

Speaker 1: Bulletproof Radio, a state of high performance.

Dave: You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that you have stem cells in just about every organ of your body but not all stem cells do what you think they're going to do. Surprisingly enough, today's podcast might have something to do with stem cells. How do you like that for foreshadowing?

Today's guest is a friend and a top expert in regenerative medicine who was an anesthesiologist at the top of his game for years who became a top regenerative medicine guy. When I say top as in has repaired injuries for huge numbers of top tier athletes including professional baseball players, fixing their shoulders and things like that and causing your body to heal and do things that are not normally possible. This is a guy who also fixed my shoulder.

Last year I had a bone and bone separated shoulder after probably from picking someone up at the Bulletproof conference I'm not really sure what happened. But my shoulder was jacked to the point it normally it would have needed surgery and this guy used a combination of stem cells and some other crazy things to have me entirely avoid surgery. I've got my full range of motion back which is kind of cool.

So this is a guy who knows how to help people heal like Wolverine would heal and has been studying the field for many years. His name is Dr. Matt Cook and he runs BioReset Medical in Los Gatos California and we're here in his offices to record this episode in person. Dr. Cook welcome to the show.

Matt: Thanks so much I'm delighted to be here.

Dave: I want to teach everyone listening today all about the amazing new world of stem cells but first, you're an anesthesiologist. Why did you go from knocking people out to doing all these unusual therapies?

Matt: I like to say I used to put people to sleep for a living and now I try to wake them up or at least wake up parts of the body. I was a regional anesthesiologist and so I spent most of my career as a medical director of a surgery center where I would do nerve blocks that use an ultrasound to put numbing medicine basically in tissue planes where I would put nerves to sleep so that people could do surgery on them.

What happened over about the last 10 years is, there's been this enormous growth of using ultrasound to put stem cells and other growth and healing factors around nerves but also in the joints and ligaments and tendons to heal them. And I had this rich background of doing a lot of ultrasound and that is what gave me the opportunity to start doing these type of treatments.

Dave: One of the things that attracted me to first come to your practice ... And people who are long time listeners know that I've done stem cells in Park City and Florida and I've kind of been a stem cell tourist and I've had a bunch of people speak at the conference. They all mention my book, you'll mention my new book Game Changers that's coming out in

December because this is something that people haven't heard about. But what you're doing that no one else has talked about is something that you helped to pioneer and they're using it in a new way is called the stellate ganglion block.

This is something that is not terrifically expensive, but something that had a really powerful effect on nervous system function, on sympathetic nervous system, things like that. That isn't necessarily a stem cell procedure but can involve stem cells, it's something you did on me. Tell me about that procedure, why it matters.

Matt: The stellate ganglion block is probably one of the most profound therapies and pain management that we have and is actually a technique that comes from anesthesia. And in the front of the neck there are basically two groups of nerves that control fight or flight and rest and relax. There's these little nerves that control your entire fight or flight nervous system and is called the sympathetic chain. And the basically control center of the sympathetic chain is something called the stellate ganglion it looks star shaped.

It controls your fight or flight response. But in a lot of people that have had PTSD or chronic pain, the fight or flight system can be overactive. What we do is we take very powerful numbing medicine or local anesthetic and we put it into that plane and put the fight or flight nervous system completely to sleep for about four to six hours. That has a very profound effect of turning off flight or flight so that people can begin to feel what it's like to have rest and relax.

Now, it turns out that that tissue plane is right next to the vagus nerve. When we do the stellate ganglion, we often get the vagus nerve as well. When we turn the vagus nerve off, that tends to reset the vagus nerve. Often we rest both, it's fairly difficult to just get one by itself. In addition to using local anesthetic, we can also use 5% dextrose and other solutions for this procedure.

Dave: The reason that I want to do this is, I actually did have PTSD and I'd say I don't have it any more. Mine came from birth. I was born with the umbilical cord wrapped around my neck and didn't suffer oxygen loss or anything like that. Until I was 30 I had no idea it had any effect on my life. But it turns out PTSD causes your body to have a reaction to the world around you that's a fight or flight response that feels completely normal to you 'cause that's how it's always been. That affects your anxiety levels but you don't know it affects your anxiety levels because they just feel normal.

I learned using a biofeedback, using heart rate variability, using neurofeedback. I've edited that stuff out so I don't have those responses. I'm actually a very different human than I used to be. But being able to go in at a deep biological level and reset that I think was really beneficial and I've also had chronic pain. I had arthritis in my knees since I was 14, maybe I was an ideal candidate for that. But you've also done this on pro athletes and people who perform really well. Do some of them also have PTSD? Old stuff from childhood or car accidents or something like that. Is this common?

Matt: I think a lot of people have PTSD and then a lot of people are on the spectrum, sort of like there's a spectrum and autism and aspergers. I think probably most

anesthesiologists are somewhere in the spectrum of PTSD because I think we do so many dangerous things.

Dave: In order to become an anesthesiologist you have a choice. You were in medical school and you're going to choose to knock people out. Is there a personality type that tend to become an anesthesiologist? I don't want to deal with people kind of type?

Matt: Most people who go into anesthesia really like doing procedures. So we like doing injections and stuff like that. And that was what attracted me to the field. Plus we probably know more about physiology than any other field in medicine. I loved physiology and I loved doing procedures and it's pretty interesting because the nervous system seems to act like a circuit breaker. So when we reset the nervous system, a lot of times it just goes back to the default settings. So athletes, if they're stuck in fight or flight, they don't perform as well because we should be able to modulate between rest and relax and fight or flight.

Turns out so many people in the military end up with PTSD because it's just more efficient to stay and fight or flight if you're over in war zones getting traumatized all the time. My mentor Tom Clark who is the head of MSKUS, I just joined his faculty, he pioneered with Sean Mulvaney the use of doing stellate ganglion blocks in military. I think at this point they've done something like 7000 stellate ganglion blocks in active military.

Dave: Wow.

Matt: It's going to be a huge game changer for PTSD but in my mind what I really like to do is combine that therapy with an entire suite of things that support people like neurofeedback like at 40 years of Zen with an AD therapy to have a really comprehensive approach.

Dave: Now, it's funny that you're doing a lot of work with stem cells and causing systems level healing. But one of the first things that you're looking at there is old trauma. And there's old injury kind of trauma. In Park City I first had my injuries all injected with my own stem cells and then I did some of that again in Florida and I've done some of that with you as well. Even some new injuries. It's weird when we have an old injury that's healed but you still have chronic pain from it. What's going on with that?

Matt: That's probably like the most interesting question to me in my life that you could ask me. I think that they're probably ... Like at existential level people have emotions and trauma, can you be trapped in the body. But if you look physiologically, a lot of times when people have chronic pain, they have what's called neuropathic pain. So there are these small nerves that are unmyelinated C fibers, basically they carry chronic pain and they stay stuck in a chronic pain state.

What I do is I look with an ultrasound and I look and I find those nerves and then I palpate those nerves and I see if those nerves are in pain literally with the ultrasound. And a lot of times I can actually see that the nerves are dilated in a person with chronic

pain. Interestingly if someone has chronic nerve pain and the nerves inflame and it's in pain, they'll just stay in pain because it's just stuck that way.

When we go in and we come into that fascial and begin to open it up with fluid and put growth and healing factors and things like that, the current theory is that we begin to down regulate this pain fibers that are called TRPV1 receptor and we basically reset the nerve and interestingly when I treat people, I'll test them and I'll look at their muscle strength and then I'll do these procedures and then immediately their strength will begin to come back.

Once the nerve pain goes away that can be very helpful for treating a joint. And so when I look at someone with a joint pain, I look at the ligaments tendons, I look at the synovium, I look at the entire function of how they move. But then I also assess the nerves. There's a small percentage of people, maybe half people have no nerve pain. But many, many people have at least some and by treating that it gets us the ability to give them a complete treatment.

Dave: After writing Head Strong about mitochondria and having explored all sorts of crazy training things as a biohacker, I've come to believe that we have localized intelligence in the body. In fact I think our entire consciousness starts as an emerging behavior in our mitochondria, spread throughout our body and little decisions get made in quadrillions of locations millions of times a second and eventually rolls up into our nervous system and into our brain and a lot of our perception of the world happens that way.

If you're part of the subtle network of cells in a knee or around the knee or in the liver, in any part of the body, your job is to take care of the local stuff, just the way our country works. You have your neighborhood, you have your city, you have your county, you have your state, you have your federal ... And it all rolls up like that. If something happens in the local part of the body and the cells there are saying, "My job is to keep this knee from failing again, I'm going to keep up hand signal going to make sure you don't do that again." Even though it would be safe to do that. And I've been able to overcome a lot of that with electrical signal. Forcing the nerves to do something that they think they can do and as soon as you do it the pain goes away.

But your model is saying, "We're just going to go and basically turn the nerves off for a minute." It's like turning them off and back on. And when you do that it's like rebooting your phone, all of a sudden it works again. I experienced that in my right bicep. I'd had pain for about three months, I probably strained it a little bit when I did SARMs and for people listening, these are selective androgen receptor modulators kind of like testosterone. There's a Bulletproof blog post on that. But I put on 29 pounds of muscle in six weeks. It was completely ridiculous without changing my training or even my food. I had to buy new shirts it was irritating. I ended up nine months after that, it went back to normal which is good I can still wear my normal shirts.

But during that time my strength went up but my ligaments didn't get as strong as my muscles did which is a common problem with SARMs. So I strained something there and I had this pain even though it was technically healed, there was no more damage but it just kept hurting. So you went in with this technique and it took all of five minutes and

you squirted some stuff around the nerve and I watched it on the ultrasound as you carefully threaded the needle around some blood vessels, around some nerves to right at the cool spot. And you can see the space around the nerve expand as the fluid goes in and all of a sudden, the arm stops hurting and now it works again.

Is my model there about a localized intelligence that you should be resetting? Is that a good description of what's going on? Or is that a layman's way of thinking about it?

Matt: So that's an awesome way of thinking about them. If you sort of walk down this road a little bit, people can be in nerve pain, A, because they have neuropathic pain which is this chronic nerve pain. Or B, because the nerve might be impinged so something is pinching the nerve. The classic example of that is carpal tunnel syndrome. Now what happens is we can treat carpal tunnel by just relieving the nerve impingement. What you had was neuropathic pain and so I put some fluid around it and it immediately reset it. When I reset a nerve and the electrical supply is working better, there's more consciousness coming in there. Often there's better blood flow.

Interestingly one of the main things that I do now, almost all the time whenever I have somebody for hydrodissection, I also give them IV-NAD. Every nerve has mitochondria. I give them the NAD before I do the hydrodissection and the NAD lowers nerve pain. And so I think your model is actually very appropriate that groups of mitochondria, a physiological area like a knee, if it's somewhat dysfunctional by doing a comprehensive approach fix mitochondrial dysfunction, fix nerve impingement or nerve pain, fix the vascular flow and one of the things that fixes the vascular flow is fixing sympathetic and parasympathetic balance. So we do that whole thing.

Dave: I want to talk about NAD for a minute. If you're listening and you've read my book Head Strong about mitochondria, it's a hands-on readable guide about what you can do. But I do talk about NAD and one of the things that happens in your mitochondria when your cells are making energy is you make electrons and you need to carry them around which requires NAD. This compound declines about 90% between age zero and age 90. And some of the supplements that Bulletproof manufactures will improve NAD levels. Things like unfair advantage or KetoPrime are active in that part of the mitochondria.

But you can also do intravenous NAD which was originally used for drug and alcohol therapy and that's what Matt's talking about here and that's something that we do at Bulletproof labs with some clients there and the idea is wait, if you can get more of this working in your body and you can then make and carry more energy more effectively, what part of the body carries a lot of electrons? The nerves. Nerves have more mitochondria than normal cells because they have to have them. And what Matt you're talking about there is, well I'm going to turn up energy metabolism with NAD and then I'm going to do the hydrodissection and you're getting better results from doing that.

Lets talk about stem cells because there's so much confusion in the world. There's a group of people who still hear stem cells and they think from the early 80s in lab research that this is somehow related to fetal tissues and things like that. Stem cells, they don't do that anymore, that's not how it works. So first thing to know if you're

thinking about it that way, it's just kind of draw a line in your brain, that's not what we're talking about.

Now there are a whole bunch of stem cells and I hear this a lot. I don't know if I've had more stem cells than anyone else on the planet but I have had an excessive amount of stem cells compared to most people. And the first person ever to prophylactically put my stem cells in my cerebral spinal fluid to make my brain younger ... Normally that's done for stage four Alzheimer's and Parkinson's kind of people. So I've gone out there and traveled around and done all of it.

But even then I still have a few questions about the cutting edge stuff. Matt you have spent more time than anyone else I've met, going out and talking to all the different stem cells specialists, all the different types, all the different labs. So I want you to really clearly walk our listeners through the types of stem cells and the pros and cons. So if people are thinking of getting stem cells that they'll understand what's possible, what they do and where you have to go to get them if they're not available in the US. So let's start with stem cells that come out of our own body.

Matt: That sounds great. Just as an aside, I love the fact that this is hypothetically like a stem cells conversation. But we started talking about a bunch of other resets and that's how I approach patients in my practice which is, I never go to stem cells first because I try to do everything else that is low risk and easy and I fix tons and tons of problems-

Dave: Hang on a second, you've done 40 years of Zen and you just said you tried to do it, I think try is a weasel word.

Matt: That's right. Yeah.

Dave: So what do you actually do instead of-

Matt: That's what I do. That's what I do. So in terms of stem cells, let's just start with your own stem cells. There are stem cells floating around in your butt, there's stem cells in every organ and we have stem cells all over our body. But there are two places where they exist in higher concentration that are relatively easy for us to access. And that's in belly fat or abdominal fat. And in the bone marrow. A doctor can harvest a little bit of fat or harvest little bit of bone marrow, do some processing and give those stem cells back to you.

In terms of the law of the land and the states that represents way more than 99% of what-

Dave: Of what you can get in US today.

Matt: Right now yeah.

Dave: And the advantage of that is that you know they're compatible with you 'cause they're yours. The disadvantage is that well, liposuction for me actually hurt more than a stem

cell treatment. Where they go in with this big needle ... By the way I Facebooked live the last time I had this done which was kind of fun, I was trying to not show my butt. But they're sitting there sticking this nine inch long needle thing until they get about a coffee cup's worth of fat out of your body and then they're spinning that down.

So that hurts and it requires recovery but the bone marrow which I also had done, I did that one in Park City in Harry and men, that wasn't very comfortable but it also wasn't that end of the world pain a lot of people are really fearful of bone marrow. I can tell you when I felt the hammering, feel a tapping that hits your skeleton, there was no pain from it. But there's no words to describe what it feels like when your whole body shakes inside your skeleton. So it was a really odd feeling but on a scale of one to 10, with 10 being a really bad pain, it never got above a three or four. It was just uncomfortable and weird and not pleasant, but nowhere near any of the other sports injuries I've had or something like that.

But just for people listening I want that experience to come through. Neither of those is on par with having a knee surgery or a car accident. They're pretty small and there was anesthetic and it's not that big of a deal but you still have to recover from it. Why would someone choose to get fat versus bone marrow?

Matt: By the way I go around and travel and see all these people and ... I actually went to Harry's clinic and he's incredibly talented, super impressed with my experience there.

Dave: This is [inaudible 00:22:43] in Park City you're talking about?

Matt: Yeah. In terms of stem cells. What generally I'll tell you is there's a cohort of people that tend to do bone marrow because they're used to getting bone marrow. The people in the orthopedic community know how to do bone marrow type of procedures and so most orthopedic surgeons and a lot of primary care sports med people that are doing stem cells are going to offer bone marrow. There's a very rich experience of people in the stem cell community from the plastic surgery community and they're really good at doing liposuction and getting fat.

So the most common reason why someone is going to be offered or fat is going to be because of what the practitioner does.

Dave: And that's really important. You don't want someone who doesn't know how to do liposuction saying, "You'll be my guinea pig." And they're stabbing you in the liver. Kidding, no doctor is really going to do that. But it requires clinical skills that are unusual. So it has to do with who you pick but let's say though as a patient, I could choose a doctor who knows bone marrow, I could choose a doctor who knows how to do with fat cells. Why would I choose either kind of practitioner?

Matt: Great. Or both, like I do both. As we age, there are stem cells that are in the bone marrow that get mobilized and they go out and fix things. So people with chronic disease, people that are older and then people that have just complicated medical situations will have lower counts of stem cells in their bone marrows as they age.

Dave: And then also it's old bone marrow. You want stem cells that are young and powerful. My parents have had their stem cells extracted but if you're getting to 75-year old stem cells, they're not going to be as potent one-year old stem cells.

Matt: Right. However that still robust experience with good experiences with bone marrow but the concentrations go down and they're older. But in comparison, adipose as we age we don't mobilize on a daily basis stem cells from fat like we did from bone marrow and so their counts typically tend to be higher.

Dave: In fat.

Matt: In fat yeah.

Dave: So you get more stem cells from fat and you get maybe more growth factors from bone marrow but less stem cells.

Matt: I would say less as we age however someone young and healthy is going to have a fantastic bone marrow and so that's why a lot of athletes might give a bone marrow because they're young and healthy, their stem cells are good and they're going to have very good counts in their bone marrow.

Dave: In my experience, having done the Bulletproof diet for a long time in doing all these stuff at Bulletproof labs, when I had my bone marrow extracted I had a very large count of stem cells. I have lots of them which is good because I'm going to live to at least 180, so I'm really only like a quarter of the way done. So I'm still young even though I'm in my mid 40s. That's what I'm telling myself, you hear that body, you believe this.

You may or may not have those. But it still doesn't answer the real question there. I'm sitting in front of my web browser and I'm looking for a clinician. Do I want to do bone marrow? Maybe if I'm older I would want to do fat. Is what you're saying, how do I know?

Matt: When you become an anesthesiologist you get board certified and so you have to sit down with these two people in a room and they ask you these questions and they would like you to commit to, "Okay, if you're old you get fat and if you're young, you get bone marrow." Something like that. But the answer is that it always depends. So in your case, you have a very low body fat percentage.

Dave: I do now. As a former 300 pounder.

Matt: Exactly. But people with low body fat, it's hard to get abdominal stem cells from them.

Dave: It's really interesting though so if people who are lean, you just don't have a choice, you're going to have to do bone marrow, or are you going to have to fatten up before you can do it?

Matt: Yeah or potentially get a little bit less but there's still a lot of anti inflammatory matrix within fat for the stem cells that we do, the adipose stem cells. If you want, I'll go into some of the regulatory issues which are sort of interesting. And then not only does it matter what your body composition is, but then it also has an effect in terms of what are we trying to treat? The orthopedic you can treat nerves, you can treat aesthetically the face, you can treat sexual rejuvenation. So there's all of these different areas. And there's a growing clinical experience with every version of regenerative product from exosomes to placental products to stem cells and to the different types of stem cells. And I think of them as all having a profile. Then what I try to do is I try to look at the individual condition, look at the patient and then try to match the therapy with the protocol perfectly.

Dave: So that's the real answer. The real answer is, you are unlikely as a patient who'll say, "Oh I need my bone marrow cells or I need my fat cells. You want to go and you want to find a practitioner like Dr. Matt who is able to say, "Well, what's the problem we want to solve? Let's choose the right stem cells from your body to solve the problem or let's choose some things that have growth factors or that are like stem cells." What you want is Swiss Army knife of approaches for stem cells. So if you have a hurt knee, it's one thing or if you're doing the kind of things that I've done with you out of the country where I get hundreds of millions of stem cells intravenously that just go where they're needed in the body in order to make things younger. That's just a different profile but you have the clinical experience and the ability to use those tools and things.

That makes a lot of sense. People including me when I first started doing this a few years ago, we have this idea that stem cells go into the body and they become the cells you need. But that's actually not how stem cells work and you taught me this and I'm going to tell you how I understand it and I want you to correct me if I'm wrong.

Matt: Okay, great.

Dave: One of the reasons I'm doing that is if you know something well enough to teach it then you actually know it and if I'm wrong you can just tell me to shut up. But stem cells go in, they find sites of inflammation, they stick to those sites, and they secrete healing factors to cause the cells there to become stronger and to heal and turn off inflammation. But they don't actually stick around. The stem cells eventually are gone, they don't become new cells in your body. But the fact that they were there, means that the cells that are already part of you are stronger. Do I have that-

Matt: Is a fantastic start. So there's like a mythology around some cells. What you first said, the mythology is that the stem cell is going to come into the body somehow and then it's going to go and become cartilage in the knee. That's like the holy grail. What that is termed is asymmetric division. So a stem cell can divide and maybe make a stem cell and then it can also turn itself into a chondrocyte, like a cartilage cell. So that does happen. That happens from our own stem cells and then that can also happen from other cells that come into our body.

That being said, there is a theory that the thing that stem cells mostly do is go in and communicate with other cells. So they migrate to that area ... What I'm talking about

physiologically. They'll migrate to your knee and notice that there's a bunch of inflammation in the knee and then they'll migrate into the tissues. Then at that point they begin to communicate to cytokines and exosomes and those are big words but basically they make little chemical packages that call other cells in. So they might call a fibroblast to help make a tendon. They might call in another cell.

They also could potentially if there's no fibroblast available, they might turn themselves into one.

Dave: So they could turn into a cell but they don't do it very often.

Matt: Well, this is something that needs to be defined more. They do both. And in a state of inflammation, the concept is that they modulate inflammation. So in some cases they can turn inflammation up as part of an inflammatory process of healing and other cases they can turn inflammation down. So modulation becomes this very sort of important idea and then messaging and communicating with all of the other cells. So I think of a stem cell as like a Mackenzie consultant that rolls up on their side and doesn't like me or a general contractor that is getting the subs to do what they're supposed to do and creating change.

Dave: Now the holy grail of becoming younger and healing like Wolverine is the idea of a pleural potent cell and this is a cell that would just go in and stick where it's needed and then become the cells that you need for a more rapid healing and things like that. It sounds like most of the stem cells that we work with today from fat and bone marrow don't have a high degree of pleural potency. But there are some new things that aren't even technically stem cells found in blood that do have this pleural potent thing. And this is at the very cutting edge of we'll say regenerative therapies if that's not technically a stem cell. Can you tell me about those.

Matt: Yes. So these are small nucleated particles or something called V-cells. V-cells are present in blood and they're also present in the bone marrow. I'm working with a company called Tithon and I'm doing some overseas clinical research with this. But there are pleural thyroid hormone receptor positive cells that are pleural potent and so the evidence is that there's some controversy on this. Because they're so small and uncommitted, they're able to grow into any cell type and because they're so small when they go IV they're able to get past the lungs. There's some very exciting potential in terms of what we're going to be able to do with these cells in terms of treating I think a variety of systemic conditions.

Dave: And of course I'm a medical tourist I had to go overseas with you in order to try V-cells and they seemed very potent for lack of a better word which is pretty cool. And I say just that they felt very potent. How do I put words to this. After you've had a good number of stem cell treatments over the next week you can sort of feel, I'm I younger? I'm I more flexible? I'm I more energetic? And things like that. And there's restorative feel. This is very hard to put words to. A restorative feel to the V-cells that's different than what I would feel from doing stem cells and all these are relatively nuanced.

The thing that I felt the first time I tried stem cells, all those sites of injury, the arthritis I had in my knees when I was 14, I don't normally have knee pain but the knees feel even better than they're used to and all the old aches and pains from shoulder injuries in my 20s and things like that, they all just went away. So I live a life without chronic pain most of the time unless I do something like walk into a wall. And then it's usually not a chronic thing and if it is I inject some stuff. I find that by having removed that wasted signal in my body, that freeze up energy from me to put into Bulletproof put into the radio show, to be apparent, it's just wasted effort to walk around carrying pain all the time.

I do think that that first hit from a symptom is very noticeable but after you keep doing stuff to get younger, there's a nuance feeling to it and it's related to what I felt from doing NAD and even some of the machines at Bulletproof labs. There's this whole huge set of things that give you more mitochondria, cause tissue healing or make your nerves stop hurting and all that. I feel like that new technology V-cells could be really cool because it's just coming from your blood so it's very easy.

We've covered what comes out of our bodies but you can also get stem cells from umbilical cords. Walk me through the ecosystem of different types of umbilical cells, where they're available and things like that.

Matt: Good question. It's interesting as seen, I'm 47 and I feel better than I did when I was 20 after I started doing all of this stuff.

Dave: We're almost the same age and both of us started like, "Oh my god!"

Matt: It's amazing. We got to go all the way back to the womb to answer this question. I said there's stem cells all over there, stem cells and fat and bone marrow. There's also stem cells in the umbilical cord. There are stem cells in the wall of the umbilical cord and one term for that Wharton's jelly.

Dave: Wait explain Wharton's jelly.

Matt: Collections of stem cells that are in the umbilical cord wall and some people call this Wharton's jelly and there are stem cells both in the wall of the umbilical cord but there are also stem cells in umbilical cord blood. Just like when we process PRP and we isolate that platelet fraction, we can isolate the stem cell fraction from umbilical cord blood. Then we harvest stem cells from umbilical cord blood. These are stem cells that are donated. Imagine a woman has a baby and there are some stem cells that happen to be in the umbilical cord blood. These stem cells have the possibility of going back and forth between the mom and the baby. So as a result they tend not to express the protein that says, "Mom or baby."

Because they don't express that protein, because they're sort of neutral, they're like the Switzerland of stem cells. We can take and isolate those stem cells and then we quarantine them while we test the mother to make sure there's no infections then we can give those stem cells back. There are a whole bunch of brands on the market right now. If someone is talking about stem cells in the United States and it didn't come from

bone marrow and it didn't come from belly fat, then probably it represents one of these umbilical cord blood products for the most part.

Dave: That means that someone is going to hospitals and they're taking umbilical cords and then getting stem cells out of them.

Matt: That's right.

Dave: How do you know who's umbilical cord you got?

Matt: It's actually a fairly robust program because a woman is onboarded onto this and so there's like a 200 page questionnaire that they have to fill out then they're medical information is tracked to the end of their pregnancy and they're in a hospital getting an elective C-section. There's an anesthesiologists that are monitoring them. In terms of a donating patient population we pry no more about these people than any other group of people that donate things.

Dave: So these only come from C-sections?

Matt: They come from elective C-sections exactly. So they're scheduled and then they quarantine that product and then they continue to test the mother afterwards.

Dave: For?

Matt: They test for the exact same things in terms of, testing infections that the blood bank is testing for.

Dave: So they're looking for the same kind of infections but there could be other infections that are not tested in blood banks, things we don't know about or just things that aren't-

Matt: Like Lyme disease or something like that.

Dave: Yeah.

Matt: Absolutely.

Dave: So there could be a risk from an umbilical stem cell. What about, how do you know if there are really good stem cells? How do you know if they're alive and all that kind of stuff because you're getting in from just one person or are these mixed?

Matt: You're getting them typically from just one person. What I can tell you is that those cells are very young but there's a lot of characterization of those cells. Basically we're getting those cells, processing them and giving them back. It's a fairly simple process and you're right we don't know a lot about those cells.

Dave: And we don't know what percentage of them are living-

Matt: We actually have fairly good numbers on viability and I'm familiar with people that actually do the testing to find out what the viability is of all the basically companies out there. The viability is not as great as we would like it to be but there is viability-

Dave: By viability you mean, some of those stem cells you're getting from umbilical blood maybe dead.

Matt: Maybe dead yeah.

Dave: That could also be true if you had your own stem cells taken out some of them probably die during processing. So you're going to get a higher viability but you're never going to get 100% of live cells.

Matt: You're going to get nearly 100% live cells-

Dave: From your cell.

Matt: From your cell. You're going to get a smaller viability from umbilical cord but they're going to make up for that by giving you more.

Dave: 'Cause they're much younger.

Matt: Well, they're going to calculate, "I'm going to give you a million stem cells. And then it's 50% viability." And so they just give you a volume so you end up at a million.

Dave: So they give you two million stem cells knowing half of them are dead and still works?

Matt: It's still going to work.

Dave: Now, do they pay the mothers for these umbilical cords?

Matt: I don't know the answer to that but I would be that they pay them a little bit but not that much.

Dave: There's a lot of processing that goes in afterwards in terms of having an umbilical cord and then turning into stem cells requires also testing in labs and things like that.

Matt: Normally it is enormously a high profit margin.

Dave: Couldn't we just grow these stem cells? 'Cause you can culture stem cells and grow them. And I've had this done with my own stem cells. You have them taken out, you send them to a stem cell bank and then they can actually grow a lot more stem cells than I sent them. It's for some reason only in the US, the second they're cultured in lab they magically turn into drugs even though before they were my cells and they're still my cells. I haven't figured out that, that's doesn't seem like science, it seems like protectionist legislation to me. But in the the rest of the world, how does that work?

Matt: That's a great question. A, we can take your own stem cells and we can take stem cells from bone marrow, we can take stem cells from belly fat and then we can send that to a lab and then we can culture expand. Any time you culture expand that's by definition more than minimally manipulated. So that's not okay we can't do that in the United States.

Dave: It actually is okay medically.

Matt: It's okay medically.

Dave: But just legally someone might be a drug company has decided that becomes a drug right?

Matt: Yeah. So we can grow your own cells then the other thing that's done in stem cell labs is that they can create a stable cell line. And when they create a stable cell line, then they grow that cell line up and they characterize the stem cell line and they make sure when they grow it there's no malformations and they make sure that their chromosomes are okay. This maybe a very interesting area in the future and it's a very interesting area outside of the United States right now.

Dave: Those are the cells I want, they've been highly characterized, they're strong, they're cultured and I can get hundreds of millions of them but I have to leave the US. This seems like an issue of national competitiveness.

Matt: I think that it is.

Dave: So we're basically hobbled in our stem cells in United states by legislation. So people can go to Malaysia where you're doing some work, they can go to Thailand, they can go all over the world and they can get way more and potentially more potent stem cells but they have to pay for air fare and go out of the country and the stem cells are still expensive overseas probably as expensive as they are in the US but in the US they're more convenient but they maybe less potent.

Matt: Where we are is kind of like an anesthesia, the answer is always, 'it depends' and so the interesting thing is that we need more data. There's thousands of stem cell trials going on right now and what we need to know is what's the experience with rotator cuff tear with culture expanded cells, with umbilical cord blood cells, with fat, with bone marrow, with exosomes, with PRP lysate, with PRP, with platelet rich fiber matrix. So I just said a whole bunch of things. We need to get data on all of these.

One perspective is that the FDA is trying to make sure that people aren't taken advantage of but it's completely hobbling the field in the states at this point.

Dave: Here's the interesting thing, I appreciate that there's a regulatory agency watching out for me however I would like to choose whether I'm take advantage of or not using the advice from all regulatory bodies. But when I don't have the choice because of that, that's called a nanny state and it's irritating and it's actually going to cause the United

States to fall far behind the rest of the world where this isn't happening. So you can go to China and do incredible stuff that is simply not allowed here. I know there might be risk to that but it's my risk to take and the fact that this do no harm, you may inject if you're allowed as a physician in the US, you may inject some form of cells into my rotator cuff and it might not get better. But it's unlikely to be worse than it was before.

So if you are to do that and obviously I'll take that risk. The fact that it's illegal for me to take that risk in the US, it is not okay from an innovation, from a national competitive standpoint. And as a care provider I imagine it's kind of irritating for you too. Because you're saying I think for this patient, this is the right treatment, but I'm not allowed to do it here.

Matt: I 100% agree and the super interesting thing about that is this is the most exciting time to be alive in history in terms of what we can do to fix problems physiologically and physically. There's an explosive growth of treatments that are just below stem cells that are really profound and effective. We're making really incredible improvements in terms of treating people here with even non stem things. But what would be great is to be able to have everything available so that we could provide the best possible care here in the states.

Dave: And you could rely in your physician to make an educated decision instead of a regulation that might be 50 years out of date. Just saying guys, let's hope our doctors do cutting edge work in the US. All right Dr. Matt thank you for the stem cell education here at BioReset medical. I got one more question for you and probably know what it is. But if someone came to you tomorrow and based on your whole life experience not just your medical side, but just everything that you've learned. And they said, I want to perform better at everything I do as a human being, what are your three most important pieces of advice? What would you advice them to do?

Matt: The number one I would do a physical movement and exercise. Number two I would have a mind, body practice of some kind.

Dave: Like a meditation-

Matt: Like a meditation practice and number three I would find a really good regenerative medicine doctor that can fix you when you break yourself and then help you not age.

Dave: I like that a lot. I have a bonus question for you if you're up for it. Tell me about your experience using the reset process.

Matt: The question about the reset process is interesting 'cause that's why I'm here. I became an anesthesiologist and anesthesia is so interesting because it's super fascinating and interesting but it's super dangerous. I was running around the hospitals cording people and saving lives and doing just crazy things and I was totally impervious to it. I loved every minute of it and I would never stressed out. Until you get to some point where you begin to realize how dangerous the stuff that you're doing is. And I kind of got PTSD

myself a little bit and part of this whole journey was running around the world, finding people that had all of these skills to help people.

Basically my version of the reset processes is that all of the traumas that I had personally ended up being things that gave me the skills to do what I do now. So I began to correlate all of the bad things that happened to me with all of the wonderful sort of life changing things that I'm doing now and it's alive in me because I totally healed all that stuff. As I talk to people I find almost everybody is in a little PTSD. Where I learned this and I really embodied it when I went to 40 years of Zen. I talk about 40 years of Zen in almost every single appointment that I have.

I talk about that concept of cognitively reframing the traumas and it's so profound for patients because the reset, if I treat your knee and I reset your nerve but then if I reset your experience of the trauma, it makes everything twice as effective on the knee. It's like there's super synergistic, we're a mind, body, spirit and so for me the greatest gift of my life other than my parents has been to be able study and grow in this field and heal myself.

Dave: One of the things that you do at BioReset with patients who need it is you actually use ketamine which is great. 'Cause you're a licensed anesthesiologist and this is a common hospital drug but you can use it to help people get over a trauma that's holding them back from their healing. These traumas don't have to be big things, they can be things we don't know what it is. And during this visit where we're filming this show, we actually did some work with ketamine on a patient and saw you did it, I was a witness to it, held the camera. Who had a really strong visceral reaction to fear of needles and for the first time in her life she was able to actually get an IV because you were able to use ketamine and a version of this reset process that comes out of the neuroscience field at 40 years of Zen. And to go through that, okay now you're in control and to do the cognitive reframing along with the visceral stuff in a medical setting using substances.

So there's a whole blog post on the Bulletproof website I wrote getting over really deep seated fears that are totally irrational and the fact that you're able to go there and use ketamine in a medical setting to allow people to then go on and do regenerative therapies that they were blocked from beforehand. I think is epic and amazing and just to witness that and to be able to capture it on film was really cool. So I'm excited to share that information with people listening.

Matt: That was like one of the high points of my life because interestingly a lot of people that come to me have needle phobia and we completely sort of fixed that. And my experience of it is that ketamine, there's a lot of physiology that I can tell you about but what it does is it makes you feel very, very safe. And there's a lot of things that I could tell you that you'd be like, "You know what Matt, I think that sounds true, I think you're probably right but I don't believe it for myself." And when we get someone into a ketamine journey and we get them to a point where they feel totally safe and then we reframe their relationship with their trauma, there becomes a portal that is open to them so that when they come out and then the next day or a year later, they remember that they were safe in that moment and they believe what the conclusion that they

came to and people can profoundly change their relationship to trauma and difficult things that they've been through.

Dave: In one setting.

Matt: I one setting. It's like what we did. It was like my favorite thing I've ever done.

Dave: By the way our guinea pig there was Selena the Bulletproof Radio executive producer and she volunteered to be a guinea pig with a lot of courage which is pretty cool.

Matt: We got a lot of help on that with Dr. Barry who did energy medicine and so it was like the culmination of everything that we're trying to do. So it's cool.

Dave: Yeah. And if you are a long time listener you've heard a couple of episodes with Dr. Barry Morguelan who's one of twelve living grandmasters of ancient form of Chinese energy medicine and a UCLA surgeon to boot. So we had a bunch of cool powerful people in the room doing some great work. And the idea there is that you can do that with neuroscience using these altered states from a neurofeedback and when you're dealing specifically with medical things and you come in and you have someone who's conscious the way you are Dr. Matt and you're able to choose the right tools, the right substance in this case ketamine to allow someone who for the first time in their life to be able to have a needle without just flipping out, that's pretty amazing stuff. So that's going to be a blog post on the Bulletproof blog.

And thanks again for just pushing the boundaries in a safe and medically appropriate way but just doing what's right to make people like me like Selena and like all your other people heal in ways that are not normally considered medically possible but are absolutely real.

Matt: Thank you so much it's the pleasure of my life.

Dave: Matt your clinic is bioresetmedical.com and thanks for being on the show.