

## **Biotech Ninja Moves Are Disrupting How We Age & What We Eat – Jim Mellon with Dave Asprey – #736**

Announcer:

Bulletproof Radio, a state of high performance.

Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey. Today's guest is a fantastic guy, a British entrepreneur, investor, author, philanthropist, and his name is Jim Mellon. He really came to the public eye in the global financial crisis of 2008-2009 and since then has focused extensively on new science and technologies around aging and longevity. But you guys have heard me say I'm going to live to 180.

Dave:

Jim is one of the people on earth who said, "I think we can do this. Why don't I just put \$165 million to work on solving some of these aging problems?" And I met him through Peter Diamandis at the Abundance 360 event. And you guys have heard Peter on the show, as well. So Jim, who created Juvenescence, which is a company on the Isle of Man that is hacking aging. I asked him to come onto the show and I'm grateful he said yes. Jim, welcome.

Jim Mellon:

Thank you very much for having me, Dave. Your reputation precedes you and I'm very grateful that you've invited me on. Thank you.

Dave:

You've been, for now almost 16 years, publicly talking about either investing, sort of things are looking a little bit weird and you were totally right. You called the 2008 thing. And after that it's been pretty much all biotech is going to transform our lives. We're going to solve aging. You're working on clean meat and things like that. You're working on a book on that that's going to be worth reading. And you're working on aging.

Dave:

I want to talk first about aging. And then I want to talk about how we are going to be able to create some clean foods. And I have some tough questions for you too there, specifically around like soy milk versus something else. And I think I know what your answers are going to be, but I might be wrong. So I'm going to pick your brain on your thinking so we can all learn how a global philanthropist guy who's done a lot of cool stuff, how you actually do it in your head. Sounds like a plan?

Jim:

Sounds like a plan. Fire away.

Dave:

Let's talk about Juvenescence. You chose a set of targets for Juvenescence, things that you're focused on. But most companies just say, "I'm going to solve this thing." But as far as I can count, it looks like you've got about five things you're working on, all at the same time. What are the five or five-ish things that Juvenescence has focused on and why did you pick those of all the things you could have done?

Jim:

Well, since I last saw you, which I guess must have been close to a year ago, we've developed the company a bit further and we now have 20 projects across 12 companies. So almost too many. But what I will say, if I can put this all in context is I came to the U.S. three years ago. I've been involved with biotech with my partners for, as you said, a number of years and we've started a number of companies, but this is our most recent one.

Jim:

I came to the U.S. three years ago and I drove around the whole of the United States. And it was a revelation actually, in many ways. I met the key opinion leaders in the field who in many cases had been languishing because no one believed that it was possible to influence our aging process. I've met people like Aubrey de Grey or David Sinclair or [inaudible 00:03:32].

Jim:

I wrote a book and the book was called Juvenescence. And it's not a big bestseller book like yours, but it's an investor's compendium. And it allowed me to, first of all, meet these people and then to order my thoughts about this incredible potential industry. And then my partners and I, who've started a number of companies, the most recent one of which is listed on the New York Stock Exchange now and we started five years ago. It's called Biohaven.

Jim:

And it's a multibillion dollar company with a migraine drug that's been approved by the FDA that's now on the market. We decided to go into this field but we knew, especially because of the work of [inaudible 00:04:16], who's a co-partner of ours, that drug development is really difficult. And many, many, many drugs fail versus the one that succeeds. So we knew we had to spread our risk and we knew we had to put small bets on a larger number of projects, which is what we've done.

Jim:

And I'm happy to say that this year we'll have one program in phase two trial, which as you know is a very, very rapid advance for a company that's only two years old. And we're going to have a, I know this speaks to your work, a ketone ester from the Buck Institute called Metabolic Switch, which actually we need to talk to you about in conjunction with Bulletproof Coffee, because I think they'd be very complimentary.

Jim:

And that will be on the market in the U.S. on October 1st. And it's a really, really potent cardio-protective, completion protective and hopefully weight loss program.

Dave:

And almost certainly an Alzheimer's drug.

Jim:

It could be. And it's \$7 to the consumer compared to about \$35 for the current ketone esters, which are not as potent and not as good. And I think it might just work very well with what you do so I'd be happy to put you in touch with the people there. But we hired the guy, the former head of Vitamin Shoppe,

president of Weight Watchers, guys who've worked on all sorts of advertising and so forth to head up that effort.

Jim:

And so on October 1st that will be our first product. And then we'll have our phase two in organ regeneration starting really around now in the U.S. under FDA hospices. And then next year we're going to do eight IMDs and otherwise eight new drug applications which will involve us going into the clinic with eight new compounds. So it's moving at warp speed, this company.

Dave:

Sort of a medic question for you there. Normally you do at more than a dozen different IMDs and different products like this in a couple of years. Is this because the internet and research and AI or something has just sped up the innovation cycle so we can move this quickly, or is this because you guys are doing something fundamentally different? Like, how can you do this as a startup? You're supposed to only do one thing and get bought by a big pharma, didn't you know?

Jim:

Oh, yes. I think that's the normal model, but you're absolutely right. It's a combination of triaging things that we think are going to work in a specific indication, but with a prolongevity effect. We can't yet produce one single pill that says you're going to live another 10 years of healthy life.

Dave:

There probably never will.

Jim:

I'm not sure about that actually, but not at the moment. And we also are using AI to accelerate the process of drug development. So the first thing that we did was to invest and create AI companies with Juvenescence. And that's super exciting because we're now able to create compounds in 30 days that in the canonical sense would have taken three years to produce.

Jim:

And ultimately this will be the era of personalized medicine, personalized, personalized. Basically the doctor, he prescribes a drug that's created with AI that's absolutely right for you as an individual, and that will be the benefit of AI. It's a bit primitive at the moment, as is everything in this science. You say you're going to live to 180, I think that's absolutely possible. Absolutely possible. But in order for that to happen, gene therapy will be part of that solution. And we're not invested in that yet, but that will be the next wave of our investment.

Dave:

We've definitely had Liz Parrish on the show.

Jim:

Yeah, she's great. I love Liz.

Dave:

There's a few people who have reached out to me on Instagram over time saying, "I want to kind of be involved in getting some of that virus. Would I have to fly?" Getting some virus, I probably shouldn't say that or they might ban the show. But what I'm talking about there is engineered viruses that would deliver changes that I want, that I choose to myself, to my DNA so that they do what I want instead of what they want, because they were not selected for the current environment I'm in.

Dave:

They were selected via, well, whatever mechanisms are in place by nature. Gene therapy, that scares the crap out of a lot of people. I feel like half of my listeners would be like, "How dare you touch me?" The other half are interested in hacking them. And it's a very polarized issue. Do you have concerns about would we change who we are if we switch our mitochondrial DNA to be more effective or if we turn this gene on or off or replace this gene that actually inherited by our predecessors? Well, not predecessors, our descendants. Is that of concern to you?

Jim:

It would be if we did it today. If you and I went to Costa Rica and had something done to us there, it would be, I think it's untested and unproven. And there have been deaths associated with gene therapies in the very early stages. So I think we shouldn't do it yet because we're going to live a long life based on current technology. We can afford to take the luxury of time for them to get it right and then we can have it done. But I would certainly do it if I felt that there's been sufficient testing and there was enough evidence that this was going to work.

Dave:

And if you were suffering greatly or about to die, you'd probably jump in with both feet.

Jim:

Definitely. Yeah. I hope that I'm not.

Dave:

Yeah, same here. I'm not in those situations either. Although about to die, I mean, 180 years, it's not that much time. I mean, I've only got another a hundred plus years.

Jim:

Honestly, Dave, if you get to 180, you're going to live to 500. It's the escape velocity. We know that. It's getting past the glass ceiling of 115 to 120 that's going to be the important thing.

Dave:

Yeah. And one of the things that I wanted to bring out in Super Human is I pulled a lot of research from different areas where there are people and researchers who have taken animals and maybe humans, but certainly animals, and they've been able to say, "I have doubled the lifespan. I have gotten..." Almost doubling. I think the highest one was 95% increase.

Dave:

And the deal is, look, if I can find a dozen examples of us doing this to animals, it is possible. It is not impossible. So we can all erase impossible from our thinking. And then we can say, all right, if it's doable,

what worked? Because this wasn't great science when this was done, this was people doing this one thing. And if we stack all the things you're doing and the ability to edit a gene and to look at, okay, is there a pharmaceutical plus this other thing, whether it's improving your sleep or whatever else.

Dave:

But what we know, it is possible to extend this dramatically in every species we've looked at, except for humans and maybe monkeys, depending on the mechanism. So that's why I'm all excited, but people still are so skeptical, but you managed to somehow dredge up \$165 million for one of these. You've got a dozen companies doing it. Is it because you're shrouding your anti-aging work in the pharmaceutical model sort of saying, "Oh yeah, we're going to fix this disease. We're going to fix this disease," so investors will invest even though living longer is the byproduct? Is that how you're doing it?

Jim:

Well, that's a very good question actually, because the first thing we say is that we're going to look for a commercial application for everything that we do, and that's not going to be aging. Because although we will measure patients to see if their biological markers are improving, the hallmarks of aging are improving as a result of taking these products, we will always have a specific near term commercial opportunity because we're a commercial business.

Jim:

The second thing is you're absolutely right. People are very skeptical about Alexia's of youth and so forth because nothing has worked in the past. But my view is that the key to all of this was the unveiling of the human genome 20 years ago. And regarding it as a very large map, laid out on the floor that the scientists couldn't read and now they're beginning to read it and read it very accurately. And they know that there's about 15 key pathways of aging and they know that all of them are malleable in one way or another.

Jim:

And as you point out, animal lives and organism lives can be extended actually dramatically. In the case of *C. elegans* earthworms, it could be 30 times. In the case of a normal mass, it can be twice. And they live healthy lives until the end of their life. So they're not living in... I watched one of your wonderful YouTubes and you were talking about how you don't want to be 180 and having the diapers and the nurses around and dribbling in a chair and all that sort of stuff.

Jim:

Our mission is to compress the period of morbidity at the end of life, and I know it's yours as well. And that mission is entirely possible to achieve. I'm 63. You're a lot younger. So I need it more urgently than you do. And my colleagues are actually a little bit older than me. So we're working as fast as we can, as hard as we can. But as long as we don't drop down of a heart attack or stress in this process, I think we can live also to 120, 130.

Jim:

And it's entirely feasible based on current technology, not technology that's out there in some science fictional way, but we're in the dialogue phase of the internet as easily this. We don't know what's going to work, but we know something will work. So we're in the casino, covering all the bases, all the

numbers basically. Whereas a lot of companies, as you pointed out, are just going off to one thing and they get disappointed, Unity, Biotech.

Jim:

I'm sure you're familiar with the U.S. listed company that was crunched this week because their trial in osteoarthritis in the knee didn't work and their shares were down 60%. That's Biotech for you, but it doesn't mean to say that cell analytics won't work in another way. And we're developing a different one.

Dave:

Cell analytics, according to my research for the book, they absolutely will work. It's one of the seven things making us old. And now that we know what it is, we will continue to attack that problem and we will hack it. There will be a solution. And it might not be what we think it is, but there will be one because now we know how to solve the problem. Before we didn't know what it was.

Dave:

And that's why I'm so hopeful, because we've managed to line up enough dominos to say, if you can knock that one over, it's going to move the needle. No one knows how to knock them over yet. There are many ways where we might've done it here, done it there. And you're saying, all right, I'm willing to line up and take a few shots at a few of the most important dominoes. And that's admirable and exciting and fun.

Dave:

I want to ask you about the escape velocity. And this is something that Ray Kurzweil and Aubrey de Grey have talked about. "Oh, I just have to live long enough for the technology to catch up for me." When do you think we are going to hit that escape velocity? How many years from now do people have to live to the point where the tech is going to be there? You're a really good futurist.

Jim:

I'm not sure I am a good futurist. But what I would say, Dave, is that there's a corporate view, which is that we don't want to scare the horses because if we say people are going to live to a thousand years, like Aubrey has said in the past, and I think he's backtracked a bit on that.

Dave:

I love Aubrey.

Jim:

Well, we all love... I mean, I love Aubrey. I was supposed to be at his wedding in England, but unfortunately it had to be done in California in a very small way. He's a really, really good man. He was so helpful to me. And actually his now wife, [inaudible 00:15:46], does some work for us, which is fantastic. But if you make predictions like so and so's futuristic like Ray's or Aubrey's, investors just won't come along for the ride because they'll think that... At least they won't at the moment.

Jim:

They'll think that you're running before you can walk. So what we do is we say, as I said earlier, we've got specific commercial applications and diseases that are related to aging, generally speaking, not

always. And that we're going to work on those, but we're also going to measure people whether or not they respond to our drugs in a pro longevity way and in a meta thematic way.

Jim:

We understand that these diseases come from aging as a cascade at the top and we want to deal with aging as a cascade at the top. So we know now that there are some things, and you know better probably the me, such as metformin or rapamycin that have a prolongevity effect. Ketone esters, your Bulletproof Coffee diet, which I was reading about with interest, all that stuff has a pro aging effect. We know that.

Jim:

but all these things need to be refined, built upon, and we'll discover a whole lot of new stuff at the same time. So if I may just very briefly give you context. I wrote a book in 2012 called Cracking the Code about biotech as it then was. At that time, there was no artificial intelligence for the development of novel compounds. There was no cure for hepatitis C.

Jim:

The was no CRISPR-Cas9 and there was no cancer immunotherapy. None of it had been discovered. None of it was in the market. This year, cancer immunotherapy is a \$200 billion industry. So my point to people is that longevity will be the next big industry. We don't know what it will consist of, but we know it's going to be big and very effective. And things move much faster in biotech than most ordinary observers see because they're more interested in the new iPhone or the glitz and glamour, the Zoom calls, all that sort of stuff.

Jim:

They don't really see this stuff applying to them, but it does apply to them. I know you've spoken about cancer quite often. In cancer, immunotherapy, if you've got leukemia now, it's not a death sentence. It's very likely to have a biblical cure. Whereas just five years ago, it wasn't possible. And as you rightly pointed out, we all die of five diseases, most of us, at least. And it's not COVID-19, by the way.

Jim:

It's stroke disease, cancer, Alzheimer's, obesity, respiratory disease. Those are the five key killers that kill 70% of 140,000 people that die every day on the planet. Those diseases, which are diseases of aging, are being addressed. To give you an example, the one that scares everyone is Alzheimer's. You don't want to be your 180 year old self with a cognition decline.

Jim:

So we are working in our company, [inaudible 00:19:01], for people in their forties and fifties to take a preventative pill that will stop the onset of amyloid plaques and time protein tangles so that you will not get Alzheimer's, even if you're predisposed to it through APOE or variants or some familial past on it. So that's a major push in our company that'll be a preventative drug as opposed to a curative drug.

Dave:

I love it because the first chapter of Super Human is like, "Look, guys, there's four things that are going to kill most of us. The first step to live a long time is not dying." So what you're doing is you're going through and you're sort of let's remove those things because they're speed bumps on the path of living a long time. So what happens if none of those get you... Your skin becomes transparent and you're hunched over in a wheelchair and are like, "Oh, that's not what I wanted."

Dave:

Where I think you're pulling a bit of a Ninja move is you see the goal of having old people who have brains that work and have bodies that work and have a ton of energy and a ton of wisdom. And that's the world where I'd like to live in, because generally someone who's a hundred years old and saying, "You know what? I remember when I was 20, and I did exactly what you were doing and I'm going to help you so you don't have to make all the mistakes I made."

Dave:

That's how we lift our society up. That's how we stop making the same cyclical mistakes that each generation has to figure out. So I'm excited by that vision. What you're doing as a Ninja move though, is you're saying, let's do this, let's do this, let's do this. And all of a sudden that picture of very healthy older people will emerge. But if you were to stand up and just say straight up, "Look, we're going to build this future." It's too big of a gap for a lot of people to accept.

Dave:

And that disruptive technique, "Oh, don't worry. We're going to do this and we're going to do this." This is how every great company in Silicon Valley over the last 30 years has been created. It's a disruption that happens. Do you sit there in your board meetings, to the extent you're allowed to under board NDAs and all that. Do you sit and talk about disruption of big pharma or are you part of big pharma or are you something different? In your self view, you look in the mirror as a company or with one of your portfolio companies, are you aging companies? Are you pharma companies? What are you?

Jim:

That's a great question. So I don't pull meetings because it's a private company, although we do expect to go public within the next year. We are talking about disruption. We're talking about execution. We're talking about future areas of opportunity. Now, the fact of the matter is that big pharma is essentially a marketing machine for other people's innovation. The days when they used to invent their own drugs are over. I mean, that's a general thing.

Dave:

That's a really accurate statement. I love it.

Jim:

I mean, that's what they are. And so if you think about Gilead as an example, their biggest selling ever drug was Hepatitis C cure. And they bought that from Pharmasset. All the immunotherapies being bought by big pharma from smaller companies like Kite or Geno in the last few years because they can't... Well, they haven't been able to develop themselves.

Jim:

So we know, because drug development is an extremely expensive sport, with a lot of danger attached to it, that we need to partner. So our model is to... There are three phases in drug development. Phase one is safety so it doesn't kill people and healthy volunteers. The reason we're going into a phase two straight away in our organ regeneration program is because you can't do what I'll describe to you in a second on healthy people, right? So you have to go to sick patients. But the FDA has approved that.

Jim:

And then the phase three is the broad studies. And one has to say that under FDA protocols, this is the right way to do drug development. This is the gold standard around the world. I mean, if the FDA approves something, then the EMA or the Chinese or others will likely follow because the FDA is absolutely the best in the world, without a doubt.

Dave:

Did they pay you to say that?

Jim:

No, but I want to get on their good side for our future's sake.

Dave:

Sorry. I had to say that. We love you FDA. We're just teasing you.

Jim:

They actually have really become much more... And you can see it in the number of new drugs that are approved on a yearly basis.

Dave:

Their flexibility has changed. I agree.

Jim:

Yeah. Their understanding is much greater. We need a lot of money, so the only way to get that money is to partner with a pharma company at the end of phase two. And that's our model. So normally what would happen, I mean, assuming we're successful and we get one product, is that we'll partner with Pfizer or whoever it is. They'll pay us an upfront fee to acquire 50% of the asset typically. And then we'll get royalties and milestones along the way.

Jim:

But the metrics in drugs are a \$1 billion selling drug, which is considered to be a blockbuster, around the world will sell for between four to six times its peak sales, so that was between \$4 and \$6 billion to an outside buyer. But obviously the patent life is very important in drug development. So if you take 15 years to develop a drug and put it on the market, you've only got five years left typically. So you want to develop it as quickly as possible because the typical patent is 20 years. You want to have as long as possible for a period of commercial exploitation.

Dave:

Your model of seeing big pharmaceutical companies as marketing machines has a lot of parallels to how I see big food, which is kind of related to big pharma. There isn't a lot of innovation going on there. The innovation comes from looking around saying, oh, we have all the trucks. We have all the shelves in stores. So we can get products out there, what are the products we should do?

Dave:

And then they end up coming to the innovative, younger, newer brands, things like Bulletproof and straight up say, "I'd like to disrupt big food because I don't like it when they sell me stuff that makes me feel bad." And so this idea that the modelists have distribution and marketing nailed and that as a startup you're probably not going to beat them.

Dave:

But if you can plug up good product that does good work into a distribution and marketing system that is highly optimized, then you're actually taking what may be selling things that aren't that good for people and turning it into something that does good work. And I think you're on the cusp of doing that because the people who run big pharma companies, they would like to be profitable and help people because most people like to help people.

Dave:

Same thing with the big food companies. They don't necessarily want us to have corn syrup and hydrogenated fats, but they do because that's what people will pay for. So this idea of innovation and plugging into marketing and distribution is how change happen and it's how disruptive change happens, too. When you all of a sudden get so big where they're saying, "We can't quite afford you anymore." And you say, "Oh, that's tough, because I can afford you." So let's hope that happens, too.

Jim:

I hope so. As you know, I'm working in food as well, but I think that... So let me just give you an example of one product. I think you'll like this one, because this is the kind of model that we're after. So it starts with a specific indication that applies to patients today and then moves into something that's really prolongevity and good for you and me. So we own half of a company called LyGenesis. It's a private company.

Jim:

And they've developed a way... It's out of the University of Pittsburgh. And by the way, I have to say that almost all of this longevity stuff comes out of the U.S.. There's a bit coming out of the UK, Canada, Japan, Singapore, and Hong Kong.

Dave:

No Russia?

Jim:

I mean, there will be some things out of Russia. Every country has got something going on, but the U.S. is absolutely the hub because of the nexus of venture capital, the universities and the scientists who are entrepreneurs. I'd say it's bigger than anywhere else. So this LyGenesis comes out of the University of

Pittsburgh and the idea is that you take hepatocytes and you seed them into a lymph node that's adjacent to a failing liver.

Jim:

And there are about 7 million people in the U.S. and Europe combined who have terminal liver disease, for whom the only solution is a liver transplant. A liver transplant in the U.S. is \$750,000, 15 hours operation, very heavy immunosuppression drugs for the rest of your life thereafter. It doesn't always work and there are not enough livers to go around.

Jim:

So these guys have taken, in the first instance, the catabo-liver, divide it into about 75 pieces and put it into 75 patients. That's the theory. Have done it in 400 animals, including in dogs and pigs. No failures whatsoever. All of the novel livers have grown to the point where they've taken over from the failing liver. So that's why the FDA approved this.

Jim:

So we'll be in the sick patients this year sooner rather than later and we'll know within a year or not whether it works and the dose escalating trial. But the prize for... I mean, that's a huge thing. It's great for people with terminal liver failure and the operation will cost about \$100,000. It'll be an outpatient procedure, about 15 to 20 minutes, using stem cells. We'll have no immunosuppression requirement post the operation.

Jim:

The patients should be absolutely fine for the rest of their lives. But it's not pro longevity because if you've got liver failure or I've got liver failure, we'll just live to whatever our normal lifespans would have been. So it's not extending life. It's like a classic car replacement, but it's not extending life. But as you know, T-cells are made in the thymus here and the B-cells are made in the bone marrow.

Jim:

And I know you've had your bone marrow sort of scraped out and re-injected. So the B-cells from the bone marrow, T-cells from the thymus and some of the B-cells go into the thymus to be matured. And then that makes up a large part of your immune system. Now, in elderly patients, people who are about 80, there is no thymus left. It is involuted. All right? So the objective of this company is to regrow the thymus tissue to recreate the immune system in elderly patients because it's immuno resilience that will help us to be robust in our old age.

Dave:

You know what? I'm just going to be a little bit rude here. All respect to my grandmother, who's 97, screw just older patients. I would like to have an extra thymus floating around. It feels like right now is a good time to have a highly resilient immune system. I've had immune issues since I was a kid because of toxic mold exposures.

Dave:

I've had the worst biological start, which is why I know as much as I do, because I had to reverse as much of that as I could. But literally, if I could grow another thymus on my shoulder right now, I would do that

because having thymic function even as someone in their mid-40s, it's already declined very substantially from where it should have been when I was 20.

Jim:

About 3% a year.

Dave:

Yeah. The inflammatory effects of me spending the next hundred years with a thymus that's 40 years younger than my current one, that sounds like an antiaging therapy to me. Sign me up.

Jim:

We will. And I'll keep you informed on that one. But I think that's super exciting. So the proof of concept is the liver, then there's the thymus, and then there's the reintroduction or receding of beta islet cells for diabetes. And there's also the kidneys. So these are phenomenal programs that are being worked on at the moment. And if that works, that's a very key component of improving people's lives and getting to our mission.

Jim:

So that's an example of the type of company that we're involved in. And we have, as I said, 20 such projects which we're backing at the moment. Some of them come out of research institutions, some of them come out of universities, some of them come out of just people's ideas who are scientists. Some of them have come from Aubrey actually, because he's just so wired in to all these novel sciences that we've... Including LyGenesis actually came via Aubrey. So we're very, very grateful to him.

Dave:

He's got a unique mind for figuring out these ideas. The idea of growing a new organ in your own lymph node as a little kind of miniature womb, it's a little bit science fiction and probably to some people a little bit disturbing. But man, to me that's, hold on, you could try and transplant something else with all those risks and all these things. It's probably better than dying, but it's a rough surgery.

Dave:

Whereas you've taken a lot of the pain, a lot of the recovery, a lot of the pharmaceuticals out of it. And it's your body doing something that it can do, it just didn't know how to do. To me, that's the essence of biohacking. And it's revolutionary. I would love to actually have a backup kidney. I only have one kidney. I was born that way. The one I have is very robust. I don't have any kidney issues. But it'd be nice to have the other one and just put it back just in case I need it. Apparently, two kidneys is better than one. I don't know.

Jim:

So why don't I put you in touch with Michael Hufford who runs the company and you can talk to him if you want.

Dave:

All right. We'll grab an extra kidney. Why not? I'll be a Guinea pig.

Jim:

Or kidney pig.

Dave:

Oh, I love it even better. I have a question about aging and then I want to talk to you about food. You said you were 63. Do you ever sit back and say, "You know, I'm kind of jealous of 20 year olds." They're coming into a world. They can do any research they want from home on a computer.

Dave:

When you and I were young, we had microfiche and card catalogs, and it would take two or three years to do what literally takes a day in terms of research and putting together papers and understanding pathways. It's just information is free. And they're probably going to hit that aging window much more quickly than we are. Do you ever just sit there and go, "God, I wish I was young," or do you think, "Yeah, I am young."

Jim:

No, I totally wish I was young because... and I'm sure every generation is the same. Technology in the last 200 years has advanced so much. If I had been my age in 1900, I'd have resented young people coming into this world of novel things like cars and trains and things like that. But we have to get over it. And if we do live to 120, 130, 140, 150, 160, 170, 180 and beyond, the period of our lives that you and I have led so far is just we're in our infancy in your case.

Jim:

And in my case, on the sort of adolescent. And everything about [inaudible 00:34:16] our lives will change. It won't just be about the fact we're going to live a long time. It will be, how do we deal with all the technology that makes it possible? How do we deal with our finances? All the pension schemes will be bused. All the governments will be bused. How do we deal with emotional relationships?

Jim:

How are we going to get married at the age of 25 and then speak with the same person forever? Hopefully that's the case. But things will change dramatically. I've got a friend who's wrote The 100-year Life called Andrew Scott. I don't know if you've come across that book.

Dave:

I have.

Jim:

But he says it's a bit like waking up in the morning. And instead of having 24 hours ahead of you, metaphorically speaking, you've got 36 hours ahead of you. How are you going to occupy your elongated day? We need to find ways of making ourselves excited, because we both know that the people who live, like your grandmother who's 97 probably has lived this long because she's still excited about life.

Jim:

She still wakes up and there's things that make her want to live, whereas you have people like retiring, go on the golf course at the age of 65. They drift away because they have no purpose to their lives. And so we need to find that continuing purpose to our lives, I think, anyway.

Dave:

So you're saying that the excitement of having a mission and a reason for being there is important. I have learned so much from the show and from my life in the last 10 years from people who are 20, 40, and sometimes 60 years older than I am. These are my elders and great sources of wisdom, where they've made way more mistakes than I've yet had a chance to make. And maybe I will make better mistakes because of what I've learned from them.

Dave:

And the ones who were happiest and most productive and still have a sparkle in their eye, it's because they're just all about helping. And it feels like, okay, if all of us are going to live a lot longer, you get to a certain point, like I've solved the problems that are really important to me. I might as well help someone else. And it feels like, as we age, that's why we have grandparents. They play with the kids, they help the kids.

Dave:

But it's a different model than what we do when we're young householders and raising families, if that's what we're doing, and building our career and our networks. And so, yeah, there will be a societal changes from this. Are you worried about overpopulation?

Jim:

Well, as you know, in many countries, the population is actually shrinking, not growing. Africa is the only area that where there's still population growth. So I think the population of the world will peak out at about 10 billion in 2050. But in many areas, you're going to see dramatic reduction. So I'm speaking to you from Spain today. And it's estimated that by 2100, the population of Spain will be half the current level because of the lack of fertility.

Jim:

The same in Italy. The same in South Korea, Singapore, Hong Kong, Japan. As we know, societies are aging rapidly, even in China. And so we may have the opposite thing, which is that we have shrinking populations, not rising population. So I'm not worried about that.

Dave:

Thank you.

Jim:

And it's another reason to make the elder people in our societies more robust because that may be all that we've got. Basically they'd be very few young people and lots of older people. We can't have a few young people looking after a lot of older people. The older people have to look after themselves.

Dave:

That is very well said. I've been saying this ever since I studied fertility. My first book in 2011 was the Better Baby Book. And there's a lot of babies out there because of that book. I had to write it because my wife was infertile because of environmental factors. So we figured out what to do to restore her fertility with the specific things like that.

Dave:

And that was actually some of the thinking that went into the Bulletproof Diet, where highly resilient people are usually highly fertile, if they're in that right phase of life. And I look at the declining fertility rate everywhere and say, yeah, we didn't have a population problem. We just have a short term thinking problem. So we're in alignment there?

Jim:

Yeah.

Dave:

If you had some advice for someone who was 20 or 25 or 30, the relative beginning of their life, even though it didn't feel like that when you're 25, what would you tell them, knowing what you know now about where tech is going?

Jim:

I would say that none of us know where it's going to end up in 10 years, but we do know that it's going to be radically different. Curiosity is a major component of success, in my opinion. You are a very curious person, as an example. You have to keep on reading. You have to keep on seeking out and not discounting things just because they seem a bit radical. So curiosity.

Jim:

Application is very important as well, so that is you have to work hard. You can't just skate through life. There are a few people who can do that, but not very many. In fact, very, very few. I think that you have to be very flexible. You have to say, well, maybe this year I'm going to be a computer software programmer, but next year that will be done by robots.

Jim:

But let's look at the jobs that will not exist in 20 years' time. I think a lot of accountants will be gone. Radiologists will be gone. Many doctors will be gone. Doctors could be, in many cases, just people in front of a large AI computer who are dispensing advice. But the jobs that require human empathy, which are undivided at the moment. You have care workers, social workers, people who...

Jim:

Just dealing with other humans could be much more highly valued. And maybe that's a career to look into rather than just the obvious ones of being an accountant or a doctor, or the old jobs that you stayed in for the whole of your life. I think that's going to change. My sister doesn't like me telling that story because she's a doctor and she doesn't think that they'll be worked out of a job, but it's possible.

Dave:

My wife is a medical doctor as well, trained at the Karolinska Institute. And we talk about this stuff a lot. And what I see happening, and there are probably... I'm guessing there could be 25,000 doctors listening to this episode, maybe. But a couple hundred thousand people here, that's for sure. So many functional medicine doctors listen to this, and a lot of them have transformed their practice from, oh, I was practicing Western medicine.

Dave:

I didn't like the model with insurance and all that. So now I practice more of a functional model and I see my patients for at least a half hour and we have a real conversation. But what's happening there, they're better able to do diagnostics and they're already starting to use computers and things like that, which they know will only get better. They're an accountability partner like a coach.

Dave:

They form a relationship with their patients and then they help their patients stay on track. Because the last thing anybody wants is a robot in your house going, "You will take your vitamins this morning. You will do 10 pushups." Because we'll just turn off the robot. And if you make it so we can't turn off the robot, there's a name for that. I think I saw it was called the matrix. And we don't really want that either. So we need people to help us do our things. And yeah, I'm a hundred percent with you there, find a way to help, and being an accountant probably isn't it. I'm with you.

Jim:

Yeah, we're almost on the same track. But it's changing very quickly. It was only a few years ago you went to the doctor and they hit your knee with a hammer and they used an old fashioned thing to look down your throat. That's changing, at least. It's much, much more sophisticated now. They already had the technology five years ago, but they using it today.

Dave:

We used to have this very difficult path of training these AI pattern recognition systems. It was called medical school. So doctors didn't get very good training on pattern recognition, but it was the very best we could do. And now for radiology or any of these things, you get a hundred thousand samples in there. Really computers are going to get better at that.

Dave:

And then you still need the doctor who said, "Yeah, I looked at 10,000 patients who have been seen by the AI and you're not normal. And I need to pull you out of the normal process and we need to go deeper." There's always going to be a need for that. These are the grizzled veterans. These are the ninjas, the gifted people. There'll be just far fewer of them who are saying, "You don't fit the model." And for those, we pop them out.

Dave:

But otherwise, same thing on neurofeedback. One of my companies is doing that. We're developing the way... If you have a normal brain with normal brain performance issues, we can hack those with neurons. But you, you're different. And whether it's because you have excessive trauma, you've hit your head, you have an infection, or it's because you have just a weird meditating brain, like let's pull you out and let's do something special.

Dave:

It's early days, but I think we're going to get there as well. And it's very exciting actually, to be able to say, "You know what? You have a boring problem. So let's give you the boring solution. It doesn't even require any work. You just need someone to hold your hand while you do it." And that hand holder is a valuable partner. And so to someone who's young who's looking for a career there, I'm not necessarily even talking about being a nurse. There's all kinds of ways you can do this. But where you end up plugging in and helping others, I think there's a growth business there, too. So that's cool.

Jim:

I love the way you put it. Love it. Yeah.

Dave:

Let's switch to talking about food because you are definitely working on some clean meats. You have a book on clean meat that's coming out here. I want to understand what your definition of clean meat is.

Jim:

Okay. Let me set this in the context of what we're going through at the moment. All the recent pandemics have come out of agricultural malpractice and, let's face it, out of China. And it may not be the Chinese's fault, but that's a fact. The three previous SARS ones and those, each lost the world economy about \$50 billion, approximately. This one has cost us \$8 trillion around the globe.

Jim:

It's crushed so many things, so many businesses, so many people, and its consequences are not yet over. If we have a microbial pandemic, as opposed to a viral pandemic, when the antibiotics didn't work. And by the way, as you well know, our antibiotic resistance is rising a lot. That could be like the Black Death and a third of us could all be dead. I mean, that's really a possibility.

Jim:

And the response to this pandemic has been almost medieval. Everyone wants to get ventilators. Now we know that ventilators actually kill you. They don't help you really, generally. There was hydroflux, whatever that one that Donald Trump was advocating. And then now we know that Methodexozone is better. And so the mortality rate of the pandemic is going down and it'll probably go away.

Jim:

But the fact of the matter is that these pandemics have come out of the food supply chain and mostly out of Asia. We have to do something about that. And as it happens, the technology is there now to do something about that. So it starts with plant-based meats and plant-based milks. I know you were going to make a point about plant-based milks and beyond that impossible of two great American examples of that.

Jim:

But it's now moving into cellular agriculture where there's a very high level of purity and all sorts of environmental positives to it, but it's sort of at a very early stage. So there's a necessity to change intensive farming from an environmental, animal cruelty, pandemic possibility because of all the antibiotics that are fed to intensively bred animals.

Jim:

80%, as you probably know, Dave, of antibiotics go into farm animals. And also the fact that we just can't produce enough protein for the people from India and China who want more and more of it. So we have to find another way of doing it. And it's now possible to do it. So this is a biotech industry in its infancy. It's a bit like producing pharmaceuticals, but it's producing food instead. And the early wave of the plants... And the plant-based foods are not necessarily healthier for you than what they're substituting for, but they're just the early wave of consumer adoption.

Dave:

Okay. I love it that you said, all right, these plant-based burgers aren't necessarily healthier for you. Because when I see someone saying, "Well, it tastes like meat." Okay. There's a lot of things that taste good. For instance, heroin tastes good, I think. I don't know. I've never tried it. It doesn't necessarily mean you should eat it. So the idea that that flavor and texture are even variables ahead of what's in it and what is your body going to do with that?

Dave:

What is it going to do to your microbiome? It's really disturbing to me. I feel like we're running down... We had these microwave dinners in the 1950s. We're going to save your time and you just put a bunch of junk together that tastes good in a little tin foil tray. But ultimately people eat it and pay the price. They saved five minutes. I support a hundred percent, animal agriculture the way it's done today is destructive to the soil, to the animals, to the people who eat the animals and to our watersheds. It has to end.

Dave:

And we also do not thrive as humans on an only plant-based diet, at least we never have. There are people who are vegetarian for multiple generations. Vegan is a new idea that simply doesn't work. And I say this as a devout raw vegan for a while, who got sick with thousands of people using the Bulletproof Diet to heal from what they did to their cell membranes. It takes two years of vegetable fats to replace half your cell membranes.

Dave:

Anyone who's done it for a long period of time, who's over about 35, 99% of us know this. You do it and then you have to recover. And it makes sense because of the anti-aging things around mTOR and things. So clean meat. Can we make clean meat that is bio identical to, I don't know, a grass fed steak, that has the right fats, that has the right nose to tail, that has collagen, that has the nutrients that are in the organs? Do you see that in the future? Or are we going to sort of be we're making this one muscle protein and we get this and you'll just eat that and you mix it into your Soylent and you'll be fine? I mean Soylent from the book, not Soylent the company. Sorry, guys.

Jim:

So the answer to that is, yes, I think it's possible in the future. But at the moment, these meat companies and cell ag are trying to produce a minced ground beef which is identical. It's made of the key components of muscle and fats, which are grown separately in bio-reactors but come out identically. But I think the really exciting one is fish, actually.

Jim:

Because not only are we suffering from our own fishing in many areas, but fish on a full of crap, basically. You've got the farm fish are fed with other fish. You've got the microplastics. You've got the mercury, you got the antibiotics and the farm fish, which account for more than half of all fish eaten. There's a whole load of environmental damage being done by fishing at load and the production of fish. And that is closer to market.

Jim:

A company called BlueNalu from San Diego is really, really exciting. they already have a tuna prototype, which is being tasted. They've got a platform so they can produce all sorts of seafood. And I think that could be much more acceptable to consumers in the early days because of all the bad surface evident in fish and also the shortage of fish and many species.

Dave:

That's a good point. I'm a little stuck when I put on my big system thinking out, the biggest systems that I can comprehend because moving onto a small farm and having seen what you can do to build soil, we know we're about 60 years away from running out of soil, and that's not counting desertification that's happening as a result of global warming. So there may be some places where there is fertile soil today that are too hot or too dry to use it.

Dave:

I know that the way to build soil is you need large animals pooping all over the place as part of the ecosystem, whether it's goats or camels, where they've restored some of the driest parts of the world near Mecca to actually cause them to become Prairie's again, just by making environmental changes. So I sort of feel like we need distributed animals doing animals jobs in the ecosystem, and that we can never do what we want to do with industrial animals.

Dave:

but that if we were to eliminate animals and replace them with acres of corn and soy as feed stocks that we somehow bio transform into fish or fake beef, that the efficiency of that system and the environmental destruction and habitat destruction it'll rot, it'll be just as bad as the current system. We just won't have cows pooping.

Jim:

Yeah. I don't really because the fact is that a chicken, which is the most efficient animal converter, takes in nine times more nutrients than it gives in its meat. And there's a lot of waste associated with it. So the beak, the head, the eyes, all that sort of stuff, the feathers is wasted. A cow is about 35:1 conversion.

Jim:

So by growing stuff in labs, which is effectively a 1:1 conversion, you require a lot less crop land to feed, to act as nutrients for these lab grown foods, which in any case are, generally speaking, fed using growth factors, insulin plus lots of sugars and amino acids to produce the finalized product, which is identical, by the way, because they're using the STEM cells from the animals.

Jim:

They're very highly selected animals that's identical to the best meat or the best chicken or the best fish. And it comes out that way. So actually, about three quarters of crop land could be re-wilded or it could be used for housing or it could be used for whatever. But the other important thing to remember is that production uses huge amounts of water and some countries have got it and some countries don't.

Jim:

So in my country, the UK, we import half of our food. We have the potential of being completely food secured as a result of this novel agriculture. Countries in the middle East can't produce any food at all, basically. And they have the opportunity of becoming food secure. You don't get a deforestation in Brazil when they're cutting down trees that we need to stop climate change to produce more soya.

Jim:

In fact, there'd be a lot less soil grown as a result of this. But the point that you made at the very outset, which was that soy milk is not particularly good for you, almond milk is not particularly good for you, is absolutely irrelevant. So cell ag produced milk through a company Perfect Day, which has just got \$380 million of funding, is going to be the solution. Because actually dairy production is even more cool than production of meat, as you probably know, for a variety of reasons.

Dave:

Where do feed stocks come from? I mean, aren't they ultimately corn and soy themselves.

Jim:

Some of them are plant derived. Some of them are industry derived. They're produced as chemicals, effectively. So the process is basically that we've got the cells are taken from a biopsy or they're taken from the umbilical cord. They're not taken in any way in which an animal is slaughtered. That's a no-no. They are then put into a bioreactor, amplified and then made to differentiate into muscle, connective tissue or into fats.

Jim:

Those are separated, typically. They're not co-cultured in different bioreactors. They go into bigger and bigger bioreactors. And then a mass is created and they're mixed together in a conventional feed process to create a product in the case of minced beef or whatever. And the same thing applies to the production of crops so that people are doing it for cotton now, which is an amazing thing. And leather.

Jim:

Dave, if you think about the size of a hide, it's the size of a veal calf because they took it to come from field cows because they're not scarred by barbed wire at that point. And this company is making the leather now, VitroLabs. I can make it at any scale at all. I can make it in the size of a house, basically. It's identical to leather, but it comes out without any hair on it.

Jim:

So the tanning process is only 1/10th of the normal tanning process, using a lot less chemicals and that stuff. And it's actually identical. And because we don't eat leather, it doesn't go through the same regulatory hoops or lack of consumer acceptance that you might get with lab grown food. So it's not just about food, it's about materials as well.

Dave:

What I think is missing from the materials side of this, leather and wool are biodegradable, and so is cotton. And every plastic fiber that you wear ends up in your body after it goes into the ocean and gets stuck in a fish and you eat it. So it's a really good idea to make our textiles more sustainable. I'd much rather wear a leather jacket made that way.

Dave:

Or frankly, I would be fine with one made from a grass fed, free range animal that's making Prairie that actually isn't cultivated, where it has wildlife on it. I feel like maybe some of our land can be returned to the ecosystem where, oh, we had Buffalo walking around a long time ago in the U.S. and every country had its own large herbivores that are part of it. And we are going to need those if we want to re-wild because they're part of the forest, they're part of the desert.

Jim:

I completely agree. But the worst thing is lines of unfortunate cows have lived on feedlots being led to the slaughter and knowing that they're going to their slaughter. it's a terrible thing.

Dave:

We do horrible things to animals and it's unconscionable. I don't eat animals that way. I am very hopeful that the companies you're backing and that companies other people are backing in the clean meat revolution, that they will consider what is the ideal model. So if you say, well, I'm going to compare whatever came out of an industrial feedlot production and that's my goal, I kind of feel like you're missing the goal.

Dave:

Because the ratio of fatty acids in that is broken compared to what a properly fed animal looks like. You take a cow that was reared on grass and you look at what comes out in its fat, it's actually a lot more like a salmon than like the normal cows. So if we replicate the corn and soy fatty acid ratio in an industrially raised animal, we're going to end up replicating the mistakes of big food in our clean meat.

Dave:

And if we take our clean meat and say, what would the ideal thing look like if we went back as far as we could in animals and we had this ratio of nutrients and we had this type of fat and this type of protein ratio? What you're going to get is something that tastes better, but something that actually makes people live longer and feel better. And that's where I'm looking at, where maybe real meat is an artisanal product that is in support of the world.

Dave:

And there isn't that much of it. And you don't need to eat that much of it. And when you want to fulfill your nutrient needs, you can get it with clean meat, but it does the same thing in the body. Do you think our models are accurate for this today? Do you think they'll get there?

Jim:

That's a very, very good point. I think that in some cases, people get what you've just said, which is a great point. So JUST which is a San Francisco based company. It's a little bit on the controversial side.

But it has JUST Eggs as a sort of egg substitute. They're working with the Japanese Wagyu meat farm to produce a replica of the Wagyu beef, which I imagine is the sort of beef that you're talking about, grass fed.

Dave:

Wagyu is beer fed. They feed it beer and they make it extra diabetics so it's nice and marbled.

Jim:

Is that Wagyu or it's another one? I can't remember.

Dave:

That probably is Wagyu being fed... Those a \$80 for one little strip of that kind of meat. Yeah, it's because it's extra tender.

Jim:

But you can make anything you want. So that's the point. There's nothing to stop you from making anything that you want. But the most important thing, and the reason I called my book Moo's Law, riff off Moore's Law.

Dave:

I love that title.

Jim:

Thank you. And by the way, when we get to griddle parity, which is another thing, we will have the cost of these healthy food products will be lower than conventional crap, which is the stuff that you were talking about killing people in one of the YouTubes I watched. And it will be done at scale, which is beyond imagination in the moment, but using a fraction of the land, a fraction of the water, none of the environmental damage that we have.

Jim:

One sixth of all the emissions in the world come from farmed animals. And 80%, as I said earlier, of antibiotic use goes into farmed animals. And we are at danger. We are at danger of a pandemic by a bacterial way, which would just be so much worse than what we have at the moment.

Dave:

I want to go back to our stereotypical 20 or 25 year old. If someone of that age range, just getting going in their career. We talked about their career earlier. If you just had three pieces of advice from your life. You've lived for 63 years. You've been phenomenally successful in multiple industries. And not career advice, but just life advice, top three things you would tell someone young who's just heard this and goes, "Holy crap, I really might live for 150 plus years." What would you tell them?

Jim:

I'd probably tell them not to do what I've done. I work too much. I don't kickback enough. So I think that's something you need to... Especially if you're going to live to 150. Learn how to have, I wouldn't call them hobbies, but interests beyond just work. But aside from that, I think that getting out of your

comfort zone is really important. As soon as I left university, I went straight to Hong Kong and started work there.

Jim:

Then I got sent to San Francisco in the beginning of the tech boom, which was incredibly lucky for me. And I went back to Hong Kong and lived there for another 12 years. So I've never worked in the UK. I'm not saying that everyone can do that and go and work overseas, but I would definitely recommend for any young person, go to a different culture, immerse yourself in it and see how other people operate before you settle down to what you're familiar with, basically.

Dave:

So there's one piece of advice and anything else, are there big mistakes they should avoid?

Jim:

I mean, there's lots of mistakes. Just living very unhealthily is... And you're putting people on the right track in that respect. There's so much advice out there now that wasn't around when I was young. I'm sure it's the same for you. And some of it is advice you want to not take, but a lot of it is really good advice, like curated advice like yours. Just take that advice. And don't engage in self destructive behavior.

Jim:

We're talking about meat and things like that, but we know that the worst things you can do are to take drugs. I mean, I know that sounds like a lecture, and to smoke. I mean, smoking shortens your life by 14 years but I still see young people smoking. I mean, I ask the question, why don't governments just ban tobacco? I don't understand why it's allowed to be around.

Dave:

It must be the money. Those tobacco taxes sure are good.

Jim:

It must be. They're the lobbies. I mean, it sounds like advice my granny would have given me, but it's just very, very sad to see that we know since the 1960s that smoking is a killer. We know the extent that dementia does and we know the economic burden that it causes and the pain and suffering. I don't understand why that product is still allowed to be on the market.

Dave:

If I put on my 20 years from now hat, I think it might be possible to just reverse all the damage that smoking does.

Jim:

It's not a reason to do it now, though, is it?

Dave:

No, it's not. I'm sitting here with you going, man, I've got a screw in my knee. I weighed 300 pounds. I overworked. I made all these dumb mistakes and I did them because of false assumptions. And I believe

most of our mistakes we make as human beings are because we believe something to be true that isn't true and then we act on it. And our priorities are all jacked because of these things.

Dave:

One of the things we think we have to have this kind of industrial meat so we do. And we have to work so hard and not learn about the world when we're young. So I'm with you on your advice. And I just wish I would've listened to when I was 25. I'm still getting good at that, but thank you for sharing your advice and your knowledge. You're doing a lot in a lot of different places to improve the world, whether it's fixing humans so we live longer or fixing our food supply so we use less antibiotics or none. And we get rid of some of this just inappropriate treatment of animals and of people. So I think you're making up for lost time when you were young,

Jim:

That's true. I mean, I was very money oriented, very money focused when I was young and very career focused. I'm not saying that capitalist motives are not good motives because they can be. But I think my main priority is to do some good and help that meant, and I know it's your priority as well. So we're right on target our message here.

Dave:

We are. And this is a little bit philosophical, just at the end of the show. I was all about the money when I was young. I wasn't going to harm anyone. I was going to go build things, but it really was the money is what it's at. Because then when I have the money, people like me and I'll be safe and I'll have influence and freedom and power. And all those messages were pretty much wrong, but I believed them so I acted on it.

Dave:

I didn't take care of my relationships and my biology and my self-improvement. And it happens over and over. And now you're going, wow, it's a lot easier when you're just doing stuff that's helpful to people and gets you enough. And so I thank you for talking about that and yes, it happened to you, it happened to me. So if one person listening to the show just lands and you're saying, "I'm going to do what I'm called to do." Then our show is worth everyone's time.

Dave:

And thank you for being a guest. Thanks for your work in the world. Jim, your new book, when it comes out in November will be called Moo's Law, which is the best title ever if you're from Silicon Valley, like Moore's law. Juvenescence is your main company. And we talked about several others throughout the show. And just want to say, I appreciate your work. Thanks for your time.

Jim:

I look forward to seeing you in person again, Dave, quite soon. Thank you very much, Dave, for having me on. Appreciate it. If you liked today's episode, you know what to do. All you've got to do is head on over to iTunes and leave a review that says, hey, this was worth your time. And you can also listen to the show again and say, "You know what? I think I actually am going to do something that matters. I'm going to change my career to something that helps because those are the sustainable careers." Or you could just try something that's really good for you. Have a great day.

