

EPISODE 815

#1 Regenerative Medicine Doctor Reveals How to Live Longer & Healthier

With Guest Dr. Robert Hariri

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SHAWN STEVENSON: The human body has an amazing capacity to heal, regenerate, and defend off disease, but something is happening in our modern world that's literally siphoning away our power to regenerate, our ability to fend off chronic and infectious diseases. On this powerful episode, we're gonna be unpacking. What's happening in our world today, that's a literally making people older, faster. Plus, we're going to be talking with one of the world's leading authorities on regenerative medicine and find out how to unlock our true capacity for a long healthy and functional life. Now, in our conversation today, you're going to be hearing a lot about stem cells. And if I were to consolidate what stem cells are basically the seed cells that sprout and become anything that our bodies need.

If you need to make some new bone, if you need to make some new muscle tissue, if you need to make some new brain tissue. Every single cell in our bodies come from the root, the seeds of stem cells. And so we need stem cells to become whatever our bodies need to regenerate. And so obviously they're some of the most important things in our reality. Today, you're going to be hearing a lot about different lifestyle factors that affect our stem cell production, mobilization, and utilization by our bodies. But I want you to keep in mind that our nutrition plays an important part of this as well, because whether it's carrying out the programs and the downstream effects of building these new tissues, which we need our nutrition to do, because our food, our nutrition literally makes up all the cells of our bodies, or whether it's enacting and inciting the production and mobilization of stem cells themselves.

Certain nutrients have been found to be exceptional in this capacity. For example, a study that was published in PLOS One titled Spirulina promotes stem cell genesis and protects against lipopolysaccharide induced declines in neural stem cell proliferation. Now, obviously that's a mouthful, but what this study is indicating is that spirulina, this largely ancient food that is still utilized today, it's been utilized for thousands of years. The most protein dense source of nutrition ever discovered has certain compounds that literally promote the creation of new stem cells. Now that's something that Cinnamon Toast Crunch simply can't do. Alright, Pop Tarts can't do that. Doritos can't do that. Spirulina can. It has these rare nutrients, like phycocyanin, for example, that have this capacity.

It's also very rich in all these different antioxidants and very mineral dense as well. So, it's a really remarkable nutrition source. Couple that with another powerful, super green, superfood algae, like chlorella. Chlorella contains lutein and zeaxanthin. Now, these are two carotenoids that have been proven to protect the body against things like macular degeneration and a double blind placebo controlled study published in clinical and experimental hypertension found that Chlorella was able to normalize blood pressure of all test subjects with hypertension. Really remarkable stuff.

There's a resonance here with these super algae. Now, here's the thing: they're algae. That's weird. In our culture today, it's weird. You don't roll up to the drive thru window and say, let me get that. Let me get that double order of algae. We don't do that supersize my algae. We don't do that, but getting these in a form that is easy to utilize. That's a more graceful on ramp for people to be able to use them is a much better idea. And that's what the folks at Organifi have done with their green juice blend. Not only does it contain spirulina and chlorella, but it also contains other adaptogens and certain nutritious sources that make it taste good as well.

So it has this really refreshing experience when you have it. So yes, it is a powerhouse source of nutrition, but it also passes the taste tests and the experience of having something that's really nutritious for our bodies. Head over to Organifi.com/model, and you're going to get 20 percent off their amazing green juice blend. All organic, no binders, no fillers, no nonsense, just the very best nutrition that you're going to find. Very easy to use. They also have great travel packs as well. If you're on the road to just keep these in, in your book bag, in your purse, that kind of thing. When you're out and about to get that super concentrate of these incredible nutrients. That's Organifi.com/model. ORGANIFI.com/model for 20 percent off. And now let's get to the Apple podcast review of the week.

ITUNES REVIEW: Another five star review titled "best health podcast available" by once liked. Shawn Stevenson is legit. The health and wellness content he provides is well researched and his advice not only comes from true science, but it comes from the heart. If you listen to Shawn for a while, you'll come to know that he really cares about your wellbeing. His guests are top notch and his message is uplifting. I sometimes find myself laughing out loud. So if

you're looking for a fun, informative, heartfelt podcast that can literally change your life, look no further. Congratulations on 800 shows, Shawn! Wow! What an achievement. Lastly, thank you for pouring your heart and soul into the rest of humanity. Love you, man.

SHAWN STEVENSON: Oh, I love you too. That's so amazing. Thank you so much for sharing that over on Apple podcast. That really did hit my heart. I really do appreciate that. And without further ado, let's get to our special guest and topic of the day.

Dr. Bob Hariri is an accomplished surgeon, biomedical scientist, and serial entrepreneur in two technology sectors, biomedicine and aerospace, and he's a coauthor of the number one New York Times bestselling book, Life Force. He's also the chairperson, founder, and CEO of Cellularity Inc., one of the world's leading human cellular therapeutics companies. Dr. Hariri pioneered the use of stem cells to treat a range of life threatening human diseases. And continues today to make transformative contributions in the fields of immuno oncology and cell therapeutics, along with tissue engineering and functional regeneration. This is a powerful conversation. Let's dive into this interview with the amazing Dr. Bob Hariri. All right. Bob, so happy to see you.

DR. ROBERT HARIRI: Shawn, great to see you again. Thank you so much for having me.

SHAWN STEVENSON: Of course, it's my honor. Truly my honor. I was telling my son about you actually on a walk yesterday, how amazing you are.

DR. ROBERT HARIRI: Listen, it's always a treat to come see you, but more importantly, you set the standard for guys like me, your relationship with your kids and everything.

SHAWN STEVENSON: Yeah, I received that. Thank you. I want to start off by talking about one of the things that you're really helping to enlighten the public about is our regenerative capabilities and also innovations that dramatically increase our capacity to regenerate. But I want to start off by talking about what is going on in our lives for the average person that's burning through, that's shortening our ability to regenerate, that's burning through that capacity faster.

DR. ROBERT HARIRI: That is such a great question because people don't often recognize. We have resident in our bodies this natural repair kit in the form of stem cells, which take up residence in every tissue, every organ of our body, literally from birth and serve as a reservoir that we call upon to rebuild, and renovate and renew our lungs, our brains our hearts throughout our lifetime. And if you keep that reservoir in good shape, you can live a very long, productive life where everything stays at the optimal level of functionality and efficiency and so on. But you hit on the, you hit the nail on the head. What are we doing that's burning through that reservoir, damaging that toolkit?

And so, you and I talk about this, we obviously worry a lot about the environmental exposures we have that can have subtle but long lasting effects on the quality of that population of renewable cells, right? And even things that we're learning today, toxic exposure to chemicals like plastics, toxic exposure to ionizing radiation, exposure to viruses. Coming out of the pandemic, we recognize that viruses can leave a long lasting effect on cells by damaging the DNA in cells. And so, right now, a big focus that I have is better understanding, number one, are there ways to preserve that reservoir, that stem cell reserve, if you will. And one of the obvious ways is that if you collect them early enough, before the damage has been inflicted, can they establish a supply depot that you can call upon later in life to renew the quality of your cells in your body. And I think that's clearly the case. We've been doing it for kids for 35 years now. We can now begin to do it for adults. It's one of the things we're beginning to offer, adult cell banking.

But more importantly, we're beginning to have the tools now to assay the quality of your cells. We can measure, for example, the biological age of your cells. There's something called DNA methylation, which is a marker of how much damage your cells have been subjected to that may that age them. And so from where I'm sitting today the future's bright, but we have to focus our attention on preserving the quality of that renewable population of cells which rebuilds and renovates us. And we have to create technologies that allow us to deploy them as we live our lives. So imagine a day where today, I collect some of your cells, 10 years from now, those cells are better than your cells then. And I can simply recharge you with a dose of your younger cells. That's where the field is moving.

SHAWN STEVENSON: Oh, that's scary good. I love that. So I've got a question. Just thinking about this biological age versus our chronological age, it got me thinking, can different parts of our bodies be different ages, essentially, we might look healthy on the outside. Maybe we look very youthful on the outside, but we have a very old brain.

DR. ROBERT HARIRI: It's another great question. We still are trying to figure out how to best measure biological age, but not in the entire individual, but even in subtle areas of your body, like you said, the brain. Listen, we're all watching what's happening in the news. Our president has clearly declined over the last four years. And that's not, he's not immune. We're not immune to that same thing. That is a biological accumulation of damage that's occurring from lots of things we just talked about. So the bottom line is, you may be able to preserve the quality of your muscle tissue, you may be, because you exercise and you eat right and so on. But the subtle changes that occur to your heart, brain, your liver, exposure to things like alcohol, all those things will take their toll, and you may in fact be biologically much older in parts of your body than you are in general in your entire body. We have our friend, Brian Johnson, who has been working feverishly on finding ways to slow arrest or reverse the aging process, but he's doing it in a systematic way, but he's seeing differences in the different tissues of his body. So it is an issue to get to consider.

SHAWN STEVENSON: Awesome. Awesome. Now you just mentioned this process essentially damaging our regenerative capacity, and you just said the A word. You said alcohol.

DR. ROBERT HARIRI: Yeah.

SHAWN STEVENSON: All right. So again you being an expert on human physiology. Is this something for us to be more mindful of we're looking at maintaining healthy regenerative capacity as we age?

DR. ROBERT HARIRI: Alcoholism is one of those easy targets because there's no doubt that people understand it is part of our society. We use it as a social lubricant, right? A lot of people are very dependent on it for stress relief, but there's no doubt that the long term consequences of alcohol use, and listen, I'm, I will be the first to admit. It's very tough to pass

on that cocktail after a hard day's work, but, all the evidence indicates that chronic exposure exceeds your body's ability to metabolize and eliminate the alcohol from your system.

And it does create a chronic inflammatory process, which damages us. Now look, the way I think about it there was a time when moderate alcohol consumption was considered to be cardio protective. Remember a glass of red wine, a glass or two of red wine was a good thing. And by the way, alcohol does have some metabolic effects on lipids and soluble, solubilizing certain chemicals in the body that might have some benefits. But the bottom line is like a Benjamin Franklin always said, "everything in moderation is a good tenant to pursue". And until the jury is completely out. I would say that you limiting alcohol consumption is going to be protective more than it'll be detrimental.

SHAWN STEVENSON: Okay. Got it. Got it. Now, let's stay in this lane of beverages that affect our health. What about, this is pretty obvious, just to get your perspective since you're here. What about these highly dense sources of sugar in the form of things like soda and sweet tea was my favorite growing up. What about these things when looking at the impact on our potential to regenerate?

DR. ROBERT HARIRI: Listen, there's no doubt that glucose is a toxin. It's a very potent toxin. Everything is telling us that chronic Overexposure to glucose does many things, which will ultimately limit your lifespan and clearly have detrimental effects on your health. The best evidence that I've ever seen indicates that lack of glucose control and chronic stimulation of your pancreas to address high glucose loads is about as bad for your body as anything we can think of.

Glucose is extremely damaging to the cardiovascular system. It is clearly a fuel for the bad cells in our body. As an example, cancer is addicted to glucose. And so, part of the problem when you've got a patient with any type of serious malignant disease is that just trying to keep them nourished will often have us substituting low quality, high caloric foods because we're, the average cancer patient's losing weight, right? And so what do we do? We put them on these oral supplements, these nutritional supplements that are just glucose shakes, basically. And that is really not good for you. I can tell you that in addition to cancer being

addicted to glucose, the effect of glucose on the key part of your immune system that is your best defense against disease, the natural killer cell is clearly an issue. High levels of glucose impair the functionality of your NK, your natural killer cells. Which means, you can't fight viral infection, you can't fight cancer, and most importantly, you can't clear the senescent cells in your body, which you need to prune in order to maintain your health.

SHAWN STEVENSON: You think about just to put this into a nice gift wrapped concept, insulin resistance is an epidemic in our society today, and it really is an accelerated aging condition. We're looking at the advanced glycation end products, right? The acronym ages, right? And if we're thinking about something that's opposite of regeneration, it would be kicking ourselves into insulin resistance.

DR. ROBERT HARIRI: We now recognize that diabetes and metabolic syndrome are the bane of the medical profession. They're responsible for more expensive chronic diseases than anything else we know of. The problem is that in the fast paced world we live in, people are choosing to take shortcuts, and those shortcuts drive you towards low quality, high caloric food, usually grain based. And remember, when we grew up. The even regulatory and government agencies were professing that our diet should be predominantly complex carbohydrates. We know now that was a big mistake. The problem is that complex carbohydrates, the way they're made in the agricultural world, are inexpensive. They can be made in enormous scale, and they can be basically put into any of the finished products that we'll find in fast food, off the shelf, quick to dispense types of things.

The days when we were really advising families to give their kids a good cereal breakfast rather than bacon and eggs was a big mistake, right? So, I'm very concerned that we put ourselves at the edge of the cliff. The way back from the edge of the cliff, obviously, is paying attention to nutrition, following the advice of experts like yourself, but also, insisting that companies invest in technologies to help control out of control blood glucose. What's the, one of the hottest topics right now, all these GLP ones, the semi glutides, right?

These were designed as diabetes medications in order to address out of control blood sugar. And you know that the benefits of weight loss in, and by the way there's going to be

publications, additional publications, indicating that semi glutides actually reduce cardiovascular risk, and I would not be surprised if we're going to find that long term, they actually even reduce cancer risk. So there's light at the end of the tunnel. We need to break our dependence on pharmaceuticals to do that, and get more into focusing on quality nutrition.

SHAWN STEVENSON: Yeah, it's just increasingly difficult in our society, we're just inundated with this stuff and we don't really realize it's like a fish being in. And so with this being said, I want to shift the conversation a little bit to, this term that you used a little bit earlier, senescent cells. And being able to understand that process a little bit and why that matters, the Hayflick limit and all that stuff. Can you unpack that for us? Like normal cell replication and eventually the death of ourselves.

DR. ROBERT HARIRI: So sitting here right now, you have 25 to 30 trillion cells. Every one of those cells originated from that initial totipotent stem cell that's created at the instant of fertilization. And that totipotent stem cell divides, gives rise to progeny that eventually mature and specialize into every cell of our body. Some will go down the pathway of becoming a brain cell, some will go down the pathway of becoming a heart cell, a bone cell, etc. That specialization process goes on over and over during our lifetime. So from one cell to 25 to 30 trillion cells in our bodies, which are being turned over at a fairly aggressive rate.

In our lifetime, we may make a thousand trillion cells in our lifetime, all from that original single cell. What's interesting is in the process of maturing, these cells undergo a series of, you pointed out, the Hayflick limit, a series of cell divisions that have a finite limit. They have a finite limit. At some point, when cells use up their capacity to divide and they cease dividing, they take on a phenotype called a senescent phenotype. Now what a senescent cell is it no longer can contribute to renewing and renovating the tissue. It takes up space, which is a big problem, and it takes on what's called a senescence associated secretory phenotype, S A S P, SASP.

The SASP phenotype is associated with the release of very toxic, pro inflammatory, and in some cases, cancer causing mediators. Those chemicals are really bad for you. And so

eliminating senescent cells is essential to maintaining your health and your ability to respond to injury, disease, and so on. So I've gotten, for the last several years, very focused on using tools, natural tools to eliminate senescent cells. I mentioned this cell type a minute ago called the NK, the natural killer cell. For people to understand, your immune system is complicated. It has lots of different actors in it. One of the most important actors is part of what we call the innate immune systems. You have two parts of your immune system, innate, which is pre-programmed and adaptive, which learns as it goes.

Your innate immune system is there to defend you against the most common threats to survival. Viral infections, cancer cells, fungal infections, and most importantly, the accumulation of senescent cells. What's interesting is the biologic mechanism by which NK cells clear all those out is the same mechanism. It turns out that cancer cells virally infected cells and senescent cells all express on their surface a molecule type called a stress ligand. And what that simply means is it's a red flag that's basically inserted on the surface of the cell, which identifies it as abnormal. NK cells follow that tracking and specifically go and target and destroy those senescent cells.

For us, because NK cells are now part of the cellular medicine portfolio, we're actively investigating how to boost your NK function by giving you more natural killer cells to augment that innate system that's there to protect you. But here's something that's and it's relevant. We now know that a defect or a deficiency in your NK cells put you at risk for lots of things, cancer, but coming out of the pandemic, guess what the underlying common denominator of bad outcome in COVID was. It was a defect in your underlying NK functionality. So, we actually took NK cells into the clinic in COVID under an FDA sanctioned IND. And we actually were able to treat patients with boosting their NK function. So hold onto your hats, NK cells are going to be really important in our lives going forward.

SHAWN STEVENSON: Yeah. When you told me about that, it was just, it was mind blowing. And again, just the fact that more people didn't know about that. So again, we've got really advanced treatments for this. And we also have very simple. Treatments if we could say we could still frame it as a treatment that our genes expect from us for Supporting in case cells like and we'll put a study up for everybody simply going for a short walk gives you a boost

temporary boost in case cell activity in production and The question is are we doing it? You know We're becoming more and more sedentary as a species and wondering why again we're stacking these conditions against ourselves.

DR. ROBERT HARIRI: And you point out another thing: exercise is fundamental to our health. There's no doubt about it. There are studies that indicate that for every hour of exercise your dividend that's paid back to you is four to eight hours of additional lifespan, right? That's a pretty nice calculus, but here's the other thing. We don't get enough vitamin D3. D3 is critically important to immune functionality. And one of the things we do we tell people stay out of the sun, avoid sunlight. I'm a big believer that we've overdone that, you know and exposure to normal sunlight is fundamental to vitamin D metabolism and vitamin D is one of the cornerstones of good immune function. So that I'd be careful about as well.

SHAWN STEVENSON: Yeah. There's a paradox here. You know if we're looking at D3 production and all the different cancers that it supports the reduction of the onset of certain types of cancer and avoiding the sun For fear of this particular type of cancer and we're increasing our risk of all these other types of cancer It's just like where do we find that happy medium instead of again? There's a lot of dogmatic fear the Sun's trying to kill. You got to do this and do that. Just getting a healthy amount of Sun is something again. We wouldn't have life here on the planet without the Sun, you know.

DR. ROBERT HARIRI: Couldn't agree with you more and listen. You know, I'm not going to just be dismissive of the fact that skin cancer is a concern. Are we diagnosing it more frequently? Yeah, we are. There are some very legitimate experts who actually believe that some of the products we use to protect ourselves from the sun might in fact be deleterious as well. There are benzenes in, in, in sunblocks, right?

SHAWN STEVENSON: Carcinogens.

DR. ROBERT HARIRI: Carcinogens in sunblock. So, the bottom line is it's a complicated issue. But I would never ever suggest to anyone that complete avoidance of the sun has completely,

unrefuted benefits. The bottom line is vitamin D is important and even though you get supplements, natural vitamin D metabolism is very important.

SHAWN STEVENSON: Since we're talking about our skin, I love to talk a little bit about where the science is at as far as stem cells and our connection with say the health of our skin with what we consider to be the standards of beauty. So skin health, hair. Let's talk a little bit about that

DR. ROBERT HARIRI: Great topic because you know in the four pillars of healthy aging that I always talk about preservation of high performance mobility High performance cognition, and high performance immunity. I always talk about youthful aesthetics. Aesthetics matter, right? We talk about this. Feeling good and looking good are fundamental motivations of people. The bottom line is what we know is that as stem cells mature and differentiate to become part of our skin. The process of doing that specialization is a series of gene silencing events.

Literally, a stem cell has the full transcribable genome accessible. So it reads and writes everything. But when you get to a terminal skin cell, like a keratinocyte in your skin, it shuts off part of the genome to be more efficient, which means it doesn't synthesize every component of the genome. With collagens, for example, the difference between an eight month old skin and an 80 year old skin is the number and diversity of collagens that are synthesized and present in the skin differs. And aging skin loses the diversity of collagens and other structural proteins. And how is that manifest? It manifests in decreased elasticity. It's manifest in decreased water retention properties. And what happens? You get wrinkles. You get friable, fragile skin. These are all consequences of a change in the overall distribution of cells in your skin.

So stem cells, we already know. We already know from our colleagues in plastic surgery. If you boost or augment the stem cell population and skin by taking, for example, some of the stem population you might get from liposuction material and injecting it into the skin of the face, you can derive benefits. You can derive a sort of a restoration of some of that synthetic behavior.

SHAWN STEVENSON: It's fascinating stuff. Again this technology is already here and happening, but I don't think a lot of us are aware of it. And so this is why I love having these conversations with you, because it just really attunes us to what's present and also what's coming down the road. We've got a quick break coming up. We'll be right back.

It cannot be overstated how much stress can wreak havoc. On our mental and our metabolic health. And there's one nutrient, one antioxidant nutrient that stands out above all others when helping our bodies to manage and metabolize stress. Data published in the journal of nutrition and food sciences states that both emotional and physical stress can affect a person's vitamin C status. It increases the requirement for vitamin C to maintain normal blood levels when under stress. Stress depletes vitamin C levels in the body and reduces the body's resistance to infections and diseases and increases the likelihood of further stress. So this truly does become a vicious circle. And when vitamin C intake is increased, the negative effects of excess stress hormones are reduced and the body's ability to cope with the stress response improves.

Now I've been sharing this information like crazy. Crazy and enlightening people to this little known fact, but more and more people are realizing this. That the vast majority of vitamin C supplements on the market, those little vitamin C supplements, those little packets out there at the checkout counter, for example, are made from genetically modified corn syrup and cornstarch. It is truly bottom feeders, the worst forms of vitamin C from these very low quality sources. And it simply does not work as effectively in the body. In fact, a randomized placebo controlled study published in the journal of cardiology had people that were undertaking a pretty oxidative habit, which was smoking to have concentrates of my favorite form of vitamin C, which is from camu camu berry versus standard vitamin C supplements, which come from again, genetically modified corn starch and corn syrup.

What the researchers found was that over the course of the one week study, participants taking the concentrate of camu berry has significantly lowered oxidative stress and lowered inflammatory biomarkers. And there were no changes in the group when they're taking the synthetic form of vitamin C. Bottom line, we definitely want to make sure that we're getting in high quality vitamin C from our food and also superfood concentrates that have camu

berry, amla berry, and acerola cherry. These are the top tier forms and sources of vitamin C, all organic from paleo valley and their incredible essential C complex.

Head over to paleovalley.com/model, and you're going to get 15 percent off. Your entire order, including their essential C complex. That's P A L E O V A L E Y dot com/model for 15 percent off. Hook yourself up, hook your family up. This is the vitamin C supplement that I've been utilizing for years, especially during times of stress, check them out. Paleovalley.com/model. And now back to the show.

SHAWN STEVENSON: So, with aesthetics, for many of us, the aesthetics are, yes, it might be for ourselves on some level, but it's largely to be attractive for people that we want to be attractive to.

DR. ROBERT HARIRI: Mating behavior.

SHAWN STEVENSON: Mating behavior. I love that you let's let's..

DR. ROBERT HARIRI: Drop it down to the basics.

SHAWN STEVENSON: To the basics. And so, with this being said, is there any evolving science right now regarding stem cells and sexual function?

DR. ROBERT HARIRI: It's a great question and there's no doubt that declining sexual function is a consequence of underlying small blood vessel problems, right? We know that blood supply to every tissue in our body is important. Small blood vessels ultimately change in their ability to react to the chemicals that cause blood vessel dilation and constriction, and that affects flow. Flow affects supply of oxygen and nutrients, and that affects function. So there's no doubt that there are techniques that are being used today, even things like PRP being used to inject into blood vessels.

Part of this of the sex organ system in order to restore functionality. The bottom line is that if you're maintaining the health of your general stem cell pool that should take care of itself. Will there be tools in the future that will augment functionality and address things like

impotence and all that no doubt that'll happen. And by the way It may be as simple as using some of the derivatives of stem cells, things like exosomes, exosomes are a little chemical messenger package that stem cells produce. They carry enough signaling material to actually restore vascular functionality. So if it works on improving the blood supply to your heart, it'll improve the blood supply to your sex organs too.

SHAWN STEVENSON: You already mentioned this and if folks miss missed our first conversation, put that for everybody in the show notes. It was incredible. But you mentioned how all of this regenerative magic really comes from an origin of one single cell.

DR. ROBERT HARIRI: Yeah.

SHAWN STEVENSON: And, you also talked about in this process of regeneration and you share the story of seeing your daughter before she was born, the sonogram and wait, this, the placenta is so much bigger than this evolving human being. There's something really remarkable about the placenta. So can you talk a little bit about that placenta and also what it's, what its real role is in nature and also why this is a viable source of stem cells?

DR. ROBERT HARIRI: So. It's funny people say why is a neurosurgeon playing around with leftover placentas after full term pregnancies. And the truth of the matter is, I was fascinated by the organ because it's so complicated and it is basically a life support system for the developing fetus. If you think about it, human beings, we devote nine months of reproductive energy to one offspring generally, right? Evolution's a lot smarter than we are. It's selected for a system that protected that fetus at all costs. It's one of the reasons why that, you know, if a mother during pregnancy is injured, even fatally injured. Sometimes keeping her alive long enough to keep the placenta perfused will actually allow the fetus to go to full term and be delivered.

That speaks to the remarkable life support system the placenta really is. But what fascinated me at a time when we thought we could only get stem cells from discarded embryos or from the byproducts of an abortion. My concern was if that was going to be the only place to get cells, this field may never mature to become a meaningful part of medicine. Lo and behold,

and I thank my daughter who fortunately she works with me now. She bosses me around because she's got more degrees than I do. She basically taught me in utero that even as a peanut size embryo, her placenta developed into a large, supply organ that was participating in her fetogenesis and growth to become a newborn.

It's funny. Our friend Peter Diamandis often says the placenta is nature's 3d printer that prints the baby. And that's a good way of thinking about it. What fascinated me was at a time when we thought we could only get stem cells from a limited number of places, I was looking at the sheer number of placentas which are discarded every year. 180 million placentas are thrown away or are incinerated or discarded every year in the world. And if you think about it, one placenta houses billions of cells compared to an embryo that may be a dozen or two dozen cells at maximum. And so the sheer scalable mass of tissue in the placenta got me focused on, that's the place we need to find cells for this emerging field of cellular medicine.

Now, fast forward 30 years in, I can tell you that the organ is absolutely remarkable. Aside from being a stem cell factory, it is also the place where cells learn how to traffic in and out of the blood system to get into the developing fetus traffic back in a, there's where cells can mature and specialize and find their way in to rebuild or to build the liver or whatnot. There's even evidence that in a pregnant woman, some of these cells traffic into her and actually participate in some of the repair processes that are going on in the pregnant mom. So this organ is just an incredible, natural, synthetic apparatus that's designed to build and ultimately sustain and protect life.

Where this is going, which is great, is that the placenta is a highly renewable natural resource. And so at Cellularity and at our division LifeBankUSA, where we've been collecting and banking cells from the placenta for decades, we now know that this is a natural resource that has two big benefits. Number one, it's incredibly proliferative. One placenta can produce trillions of cells. That's a remarkable advantage if you're trying to produce a product. The other really great thing is that every placenta is a universal donor tissue, meaning that I can take cells from a placenta and give them to an individual without having to match them and they're tolerated.

That's part of nature's genius, right? If you think about it, Mom generates or contributes 50 percent of the genetic material for her developing offspring, that fetus. So the fetus that she's carrying for nine months is not a perfect match. She doesn't reject it, the fetus doesn't reject her. Think about surrogate pregnancy. Mom and the baby are not even related, yet there's no immunologic conflict. That same unique immunologic power is retained in the cells of the placenta as well. So here we've got this organ that we're going to incinerate and pay to incinerate. that you can actually harvest enormous amounts of cells from that can be scaled and produce even larger quantities.

They can be given to anybody without having to match them. And they provide basically a replacement part for anything you might need in your, during your lifetime. So suffice it to say that for 30 years we've worked to demonstrate that the placenta is nature's toolkit. It's incredible. economically and efficiently collected and processed can be stored for a lifetime and the cells from that organ can be mass produced into quantities to treat virtually anyone.

SHAWN STEVENSON: Wow. So one of the things that is new to me hearing is that the placenta and just correct me if I'm wrong, is in a way training our bodies to be able to interact with stem cells even later in life.

DR. ROBERT HARIRI: That's a great way of, that's a great way of describing it. Our body learns to incorporate stem cells into different tissues. Remember, a stem cell hasn't figured out what it's going to be. So when a stem cell is recruited by a chemical message that says, I need a replacement part, it travels through the bloodstream or potentially the lymphatics finds its way to an area where there may be an underlying defect. And then it figures out where it is. I used to make the analogy that, you walk into the mall and you see the map and it says, you are here. When a stem cell finds its way to the liver, for example, and it interacts with the matrix of the liver, it says, I have to differentiate into a liver cell in order to take up residence there.

So, to some extent, cells trafficking from the placenta into the developing fetus are taught what to do through that trafficking process. And ultimately it, the sequestration in the discrete location, like an organ or a tissue. So that's a great way of thinking about it.

SHAWN STEVENSON: I love that. All right. And you also mentioned this phenomenon that isn't talked about enough, which the stem cells very likely are making their way to the mother as well. And all of these stories of moms experiencing remission of health issues and resolving of certain pains and maybe arthritic conditions or injuries that weren't healing or all of these stories and we just brush them off to the side.

DR. ROBERT HARIRI: It's one of the things which fascinated me from the beginning. So let's look at, let's look at autoimmune diseases, which really are pretty terrible. They're very chronic, expensive to treat the way we treat them. In large, in many cases causes more complications than we even expect. Multiple sclerosis. So MS, this chronic inflammatory disease, which damages the insulation on our nervous tissue.

So that we wind up getting all kinds of nervous symptoms. We get blindness can occur from in MS. Motor problems, cognitive problems. That is a consequence of our immune system identifying something in our nervous system and attacking it and destroying it. That's an autoimmune phenomenon. It turns out that it was observed that women who have multiple sclerosis, who get pregnant, had a very high rate of remission. And it's an MS is not the only autoimmune disease where that occurs. So 15 years ago, we were so fascinated by this that we began to treat autoimmune diseases simply by infusing placental stem cells into these patients. And we saw very compelling evidence that we induce a state of response where symptoms improved but in many cases even sustained a state of remission.

So, I'm, I am still very focused and the world of cellular medicine is getting more and more interested in autoimmune diseases, but I'm completely convinced that one of the most powerful tools for treating autoimmune diseases will be stem cells and a lot and hopefully predominantly stem cells derived from the newborn placenta.

SHAWN STEVENSON: Wow and you know this already. Autoimmune conditions are one of the fastest growing health issues in our culture today, and I believe it was Dr. Terry Walls who shared with me her story. She's had multiple sclerosis and was able to put her condition into remission after a lot of angst and struggle and trying to figure things out. But she shared with me in her story, there was a spot where her being pregnant and going into remission.

And we just again, the story just kept going. We glanced over and got to all her lifestyle factors she did later. But that stuck with me, just that is so remarkable that's something that we don't hear very often, in particular with something that can be so devastating, and having a remission that is so powerful. And with that being said, tens of millions of Americans have autoimmune conditions now, and, of course, you gotta look at what are the causative agents, why is this issue skyrocketing, and helping to, of course, remove these things.

But also there are viable science backed treatments that are far less damaging. And that's the thing, too. And I want to ask you about this, having you here. And just to, let's just have an honest conversation about this. A lot of our treatments currently for autoimmune conditions, for example, for neurodegenerative issues, for cancer, they're not very effective. They're simply not effective. And, of course, we can see a resolution of some symptoms. We might have some marginally increased lifespan potentially, but the quality of life is often taken away by having these conventional treatments and we can do better. We can do better. You've proven this, that we can do better.

DR. ROBERT HARIRI: Just the observation that pregnancy induces a state of remission to autoimmune disease should have been a huge focal point for investigation and discovery work and clinical development. But the truth of the matter is, The drugs that address the symptoms of autoimmune disease, the inflammatory state of an autoimmune disease. That got most of the attention because it drove the development of traditional therapeutics, small molecules and biologics and so on. But as you point out, sometimes the treatment is as bad as the disease, right? So some of the biologics that are used to treat in the inflammatory conditions associated with autoimmune disease actually are so, immunosuppressing that they actually increase your risk of developing other diseases, even cancer.

And there's no doubt that what we're doing conventionally in treating cancer is we're attempting to kill cancer cells at a faster or more efficient rate than we're killing normal cells. But we're killing normal cells as well. Patients who die of cancer die because of the incredibly degradative effect of chemotherapy on the entire system. And, we mentioned before something which is really a pet peeve of mine. One of the final common denominators or

common pathways for cancer at the end stage of life is a condition called cachexia. Cancer cachexia where people waste, they lose all their body mass, their muscle mass, and so on.

How do we address that? The traditional conventional wisdom is you've got to force Nutrition into these patients, right? Cause you want to somehow believe that you're sustaining or driving them from this catabolic destructive state to an anabolic constructive state. I have a probably a very controversial way of looking at this. I always say nature is smarter than we are. Nature has the benefit of millions of years of evolution. To me, cachexia seems to be a final attempt to starve the malignancy.

And as I mentioned earlier, cancer is addicted to free glucose. And so cancer cachexia, this attempt, where patients, they don't want to eat, right? They have no appetite. There's no doubt that they go into a catabolic state of very low levels of glucose. What's our natural, what's our knee jerk response to that is we fill them up with these high caloric supplements. These nutritional drinks that are basically high sugar cocktails. I wonder sometimes, are we doing them more of a disservice than benefiting them? And so in autoimmune disease, the same thing where we're attempting to control the inflammatory symptoms that they have by suppressing the immune system. Is there a better way to control the immune functionality by using what nature is doing in pregnancy in a patient with MS, for example?

So listen, we got to be open minded about this stuff. What I, what always bothers me about is when anyone is dismissive of any observation which drives a train of investigation. And we saw that during the pandemic, right? An open mind is fundamental to the advancement of any scientific pursuit. That's my point of view.

SHAWN STEVENSON: I love it. This is, it's just looking at the adaptations that our body makes, right? And many of our conditions that we label as diseases, they're adaptations, right?

DR. ROBERT HARIRI: Exactly.

SHAWN STEVENSON: Insulin resistance is an adaptation to this hyper influx of glucose. And so with cancer and seeing cachexia being an adaptation in a way and understanding like our muscle is really our body's primary endpoint for glucose disposal.

DR. ROBERT HARIRI: Exactly.

SHAWN STEVENSON: Right? And it's just like looking at what adaptations is the body trying to make trying to sort this issue out. Instead of again coming in with blunt instruments understanding the condition of what the body's trying to do here. And of course most importantly let's not put ourselves in the situation where this is manifest in the first place because something is clearly wrong to see the multiple epidemics of cancer. Just again it's gone up precipitously just especially just in the last 40 years in particular Something is incredibly abnormal about our environment that's triggering this. And so, with this being said, I want to ask you about this because you brought up the muscle wasting. Let's talk about stem cells in regard to maintaining our muscle mass, because I think that is a core component of not just a long life, but a long, healthy, functional life.

DR. ROBERT HARIRI: So, listen, the one thing we know that's highly actionable is that maintaining healthy, lean muscle mass is probably your best defense against virtually all chronic illnesses. And you pointed out one of the most important roles muscle plays muscle is your greatest protection again against out of control glucose because that's where you burn it, but muscle will only burn glucose when it's active. So walking is one of the simplest and most, most useful tools to enhance the functionality of muscle to clean up all that free flowing glucose and keep that under control and prevent the insulin spikes and everything else, which we know is deleterious. But here's the other important thing.

People don't recognize muscle is the largest wet body mass of the average individual. We don't think of it very often, but if you think about the sheer mass of tissue in your body that is muscle, that means two things. It means that it's one of the most important synthetic organs of the body. It's producing its own array of chemicals, what we call the myokinome. And the myokinome includes proteins and peptides which signal other organs and tissues like the brain, like the heart, like the immune system. And the other thing that muscle is, it's the

largest venous capacitance organ of the body. If you think about it, there's more blood in muscle tissue, transiting through the tissue, through the high pressure arteries, and then coming out through the low pressure veins.

And that volume of blood means that's where a lot of your blood borne cells are resident. Now, interestingly enough, we now know that a lot of your immune cells, and believe it or not, a lot of your stem cells, actually take up residence in the low pressure vessels of your muscle. It's one of the reasons why exercise helps mobilize those cells. And guess what else? This is a gift from our friends in the PT world. Massage, vigorous muscular massage actually helps mobilize and transit those stem and immune cells into your circulation. It's one of the reasons why exercise and massage, especially early in the recovery from an illness, has lots of benefits.

And so the way I think about it, you know that there's ways to maintain muscle mass, exercise, and good nutrition. There's also, in the future, even more technical ways of maximizing muscle health by restoring functionality, by delivering stem cells, which can boost the number of starting materials, if you will, that can help rebuild muscle. We've done clinical studies and we've actually shown that by injecting stem cells into muscle, you can actually improve the blood supply to muscle and the mass of muscle.

SHAWN STEVENSON: This reminds me of this quote from Hippocrates saying "the physician must be experienced in many things but assuredly in rubbing". So that aspect of massage and this was a commonality right decades ago, you know a century ago in particular with nurses and massaging patients. And that being one of those things that was just considered standard of care for helping to heal and recover faster. And today again there's a huge lack of just that sensory input and you're isolated, you know in a way and now again just talking with you is just stuff stars puzzle pieces start coming together.

DR. ROBERT HARIRI: And you know what? Think about all the allied technologies that are out there. There are these electrical muscle stimulation tools. The electric pads people are wearing on their muscle to increase the rate of muscle contraction. And they do that in order to build muscle and to burn calories and so on. You're actually deriving the same kind of

benefits of exercise. And so, there's no doubt in my mind that there's an array of technologies and tools available to help you maximize and optimize the quality of your muscle tissue. If that's one of all the strategies to have, maintaining muscle mass, good nutrition, right? These are cornerstones of preserving the quality of your immune system, your regenerative system and maximizing your health overall.

SHAWN STEVENSON: Awesome. All right. So this episode is dedicated to not just now, but also looking ahead. And of course we want to stack conditions in our favor and give those inputs that our genes are expecting from us, moving our bodies regularly, supporting our muscle mass. We have to use our muscles. It's use it or lose it. Good nutrition, sleep, all these things. And we do masterclasses on all these things. But when we're looking for What's again, it's not just the futurists that right now that can stack conditions in our favor if we're dealing with a health issue or if we're just wanting to turn the clock back in many ways. So, obviously, we've cracked open this conversation about stem cells in different domains and earlier you said banking our stem cells. So in particular, what, how, what does that look like and what are some of the potential benefits?

DR. ROBERT HARIRI: So the general field of cellular medicine has come a long way in the last 30 years, right? The cell therapy that's gotten the most attention recently has been Using parts of our immune system. and engineering in functionality to go hunt, seek and destroy, hunt down cancer cells. That's a technology called CAR T therapy. CAR T means chimeric antigen receptor T cells, which simply enough means customizing the molecular structure on the surface of your immune cell, your T cell, so that it can hunt and find a cancer cell in a very specific way.

It's a heat seeking missile. Okay? Now, CAR T is the subject of Nobel Prizes and is revolutionizing the treatment of certain hematologic blood cancers and what we know is that those immune cells, that starting material, is engineerable. We now have the ability to engineer the genetics of cells. We can use special customized viruses to deliver little bits of DNA so that the cell will express those molecules on the surface. We know how to do that now. But if you have cancer, which today the current convention is you get diagnosed with a cancer, you get your T cells harvested and then engineered and given back to you.

That works. But isn't it even more efficient that if you already had some of your immune cells stored away earlier before you ever got the disease and you did need that kind of technology, you have a blank slate to start engineering from. And so we live in a world where it's very inexpensive. It's very efficient to collect your own cells early enough in life. And you can store these away in cryopreservation. In other words, we freeze them at such ultra low temperatures that they can literally stay in a state of suspended animation for decades. Now, if you ever need that material, it's available to you.

But what's the best part about it? The cells you store today are always going to be younger than the cells you have next year. And so if we know age has a chronic deleterious effect on the quality of our cells in our lifetime, the earlier you store your cells away, the better. And so we know for 40, 35 years, 40 years, you can collect cells at birth, cryopreserve them, and make them available for that individual later in their lifetime. We could do the same thing for adults as well. And it's not that complicated. It can be done by a simple blood draw. It's equivalent to going to donate blood, basically. You donate a bag of blood, the blood is processed to remove the stem population, and then they're stored away for you for future use. So the opportunities that exist are even tough to anticipate because development is occurring around the clock in the field. But as far as I'm concerned, there's no better time to store yourselves than today because tomorrow you may have had some accumulated damage that you didn't have today.

SHAWN STEVENSON: I love the analogy, the banking analogy. And with this being said, with this being said, when we have a blood draw, our bodies are not going to be lacking that blood, all right? Not at all. So that's what I want to ask you about the stem cells. Am I taking, if I'm making a withdrawal from here and putting it into another account, am I going to be lacking?

DR. ROBERT HARIRI: What a great question. I want to refer back because you're, you and I love history, right? So, what's the most, the longest sustained therapeutic modality in human history? Therapeutic bleeding, bloodletting. Remember? It goes back to, it goes back to, the way before the Renaissance period .Greeks, Roman, Roman civilization.

SHAWN STEVENSON: Throw some leeches on you.

DR. ROBERT HARIRI: Leeches. But bleeding, therapeutic bloodletting, So the word remained as a tool that physicians used for centuries because it worked. And people say why did it work? I have two theories on why it worked and why it worked effectively. The first theory is that when you bleed somebody, you get whole blood. Whole blood are the cells, the red blood cells, the white blood cells, the platelets, and also the plasma. The plasma is the liquid phase that contains proteins.

What proteins exist in plasma? All the toxic antibodies and antigens and molecules that you, your immune system is processing are in that plasma fraction. In some cases, toxic chemicals that are part of the digestive process. that are transiting through your liver, happen to be in your plasma. So when you bleed somebody and you throw that blood away, you've diluted out that plasma because now when they drink liquids, water and so on, they suspend their circulating blood in now crystal clear liquid, not protein contaminated liquid.

That's the first thing. Think about it like changing the oil, right? When you remove the oil from your oil pan, and you replace it with fresh new oil, you've eliminated all the accumulated garbage that's in there. The same thing occurs with plasma. So that's one benefit of bloodletting. The second benefit is that by eliminating the cells, the red blood cells, the white blood cells, the platelets, you stimulate your bone marrow stem cell population to start replacing those cells. Stimulating your stem cells is good. It actually calls upon them to divide, expand, and differentiate.

And that is a, and they repopulate your bloodstream in a very effective way. So the combination of cleaning out the bad plasma and stimulating replacement from your stem cell population appear to have clinical benefits. And by the way, people who like to donate blood, chronic people, chronic blood donation, is associated with certain benefits. And this may, in fact, all link back to the ancient form of bloodletting.

SHAWN STEVENSON: It's fascinating. It's fascinating. Where can people do this? Where can they get more information? When I was talking with my son about you, I was just like, you're

like Indiana Jones in a way, you got all these different aspects. Of your life and all the things that you've created and the impact that you're having But this is something that I want obviously more people to get more access to more information. Where can people go?

DR. ROBERT HARIRI: First of all I'm going to say that's like one of the greatest compliments I've ever had. I'm gonna send this clip to Harrison Ford because he's one of my all time heroes. And Indiana Jones is one of my favorite characters of all time. But look here's the bottom line: People today are so well informed. If they go online and they go to either fountainlife.com, that's our clinic system, or they go to cellularity.com, C E L U L A R I T Y . com. They can learn all about these techniques and these innovations and so on, and then they can direct themselves to the right place to the nearest place to, for example, get their stem cells collected.

They can even get total plasma exchange procedures where they wash out that bad plasma. And then I also, we cover a lot of this, on my podcast at PilotingHealth.com where I try and talk about these subjects and often refer to some of our conversations because we reinforce our messages that way. And then obviously, The book that Tony Robbins, Peter and I wrote, Life Force has been a good encyclopedia for reference as well. But, here's the bottom line. The communities that you speak to you, you so well inform them about accessible tools in their day to day life. For me, it's just a privilege to be part of your community. It's a whole entire spectrum of education so that we can introduce folks to the allied technologies in cellular medicine and regenerative medicine.

SHAWN STEVENSON: Yeah. Yeah. Bob, I appreciate you so much. Truly. I'm looking forward to a lot more conversations with you and we'll put all those resources for everybody in the show notes. Thank you so much for coming to hang out with us.

DR. ROBERT HARIRI: Shawn. It's wonderful to see you. And I cannot thank you enough for inviting me.

SHAWN STEVENSON: It's my pleasure. Dr. Bob Hariri, everybody. Thank you so much for tuning into this episode today. I hope that you got a lot of value out of this. You know what to do. Share this out with somebody that you care about.

Get this incredible information out. Solutions exist. All right. So if we're talking about recoveries from injuries, chronic illnesses, The therapeutics available through stem cell technology is absolutely amazing. And again, this is not the future, it's happening right now. So just being able to have this in your healing Your regenerative, your superhuman utility belt is an incredible gift.

And as always, of course, we need to check those boxes on those lifestyle factors to ensure that we're giving our bodies the greatest capacity to do what they can do to keep us vibrant, to keep us functional, and to help us to live life on our terms. But should we need it? Being able to have information like this is incredibly valuable. I appreciate you so much for tuning in today. We've got some epic masterclasses and world class guests coming very soon. So make sure to stay tuned, take care, have an amazing day. And I'll talk with you soon.

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