# The Human Upgrade: Episode 1096

[00:00:15] **Dave:** You're listening to The Human Upgrade with Dave Asprey. This episode is live in Toronto with Dr. Adeel Khan, who I would say is the Elon Musk of gene and cell therapies. And I just got gene therapy for the first time in my life. This is a momentous occasion for me because I have been dreaming about this in the context of longevity for 20 years. And I wrote about it in Superhuman, my big book on longevity, saying we're going to be able to do things to stem cells to reverse their age.

[00:00:52] Here's what's possible only in Japan, and here it is a couple of years later. You can do that. And the gene therapy that we're going to talk about, but it was just a little shot. And over the next three to six months, I should take nine years or maybe seven, depending, off of my biological age, my intrinsic age, which is a enormous thing for one shot.

[00:01:17] And you're going to learn some things about stem cells, the way we used to do them, especially umbilical cells that you might not like or might surprise you. So let's dig in. Adeel, thanks for hosting me here in Toronto.

[00:01:31] **Adeel:** Yeah, no, it's going to be hard to live up to that introduction, but I'll try my best.

[00:01:35] **Dave:** And tell me about the gym where we're filming this.

[00:01:37] **Adeel:** Yeah, this is Pure Muscle. It's the Mecca of the North. Drake has come to work out here. Anyone who's an influencer or celebrity comes to work out here. The reason is not just because, I mean, the bodybuilding scene is great here, but it's actually because the machines that they have are not available anywhere else in the world. Dorian Hamilton is probably the single best guy at building a gym.

[00:01:58] He built one for Chris Bumstead, who's the world's biggest fitness influencer. He has 19 million followers, but he has his own gym now, and Dorian built that for him. So Dorian is a master of selecting equipment. So you can work around injuries. You can work around chronic pain, and you can hit muscles in angles that you could never hit with just free weights.

[00:02:16] **Dave:** That is legit. In fact, maybe we can go hit the gym after this. I haven't lifted in a long time I'm always using a--

[00:02:22] **Adeel:** We can get big Mike to train you.

[00:02:24] **Dave:** Oh nice.

[00:02:24] **Adeel:** He's the guy with the skull tattoo.

[00:02:25] **Dave:** Oh my God. What could go wrong? I do all AI-assisted stuff, so most of my muscle comes from getting a signal indifferent. A lot of time in the gym, when I was working on losing that a 100 pounds, I didn't get great results at the time because I was overtraining and because I had mitochondrial blockades from toxins, and I had tons of estrogen and all that stuff. Now I'm lean, relatively muscular, and I appreciate going to the gym, and I don't do it that often because I have the tech that just puts my muscles on for me, but I also am not a powerlifter like you.

[00:02:56] **Adeel:** No, I think strength is important. I don't think it's the most important when it comes to longevity because there are other ways to develop that are more efficient, like you're doing.

[00:03:06] Man, I'm so excited about the gene therapy thing. So many places we can go, but I called you the Elon Musk of cell therapy. And we just sat down last night at dinner, and we were introduced years ago by Andrew Monsanto, a friend of mine from the crypto business. So I was like, okay, who is this guy?

[00:03:23] **Dave:** And I dug in. I met your CEO, and I realized you're doing the stuff that no one's willing to do in longevity circles. A lot of us are still saying, how do I raise my NAD levels? Which NR has been on the market for 15 years. I've been on it. And that's cutting-edge for a lot of us, and I'm a fan of it, but there's so much more we can do. How old are you?

[00:03:47] **Adeel:** 36 now.

[00:03:48] **Dave:** 36. All right. So you're a relatively young guy. You're trained as a medical doctor, and you're doing all this crazy stuff. How did you get here?

[00:03:58] **Adeel:** Yeah, I went to med school because, like everyone else, I was just like, I want to help people, which was a basic desire, but then when you get into med school, you get jaded a bit because you realize that they're just treating the symptoms. They're not treating the root cause. Why I had that perspective, probably because I was a gym rat before. I was a personal trainer before I went into medicine, and I love bodybuilding.

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[00:04:20] I've been following bodybuilding since I was 18. I remember watching Ronnie Coleman who's like the world best bodybuilder of all time. I remember watching him just eat ridiculous amounts of eggs, his training, all the supplements. Obviously, he took steroids too, but just that lifestyle of taking care of your body, that always resonate with me because to me, your body is the most important thing.

[00:04:41] And if you don't take care of it, and most people don't, it's what's called a deficiency need, like health in general, which means people don't take care of it until they lose it. And I was determined. I'm like, that's not going to happen to me, especially because a lot of people in my family have diabetes, heart disease.

[00:04:55] So when we're learning in medicine, we're just learning about pathophysiology, but we learn about some of the root causes, but then we only treat the symptoms. And that always baffled me. And that's why I was telling you last night, too-- I read your book in medical school, and I'm probably the only med student in my class who read your book.

[00:05:10] **Dave:** Thanks for being open-minded.

[00:05:12] **Adeel:** Yeah, but I read Mark Hyman's book. I read dozens of other books. I read hundreds of books in med school outside of just allopathic medicine. And so integrative functional medicine is naturally where I got inclined. Andrew Weil was a huge influence for me.

[00:05:27] **Dave:** He's been on the show too.

[00:05:28] **Adeel:** Oh, has he? Oh, yeah. He's amazing. Plant based medicine, breathing. He talks about so much stuff that is becoming more popular now, but he's been talking about that stuff for decades. And then that just led me down this whole rabbit hole of being like, wait a minute. We're not actually doing our patients the justice that they deserve.

[00:05:44] And it naturally led me to, okay, lifestyle is great. I love it. Not against it at all. Sleep, exercise, stress, nutrition, and optimization of supplements. But what else is there? And I've always been a tech geek, I guess. And so I just got super fascinated about this whole field of regenerative medicine, which is essentially the concept of being able to repair or restore your tissue or even your whole body back to a previous state.

[00:06:07] So the question is, can we take something that's diseased? Whether it's your body, your heart, whatever, and take it back in time, essentially. Can we reverse it? And that was the promise of regenerative medicine. And it took good 30 years of research to actually get to clinical translation.

[00:06:21] Because Dr. Arnold Kaplan, he coined the term mesenchymal stem cells or stromal cells more appropriately, but he coined that term in 1992. And so he came up with that. So we've known about stem cells for a while, but no one can figure out exactly how they work or exactly how to get them to do what we want.

[00:06:38] And so the cell delivery mechanism is what was the biggest issue and the hurdle to clinical translation. And now we've been able to circumvent that with the new technology, which we'll go into. But even with gene therapy, that was a big issue. It was a delivery mechanism. It's like, can we control the delivery of the signal that we're trying to send?

[00:06:54] I just got obsessed with that stuff. And for me, it was always about trying to make a big difference, not about trying to do whatever the hottest trend is. I was into this stuff, I guess six years, since I finished school. I've been just obsessed with this stuff.

[00:07:10] **Dave:** If you're already going, what the heck? Go to daveasprey.com/genetherapy, and I'll have all the links and all the stuff you need to know about this because this is a quantum leap for longevity, something I've worked on for 25 years. But what I heard from everything you said is that the AMA and medical schools need to do a better job with screening out healthy students who want to study medicine, because who knows what you might do?

[00:07:36] **Adeel:** Exactly. We're rebels.

[00:07:39] **Dave:** Something else happened as well. And most doctors get out of med school horribly in debt, and then they get a job at a hospital for $80,000 a year, which isn't enough to pay off their loans ever. And they realize they get three minutes per patient, and they just hate their life. And I've talked to so many of them who finally just said, I'm done. I'd rather run a small practice, even if I make less money, so that I can really help people. So you didn't follow that path. You want to talk about why you could start all this stuff?

[00:08:11] **Adeel:** Yeah, no. To me, the system was broken. I already saw the system was broken. The part where it enlightened me, there's a few moments in my life. One was in medical school when we had lectures on nutrition. And not kidding you, we only had two lectures on nutrition, and one of them was the Canada Food Guide, which is-- and this was backed up by an endocrinologist.

[00:08:33] One was a nutritionist, or dietitian, registered dietitian, and the other was an endocrinologist. And basically, their lectures were essentially like, you got to get your food groups in. You got to have your wheat. You got to have your dairy. Essentially, they told us, this is how you promote food to children.

[00:08:45] And they wanted us to go to schools to teach children about the Canada Food Guide because apparently, that's the gold standard. And I was just like, this is crazy. Because I was educated. I came from fitness, and I read bodybuilding books, and I read your books. I read Poliquin. I read so many other books.

[00:09:01] And so I was educated, and I was like, this is wrong. And I confronted them, and they're like, you don't know what you're talking about. I'm like, okay. I was a med student back then. So obviously, I'm not going to question my--

[00:09:12] **Dave:** That's called appeal to authority instead of logical thinking.

[00:09:15] **Adeel:** Right. Yeah, exactly. And so that's when I started waking up to the idea. I'm like, wait a minute. The people who are teaching us, maybe they don't actually know what's best in medicine. And then once you start diving into it a little bit, you realize that medicine's innovating at a pace that's never happened in history before. So it took from 1900 to 1950, 50 years, the medical literature database doubled in that time. So 50 years. And then it gradually became less and less. And now, guess how much it takes for the medical literature to double?

[00:09:47] **Dave:** About three days.

[00:09:49] **Adeel:** So not far off. 73 days.

[00:09:51] **Dave:** Close.

[00:09:52] **Adeel:** And so that is insane. Imagine, less than three months, the amount of medical knowledge we have is doubling. How can anyone possibly keep up with that? And so it almost

becomes of like, who has the most knowledge? And how do you keep up with that knowledge information? And how do you keep up with the gaps between clinical translation and basic science? And there's huge gaps now, and the gaps are just widening every year.

[00:10:13] So I think it's great that a lot of doctors are raising awareness about exercise and all this other stuff for prevention, but the reality is, this stuff about cell and gene therapy has been there for over a decade. And it's not necessarily new. It's just that I'm just trying to bring it to the forefront and combining the both because in my view, we're in the new era, which we're calling medicine 4.0, which is basically cell and gene therapy and tissue engineering combined to bring us the next generation of therapeutics.

[00:10:40] **Dave:** All right. The definition of biohacking is to change the environment around you and inside of you to have full control of your own biology. So these are absolutely new, laser-focused techniques that allow you to change what your body does. And I want to say straight up, it's reversible. So if I don't like what happens, you can take a substance that turns off the genes. So this isn't a permanent change. It's only there as long as you want it. And that's, I think, really important. And if I got your gene therapy and then I chose to have more kids, which I am not going to do, but if I did, this has nothing to do with the germline.

[00:11:20] **Adeel:** No, exactly. And that's the beautiful part about this plasma gene therapy. It's very different from traditional viral vectors because it's just a circular strand of DNA. And it's just a delivery system for a peptide to be secreted in your body for up to one and a half to two years. And like you said, it's basically a precise signal. That's, I think, the biggest thing for people to understand. There's a field called spatial transcriptomics.

[00:11:44] It's basically single cell resolution imaging. So essentially, instead of guessing that, hey, this is how a cell works, maybe we think this is how it works. We actually know how it works now. So there's no more guessing. I think when we were trained in medical school, there was this conception that molecular mechanisms aren't that important.

[00:12:00] I maybe can make that argument 20 years ago. Because yeah, it's true. We didn't understand that much about molecular-- we didn't have the science. And so it made sense that we had to just treat the symptoms because that's the only thing we could do. But there's no excuse

for that anymore. We can understand, to a cellular level, what's going on in almost every chronic disease. So why can't we target that and reprogram the body to heal itself? We can, and we will.

[00:12:23] **Dave:** All right, let's go into, first, gene therapy, and then what you're doing in cell therapy because they're both really important for people to understand. It makes it hard to talk about it because it's such a big thing. I'm still like, I can't believe I just got gene therapy.

[00:12:39] About five years ago on the show there was someone who's doing viral inserted therapies that were highly not regulated, and I was trying to arrange to do that. I even put together an interest list from people on the show, but we just couldn't bring it together. Pandemic, and all that nonsense.

[00:12:56] So this is, though, not viral based, and there's been a couple episodes if you go back through the thousands of them where I talk With people who are trying to figure out how to do this. And then I talked to you like, oh, we're doing it. We've done our clinical trials, and here's the results. So that's why I was confident enough to get the injection. Plus, I can turn it off.

[00:13:19] So talk to me about gene therapy. Walk listeners through as if they're not long time listeners or readers. What is a plasmid? What is plasmid gene therapy? And then we're going to talk about this specific gene that I got changed.

[00:13:31] **Adeel:** Yeah, I think to understand the current gene therapy, you have to understand the history a little bit. So basically, gene therapy research, it really started in the late 90s, and it started with something called viral vectors. And there's one specifically adeno-associated virus, AAV vectors, that got all our attention. The reason is because it's easy to manufacture, but it is still costly, and there's still the risk, theoretically, of it translocating, causing infections.

[00:13:56] And there was actually a big case, I believe it was in the late '90s that he had a viral vector for-- he actually ended up dying from it. So that set the gene therapy field back literally a decade. So from the early 2000 to late 2000s, there was really little done. I think it's an argument, one-sided. I see both sides, but I do think that similar to the crypto revolution and a lot of things that take off really fast, there's going to be risk with it. And there's going to be understanding on both sides to say, hey, if we want innovation, we have to take some risk.

[00:14:30] **Dave:** I'm sorry, the government is not my mommy. I'm a grown adult, and that means any risk I choose to take is my risk. And anytime someone says they're doing something for my own safety, they're just an oppressor. I'm sorry, my safety is my job as an adult. And if it's a child, then you say, okay, you can't do that because you don't know enough. So this paternalistic view of humans, it doesn't work. And the reason it doesn't work is that in the US, where many therapies are not available, you just go somewhere else, like, hey, am I in Toronto? Oh, hey, what do you know?

[00:15:04] **Adeel:** And why did I work in Dubai for this whole winter? It was because I could do what I want there, and the government doesn't have the same affiliations with their pharmaceutical companies there because the government is in the role of families, and they don't care about the money.

[00:15:15] **Dave:** It is. I'm going to Dubai again next month, and I'm spending a lot of time there. And same thing, the attitude towards innovation there is more like Silicon Valley of the '90s. It's so good.

[00:15:26] **Adeel:** They approved psilocybin recently there, which is--

[00:15:28] **Dave:** Really?

[00:15:28] **Adeel:** Yeah.

[00:15:29] **Dave:** Last thing you'd ever think of.

[00:15:29] **Adeel:** I know. And so it can tell you how progressive they are because they want what's best for the people. You know what happens a lot of times, and people get scared. And so essentially, set back gene therapy for over a decade, and then they picked it back up again, but no one could really figure out how to scale gene therapy because viral vectors are so expensive to manufacture and there's still risk with them inherently. And so, like you were saying, you're trying to get that viral vector right a couple years ago, but it's not easy to get, and it's also much, much more expensive.

[00:15:58] The scientists that I work with, Walter Patterson and Mac Davis, who are the inventors of this technology, they figured out a way to basically make something of E. coli origin. So they start looking at minicircles. So minicircles have been in mice research for over a

decade, but they were asking themselves, why isn't anyone doing this in humans? So they just literally took what was already being done in mice. And if you think about someone like David Sinclair, a lot of what he talks about are animal studies, and yet he's getting a lot of notoriety.

[00:16:26] **Dave:** He's been on the show. Yeah.

[00:16:27] **Adeel:** Yeah. But it's lot of animal studies. But having human studies, it's just so much more powerful. And so they were like, why don't we take the same thing that we understand works? It falls down as a very safe molecule. Why don't we try doing that in the delivery mechanism of the minicircles that have been around in animal studies for years? And they knew that because the minicircle is basically just a strand of DNA.

[00:16:48] And so it's a plasmid, which means it's of bacterial origin, but there's no live bacteria in there. So literally, just think of a circular strand of DNA that goes into your body. And so that little area where we injected has that strand of DNA, and it's going to secrete and send a signal for phallostatin every day at a low dose.

[00:17:06] **Dave:** All right. So we're going to talk about what is phallostatin in a minute here. But I want to define plasmids in a way I've written about these in, I think, my second book. And the idea of a plasmid is that, when bacteria are sitting around, they can use plasmids to exchange [Inaudible]. I think of it like the X Men.

[00:17:29] They have trading cards. They're like, hey, I'll trade you my ability to regrow my tissue for your ability to shapeshift. Okay, here's a plasmid. Here's a plasmid. And it's an instruction set to turn on a new ability. And this is why we have antibiotic resistance, by the way.

[00:17:41] So you give an antibiotic to a cow, those bacteria all become resistant, and then they do the plasmid swap with other bacteria that infect us. And suddenly, those bacteria are now antibiotic resistant. This is why you shouldn't eat industrial beef. There's lots of reasons you should do grass-fed, local organic and all that.

[00:17:56] So that's what a plasmid is. And since bacteria secrete these little circle and use it as swap abilities, you've added a new ability to my system, and the ability is to make more phallostatin. Tell me what phallostatin is and why it matters for aging.

[00:18:13] **Adeel:** Yeah, it's the holy grail of anti-aging research because it's basically the culmination of not just preserving muscle, but also reducing systemic inflammation. A lot of people know what peptides are, but just a quick refresher, a peptide is a chain of amino acids, a protein. Sends a signal to your body.

[00:18:33] Insulin is a famous peptide, peptide hormone. But there's lots of [Inaudible]. There's so many peptides out there on the market that most people have heard of now, and so most people understand a peptide is just a signal to your body. So what's the signal that follows that in sending? It's actually pretty amazing how many different signals it has. And those signals are something called FOXO pathway, which is an anti-inflammatory signaling pathway.

[00:18:55] And that's why it has these huge, dramatic epigenetic alterations, like you were saying. It's going to reduce your intrinsic biological age by up to nine years. Why is that? It's because it's going to reduce systemic inflammation, which is probably the biggest driver of aging. And then on top of that, phallostatin has an antagonistic relationship with myostatin, which to me, as a gym junkie and a gym rat, it's probably the best thing ever, but something I dreamed about since I was a child is what's myostatin inhibitors.

[00:19:20] When I was 18 years old, I remember looking at these guys, like these bodybuilders, like Ronnie Coleman has a myostatin deficiency. And then those big Belgian blue jack cows because they don't make myostatin. So obviously, this isn't going to take your myostatin levels to zero. You're not going to be deficient, but it will lower them enough that it will allow you to increase lean body mass and make it easier for you to put on muscle.

[00:19:41] And most importantly, I think for the average person, it's going to prevent muscle loss as you get older because it's severely, severely anti-catabolic. The biggest issue with intermittent fasting, with all these weight loss drugs is that you're losing fat and muscle. And people don't realize body recomposition versus just losing-- there's fat loss and there's weight loss. Most people are just doing weight loss. They're not doing fat loss.

[00:20:04] **Dave:** I just did a post about Ozempic. Like, look, it's a powerful anti-aging peptide if it doesn't make you feel like you have morning sickness like it does for me. But I tried it for one week for a show I did on it. I don't need to lose any fat. But what's going on with people is they

stop eating protein. And so then, of course, they lose it, but if you could force yourself to eat enough protein when you're on Ozempic, you're not going to get that problem.

[00:20:28] **Adeel:** Or you just do the follistatin.

[00:20:30] **Dave:** Or you could do the follistatin. In fact, if you look at what they're charging for Ozempic on a-- if you're going to take it for several years, it probably adds up to a single injection like this anyway. And right now this is an expensive therapy.

[00:20:42] **Adeel:** It is, but our vision for it, for the company, is for this to be accessible to everyone one day. And we have a roadmap to do that. That's going to be partly driven by doing Phase 2 and Phase 3 trials, so we'll have more evidence. But also, the Phase 2 trial we're hoping to do in Japan because they have a huge aging population, and sarcopenia is a huge problem there. So if can prove to the government there that, hey, this will actually help save you costs, because it will, then maybe we can get insurance companies to even cover it one day.

[00:21:07] **Dave:** Wow, I look at this as mobile phones, and I've talked about this a lot in my books. I will go out and do any of the crazy millionaire biohacks that I can get my hands on so I can talk about the mechanisms. I could talk about the relatively cheap version of this, and even the free version to take advantage of a new understanding of biology, but anything that's expensive now will, 20 years from now, be commonplace.

[00:21:33] And the first mobile phones are $20 a minute. They cost 40 grand. They took up the trunk of your car, and only annoying millionaires had them. And then all of a sudden, now it's a dollar a month in Africa. So I think this is going to happen with gene therapy.

[00:21:46] **Adeel:** 100%. It's going to democratize health for everyone. And the reason it'll do that is because this is cheap and scalable technology. And so Tony Robbins, I was just at his house a few days ago, and so he's going to be documenting his progress about this therapy too, so that'll be good for, I think, more exposure, but the reason I'm bringing him up is because he said the best. He's like, I'm happy to do this treatment even though it's expensive because I know I can afford it, and one day it'll be affordable for everyone.

[00:22:10] **Dave:** Yeah.

[00:22:10] **Adeel:** And so that's the right mindset think. And it was like buying a Tesla 10, 13 years ago, 2010, 2011. Who was buying them? They were not good cars. They were like, the tech wasn't great then.

[00:22:20] **Dave:** Yeah.

[00:22:21] **Adeel:** It didn't last very long. You had to charge it a lot. There was lots of issues, lots of bugs, but there was people who were early adapters because they know it's for the greater good. So I think this is for the greater good. And you have to have that mindset of saying, hey, this is new technology. It's safe, number one. We know that. There's no adverse effects. And number two, it can have a huge benefit for society at a large. So the people who can afford it, if they can do it and be the early adapters, like people like you, it influences other people to say, hey, I want this one day. And maybe not now, but maybe when it's $5,000, which hopefully eventually it will be.

[00:22:50] **Dave:** Yeah. Right now it's about five times that, right?

[00:22:52] **Adeel:** Yeah.

[00:22:52] **Dave:** Okay. And those are not Canadian dollars. Those are discounted.

[00:22:55] **Adeel:** Yeah, they are US dollars. That's like 40,000 Canadian.

[00:23:01] **Dave:** Speaking of Canada, one of the things you can get here that you can't get in the US is a microdose nicotine.

[00:23:07] **Adeel:** Oh, really?

[00:23:08] **Dave:** Yeah, so the FDA, this has been around for 20 years. It's actually the best form of nicotine for anti-aging. I use nicotine because it reverses and prevents Alzheimer's disease at low doses. And we know about this since 1986, that there's many studies out of Vanderbilt about this.

[00:23:25] **Adeel:** No one talks about like, oh man, we could all--

[00:23:29] **Dave:** Yeah, for sure. Spray it onto your tongue. All right. He did a double spray. Now he's going to be launching off the planet here.

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[00:23:36] **Adeel:** I'll show Elon Musk. Okay, so basically, a perfect example of that is intranasal insulin.

[00:23:42] Dave: There you go.

[00:23:43] **Adeel:** Intranasal insulin has been shown to treat not only Alzheimer's, dementia, but mild cognitive impairment. And I never learned anything about it in medical school, and 99.9% of doctors have never heard about it because you can't patent it. And because there's no patentable intranasal insulin that you can do as a pharmaceutical and package it and make a shitload of money off of it. It's such a shame though. It's such a disservice because it can increase white cortex matter. It can make you smarter. Just for, let's say, health optimization--

[00:24:09] Dave: Do you use it?

[00:24:10] **Adeel:** I just started. Yeah, but I've done it for my father-in-law who has MCI, and it's been amazing.

[00:24:16] **Dave:** I love it that you know about this. Almost no one does. I've used intranasal insulin on occasion, for anti-aging, and it's a really good cognitive enhancer. You use it, it feels like nicotine. It dials you in. But there are also studies that show that higher levels of insulin in the brain have some negative effects as well. So it's like insulin causes growth, so I don't know that we know the right dosage and timing to use it for longevity versus--

[00:24:43] **Adeel:** Yeah, I'm personally using it more clinically, for people who have actual MCI, mild cognitive impairment.

[00:24:48] **Dave:** Or a brain injury.

[00:24:49] **Adeel:** Yeah, or brain injury or dementia. Because what's out there? What's the alternative? It's pharmaceuticals that don't even work. And they tell us they don't work, and they have a huge list of side effects. So why not try something that's safe, number one, most importantly. And number two, that is efficacious. And number three, has good molecular mechanisms and basic science to back it up.

[00:25:08] So you have all these real world evidence of cell and gene therapies around the world too with patient registries and data that work, but because there isn't RCTs, people are like, oh, it must not work. It's baffling.

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[00:25:23] **Dave:** It's driving me crazy. The first laser I got that had profound biological effects was not approved for humans because none of them were. It was approved for racehorses. So I said, I'm a racehorse. I'll use it. And so if you look at what you can do, like if I had a brain injury, if there was a gene therapy that would fix that, I would do it in a minute, but I would also look at stem cells.

[00:25:42] We're going to get into what you're doing with stem cells. I would do intranasal insulin, and I would get in a hyperbaric chamber  and I would use a laser on my brain through the skull. And you can radically transform someone's brain, and when you're done with that, then you retrain it with neurofeedback.

[00:25:59] **Adeel:** Exactly. You understand that better than 99% of neurologists.

[00:26:01] It's the brain damage from toxic mold that I had to fix.

[00:26:03] But why do you understand that, and a neurologist doesn't? That's what puzzles me. Why does an MD, PhD neurologist, who's gone to Harvard, does not understand that, but you do? That's my question.

[00:26:15] **Dave:** It's what happens. There's answers that. And Naveen Jain from Viome, I was a friend, and mentor, and a partner in our mentorship group called Apollo group. I spent a lot of time with him, and he said, Dave, I come from tech. He's an old Microsoft guy. And he said, I can do what I'm doing with the gut bacteria and things like that because I'm not from the industry. So anytime you cross over-- and what you did is you crossed over from basically bodybuilding into medicine. And that allowed you to think about it differently. So it's always cross industry stuff that creates the most pollination.

[00:26:45] **Adeel:** Yeah, that's what Tai Lopez calls it cross-pollination.

[00:26:47] **Dave:** Oh, does he? Okay. I haven't talked to Tai in a while. He's great. Actually, no, I was on a show recently. It was 10 years between the two times--

[00:26:53] **Adeel:** I thought he coined that term. Did you coin that term? Cross-pollination. He says that from industries.

[00:26:58] **Dave:** Maybe he did. I don't know. I thought I made it up right now, but clearly, I didn't.

[00:27:01] **Adeel:** But no, cross-pollination is exactly how I think. It gives you that ability to have lateral thinking, which is take things from other industries. But medicine is a perfect example of that. Because if you only train in Western medicine, because most of your listeners are probably Americans-- but Ontario medical schools are the equivalent to like Ivy League medical schools.

[00:27:18] There's only five medical schools in Ontario. And if you're from the Toronto region, to get into an Ontario school, here, you have to have pretty much a perfect GPA, a perfect MCAT, so you have to be-- it's basically like going to Harvard or one of those med schools. So it's very, very hard to get in here. So if you get into a Canadian medical school and you're told you're the smartest cream of the crop, you're basically told, when you're 22, 23, when you get in that you're the best of society.

[00:27:41] And so you think you know everything because you go through this medical training, you're told that you're the smartest, and then you go through this rigorous training, you don't sleep, you do thousands of hours in the hospital. So how can anyone possibly know more than you when you're a specialist in something?

[00:27:55] And that's the God complex that doctors notoriously have. And ego is the enemy. Ryan Hall, they wrote that book, and it's probably one of the best books of all time. And so I think that's so important to humble yourself and just realize, maybe I don't know everything. And what opened my eyes was what I call cross-cultural medicine.

[00:28:10] And I think this should be a part of medical curriculum, which is basically medical students or residents should have to travel the world and do medicine in different parts of the world to really see what medicine is about because when I worked in Japan, when I worked in Europe, when I worked in South America, when I worked in the Middle East, I saw so many different things, and then I was able to bring them all together, and now I can make Medicine 4.0.

[00:28:32] **Dave:** It's funny. Another guy who's been on the show a couple of times is Dr. Barry Morgulon, a UCLA endoscopic surgeon with 30 years of experience. He said the same thing. He traveled all over the world and eventually ended up in China, but he was learning medicine while he was teaching Western medicine. So you get this amazing thing. And so many of the biohacks

are Ayurveda or and, oh, it turns out there's data to support what they've always known. So I'm seeing more of this happening when people get out of med school and they'd say, oh, I have to go learn functional medicine and all of that. And then we've got where you cross medical fields. You're also crossing bodybuilding and just power lifting and medicine. And then you're getting into the tech with gene therapy and the stuff with cells.

[00:29:13] **Adeel:** Yeah. The fact that Japan approved stem cells, expanded stem cells, we're talking culture expanded, which is still legal in the US, by the way, approved it nine years ago. And they have regulation in place for that. They have a regulatory framework, which keeps it safe. It's baffling that they have that and the FDA doesn't.

[00:29:32] **Dave:** Let's talk about what those are. And if this is a repeat for you, I apologize. Most listeners don't listen to every episode because there's a lot of them. Or you haven't read my book. This would be Superhuman is the book where this is. You can also get stem cells from umbilical cords, which has a lot of shortcomings that you're going to hear about on the show. But you could take your cells, and you could brew them in a reactor, basically, and make a lot more. So I have mine banked, and I can culture expand myself.

[00:30:02] **Adeel:** What age did you bank them at?

[00:30:04] **Dave:** Oh, about 8 years old ago.

[00:30:08] **Adeel:** Robert Herreri, who's a MD PhD, he owns the company Cellularity.

[00:30:10] **Dave:** Yeah, he's been the show.

[00:30:11] **Adeel:** Oh, okay. You know everyone. So, he says that after age 40, there's a precipitous decline of the efficacy of your stem cells. So I think autologous stem cells still have a place for certain things, but there's something called allogeneic stem cells, which are basically donor stem cells. And now we're getting into the new generation, which we'll talk about our gene edited stem cells, uh, which I think really the future.

[00:30:31] **Dave:** It is the future, and I've had about 500 million of the type of cells you just described. And this is where they take a very powerful cell that's been carefully vetted

[00:30:42] and screened, and they grow it forever, basically, as a single thing, and then it's been tested on tens of thousands people. And I'm okay with that because you can see if there's reaction

patterns, but if you get umbilical cells from eight different women you don't know, and they're saying, hey, it's $500 a month, or whatever the deal is, I have not done those. And I know that there are risks, including host graph response, which is when your immune system rejects, it's not common. But there's also some disease things. Talk to me about diseases and stem cells.

[00:31:16] **Adeel:** The problem is with those stem cells like you were saying, even though they're immunoprivileged which means they don't have an HLA antigen, so they're not going to necessarily--

[00:31:25] **Dave:** They're not supposed to.

[00:31:26] **Adeel:** They're not supposed to. Yeah, exactly. But just because they're immunoprivileged doesn't mean they're not going to trigger your immune system. In fact, they do trigger your immune system, which is why they're cleared up by your immune system relatively quickly.

[00:31:36] And that's the fundamental problem. People don't understand the science. Doctors who are doing intravenous stem cells are telling patients that, yeah, it's going to stick around, you're going to increase your cell count, your stem cells decrease as you age. Therefore, 100 million, it's like giving yourself 100 million stem cells that are going to stay there permanently. That's not true at all. Intravenous stem cells may be staying in your body for four weeks. They're cleared up by your immune system.

[00:31:56] **Dave:** And what they do is they come in, they stick to the site of injury and they secrete stem cell poop called exosomes. And that's what] triggers the healing.

[00:32:02] **Adeel:** It's all about the saccharotome. The saccharotome is microRNAs, cytokines, proteins, signals that basically help to reprogram the environment to allow for the healing. So, I always say, like, stem cells are like the construction workers, right? If you're trying to build a house, they're going to help to put everything together. Right. And so to do that though, properly, you need scaffolding and you need something to protect them to stay there.

[00:32:24] And so that's where the hot area of research is now. It's biomaterials, it's tissue engineering and it's gene edited cell therapies coming together. So we can actually make the stem cells stick around and do what they need to, which is regrow new tissue or repair or reverse

tissue. So when you're getting stem cells from 99% of doctors right now, I mean, I think I'm the only one in the world who's doing it, actually, so, the genetic ones, I mean, but basically everyone else who's doing it is essentially just giving you umbilical cord stem cells, which are mesenchymal in origin, right?

[00:32:51] But they're not going to stick around very long, so they're just paracrine signaling. I think a lot of people still, and I hate the predatory marketing around stem cells, which is basically using celebrities, using people to be like, oh, it's the best thing ever. It cured me. I get that there has to be some sales around it, but you need to be honest and you need to have integrity when you do this stuff because you're playing with people's lives and you're giving them false hope.

[00:33:10] For me, as I consider myself a clinician scientist, I'm one of the two doctors in Canada approved to do stem cells because I'm doing a Health Canada clinical approved trial with stem cells. So there's very few doctors who are doing science and doing clinical application. And I think if you're going to go to a stem cell doctor, which is a bullshit term by the way, but if you're going to go to one, make sure they're actually doing scientific research with the institution. I work with University of Toronto, which is like the Harvard of Canada, and you got to work with an institution or else you don't know what you're getting.

[00:33:41] **Dave:** There are some people with decades of experience in it, and I've had great results from the whole body stem cell makeover, but this is a big, expensive procedure. And I lay down, they tap into my bone marrow, they get my fat. And then fortunately the second time, at least knocked me out the first time I was awake for all of it. And then they inject every joint in the body and it was really beneficial for me. This is a heavy duty procedure and it totally worked. But most people aren't going to do that because it's quite expensive. And what you're doing now, because you're amplifying cells, you're editing the cells, you're getting different responses.

[00:34:15] **Adeel:** We are the only group in the world that right now has the license with a company that I won't say because for exclusivity purposes, but basically we have the technology to overexpress certain transcription factors and create specific cell lines. So for example, for osteoarthritis, we can use what's called an IPSC derived MSC that overexpresses TGF beta. So that's a mouthful. So what does that mean? What did I just say? So basically there's a guy named Professor Yamanaka.

[00:34:43] **Dave:** I quoted his research in Superhuman saying, I can't wait to do this.

[00:34:47] **Adeel:** And you're doing it. So basically he won the Nobel Prize. So he's no joke. And he's actually working at Alto's Lab, which is a secretly funded company. I don't know what they're doing. They're funded 3 billion by Jeff Bezos, but they haven't come up with anything yet. So I'm not sure if they're going to just one day be like, we've cured aging. But they're working on something.

[00:35:05] **Dave:** It's probably like blue origin. Oh, wait. Sorry, keep going.

[00:35:10] **Adeel:** So yeah, but they literally have the best scientists in the world. But why aren't they coming out with the best developments and why aren't they pushing the field forward? I'm not really sure what's going on there. But anyway, the point is, there's another group that came up with this technology, where basically they figured out how to use these reprogrammed Yamanaka factor cells. So Yamanaka factors are just for transcription factors that reprogram any somatic cell so they can take any cell in your body, a muscle cell, a fat cell, a skin cell is usually the easiest to take a fibroblast, and you can reprogram it into basically an embryonic stem cell state.

[00:35:43] So first of all, think about how crazy that is that your body has a memory to become into a naked stem cell, which means your body has this inherent ability to heal itself. That right away gives you that fundamental principle that we have what we need to heal ourself inside of us. We just are figuring that out now and now we're starting to peel the layers back.

[00:36:01] And so we can create these genetically reprogrammed cells. But the problem was these cells are too strong. They have too much stemness because they can keep growing. They have uncontrolled proliferation. They can turn to teratomas or tumors, cancer. So they don't stop growing unlike mesenchymal stem cells. That's why mesenchymal stem cells are so strong. Most stem cells are still widely used because they're very safe because they only have finite amount of division.

[00:36:25] But iPSC cells can keep growing. And so no one could figure out how do we-- because this is great. We got the Nobel Prize, but how do we actually use this clinically? And so it took a while. And so what this company did, they figured out how to edit these iPSC cells using gene editing technology to basically prevent them from having uncontrolled proliferation. It's called a suicide gene therapy. So basically it prevents it from growing uncontrollably. So you

will not have-- you have zero risk of that uncontrolled proliferation. So you can just switch it off. Similar to how that gene therapy we did for you has a kill switch, but this has it built into it.

[00:36:55] **Dave:** Okay.

[00:36:56] **Adeel:** And so now we have the fundamental basis of iPSC cells. Now, iPSC cells, we have clinical grade ones. So that changes the ball game, right? Because iPSC cells are the most basic type of stem cell, which means can turn to anything because they're like embryonic. And so we can create different cell lines. So we can create iPSC derived MSCs, like mesenchymal stem cells that are derived from iPSCs and we can get them to overexpress certain transcription factors like TGF beta, which you know, is a growth factor that's important for stimulating cartilage regeneration. So for example, you can make-- so we have that cell line for osteoarthritis.

[00:37:28] **Dave:** So you inject that into the knees?

[00:37:30] **Adeel:** Exactly. Yeah, but then we can have cell lines. We can have islet cell lines that are iPSC drive for injecting into the pancreas for diabetes. And then--

[00:37:38] **Dave:** Have you had results with that?

[00:37:39] **Adeel:** Yeah, I have patients. So I work with the interventional radiologist in Dubai. He's been doing this for years because in Iran, Pakistan, a lot of those countries, India, there's obviously less regulation and they've been doing this for a longer time.

[00:37:52] And so he's had patients, we've had patients, part of our group, like I work with him, that have actually got off insulin and have put them into remission.

[00:37:58] **Dave:** These are type ones?

[00:38:00] **Adeel:** Type I and type II.

[00:38:01] **Dave:** Wow.

[00:38:02] **Adeel:** Yeah. The problem is it's chronic disease, right? Chronic disease is a trillion dollar industry. So if you start telling people that you can fix their hearts, kidneys, livers, organs, basically using stem cells, you start getting into hot water.

[00:38:15] And so that's where we really have to start doing a lot more. We have to get those high level RCTs to convince the regulatory bodies here, but we already have the real world

evidence. And there's published evidence out there too, with that, with data sets and case reports and even trials from Iran, those parts of the world.

[00:38:31] **Dave:** Okay. So, I mean, yeah, hearts and lungs and pancreases, those are cool, but talk to me about hair and reproductive systems. What do you got?

[00:38:39] **Adeel:** Yeah, every man's problem.

[00:38:40] **Dave:** And women too.

[00:38:44] **Adeel:** So hair is really cool because there's a company called Stemson Therapeutics and they have a technology for iPSC derived hair follicles. And so basically for colloquial terms, let's just call it cloning hair stem cells. Traditionally, there's something called a FUE hair transplant.

[00:39:00] **Dave:** I've had it done on the show.

[00:39:02] **Adeel:** Oh, you have? Okay.

[00:39:03] **Dave:** 10,000 hairs moved from the sides to the part where I was getting just a little behind.

[00:39:09] **Adeel:** Oh, okay. I can't tell.

[00:39:12] **Dave:** I went to the world's best guy in Florida Alabama. He's great.

[00:39:12] **Adeel:** Oh, yeah. Amazing. You did a great job. So people know the process, right? You take one by one, you implant it. But now instead of having to take them from the back or the side of your head, you can just take one hair follicle. You can clone them. Grow as many follicles as you want. If you're completely bald, you can grow 10, 000 hair follicles.

[00:39:27] **Dave:** Where do we go to do that?

[00:39:28] **Adeel:** I know. We're going to have it in next year.

[00:39:30] **Dave:** Okay, sign me up. We'll do it. We'll do the whole procedure live. We'll not print the whole thing, but we'll do a whole show.

[00:39:34] **Adeel:** But your hair's already good.

[00:39:35] **Dave:** There's a little bit on the top that isn't quite where it should be.

[00:39:37] **Adeel:** Okay. All right. Sure. I mean, if it's just thinning, you can always just do stem cell injections for that too. But for men who are bald-- so this is the equivalent of what I say like for breast implants for women. Like women, why did breast implants become so popular? Because a lot of women who just-- cosmetics, right? It became because of women who don't have and wanted it. And so similar for men who don't have hair and they want it and now they can actually have it.

[00:39:59] **Dave:** So Dr. Whitfield was just on the show talking about all the problems with breast implants and breast implant illness and a lot of really good medical evidence for it. So do you have breast stem cells? Can you do--

[00:40:12] **Adeel:** Well, you can do fat graft, but it's not going to take you from like an A to a D. It'll take you like A to a B. So we do that in Dubai. But basically you can take your fat-- but you also have to have a good amount of fat to do.

[00:40:20] **Dave:** So you have to eat a lot of junk food and--

[00:40:22] **Adeel:** Yeah, and then harvest your fat, and you can use that for breast enlargement. But similarly, so reproductive organs, you can do that for penises as well, and you can make penises bigger, and you can add like a good inch or so.

[00:40:31] **Dave:** Yeah, there's more-- I've had stem cells injected.

[00:40:34] **Adeel:** But did you ever have a fat graft?

[00:40:36] **Dave:** No, I didn't have a fat graft. I'm open to it.

[00:40:38] **Adeel:** Yeah, we have a urologist.

[00:40:40] **Dave:** Okay, I'm down. I'm about to find some fat. But, uh, yeah, the adding an inch, absolutely, with shockwave therapy and stem cells, yeah, that I know for a fact.

[00:40:48] **Adeel:** Well, it's actually a real problem. So Peroni's disease is a fibrotic condition of the penis where you actually get fibrosis and you get nodules and you can get curvature as well. And this actually affects 10% of men and that's a lot of men if you think about it. And that's not even including just erectile dysfunction, which is becoming so much more common because of

poor lifestyle, right? Because there's not enough blood flow. So stem cells are very, very effective for not only erectile dysfunction, but also Peroni's disease.

[00:41:10] So it's actually treating a lot of medical conditions, which are unmet needs yet the regulatory bodies are still saying, this is not allowed.

[00:41:17] **Dave:** Well, that's why I didn't ask them. I'm sorry. You don't have the ability to allow me to edit my own biology because it's mine. So everyone now is saying what? That was a lot. Daveasprey.com/genetherapy. I'm going to put links for all of this stuff in there for you. But right now there's nowhere people can go except if they're seeing you in Dubai when you're there. Is that the--

[00:41:38] **Adeel:** Well, we're going to be doing it in Mexico as well.

[00:41:39] **Dave:** In Mexico? Okay, good deal. So this is just coming online?

[00:41:43] **Adeel:** Yeah, the hair follicles. Well, the penis stuff we're already doing, but the hair will be online probably even in spring.

[00:41:48] **Dave:** All right. So sign me up in spring. I'll do both and we'll do a show on it.

[00:41:53] **Adeel:** Deal. Sounds good.

[00:41:50] **Dave:** But you have to blur out the parts. I don't want anyone to feel ashamed if they compare. Such a douchebag comment. I'm sorry. I had to make it.

[00:41:59] Adeel: Our company is called Eterna, so I was thinking about calling it Eterna Gerth. Get your confidence back today.

[00:42:07] **Dave: I** In the video, when I had my own stem cells injected for the first time, I was like, how do you show that on video? So there's a blanket covering the stuff you don't want to see, and I'm filming it. And you see my feet at the end of the video. And then you see a hand with a needle, long needle come down. And then the needle goes in and my toes go swing. And then I actually said, this is going give you length and girth. It was all. It was a joke, right? But it did work.

[00:42:32] **Adeel:** That's amazing. Just stem cells. Imagine the fat graph is actual tissue because it actually adds tissue and volume to your--

[00:42:38] **Dave:** That's amazing. All I'm going to need lot of croissants first. I have a lot of fat.

[00:42:41] **Adeel:** Yeah, you have no fat right now.

[00:42:43] **Dave:** All right. This is amazing stuff that this is all just coming online.

[00:42:48] **Adeel:** Yeah. And that's really the big message I want to get across is that the medicine innovation that's happening at a real world evidence level is happening too fast for regulatory bodies and for guidelines to keep up. Because where do most doctors get their information from? It's usually guidelines.

[00:43:04] Where do guidelines come from? They come from specialists who are considered top tier. Where do those specialists of top tiers come from? From top schools or whatever? And who do they work with? Pharmaceutical companies and they have lobbyists and they have people who promote certain things to them. So it's all muddled. And I'm not saying that there's not good in the pharma. There's obviously life saving drugs for acute care medicine, but a lot of chronic care medicine has been misconstrued to this model and reductionistic model of saying take this pill for this chronic disease when that's not how chronic disease works. You and I both know that.

[00:43:36] **Dave:** You're kind of saying, take this gene therapy for chronic disease.

[00:43:39] **Adeel:** But we're treating the root cause at a cellular level and we're reprogramming your body to do what we want because I think-- and I think this is a big thing to understand about stem cells too. The biggest issue was we couldn't control the signals. Now with gene edited stem cells, we can control the signals. We can control the delivery mechanism. And so we can actually get them to do exactly what we want.

[00:43:59] **Dave:** If you put on your 20 years from now hat with gene therapy, what are some of the like far out things you think might be possible that we're going to do?

[00:44:09] **Adeel:** I think by then we'll be able to basically target specific transcription factors that essentially are the root cause of any disease and be able to reprogram that and reverse it. And what I mean is, and it's going to personalized.

[00:44:23] **Dave:** What about infectious diseases though?

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[00:44:25] **Adeel:** Like Lyme?

[00:44:27] **Dave:** Like Lyme or a lot of people get toxic mold growing in their body when they live in it. And then you have candida and they have all these viruses.

[00:44:35] **Adeel:** Yeah, exactly. So let's talk about immunotherapy. So immunotherapy, when people think stem cells, they always think just like umbilical cord stem cells. That's the first thing that comes to their mind or embryonic, but cell therapy is a whole slew of stuff now. And so we have different cell lines. We were talking about like islet cells, neuro progenitor cells for neurodegenerative conditions, but we also have cell lines for immunotherapy. What's immunotherapy? The gist of it is that we're trying to get your immune system to basically boost itself to fight chronic infections or even fight off cancer. And the principle behind this-- and this has been done in Japan for 10 years, by the way. And so when I work in Japan, the doctor I work with her dad's been doing this for a long long time and they've treated patients with something called dendritic cells and natural killer cells. Stage four patients who were told they're terminal and they're still alive today.

[00:45:22] Why is that? It's because the immunotherapy response is targeting potentially what's the underlying cause of cancer, which could be maybe some pathogen. And that's where I think a lot of this comes back to. In physics, they call it first principles. In biology, we're calling it fundamental principles of biology. What's the fundamental principles? Governing this disease.

[00:45:39] **Dave:** Yeah, natural killer cells are so important. I've had my own natural killer cells taken out, culture expanded, and I had two billion of them put back in because as a guy who grew up overweight, lots of toxic molds and autoimmunity everywhere, resetting the age of my immune system, so it's younger is a major thing, but those weren't edited--

[00:46:00] **Adeel:** Exactly. So what we're working on is we're going to working on our own minicircle CAR-NK cells and CAR-T cells and we can also make dendritic cells using our minicircle technology. So let me explain what CAR is. It's chimeric antigen receptor. It's basically a gene editing technology for T cells. And T cells are basically like, think of them like a sniper. They go in. They can snipe those cancer cells, they can kill them, they can target them.

[00:46:27] But what happens in cancer is it becomes immuno invasive. So the T cells can't detect them, and they can't figure out what's the difference between a cancer cell and a normal cell.

They're able to make epigenetic alterations which prevent them from being targeted. But with this chimeric antigen receptor, when you edit the gene cells, the T cells, you can take them out of your body. You do the gene editing CAR. And then you expand them and culture expand them and then you can infuse them back in and it will actually cure or put people in remission. And this is actually an FDA-approved treatment now. It's called CAR T and it's basically for hematological cancers like lymphoma leukemia. But the problem is it's hugely expensive and then it's also not very accessible. You can't get it at most places and a lot of doctors are still hesitant to use it.

[00:47:09] But what we're going to do is we're going to manufacture them ourselves so we can provide access to people offshore so we can help a lot more people because a lot of people I think need access to technology, especially with cancer. Cancer, unfortunately, the innovation in it hasn't happened, right? If you look at the mortality data, people live maybe four weeks longer.

[00:47:26] **Dave:** Yeah. It's, pretty scary what's going on with cancer treatment for the amount of money we've put in there. We haven't gotten very good results.

[00:47:35] **Adeel:** Exactly.

[00:47:35] **Dave:** So to translate what you said, imagine that cancer cells have cloaking technology. And what you're doing is you're programming the T cells to be able to hone in on the thing that's making the cloak. So then they just light up and you can go after them.

[00:47:49] **Adeel:** Exactly.

[00:47:52] **Dave:** And all this sounds like science fiction. This is actually what's going on inside our bodies anyway.

[00:47:56] **Adeel:** Exactly. We're just starting to unravel it.

[00:47:58] **Dave:** And you're looking at this like a hacker would and saying, okay, well, if this is the behavior of a system, how do we just get it the right signal to make it behave the way we want?

[00:48:09] **Adeel:** And that comes back to first principles or fundamental principles. It's understanding those principles. The problem is most doctors don't understand those principles. So it's hard for them to innovate because they don't have a good framework to work from. And

that's the problem. It goes back to education. We're not taught in medical school about all the molecular basis of disease and how they're all interconnected.

[00:48:29] It's so interesting because the more I read and the more you see about chronic disease and aging and everything, you're like, wait a minute, everything comes back to pretty much the same root cause dysfunction, which is like chronic immune dysfunction, like mitochondrial dysfunction, that alter dysregulated nutrient sensing.

[00:48:45] There's the 10 hallmarks of aging. And so if you look at those 10 hallmarks of aging, they're actually the root of-- every chronic disease has those involved to a certain point meaning it's all interconnected.

[00:48:58] **Dave:** Okay. Are we going to be able to fix, basically inborn problems like MTHFR? I have that. This is when your body can't process certain B vitamins. Or things like, I have an HLA DR mutation that makes me more susceptible to toxic molds than the average person, but 28% of people have that.

[00:49:16] **Adeel:** Yeah, well, with the minicircle technology, it's different from CRISPR/Cas9. Cas9 can have off targets. Minicircle is specifically like a sniper. It has one target and it can target that perfectly every time. And so you can do customized gene therapies for people who have pathways that are irregular because of their genetics. So yes, we can-- the whole vision with the company is being able to have these target gene therapies for a whole slew of conditions.

[00:49:41] **Dave:** Wow. Can you change my mitochondrial DNA too?

[00:49:49] **Adeel:** I don't know about that.

[00:49:50] **Dave:** Well, the answer is yes.  As a target, I mean, mitochondria mutates so much more than our regular cells. So they're oftentimes the cause of a problem and it can be lifestyle stuff that makes them weak, but also sometimes the mitochondrial DNA is structured, which in a way that just isn't beneficial. And there's actually studies of this where you can have a mismatch between, say, the wiring diagram for the body, which is mitochondria, and then the physical structure of the body. So if you have a body that was supposed to be a warehouse and they try to put in the wiring system from a 7/11 because your parents had mismatched physical DNA and

mitochondrial DNA, then it creates a systemic weakness. So there's no reason we can't go in and say, you know what, that DNA needs an upgrade and then do that.

[00:50:37] **Adeel:** Yeah, no, it's theoretically possible. I have read some basic science in animal studies about using-- taking from other healthy mice, and they can take mitochondrial and infuse them into the other-- the unhealthy person to treat mitochondrial disorders, and people who have issues, and so many people have mitochondrial dysfunction.

[00:50:55] **Dave:** My data says 48% of people under age 40 have it, and everyone over age 40, they just call it aging.

[00:51:02] **Adeel:** Exactly. The cool thing about intravenous stem cells, and one of the reasons the concept still, I mean, even with the first generation, they're useful, but the second generation will be a lot more useful because they can stick around longer, is because they're pleiotropic, which means they have multiple cellular effects, unlike a lot of pharmaceuticals, which are designed to just do one target, but that's not how the aging process works.

[00:51:23] And that's why I don't think a lot of people are saying, oh, maybe one day we'll have a pill for aging. Or one day we'll have a pill for exercise. That's what they're trying to do-- exercise mimetics. They're trying to make a pill--

[00:51:32] **Dave:** Those do exist.

[00:51:33] **Adeel:** Yeah, but they don't actually have all the multiple-- because exercise has dozens of effects on a cellular level.

[00:51:39] **Dave:** Yeah. You're not going to get changes in your fascia planes and functional movement and all that. But GW-501516 is a peptide. Actually, is it technically a peptide? I think it's actually a drug-like molecule. But that's something that I've used for years, also in the big longevity book, and it increases the number of mitochondria and the efficiency of mitochondria, and it raises PGC 1 alpha the same as nicotine does. So those are exercise mimetics, but you only get some benefits of the exercise mimetics.

[00:52:07] **Adeel:** Exactly. MOTS-c is another one that I've used with some of my professional athletes, like hockey players, football players.

[00:52:13] **Dave:** I never noticed anything from that. Do you like it?

[00:52:15] **Adeel:** Did you do a high enough dose? Because to really get that effective, most people are only doing like two and a half milligrams a couple of times a week. What we found is you actually have to do five milligrams every day.

[00:52:25] **Dave:** Oh, I didn't do that.

[00:52:26] **Adeel:** Yeah. And then you have to do that for 30 days, and then you can slowly go every other day, and then find your dose.

[00:52:32] **Dave:** It's going to cost thousands of dollars.

[00:52:34] **Adeel:** I got a guy who can make us big vials.

[00:52:36] **Dave:** Nice. Yeah.

[00:52:38] **Adeel:** Because that's the only way to do it. And that's the problem. I think peptides in general, a lot of them that are being underdosed, because there's different dosages for anti-aging versus actual healing and regeneration or performance. So anti-aging, dosing is usually lower than what you need for healing and regeneration. TB5, TB4, Thymosin Beta 4 is a perfect example. A lot of people know about that one. For chronic pain, I've used it for patients to help heal and get rid of their chronic pain, but you have to do two milligrams, which most people are only doing 600 micrograms a day, if that.

[00:53:08] **Dave:** Okay, so there's maybe some updates for dosing. I don't think anyone right now, and I've had a lot of peptide experts on the show, anyone's done enough research, or I would say all of us haven't done enough research to know the ideal dosing for a specific person for a specific condition that's cutting-edge stuff.

[00:53:24] **Adeel:** And that's where I think the data component to this is going to be so important, is like the patient registries and the data that we're all gathering and being able to eventually apply machine learning to that because then we can actually say, hey, this is enough data to be the equivalent of a high level RCT because we have so much real-world evidence.

[00:53:40] Dave: Yeah. That was one of the original goals with biohacking. It was to say, when we have enough data from enough people, some regulatory agency or pharmaceutical company can just lie. And then we'd say, well, here's 10 million people who just pointed it out your lie with all of their data, and you can't really fight that. I'm doing the same thing at Upgrade Labs,

my franchise for that. We're getting the data, medical grade data from everyone who comes in, and then we're having them do all of our interventions that are customized for what they want to do.

[00:54:09] And then we're putting it into machine learning so that we can say, oh, you know what? You should take three pounds off that or do two more minutes of that. And you get better and better results over time, because there shouldn't be any wishful thinking. It just has to be data-driven.

[00:54:21] **Adeel:** It has to be, especially in this field where right now it's still like the wild, wild West, because unfortunately, you have to do it in a lot of areas where the regulation is not as strict that also opens up for practitioners who aren't necessarily trying to do best practices, and they're just trying to delve into this world.

[00:54:35] **Dave:** There are a lot of stem cell doctors out there who have taken one week of training.

[00:54:41] **Adeel:** Literally. Chiropractors, naturopaths, I'm sorry, but they just should not be doing stem cells.

[00:54:47] Dave: I don't think I can support that. There is definitely an elitism from UMDs, and I was married to one for many years. It depends on their training. I've worked with one guy who's a chiropractor in Park City who has more experience than almost anyone in stem cells. And trained all over the world. Look at the training. That's the most important thing.

[00:55:06] **Adeel:** No, that's true. I agree that the training is the most important, but for stem cells, because what I do is interventional-based, a chiropractor cannot inject the way we can inject, unless he's done a fellowship training. You have to go to an academic institution to get that type of training.

A chiropractor shouldn't be injecting stem cells into a pancreas, or injecting stem cells into a shoulder where it has to be precisely delivered.

[00:55:30] **Dave:** It depends on the training. I mean, I've had some really good joint injections from people who don't officially have an MD, but have another medical, but--

[00:55:36] **Adeel:** Wait till you experience it with us.

[00:55:39] **Dave:** I'm open to it. The notion though-- you might not like this. A lot of medical doctors who, listen, sorry, friends. Some of the regulation around medicine is job protectionism. Why you need a permission slip that costs 250 bucks to get a doctor's appointment to go get a refill on your prescriptions? That is not okay. So some of that's built in, and I like to see a large amount of training and experience before anyone's going to inject me. And yeah, if I was going for my organs, I think you want someone who's an MD, because that's what they're trained in.

[00:56:10] **Adeel:** No, exactly. And that's where, I think, understanding stem cells and talking about them, you're right. If you have enough experience, and you've done the right training, but I think the interventional application of them can only be done a physician.

[00:56:21] **Dave:** Yeah, when it's an intervention that's going deep, the IV stuff. I've also seen one physician, up in Seattle who had a week of training and rebranded, and I was appalled. It's like, oh my God, thank God that was only IV. And yeah, they--

[00:56:36] **Adeel:** There's a guy in Utah, he did the stem cell makeover, that guy, and he's, notoriously-- just went to Columbia for like a week and just says now he's an expert in stem cells. You know what mean?

[00:56:47] **Dave:** Dude, that is actually not the case. I've written about him in my books. He did a lot more than a week in Columbia. He studied for a long time down there. I would say I've had really good results from his work. And I also liked that he was using my stem cells instead of umbilicals.

[00:57:02] **Adeel:** Right, yeah.

[00:57:04] **Dave:** So you go back eight years, there was no one doing it. So he went out, he learned in other countries, and then came back, but it wasn't a week, man. It was a long time.

[00:57:14] **Adeel:** Fair enough. I think medical doctors, we definitely have a little bit of bias towards people who are not medical doctors, and that's where it becomes tricky. It's like, how do we create a regulatory framework that says, okay, this guy's vetted, and this guy actually knows what he's talking about versus a guy who's down the street who, just saying, did a weekend course and just wants to offer it.

[00:57:32] **Dave:** Is it an issue if people just want to go get intravenous stem cells?

[00:57:35] **Adeel:** It can be because stem cell manufacturing, it's its own science now. So basically, if you don't grow the stem cells properly, which means the culture and expansion process, they can actually become senescent. And if it becomes senescent, that means they don't survive, and they actually cause inflammation.

[00:57:48] Dave: A lot of times, they're just dead stem cells that you're getting.

[00:57:50] **Adeel:** Exactly. And so if you're not actually having good cell viability, and the proper manufacturing process, what are you actually putting in your body? And so the stem cell manufacturing, there's something called passages, which are basically, the number of flasks that you change from to grow those stem. And if you do too many passages-- between four or six is probably the sweet spot. But a lot of companies in South America are doing 10, 12 passages.

And so you're just increasing that risk of senescence. And now, because the science is becoming so much more clear, we're understanding that if we grow it, for example, in a hydrogel using biomaterials, then they can actually protect the stem cells from the immune system, allowing them to stay in longer.

And then now we're talking about the genetic stuff. So basically, there's ways to enhance what the stem cells need to do. You can even use nanoparticles like zinc, for example, in a culture medium, and that zinc can increase the immunomodulatory function of mesenchymal cells.

[00:58:41] **Dave:** Wow. So you're figuring out how to grow them more efficiently. Let me understand. With your stem cells, the ones you're doing, where did they come from? Their umbilicals originally, right?

[00:58:50] **Adeel:** The original ones. Yeah. The generation one are umbilical core stem cells, but we work with our manufacturer to optimize the process. So not just the manufacturing, the culture medium, and the selection donors, and all that stuff.

[00:59:02] **Dave:** So it's very different than what most people in America get if you just go to a random place. Stem cells directly taken from several different people's umbilical cords, and then they hopefully refrigerate it all and all that, and then they inject it and they test it for some diseases, what you're doing is you're saying we have one set of cells that we got, and then you're

treating them very specially, and you're growing them over and over again. But after six passes, do you stop growing them and get fresh ones? Is how it works?

[00:59:30] **Adeel:** Yeah. For the umbilical cord stem cells. But the iPSC cells, we have what's called an immortal cell line.

[00:59:34] **Dave:** That's what I was thinking. Those are the ones I want.

[00:59:36] **Adeel:** Yeah, exactly. So the immortal cell line is really cool because it's just one donor. We're talking about a poop donor, super donor. And that one's exactly like you said, you have thousands of data sets from that one cell line.

[00:59:49] **Dave:** Yeah. That, I think, is a future. That was what I was predicting. I'm like, someday I'm going to do this. I thought I was going to have to go to Thailand or somewhere to get it done.

[00:59:56] **Adeel:** It's amazing that you predicted that because I think that obviously says you're able to see well into the future, and that's where medicine's headed.

And that's why I think in 20 years, we'll have nano-engineered, gene-edited stem cells precisely designed for your body to target exactly what we want, whatever cellular pathway we want.

[01:00:13] Dave: If you were a bad actor, say one who would release mosquitoes that had gene-edited stuff in them, or you were trying to make potatoes grow certain peptides so people would have to eat them, even if they didn't want to, how would you misuse this technology?

[01:00:39] **Adeel:** I always think about how it can help and heal people, so I never think about the bads or harms of it. But obviously, there's applications that you can use to do harm too. But to me, I'm always focusing on the healing.

[01:00:53] **Dave:** So that is something that I did in my 30s as well. So the creation of the web as we know it, I was at a company that was at the very center of all that, a data center company called Exodus Communications, and I was teaching engineers how to do this, I'm like, this is going to make information widely accessible, this is going to be a platform for freedom, and it's going to democratize everything, and I did not think other than from what will black hat hackers stealing money do?

[01:01:21] I did not think that they would use it to build a surveillance framework to control everything that you do and that they would use it for oppression and they would use it to spy on journalists and all these things. So I've learned as I age and I as I gain wisdom that you always look at how would a bad actor misuse what I create so I can build defenses.

[01:01:44] **Adeel:** I think the worst case scenario is that we give up to the pharmaceutical companies. We just let them buy us out and then they shelve it.

[01:01:50] **Dave:** Oh, they've done that dozens of times.

[01:01:52] **Adeel:** They have. They did that with electric vehicles in the '80s and '90s as well. GM had electric vehicles and they just took, I forgot the car name exactly, but they just shelved the whole thing.

[01:01:59] **Dave:** Wasn't it a Volt?

[01:02:01] **Adeel:** Yeah. Chevy Volt. And then that's why Tesla had to become-- I mean, Tesla's whole story. We talked about this a bit, but I find it really fascinating because I think it's similar to what's going to happen with this whole cell and gene therapy revolution, which is that Tesla was suppressed from 2010 to 2020 because the big oil companies they want them to take off and because they were disrupting an entire industry.

[01:02:23] And we're talking hundreds of billions trillion dollar industry just like this cell and gene therapy can disrupt trillion dollar industry. So anytime that happens, you're going to get natural suppression of the bad players who don't want this to take off. And their only strategy to really prevent this from taking off is buying or acquiring these companies and then shelving them or telling them like that just-- or just basically not letting them see the day of light.

[01:02:45] **Dave:** And I'm kind of surprised that the big oil companies somewhere on earth that some bad person didn't just assassinate him. I think they didn't think he'd succeed. So they didn't do it. Otherwise they probably would.

[01:02:56] **Adeel:** Tesla was literally this close to going bankrupt.

[01:02:58] **Dave:** Yeah, that was financial assassinations, but really it's not like large companies haven't done that before is what I'm saying.

[01:03:04] **Adeel:** Right. Yeah. No, that's true. You're right. And that's the scary thing. And I think that's where a lot of this social media and the culture and the narrative around this stuff is so important because once people actually-- it's interesting because almost everyone I treat at least right now is highly, highly educated and very, very intelligent. And they're like some of the wealthiest people in the world or some of the most successful. So I always ask myself, I'm like, if these people are doing it and they're so well educated, what does that say about mainstream medicine?

[01:03:32] Because sometimes I think I'm crazy. I'm like, am I the crazy one? Because I'm going against the narrative. So that's why I'm wondering, I'm like, and then, but then it reaffirms what I'm doing is the right thing because I'm connecting with all these amazing people in their own field. Well, what determines whether you're crazy is whether or not it works.

[01:03:47] **Adeel:** And it's a simple principle to follow. Have you ever met William Davis?

[01:03:52] **Dave:** I don't think so.

[01:03:53] **Adeel:** He wrote the book The Wheat Belly.

[01:03:54] **Dave:** Oh, no. Bill Davis. Yeah. Of course, he's been on the show.

[01:03:56] **Adeel: O**kay, yeah. William is his full name.

[01:03:59] **Dave:** Yeah. I love his work.

[01:04:00] **Adeel:** Yeah, so he had this analogy, which I really liked. It's basically like, do we need to do a randomized control trial for parachutes to see if they work? Because are you going to be in the placebo group for the parachute? You have to draw a line somewhere between real world evidence and where it works and then also the importance of RCTs. And I think it's balancing between those two and saying, hey, maybe medicine doesn't have all the answers. Maybe the story that we told ourselves that high level RCTs is the only way to assess whether or not something works is not actually true. You know peptides. I think everyone knows about peptides now, but there's not really any human high level RCTs on them. But there's been done by probably millions of people at point.

[01:04:39] **Dave:** And unfortunately, because of, I'm just going to say, suppression from Big Pharma and the government, we're not getting enough data. It would be really easy if we tracked

what people were taking and what results they got, but it tends to be not for human consumption, which is stupid. I'm sorry. I get to decide what I consume. And there's stuff that's added to American food that is not for human consumption. They do it anyway, like iron filings in cereal. It's not up to anyone else.

[01:05:05] **Adeel:** Or, or yoga mats in subway

[01:05:07] **Dave:** Oh, right. Oh, it's funny. Vani Haria was just on the show. Food Babe, who pointed that one one. It's a really fascinating time because we are screwing up the environment. I mean, glyphosate is messing with all kinds of things. We've got all these endocrine disruptors. In a world where almost everyone has endocrine disruption, testosterone counts in men are down 50% across everything as we smell our air fresheners--

[01:05:33] **Adeel:** Autism rates are up.

[01:05:35] **Dave:** Right. What are you doing about that?

[01:05:37] **Adeel:** My whole philosophy about this is we have to build resilience in your body. Because the environment is only going to get worse and worse. I think it's a lost cause, unfortunately. I don't see how we can reverse--

[01:05:46] **Dave:** Oh, when you say the environment--

[01:05:48] **Adeel:** Like food, like big food, like soil depletion, the fact that, like with Monsanto and how they control a lot of the food, agricultural, that stuff is a poison.

[01:05:56] **Dave: T**he food environment's getting worse and the toxin environment.

[01:06:00] **Adeel:** And pollutants and all that stuff. And stress, anxiety, social media, all of it.

[01:06:05] **Dave:** We have to be powerful for that.

[01:06:07] **Adeel:** Our bodies have to be able to deal with it. So how do we build a resiliency in our body? We can do that with cell and gene therapy. We can give your body the resiliency that it needs to deal with whatever stressors come to it. And that's why I like even like, like we're going to do the V shot for you. Why? The V shot is basically just a vagus nerve injection using peptides that help your body to deal with stress. Increases stress resiliency.

[01:06:27] But I've also had patients who have PTSD, panic attacks cured from it. And why is that? Because your sympathetic nervous system is on fire. It's like shooting all the time. And your parasympathetic nervous system doesn't work. So you can't even relax properly when you want to relax because your body can't send those signals. Because it's dysfunctional. So we're just trying to reprogram that nervous system to reboot it to do what we want.

[01:06:46] And that's, I think, the whole philosophy. It's like rebooting the immune system, rebooting the nervous system. It's just trying to reprogram it to do what we want. And I think that's the age that we're headed in now is we're giving your body that designer cell and gene therapies and manufacturing of these technologies to do the things that we need.

[01:07:03] **Dave:** I predict that to deal with that stuff, you're going to have to upregulate our glutathione production. And all of our detox pathways need to be massively upgraded so that we can handle higher levels of pollutants. And it shouldn't be that hard to do a testosterone gene therapy because testosterone isn't just made in the testes, it's made in all of your cells by mitochondria. Can you give me a testosterone boost?

[01:07:28] **Adeel:** Yeah. Did you know that's one of our target?

[01:07:30] **Dave:** No, I didn't.

[01:07:30] **Adeel:** Oh, oh, you did? Wow. Geez. We got to hire you.

[01:07:34] **Dave:** I've listed 10 things for Mac. Some of them are new.

[01:07:39] **Adeel:** But testosterone is actually our-- it's going be our fourth product after clotho and copper peptide. And the reason is because like you said, yeah, [Inaudible] and so, because basically instead of having to inject yourself once or twice a week to keep your levels, we can just do the gene therapy and you're good for one and a half to two years.

[01:07:54] **Dave:** Wow. So I also wrote about clotho in Superhuman and it was something you couldn't get, but it's something that declines as you age. And if you have enough clotho, it's very kidney protective. And the four killers that I talk about are diabetes, cancer, heart disease, and Alzheimer's. And you start by not getting those. But then the fifth one would be kidney disease that's usually caused by high blood pressure. And clotho will fix that. Not to mention it also raises your IQ and other things. So if you can do that with gene therapy, I've been trying to, in

fact, I've been talking with a guy who's making clotho, but they can't figure out how to get it in the body. They have a beaker of it. So this is really big. And you said GHK or copper peptide, that's also in Superhuman.

[01:08:37] When people are getting young blood or plasma from young people, one of the things that's high in plasma from young people is copper peptide and it's low as you age. So for people who aren't going to do young blood, which still I know one guy's who's having really good results with it. But the original company that was doing that went out of business because they had no clinical trials at all.

[01:08:56] So what I've been doing is I've used copper peptide topically, and I also inject it on occasion. But it just raises levels for whatever a day. And what you would do with gene therapy is you would turn on production throughout the body of more copper tripeptide, assuming I'm taking enough copper for it to work.

[01:09:13] **Adeel:** Yeah, no, exactly. And because your levels do fall as you age, it's just going to restore the levels that you would want when you were younger. It's the same principle with HRT. Where do we find the HRT? Hormone Replacement Therapy. We're just trying to optimize your levels.

[01:09:29] Why are we optimizing them? Because we know as you age, because of all this stuff in the environment now too, people's levels are falling precipitously, and we're just trying to restore them back to an optimal level. And now we know, because we can measure those things, we know what the optimal level is going to be for your body.

[01:09:42] I think for some of the peptides, we still need to figure it out. We're thinking about making like a TB4 and BPC gene therapy, but I don't think we know the exact optimal levels yet. And so stuff that still needs to be figured out.

[01:09:53] **Dave:** Wow, this is game-changing stuff, although it might not be cost effective. I mean, testosterone pellets aren't that expensive-- just two injections once a week.

[01:10:00] **Adeel:** Yeah, but the beauty of this technology is, like I said, it can be done at scale and manufacturing it is not super hard and eventually we want to make this cheap.

[01:10:09] **Dave:** So you'll go to a testosterone clinic and instead--

[01:10:10] **Adeel:** No, imagine you come to a cell and gene therapy clinic and your whole body gets updated.

[01:10:16] **Dave:** Called Eterna?

[01:10:18] **Adeel:** Yes, ETERNA, yeah, exactly. That's our clinic. Imagine you come in, you get your gene edited stem cells, and you get your reprogramming of your body with all these different slew of gene therapies. And you're literally a new person walking out. And it's unbelievable because each injection is just like, you've witnessed, it's subcutaneous. It takes two minutes.

[01:10:33] **Dave:** Why does it only last for 18 months to two years?

[01:10:36] **Adeel:** That's just, the natural-- eventually the DNA strand just gets processed by your body. So it's just taken up basically.

[01:10:42] **Dave:** Got it. And why do you do it in the fat subcutaneously instead of IV?

[01:10:49] **Adeel:** Well, actually, I don't know if I know the answer to that, but that's a question for [Inaudible]

[01:10:54] **Dave:** Seems like, I'd want it everywhere in the body. Like, the vein right here, you can hit that with that same insulin syringe. I've injected GHK directly into my veins before.

[01:11:01] **Adeel:** Yeah.

[01:11:01] **Dave:** I don't think it's a good idea because you don't know what it's going to do to your plasmid.

[01:11:04] **Adeel:** I don't know what the plasmid would do if you did it systemically. Because think about it, the plasmid is just in that local piece of fat and that's where it sending your signal.

[01:11:10] **Dave:** Sending your signal.

[01:11:11] **Adeel:** Exactly, So I don't know if you necessarily want that in your whole body.

[01:11:13] **Dave:** What would happen if I just took like 10 of the shots at different parts of my body?

[01:11:18] **Adeel:** You would have-- you mean the same dose?

[01:11:20] **Dave:** Yeah, the full satin one I just did.

[01:11:24] **Adeel:** I'm not going to lie. I've done two or three now, and each time I get a bit more of a boost, yeah, it's pretty cool. But I think there's diminishing returns obviously, but the interesting thing, we've done it for chronic pain patients, for example and IBD as well, and those chronic inflammatory conditions. And what happens is those patients get amazing results for the first six weeks, and then it plateaus. And then those patients allow them go back to baseline, but then you do a second dose and then maintains it.

[01:11:49] **Adeel:** So I think there is a dose dependent effect for certain conditions like chronic inflammatory conditions. But when it comes to anti-aging longevity, one dose is sufficient because it's going to have those epigenetic alterations.

[01:11:59] **Dave:** That is so incredibly cool. I'm excited to be able to come in and just get the full pack of all of the upgrades.

[01:12:06] **Adeel:** Exactly. And then we're going to be adding to that with a microbiome upgrade too, right?

[01:12:09] **Dave:** Yeah. Let's talk about that because years ago I took pig whipworm eggs on stage at the biohacking conference. It's called helmin therapy. And you can take these, basically, parasites that can't live in the human body. They basically can't reproduce. So it's a six week thing and it modulates your immune function. And since then, fecal transplants, I've covered those over the years. The problem is no one knows who to get poop from and there's a, I think Mark Hyman and I talked about it years ago on the show. Someone in Europe was making some kind of pills you could do for this, but you've done some really cool stuff around FMT. So you're affecting the microbiome as well. Talk about that.

[01:12:51] **Adeel:** Again, my whole thing with this was like, what's the lowest hanging fruit? And to me, it was always like, how do we get the body more resilient? And it comes back to the immune system. And where is most of your immune system? It's in your gut. And so how do we make the gut more resilient and restorative? And FMT has so much good science behind it, not just in animal studies, but human data as well. And the top guy in the world, his name is Dr. Thomas Brody. He's from Australia. He's a top gastroenterologist arguably in the world. He was

the guy who H. pylori. But he also has been doing FMT for over a decade and encapsulation method. He's done it for over 12, 000 patients.

[01:13:23] **Dave:** Let me talk about what encapsulation method is for listeners. So the original fecal matter transplant is you have a friend poop in a blender, and then you blend it up, and you put it in the backdoor.

[01:13:31] **Adeel:** People do that. I've had pet. I've had IBD patients because the US doctors will not give it to them. And they have IBD. They're suffering. They have bloody diarrhea and they have to get it from their own dad or their cousin, and they have to do it themselves. It's crazy.

[01:13:43] **Dave:** It's totally crazy. And by the way, no regulatory authority in the Constitution has the ability to decide whether I put poop anywhere in my body.

[01:13:51] **Adeel:** Exactly. Why is it a drug? Why is it regulated as a drug?

[01:13:54] **Dave:** I didn't hire them to make it a drug. So it's not a drug. And if someone says this, that's because they're lying and they're power grabbing. So I have not done that because honestly I don't really know whose poop I would use. I thought about it though when my son was like six months old and never had antibiotics, super clean pregnancy.

[01:14:10] I'm like I wonder if I should try that, but I never did. So what you're doing though, encapsulation method, means that they take a poop from a stellar super donor, and then they process it somehow and put it inside, double encapsulated pills, so you take it. It doesn't make you sick.

[01:14:28] **Adeel:** Exactly. Yeah, no, there's a whole science behind it. We have a human microbiome specialist who's worked with the industry and she has her own proprietary method on not only donor selection, but on how to encapsulate and how to manufacture them so that they're going to survive and go back past the stomach into the intestines and do what they need to and reprogram the gut. And the cool part is we have--

[01:14:46] **Dave:** I got to try this.

[01:14:47] **Adeel:** Oh, for sure. I think everyone is going to want it. But we're going to have different generations too. So the first generation is just FMT for anti-aging longevity, but then eventually you can have FMTs for specific medical conditions. And so just like you have specific

cell therapies for medical conditions, you're going to have FMTs for specific medical conditions because we're understanding so much more about the different ratios of bacteria and how they play a role in different diseases.

[01:15:09] Like Parkinson's, for example, we recently discovered that there's actually gut dysbiosis and a bacteria that's linked to every case in Parkinson's.

[01:15:18] **Dave:** Wow. So you can nail Parkinson's with--

[00:15:19] **Adeel:** FMT, yeah.

[00:15:20] **Dave:** Now, what's the difference between probiotics and FMT?

[01:15:22] **Adeel:** It's like the difference between, I guess, like if we're talking stem cells, like taking stem cells from your own body versus the gene edited stem cells. So there's this magnitude of order difference in terms of magnitude of effect because a probiotic isn't going to really repopulate your gut and sustain that change. And that's the problem with a lot of probiotics. The whole point is we're introducing this good bacteria, but do they stay there?

[01:15:42] **Dave:** Some of them do. I mean, I've interviewed a couple PhD experts, where they, you see, take it for 30 days and you see it in the poop. And you see it even in your Viome test

[01:15:51] **Adeel:** Yeah, exactly. Some of them do, but not all of them and it's hard to sustain those levels and it's hard to know if you can get therapeutic benefits in everyone, right? You don't.

[01:15:58] **Dave:** It's kind of a crap.

[01:16:00] **Adeel:** Exactly. Whereas FMT-- no pun intended. Whereas with it's actually a therapeutic reprogramming of your gut. And it's a four to six month course that you're taking every day. So it's not just something you take one day. So that's why it's actually having-- and we have a team. We have a nutritious biochemist and all that stuff because you have to have the right regimen around it for it to actually sustain the benefits that you want. And so it's not just about like one and done. It's like, I think you have to really maintain to repopulate the gut.

[01:16:28] **Dave:** Interesting. I think there may be some cofactors in there too, but I've seen results from FMTs that you don't get from single strand or even mixes of probiotics. And I've seen massive results from some probiotics.

[01:16:39] **Adeel:** Yeah. I think FMT will be a huge game changer just to make it more accessible to people. Because right now, for whatever reason, they're regulating it like a drug and they're making it really inaccessible. And it can help so many people. And that's, again, the main reason I got driven into manufacturing it. It was just like, why isn't this more accessible?

[01:16:55] **Dave:** I'm still trying to imagine how you manufacture it, because you don't culture the poop. So there's, like, some, like, super pooper, and like, eat more Taco Bell.

[01:17:04] **Adeel:** Literally. No, it's an interesting process. Maybe we'll film it. We have our factory set up in Mexico now for that.

[01:17:12] **Dave:** That is cool. And so does your super pooper just live at the factory? How does this work?

[01:17:18] **Adeel:** No, they're similar to the stem cells because we have fat stem cells too. Just like how you banked your stem cells, so the donors we have for that, we're selecting from those donors because they're healthy. So we're trying to find the best donor for that. So we have our own method for doing that.

[01:17:31] **Dave:** Okay. Got it. And so then you just bank their poop. So they come there for a month and poop a lot and then they're done for that.

[01:17:36] **Adeel:** Yeah. Exactly. Well, they actually just send it.

[01:17:37] **Dave:** Oh, they just mail their poop?

[01:17:39] **Adeel:** Yeah.

[01:17:40] **Dave:** All right, guys, this is the job you want. Your whole living is pooping and mailing your poop.

[01:17:47] **Adeel:** It's literally a job. Even in the US I think there's companies that'll pay you to send your poop to them.

[01:17:52] **Dave:** Really? So, I mean, how much does being a poop donor pay?

[01:17:56] **Adeel:** I think it pays something like a, I don't know, a thousand bucks per sample or something. It's not bad.

[01:18:01] **Dave:** A thousand bucks a load? Seventh grade sense of humor for the win. It's part of my anti-aging strategy.

[01:18:07] **Adeel:** But if your poop isn't good, they won't want it.

[01:18:10] Dave: If you have the world's best poop, you can--

[01:18:15] **Adeel:** You might be a candidate.

[01:18:15] **Dave:** This is pretty much South Park happening, right?

[01:18:16] **Adeel:** Yeah, it is.

[01:18:15] **Dave:** The episode on FMTs?

[01:18:22] **Adeel:** We were going to approach Tom Brady.

[01:18:24] **Dave:** If you don't know what I'm talking about, just go to YouTube, unless it's been censored, and search South Park fecal, and you'll find one of the funniest episodes on earth. So we've talked about basically superhuman poop, we've talked about gene therapy. And you said folistatin, followed by clotho, followed by GHK, and then testosterone, which is legit. And I've talked with Mac about a bunch of other targets that are going to be awesome. There's one for cardiovascular disease I don't think was on your list. I'm all stoked. And then--

[01:18:53] **Adeel:** Which one, because I was just looking into that actually, because we have an interventional cardiologist who works with us and he does stem cell injections via angiogram into the heart for CHF and it can improve ejection fraction. But we want to do gene therapy for cardiovascular disease.

[01:19:10] **Dave:** This was a-- I'd have to find the paper. It's a long word and I don't remember what it is, but it was basically a ratio of glycine to something else. And if you could drop the other thing, or what I do is raise glycine with collagen and taking glycine, which seems to have a massive effect on outcomes for cardiovascular disease, whether it's calcified or not. So I'm thinking, okay, fix the heart with stem cells. And then do gene therapy that basically will suppress the other factors so that your glycine will be higher.

[01:19:36] **Adeel:** Yeah, because my approach to all this is that the stuff that you're doing and that you've been talking about for years is the foundation. But most people unfortunately aren't going to do that. So you're going to have to intervene. So we need advanced interventions to save these people because--

[01:19:53] **Dave:** I would like to stop taking 150 supplements a day.

[01:19:56] **Adeel:** Yeah, exactly.

[01:19:57] **Dave:** So turn it on in my cells or even in my poop. One of the probiotics I take on and off when I get around to it, it's a strain that increases glutathione production. So your gut starts making glutathione for you. And if you're a new listener, glutathione is the primary detoxing molecule in your body.

[01:20:14] **Adeel:** But I bet you if we do FMT, your glutathione detox pathways will improve. And that's the beautiful part about all this. It comes down to the root cause of, why do these pathways go away in the first place? It's because it comes back to the mediators and it comes back to the dysfunction.

[01:20:28] **Dave:** I'm really excited about this, and I want to be clear. I'm also excited about continuing to use my own stem cells that I know are compatible. Is there a path where I could send you my stem cells from my stem cell bank and just say, hey, could you tweak these guys, make them younger, make them pluripotent?

[01:20:47] **Adeel:** Yes, we can. We can do that with our minicircle technology. We can use the minicircle technology for it and put the Yamanaka factors on that too.

[01:20:53] **Dave:** Wow, so we could basically de-age my own stem cells. That's something I'm really interested in. So I'm still a fan of using my own stem cells, and I'm really excited about getting massively upgraded ones, the way you're talking about. And I'm not a fan and never have been a strong fan of umbilical cells that are not culture-expanded and tested for a long time. I think there are meaningful risks from taking random stem cells from random umbilical cords that aren't tested as well as a single one can be, and then just injecting them all willy nilly. So I'm a little concerned about that.

[01:21:25] **Adeel:** I think with vaccination too, it can cross the placenta, and then spike proteins and then-- so you don't necessarily know. Especially the ones in the US, I feel like a lot of the stem cells you're getting are going to be from vaccinated people. And you may have effects from that too. You don't necessarily know how your body will react to that.

[01:21:41] **Dave:** Could you do gene therapy that makes your body more resilient to the spike protein?

[01:21:47] **Adeel:** I guess what would be the target though?

[01:21:50] **Dave:** You'd have to target the executives of the pharma company. So that wouldn't work. I think IQ upgrade stuff. I don't know, evil downgrade. I'm not sure which one it is. I like making you uncomfortable with those statements.

[01:22:04] **Adeel:** No, no, I'm not. When I was in Dubai, one of the clinics I work with, they actually have-- they use an intravenous laser, and they put a catheter into your vein, and then they use a laser, and it basically irradiates all the spike proteins--

[01:22:13] **Dave:** Yeah, the Weber laser. I've done that one.

[01:22:16] **Adeel:** Oh yeah, for it to get rid of the spike proteins in your body?

[01:22:19] **Dave:** I hope it does.

[01:22:18] **Adeel:** Yeah, it didn't do.

[01:22:19] **Dave:** No, I did. I got COVID, so you get spike proteins post COVID, right?

[01:22:22] **Adeel:** Yeah. But you didn't get the vaccine? In Canada, they forced us to get the vaccine.

[01:22:25] **Dave:** Yeah, I know. I'm a Canadian, so yeah, of course, I was forced to comply with all the regulations against my will.

[01:22:32] **Adeel:** Yeah, but there was a lot of people who didn't want it and they had to get it. And so there is a big, I think, demand for that treatment. I still don't have it here in Canada, but my goal is to eventually get it set up probably in Mexico, because Canada probably won't allow me to do it knowing them.

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[01:22:50] **Dave:** The spike protein resilience thing?

[01:22:52] **Adeel:** Yeah, getting it out of your body. Yeah. Because they do it in Dubai, but I don't--

[01:22:55] **Dave:** With intravenous laser?

[01:22:47] **Adeel:** Yeah.

[01:22:57] **Dave**: Oh, you can do that here. I've done it in Canada and BC anyway.

[01:22:59] **Adeel:** Oh, okay.

[01:23:01] **Dave:** Yeah. So all it is, you have an IV running, and if you put a laser on it-- the laser is for illumination, so you could see what you were doing better.

[01:23:09] **Adeel:** Exactly. That's true. It's just so we can see better.

[01:23:12] **Dave:** Yeah. There, problem solved.

[01:23:16] **Adeel:** Same thing with immunotherapy. It's just to boost your immune system. It doesn't do anything else.

[01:23:18] **Dave:** Yeah. And this is something that's really important. And I'm working on a longevity venture fund right now. And what I'm suggesting is that focusing on longevity is really good because longevity is not a disease. And if you look at all the side effects of making yourself live longer, you either don't get diseases or they go away, but those are side effects because we're only working on aging. So aging is not a disease, even though there are some people in the aging field who claim it is. Let's keep it not a disease so it can't be regulated. Because it's a lot more fun to work on aging when you don't have people telling you what you're allowed to do.

[01:23:55] **Adeel:** That's an interesting perspective. I thought saying that it's a disease might be a good thing because then we can actually have treatments that may be covered by insurance companies, but then again, going down that route--

[01:24:03] **Dave:** Do you want an insurance company responsible for anything in your health?

[01:24:06] **Adeel:** I just want it to be accessible to everyone. And that's my whole idea behind this.

[01:24:09] **Dave:** Oh, so you want to get rid of insurance companies. Their job is to make everything inaccessible because it takes 10 hours on the phone to get them to give you seven cents of coverage.

[01:24:19] **Adeel:** And then the regulatory bodies can also say that, hey, if you're claiming that this can treat aging, therefore you have to go through this, this, and this hoop to get to this work.

[01:24:25] **Dave:** It's generally supportive, that's the very vague claims. I can say this. Back when I started Bulletproof, I know very well that C8 MCT oil, that there are studies out there that show that it reverses Alzheimer's disease. But I was selling a product for energy, and I've never marketed anything around Alzheimer's for that. But I know that people who decided to use that product, there's probably a meaningful number of people without Alzheimer's today because of it. So just because you know something works doesn't mean you have to say that it does that.

[01:25:03] And this is why a lot of functional medicine doctors will use off-label drugs. For me, something changed my life. When I was going to a business school I was failing out of my classes, and it turns out I had brain damage from toxic mold that Dr. Amen diagnosed. So I ended up getting modafinil.

Now, modafinil is a treatment for ADHD off-label, but it' right now the world's probably most studied pharmaceutical smart drug, and I'm a huge fan of it for most people some of the time. But to get it, they had to give me an off-label prescription because I didn't have narcolepsy. So that whole idea of on label and off label, that's all just marketing and controlling nonsense.

[01:25:44] **Adeel:** I think the perfect example, the most recent example of how pharmaceutical companies play around with this stuff is tirzepatide, or Mounjaro, the second generation of Zempig. Have you heard of it?

[01:25:55] **Dave:** Yeah, yeah.

[01:25:55] **Adeel:** And so, basically, it's the GLP 1 agonist, but it also improves insulin sensitivity. So it has that dual effect.

[01:26:00] **Dave:** It's a big one.

[01:26:01] **Adeel:** But it's a big one because insulin sensitivity, why are so many people talking about metformin? Because it improves insulin sensitivity, which helps us so many different

processes, metabolism, and prevents chronic disease and inflammation. But Mounjaro, as the brand name is in the US, it's literally just tirzepatide attached to like another molecule that doesn't do anything, but they just added the other molecule so they could patent it. And so Mounjaro costs 10 times as much as a generic tirzepatide, which you could just get from a compounding pharmacy, but it's illegal to sell that tirzepatide compounding pharmacy because it's not FDA approved.

[01:26:35] **Dave:** Yeah. There's a lot of nonsense around that stuff.

[01:26:40] **Adeel:** So it's hard for people to navigate the system. If you're a regular person and your doctor is telling you, you have to do this because this is what the FDA says and you think the FDA is like the regulator by that you have to trust, then it's hard for you to know what to do.

[01:26:52] And I get that pushback all the time because to me, the FDA is like an overprotective mother. They have maybe good intentions. But a lot of times, because of lobbyists and other parties involved, they go down the wrong path in terms of wanting to really protect and help people.

[01:27:06] **Dave:** You mean because the FDA is run entirely by pharmaceutical company executives?

[01:27:12] **Adeel:** I didn't say that.

[01:27:13] **Dave:** Am I lying? So I think anyone listening to this, or anyone alive in America today, who says, oh, I trust the FDA and CDC after the last three years, you failed the critical thinking test. Now, do I value what they say? Yeah, actually, I do. Do I like not having Listeria in my food? Yeah, I do. So there's a role for regulations. It's just gotten a little bit out of hand.

[01:27:39] **Adeel:** Exactly. And if you google "stem cells FDA", you'll see all this stuff, and that a lot of my patients get scared because of stem cells because of that, but that's--

[01:27:45] **Dave:** I had Scott Berman on the show right after he beat the FDA to say they're legal.

[01:27:49] **Adeel:** Right, yeah. In California, right?

[01:27:53] **Dave:** Yeah.

[01:27:53] **Adeel:** Yeah. That was a huge case.

[01:27:54] **Dave:** So if you're listening to this, going, that was really technical, there's a regulatory fight for your right to have control of your own biology. And there's a lot of big companies and governments and God knows what other people who think they have a right to tell you what you can and can't do with your biology. There is abundant evidence that you can remove decades from your biological age today.

[01:28:17] And I've already done it. I'm about 11 years younger than my current age. And I started out with the worst health you could possibly imagine. And I'm looking for seven, maybe nine years from this, and I'll keep doing all the other stuff.

[01:28:29] So if this is possible and someone says you can't do it, that person is your enemy. They are trying to make you age more quickly than you want to age. And if that person says, I do not recommend it. I don't think it works. Here's the reasons. And then you say, thank you. And you take it under advisement, and then you make your own decision, that's how the US is built legally. And so there are people violating the law right now when they say you can't do that. They'll never be held accountable because accountability has been removed from US. But the reality is you can become younger today. And I've done it. I'm on record saying I'm going to live to at least 180 years old. I've spent two million dollars so far doing that. I'm not like Brian Johnson who spent two million dollars in a year. I would love to be able to do that. That's outside my pay grade.

[01:29:16] **Adeel:** I don't think you need to.

[01:29:16] **Dave:** I don't think you do either.

[01:29:17] **Adeel:** He just did the follow stat last week, and so he posted about it. And we're talking to him about maybe doing the gene-edited stuff too, but it's simple. I think it's about simplifying this aging stuff to make it accessible to everyone.

[01:29:29] And like you said, the worst thing I hear all the time is my doctor just told me I'm getting old. It's like, what does that mean? I've had patients who are in their 40s or even 30s. They're just like, oh, you're getting old. It's like, I'm like 35, bro. What are you talking about?

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[01:29:42] **Dave:** It's also interesting to just ask your doctor when you're interviewing them to see if you want to partner with them on your health, what is your anti-aging strategy, doctor? And if they say, I'm eating kale, you're like, maybe they don't know what they're talking about.

[01:29:55] They're still going to be good if you have an infection maybe, or if you break your arm or something, but otherwise, your doctor should have an anti-aging strategy. If your doctor is unhealthy looking, you should say, hey, doctor, I don't want to be rude and-- you do this very respectfully, but you say, I've noticed that you're carrying a lot of extra weight, for instance.

Because I was a 300 pound guy. I've carried a lot of extra weight. I'm not talking about fat shaming here. I'm talking about just a question like, I want to work with you on my own weight, on my own health. Can you tell me what's going on with you? And I did this once when I was younger, and the doctor said, oh, if you just do what I say, it works really well. I just don't follow my own advice. And it's because you can't follow the advice to exercise all the time and starve all the time. It's impossible for humans to keep that. There are a few who do it, but they're very miserable.

[01:30:43] **Adeel:** They are. I can tell you because I treat all the fitness models and bodybuilders in the world.

[01:30:47] **Dave:** They hate their lives.

[01:30:47] **Adeel:** Most of them are not very happy people, or they're on a lot of drugs, and that has its own issues. So I think you have to create a sustainable approach that's easy and simplified. And you can do that with biohacking. To me, this is just the beginning of biohacking.

[01:31:01] **Dave:** Oh yeah, it is.

[01:31:01] **Adeel:** Because this is the real biohacking, I think, we all dreamed of, which is we're actually modulating your body to do what we want and reprogram it to an extent that we never thought we could.

[01:31:08] **Dave:** And look at the speed here. So I started the biohacking movement 12 years ago. And that's not very long for a movement like this. And the anti-aging longevity movement goes back actually to the '60s. And there's some overlap between those two now. And just in that period of time, when did you finish med school?

[01:31:27] **Adeel:** 2015.

[01:31:28] **Dave:** 2015. So look where we are just in the last eight years, what you've been able to do with this. It's phenomenal.

[01:31:33] **Adeel:** It's insane because-- and for medical doctors out there, 50% of what you learn within five years will be outdated or wrong. So if you're not rapidly keeping up with the pace of innovation, you're unfortunately going to lose respect. And a lot of my patients lose respect for their doctors because their doctors will tell them, oh, that's bullshit.

[01:31:51] It's like, well, do you even know anything about it? They don't even know anything about cell therapy. CAR T is a perfect example because CAR T is actually FDA-approved, and it's gone through all the processes, and it's been around for over 10 years. And there's still doctors out there who say there's no cell therapies that work for cancer or there's nothing you can do for this condition. But they don't even educate themselves.

[01:32:11] **Dave:** The other big thing we should talk about-- if you go to ChatGPT and you ask it a question about health, it's going to give you 10 FDA warnings by default, which is not-- why is that there? I don't know. Someone inserted that. And it's only going on historical knowledge and 80% of medical research is funded by pharmaceutical companies. So it tells you lots of things aren't possible that are documented to be possible. And I've also asked it and it says, no, you can't do that. And I said, what about this? Oh, if you use that, of course, you can it.

So you can't rely on ChatGPT especially, and you used to be able to rely on Google, but Google started censoring health information about four or five years ago. So all of my friends who had really powerful, helpful blogs, and me to some extent, we got absolutely just taken out of search results. So all you see is Medline and stuff that's basically very dumbed down, like Reader's Digest level dumb.

[01:33:06] **Adeel:** It's so generic, it's painful. It's outdated and generic. It's stuff from probably the early 2000s or maybe even '90s. And that's what they're telling as the guideline. There's just basic stuff. And people think that anything beyond those basics is-- like a lot of doctors, unfortunately, think it's quackery because I am a medical doctor, and obviously, I'm around a lot of other medical doctors. I'm trying to tread that fine line between innovation and between still being a good clinician scientist. And it's really, really difficult because to one hand, I don't want

to be called a quack from mainstream medicine. On the other hand, I want to innovate and push the field forward. So it's a really challenging thing to do.

[01:33:43] **Dave:** And here's the thing too. When someone says that you are spreading misinformation, they're saying that you're intentionally spreading a lie. And now, if you say you're lying, that means that you know that the other person knows the truth and is lying. There is actually no way for you to know unless you have evidence that they know the truth. What's going on here is there is a disagreement, and only a coward says you're lying instead of saying, well, let's talk about the facts here.

Here's the reason I think this is true. What do you think? And then we compare notes, and then we come to a conclusion, and we may say at the end of the day, we still didn't agree. That doesn't mean either one of you is a quack or lying. So anytime someone labels another person a quack, all it is is an insult, and it's 7th grade bullying tactics, and it's stupid.

And by the way, I am so proud to be listed on Quackwatch. I'm not even a doctor, and I got rated on that. It was one of the proudest days of my life. Stephen Barrett, thank you, brother. If you guys are wondering, Stephen Barrett runs Quackwatch. Every doctor I respect is on there because they did something that mattered, and Stephen Barrett has never treated a patient, and he's been sued multiple times for Quackwatch. So it's not a credible site, except I'm on it, so it me happy.

[01:34:54] **Adeel:** I wonder if I'll get on there.

[01:34:55] **Dave:** It's a badge of honor. I'd print it out and put it in my office.

[01:34:58] **Adeel:** No, but it's a real problem because I think a lot of doctors, academic doctors especially, I find, are institutionalized. They basically just see things one dimensionally, and they're like, if it doesn't fit in this box, then you must not know what you're talking about. And so it's about shifting the narrative. And I think the real world evidence approach of having patient registries and keeping track of the data is by far going to be the most powerful stuff over the next 10 years.

So I think what you're going to see is a revolution in medicine that's going to be driven by me real-world evidence as opposed to high level RCTs are done in academic institutions, and they're

not ready for this disruption and this change to happen, because medical tourism is only growing. It's not becoming less and less popular.

[01:35:36] **Dave:** That's why you send people to Mexico. Right now it is cheaper to do almost any procedure that you could get in the US. You go to another country, you can get equivalent or better care, and it'll cost you 20% as much. And you get a free trip to wherever you wanted to go.

[01:35:49] **Adeel:** And on top of that, you can do more innovative stuff, and you can do stuff that you can't do in the US, like we're building a hospital in Los Cabos, and the idea there is we're going to be able to do surgeries that are combined with regenerative therapies, so that let's say you need a shoulder surgery because you have a labrum that can't be repaired with stem cells. So you have to get arthroscopically repaired or whatever. But then at least you can apply stem cells in there intraoperatively because it'll help with the healing.

[01:36:12] **Dave:** And you'll way faster.

[01:36:13] **Adeel:** Exactly. So why can't we just do simple stuff like that in the States, It always boggles my mind. And this is stuff that's already out there. We already know there's evidence behind it. What's the harm? There's also no harm in doing this stuff. And it's safe, and it can be very effective, but yet they want to create as much regulation around it to prevent it from reaching as many people as possible. So it makes you question. It's like, are they actually interested in wanting to heal as many people? Because if they were, wouldn't things be a little bit different? That's just the question I want people to think about.

[01:36:39] **Dave:** It'd be very different. And there's also an error that you'll see in medicine a lot. I remember I had some kind of procedure. I don't remember what it was a while ago. And I asked the doctor, I said, hey, I'm going to take glutathione after this. Do you see any reason that I shouldn't do that? Glutathione just helps you recover faster. And he looks at me and goes, oh, no, you shouldn't take it. I said, why? And he said, well, there's no studies proving it's safe. And I looked at him and said, there's no studies proving lotion is safe after surgery. Are you telling me I shouldn't use lotion? And he goes, that's a good point. Okay, take it. So there doesn't have to be a study showing something is safe because we understand how it works.

[01:37:14] **Adeel:** I love how quickly he shifted. What a bad argument.

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[01:37:18] **Dave: Y**ou saw the little Apple logo go for a second or two, but it's a bad argument. So, no, there's a lot of things that'll never be tested, especially supplements. So what do they do? And is there a likely reason not to do it? And if you're saying, oh, yeah, it turns out this works by starving cells of zinc. You shouldn't take zinc. What do you take? Oh, great. Then now we know. But otherwise, you should be able to do it. And almost everything you do in your life isn't tested.

[01:37:45] **Adeel:** I'd love to talk about chronic pain a little bit because that's what I started-- I'm a sports medicine interventional pain doctor by training. And so chronic pain affects millions and millions of people, and it actually makes people depressed, and a lot of people don't realize when you have chronic pain, a lot of them are actually suicidal and they actually can lose their jobs. And the musculoskeletal chronic disease burden is actually the highest, economically global impact.

[01:38:09] And so there's a huge amount of chronic disease burden. And what do most doctors do? Pain meds. And what did pain meds do? What did Purdue Pharmacy-- what ha, like-- I'm sure a lot of people have heard about that, but with OxyContin and like the whole scandal and basically saying that it's a sixth vital sign. So basically you measure their pain and you tell them that you have to lower their pain because that's the only way you to gauge whether or not you're actually doing something. So they basically trick doctors into this whole narrative that you have to treat them with chronic pain medications. And all that did was create addictions that we're still trying to get off of after like 20 years.

[01:38:41] So we know how bad that was for society. And so I got really into chronic pain because I saw all these people suffering that basically had no hope. And I've had patients with like-- like one patient, she had arachnoiditis, which is basically a nerve condition where you get pain in both legs, and it's 10/10 pain.

[01:38:59] Imagine the worst pain in your life, like nerve pain, that's just going down all over your body and you're basically bedridden, and there's nothing they can do besides just like steroids, and they stop working. And the worst part is it happens after medical complication. It's after lumbar puncture procedure. So they do that for diagnostic testing in the hospital to test your cerebrospinal fluid.

[01:39:18] **Dave:** I've had mine punctured a few times. I put stem cells in there.

[01:39:21] **Adeel:** Okay. Yeah. So that's one reason to do it. But LP can have arachniditis as a complication. And so these people literally have no hope. I had one girl in particular who's a big influencer. And I actually went to Japan to treat her. Her name is Lily. And so she was bedridden for a year. And she couldn't do anything. And the stem cells there, they only had autologous stem cells, and that didn't help her, and so she wanted umbilical cord, and no one would do it for her.

[01:39:46] And so, I flew down, and then I did it for her, and now she can walk for three hours. She's not bedridden anymore. I mean it saved her life because she was--

[01:39:55] **Dave:** Hold on a second. That can't work, you quack.

[01:40:02] **Adeel:** Exactly.

[01:40:02] **Dave:** That didn't happen because it can't.

[01:40:04] **Adeel:** Exactly, exactly. Yeah, we gave her the follistatin as well to reduce systemic inflammation and help build back her strength. But the fact is, I've helped so many people who were just abandoned by our system and they were basically told that there's nothing for their chronic pain. And chronic pain is one of the worst things people can live with. And so many people live with it and we're able to actually get people off their pain meds and give them back their life with the interventional and all cell therapies.

[01:40:25] **Dave:** People who've never had chronic pain probably just can't conceive of it. I had chronic fatigue syndrome and fibromyalgia and I would describe it, it felt like there was a candle burning between my shoulder blades all the time. And I had that for five years straight. And you just learn to live with it and muscle through it. But it sucks so much energy and it makes you act like an asshole.

[01:40:46] **Adeel:** Exactly. It affects your mood and it affects everything. How did you get rid of that?

[01:40:49] **Dave:** Well, this whole longevity biohacking thing. So in that case, it had to do with toxic mold exposure, which is a primary cause of fibromyalgia. So I removed the mold from my environment and I treated the mold in my body and then I used binders and things to remove the fat soluble toxins. And I did more and more of that. It got better and better. A primary thing

would have been cholestyramine was very, very helpful, and also figuring out which foods are triggers.

[01:41:15] So a lot of times people have chronic pain, if you just ate red meat and salt for just two weeks and you notice a big difference, well, okay, it's something else you're eating. So then you add in a couple more foods. And for me, the primary cause of that after the mold toxins and all, it turns out I am highly sensitive to nightshade vegetables. My favorite food on earth is green chili from New Mexico because I grew up there. You give me one bite of green chili or paprika, any of that stuff, and that same one vertebra just does something bad and it hurts again.

[01:41:49] So I don't eat those foods because they don't work for me, but they might work for someone else. But if I hadn't eliminated most things, and that's what the Bulletproof Diet was, limit all but these commonly useful foods for just two weeks. And then people lose weight and they feel so much better. And then you add things back in and producing, you realize, oh, it turns out, beer and peanuts are a trigger thing for you. So maybe you don't want to eat those anymore.

[01:42:10] **Adeel:** But if you talk to a chronic pain specialist from a top institution, they'll tell you that that's all there is.

[01:42:15] **Dave:** Oh, they'll tell you that, except that it works. The other thing, and I've consulted with pain guys to help them in their practice. The other thing that's magic is you give people activated charcoal which helps to bind to toxins that cause neuroinflammation. Is you eat it and then you use red and infrared light therapy on the places that hurt, which restores structured water and restores blood flow and adds electrons. And magically, that alone works on a lot of people.

[01:42:40] **Adeel:** That's the thing, right? I believe I would really be out of a job if everyone did this stuff and the movement therapy and all the other fundamental primary stuff that we know works. But a lot of people just don't know what to do with that stuff and they don't have good guidance. And so with medicine, the biggest issue I think with chronic pain is it's very reductionistic.

[01:43:01] **Adeel:** So let's say you have chronic back pain, which is a really huge problem. You go to your pain doctor and they'll say, Oh, this facet joint is the reason you're having all your pain. So let's do a nerve block or let's do cortisone into that facet joint. But that's not how chronic

pain works. Chronic pain is mediated by some-- we know it's the immune system that's mediating all these, it's neural inflammation at a cellular level and it's mediated by your immune system. so again, we have to treat and that immune dysfunction. So a lot of times, and even structurally from a structural perspective, it's more than just like the joint that a lot of times there's chronic muscle tears. There's a disc. There's peripheral nerve entrapments.

[01:43:34] There's so many other structures that are pain generators. The whole approach of this reductionistic view of medicine is what we're taught. That's how we're trained. On a multiple choice test, it's like, you have to circle one answer. And so you're always taught to train in this one dimensional way, but that's just not how the human body works when it comes to chronic issues.

[01:43:51] When it comes to acute care, like you were saying, you have a fracture, you need that fracture fixed. That's different. But when it comes to these chronic issues, they're so much more complicated. And there's, what I call multi-- it's like multimodal health. You have to look at all the different cellular pathways and how do we target them to actually treat the condition.

[01:44:05] **Dave:** There's so much really cool stuff when you work with an expert like you where people are literally trapped for 10 or 20 years and it's one treatment or two treatments and all of a sudden it's like you sat down this huge backpack of rocks you were carrying all the time.

[01:44:20] The sense of relief is really palpable. By the way, guys, Daveasprey.com/genetherapy. I'll put all the links to this stuff in there and Adeel said he'll put you to the front of the line if you want to come in through there.

[01:44:30] **Adeel:** Well, especially if you're suffering from chronic pain, I mean, I think I have to tell a story about Dubai guy because that to me is like a perfect. It doesn't matter who you are in the world. So for those who don't know the Middle East, he is a guy who had the vision for Dubai. I think a lot of people know Dubai as one of the greatest cities in the world. His name is Mohamed Alabbar. He's the owner of Emaar, which is basically the six tallest buildings in the world, including Burj Khalifa, which is the tallest building in the world. And so this guy, he basically had that vision.

[01:44:58] He's one of the richest businessmen in the Middle East. His friends are all the royal families. And despite access to whatever doctor in the world he wants, he had this shoulder issue

for 20 years. And they basically just told him to do-- he had cortisone, didn't work. He tried physiotherapy. And then they told him the MRI was normal. So he's just living with this chronic pain, doing physio once a week for years and years.

[01:45:16] **Dave:** Wow. I guess he's okay with you talking about him on Instagram.

[01:45:19] **Adeel:** Yeah, we have a picture together on Instagram. So that was actually my big moment where a lot of people in the world saw that I was treating him, and especially in the Middle East, he's hugely influential.

[01:45:33] But basically, he flew me down to come check him out and we scanned his shoulder with an ultrasound and we found small tears that were missed on MRI and we're able to fix them with regenerative procedures like PRP and stem cells.

[01:45:41] It's such an easy fix. But it's just like the fact that this man who's one of the most powerful men in the Middle East and probably in the world is couldn't get a problem like that fixed, it sucks for chronic pain patients because there's so many of them who just don't know their solutions out there for them.

[01:45:56] **Dave:** It's a brave new world of cell therapies right now. And I think you're absolutely leading the way. And I don't think I'm overstating it, calling you the Elon Musk of cell therapies, as I think listeners just figured out. And so I know we're probably way over time on this interview. But if you'd like to know more about Adeel Khan's work, there's a lot of it. I agreed to just make an information page, so Daveasprey.com/genetherapy. And just go there and I'll put some codes in there to make sure that you get to the front of the line and I'll probably throw a little discount in, right?

[01:46:32] **Adeel:** Yeah, for sure.

[01:46:31] **Dave:** But again, some of this, actually almost all this stuff is expensive now. And I don't want you to go there and say, what the hell? This is only for rich people. I'm just going to tell you, this is the first time on earth it's happening and the costs on this are going to get better and better and better.

[01:46:49] And you need to know it exists because, well, you should be putting pressure on your insurance company and on your legislators if you still believe that voting changes things and so I

did there. But what you want to do though is increase demand for things that actually work because if we were doing a hundred million shots a year of this stuff, it wouldn't be very expensive.

[01:47:15] **Adeel:** No, exactly. And that's the vision of this, is that we want these gene therapies and cell therapies to be accessible to everyone, to keep your body strong and resilient to whatever stressors you deal with in life.

[01:47:26] **Dave:** All right. That's what to do. And I'm coming back the second you have the system ready to do hair and reproductive--

[01:47:34] **Adeel:** And FMT.

[01:47:34] **Dave:** And FMT. So we'll actually shoot me doing that live if you're okay with that. All right, well, maybe not live. We'll shoot it and then we'll edit it. So camera drops, YouTube vlogs, you know how it is.

[01:47:44] **Adeel:** Yeah. I mean, I think cloning hair stem cells alone will be a huge thing.

[01:47:51] Dave: I can't wait. That'll be fun. In fact, I'm like a widow's peak that comes down to here.

[01:47:54] **Adeel:** You can have whatever you want. We can draw whatever hairline you want.

[01:47:57] **Dave:** That's so cool. Awesome. Adeel, thanks for, uh, being, disruptive in the medical field. And I love it that you're not just doing one thing. You're doing multiple things and you're just getting down into the fabric of biology so we can make it do what we want. This is new, it's innovative, and it's so cool.

[01:48:13] **Adeel:** Thank you. No, it's going to be like you said brave, new world. the next 20 years are going to be of completely different landscape in medicine.

[01:48:16] **Dave:** Nice. Guys, thanks for listening. This has been so much fun. And if you're interested in living a very, very long time, there are lots of us out there working on making this a reality. There are venture funds focused just on longevity right now that exist. I'm working on one as well. Upgrade Labs, my company there, is working on longevity protocols where we can show you what to do with interventions that don't even require injections.

[01:48:45] And I am working on being a resource for you to learn about the newest stuff. And I'll put together lists of various things you can do. What I'm not going to do for you, though, is tell you everything that I take so you can do it yourself, because the odds are you are not a six foot four, now 7% body fat guy with a massive history of autoimmunity.

[01:49:10] So if you do what I do, you're not going to get my results. You have to do what you do. So I will teach you. Here's why you do this intervention. Here's why you do this supplement. And then you say, Oh, that why matches my goals and matches my current state. That one sounds good. This one doesn't. But just doing what someone else does isn't what works. I wish it was because at that point I would just email you everything. See you on the next episode.