

[Announcer:](#) Bulletproof Radio, a state of high performance.

[Dave:](#) You're listening to Bulletproof Radio with Dave Asprey.

[Dave:](#) Today's cool fact of the day is signs of new nerve cells have been spotted in adult brains. I would say brains like that because it's like Pinky and the Brain, you know what I'm talking about. Now a tweaked laboratory protocol revealed signs of thousands of newborn nerve cells in the brains of adults, including someone who was 100. And those immature neurons mark the latest data points in this debate that's lasted for decades whether people's brains developed new nerve cells as adults. And that process is called neurogenesis, happens in the brains of some animals, and scientists have been a bit divided over whether human brains as adults are capable of this thing. And what these researchers did that must have been great fun was they sliced or they viewed slices of postmortem brains of 13 formerly healthy people aged 43-87 under a microscope and saw these newborn nerve cells, and they were part of the hippocampus called the dentate gyrus, a suspected hotspot for these new neurons. And that's kind of cool because they used some new procedures where they did really fresh brains and they soaked them only for a little while in chemicals that preserve the tissues so they're able to see more than they normally do.

[Dave:](#) And that's really cool because well, it looks like we really can make new cells in our brains, and what's really cool is they also looked at Alzheimer's brains and they had far fewer of those cells, which means maybe one of the things that's going on with Alzheimer's is that you don't have enough stem cells in your brain. Just saying.

[Dave:](#) Now you guys know I've been really working on my foreshadowing skills, and I think I nailed this one because we might just be talking about stem cells and brains today if you didn't figure that one out. But before we get into that, now back to brains and stem cells.

[Dave:](#) Today's guest is a board-certified integrative neurosurgeon named Dr. Marcella Madera, and the reason I'm having her on the show is well, there are very few integrative neurosurgeons out there. But she's actually done work on me, which is particularly cool. If you've seen my videos on YouTube or you heard the interview with Dr. Harry Adelson and Dr. Amy Killen from Docere Clinics, you've heard about my six hands whole-body stem cell procedure where I had stem cells pretty much everywhere you can stick them in the body. Well, two of the six hands sticking stem cells everywhere on my body belonged to Dr. Marcella or Dr. Madera as we can her. I just call her Marcella for the interview.

[Dave:](#) Marcella, welcome to the show.

[Marcella:](#) Thank you for having me.

[Dave:](#) It's actually really cool to be able to chat with you, and I'm not post-anesthesia with all sorts of weird goopy things on my head, which I think happened last time. I'd like to start out by saying what made you an integrative neurosurgeon because those words

sort of feel oppositional to me. Most of the time surgeons are the ones like, "I don't know, hit it with antibiotics and I can stop a human heart and I'm so tough." And here you are not only doing integrative stuff, you do Dr. Barry Morguelan's energy exercises before you operate. You're kind of out there. How do you exist in both worlds? What made you this way?

[Marcella:](#) So I had many years of taking care of patients where I had this rigorous surgical training at [Johns] Hopkins for my fellowship, and I really had the feeling over and over and over that I wanted to treat patients holistically. And I felt like there was so much more that I could offer to patients in terms of their whole life and their whole health as opposed to just finding a place to cut. So that's how I started my journey.

[Dave:](#) How have your colleagues responded when you sit there and do some sort of deep breathing exercises, unusual stretches, and then talk about being integrative? Are you shunned? Do you sit by yourself at the cafeteria where all the surgeons eat? How does that work?

[Marcella:](#) Actually my partners have been really supportive of this adventure that I've been on of creating this integrative practice. In OR, for example, I do physical energy exercises before every case, and my whole team in the room, including anesthesia, scrub techs, CR arm tech, nurses, monitoring tech, every single person in the room does the exercises and now people start coming to the room ahead of time. "Hey, have you guys exercises yet." People that aren't in my room. So really the whole team getting involved has been really supportive for both me and for the patient in creating that positive environment in the room for the procedure. And then my partners, I have done the exercises with them when we scrub together, and they smile and they let me do it.

[Dave:](#) Describe the exercises that you're doing with people. By the way, just people listening, if you've watched the video with Dr. Barry or listened to any of the interviews with Dr. Barry, he goes pretty deep. He's like the guy who Dr. Strange, the movie, they interviewed him before they made the movie because he's that surgeon who went off the China and all that. All right. So, Marcella, what do patients see you do before you start cutting on their brains?

[Marcella:](#) Sure. Well, so I do with my integrative practice, I always teach all of my patients one exercise that they do leading up to the surgery and then they do after, a physical exercise. And that's a neck exercise, a very simple one where you turn your head all the way to one side, holding in your abdomen, your core really strong, and you say, "Each day, I go farther," and you do that to both sides really slowly, "Each day, I go farther." So I teach that one to patients. Again, it helps align their mind and body getting ready for surgery and then helps them recovery after in terms of, again, aligning their body to heal.

[Marcella:](#) And then in surgery, while the patient's asleep with the team, I choose one of the hundreds of exercises that Dr. Morguelan has given us. So today, for example, we did this exercise where you put your hands together and you touch your chest and you hold in and you say out loud, "If it's going to be, it's going to be me." It's a fun one. We also

did a push/pull today, which is pushing one hand out and bringing the other to the chest and then alternating that and taking big, deep breaths.

[Dave:](#)

That's like a Tai Chi, it's a relatively common Tai Chi one with Dr. Barry spin on it. Okay. But all the Tai Chi stuff comes from that lineage anyway, but just for people who aren't going to see this on video. These are unusual things. I got to tell you guys, I listen to Dr. Barry's audio stuff and I do some of his move and exercises, not as often as I probably could, but there's weird stuff that happens. It's reliable and repeatable. So I just find it particularly ballsy when a licensed medical doctor is wanting to go out there and be like, "Yes, I do this." It's almost like if you got out a rattle and shook it and spun around and lit a candle before. There might be value in that. The Shamans I know are very serious about that stuff, and some of them have very unusual abilities. So I'm not discounting it. It's a bit risky because people could say, "She made me do this, and I didn't like it," whatever. Do you worry about that?

[Marcella:](#)

Never. And the thing is the results speak for themselves. When I started doing these exercises in the OR with my team, this was years ago, before I had my integrative practice. I was doing this for myself and for the patient, but people love doing them and they love the way they feel. Everybody in the OR loves to take a deep breath and start the case. We always do a time out before surgery. So the time out, we say the name of the patient, what procedure we're doing, do we have all the equipment. So there's a space in the OR that's reserved for getting everybody on the same team together, eye contact, let's do this. And this just adds a piece to that that allows each individual person to take a deep breath, clear their mind, and go for it. And people love it. I haven't had one person in the room say, "I don't want to do that anymore." They're not telling me in the OR.

[Dave:](#)

There are a bunch of studies out there, and one was just published. I shared it on social media about it turns out we really can learn [inaudible 00:08:39] leap, at least a little bit. And they looked at EEG and they did all this stuff. So something happens. There's also various people, surgeons as well as I believe a few studies have come across where they talk about what people say when you're unconscious during surgery actually affects outcome. Right? So do you pay extra attention to the language when you have a patient who's out? Do you think when you're saying, "If it's going to be, it's going to be me," or whatever it is, I mean, do you think that's moving the needle, and have you ever measured it or is it one of those things where you know it feels good and it can't be harmful so let's do it?

[Marcella:](#)

I think it's a little of both. So I have a great example of this. I have a patient who is a PhD psychologist who has an expertise in hypnotism. He asked me a very specifically to read him a script while he was going to sleep and while he was emerging, and he wrote the script. And it had to do with no pain, just pressure. It was like a three paragraph script that had to do with his recovery and mainly minimizing pain. This guy had a multi-level lumbar fusion, very big, and a revision. He had had surgery before. So four plus hour operation. Hardware. The guy did not take one narcotic pill in the hospital. Now, that's an N of one, but I-

[Dave:](#) Dang. Spine surgery with no antiseptic. What'd you do just cut the spinal cord all the way? There you go. You won't feel that.

[Marcella:](#) Oh my gosh. Don't say that. I heard stories. My feelings.

[Dave:](#) No, no, no. I'm just saying how could you not feel it unless there was no nerve there, but clearly something was happening, right? But N equals one.

[Marcella:](#) For sure. For sure. And then also, I do believe that all of our brains are wired to focus on the negative. Our culture, our upbringing, our protective mechanisms in our brain, we want to protect ourselves so anything that's negative we focus on that because we're protecting ourselves. But the more you speak in a way that is in reality but also encouraging of the future. So this is going to go great. Your nerves are going to heal. You're going to feel better. Whether it's during the surgery or in preoperative discussion with the surgery or after the patient, I do feel like the intention that we have for healing can affect the results for sure.

[Dave:](#) Do you think intention matters more when you're using stem cells?

[Marcella:](#) I think it matters all the time. But I'm somebody that uses it in my regular practice and my integrative practice. So I think it doesn't hurt anywhere.

[Dave:](#) And that's something that I would love for everyone listening to just hear, that mindset is exceptionally unusual in hardcore western medicine where you're saying, "Okay. If it doesn't hurt and it might have benefit, even if we don't know why, it's okay to do it." But we have almost this fear of like, "Well, if I don't know that it works, we just can't do it because we might look silly." But here's the deal, if it feels good and it might work and it isn't expensive and it doesn't introduce more risk, it's okay to do it without knowing for sure. And that mindset just requires courage, especially when you're dealing with a licensed thing like that. So I love that you're pragmatic, and what you're saying makes so much logical, scientifically true sense that it's super cool.

[Marcella:](#) What I would say too in my integrative practice, every patient has gotten better. So I know it works and in those ... But I've used that intention, I write my own goals, I hand write goals for every single patient that I want that patient's procedure to go perfectly, that I want them to have perfect recovery, and, like I said, the results speak for themselves. So I'm using the intention and it is working.

[Dave:](#) There you go. Part of the reason I'm asking that is that all right, guys, I'm just going to go out into a little crazy land here. You all know from the people I've interviewed, Albert Villoldo, Dr. Barry, Joy Martina recently. So I'm totally happy to talk to people who just know stuff and they can't say why or how but they're just people I'll call highly intuitive. My experience with the world as a biohacker and a skeptical computer scientist guy is that sometimes there's stuff I can't explain yet and I'm going to find a way to explain it. But in the meantime I'm not going to ignore this stuff, and I'm going to actually look for it.

[Dave:](#) So I know people like that. One of those people after I had my whole-body stem cell makeover with Harry and Amy and Marcella, they actually were like, "Oh, what's going on here?" I didn't really give them much details, but like, "Wow. There's these little golden thingies floating around in your body." Yes, there are people who at least believe they can see inside you with Superman X-ray vision. I don't know if they can, but they knew something was going on. They're like, "Oh, wow. There's little things, they move around like when I tell them where to go." Actually two different people who have that kind of weird skillset independently didn't know each other both said the same thing. So there's probably something cool about stem cells might listen because something has to guide in your body when you're in the womb. How does a stem cell know whether it becomes like your liver or becomes your tooth, right? Do we know what's telling them to do that?

[Marcella:](#) We think part of it is the ... So the paracrine signaling or the signaling from the environment that they're in contributes to that.

[Dave:](#) The chemical signaling.

[Marcella:](#) Correct, yeah. Chemical signaling or microscopic chemicals that tell the cells what to do, and that's how we think that the regenerative treatments actually work is that we inject whether it's your own cells or an external substance like exosome or umbilical cell, something we inject that then tells your cells to wake up and heal. So it has to do with the chemical signaling.

[Dave:](#) So there's definitely some chemical signaling. But there's also some evidence that there's electrical or magnetic signaling that also is helping to guide what's going on. If you run a current over a developing embryo in an animal, very strange things happen that don't happen otherwise. So at least my understanding of that system is that it's probably some chemical and some other field based stuff. When I say field, I mean measurable fields, not fields of intention. But hey, we just talked about maybe those matter too, who knows.

[Marcella:](#) I will say, too, my patients who have done the energy work in my integrative practice, some sign up and do more intensive practices and listen to the audios. Patients that have done more of that have done better than those who didn't.

[Dave:](#) I have zero doubt that that would be the case. Having experienced Dr. Barry's work in person and just done his stuff ... In fact, my 11 year old after one week of listening to Dr. Barry's meditation stuff before she goes to bed, she's like, "I go to bed a lot easier. I like this." She said, "I told myself I'm doing it for three months." She did it. She said, "Now I'm going to do it for a year." So, every night for a year, my 11-year-old, of her own volition, without any encouragement, decided that she would listen to one of probably 50 different Dr. B meditation things. I know that they do something, and I've felt some really cool stuff that I don't normally get from meditation without really advanced work. So there's stuff going on with that, so I can see why patients would get better because if you can increase that thing we call chi, you'll heal faster and there's tons of studies off that with acupuncture and that sort of thing. So we know there's something going on

there, and I love it that you're just like, "Yeah, I'm going to do it because it's not going to hurt anyone, and my patients seem to like it." What a great healer perspective that is.

[Marcella:](#) Thanks.

[Dave:](#) I want to get more into though the fact that you're one of the only spine surgeons to selectively and occasionally offer stem cell treatments using a patient's own harvested cells for things like MS or Parkinson's or things like that. Can you talk about what you think is happening in the future of that field?

[Marcella:](#) Absolutely. The nerve generative diseases have been linked more and more to inflammation, and we know that the regenerative substances, whether it's patient's own cells or, again, these other regenerative substances we can use, do amalgamate the inflammatory response. It is very promising what is going in other countries with studies with these severe cases of neuro degenerative diseases and treating them with regenerative medicine. So I do think this is the future for those diseases for sure.

[Dave:](#) If you put on your 20 year from now hat, someone walks in, they've got spinal cord injuries or they've got Alzheimer's or their brains all jacked up, what are you going to be doing?

[Marcella:](#) So I think spinal cord injury, that's what gets me really, really excited because I think we're closer to that one because I feel like we're getting to where we know where to do the injections and how to do them, and especially for incomplete injuries. Meaning someone is not completely paralyzed but partially, they have less far to go in terms of healing. But I think we're going to be doing intrathecal injections and then we're going to be injections in multiple other areas of the body to help the nerve healing.

[Dave:](#) I'm definitely haven't been paralyzed or anything, but I did the full on give me a young person's spinal cord and brain stem cells everywhere in the body kind of thing, the most extensive procedure I think that's ever been done on one person at one time, at least according to anyone I can find. And we did masses of exosomes and my own stem cells. Can you walk people through what are exosomes and why would you use them anywhere in the nervous system or in the body?

[Marcella:](#) Sure. So, the simplest explanation is that they are little nanoparticles full of awesome, regenerative juice. What's in that regenerative juice are RNA, which is again a very micro-chemical signaling molecule, and then also growth factors and hundreds of different growth factors. The exosomes come from immature stem cells, and those stem cells secrete these vesicles. So they actually don't have any DNA in them, so they're not cells themselves. They're powerful.

[Dave:](#) So I had 11 vials of exosomes pretty much everywhere in the body. And, guys, if you didn't hear the original interview about this, I had stem cells in every joint in my body, basically from the ankles on up, every vertebra, and then all the cosmetic and reproductive organ stuff. And then, Marcella, can you describe what we did with the stem cells along my spine and brain and things like that?

[Marcella:](#) Yeah. So for your spine, at every joint from your cervical spine, so the neck and also the base of the skull. From the base of the skull, all of the neck spine; all the thoracic spine, which is the part that's connected to the ribs; all of the lumbar spine, which is the low back; SI joints, which are the joints that connect your pelvis to your spine; and then iliolumbar ligaments, which are ligaments that connect the pelvis to the spine. So that's all of the joints from top to bottom, plus epidural injections, which help the nerves. So epidural injections in the lumbar, thoracic and cervical. And then intrathecal, which is into the spinal fluid, in the neck, and then those cells get into the spinal fluid and get to the brain as well.

[Dave:](#) The reason I wanted to do all this is well, okay, I'm planning to live to at least 180, and I have a pretty crappy history in terms of people who are likely to either be in Men's Health with my shirt off, which did happen. I mean, I used to weigh 300 pounds, and if you look closely, you can see my stretch marks in the photo, and I didn't know I was taking my shirt off. They're like, "Could you do that?" I'm like, "Over my dead body. Are you kidding?" And they coaxed me into doing it, and the picture, I guess I have abs, whatever. But that was unlikely. But in terms of living to 180, given that I had high risk of stroke and heart attack, arthritis in my knees since I was 14, run away inflammation, chemical damage to my brain from toxic mold. And then over the last couple years, I actually had two substantial traumatic brain injuries.

[Dave:](#) So I'm like, "You know what, I think I need a reset on all this. I'm just going to go in and do all that." And that was what motivated me to do it, although I don't have Parkinson's or anything like that, but I know I've had inflammation throughout a lot of my life because of autoimmunity and toxic mold, all that stuff. So that's the context.

[Dave:](#) But also, if I hadn't had all those things, would I have done this? Probably because I still want to live to 180 and this is kind of a reset for me.

[Dave:](#) What I noticed that was probably most profound after the treatment was it took about maybe two weeks, but my sleep score went through the roof. I've gotten really good at hacking my sleep. I have 10 years of sleep data that I've been gathering most nights, going back all the way to the days of the Zio, which they don't even make anymore. And pretty good sleep data most of the time. The difference I found was that the amount of deep sleep that I get went through the roof, and I do it in conjunction with the True Dark glasses, I take Sleep Mode. I do all the other sleep hacks that I originally wrote that I have kind of been copied all over the internet, collagen or honey or brain octane before bed, all that stuff. But the amount of REM and the amount of deep sleep, I oftentimes get two hours plus of each one per night in six hours of sleep. So, I'm getting as much of those things as a 20-year-old gets in an eight-hour sleep in six hours and I'm 46.

[Marcella:](#) That's amazing.

[Dave:](#) I think it was the cells. Can we prove that that's what did it? No. But wow. Have you seen other patients improve their sleep when they get this kind of stuff done?

[Marcella:](#) I haven't. But also, I think that every chemistry is different, and your chemistry clearly needed that if that was the source of the improvement. Like you said, the chronic inflammation that you've had has caused a long standing disruption or could have caused a long standing disruption in your sleep and resetting it with this inflammatory modulating exosomes could have gotten you that effect for sure.

[Dave:](#) Something else really irritating and kind of disruptive happened. Since I was maybe 11, my preferred bedtime is 2:00 a.m., and if you look at my sleep data, I go to bed at 2:05 a.m. I get tired at 1:55. I write in my books until 1:55. Between 11:00 p.m. and like 2:00 a.m. almost, that's my quiet time. I'm in the zone. I just nail it. I go to sleep, wake up full refreshed six hours, ready to go. But I started getting tired at like 10 o'clock and wanting to wake up at 5:30. It's horrible. It's dark at 5:30. It's the middle of the freaking night, okay?

[Marcella:](#) Yeah.

[Dave:](#) And I've since managed to push that back a little bit, but I'm still waking up at like 6:30 or 7:00. I don't want to wake up that early. I need my writing time. And so I do think that it shifted my circadian rhythm to be more normal, but I don't want to be normal. I want to be above normal. So I blame you.

[Marcella:](#) Can you write in the morning?

[Dave:](#) No. I have kids. Are you kidding? You wake up in the morning, the energy's all wrong. A lot of writers actually, there's something magic that happens after 11 for writing. There's, I don't know, the moon energy comes out, and I put on crystals. I'm kidding. I have no idea, but there's something special that happens there.

[Dave:](#) So I do think there's a circadian thing. Can you talk more about nervous systems, surgeries, or circadian stuff? What have you learned, especially as an integrative practitioner that might be applicable to everybody listening if they're going to get any kind of surgery?

[Marcella:](#) Well, for surgery, optimizing sleep before surgery is really important, and that's something from an integrative perspective. I never talked about that before I was doing integrative work. But certainly surgery is extremely traumatic to your system, and so my entire process leading up to surgery or even if it's just a small procedure, not a surgery, is optimizing the stress response, the inflammation response, and trying to keep people as calm and cool, rested, and well, even better than they're normal state of health leading up to surgery. So sleep is incredibly important before, and then afterwards, depending on how big the surgery is and how long people are in the hospital, most of the things that I do in my integrative practice are actually pretty small surgeries because one of my goals with my integrative practice is to minimize the size of surgery that I do. So I'm actually doing small, minimally invasive things. But if you're in the hospital for a few days or with medications that you're taking, all of that can disrupt sleep, and the more sleep you get, the better you're going to feel, the better you're going to heal. That's very, very well known.

[Dave:](#) Hospital environments suck. I do my best to stay out of the hospital. Okay, that's a statement all of us would say unless we work in one. But I think the only time I've ever spent any time in the hospital was maybe four years ago, I stepped on a rusty nail. Fine, whatever. I had a tetanus shot a while back. I don't know. And I was feeling fine, and I thought I didn't go that deep. I put some iodine on it. I'm like, "I'm good to go." And three days later, I started getting a little infection in the spot on my foot. I'm flying all over the place, and I come back.

[Dave:](#) My wife's an ER doctor, and I'm starting to get like pain in my jaw and like weird muscle tension and things like this. So she's like, "Ah, Dave. You need to go to the hospital and go to the front of the line." I'm like, "Come on." She's like, "No, you actually have tetanus. This isn't like you might have tetanus, you have the symptoms of this, and this can kill you in eight hours," or something. So I guess I'll go to the hospital. So I went there and the Canadian system was really cool. They're like, "Oh, just hang out here. No problem. We'll have some of the ..." Whatever the stuff is called. It's not the tetanus vaccine. It's the tetanus gamma globulins I think. Immunoglobulins or whatever they are. So they fly the stuff in on a helicopter, and they didn't even charge me \$5. It was amazing.

[Dave:](#) I spent eight hours in the hospital. I couldn't sleep in this hospital to save my life. And like if I was going to have surgery, beeping and horrible lighting and constant interruptions. How does anyone heal in a hospital?

[Marcella:](#) Well, I will say too so the whole process of being in the hospital sets off a stress reaction, which sets off inflammation, and we do know that inflammation can affect the circadian rhythm. There are connections chemically between circadian rhythms and inflammation. So what do people do in the hospital? I mean, number one, we try to do the smallest surgery possible to get them out as soon as possible. For my patients who do my integrative program before and after, I actually have them listen to the breathing exercises while they're in the hospital, after, really any time. They can actually leave the breathing exercises on all night, and that helps with sleep. I also have another autogenic exercise that came from a neurosurgeon who is a holistic pain doctor now that helps manage pain with cognitive exercises. So managing pain is a big part of it when you're in the hospital to get sleep and then keeping your nervous system calm as well. But the number one thing is quick surgery, stay as short time as you can.

[Dave:](#) Do you envision a future where hospitals actually help you heal by designing their environments to be a little bit human friendly and a little bit less like being inside of a refrigerator? I have no idea how to even describe it.

[Marcella:](#) I do. I think so that's a great way to talk about a project that I'm working on with the medical school here in Austin. So Dell Medical School has supported me with this project of how do we reduce pain after lumbar fusion, and they're actually letting me add some integrative techniques to the pathway before and after surgery. So we're even getting anti-inflammatory diet in the hospital amazingly.

[Dave:](#) What do you recommend? So this is something ... Listen to this, you get to talk to an integrative surgeon about what do you do before surgery, and this doesn't have to be

before neurosurgery, before any kind of surgery. So what kind of food changes do you make for people before they go in?

[Marcella:](#) So I really design a food discussion based on how much I think the patient can manage. Some people come to see me and they already know where the meat sources that are important, what are the good ones are-

[Dave:](#) Well, you're in Austin. So any barbecue is fine, right?

[Marcella:](#) There are some places that are better sourced than others.

[Dave:](#) Okay. Got it. So grass fed you're basically saying.

[Marcella:](#) Yeah. Yeah. But there's some patients that come and have a wide variety of knowledge, and other people come and have never heard that actually gluten and dairy can be inflammatory or have never believed it and have never heard a conventional doctor tell them that it is actually important.

[Marcella:](#) So the other thing is leading up to surgery is stressful. So I don't want to give people 100 things to do leading up to surgery, especially if their surgery ... if they need to do something pretty quickly, if they've got severe nerve compression or something. So I really design it based on what the patient can feasibly manage without too much stress. So typically what that is, the simplest this is very simply, low inflammatory diet, low dairy, low gluten, cutting both of those if they can. I do talk to them about fat sources, trying to get grass fed if they can and the grass fed butter. We talk about butter and cheese, either European sources or grass fed sources. In Austin, we're really lucky we have great farmer's market and Whole Foods and from here. So people access to really great stuff here. So I try to keep it as simple as compact as I can if their surgery is coming up pretty quickly.

[Marcella:](#) For patients who want to dig really deep and-

[Dave:](#) As in the ones who don't want to die and want to suffer less after surgery, those ones. Okay. Yeah, keep going.

[Marcella:](#) Yeah. For those, we just do a more intensive anti-inflammatory diet. Being a neurosurgeon, I have a lot of colleagues who are integrative and functional doctors who have very specific ... do lab testing and do soul testing. If people want to get really deep into it, then I refer them to one of my really expert colleagues for that stuff.

[Dave:](#) What differences do you see in recovery time when people go to the trouble of, "Oh, I'm going to change my diet, and I'm going to do everything I can before surgery." As a surgeon, what do you see inside the tissues, what do you see during recovery?

[Marcella:](#) So I have a great patient example for that. So I have a lady who had severe neck pain, arm pain, neck disease, disc pressing on her spinal cord, and the first time I met her was in my conventional practice. And when I met her, I said, "You are a candidate for

surgery." Also her hand, she had hand dysfunction, so arm pain, neck pain, hand dysfunction, but she really, really wanted to optimize her life first. And she knew that she could do a lot of things, but she just hadn't done them. So she went on a very strict anti-inflammatory diet. She did some other energy modalities for pain, electromagnetic fields and cold laser. She did the energy-

[Dave:](#) All the stuff at Upgrade Labs. I love it.

[Marcella:](#) Yeah. Yeah. She did some of the energy exercises, and she amazingly at six months of doing that, her arm pain was gone, her neck pain was gone. She was walking two miles a day where she couldn't walk before, like more than 10 minutes.

[Dave:](#) And this is without surgery?

[Marcella:](#) This is without surgery. Her hand, she still had hand dysfunction. Her hand still wasn't quite right because she still had a disc pressing on her cord. But it was so powerful, and I have her neck disability scores, her quality of life scores, validated patient outcome measures that clearly show she was like 80% better without surgery. And so then, when we did her surgery, she went home the same day. We did regenerative procedure in addition. So I did her cervical fusion, but then I also treated the rest of her spine, which is very arthritic with stem cells.

[Dave:](#) Beautiful.

[Marcella:](#) So we did the surgery plus regenerative, which is something I'm super excited about. And then she flew through recovery, and she's perfect now. So to answer your question, recovery is only made better by cleaning everything up ahead of time.

[Dave:](#) It's astounding to me. I lived my life with constant pain, to the point that I didn't know it was abnormal because it was always there. Like my upper back always hurt, my knees always hurt, and when I went down the path on developing the Bulletproof Diet, which is a lot in alignment with the anti-inflammatory stuff. It's not based on what our ancestors ate, it's based on what do you know about biochemistry and nutrition that resolves inflammation and removing the things that cause inflammation and then doing the things that are good for you instead of the other. We'll just eat more of what's good without taking out the bad. And I notice the same thing. I'm like, "Wow. I don't have this spinal pain. I don't have the knee pain." Everything works for the most part to the point where you get used to that, but then when I did the whole body stem cell makeover with you and Harry and Amy, there is like other levels where it's not about stopping hurting, it's about just more abilities and just more energy. Just maybe more faster recover. It's the whole younger thing.

[Marcella:](#) I was just going to say you're getting younger, Dave. That's incredible.

[Dave:](#) It feels like that. My responsiveness to exercise, I don't have to exercise very much. I'm lean. I put on muscle without effort. I did one of the chi machine workouts every two weeks from Upgrade Labs, and you see the difference. And it lasts for two weeks. It's a

little bit nuts given my normal growing up was yeah, I could put on muscle and all, but it was just always pain and just high maintenance. I felt like the maintenance that's required for my body went down.

[Dave:](#) I also noticed my alcohol tolerance has gone through the roof. I can drink like I would have in college. I don't do that because alcohol is the opposite of an anti-aging thing. But I was talking about a month after the procedure, I pretty much, I'll drink good Sake with sushi pretty much as often as I can. I appreciate really good stuff, and it's self-limiting because good Sake is expensive like good wine. So you can't drink that much of it unless you want to be poor.

[Dave:](#) With that said, I can drink a carafe or two of good sushi, but I was on an intense business trip where I had sushi dinners every night. So, I drank enough sushi, er, sorry enough Sake to feel good every night, really for about two weeks in a row. Like five-six nights a week. This should have trashed my brain, not the point I'm walking around feeling like crap all the time, but I would have started dropping words. I would have noticed a little bit of creakiness. I would have felt it. I didn't feel it. So that said, I do my alcohol protocols with glutathione and all that, but my resilience is way higher. And no, I'm not doing that now. I might have a glass of Sake once a week if that because I enjoy it knowing full well that it's not good for me. But the difference was honestly I haven't been able to do anything like that since I was 25 and I'm 46.

[Dave:](#) So my sleep is different, my circadian rhythm is different, my stress tolerance for alcohol and other toxins like that has gone through the roof. My flexibility. I'm thinking that it worked.

[Marcella:](#) That's amazing. Of course it did. And we did breathing exercises during your treatment too.

[Dave:](#) Oh, nice. I don't know if I was doing them. I was unconscious. But I was doing the snoring exercise probably.

[Marcella:](#) Yeah.

[Dave:](#) All right. I want to get a little bit futuristic with you and share a story. I know two people who were paraplegic for at least a year, and both of them used electrical stimulation on their spine. And both of them are walking around doing completely normal things today, as in fully recovered, and not with surgery, although I don't know if they had surgery. Maybe, maybe not. Both car accident people. And one of the guys was 70. I talked to him while he was doing squats with weight. So I think it was working. The other guy was proponent of the electrical machine. So you got to take that with a grain of salt. But it seems like we know that nerves will grow or at least we know bone will grow following a weak electrical current as long as it's shaped right. There was a Nobel Prize for that. How to heal a disjoint fracture. So this is one of those smoking guns. I think electricity in the body kind of matters.

[Dave:](#) And we know that nerves will myelinate if they carry more of a current. So you can use electrical stimulation to drive myelination of nerves. So they're required to carry a current. They tend to grow more thicker myelin and carry walls as talked about how she did that when she cured her MS, and I've driven my myelination. Mold toxins will demyelinate nerves. It's like the rubber insulation on an extension cord. That's what myelin is. So if it's frayed or doesn't work, electricity kind of leaks out of the nerves to put it in a really rudimentary, lay person way.

[Dave:](#) What have you seen with the electrical stimulation or you mentioned the electromagnetic stuff earlier. It's okay to go off the reservation. We're talking about the future or the outliers, not your recommendations. Although I'd love to get those if you have them. But if you were to go out on a limb here and say I don't recommend this, but there's something interesting going on. What's going on for radical regeneration here?

[Marcella:](#) Well, so one of the things that has come to mind a couple times since we've been talking is that the biochemistry that I was taught in college has to do with receptor ligan meeting two proteins that meet each other in the body on a microscopic level then affect the next process. So it's like things touching each other, chemicals reacting with each other cause biological processes. But we know that quantum physics works differently, and when you talked about fields and the electromagnetic fields among cells and in the body, I feel like we're on the verge of in the next 20-50 years of having a totally different understanding of the biology of the body. And so taking into account how does this energy work, how does acupuncture work, how does pulse electromagnetic fields, for example. So I have patients that use that occasionally, and it's a device that emits a magnetic current, and that's basically an energy that a magnetic field that energy goes into the tissue and affects healing.

[Dave:](#) I've got one right behind me. I used it on my foot last night.

[Marcella:](#) There you go. Same with cold laser. So cold laser, again, it emits an energy, and that energy goes into the body and affects healing. But we weren't taught, I wasn't taught in college or med school how the body can absorb energy from external sources and do stuff. So that's what I think is the future is understanding how that works and then what type of energy is the best for your particular problem. So if it's spinal cord injury, is it electrical, is it magnetic, is it both of them together, is it electrical and magnetic and stem cells all at the same time? I think that's where we're going is figuring out how to use external energy plus regenerative medicine together.

[Dave:](#) That is very much in alignment with where I see the world going on that front because you can see it happen. I look back 20 years ago, if you just say magnets have anything to do with biology, most people, especially Western medicine, would just laugh at you and say you have a tinfoil hat. The machine that I have here is from Upgrade Labs, and you turn that on and your entire muscle group will twitch.

[Marcella:](#) Yeah.

[Dave:](#) So it's pretty each to say magnets are doing something because how is it that it can move or you look at the ... There's some really cool videos looking at what aphids growing on roses will do when they're near an airport radar installation. Every time the radar beam sweeps around, all the aphids stand up, and then they sit down. They stand up, then they sit down. It's like they're dancing in unison, but it's because there's an EMF field that's effecting them. Whether that affects us as much or doesn't, it's pretty clear there's something happening and we can argue and do the science and over 20 years, we'll figure it out. But then how do we use that to do good in the body? I think there's a mechanism for it.

[Dave:](#) Just to point out, you're talking about quantum biology, which is really different than this word quantum ... It kind of makes me mad because quantum physics and quantum biology are very real, hardcore academic disciplines with really strong research behind them. And then there's also like I'm going to do a quantum meditation, and you're like, "What does that mean here?" What it means is you've got some sort of like buzzword marketing because Prana is now a yoga brand. So you're like, "I don't know. I just thought I'd pick the word." So it kind of gets abused, and because you're doing real Chinese lineage energy medicine in addition to what you're doing, that's not the quantum we're talking about, but that may cross over into actual quantum biology. And that's the cutting edge of science where we don't know but there's something interesting going on there. So we're learning.

[Dave:](#) And I just want to draw that distinction for people because quite often quantum can just be replaced with the word bullshit, but when we're talking about quantum biology or we're talking about quantum physics, those are real science. And some quantum meditation may have a quantum effect. Heck, it probably does. But it can be misused and abused. You can't take it with or you have to take it with a grain of salt, and in this case though, this is the proper Himalayan salt. So you can take it.

[Dave:](#) All right. Let's talk a little bit more about dying. How long you going to live?

[Marcella:](#) I think about 120.

[Dave:](#) 120. All right. Why?

[Marcella:](#) I think that my lifetime we're going to see some really fascinating treatments for the things that typically get people in old age, and I think that's the number. It's of an inner core telling me that's the number.

[Dave:](#) So you're sort of intuiting it.

[Marcella:](#) Yeah.

[Dave:](#) And you're counting on obviously stem cells. Are there any other technologies that you think are going to enable you to live? That's about 50% longer than average.

[Marcella:](#) I'm going to chalk it up to the Chinese energy. I feel very strongly that when I at whatever point I finish my ... I may never finish my neurosurgical career, but whenever that I time is I see myself digging deeper and deeper into this Chinese energy discipline. And I can see that leading me into a very long life.

[Dave:](#) Some of the longest-lived people do practice Tai Chi or Chi Kong or come from China, and you could say maybe it's genetic or something. But there's unquestionably a lineage of this, and I love that you're talking about it because the first chapter of my new book that is not out yet that is around ... I'm actually planning to live to 180. I look at do we have examples of people that do this, and where do they come from, and have we been studying this for thousands of years? And it just so happens that in Europe, in India, and in China, there are very clear examples going back a couple thousand years, not to mention Egypt, of people saying, "We're going to work on this longevity. We're going to pay attention to people that live a long time. We're going to do more of what they did." So I feel like there's kind of a history of that. So relying on that the whole [inaudible 00:46:13] side of things, it's probably not going to hurt you. You'll probably get more energy now and maybe you'll live longer.

[Dave:](#) So I like your perspective on that, and I think it's actually a rational perspective even though some people would say it's irrational. Given that-

[Marcella:](#) You can't come on Bulletproof Radio and say you're going to live to like 95. I mean, that's just-

[Dave:](#) A few people do it. I want to get one of those little machines that goes "Waa-waa."

[Marcella:](#) Exactly. My grandmother just passed away at 93. So I've got the genetics to get into my 90s, and I feel like we got science and the energy to get me further.

[Dave:](#) Love it. We can definitely hang out when we're old together. We'll be wiser and still young.

[Marcella:](#) That's right.

[Dave:](#) All right. Marcella, I really appreciate you taking the time to be on Bulletproof Radio. Thank you.

[Marcella:](#) Thank you for having me. It's really fun.

[Dave:](#) Your clinic is AustinIntegrativeSpine.com. That's I guess where people can find info about your work, and I got to say if you're going to get stem cells in your brain, your spine, in your other areas, wherever else they might be, I got to say she does good work. So Harry and Amy at Docere and having all three of you guys working on me at the same time was really, really cool, and I appreciate that.

[Marcella:](#) Well, it's great. Thank you so much for letting us do that, and it was a really great experience for all of us.

Dave:

If you like today's episode, you know what to do. Head on over to bulletproof.com/itunes, and that's going to take you straight to the Apple page where you can leave a review for Bulletproof Radio and tell people that the show is worth your time. We've crossed 100 million downloads, and the reviews are very good. I always appreciate a good review, and I actually appreciate your comments especially. So if you think that this show is worth your time, by all means tell other people because it matters. Thank you.