

# Paleo Solution - 252

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Robb: Howdy folks, Robb Wolf here, another edition of the PaleoSolution podcast. I am incredibly excited today to have Dr. Terry Wahls, clinical professor of Medicine at the University of Iowa Carver College of Medicine, author of the Wahl's protocol and general one of the most favorite people in the world that I know. Doc, how are you doing?

Terry: Hey, I'm fabulous. So glad to be here.

Robb: Super excited to have you on the show. The last time that you were on, it was incredibly popular. Folks really love you, loved the message that you have. And this time I threw out to the interwebs mainly on Facebook. Just let folks know that you would be on the show today and ask for some questions. We have a deluge of questions.

Terry: Terrific.

Robb: I figure we might jump in on that and do you have anything that you want to tell folks that you have going on right now?

Terry: There's one thing that just came through with one of our papers that went out and we're now in the publication process. So that's fun. We'll have another round of papers going out related to gait and MRI changes.

Robb: Nice.

Terry: In the research world, things are going very well.

Robb: Doc, remind folks of what has been covered so far as far as the autoimmunity research kind of structure, the trials, how many of them. And then, where are we going next.

Terry: I first start out with a case support which is just me. Then we had a case series of people that we had done e-stim and exercise. Then the next thing we did is what's called a Safety and Feasibility trial where we had 20

people that we would give the same interventions that I had which were diet and lifestyle interventions. And follow them for three years.

We reported on the first 10 that I had made it through 12 months. And that it was safe, well tolerated, and the effect size for the fatigue reaction was really very, very large. We're now reporting on the 20 that have made it all the way through 12 months. And the effect is still very large. We have an even better P value. Right now it's down to 0.00005, so that's really quite huge.

And then the papers that we have in the pipeline there'll be a paper that will talk about the gait changes. And I'm meaning to look for an open access place so we could have the videos that we have with those gait changes on an open access platform. At least that's the plan. Hopefully we'll be able to get that to happen.

And then at noon, I'm meeting with some radiology faculty because we're working on the manuscripts later to the favorable MRI changes that we've seen as well.

Robb: Fantastic. It's always helpful to remind folks that this – you know we've had so much anecdotal information which I think is very compelling but then we have to really get in and actually test this and say okay we're suffering MS hallucination or is there really something to the story but that takes time.

Terry: It's time and lots and lots of money. Now the other thing that we've got going for us, we've frozen blood at the on-set you know before baseline and then at months 3, 6, 9, 12, 18, 24, 36. And now I'm talking to a basic scientist here at the university and we're discussing what kind of an analysis to do on the frozen blood. And then I'm raising money through the Wahl's foundation to fund the pilot studies to begin looking at what we're going to do.

In fact this afternoon I'll be meeting with Dr. Zuhair Ballas, who's the head of the immunology department. And we're mapping out what kind of immune assays we're going to do to see how that changed. So it's very fun. And now the basic scientist know that I've got this blood and they're beginning to talk to me about potential ideas for the types of analysis that we could do.

**[0:05:00]**

Robb: That's fantastic. Wow. Amazing. Again, my mother had lupus, rheumatoid arthritis, Sjogren's like a host of interrelated autoimmune conditions. She was one of the few people that I could not beg and cajole into trying any of these stuff which was very frustrating for me. My wife's mother died at the age of 51 due to complications from a very minor surgery. She was having a bone on her foot fused due to RA complications and again on the anecdotal side, we've seen a lot of people appear to benefit remarkably from these Paleo, Paleoplus protocols. And autoimmune disease is one of the greatest vectors of morbidity and mortality in westernize country. So this is really, really important stuff.

Terry: Now, another thing that is happening Robb is – so we're going around the university presenting our research data, showing those videos and in the Rheumatology department, one of the Rheumatologists and I are writing a very small pilot study. We're going to compare care for rheumatoid arthritis patients in their rheumatology clinic to people who are agreeable to get referred to my therapeutic lifestyle clinic with RA.

And so we'll compare the outcomes for their clinic registry on RA versus them coming through my clinic. And the reason we're doing that is of course I've been doing my clinic for a year and half at the BA and we have some marvelous, marvelous results with autoimmune conditions which have gotten to notice of the rheumatology docs. So hopefully this study, small pilot will get approved on the next couple of months and then we'll be able to compare prospectively a dietary lifestyle approach for RA versus usual care.

Robb: Fantastic. And did that maybe leads into one of the first questions I'll ask but I have one more question related on the research front. When do we pop up on the notice of like the National Institute of Health? What do we need to do before we pop up on the big radar and then somebody says okay we're really going to tackle this thing and a super well funded, very large fashion?

Terry: It's a painful process that usually goes in the sequence single case study, case series, very small pilot feasible studies which is where I'm at now. Then you can try a larger efficacy study. And I'm writing grants to the MS

society. As a matter of fact, I will be talking with them on Thursday about some things that we could do to make our grants a little more attractive to them.

And that kind of funding was usually about \$350,000 a year for three to four years. Then after that, you take that data, now you propose an effectiveness study and that's going to be \$500,000 a year for five years at two sites. And it's powered big enough probably a hundred to 200 people to show that yes this really is effective. And you'll have a randomized control.

And what would be really very interesting from my perspective would be to have a study where we could use diet and lifestyle as the first intervention compared to usual care. There'll be a few more years. All those stuff is so painfully slow because you do your studies that takes several years, you write them up, get them published. And so the whole sequence of events is probably a 15 year process. Painfully slow.

But we need to have people like me who begin the process in the trenches, start writing the grants. And when you first put this stuff out there people think you're crazy. And the response is you clearly don't understand the path of physiology of these diseases. Kind of like well, but I do get pretty amazing results of my understanding of the path of physiology so we keep writing as we get more data, the grants get stronger.

And what is remarkable Robb is the National MS Society based on all the cyber chatter that's been going on on diet and lifestyle in this last year, decided that they need to pay attention to diet and wellness. Convened a wellness meeting last fall in Fort Worth, Texas and to my amazement they asked me to be there. And so I called and said I have to withdraw for another meeting I want to be sure you know who you've asked and the point of view I have on this.

They said we understand about your research, your book and so I went. And when they were opening the meeting, they were reviewing that the cyber chatter for diet and lifestyle was about eight times the chatter for using drug therapy. And then in the diet and lifestyle, diet was about six times the chatter of all the other lifestyle factors. And then in diet, Wahl's

Paleo was eight times more popular than the other diets which was Swank and McDougall.

**[0:10:14]**

Robb: Interesting.

Terry: And so I thought okay, now I get why you had me here.

Robb: Right, right. Well, you know it's been a long time since I've been anywhere near the research side of things. I've kind of stirred things more towards the I guess you could say market based intervention where we just try to get folks to give this stuff a shot. And I think it's pretty sell that even if we were suffering MS hallucinations that this stuff actually helped for systemic inflammatory conditions and autoimmunity that generally eating this way was still healthy nonetheless.

So comparatively little potential downside but it's fascinating to me that the market side of this we would probably have 95% of the protocols figured out from people tinkering and fiddling and what not. Probably a decade or so before we really get the literature to back up what we've observed out in the interwebs. It's interesting.

Terry: And I think that's the power of the internet, the power of social media, the power of people to publish and entrepreneurs like yourself and myself we're saying here's a protocol, it's pretty low risk, here's the rationale, give it a shot for a month or two and see what you think.

So my sense now is that forever, as long as we have the internet, a person to public who's willing to read and search can now as much or more than they're treating physician about the physiology of their disease and what the latest research says.

Robb: Which is so powerful, so amazing.

Terry: Oh yeah. And had that not been the place, I certainly wouldn't have figured out how to build my protocol.

Robb: You know it's interesting Loren Cordain shot me a couple of papers and I'm completely blanking on the doctor's name but there was a doctor in the early 60's that had developed essentially a Paleo diet for specifically

multiple sclerosis had connected the dots on the gut permeability story, we didn't know about Zonulin yet but he actually described you know it's almost like physicist saying hey, we should find this particle here, this energy level when they're doing particle physics but he said there's probably this one protein that regulates gut permeability.

And so he predicted Zonulin and he had a pretty busy practice and then he died and this information was literally lost to the ages until Loren found it in the mid 90's. And so he didn't have the internet then but we could have been well on this road in the 60's and 70's but there was no way to disseminate this information, no way to get people to try these protocols and then go to their doctor and say hey, I did x,y,z and look at the way that my blood work has changed, look at the way that my fatigue and all my symptomology has changed, what do you think about this and just get this conversation going.

Terry: And sadly Robb, most physicians when they see that kind of reaction they're like wow. But they can't put it together that the recovery really happened because of the dietary and lifestyle changes because if they did that, that would mean they would have to shift their understanding of disease processes in general. And eventually they will but initially they just can't do that. Somehow they'll think man, I must have made a mistake. You must not have really had and then insert whatever the name of that disease was.

Robb: Right, right. Well I'm always reminded by the fellow who figured out that H. pylori was probably the vector for gastric ulcers and nobody believed him and the guy was ridiculed and then he inoculated himself with H. pylori, developed ulcers, give himself a round of antibiotics, cleared up his ulcers and then everybody said well clearly this is the cause and I forget who said it but you know science tends to progress one funeral at a time so we just have to keep chipping away all these stuff.

Terry: Yeah, that is so true.

Robb: Let's jump in on some of these questions. There are some fantastic questions here, Shannon Franklin asked besides people with MS who would you recommend the Wahl's protocol for?

Terry: There are several big groups that are very helpful. I would generalized it basically all autoimmune type conditions. RA, lupus, Sjogren's, Psoriasis, inflammatory bowel disease that's been very helpful. It's also very helpful for neurological problems like Parkinson's and early memory loss, early dementia. You can halt disease progression and often significantly improve function.

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Mental health issues particularly depression, anxiety, post-traumatic stress disorder, very helpful. I use it routinely for traumatic brain injury and it's been very dramatic in those clinics. We have several people with diabetes, obesity who've used this to normalize their blood sugars. We had people lose a 100 pounds, 200 pounds as their energy steadily improve and they were never hungry during all of that weight loss.

Robb: Fantastic. Yeah, in our clinic we've worked with TBI's, we've worked with fighter pilots who have had narcolepsy and oddly enough narcolepsy has an autoimmune component to it so it's fascinating the number of things that these autoimmune protocols and addressing.

Terry: When we get the basic science, more and more diseases every year are re-classified as possible autoimmune and probable and definite autoimmune. Even heart disease, atherosclerosis, the basic science now is looking at this as an autoimmune condition.

Robb: Which is so interesting. So interesting, it really all does kind of go back to the gut and inflammation at some point.

Terry: Yes.

Robb: Okay Patrick Rochan, I hope I got his name right asked for the best source of DHA besides fish oil for someone on Coumadin or Warfarin? And I know that one gets a little bit medically.

Terry: Okay so I'll put out my usual disclaimer I can't give medical advice for guidance. You always have to talk to your personal physician. So when you're on Coumadin, that makes me wonder why is this person taking Coumadin. Did he have fibrillation or stroke and at what point did low vitamin K2 contribute to that problem. They will need some DHA.

The DHA, you have to worry about with that prolong bleeding time. There are allergy forms of DHA so that's one possibility. And then there's some concentrated molecularly distilled fish oils that are nearly pure DHA and you can get those in a 500 mg or a 1000 mg capsule that is like 95% DHA. So those are the options but this person will have to work with whoever their physician is that is prescribing the Coumadin so they can introduce the DHA slowly, gradually well not adversely affecting their Coumadin dose.

Robb: And the DHA tends to have a little bit less of a blood thinning effect versus the EPA and even though can retroconvert you should get little less of that blood thinning effect off of it.

Terry: And then I would ask this person may want to do is get a fatty acid analysis of their red blood cells so they know do they really need DHA supplement? Their blood cell analysis may indicate that they need the DHA supplement or they may find that their red cells have enough DHA on it and then it can just do just as well by eating grass-fed meats and wild fish. Not everyone needs DHA.

Robb: Gotcha. John Mcleen asked or said I'm working with a friend to help her with her lyme disease with a Paleo ketogenic diet. We're finding very little influence success stories. Can you ask Dr. Wahl's about her protocol in lyme's disease?

Terry: Oh yeah. So the protocol is certainly designed specifically more for mitochondria and autoimmunity. But what we find is many people with autoimmune problems that affect the brain have infections of one or more organisms that the body is not adequately controlling which leads to a lot of fatigue and a lot of hijacking the mitochondrial energy support.

And by improving the nutritional status of the individual with the Wahl's diet, adding in the seaweed, the vitamin D, the vitamin K2, the immune cells their effectiveness is greatly improved and so that individual is now able to better control these infections or co-infections.

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We have had many people who reach out to tell us that they have been on antibiotics for years, seeing a wide variety of lyme's specialist and still



struggling. But once they adapted the Wahl's protocol, their energy begin to improve and their mental clarity remarkably improved. So it's certainly well worth a shot and has every reason to be very optimistic.

Robb: We've had a couple of clients in our gym that have lyme's disease. One young woman about 18 years old that seemed to respond very favorably to an autoimmune Paleo approach and correct me if I'm wrong but my sense on this is just that if we look at our total immune response as kind of a limited resource and if some of that response is dealing with inflammation beyond just say like this infectious agent dealing with gut permeability, other kind of collateral damage and we're able to fix that.

Then the body actually has more reserve to be able to deal with it. It's almost as if we look at it like a bank account or something. If you wanted to pay off this debt, do you want more money going out in spurious directions or do you want to focus all that energy in dealing with that debt. If you feel like [Cross-talk] decent way to look at it?

Terry: I think it is. I think that's certainly very fair response. You decrease the drug on the immune cells then we have to do all this extraneous work. You know, 70% of your main cells are on your gut and through all there, they cannot help you address a systemic infection.

Robb: Gotcha. Henry Duran has a question. Does Dr. Wahl still like having a high proportion of MCT to ensure ketogenesis for someone wanting a fairly high protein? I could only do so by having tons of lean protein to maintain a chloric load. I know it's kind of random. But it sounds like he's probably trying to have a high protein intake for maybe some athletic pursuits but also getting in some MCT to try to brush into that ketogenic state.

Terry: So if you're a high protein intake person long term, there's an increase risk for tumors in cancers. If you have a high carb intake long term, increase risk for dementias and autoimmunity as well. The high fat diets, it could put you in ketosis. If you're in high protein, you're body can easily convert that protein and start burning the amino acids in your mitochondria and that makes it tougher to get into ketosis.

So I think this gentleman needs to decide if he wants to be in ketosis, you have to moderate his protein and take more fat. If you have more MCT

oil, that makes it easier to get into the ketosis. If he is not wanting to be in ketosis but feels he wants the high protein because he's trying to do some muscle gain. Then that's a different goal.

Robb: Which is one of the things that I find myself saying all the time, who are you, what are you trying to do and that will largely delineate. You know if you're valuing more neurodegenerative prevention over athletic pursuits then that kind of stirs the boat one way if you're really focused on winning a world championship in Brazilian jiu jitsu then it kind of stirs the boat a different way.

Terry: Absolutely.

Robb: Right. So Iza Polstek from Germany, she asked what about histamine problems in combination with multiple sclerosis?

Terry: That's an interesting area of research I'm not as familiar with that. So I'm not going to comment directly other than to say yes, there is much more interesting commentary on it and I think for some people histamine maybe a factor.

Robb: Okay. Ron Hood asked does she have any new information regarding Parkinson's disease in the Wahl's protocol or Paleo. I think you've talked about that a bit. I think this is a surprising thing when people have really associated you primarily with autoimmune interventions but we're really seeing huge benefits for a variety of neurodegenerative disease.

Terry: You know this all began, when I first started talking about this here at the university, several other senior professors who had early Parkinson's approached me asked if I could give them some assistance and guidance. And we saw that they were greatly helped.

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Then in the thousands of thousands of followers that I have, I have many people with Parkinson's. I've actually put up photos of their before and after shots showing that they did have a lot of problems with rigidity, tremor, early cognitive decline that were stopped and then reversed. This is one very lovely photo from Kelly who's out hiking with her dog and she had talked about how in the previous year all she could do was to be in

bed or she'd be in chair with tremory that she was not able the feed herself or get dressed. And in a year's time, she's out hiking with her dogs in the wilderness. That's a pretty big change.

Robb: That's a huge change and how old was she? How old was she?

Terry: She didn't really say, she looks like she's in her late 50's. So pretty young on-set for a Parkinson's patient but she was profoundly disabled. She's still on a few of her Parkinson's meds but she's very grateful to have gotten her life back.

Robb: Wow, amazing. So this one actually makes me a little bit crazy but I'll throw it in there because it always pops up. Joe Ashed, how do you follow the plan when eating out? This makes me insane. It's just you follow the damn plan.

Terry: Okay. I've gotten better, Robb. I have a couple of times gotten into trouble at a restaurant where I was given some food that I was told was gluten, dairy-free and I ate it. The waiter came back and said oops, it wasn't. So now I'm much more clear and I explain that I have a life threatening reaction to gluten, dairy and eggs. So could you give me some suggestions on the menu.

And then I choose from the suggestions. That works out really quite well. The other thing that I've done Robb is I'll carry a head of cabbage with me when I travel. So I can have a wedge of cabbage before breakfast, before lunch and supper. That way I'm getting all of the high volume of vegetables that I want. That's a little challenging to do when I'm travelling.

And cabbage is a very easy transportable vegetable. It doesn't have to be in a refrigerator. So if I've gone for a few days, it certainly fine to bring a head of red cabbage with me.

Robb: Doc, any concerns about goitrogenic activity doing that [Cross-talk]

Terry: Oh yeah. Let's talk about that. So there's a lot of concern that the cabbage family vegetables will create hyperthyroidism and larger thyroid. And when I've talked to researchers that a study thyroid, study the

Brassica family vegetables, so far, the response has been there hasn't been any scientific literature that validates that concern.

But then I'll go well you know we have a lot of ancient wisdom that science hasn't yet caught up to. So I go back to the possibility that the theorize mechanism is the cabbage family vegetables if you eat them raw will slightly depress your uptake for iodine. The solution then is to eat seaweed. And let my body sort it out. That has worked very well for me.

And I do recommend a mix of raw and cooked vegetables including the cabbage family vegetables. And I do let people know that there is this concern out there, it's not well validated in the science but the rationale approach appears to be adding seaweed to your diet.

Robb: Gotcha. And we have some questions with some of the seaweed later it just popped into my head. Would kelp powder be something that folks could take a little bit on the road because I know it's very, very concentrated in iodine, pretty concentrated in nutrients. Would that be a decent travel option to run with?

Terry: I would take the kelp capsules, I just take one a day. It's simpler.

Robb: Got you. That's why you're in charge of this thing and I'm not because I make everything hard. So David Luis has a question, he has a joke kind of upfront then the real question, how the hell do you eat nine cups of veggies a day and then the real question, a little bit more serious, what do you think of replacing some of the low cal veggies with nutrient dense alternatives like properly soaked or sprouted beans like lentils also meat like liver?

**[0:30:03]**

Terry: Okay so the advantage of nine cups of vegetables, I've took for a people who are adapting the diet. All of those vegetables crowd out the bad foods. And I make it clear that nine cups is for men and tall women like because I'm six foot tall. Petite women maybe four to six cups. There's no need to stuff yourself. And the concepts are you eat some high quality protein and lots of vegetables according to your appetite.

In our clinical trial, some of our more petite people were like I can do four cups of vegetables Then they juiced the other five and consume those that seems to work out really very well. There is absolutely no need to stuff yourself. The protocol is designed so that it makes it less likely you're going to be we don't want you hungry and we don't want you thinking about eating the excluded foods. So we fill you up but the goal is not to over stuff you, so he doesn't have to stuff himself.

Robb: Doctor, what about folks who have some low, some hypochlorydia and maybe some inadequacy in pancreatic enzyme release due to inflammation and just long, long term nutrient deficiencies? It becomes kind of a chicken and egg issue where these folks need some vital nutrients like zinc and some B vitamins to be able to produce hydrochloric acid but they're not able to absorb it because they don't produce the hydrochloric acid. How do you stir that boat?

Terry: So those folks do very well with soups and stews. If I'm worried about acid, I'm going to have them add apple cider vinegar. They may need enzymes as well, they may need bile salts as well. Raw food is definitely off the table initially when they're that ill.

Robb: And then as the digestifier comes online and will start shifting getting in a little more raw and then eventually they probably finish off with about 50% raw veggies, 50% cooked veggies.

Terry: That's where we're trying to get them to.

Robb: Trying to get them to and probably even a middle ground between that would be fermented vegetables perhaps?

Terry: Correct. So you go cooked, then you go fermented juiced then fermented not juiced and then you might go raw juiced and then you might go raw.

Robb: Oh interesting.

Terry: That would be the sequence that I would go. And maybe if you do the juiced vegetables, I would do that in small quantities because of the high glycemic index veggies.

Robb: Even though things like kale and cabbage are pretty low glycemic load just for concentrating it so much in that fashion. Renee Bach has a long

but good question with Wahl's protocol ketogenic version be beneficial for individuals who have neurological conditions like idiopathic small fiber neuropathy with autonomic involvement. It looks like I have a rare presentation of a queue onset full body SFN, my neurologist is going to confirm this with a skin punch biopsy generally these neuropathies are thought to be immune mediated. If you look at the scientific literature, all my autoimmune labs are currently negative. I still need to be tested for Sjögren's thank you very much.

Terry:

Some of the things that I'm finding in my followers, I have so many people contact me to tell me that their autoimmune condition often many names I've never heard of Robb, have remarkably helped. In my book, I talked about how we scientists, we really worked hard at classifying diseases and giving them names and yet when we look at the basic science, this really is always in so many ways that things go wrong in our bodies.

Toxic overload, nutritional insufficiency, leaky gut, food sensitivities, autoimmunity and that appears these altered physiologies are really at the root nearly every chronic autoimmune and degenerative problem. And so while I still do my internal medicine and diagnosing, classifying like every other board certified internal medicine doc, in my clinics I focus much more on what are the underlying physiologies for this person that I'd be asking a lot about are toxin exposures, the probability of antibiotics leading to leaky gut and probability of leaky gut nutritional insufficiencies, excess stress hormones, her vitamin D levels, her vitamin K2 levels and I'd be fixing all of those things.

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And the diagnosis that I've made with my internal medicine hat on, matter far far less than the diagnosis I make with my functional medicine hat on. So absolutely, the Wahl's protocol would likely be very, very beneficial for her. I'd really have her read closely the chapters on functional medicine so she could zero in on what were the factors that probably were the root cause of her developing this illness and put her first efforts there.

Robb: Fantastic. I think we always want to be the unique snowflake and our condition maybe a little bit seemingly different but you know where there some sort of gut issue it seems like it tends to resolve remarkably well if we remove these common gut irritants, grains, legumes and dairy, if we see some sort of systemic inflammatory condition that quacks like an autoimmune duck and walks like a autoimmune duck, it's probably got some autoimmune underpinnings to it.

And again we don't have a ton of randomized controlled trials too we hang our head on this but the greasy used car salesman pitch is it seems to have worked with a lot of other situations so why not give it a shot. Keep some really detailed notes on that and then send it to us so that we've got another case to be able to present in helping people.

Terry: Exactly.

Robb: So Katyana Taylor has a question about organ meats. Please talk more about organ meats, quantity, frequency, pros and cons if any, I find them frequently defending offal to a public and medical personnel who thinks offal causes everything from gout, cardiovascular disease. Help me fight them with the truth please.

Terry: Okay so if we go back to most of our traditional diets, if an animal was captured and slaughtered, about a third of the carcass would be what we consider organ meats or offal. And so the estimate is traditional diets will have a third or more of their protein consumptions as organ meats. It's all obviously just not the liver. They'd be eating heart, tongue, kidneys, sometimes lungs and they'd be using the stomach and the intestines as well.

So organ meats all of them have the basic structures that our organs need be it the amino acids, the carbohydrates, fats. They are particularly liver and heart, tremendous sources of coenzyme Q, lipoic acid, carnitine, creatine. And the heart, great source of calcium, magnesium. Liver great source of zinc as well. Certainly I do recommend that people eat as organically as they can and if you're going to eat liver, for sure you want it to be organic so you're decreasing the possibility of concentrating the growth hormones and various compounds used in factory farming.

Robb: Right.

Terry: But there's a lot of nutritional ignorance in the medical community and that could be difficult to overcome.

Robb: Which I've kind of adapted the idea of save the smart ones and grab the low hanging fruit. It seems like time is better spent catering to folks that are at least partially bought in on this versus trying to chisel down a very reinforced stone wall that people have erected around themselves.

Terry: Yeah, I call that – through their – pre-contemplative or ready for action. And that goes true for the medical world. You're either pre-contemplative to the idea that nutrition and diet matters, they're contemplative to thinking it might or they're with me, they don't get that diet and lifestyle make a huge difference.

I don't waste my time arguing with the pre-contemplative. Basically you're right, we need more studies. The contemplative, I'll engage in a conversation and those who are doing action, we compare notes on how we motivate people and what we're doing next.

Robb: Nice. I like it. And you know to the point of the offal consumption, it tends to be much higher in glycine and I'm looking at a paper from the Federation of the American Societies and Experimental Biology, dietary glycine supplementation mimics lifespan extension and dietary methionine restriction looks like glycine tends to slow some of the deleterious effects of super high methionine intake which you know a basic kind of Wahl's protocol ketogenic diet tends to reduce protein intakes from a classic, higher protein Paleo diet.

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So I think we mitigate things in that regard but then if we're balancing out say like substituting and I'm not even doing this. This is actually going to light a fire under me to try get a third of my protein sources from offal. But if we're further limiting methionine intake then we're dealing with some cardiovascular disease risk issues and neurodegenerative disease risk issues. And it appears maybe tweaking some dials towards a life extension kind of direction which is very interesting.

Terry: You're also helping reduce the risk of asthma. And making your face look a lot younger because glycine is so important in skin tone.



Robb: Interesting. Okay, very cool. So Anette Gultz asked her about getting sulfur rich foods like cabbage when you have a FODMAP intolerance. Also is the Wahl's Paleo Plus approach appropriate for those doing CrossFit type training? I would really like to talk about that physical training quite separately so maybe we'll talk about the sulfur rich food first and then we'll dig into the Wahl's protocol and athletic training.

Terry: I did discuss FODMAP's in my book and I've noted people with FODMAP's often do very well simply as we squeeze out all the gluten, dairy and eggs. That alone it takes care of many, many people. Some still have FODMAP's intolerances and they do much better if I shift them more towards the ketogenic diet. So now they're in a much more reduced amount of vegetables four to six cups and they're getting more of their nutrition from liver and organ meats.

As you reduce your vegetables and now that's when I really push okay, a third of your meat, I'll be having liver and organ meats at least 12 ounces a week. And for most Americans that's a lot.

Robb: That's a lot. We feel pretty good if we do a beef heart chili every couple of weeks. We usually get one serving of liver a week. I for some reason have not been able to get tripe from our grass-fed meat folks like the butcher just ends up doing something with the tripe before I can, you know we tell them each time yes send the tripe and we end up not getting it. But I'm woefully inadequate on that by those standards.

Terry: Some of the things you can do is if you're getting the whole animal is have the organ meats grounded with muscle meat into a sausage. And then if you feel like your sausage a little more peppery, put more zip to it. Then that can be very nice at disguising the organ meat flavor.

Robb: Got you. So okay now the Wahl's protocol and say like CrossFit type stuff. How do we find the balance between optimizing athletic performance versus some of this health and longevity stuff?

Terry: Because we're all slightly unique with our own mix of enzymes and mix of which bacteria we have living in our bowels, our responses would be individualized. In general, I would have people start on the first level and keep some notes as their going how well they feel and they might do fine on that level so has a lot of carbs in that 6 to 12 ounces of meat.

If they find that they feel the need a little more protein because of their muscle work, they certainly can advance the amount of protein. None of these is written in absolute stone. People are welcome to observe, tinker and adjust to match their experience.

I do know that we have more and more athletes will convert to a ketogenic diet and find that their athletic performance improves. Some do not. So I would pay close attention if he decide to go down ketosis, you need to make that transition very slowly. If you flip into ketosis real quickly and you're an athlete, you'll end up with a keto flu with vomiting, diarrhea, body aches that will not go away until you start eating more carbs. So if you're going to try ketosis as an athlete, make your transition over a couple of months not over one week.

**[0:45:00]**

Robb: And doc, have you seen with your patients any of these folks their lipoproteins particularly LDLP really popping up, AOB, increasing. We've seen folks in our clinic and there seems to be somewhat some stuff around the interwebs although I see a lot of the people that report really dramatically increased lipoproteins are doing like blended butter with MCT oil and I'm wondering if the butter is an issue. But we're seeing people kind of going into a ketogenic approach but seeing their lipoproteins really pop up.

We see all their other inflammatory markers improve, we see triglycerides improve. But and so I'm still at a spot where I'm not sure if that's a net win, what's your thought on all that?

Terry: First I'd say I don't think we really know how to interpret those findings Robb. They may be helpful or not, it's not quite clear. In my clinics, at the BA, I can't get that kind of sophisticated lipid analysis. So we can do that in my clinical trials where we're trying to understand the mechanisms of what's going on. And I'd have to go back and look, I don't recall that having been a problem in what we see. But in my clinical practice, I'm not able to do that more advanced lipid analysis.

Robb: Okay. Maybe we can start throwing a few freebies in there through our clinic and get those ordered up and we'll foot the bill on that then we can get a little data on that.

Terry: Yeah. That would be very interesting.

Robb: Yeah, specially health would be totally game for doing that. So we'll talk more offline about that one. This question is from my good friend Brad Hirokawa. Does the response to the autoimmune protocol differ between men and women? Is there any type of gender tweaking that we need to think about with that?

Terry: At this point I don't have any data that suggests there's any difference by gender. There is a difference by how advanced your disease, whatever your disease. The further down you are on the path of destruction and disease, the slower the recovery is. So that's our strongest predictor of response. The earlier we can get people to make changes, the more rapid, more dramatic, and more complete the restoration of function.

Robb: Sounds fantastic. Liam Kreggan asked can you ask her how her condition is currently? Does she feels she has beaten MS or simply controlling it?

Terry: Okay I get this question a lot. People ask one, are you in a remission. I have to remind them I have progressive MS, there are not remissions in that stage of the disease. I continue to improve. I was jogging a mile and a half but I have to give that up because I have hip pain in my right hip with some significant arthritis there. So I'm back to lifting weights, doing body weight exercises and swimming.

My strength and stamina continue to improve. I have a physical therapist who comes out to my house once or twice a month to evaluate my strength training program and then advance things so I keep moving in the right direction. As long as I follow my dietary regimen, my daily meditative practice and my exercise regimen, I continue to improve.

If I back off on my meditation, I don't sleep as well. If I back off from exercise, I have a little more muscle stiffness. If I deviate from my diet – so if I travel now and I can't eat quite my protocol but I'm very close, as long as I don't get into any gluten, dairy or eggs, I'll be fine for a couple of days.

If somebody accidentally gives me gluten, dairy or eggs, 48 hours later my face pain will turn on which will be quite horrific. I'll have severe fatigue and sometimes I have additional weakness somewhere. It could be my

hand, it could be in my leg and then I take oral prednisone and everything will turn off again.

So that does mean I really prefer to eat at home when I can control my food. If I'm going to eat at a friend's house so I'll call them ahead of time explain I can't have gluten, dairy or eggs and then offer to bring something. I just have to pay great attention to not get food that's been contaminated.

**[0:50:07]**

Robb: Sure. Often times my sense on a question like this is have you found a spot where you are now healthy enough or you can start living the way that you live that made you sick? And usually the answer is no.

Terry: Oh I've been doing that for years. In that sense, I've been doing that for years. I can take walks with my family, I go hiking with my dog. I can bike all morning with my wife Jackie. I can give lectures, write books, fly around here and there. I'd say my strength on a treadmill, I'm probably still not as strong as an average 59 year old woman my age. Although I might be getting pretty close to that.

I feel bad, I still wish I could be running. I keep trying but my hip keeps bothering me, I've finally given up on that. So it's just going to be hiking and swimming but that's pretty good. I'm pretty happy with that.

Robb: Especially where you're coming from having been essentially wheelchair bounded at some point. So yeah, that's a pretty good win.

Terry: And Robb, I was so I'll I couldn't sit up in a regular chair. If I sat in a regular chair, I'd a 10 minute limit. So I was frighteningly close to being bedridden. I was having – beginning to have a lot of issues of memory, with focus, brain fog. So my future was very clear to me was becoming bedridden and quite possibly demented.

Robb: Wow, doctor this isn't a question off of this. I don't know why what you were describing kind of popped in my head. So I've always been a fan of lower carb diets, I tend to feel better on them. I've had trouble finding a way to make my athletic performance really optimized on lower carb like I just don't have that really lower gear. I'm not into longer endurance

activities. I do more Brazillian jiu jitsu and kickboxing and stuff like that which tends to be pretty glycolytic. I can motor along doing that stuff but I know I'm kind of missing a lower gear.

That's been something I've thought about a lot and then I saw a talk by Chris Masterjohn in Ancestral Health symposium back in Boston which I think is where you and I first met in person. And he had a great presentation talking about amylase gene frequency in humans and how he was presenting this as a pretty good sell that humans are wired up to eat a decent amount of starch.

I've been trying to make sense of all that stuff. Part of my sense is that maybe to the degree that we need a ketogenic diet or sneaking up on the ketogenic diet is because of toxins be it food or environmental. We've got this damage in our system that then needs some sort of an intervention to fix that.

And so if we were living under more idealistic circumstances, humans would probably be tolerate carbs more often, more frequently but because we have people that are broken the intervention to fix the broken is very different than maybe what was normal for our kind of ancestral story. Because you have folks that try make an argument that the default mode in humans is this ketogenic state. You have other people that say no, no, no because of anthropological data and also some kind of genetic data based around like things like amylase gene frequency that we're wired up to eat more carbs.

It seems to be quite beneficial for gut bacteria to have a more frequent titration of carbs although we eat nine cups of veggies a day seems to fight a lot of fermentable substrate. You know what I know that there was a huge mouthful but what do you think about all that? It confuses the hell out of me. I don't know what to make of it.

Terry:

Well I think a lot about this as well. As I look at the traditional societies, the arctic Inuit are hailed as the ultimate ketogenic eater, but even those guys are not in ketosis all the time on their traditional diets. They have more carbs for two months out of the year. And we have societies that never have to be in ketosis in equatorial Africa, you might have been in

ketosis sometimes but you're more likely had access to some carbs year round.

**[0:54:51]**

I think we may discover is that ketosis intermittently is the normal state and that every society would spend who had ketosis because we're in winter, would be in ketosis every winter for one six months or ten months span how far towards the pole you were. But you also got to come out of ketosis during your summer period.

Biologically when we're in ketosis, our biological systems are set more towards repair and maintenance. When we have more carbs in our diet our biological process is set more towards reproduction. So it's not that one is necessarily better than the other, I'm beginning to think that we're probably best of experiencing both during the year so that I'm beginning to wonder if with the average Jane or Joe, being in ketosis part of the year is a very good idea. Being out of ketosis would a low glycemic index diet is fine. But then you should go back into ketosis.

If you're trying to conceive, you probably don't want to be in ketosis. You want to have a low glycemic index diet. And I'd also made the observation that we're all unique set of DNA enzymes, a unique set of microbiome that live in our guts and help in digest our food, a unique set of toxins. So how we respond to these interventions will vary. And it's really up to us to pay very close attention and be willing to make minor adjustments based on our observations.

Robb: I like it. I still don't know if I'm less confused but I like it.

Terry: Well it's acknowledging that it's not clear and we have to pay attention to how we respond individually.

Robb: And part of my it's not even confusion, looking at the reality that probably if I wanted to live a few more years and both my parents were type 2 diabetics, both of them have autoimmune conditions, then I would probably do better and I feel better like cognitively I feel better. My memory is better when I'm ketotic and I do bounce out of that occasionally like if I do a really hard workout, when I've played with more of a ketogenic protocol, throw some more carbs in post workout which

will bump me out of ketosis for a while and then I'm able to kind of work my way back into that because the insulin sensitivity is good.

And so I definitely feel good, I don't have the energy swings. I don't have again that low gear that I would have from eating more jams and sweet potatoes and what not. But Peter Attia made kind of an interesting observation that he looks at carbs as kind of a performance enhancing substance and that like a lot of performance enhancing substance or maybe some downside when we are using a lot of it.

And you have to figure out kind of a risk mitigation strategy to figure out how to make all that stuff work. And he's been ketone fueled athlete here for I think three maybe going on four years and has one of the most remarkable improvements in  $\dot{V}O_2$  MAX and also total aerobic capacity that the exercise lab that he went into has ever seen like he had the tested before he went ketotic and then over the course of I think a year of I guess building up his mitochondrial density and what not and has been able to get back and pretty much all of his anaerobic capacity but that's in kind of an intermittent testing whereas this stuff that I tend to do is probably like a 70% glycolytic sport. That's just the way that it's built.

Terry: Well it's really very interesting though.

Robb: It is, it is. It's very interesting and again it's just more, more nuanced and less in stone rules which I find customization you know we've got a pretty good starting point for like 80-85% of folks and then from there it's all about tinkering and customization and seeing what's working for you to meet the individual's goals.

Terry: Absolutely.

Robb: So Robert Anderson has a great question here the pros and cons of eating red meat when diagnosed with MS. I know that there's a lot of what I feel is misinformation implicating red meat as a proinflammatory agent. What are your thoughts on that?

Terry: So I think he's talking about that's some of the studies that said carnitine increases TMAO, a few gut bacterium. And so there's like oh my god this must be very atherogenic.

**[1:00:00]**

And my response to that article is man, how important the gut bacteria are and how we have change our gut bacteria through these high sugar diets and load of antibiotics use. So rather than implicate the meat, I implicate the bacteria and say our problem is that we're feeding the wrong bacteria in our gut. So it's the same data with different interpretation of the results.

And red meat has been eaten for a long time. If you go back to our genos that's 2.5 – 9 years, our species that's 500,000 years and if red meat was really bad for us, I don't think we would have survived all of that time because that was a big part of the human diet for so long. It does make me pay much more attention to the bacteria that we have living in our bowels, a vital part of our ecosystem. They are vital part how we metabolize things. And the more we could learn about how to make sure we have the correct mix of bacteria so we're getting the most helpful response from the foods we eat I think it's going to be important. And that literature is growing.

But for most of America, our microbiomes have been ruined to some degree at least altered by the bacteria and the antimicrobials that we take and the conventional food supply that's filled with a variety of anti-microbial compounds. I'm hoping that the research will include analysis of microbiomes from communities that are still eating traditional foods that have not yet had antibiotics.

Robb: Right, right. And we're good friends with Jeff Leach at the Human Gut Project and really follow his work. It's very, very interesting. You know along that line, have you tinkered with your patients incorporating like potato starch or a resistant starch to help them on the gut flora side or do you feel like that they're getting enough fermentable carbohydrates from the ubiquitous vegetables are taken in.

Terry: It will depend on the individual. So if constipation becomes a problem, yes then we have to work on soluble fibers, resistant starch part of the equation. If constipation is not a problem, then we don't have to address that. We have to make sure people – preferably two to three soft bowel



movements a day and the joke is if you're having them in your pants, we have too much fiber. We have to back off.

Robb: Possible dial back the fiber. That's a great idea. Let's see here, there's a lot of questions asking is it good for this protocol. You know this condition, this condition which I'm skipping by those, I...

Terry: The answer is always yes.

Robb: Yeah, the answer is yes. And again the greasy used car salesman pitch is give it a shot. Not only see what happens, keep really good notes and then tell us what the heck is going on. You know there was a question up above that – do you see this protocol being beneficial for something like degenerative disc disease?

Terry: We don't have good scientific data. However, I would encourage people to use this protocol particularly reading the chapters that have what I'm talking about bone broth and the offal meats because that will give you more of the glycine. The sulfur hyaluronic acid to help you repair that stuff. So we'd love to see some folks with this. Give us some detailed notes and feedback. We certainly have every reason to be very helpful.

Robb: Very cool. Let's see here. We'll do one or two more. This is really interesting. Bethany Spraing asked how do you recruit for your research?

Terry: So the research process is you write a grant, get money for it. You have a defined population. Once the study has been approved by the committee that oversees research here at the university, it's the Institutional Review Board, then we can begin recruiting according to the processes laid out in the grant.

And because we are typically looking for people who are still eating the standard American diet, many people who call our lab, call my offices and say I want to be in your study, they've already implemented many of the interventions so they would not be eligible.

**[1:04:55]**

Robb: That's ironic is it not?

Terry: Yes, yes. Well but throughout this we have to build the show a delta, a change, so we always need to have people who are still eating crap be willingly be randomized into the changing diet and lifestyle versus not changing diet and lifestyle waiting a few months to get the intervention.

Robb: Right. Gosh it's funny though it's so funny. The last question Gary Hawkins is mentioning I believe he's a physician that he notices elevated candida levels in most of his MS patients and wanted to know your thoughts on that.

Terry: Certainly, it's very, very common in the folks who've had lot of antibiotics as a child be, great risk to have yeast overgrowth, candida overgrowth. And so putting them on a diet that lowers the carbohydrate intake you know and eliminates the sugar white flours is really much more of an anti-candida diet. And certainly for many people a course of anti-candida therapy can also be very helpful.

Robb: Fantastic. Maybe one last one, any results even anecdotal with ALS?

Terry: So I have a lot of folks with ALS tried the diet, contact me. I always say please see a functional medicine practitioner as soon as possible so they could do a more complete evaluation. This has been helpful at reducing symptoms, improving function for ALS people. But you absolutely want to go see a function medicine practitioner, get evaluated more completely because you don't have as much time.

Diseases tend to be quite progressive and often rapidly so. But often from a functional medicine perspective you can get to the root cause of what's going on. Stop the disease and sometimes regress it quite remarkably.

Robb: Fantastic. Doc, thank you so much for being on the show. Thank you for answering all these questions. Folks can track you down at [terrywahls.com](http://terrywahls.com). We'll have a link to the Wahl's protocol book in the show notes. Anything else that you want to close with?

Terry: Well, I just let them know that the new paperback will be out. It's going to be fun. Watch my website, we'll put the links up to the new papers as they come out.

Robb: Fantastic. Doc, thank you so much for all the hard work that you've done. Thank you for sharing your story. I think because of following, you know being Loren's grad student back around '99, 2000 he and I were talking about you know, really thought that there was probably this link between leaky gut, Neolithic foods and autoimmune disease. And I ran around feeling like an absolute crazy person for the better part of the decade because I really thought that there was something to this. Shared it with as many folks as I could.

It's almost like a Stephen King novel or something or like the person can see someone and they're going to have a car accident or their house is going to burn down or something. I would meet people who have these different things going on and I try to soft sell them I'm like hey, if you cut out gluten and did this and did that, this might dramatically improved. And sometimes we get some results more often though, I would just get a very odd look and the person trying to sneak away and run away from the crazy person.

But I've got to say it's been so validating to see some top of the food chain researchers like yourself come in and champion this topic and really take our anecdotal understanding of autoimmunity and systemic inflammation and put some legit good science behind it so that we can say yeah, we're not just imagining. There seems to be really something there, so a very deep and sincere thank you for your work.

Terry: It is just so critical to have people wanting to do prospect of trials that are randomized so we can publish it and the get more validity to what we have seen in our clinics.

Robb: Well, it looks like those days are coming. That's very exciting. So maybe let's look ahead and maybe get you back on the show maybe four or six months down the road and bring you back on. Folks love having you on and I love having you on. I always learn a tons. So thank you.

Terry: Absolutely. Would always love to come back.

Robb: Great. Awesome doc. Take care, will talk to you soon.

Terry: Thank you. Bye bye now.

Robb:

Bye bye.

[1:09:50]

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