

# Paleo Solution - 216

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Robb Wolf: Howdy folks, Robb Wolf here and I am incredibly excited because today we have Dr. Terry Wahls, clinical professor of medicine at the University of Iowa Carver College of medicine. Doc, how are you doing?

Dr. Terry Wahls: Fabulous, great to be here.

Robb Wolf: And I'm projecting the soon to be New York Times best-selling author of The Walls Protocol as a byline, as an aside so I'm excited.

Dr. Terry Wahls: I'm very excited too. This is a wonderful time, a wonderful, wonderful time.

Robb Wolf: Well Doc, I'm willing to bet that almost everybody in this kind of Paleosphere knows who you are, has seen your TED Talk but could you give us a little background about your experience becoming a physician and then also, really the life-changing event that I guess has driven the writing of this book forward?

Dr. Terry Wahls: Yeah, absolutely. So I'm an internal medicine doc and I actually I became a doc after getting my bachelor of fine arts in studio art painting. Entered medical school, became a doc and was in internal medicine practice, doing quite well. In 2000, I began to have some troubles stumbling and finally went to see my physician. We got a big workout including an MRI of my brain, my spinal cord, which showed some lesions on my spinal cord at the level of my neck. I had a spinal tap, which showed abnormal oligo bands or excess antibody levels in the spinal fluid. Then when they looked at my medical record, they saw that I'd complained of visual dimming 13 years earlier.

So on the basis of two lesions separated by time and space, so 13 years in space, eyes, leg and a lesion in a spinal cord, abnormal spinal fluid, a diagnosis of relapsing, remitting multiple sclerosis was made. They suggested that I take disease-modifying drugs. I decided to get a second opinion at Cleveland Clinic and they agreed that I had MS and I began copaxone.

For the next three years, I just had one episode of worsening symptoms that's called a relapse. So in a drug study that would have been a huge

success but the problem was I've been getting steadily weaker, less endurance. I was having more trouble with fatigue. My back was getting weaker. My doc told me I transitioned to secondary progressive MS and had suggested that I take Novantrone, a form of chemotherapy and also that I get a reclined wheelchair.

That's when the journey really began. I started reading the medical literature and was able to find some vitamins and supplements that protected mouse brains. I translated those doses up to human doses and found that they seemed to slow the speed of my decline, although I, you know, was certainly still declining. And also of note in 2002 while I was still walking around pretty well, I had discovered Loren Cordain's work and had, after about two decades of being a vegetarian, gone back to eating meat, taking out gluten, dairy, and legumes but had still declined but I continued following my Paleo diet, was adding my vitamins and supplements.

The summer of 2007, I could walk short distances using two walking sticks. I had difficulty sitting up for more than 10 minutes in a regular chair otherwise I needed a recliner or had to be in bed. That's why the Institute of Functional Medicine. I took their course, neuro protection, a functional medicine approach for common and uncommon neurologic syndromes and then I had a much longer list of vitamins and supplements that I was taking. I also discovered electrostimulation of my muscles and had started that and then I had, what was really a brilliant insight and that was, I should get this long list of nutrients, it had 19, from my food.

So that took more research but by the end of December I had that figured out and then in January, these new foodstuffs that I was ramping up. That's really when the magic began. Within three months, I was walking without a cane and in six months, I was on my bike for the first time in five to six years. In a year, I had done an 18-mile bike ride with my family and that really transformed me as an individual obviously but also as a physician because I then saw disease and health in an entirely new way and it really affected the way I practiced medicine after that.

**[0:05:29]**

Robb Wolf:

That's amazing. Doc there's two things that I definitely want you to flesh out here, probably in reverse order here. I definitely would like you to talk about how you went beyond like the basic Paleo template to find the... You know, you talk about that very eloquently in your book to be able to meet the needs that you had. Like the basic Paleo template was a good start but you needed to go far beyond that. But before we get to that, so many people who end up in the spot that you are and they're

looking at Novantrone or methotrexate, could you tell the listeners what are these drugs? So they're chemotherapeutic drugs, what did they do?

Dr. Terry Wahls: Yeah.

Robb Wolf: And what are the clinical outcomes for folks on these drugs? Because frequently people will be very resistant to thinking about doing some things like some UV therapy, some electro stim, modifying the diet. They just kind of one to relax into the arms of medicine and clearly, you know modern medicine can do some amazing things. But then it's my opinion and I think you'd probably agree with this, there are some areas where modern medicine just fails and I would argue that this area of autoimmune management is a pretty epic failure compared to some alternatives we have.

Dr. Terry Wahls: Yes, yes. Absolutely. So I'll review for the listener autoimmunity in general. That's a condition where the person's own immune cell system begin doing damage to the person's internal structures. In my case, what was being damaged was my brain and my spinal cord, in rheumatoid arthritis it's your joints, in systemic lupus it's your brain, joints and a variety of other organs that can be damaged.

The reason science says we probably had an infection of some type that triggered this confusion of our immune cells and their inability to recognize my structures as belonging to me. And that there are thousands, many thousands of papers across all types of autoimmunity that identify the genes increased risk ever so slightly but it's this host of unknown environmental factors that account for 70% to 95% of the risk of getting an autoimmune problem.

Now my conventional colleagues, the only approach that they will use is a drug that will blunt the immune cell system. Now the first layer of drugs, I have a sort of non-specific blunting of the immune cell system, and that will cost typically about a thousand bucks a month. Things like, at least when I was taking them, Avonex, Rebif, copaxone then you can get into other things by mouth, methotrexate, CellCept and again they interfere with the rapidly dividing cells and the immune cells or some that are very rapidly dividing.

Now there are more expensive drugs that are much more specific at blocking a very specific step in the immune system pathways that can really turn off disease activity and that'll cost \$4000-\$5000 a month. Because the immune cells are very important in the regulation of all aspects of my life, when you block a particular step in my immune cell

function, you will have very major effects. It can be in my cardiovascular that is my heart system, increases my risk for infections, mouth ulcers. You can develop rashes, joint pains. If you look at the package insert, it is a very substantial list of minor and sometimes major in life-threatening effects.

Robb Wolf:

My wife's mother unfortunately died from complications stemming from rheumatoid arthritis. It was actually an outgrowth of immune suppression that she had to go in for a medical procedure, got an infection and they could never get ahead of that and she ended up dying at the age of 50. So I think it's -- which is a huge tragedy and this happened about three months before I met my wife and we've gone on and been able to help a lot of people with rheumatoid arthritis. So this is one of these things that, you know, if I get tired or frustrated with, you know, just either the establishment or kind of the craziness that can pop up in the Paleosphere, this is one of the things that still lights a fire underneath it. That there are people out there that don't think that they have alternatives to conventional treatment and they may in fact, you know, have amazing alternatives. I would argue that your book is probably going to be one of the most important alternatives that we have out there.

**[0:10:34]**

So that was a great, you know, kind of description of kind of the conventional therapy approach and where I would argue most docs kind of where their head space is in managing autoimmunity.

Dr. Terry Wahls:

Absolutely.

Robb Wolf:

Walk people through a little bit of—so you mentioned that you had found some nutrients that, you know, the literature would indicate would be beneficial in slowing the progression, maybe reversing the progression of this autoimmune attack. How did you look at what you're eating and then try to figure out, okay paleo is good but I need to get more of XYZ? Like what was XYZ and how did you figure out a way to get that?

Dr. Terry Wahls:

So I'd gone Paleo in 2002, continued to decline then looking at the literature and I was looking at diseases with shrinking brains, so Parkinson's, Alzheimer's, Huntington's and MS and mitochondria were a key linchpin for all of that. So then I really worked at finding the literature on how to help mitochondria be healthier and that came up with B vitamins, coenzyme Q, creatine. I added those things and it seemed to slow down my decline. Then I got sort of pissed off that I'm not getting better, I'm wasting my money, and I stopped and then I couldn't get out of bed and it's like wow, maybe they are helping.

Robb Wolf: Was doing something. Yeah.

Dr. Terry Wahls: And actually that was incredibly exhilarating because suddenly it's like, I can do something here. I'm figuring stuff out that my doc doesn't know. So that was a very important step for me to have made those connections.

Then in 2007 when I got in with the Institute for Functional Medicine, I finally understood leaky gut in a much more complete way and understood the development of neurotransmitters much more completely. So I had a list of nutrients that were helpful in healing leaky gut and list of nutrients that were very helpful in making more neurotransmitters and nourishing my brain cells a bit more effectively.

You know, when I had the brilliant awareness that I should get this for my food, I went to my registered dietician friends and showed them my list and asked where they were, the food supply and they didn't know. So then I went HealthSense Library and they couldn't help me there either. So I was back to the internet and was able to identify great food sources for these nutrients. The big picture we're talking B vitamins, coenzyme Q, creatine, lipoic acid, carnitine, and essential fats.

Robb Wolf: So I'm thinking organ meats, grass-fed meats, maybe some, you know, things like pastured dairy perhaps might fit in to all that?

Dr. Terry Wahls: Well dairy would not because of the cross reactivity with gluten soy. I left dairy out but certainly the organ meats, grass-fed meats will be very important. Some nuts and seeds would be helpful so you can get enough iodine. I want to be sure I was having plenty of seaweed and then I also need to have a whole lot of antioxidants, lutein, zeaxanthin, the beta carotenoids and so that were vegetables. I needed more of the thiols and that's the sulfur-containing vegetables in the cabbage family, onion family, garlic and then the beta-glucans in the mushroom family.

So this ends up being a pretty structured; three cups of greens. Three cups of the cabbage family, onion family, mushroom family. Three cups of deeply colored for all those antioxidants. Grass-fed meat, lots of organ meat, wild seaweed, wild game. That's when the magic began to happen. I mean it was really quite striking.

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The first month my fatigue began to retreat, the brain fog, you know, and I'll admit at the summer of 2007, I lost my phone three times, I lost my keys several times. I was having to keep a detailed notebook to keep

track of what I needed to do that day. So I knew beating down palms with memory and I brain fog. So again, some of the first things that I saw was a lot more mental clarity and more energy.

Then of course there's the very exciting first time I went out into the hallway without my scooter, without a wheelchair. Yeah. And people would see me like, they'll be like, oh my god, Dr. Wahls because people were so stunned because, you know, it had been four years.

Robb Wolf: Right. And again I don't know if people know your background all that well but you had been competitive in martial arts prior to this, super active.

Dr. Terry Wahls: Yeah.

Robb Wolf: And so you had an individual who's a higher achiever, very, very active and then you were essentially wheelchair bound for a pretty good extent.

Dr. Terry Wahls: Yeah.

Robb Wolf: And had you not had the wear with all to get in and dig around and figure this stuff out, who knows what the ultimate outcome would have been.

Dr. Terry Wahls: You know, and I think having done taekwondo and being an athlete, one of the things that I did do was I always worked out every day. I knew that I would have to work out as long as I could with my own mass that that would keep me as functional as possible. So I jogged until I couldn't jog then I walked in the treadmill and I put it a pool and I always lifted free weights. What I didn't do that I should have done more was stretch but that is such a critical piece for anybody with autoimmunity is to maintain that physical exercise every day.

Robb Wolf: Definitely my mother had lupus and rheumatoid arthritis and unfortunately I couldn't get great compliance on her but definitely I saw her physical capacity and mental capacity seemed to go in lock step. Like when she had a back slide on one area, both areas seem to go immediately south on her. Yeah. Yeah.

Dr. Terry Wahls: Yeah.

Robb Wolf: So Doc, you know, there was another piece of this, which I've done a little bit of reading on, but I don't think folks would be super familiar with the electrical stimulation. What role did that play for you and like if somebody has an autoimmune condition, how do they track down a

piece of this equipment and how would they implement that? You go through great detail on the book –

Dr. Terry Wahls: Yes, yes.

Robb Wolf: But maybe you give them a little taste of that.

Dr. Terry Wahls: So this is not an FDA approved treatment for a disease state but it is approved treatment for some aspects of muscle atrophy that is shrinking muscles, muscles spasm and muscle pain. You know and I review that in a review that there is a growing body of research that people like me are using E stem to treat a wide variety of diseases that have muscle pain, muscle spasm and shrinking muscles. I talked that there may be some challenge finding a physical therapist that's going to feel knowledgeable and comfortable using E stem probably in an athletic practice. In that you will likely have to pay cash to get a test session to figure out can you tolerate it and whether or not you can begin to add this to your exercise regimen.

I found it very helpful now, you know I'm sort of at one time, an over the top athlete, so I was very happy to add the E stem and to really push the limits as far as I could in terms of how I would use that.

Robb Wolf: So you were actually getting some pretty vigorous muscle contractions and maybe some soreness from the session you did? Okay.

Dr. Terry Wahls: Yes and my physical therapist told me if I didn't back off, he was going to take the device away from me. So I had to back off a little bit.

Robb Wolf: Well, you know, clearly an aggressive approach can be pretty good if nothing else hit brackets what the upper bound is that you can tolerate with all then you can kind of work back from there.

Dr. Terry Wahls: At the time, it was the first time that I really felt like I was in charge. I was doing something and also, for my mental health, it felt incredibly good to do the E stem. It was painful, I will certainly disclose that but there's also this mental high, mental euphoria, mental clarity that I enjoyed afterwards. So, you know, the device that I was using was manufactured by MP, it was portable, it was handheld and I used that device for years and years now.

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Robb Wolf: Nice.

Dr. Terry Wahls: Very happy with it.

Robb Wolf: Very cool. Doc, what type of macronutrient ratios were you looking at when you really, you know, found the slipstream with this? Was this a ketogenic kind of profile? You talk a ton in your book about mitochondria and rehabbing the mitochondria, avoiding an apoptotic shock to various cells because of the lack of the fuel substrates. Talk to folks a little about, you know what you're doing with the macronutrients and how we're preventing some of the mitochondrial damage and also maybe encouraging some mitochondrial growth.

Dr. Terry Wahls: So I'm going to take a moment to refresh people on ketosis and ketogenic. So most people when they're eating the high carb diet were bringing sugar in our mitochondria for energy. When we go back in time and you don't have to go that far back, during the winter, carbohydrate intake would be sharply reduced, people would have more protein and more fat or they'll just be a lot more hungry and starving if you went far in a factory in winters. So then the body would burn fat and we'd burn fat in our mitochondria for energy. Our brain burns fat and does so very well. It turns out that fat burning in the brain is a very healing, very protective and really a very good thing.

So when I was first doing my nutritional plan, I actually was not at all concerned about macro nutrient ratios. I was focused entirely on micronutrients. Part of that is that, when I looked at the Paleo literature, I was struck by the fact that the—we have a wide range of macronutrients that the hunter/gatherers that have been studied eat. So the Inuit can have a diet that's 90% fat and they're thriving. The Katabans have a diet that's 60% carbohydrate and they're thriving which led me to the conclusion, which may or may not be correct. But I reached the conclusion that all these societies identified how to maximize their micronutrients given their available foodstuffs.

So my goal was to maximize my micronutrients for my brain that originally it was 19 and now it's 31 that we track for my brain. Now in my new study, we are comparing my original diet with a ketogenic version of the diet to see if putting people in ketosis is even better and we're too early to know. But I will say ketosis, it certainly looks for me it's like high-octane fuel.

Robb Wolf: Interesting.

Dr. Terry Wahls: I do very well in ketosis.

Robb Wolf: How does the ketogenic ratio, you know, when you throw all this into a nutrition analyzer and we spit out protein, carbs, fat, total caloric load and also macro and micro nutrient load. I would suspect that the ketogenic diet might be a little lower in theory as micronutrients because we're getting a rather high caloric load from the fat. But yet we're getting some...I know that there are some elements of being in ketosis which spares B vitamins, attempts to spare EPA and DHA and save those for preference for other activities in the body. Like how does it skew those micronutrients?

Dr. Terry Wahls: Well. So if you look, ketosis has been studied for a long time probably since the 1920s for epilepsy. Johns Hopkins has very nice ketogenic program for kids with epilepsy and when I looked at that, they could get people in ketosis but it was not nutritionally sound. They have to use some vitamin supplements to keep because they're so low on vitamin A, vitamin C, they don't have enough vitamin K and of course they don't have many antioxidants. So my conclusion was that ketogenic diet maybe helpful in the short term but will create long-term nutritional deficiencies and long-term health problems.

But I was very intrigued about the ketogenic literature. So I set about trying to design a ketogenic diet that would still be as nutrient dense as I thought it needed to be. So in my diet we rely on medium chain triglycerides, which allows you to have a higher carbohydrate load, and then I stress the non-starchy versions of the vegetables and fruits that make up the green, sulfur and colored category.

**[0:25:21]**

Robb Wolf: Got you.

Dr. Terry Wahls: In the percent fat, that would be 60-70% fat in my Paleo plus or the ketogenic version. The Wahls diet was about 35% fat to 50% fat depending on the person's personal choices.

Robb Wolf: Got you. Got you. So it's interesting being able to use those MCTs, it buys you maybe a 20-25% reduction in total fat intake. So you can do more nutrient dense carbohydrates and maybe a little bit more nutrient dense protein but because the MCTs preferentially, you know, the really kind of the only place that they can go is into the ketogenic pathway, then we're able to both have our nutrient density but we're maintaining a nice base level of ketosis too.

Dr. Terry Wahls: Correct. Correct. I think ketogenic diets have a lot going for them. My concern for a lot of people who want to do this long term is if you don't

pay attention to the nutrient density, you will develop a long-term nutrient deficiency and chronic disease ultimately.

Robb Wolf: It's potentially like some adrenal fatigue issues? Like where would you see the problems popping up with this? Like iodine issues, thyroid, cortisol issues, like what would the issues be?

Dr. Terry Wahls: I think they are going to be more likely to have problems with fatigue with pain. They could end up with high blood pressure and calcification on their arteries because of the vitamin K is too low, macular degeneration in the eyes because of the inadequate antioxidants.

Robb Wolf: Okay. Okay.

Dr. Terry Wahls: Cognitive decline.

Robb Wolf: Right. Right. So I know when I had Dr. Perlmutter on, he recommended, you know, that most folks be closer to ketosis than not. I think he's kind of modified that stuff as he's gone on. The people in the orthodox Paleo scene just kind of lost their minds. You know where I'm at with this is if we see clinical symptomology that looks like we have something bad going on. If we see blood work that indicates that we have something that we don't like then we start shifting more towards this ketogenic intervention otherwise a nutrient dense carbohydrate-based on need and activity and kind of individualization. Does that feel good to you or where do you play out on that?

Dr. Terry Wahls: So I play out that everybody should be low glycemic index, always low glycemic index. I get a little concerned when I see all these paleo treats that have all these sweeteners added that makes me crazy. So a low glycemic index, nutrient dense diet and I think ketosis is fine for people who are motivated and interested. But as you become ketotic, you still have to pay attention to nutrient density and so I think intermittent ketosis is a great idea. Long-term ketosis is good if it's nutrient dense.

Robb Wolf: Got you. What if we have a really hard charging athlete or say like a 42-year-old guy who's trying to stay competitive in Brazilian jujitsu like myself?

Dr. Terry Wahls: No, yeah.

Robb Wolf: I've tinkered and fiddled with this stuff and I've actually found over the course of time that I've really been paying attention to some resistant starch in my diet, making sure my gut health is really good.

Dr. Terry Wahls: Yeah.

Robb Wolf: And it seems like my carb tolerance has actually improved of off that. So if we have somebody who, particularly like their physical activity is very glycolytic, very glycogen demanding, do you see a trade off with that or do you think again this is kind of an individuality thing? Some people are going to be able to motor along on that and do something that looks kind of Kitavan-esque and they're going to be great and then other folks are just going to be need to be more on that ketotic side of the coin.

Dr. Terry Wahls: I think it's probably very individual and I'm mindful that I have to meet people where they're at. So if the person really wants to be in ketosis, we're going to help them know how to do that in a nutrient dense way. If they really don't want to go down the ketosis route and just want to do low glycemic index, nutrient dense, I will do that. The other thing I have to watch is weight loss. People follow my diets, the weight comes off and then I need to make sure they don't lose too much weight and so as they begin to lose too much weight, I start adding carbs back in.

**[0:30:12]**

Robb Wolf: Got you.

Dr. Terry Wahls: To stave off further weight loss.

Robb Wolf: Got you. Let's see here. What else do we want to talk about on this stuff? Your book is phenomenal like I've actually read it twice and it's great stuff and I feel like I'm pretty up on most of this but I actual learned a lot in here. So it was a--

Dr. Terry Wahls: Oh good.

Robb Wolf: --really fantastic book. So you mentioned your nine cups protocol. So, you know, where you have the multicolored vegetables, the sulfur containing vegetables and then the third one was the more beta-glucan type things from mushrooms and what not.

Dr. Terry Wahls: Right. So that goes in the sulfur group so the beta-glucans from the mushrooms, the thiols from the garlic, onion family and the cabbage family and then the greens which give you all the vitamin K precursors and more antioxidants.

Robb Wolf: Okay. Okay. Great. So you know you've mentioned a little bit on the importance of exercise. Do you have a kind of an ideal and people ask me

this all the time and it makes me a little bit crazy but folks continue to ask it so we just get to be crazy about this. But what's kind of an ideal breakdown on the physical activity? Some weights a couple of days a week, a little bit of interval work?

Dr. Terry Wahls: So I'm going to back you up. So in my clinical trial, my folks are so disabled I'll put them on E stem and we will start their electrical exercise five minutes to each muscle group and they'll do perhaps four reps; lift their foot, you know, four or five times where they volitionally do the lifting. Then they're tired and then we let the E stem lift for, you know, the remaining three minutes. That's how weak my folks are when they start, at least some of them.

So we work to very much personalize both the E stem and the exercise and then in my clinics, I found out where people are at and using motivational interview and I help them set up new goals to increase your activity. We talk about stretching, I talk about resistance training and we talk about endurance training. My preference is that stretching and resistance are the most important. Some interval training would be next important and endurance training is my fourth stress.

Robb Wolf: Okay. Okay. Actually, I think for a lot of people, it might be counterintuitive when they start talking about mitochondrial density and stuff like that but it's interesting when you see where people lose functionality, its strength and mobility and those two things seem to go on lockstep. You lose full range of movement around the joint and then suddenly that area becomes very weak and prone to injury and then you can't do anything with it then. You know, you can't bike, you can't run, you can't swim.

So I think that many folks would come at this thinking that you know pure aerobic or endurance work would be the preference here but from my experience, I would definitely agree that strength training and the mobility work are super important.

Dr. Terry Wahls: Are the most important really, really the most important.

Robb Wolf: So, you know if somebody wants to track you down, where are you on the inter web?

Dr. Terry Wahls: Okay.

Robb Wolf: So the name of the book is The Wahls Protocol, when is this officially released? This podcast is going up on Tuesday the – what is it, Tuesday the tenth?

Dr. Terry Wahls: Eleventh?

Robb Wolf: Eleventh? Yeah, yeah.

Dr. Terry Wahls: So it's released on the thirteenth.

Robb Wolf: Okay.

Dr. Terry Wahls: And people want to go to my website, Terry Wahls, and so they can put in their email and download the freebies, the things that we mentioned in the book. So there are a bunch of nice little things that people want to come pick up.

Robb Wolf: And you have an extensive, actually probably more, about a half of the book is meal plans and how to on this. Can you tell folks a little bit about that?

Dr. Terry Wahls: Yeah.

Robb Wolf: Because if folks—interestingly like the science part seems to be reasonably palatable for people these days and the hard part is actually implementation.

Dr. Terry Wahls: Yeah.

Robb Wolf: You do a great job of walking people through the implementation. Tell folks what you have as far as that goes.

Dr. Terry Wahls: So what we have is a weeks' worth of menus for each plan and I have three levels of plans. So there's the entry level, which we call the Wahls Diet and that is the nine cups of fruits and vegetables, high quality protein. I talk about, if you're vegetarian, vegan, how to do that more safely and why you might want to consider adding animal protein to your diet and we talk about animal protein.

**[0:35:16]**

Then the next level is nine cups, clearly animal protein, more organ meat and seaweed and I teach people how to sprout their nuts and seeds.

Robb Wolf: Okay.

Dr. Terry Wahls: And then the third level is the ketogenic version of the diet and we talk a lot about medium chain triglycerides and how to get yourself in ketosis, monitoring the ketosis and how to make some individual adjustments if you're in ketosis or not. We have seven days planned out for you. I have recipes for those seven days and by the way, we have lots of different menu options there and recipe options to help people begin. We tried very hard to make this an easy to begin and very straightforward transition.

Then for the clinical people, the docs, the nutrition and the scientists that are a little alarmed that I'm taking, you know, food groups away, that we did a research quality analysis of the menus. I went over the 31 nutrients and compared the intake and the Standard American Diet based on the CDC literature and what we would have if you had followed the menu. We adjust it for the same amount of calories so we could show that we have, you know, ½ the – well nine times the RDAs for various vitamins and minerals.

So the profile actually looks a lot like a traditional hunter/gatherer society because it's designed to be nutrient dense and we tinkered with it back and forth a little bit so that I can get food rolls that will deliver the nutrients I said were so important.

Robb Wolf: That's fantastic. I think, you know, it's interesting within the orthodox registered dietetic scene, kind of the mantra is nutrient density. But what's ironic is I've often found that probably the most convincing argument and Matt LeLond has been a huge champion in this and he's done some really phenomenal research in this area, but really tackling this from a nutrient density standpoint. How many vitamins, minerals, anti-oxidants are you getting per calorie that's possibly.... And then maybe on the flip side of that, what type of anti-nutrients are we avoiding that could be pathogenic or gut irritating, you know, like gluten and stuff like that, so maybe that's kind of another factor in this. But if we look at that nutrient density story that's possibly the most compelling argument for this way of eating all the hunter/gatherer stuff aside. Like we can really hang some pretty big hats on the nutrient density story.

Dr. Terry Wahls: You know, I think we can. We can look at Jason and Mira Kelton did a nutrient analysis of modern diets, Standard American Diet, Atkins's diet, Paleo diet, South Beach diet etc. They were able to show that the Paleo diets were vastly more nutrient dense than the Standard American Diet and we're among the most nutrient dense but still had some gaps in them, some substantial gaps. That's part of why I think providing a little bit more structure and guidance to our hunter/gatherers, modern day

hunter/gatherers, will help them to have a better diet, actually a much more nutrient dense complete diet.

Robb Wolf: That's fantastic. Well Doc, I am super excited that this is almost ready to be released. I think we met for the first time at the first Ancestral Health Symposium, I want to say, the first or second one but I--

Dr. Terry Wahls: At Paleo FX.

Robb Wolf: Was it Paleo FX? Okay, Okay. It was at Paleo FX. But I remember when you were just embarking on this project and really excited to see this thing out and I honestly think that this is the high watermark on this topic of looking at ancestral health and autoimmunity. Your work, Chris Kresser's work, you've guys have just done amazing jobs in taking this stuff and you know, taking that basic Paleo template and then looking at it and being critical and saying, okay where is this working? Where is this failing? What do we need to do to engineer this to work for what the outcomes that we want?

Dr. Terry Wahls: Right. You know, because you and I we're doing the best we can with agricultural foods and so we aren't out in the wild gathering our wild foods that are more nutrient dense than agricultural foods. We do need some guidance to help think about how to best do this given foods that we can easily obtain.

**[0:40:14]**

Robb Wolf: Right. Yeah, we're not all leading the thyroid gland out of animals and getting our iodine that way so we might have to look elsewhere for it. Yeah. Yeah.

Dr. Terry Wahls: We have to improvise a bit.

Robb Wolf: Right. Right. Well Doc, I am super excited for you. Anyway that we can help get the word out?

Dr. Terry Wahls: No.

Robb Wolf: We're very excited. This will go up on the eleventh.

Dr. Terry Wahls: Yes.

Robb Wolf: What else can folks do to get the message out for you?

Dr. Terry Wahls: Well I think we should talk a little bit about my research.

Robb Wolf: Oh please do. Yeah. Please do. Please do.

Dr. Terry Wahls: Yeah, yeah. So I was correctly criticized at first so I started talking about nutrition for MS, that my medical colleagues said well one case so what and that's true, one case so what. So we wrote a grant, got funded and then got approval to do our study. Because my intervention was so radical and it only been done on one person, me, with no other animal data, The institution review board said well do 10 people first, give us a safety report and if it's safe, we'll let you do the next 10. So we have did that and wrote up that first 10. That paper has now been published in the Journal of Alternative Complementary medicine and the key finding was, people could do the diet. They could do the meditation that we taught them, the exercise and the E stem and they were fully compliant on the diet more than 95% of the days and they were fully compliant on exercise more than 85% of the days, which I think is really quite remarkable.

We had a very large effect size on fatigue and fatigue is enormously difficult to treat with MS. The drugs on a seven point scale; one no fatigue, seven total fatigue, the drugs can move that needle about 0.5, 0.6 and we were able to move that needle more than 2.4 I believe. There's no other paper that's come close to making that kind of dramatic impact on fatigue. We know have 20 people that have made it through the 12 months and as I said, we're writing those people up. So the exciting news is, the diet and lifestyle is effective. We're showing that it's safe, that it can be implemented in that people can have choices. They can have choices on how they think about treating their autoimmune conditions now.

Robb Wolf: Doc, what's the next step on the research? Like are you looking at -- I mean clearly the goal is to get as many people put through this as possible. What are the next steps now that you've kind of field tested it for safety, where does this go next?

Dr. Terry Wahls: So a couple of things. So I'm here writing the grant now. We're sending it to the MS society and we'll send it off to the NIH for a much larger study. I have two other small pilot studies going, one that's just using the E stem and to see the effect size is just using E stem and the other is just doing just a diet. So we have usual care, we have the original Wahls diet and then the ketogenic version of the Wahls Paleo plus and we're comparing that and we're early on that. Again it looks, you know, very exciting. I think it's telling in that—because that's study is really short, it's only 12 weeks. I hadn't planned on videoing people at baseline at 12 weeks. I didn't expect to see a big change in their gate. I think it's telling that I'm

put it in a modification so we could start videoing everyone because the first two people who came through had such a big improvement in their gate. I was like darn I should have caught that on video, it would have been very cool at my next oral presentation, you know.

Robb Wolf: Right. Right.

Dr. Terry Wahls: And so now I'm writing a grant with another researcher who's very big in fibromyalgia. We're planning on doing a pilot study, testing the Wahls diet for fibro because I have so many people who follow me, who told me that the fibromyalgia was dramatically helped with the Wahls diet. I'm having conversations with a fellow who's a Parkinson's researcher. Again because so many people with Parkinson's that follow me tell very exciting stories about how much their Parkinson symptoms were reduced by adapting a Wahls diet.

**[0:45:02]**

Robb Wolf: You know, this gets a little bit –you know, all of this stuff is rather controversial within the mainstream medical scene but for me when I look at a variety of these neurological conditions ranging from MS to Alzheimer's to Parkinson's even traumatic brain injury that we see in athletes and in soldiers and whatnot, a lot of the etiology at the end of the day is very similar. We see a localized insulin resistance in the brain and we see mitochondrial dysfunction. We see abnormal levels of apoptosis and inflammation and so even though we might have different etiology, different causes in this it seems like a lot of the solution may be very, very similar. Like what do you think about that?

Dr. Terry Wahls: That is exactly right. You know when I talk to the public and my medical colleagues, I review that you know, we originally learned diagnosis and we have all these distinct diagnoses but now that we understand the biochemistry in cellular physiology we see that it really looks surprisingly similar disease state to disease state. Just as you say, insulin resistance, very common. Mitochondrial problems not working well very common. Inappropriate inflammation, very common. Micronutrient deficiencies, very common. So the approach, which I think, is the approach for treating most diseases to create health by teaching people how do you have a micronutrient dense diet, teaching them a meditative stress reducing activity of some type and helping them begin the journey to resume movement again.

Robb Wolf: Yeah.

Dr. Terry Wahls: Yeah whatever your disease state is, that and we have thousands, probably hundreds of thousands of research papers that will support this that if you do those three things, whatever your disease state is we will over time reduce your symptoms, reduce your need for medication. And very often be successful within three years of greatly reducing and often eliminating many if not all of the medications.

Robb Wolf: Right, right. That's a pretty disruptive potentiality there. I meant that's a -

Dr. Terry Wahls: You know, it was so exciting.

Robb Wolf: It's crazy. Yeah.

Dr. Terry Wahls: Because we have the internet, the public is learning this stuff faster than the physicians are because the public evaluate these experiences, these stories, this research in real time and make decisions that you know, this intervention looks like it's low enough risk. I'm willing to do it myself while we're waiting for those research docs to get their randomized, double blinded controlled studies. The public is beginning to decide that they're willing to do these diet and lifestyle interventions ahead of or in parallel to the clinical trials that people like me are doing, which I think is very exciting.

Robb Wolf: It really democratizes the whole process and you know, it's interesting to me. You know, we need always to be mindful of safety and whatnot but it's ironic to me that it's reasonably easy to get funding and to get clearance for a clinical trial for drugs that really could have some very powerful effects on people you know, like Fen-Phen you know at one point was FDA approved and then it wasn't.

Dr. Terry Wahls: Yeah.

Robb Wolf: And stuff like that. But yet it's as if we're feeding people depleted uranium asking to put them on a nutrient dense ketogenic diet. And that seems crazy to me.

Dr. Terry Wahls: So for me to get FDA approval to go out and say that we could use the Wahls diet is approved treatment for MS, I would have to have two randomized controlled trials with two sites that have positive results. So that's \$6M. You would have to do that for each disease state. That's why it becomes so enormously difficult to have an FDA approved dietary intervention that is going to be proven. It's so costly, it's crazy.

Robb Wolf: And who's going to fund that? The coconut manufacturers? I mean you know, the --

Dr. Terry Wahls: No.

Robb Wolf: -- grass-feed beef people you know what I mean? I think if we --

Dr. Terry Wahls: You'd have to get the NIH to fund that but they are very enamored with drugs studies because you can do a drug study that targets one molecule.

Robb Wolf: Right.

Dr. Terry Wahls: And that's the kind of study they want to research. Now you know the private foundations are very interested at funding the kind of work that I've got. But you know, now that we have these very exciting preliminary results, I'm much more optimistic that we'll get a better shot with NIH funding.

**[0:50:08]**

You know on the other hand, I'll also tell you Robb, I'm very pleased with the public that has been willing to support the Wahls Research Fund. So we have donations that have allowed me to add to my studies to get these additional pilot studies going to collect the data that I can use to write grants to the NIH and to other specialty societies to get our studies going at a much bigger level.

Robb Wolf: Doc, tell people a little bit about what happened with your TED Talk.

Dr. Terry Wahls: Oh, yes, yes.

Robb Wolf: That would be horrible to not give some background on that.

Dr. Terry Wahls: Yes, we should talk about that.

Robb Wolf: Yeah.

Dr. Terry Wahls: So in 2012, I was invited to give a talk at the Iowa City TEDx. So I told my story and I acknowledge that this is a personal narrative in that I was doing research you know, that we'd be presenting very exciting data the following week at the 2011 neuroscience conference.

That talk immediately went viral into the paleo community, into the MS community and the functional medicine community. In fact I think right now it's about 1.68 or 1.7 million views. Now periodically the TED people would contact the organizer of the TEDx and would challenge my Ted

Talk. They want to know what the science behind my claims were. So Cliff would contact me and I would send him our abstracts and posters that we were presenting with our preliminary data and he would forward that on. Then a couple of months ago, he got contacted again and they were again being challenging the validity of my story I guess.

But fortunately this time, we now had an accepted paper so we sent that to them and Cliff had indicated he wasn't sure how much longer TED was going to let my talk stay up. Then he said well they worked it out. So what they put on was my talk falls outside curatorial guidelines, viewer discretion advised. Now what I think is really very interesting there's another talk by a neuroscientist Jill Bolte Taylor who gives a wonderful, wonderful talk about the personal experience of having a hemorrhagic stroke and losing the ability of her left hemisphere and not be able to speak and having those pretty amazing changes as she stroked and then during her recovery. This was entirely her personal experience, which I really is a wonderful, wonderful talk. There's no viewer discretion or outside curatorial guidelines although there is no science supporting her personal story.

You know, I gave the science behind why I chose my interventions that I did, told my personal story, said I was doing research. I was going to present at a peer reviewed internationally recognized meeting at which by the way we got an award for, you know, hot topics in neurology and yet they continue and TED know that by the way. They know that I got that award. But they continued to go after the talk. So I don't know how long they will let it stay up. They did get a lot of flak from the paleo community where they put that warning in so they have backed off and said they have no plans to take it down. But they still had that big red box warning that this follows outside the curatorial guidelines.

Robb Wolf: Well if anything else, it probably is accelerating the spread. As soon as you put any type of explicit warning label on something folks are doubly curious about what's going on with that. So if they wanted to shut it down --

Dr. Terry Wahls: Yeah.

Robb Wolf: --they probably went the wrong route on that ironically.

Dr. Terry Wahls: You know, Monsanto, the drug companies, the chemical companies are putting a lot of money into TED and one has to wonder if that's beginning to influence their curatorial decision making.

Robb Wolf: Right, right. I know that Ellen Savory talking about reversing desertification using wild ruminants and trying to recreate the kind of evolutionary framework that these ruminants would move over the landscape. That there's been a lot of backlash with that too. Ironically even though Savory is advocating things like grass-fed beef and goats and all this stuff, he's not had a single cattleman association support what he's up to. So there's some really – there's some interesting politics, interesting big money that's involved in all that. But like you said this kind of democratization of this information in people being able to you know, find the functional medicine doc, find kind of an ancestral health oriented practitioner and be able to tinker with this stuff. You know, you can make an easy argument that it's pretty safe to at least try and we may have a really shocking improvement at the end of the day.

**[0:55:28]**

Dr. Terry Wahls: Right. You know, and in my book so I talk about here's how to talk to your primary care doc and here are the tests your primary care doc will feel probably very comfortable ordering, interpreting and I also tell people in my clinical practice, I don't do any functional medicine testing. I just do the stuff primary care docs do. We see stunning results. So I try to give the public reading my book a lot of comfort in working with their current physician. Because if you talk to your physician and say you know what, doc, I want to eat nine cups of vegetables every day, your primary care doc is going to love that and if they don't fire them, get a new one that will.

Robb Wolf: Right. Yeah that really shouldn't be a controversial topic or eating some --

Dr. Terry Wahls: Right.

Robb Wolf: --liver and some seaweed. Yeah.

Dr. Terry Wahls: Right. If you tell – I'm going to eat more vegetables, I'm going to eat liver once a week, I'm going to have seaweed once a week, your primary care doc should leap for joy. Because they know that that's going to improve your health status whatever you've got.

Robb Wolf: Right.

Dr. Terry Wahls: Now they may tell you you have to tweak things a little bit because of your history of kidney stones or the fact you're on Coumadin or that you're diabetic or whatever it is. They'll help you adjust it. But your primary care doc will be open to that.

Your specialist will not be as knowledgeable about nutrition and will not feel as comfortable.

Robb Wolf: Right.

Dr. Terry Wahls: But your primary care doc should be fine with it.

Robb Wolf: Very cool. Well Doc, what else? What did we forget? I almost forgot the research and the TED Talk. Did I forget anything else?

Dr. Terry Wahls: Well I think we've been stressing to everyone that this is really good for whatever chronic disease that you have. You may need your doc to help you personalize it a little bit depending on your chronic disease but eating a nutrient dense diet is how we create health. Creating health is the best way to treat disease.

Robb Wolf: Any plans in creating a practitioner training program so that we get people more --

Dr. Terry Wahls: Well --

Robb Wolf: --on the ball with this?

Dr. Terry Wahls: You know, as a matter of fact, certain people will ask me that if I would create a Wahls protocol certification for clinicians and so I am talking to my team about doing that. We're talking about building a membership site for the public to give them more support. I'm talking to my research dieticians about whether or not they'd be willing to moonlight and create a supportive environment for those who want to have a more intense nutrition coaching. So we're trying to do all those things.

First order of business though is to get the book out, get through the media tour and then we'll come back and probably start building out these things.

Robb Wolf: Great.

Dr. Terry Wahls: Because I think it will be very helpful and we certainly have gotten a lot of indication that people would like us to do that.

Robb Wolf: That's fantastic. You know, hopefully you get on Dr. Oz. One of his production folks their sister or a cousin, I forget what it is is one of the first people that I ended up working with who has MS, really gorgeous young Italian gal who at the age of 24 developed MS . We did --you know,

not even a sophisticated protocol as you did but you know she had before and after brain imaging showing the lesions before and the lesions afterwards.

Dr. Terry Wahls: Oh, exciting.

Robb Wolf: You know, no – clearly like the clinical manifestations of things like drop foot and --

Dr. Terry Wahls: Yeah.

Robb Wolf: --memory degradation and whatnot. We came really close when my book came out to getting on the show and talking about that specifically. So hopefully you're able to crack into that scene too. That would be phenomenal.

Dr. Terry Wahls: Well I'm hopeful. My agent is working on all these things. So I guess we'll find out.

Robb Wolf: Very cool. Awesome Doc. Well I'm incredibly excited. Are you going to be at Paleo FX and AHS this year?

Dr. Terry Wahls: Yes, I'll be at Paleo FX and I submitted a couple of presentation proposals for AHS. I thought people would like to hear our follow-up on your research and we're talking about nutrient density so.

Robb Wolf: Fantastic.

Dr. Terry Wahls: I plan on being there.

Robb Wolf: Awesome. Well I will see you at Paleo FX. I'm not going to be at AHS this year so I will see you at AHS or excuse me Paleo FX.

Dr. Terry Wahls: Oh excellent. Well I look forward to it.

Robb Wolf: Great. Well Doc, it was just a huge treat having you on the show. Let me do a quick shout out to our podcast sponsors: The Performance Menu Journal of Nutrition and Athletic Excellence, Masa Meats, MasaMeats.com, they are the folks that I get my grass-fed meat from. They're in Orland, outside of Orland California. They ship all over the lower 48. CavemenCoffee.com if you enter Robb Wolf into the discount code thing, then you get a discount and also 10% of all those sales go to the farm to consumer legal defense fund. [1:00:28] [Indiscernible].com and I know I'm forgetting --oh FrontdeskHQ.com your mobile-based

solution for service based businesses. Awesome. All right. Doc, well thank you so much. Take care of yourself--

Dr. Terry Wahls: Thank you.

Robb Wolf: --while you're on the road. That is a pretty exciting but also harrowing experience so excited to see how that goes. Whenever you want to come back on, we would love to have you.

Dr. Terry Wahls: All right. Well thank you very much Robb.

Robb Wolf: Thanks Doc. Talk to you soon.

Dr. Terry Wahls: Okay, bye-bye now.

**[1:00:57] End of Audio**