually full of bacteria and different species which are helping us with absorbing nutrients and accepting the food and supporting microbiome. So that's basically one of the problems.

Dave Asprey:

It's one of those things where if your cells aren't sensing nutrients, they aren't sensing amino acids or other things like that, it feels like fasting, probably longer fasting, versus shorter fasting is really going to help and we know it helps with things like dopamine and insulin, and likely with... Those aren't nutrients, those are neurotransmitters, but still are neurotransmitter hormones. So I'm pretty sure that we're going to end up doing more of that or mimicking that because people still like to be able to eat, which is one thing. What is the top three most affordable anti-aging things that listeners could do today to help them live until they can live forever?

Sergey Young:

[inaudible 00:37:19] When I have 30 seconds, I push everyone to do their annual checkup, medical screening, because if you going to be able to catch cancer at early stage, the recovery rates for some of the cancer types today is from 93 to 100%. 20 years ago, cancer was kiss of death. And people were delaying that they have cancer screening. Right now, if this is early stage, and with the current advancements in technology, you'll be able to catch cancer at a very early stage, your chances to recover are almost 100% and what is more important, the quality of your life and your health going to be sustained. So think about you just going...

What I say and my wife disagrees with me, one of the most important days of your life every year is the date of your medical checkup. And so I do it every year, this year, it was June 8, and even this year to identify colon cancer, you don't need to do colonoscopy anymore. So it's combination of full body MRI, in combination with Cologuard or any other liquid biopsy test, which is now in development by the companies like Freenome. We invested in Freenome and they started with colon cancer. Well, this is super helpful. And even if you see the same MRI machine, right now your scans are done and revisited by artificial intelligence first, and then human radiologist. And combination of human and artificial intelligence is extremely effective.

So it can detect early stage cancer. And I think it was example of breast cancer in 98% of cases, while human radiologist along working on line pressure, and they always do unfortunately, is like 38% effective specifically for early stage cancer. I think we will see the different numbers there. So thing number one, I think is just understanding the value of your medical checkup, understanding how many

changes in technology and the science that we can use now. And well, that's why by doing this we can enjoy more years on Earth. So that's one.

Dave Asprey:

So I'm going to push back a little bit on that one. At least in the US, okay, you go into your annual medical checkup, they hit you on the knee with a mallet, they take very basic blood tests that probably don't do anything. And they tell you your cholesterol is too high and give you drugs even though the cholesterol isn't too high and you don't have inflammation, or maybe you do. But they don't actually do any of the cool stuff you talked about. But I do the same things. I've done the high resolution MRIs. I've had the liquid biopsies. In fact probably my most successful investment right now. I don't talk a lot about being an investor but I am, is able to detect about a half a dozen types of cancer better than any other company using big data and some other stuff and I can't say who it is or what it is, but that's crazy burnt land.

Because we couldn't do that five years ago. So this is all happening right now. But what people can do is, you can when you identify this stuff, you list it. You list the companies, you what it is, how to do it. Like what's happening in your book, you can use your flexible spending account if you're in a position to fund that in the US. So you can say, right? I want to get this test, right? And you can use your FSA to do that, which makes it pre-tax dollars at least. And you don't have to do all of these every year, especially when you're younger. But I will say there's really good value to doing that. And I love that as an answer, get the data, instead of just eating some kale, that's a bad idea. All right, what's number two on your list?

Sergey Young:

Number two for me, it's just using the wearable. And what I like about wearables, they are becoming our personalized healthcare devices. I'm pretty sure, so right now, I'm like wearing a continuous glucose monitor, like I'm using the Apple Watch. I'm actually experimenting for my fifth day with WOO or ring. You can wear Opatch. So I do believe that wearables is not going to be activity tracker anymore, it's going to be more like a personalized healthcare devices. And latest app which can do a lot of things, and I think a few years from now, they will just add their glucose monitoring in a form of satellite device but still integrate it data wise with what we have on us.

And then probably, like measuring our blood pressure. And I do think with all of this, it's going to be more than 50% of the stuff that you need to measure on a regular basis about your health. So I think it's an opportunity for all of us to start early enough embracing and using wearables and working with the largest companies on Earth, who are investing and over investing in healthcare to enjoy this level of personalization from our wearables sharing the data, and has been able to catch disease and address diseases at much, much earlier stage. So when people ask me, so what's going to happen in healthcare, and this relates to your point, if you go to the hospital next door, and you ask for checkup, you're going to be seeing very short list of the things that they're going to do with you without necessarily helping you to identify your major risks.

I do think the change in the healthcare system will come not from the old players doing new things, this will come from new players completely disrupting the space. I do believe in 10 years from now, the largest healthcare companies on Earth going to be Google, Apple, Amazon, Microsoft. And I'm not necessarily like the biggest fan of big tech. But watch out Apple, I think, well, that's why I'm wearing Apple Watch. And I still miss my Fitbit time before it was bought by Google.

Dave Asprey:

You're not using it because of the privacy issues?

Sergey Young:

No, I actually think that Apple has better chances to make good investments and build a platform in healthcare. And I've seen the research report done last year by Morgan Stanley, that Apple can generate up to 50% of its revenue by the end of this decade from their health platform. And as a consumer product, I do think Apple is a little bit better platform, it fits at least how... I do see the evolution of that. Well, that's not the only reason but in the end of day, they will have a choice. And I'm pretty sure that it's not going to be only big tech, there's a number of startups who are working in this space. So like wearables, transforming themselves into our personalized healthcare devices. I do think it's really important.

Dave Asprey:

I'm going to ask a personal question here as a fellow investor, although I don't have \$100 million fund investing this stuff, but I've done it, I was co-founder and CTO of the first company to get heart rate from the wrist. But it was too early. Fitbit became a multi-billion dollar company and we sold for like 100 million to Intel. And you're like, oh, they only sold 100 million while CAD didn't sell for two or 3 billion whatever the heck, right? So it wasn't the unicorn big win. I tend to look at these things very early on and assume that they're going to happen before everyone else because well, I just assume that the future is here sooner than I think it is. So how do you assess timeframes on this kind of tech?

Sergey Young:

Oh, look, we actually investing more in a different type of technology. So we have probably two or three investments out of 16 companies that we invested in, two or three investments into the medtech itself. And it's very likely to be like, big niche. So we invested in a company called Eco Imaging, and they build in affordable and accessible version of ultra sound diagnostic device. The market is already there. So when you look at the total addressable market, it's like any improvement to that this is a big thing, or we currently investing in a company which will just do like glucose monitoring.

I couldn't mention their name yet. But well, that's a huge problem for people who suffer from diabetes and for people like us who just want to monitor their glucose level all the time to see how our body responds to different type of foods and activities on that front. So in a way, I mean, we are investment funds, so we just need to be careful with our investors money, as well, in addition to making an impact. So whenever we see a huge addressable market, we invest that. But what I must say, and this is the reason why we 95% focused on US within our portfolio. And I say it with a lot of love, US has the most inefficient and expensive health care system on Earth. We spend 18% of our GDP on health care.

I'm part of UK parliamentary group on national longevity strategy. UK spend like 8% of their GDP and they have better average lifespan number. Singapore, I've just done speaking in Singapore, they spend like 5% of GDP on their health care, and they share the top two places in the world ratings of health span and lifespan together with Japan. And in US, COVID, as far as I remember, three out of five years, pre-COVID, pre 2020, US health lifespan actually decreasing rather than increasing. So we just need to have a massive change and I do think we discussed it a couple of years ago on one of the [inaudible 00:48:22] events like 60% of the data transfer from one medical institution to the other medical institution is happening by fax. When was the last time you've seen fax machine? And this is still happening. Well, that's why I'm more optimistic about big tech disrupting this whole thing rather than just trying to change the current system. Sounds a little bit radical. But well, here's what I think.

Dave Asprey:

Investing in a place where things are too expensive is not a bad idea at all. And you can always try it in a place where things are cheap, and then sell it in the US, which is what we did, and what a lot of companies are doing. All right, well, it's helpful. It's a tough thing to know when something's going to happen. And it matters more if you're 70. Right? And we have a few Upgraded Collective members who are 70. And we have some who are in their early '20s. Right? But if you're 70, you're like all right, the timeline for this, when should I plan to do this because you have a more urgent need for some radical life extension than someone who says I just have to not get in a car accident, and I'll probably be okay for the next five or 10 years.

Sergey Young:

So that was the second part and they're like... I call it passive longevity just don't die stupid, like tobacco smoking, which is minus 10 years from your life. Well, and some of the stuff they're like pretty obvious, like tobacco smoking, alcohol drinking and driving, using seat belts. But some of the things like just embracing driverless cars, like driverless cars will bring mortality rates from car accidents by a factor of 10. Pretty soon. So that's an important driver of longevity as well. And just not taking risky choices is important as well. So I received a letter two weeks ago from a very good friend of mine from California. She's a big fan of mountain hiking, and the letter says, Sergey, I'm about to climb one of the most dangerous mountains on Earth, and its K2.

Mortality rate of K2 is 25%. So like, Russian Roulette is like 70... Sorry 17, 17% chances of dying. Just going to K2 is 25% of dying. Or just riding motorcycles. The mortality rate for motorcycle accidents is like 17 times higher than driving a car. And then people think, oh, look, it's going to be fine. I'm going to be safe. You're not. So that's important as well. So coming back to your question, so what do I.... Obviously, there's just a lot of disagreement in the academic field, like what extends our lifespan. And I do think there's one agreement that decreasing your calorie intake is going to extend your lifespan by three to five to seven years.

And it's easier to say than to have a discipline to manage your two or three meals a day and make sure it's low on the calorie front. So I'm big fan of vegetables, right? Simply because of their very low calorie intensity. And even though I would just have half of my table full of vegetables, I'm probably still going to be fine on the front of calories that I'm taking. So that's one. Obviously, I'm very mindful of the quality of my meat and fish. I don't do a lot of meat and fish, but if this is meat, then it's meat from the farm. And you just do it just to make sure it doesn't have antibiotics, growth hormones, equally bacteria, all is dangerous stuff. What I learned, I think it's in US, 70% of antibiotics is consumed by animals on the farm, right? And the fish-

Dave Asprey:

We need to stop that right now. That's going to lower human lifespan, it already has. Yeah, it's not okay.

Sergey Young:

When we started to use antibiotics, like 100 years ago, the average lifespan on earth increased by 10 years from 35 to 45, in the course of two decades. Why are we trying everything to reverse this and the use of antibiotics as well? So that's one thing that I do. Second thing, I do fasting. And I like fasting because statistically, so I fast 36 hours a week. Monday evening to Wednesday morning, and I feel fine. I can survive on the water and herbal tea and I actually love this feeling. And it is really important not only from just decreasing the calories that you take but also in terms of giving your body the opportunity to reset and clean all the system and start autophagy.

Obviously, autophagy, you need to, if you can, like a longer fasting, like three, four or five days are better for that. But when I fast for so long, my family is saying that I'm not the best person in this mode. So I'm just trying to be meaningful with my work commitment and my family commitment as well. So that's basically what I do. And I do supplementation. Bulletproof is one of my favorite brands in terms of the supplements, and I take a lot of these supplements as well.

Dave Asprey:

Which one?

Sergey Young:

So in Bulletproof, what do I take?

Dave Asprey:

Oh you're saying... I just didn't hear you say Bulletproof. Just be clear, there's a lot of good brands of Bulletproof stuff that I formulated, if they're still making it the way I formulated thumbs up, right? I'm not at all involved in the company, and they won't share any information with me. So I have no idea what they're doing. But I'm pretty sure it's good. I still take it so I'm with you there. But just to be really clear, like you said, you take a lot, a lot more than Bulletproof makes because Bulletproof only makes like 10 things.

Sergey Young:

Sure, yeah. Yeah.

Dave Asprey:

Right. How many a day of total do you take?

Sergey Young:

So it's usually somewhere around 20 different types from simple things like Omega-3, garlic for my heart system and for my vessels, D3, I do think we all need to have vitamin D supplementation as well. Some of the exotic stuff from Japan like... So I do a lot of seaweeds on rotation. I have like six months rotation schedule for seaweeds, because I do think they useful on a lot of different fronts. I have certain problems with my livers. So milk thistle, it can be pretty helpful in this regard.

Dave Asprey:

I do that, too. That makes a lot of sense. I have about 20 a day. So relatively light for someone who's lived as long as you do. Do you do like spermidine, do you do Urolithin A, like all the cool autophagy, there's a bunch more.

Sergey Young:

I just bought spermidine. I haven't started to do it. But I take NMN for the last probably year. Year and a half.

Dave Asprey:

All right. There's an almost unlimited number and I struggle with this. Well, actually, that's not true. I actually don't struggle with it because struggling uses a lot of energy that I don't. I will say I have

questions but I don't suffer because of them. Questions about... Okay, I take a lot more than 20 supplements a day, about 150 a day, depending on what the day is and what I'm doing, and then carefully tuned for it. And you what, it works. I don't have the inflammation I used to have. My brain works all the time. I'm full of energy. And it's been an evolved thing. But maybe if I did 120, it would work just fine. I just get lazy.

And it's just not worth the trouble saying, should I take Resveratrol every other day versus today? Versus in the morning, versus at night, versus with my Bulletproof coffee because it's fat absorbable? I mean, you could always worry about perfection, what we got to do. Do you think we're going to get at some point where we have good enough advice that machine learning and AI just tells us just take this handful of stuff?

Sergey Young:

Yeah, I do think so. And just coming back to your earlier point. I'm typical placebo man, right? So if I believe that my supplements are going to do a good job for my mental and physical health, I mean, this is what I experience. And I think it's some of the medical studies like the biggest competitor to particular drug is actually placebo. Placebo work in so many cases we couldn't even imagine. So that's one of the first reasons why I like supplements. I do believe that the problem with a supplement sector and supplementation as well, is just specifically when you take a lot of things, it's just very difficult to establish relationship between the change of the level of how your body works and respond to some of the supplements with supplementation itself.

So probably in 10 to 20 years from now, just by using artificial intelligence, we'll be able to find the answers. If Freenome is the company that I mentioned, which do early diagnostic of cancer, so they use cell blood test to identify your risks of the colon cancer. And so like the biomarkers of colon cancer was always there. But 20 years ago, it was just not possible to establish this whole correlation. So they analyzed I think more than 100,000 different samples to establish correlation. And right now they are running human trials on colon cancer specifically. So the data is there, what we're missing is this capacity of the computer power and artificial intelligence to track that and establish relationships. So I'm pretty sure we're going to be... It's not going to be like 90% unified mix of the things for everyone. But we can do it as personalized as possible for everyone.

Dave Asprey:

I like that, I know we're going to get there. I think it's going to take a very long time. There's companies working on it from a blood test, from a urine test. From a stool test, our friends over at Biome Levine's working on that, and I think he's done some really good work from that front. But I don't know, I just believe I'll be taking less, probably. But I'll still be wanting it customized because what we're optimizing for using machine learning is people who die when they're 80 or 90. And like, no, no, no, no, I don't want to have average numbers for my age, I want to have nutrient numbers and performance for my 25 year old age. And that's going to take a new kind of thinking and new kind of machine learning of setting targets. So that's a long term thing that might always be hard to get because it's almost like we build in our expectations in the systems and that happens. Well, would you be up for a couple questions from the Upgrade Collective?

Sergey Young:

Yeah, please.

Dave Asprey:

All right. Guys, you have some questions ready? All right. Raise your hand if you want to go and I'll call you. And Joanne's got a question, her hand is up. Go for it, Joanne.

Joanne:

Kind of a question statement. I just happened to see the Louie Schwartzberg Fantastic Fungi movie the other night. And Paul Stamets is the miracle guy behind these mushrooms. And they were doing some tests later on in the film with some people with Alzheimer's and dementia. And they used a fifth of a portion, I guess you'd call it of Psilocybin. And it gave these people their life back where they were sitting in chairs all slumped over. And then Paul Stamets' mother was really at stage four cancer and there was some mushroom experience going on with the company. He gave it to her and she came out of it. So I think both, I love the technology. I love the development of the science. And I think we have to combine both nature and science. And would love to hear what you think about that.

Sergey Young:

Yeah. Thanks, Joanne. Well, first of all, can I just agree that we need to look to the mother nature, which already has a lot of answers to us. This whole current paradigm of medicine, which is not relying on the ability of our body to heal itself, not from all diseases, right? You still need to have professional help. But there's so many tools that we have inside our body and mind for recovery and healing as well. And it's been offered by mother nature. So I do believe this is really massive. When you talk about mushrooms and psychedelic, well, frankly speaking, I have nothing to say, because this is such a emerging early stage industry.

So we haven't built our confidence in that. Imagine we have \$100 million dollars to invest in so many different things. And so we haven't made any allocation for this new industry. It's a little bit like cryptocurrency, five or 10 years ago, you know that it's going to change the world, but who's going to be Bitcoin, and what's going to be Ethereum, and what particular crypto coins will disappear? You don't know. It's always like internet back in 1998, like Amazon and Google is there but you don't know who's going to be the winner. So we really at early stage, I do think it's very promising, but we haven't tested it with our money. And usually, it's like the best test when we invest in something, we do a lot of due diligence, and we understand it much, much better.

Dave Asprey:

Well, I have made an allocation there. I think Paul is the best guy in the world specifically for that cancer stuff. So actually, last week, I had dinner at Paul's place. And I made a small investment in his new pharmaceutical company that's working on neuro regeneration. Because one of the things you have to do as you age, your neurons break down as far as the lining, and I think he's got some serious patentable and patented tech to grow neurons back like a young person. So I want a young person's brain and a young person's body when I'm old. And frankly, I'll take the old person's body and the young person's brain if I have to choose. So I did that.

And then someone just sent me a study today, showing that a single dose of psilocybin caused rapid and persistent growth of dendritic spines in the frontal cortex. That's the thinking part of the brain. And they said, it sticks around for at least a month. So I'm like, I know there's something going on here. And I also use the lifecycle ones, because there's an Australian strain of mushrooms that I can tell measurably with my wearable, it makes my sleep better. Right? So that's my go to sleep one. And so there are pharmaceuticals but like you said, there's there's all kinds of stuff we don't know yet. So it is a bit of a shot in the dark. But I just go with ones either I can see they work or with the most knowledgeable people and you hope. And I also didn't put \$100 million into it the way you would have.

Sergey Young:

Thank you. Thanks, Dave.

Dave Asprey:

All right. That was a great question, Joanne and bringing the world of nature in. Because we've been doing this for 1000s of years in traditional Chinese medicine and things like that. All right, Tina, you've got a question. What's up?

Tina:

Oh, thank you so much. This has been really great. And I look forward to getting your book. My question is, what do you do for exercise? And what do you think the role of exercise is for longevity?

Sergey Young:

Okay, great question. I do think all of you on exercise is pretty binary, we humans we are kind of black and white. So you either go for a marathon or do iron man or iron woman. Or you're just staying at your home and watching TV. Right? That's your exercise. I do think there's something in between. And I do believe like 10,000 steps a day is 2/3 of the things that we need exercise wise. So you can integrate walking into so many activities in your life, and this is what I do. On top of that, I do think you actually need to have a combination of the things. You need to do stretching so I do yoga stretching two times a week. Then what I'm missing is cardio.

I had particular difficult COVID case back in December for like 20 days, and I still haven't recovered. So I still haven't add my cardio into my life. I still find it difficult. But then my rule was always like 90 minutes of cardio every week. So it's either like, three trainings 30 minutes each or two times 45 minutes each. And what I've never done but I want to do is weightlifting, because what I've seen that people who do weightlifting once a week, it's really good prevention for all the problems with your bones and cartilage for the later stage of your life. And so I've seen a few studies to support that, I haven't done that. So that's my pretty open answer on what I do and what I don't in this field.

Dave Asprey:

It's a beautiful answer. There's great evidence lifting something heavy for a brief period once a week does huge amounts of good and small amount of time. And you can use tech for that, some of the upgrade labs tech is there. And then having some cardiovascular stuff, it turns out you can get what you're looking for in about six minutes a day using an AI algorithm instead of 90 minutes. And University of Colorado research shows it actually gives you better improvements in V02 max than doing the longer stuff. So it's not just as good, it's better. Yeah, we're doing that upgrade labs too.

But I have some things I'm going to share with you knowing a lot about what you just mentioned, with lungs not recovering. Addressing mast cell activation with Claritin and Pepcid over the course of months, as well as Niacin, adding it to your other stack that's improving your NAD levels. And then this is the thing and I consulted with a dear friend who is one of the luminaries of anti-aging and nutrients. And he's been on the show but I don't have permission to name him. So I'm not going to. I suggested a banned substance for the Olympic Committee called GW501516 that increases mitochondrial growth. And his results were, oh my God, I can't believe I just improved this fast. Like a week later, I feel like myself again. So basically, it gives your mitochondria a little kick in the pants, turned down mast cells at the same time and go back to working out. This is hackable.

Sergey Young:

Perfect. Thank you, Dave.

Dave Asprey:

All right. I hope that doesn't get the show banned, jeez. Didn't name any particular things there, so I think I'm okay. I was just talking about bad lungs. All right. Always looking to give back, especially to people like you Sergey who are really doing good work in the world. I got to recommend your book, Science and Technology of Growing Young. Here's the deal. It's going to happen. It is happening now. If you look backwards, you don't see it. If you look forward, and you have the ability to look forward. Not everyone does. Sergey does. I do. Many listeners do. It's blindingly obvious that this is happening if a comet doesn't hit the planet. So start paying attention to it.

And if you want a very readable brief, actually shorter than my book, that says here's what's happening. Here's why. Here's the tech, very well organized. It's Sergey's book, so check it out, and it's just worth your time. Not a heavy, long read, but full of knowledge. Sergey, thank you, my friend. I can't wait to hang out with you again, maybe at the XPrize or somewhere else, but it'll happen soon.

Sergey Young:

Thank you, Dave, and thanks to Upgrade Collective. I'm really delighted to make it interactive today. And thanks to all of our audience, stay healthy and happy, please.