

Paleo Solution Episode 112

Robb Wolf: Hey folks, Robb Wolf here with Greg Everett and special guest, Professor Loren Cordain. Loren, how are you doing?

Loren Cordain: Hey Robb, it's great to be here on your what? 112th podcast.

Robb Wolf: That's what we hear, yeah. Greg and I --

Greg Everett: Can you believe it?

Robb Wolf: Yeah, Greg and I have to use both of our fingers and toes to get up that high. So we're glad that we have a legitimate professor here today to help us keep track of the numbers so... Okay, that was funny. Loren was just asking us. So do we have the opportunity to edit any of this out later? We guaranteed Loren that Greg and I would be far more ridiculous than anything and any gaff he could possibly pull off so...

Greg Everett: Yeah, it's a good bet.

Robb Wolf: Guaranteed. So Loren what's new? You just back from a conference in Florida?

Loren Cordain: No. Actually, I just finished up the semester here at Colorado State University, and of course I finished my book up this fall -- my new book, The Paleo Answer and the newest project is Joe Friel and I are going to revise our Paleo Diet for Athletes, so we'll be doing that the next month or two and it will probably come out in the fall.

Robb Wolf: Nice! So we'll jump into your new book here in just a second but I'm sure that The Paleo Diet for Athletes kind of perk some folks up. What type of stuff do you think you're going to be modifying with that?

Loren Cordain: Well, you know Joe and I have had a few conversations and we've talked with the editor, but we wrote that book in 2005 and as you and Greg are well aware of is that things in nutrition physiology and biology are changing very, very rapidly. And what was new to us 5 years ago is not even in the textbooks anymore, so I want to make sure that we get that completely up to speed.

One of the things that Joe mentioned to me is the notion of supplements are kind of out these days, and I don't know if you had a chance to read my new book but I've got a chapter or at least a section of a chapter on

problems with supplements and it turns out that taking antioxidant vitamins, B vitamins, selenium and so forth is not really a very good idea based on that most recent information.

Robb Wolf:

Yeah, it's pretty intriguing you know? It's interesting, you know we had like a free radical theory of aging and obviously under certain circumstances oxidative stress, ionizing radiation and free radicals can start becoming a problem but now we're discovering with this process of hysteresis which exercise, fasting, a variety of different situations induce this transient stressor and it's actually this transient stressor that is literally keeping us alive.

Like if you do squelch all of the stress then the organism pretty much kills over and dies, and with the exercise side of this we're blunting a significant amount of the adaptation when we dose ourselves up on high amounts of antioxidants and stuff like that. Is that kind of the direction that you're steering that one?

Loren Cordain:

Yeah, there's a series of meta-analyses that have come out in the last -- I want to say 2 to 3 years particularly from the Harvard group and others. And what we're finding is that when we look at these enormous groups of people, 250,000 people and we look at mortality from all causes combined, what we find is that antioxidants and vitamins, B vitamins, beta-carotene, vitamin E, they actually increase the overall mortality.

And so this was first kind of hit upon in 1994 in a study of smokers taking beta-carotene and they found out that the heavy smokers after an 8-year period of taking beta-carotene their mortality rate was 22% higher than the people taking the placebo. So this was really the first inkling that there was a problem with it. And so now study after study after study meta-analyses -- even vitamin C we're finding increases overall in mortality or doesn't prevent disease.

And the bottom line now that many scientist believe is that a super normal concentrations of antioxidants which were thought to reduce these ROS or these Reactive Oxidative Species, that will be too early or actually it's not a group thing and we require ROS, we require these things, the mitochondria and cells require them to get rid of dead cells and to get rid of the bacteria and viruses and pathogens and toxins in our cells. And so when we completely overload the system with antioxidants it seems to kind of backfire on us.

The most recent study was a select study of vitamin D and prostate cancer -- or vitamin E and prostate cancer and then you took vitamin E, it

had 18-22% higher mortality from prostate cancer than those who didn't take it. So it's pretty scary what we once thought was helpful is no longer and so I've incorporated that kind of stuff in my new book and in our revised Paleo Diet for Athletes -- we're going to put that in as well.

Robb Wolf:

Awesome! Well, I have in my notes here to talk to you towards the end more about supplements and sunshine and we'll touch on vitamin D, but you have this new book coming out, The Paleo Answer. I've got a copy of it in my hands. I read it about a day and a half, and as I always say I wish that we could write these as quick as we could read them but it's a really great book. Like I was sitting in your office when you got back your manuscript from the -- you know your first book, The Paleo Diet, and obviously it's a great book but it wasn't kind of everything that you wanted to do because this was such a brand new concept.

I think it was kind of holding the publishers a bit at gunpoint even kind of heading down this road in some ways. But one of the questions that folks are going to immediately ask is "Well, I read the Paleo Diet so why do I need the Paleo Answer?" And I kind of have that and we fleshed that out even more with some of the later questions that I'm going to ask you which is kind of like an off-the-cuff thing whether folks are going to take away from this that they didn't get in the Paleo Diet?

Loren Cordain:

Well, you were in my office that day almost a decade ago when I got the manuscript back and what I had originally written with the first manuscript for the Paleo Diet wasn't what ended up being published and I can understand that the publishing industry, Paleo Diet was unknown to anybody, and what we're popular in those days were books to promote weight loss and so that book was -- I think that was part of the marketing strategy, not my marketing strategy but the publishers was to market it as a weight loss, okay. And clearly people that are overweight and have weight problems are going to benefit from the Paleo Diet.

But the intent never was to be a weight loss diet per se. The intent was to always be not even a diet but a lifetime program of eating to optimizing improved health. And so now that the Paleo Diet has become so popular, I think that I have the leeway to be able to write the book that I want to write.

Robb Wolf:

And you know it's interesting because obviously I loved your first book but I know you pretty well on a personal level and I've got to say the second book has your humor. It's like talking to you. So like your voice really came through on this book relative to the first book.

Loren Cordain:

It does Robb and I think that's the difference, it has my tone. And you get to the point where I think your reputation and your writings allow you to do that and as a first time author working for a major publishing house and a Pulitzer prize winning editor, I didn't have that levity to be able to have my own voice come through and to be able to say it. And I didn't know either on our first book. I didn't know that I can see it in my editor. No. This is very important. We need to conclude that.

So the bottom line is this is Loren Cordain talking and this has got everything. I didn't pull any punches and whether areas where the editor said "Well, I don't know if you want to put that in there." I said, "I disagree. This is absolutely essential." So I feel very happy about this book and that it covers so much and so many of the topics that we really weren't able to get into the depths that I know that many Paleo aficionados really want to know.

And as I look at the popularity of this concept in the last year or two there has been -- golly, two dozen or more books that have come out and you know I haven't read them all, but many of them are just kind of people's perspectives on how to do this. You know what are the foods to cook? Should I include dairy? Should I include beans, salt, sugars and so forth? And so I never was able to get into the scientific rationale for how we construct these contemporary Stone Age diets and I think that's really what I bring to the plate here now is the rationale.

I know when we were speaking down in UCLA at the Ancestral Health symposium Pedro Bastos came up and gave a talk about what's wrong with dairy and I think that many Paleo dieters still feel that dairy should be a part of their diet. So I spelled it out in exclusive detail -- I mean at least one chapter of what's wrong with dairy, and one of the other things too is that the editor said "You don't have to limit the number of references." So for me it was -- I mean in hog heaven as a scientist I can put down everything and so the reference list is very, very extensive and I think for the readers that are interested when we talk about "Well, what's wrong with dairy?" And they can look all of the stuff on Medline themselves.

Robb Wolf:

Yeah, there's over 50 pages of -- or almost 50 pages of references and it's in about 8-font size, so it is packed with references. You know one of the things that pops up and I don't want to say it's like a battle but there's definitely like an ideological -- okay, maybe there's a battle like maybe in the first kind of a Tonkin Bay incident kind of gig was the protein debate between you and T. Colin Campbell and I had -- you know, when I was -- again, this is kind of going back and now what is a quasi ancient history

and this whole Paleo ancestral diet kind of scene but the question about the China study would come up again and again and again.

And I would start trying to articulate this big kind of Meta picture of Paleo versus vegetarianism and then you get one to molecular biology and you're trying to create this big airtight case on this whole thing and I approached Loren and asked him, if you would do a review of the China study, and Loren you made the point that you and Campbell were supposed to debate at -- was it at American Society of Medicine? What was the original event that you would debate at?

Loren Cordain: Well, the first time I met Campbell was at a Robert Crayon symposium. I don't remember, it must have been early 2000s and I was familiar with his work because I had read some of it but he wasn't familiar with mine and I remember the very first time that he had ever even considered or heard the concept of Darwinian medicine or Paleolithic diet. And so he was really kind of taken aback and he hadn't read any of the papers and so forth and then later on we've debated one another. Yours was the first formal debate on the internet and I want to thank you for inviting me to be able to articulate my position on protein.

And yes, so I think that's really kind of got the ball rolling and then we've debated at the A4M conference in Las Vegas at least once after that and perhaps another time -- I can't remember.

Robb Wolf: Okay. Yeah, and you know it's interesting. This seems to be kind of -- I don't know, dividing line. Like if folks throw their hands up about concerns regarding Paleo, typically they're not running to the American Heart Association as a safe haven maybe occasionally. You know they made kind of kowtow at that but typically where they're going is into you know kind of vegetarian land and that is chapter 4 of your book, kind of addressing the vegetarian topic and I would say you unleash serious can of whoop ass on people with it because this is a topic that you know --

Greg Everett: And the debate itself was pretty airtight I thought.

Robb Wolf: It's amazing and you know we made that thing free like we were going to sell it and then the thing was so damn well written particularly on your part and then it was actually so shockingly poorly written and that obviously just kind of approach as a payday on Campbell's part, we had to make the thing free. Like we couldn't sell the thing and that it was amazing. It's still for me kind of a landmark piece.

Loren Cordain: Yeah, as I mentioned just like a year or two ago I was at the A4M Convention in Las Vegas and I met up with Campbell once again and I think he's a very nice person, and he and his wife were there and you know we spoke, we had a small talk but he brought that exact thing up. Campbell himself told me and he said that he really didn't approach that seriously from a scientific perspective and that he just wanted to acknowledge that I did. And so I think that was somewhat worrisome to me and then he didn't really realize that I took this seriously and I just didn't write this thing overnight.

I took a couple of months to put it together. But I am glad that we did do that and I'm glad that your readers got the opportunity to be able to look at both sides of the equation, and as Robert Crayon, God bless his soul, would used say is that, "Let's always let the data speak for itself and try to illuminate the charismatic individuals and their opinions," and hopefully that's what that debate did. The data spoke for itself.

Robb Wolf: Yeah. I think it definitely does and the folks that are open to the concept of kind of an evolutionary biology approach applied to human nutrition and physiology and all that, I think it just still speaks volumes about that.

In the vegetarian chapter you kind of tackled this on a global level because there's definitely the sense -- you don't have to go far in the media, you don't have to go far in the most academic circles. There's this sense that there are these shockingly healthy vegetarian cultures that just live across the border or across various bodies of water, and we're just kind of dropping the ball by eating meat and seafood and eggs and all that sort of stuff, and you really took that stuff to task. Could you tell people a little bit about what the process was with that?

I mean you didn't really tackle that angle in the Paleo Diet and I think to me that is the strongest chapter of the book is where you addressed this vegetarian topic and maybe that's because it really solidifies or condenses in one spot like so much information that I need to go dig up all the time when I'm addressing this topic in an interview or something like that. So I mean what was the process of writing that chapter and kind of what all is in it?

Loren Cordain: Well, the impetus for that chapter, there's a couple of things that kind of came to mind but one of the things that I look at is when people look towards healthy diets. I think that clearly vegan, vegetarian, ovo-lacto vegetarian type diets are thought to be healthy and nutritious. And to be honest with you, I knew the scientific literature and that really wasn't the

case. So when such noted vegetarians as Bill Clinton who became one recently and life-longers like T. Colin Campbell are promoting this.

It seems to me that people that are seeking health and well-being that it's kind of pulverizes, like you're going to eat the standard American Diet, you're going to need a vegan vegetarian diet but there really wasn't anything in between. And so to me that's really what the Paleo Diet represented. It represented kind of a guiding light in all of these crazy ideas that humans have created about nutrition. And really the thing is with the Paleo is that I didn't invent it or you didn't invent it. What we simply did is we uncovered what was there.

And so I think that that point needed to be made. And one of the other points that kind of drew me to this and you're right it was different than the T. Colin Campbell debate. It was more inclusive. It took in the entire problems with vegan vegetarian diets. The other thing that really bothered me is that vegetarianism is very politically charged at the highest level of nutrition in our country, particularly American Dietetic Association and United States Department of Agriculture. Both of these groups promote and say that "A well-planned vegetarian diet can help to prevent numerous health problems."

If you go into the book I actually have a quote on that. But the data -- once again, let's let the data speak for itself. The data doesn't show that whatsoever. The very first meta-analysis of vegetarians was done 1997 I believe, and published in AJCN, The American Journal of Clinical Nutrition and it showed entirely the opposite. It showed that vegan vegetarians as well as ovo-lacto vegetarians had the same mortality rate from all causes combine of people that just ate anything.

So that study was replicated 5 or 6 years later, was that a much larger sample of what we call the Epic Vegetarian Study showed the same things, is that they die from the same rate. It is heart disease, cancer and all causes combined of people that just eating everything. So the notion that these are helpful diets simply doesn't stand up to the data and so that point had to be brought up. And so then I tried to dissect it further and show why this type of eating actually was hazardous to your health and I took it to India and I think that this was an interesting idea even though the data isn't really good from India compared to what we have in the Western world.

There's what? 1.2 billion people living in India, roughly one-third of which are vegan vegetarians and have been from the time their born until the time they die. And so what better population to look at, and you would

immediately assume if this type of a lifestyle was heart-healthy and help to prevent cancer than they should have many centenarians and people living the right healthy old ages but it just simply doesn't show that at all. And some of the medical journals from India as well as Western journals show that India has perhaps the highest rate of cardiovascular disease in the country and vegetarians also have high rates of cardiovascular diseases earlier in life and that they die earlier.

So this kind of information runs completely contrary to what are governmental regulations are saying, and I don't know of any citations. You know I try to comprehensively not cherry pick the data but I think a good scientist try to look at both sides of the arguments and there really isn't another side of the argument suggesting that at least diets "properly" planned are helpful.

Robb Wolf:

And you forwarded me some of the background information. You know like the New Dietary Guidelines 2010 and it was interesting, a lot of the commentary on the back side of that was -- even know it's all kind of registered dietician, ADA type folks. There was a lot of commentary in there that the recommendations for vegetarianism needed a significant caveat because it was known to be nutrient deficient approach to eating. And it's interesting that the government would get in and recommend a way of eating that we know on like a calorie per calorie basis, you're probably going to end up in some sort of a nutrient deficient state to say nothing of like autoimmune diseases and gut permeability and all that sort of stuff.

Loren Cordain:

Yeah, that's right. And it seems to me that the way we should approach collectively nutrition in our country is not through a small body of people. For instance that the United States Department of Agriculture how they determine that the recommendations in our country was a very shrouded process until only recently and we now know that there are 10 people and whose names we never had before who are making these types of recommendations. And it's not exactly like an anti-age study group or a consensus of a council of a group of scientists.

It seems to be kind of an opinion what opinionated approach that really isn't driven eclectically by all the data. Let me give you for instance the American Dietetic Association, USDA says they carefully planned vegan vegetarian diet is adequate in all nutrients and one that just sticks out like a sore thumb is iron. And so the way that we determine whether or not vegetarian diets then are adequate in these nutrients, we can do what we call epidemiological or population studies and we can look at

these people in cross-sections or we can follow them in either prospective or retrospective cohorts.

And if we do that that the epidemiology generally shows that worldwide vegetarians, be it vegan or ovo-lacto, they all have low ferritin levels, and we need to measure ferritin, not any other measure of iron status because other measures simply are not indicative of long-term iron status.

And so the better studies rather than epidemiological studies or what are called Randomized Controlled Trials in humans in which we can cross them over and these are called Randomized Crossover Trials and the best are called Randomized Crossover Double Blind in which neither the subjects nor the scientists know what's going on. And so anytime we make population wide recommendations what we really need to do is we need to look at Randomized Controlled Trials.

And a single Randomized Controlled Trial is not good enough. We need to do this multiple times and what multiple Randomized Controlled Trials are, when we analyze them are called Meta-Analyses. And so those kinds of studies need to be done before we make any population-wide recommendations. Shockingly there is not a single -- not a single Randomized Controlled Trials where we took normal people, put them on a vegan or ovo-lacto vegetarian diet and then 6 months later measured their blood concentrations.

There's one study that was done by USDA in North Dakota about 15 years ago, they failed to use a control group. So you have to use a control group and we simply don't have that and I can tell you right now that all of the data suggest that you will become iron deficient if you follow this diet anywhere from 2 weeks to 2 months. Any healthy person will become iron deficient. So that kind of stuff flies directly in the face of the governmental recommendations. And where I sit in on the USDA board, I'd say we can't even possibly make this suggestion that these are properly planned, are helpful in all nutrients.

Robb Wolf: Occasionally one of the kind of repost days I guess that folks will mention about Paleo is calcium intake and you kind of addressed that in your book as well. Could you talk about calcium from the Paleo perspective and kind of do a little compare and contrast with what the current recommendations are?

Loren Cordain: Yeah. So the recommendations for the DRIs or the RDAs, what they used to be called, are what I would call supra normal, supra-physiologic. It's

impossible and we've done these analyses in our laboratory. It's absolutely impossible. If you eat real foods to ever -- except for dairy to ever achieve this kind of RDAs or DRIs. So that was the first tipoff is that if you eat fruits, vegetables, meats, fish, seafood, the foods that humans have always consumed you can never ever achieve these supra normal calcium concentrations.

And so their governmental recommendations to do this are not really based on very good science and what we need to base them on are what are called Balanced Studies and we need to look at not just how much is coming in and how much is going out but how much is absorbed. And so surprisingly those 3 points in which we look at calcium, at the calcium flux as it moves through the body have only been recently evaluated and it turns out that high protein even though it increases calcium loss in urine actually enhances calcium absorption, so then that flux through the system actually is increased.

High protein also increases a hormone called IGF1 or Insulin Growth Factor 1 which tends to promote bone growth. And so when we finally got a ground to looking at Randomized Controlled Trials of high protein diets, it turns out that they actually are an anabolic for bone. So it's way more complex than simply looking at a simple nutrient like calcium and paradoxically what we're finding now with large meta-analyses is that people who take supplemental calcium -- women who take supplement calcium, it actually increases their risk of mortality from heart disease.

And so Pedro Bastos and myself and a cardiologist from Kansas were actually writing a manuscript on how supra normal calcium predisposes people for cardiovascular disease.

Robb Wolf:

And I mean we have -- obviously this needs to be hashed out, what we -- you know understanding the clotting cascade, calcium -- free calcium is the precipitating agent in that whole process. So I mean we still need to put our ducks in a row and make sure that we've got a mechanism of causation but just fuming through a standard medical school physiology textbook it's not too far of a leap to understand, okay, if we had supra-physiological levels of calcium, we might be goosing the clotting cascade in the -- you know increasing the rates of cardiovascular disease from that, and then also sclerotic lichens because that's also a calcium-mediated problem.

Loren Cordain:

Yeah, that's right Robb and another factor too is that channels were -- we absorb calcium in the intestine, those things are shared with magnesium and so high calcium concentrations in the diet impairs magnesium

absorption and we know that magnesium is protected for cardiovascular disease from a variety of mechanisms.

So from the evolutionary perspective is that once again, these concentrations of calcium in our diets through dairy products can only be achieved through foods that humans never ate and even though we may consider them the DRI or the Recommended Daily Allowance, they clearly are a couple of standard deviations above and beyond anything humans have ever consumed.

So it's not surprising that we find problems with calcium. And milk in general. I mean there's all kinds of health problems involved with milk drinking and once again the dairy industry as well as the government are pushing this food group -- once again the evolutionary templates that know.

Robb Wolf:

And just to kind of circle back around like supplements, dairy, whey protein, like when folks ask me about it I try to be a little bit hands off and that I do my standard like "Take 30 days, eat grain, legume, dairy free Paleo, get healthy, reintroduce and see how you do."

And so in that way typically what I find is 85-90% of people get real healthy eating this way upon reintroduction of these foods. They typically feel less well, perform less well and so then it kind of takes care of itself from their but you know I would love to be able to sell some supplements off my site. I'd love to sell some whey protein, you can make a top money off that stuff but it's always been this thing when I really look at the literature on this, like I can't morally sell something, like I might sell some sort of like a testosterone booster or something like that that's kind of an herbal derivative or something.

But I haven't been able to really get behind this stuff because the science has never been clear about whether or not it's actually beneficial and then the more and more time that we spend looking at this, it looks like it's deleterious to health, and I feel like sometimes folks look at it like we're being dicks or something for recommending this but it's -- I mean what's your thought on that?

Loren Cordain:

I agree with you entirely Robb and I think that -- you know the supplement industry, it's a 9 billion dollar industry and it's got so much hype build into it, but once again proper nutrition -- we have this notion in the United States and in the Western world that nutrition is micronutrient driven. In other words vitamins and minerals and these individual elements, and since World War II that's really been the driving

perspective, is that “Oh this food has got so much of this vitamin and that one has got that or this mineral,” and whatever.

And if you take it to an extreme -- I remember when I was 18 years old going out and buying Total cereal because it got 100% of all the vitamins and minerals that you needed. So for a young 18-year-old mind in 1969 I thought “My God, if I ate a bowl of Total cereal in the morning I’m good to go for the day. I can eat anything I want.”

Robb Wolf: And it will balance out all the fear and everything else.

Greg Everett: It makes perfect sense.

Loren Cordain: Yeah, it makes perfect sense and that’s really the concept that’s driving all of these commercial products that they take a nutrient core food and they goose it up with vitamins and this and that and now you’re at 100%. And the group from Harvard has also gotten away from this completely and what they say where we need to go back to is we need to go back through traditional nutrient dense food, not focused upon vitamins and minerals and it’s more of the foods that we don’t eat compared to the foods that we do eat and make a difference.

So the thinking now is becoming is that if we choose traditional nutrient dense food like meats and eggs and fish and fruits and vegetables, imagine that. What does that sound like? So if we eat that, vitamins and minerals and so forth don’t become part of the equation. When we supplement with antioxidant vitamins we die more often. And the same thing, when we drink high amounts of calcium, we take calcium supplements, it increases the mortality from cardiovascular disease.

So I think that we humans try to say that there’s some silver bullet to nutrition. If we do this, we do that we’re going to live a longer and healthier life. Well, the vitamin companies and supplement companies love this. But to be honest with you this goes back to the sustainability issues like with Gary Taubes and others is what we need to do is we need to focus upon healthy locally grown foods sold from the producer to the consumer. There’s no middle man and so in real nutrition nobody really gets very wealthy off of this.

The farmers and the cattlemen and the chicken folks, they and the people that have the groves and the orchards, they sell directly to the consumer locally. We don’t have to use fossil fuels to truck it around the planet and we don’t have to use fertilizers, blah, blah, blah. So that’s really what nutrition has always been about. It’s never been about

vitamins and minerals. And I think that this kind of begs the issue with the vegetarians. Vegetarians I think they have the sustainability to local this and that or whatever. But what they have missed is that meat and animal products are very nutrient dense and healthy foods.

So my take is exactly with yours is that -- but there's really not much need. The only supplements I would ever suggest are fish oil and vitamin D. And most people that don't get in the sunshine which is about 80% of the U.S. population, then you better take some vitamin D. If you don't like to eat fatty or fishy, you can't afford to eat it on a regular basis and you don't want to eat organ meat, then you better take fish oil supplements and that's all we need. It's all we need with the Paleo diet.

Robb Wolf: To me that sounds like such a less neurotic -- you know what's behind door number three, like spin kind of -- it seems remarkably devoid of bullshit and obviously like I've got my own agenda, I've got books for sale, I've got seminars and all the rest of that stuff but it seems like such a soft fill.

Greg Everett: Yeah. But in a practical sense too like shifting to more of the whole foods paradigm, just making things simpler like that is going to go a long way because you look at the clients who walk through your door and they're just paralyzed, they're overwhelmed by the information because they are so focused on this micronutrient perspective. And the calcium one is huge. With every single woman that comes in our door, that's one of the first questions we get. "Well, how am I supposed to get enough calcium?" and/or "What about my kids? I have to feed them milk, right?"

And so like you said Doctor, just going back to the whole idea of if you eat whole foods, ideally locally produced and grown, there's just really no issue.

Robb Wolf: And it's interesting, I think this is part of why we'd seen this Paleo ancestral diet concept really -- get some legs under it. One thing it works and it works for a variety of stuff from autoimmune disease to cardiovascular disease. I mean people just look, feel and perform better. But vegetarians don't have the market locked up on sustainability and in fact when we really start talking about sustainability then we need to start looking at something that looks biodynamic and actually looks like nature, and in nature you've got an interplay between herbivores and carnivores and the stuff that grows and photosynthesis, and that's kind of how it works. Like there's a couple of billion years of tinkering that is going into that so...

Greg Everett: Well, I'm happy to eat some vegetarian.

Loren Cordain: Robb, one point that you just brought up to me is very, very important is we talked about sustainability and you talk about what the typical vegetarian diet is comprised of. You can't do a vegetarian diet without grains or legumes, okay. It's virtually impossible. I mean, try to get all your calories from carrots and apples and celery in a day and it's just not going to work. So you have to include grains and legumes. And think about where the world's grains are grown and how they're grown. They're grown here in the United States, in the Midwest, corn, wheat and so forth and it's not a sustainable agriculture.

It requires fertilizers and petroleum and resources from all over the world and so that's exactly the antithesis of sustainability is high grain eating. We export tons and tons and tons, millions of tons of grains to third world countries and they'd be much better off instead of being dependent upon our petroleum-produced grains by producing their own local crops and vegetables. So I think the point is well taken.

Robb Wolf: And it's interesting, there was an animal science professor at Oregon State University. I'm trying to pull this up online right now. I always forget the guy's name but he even tackled this from a morality and ethics standpoint. It's like, okay, if you value life and like if one mammalian life is equal to another one. So a mouse is equal to a cow is equal to a bird or whatever, that you would -- what ends up peeling out of this thing is actually non-grain driven food production that is open farmland, lots of fruits and vegetables, nuts and seeds and then large cellulose converting mammals taking stuff that grows from the sun and converts that energy into protein basically and not only are you killing fewer animals in total in a scenario like that relative to everything that gets whacked in the process or agriculture.

But interestingly you also get a pretty bite on biodynamic scenario that you get some remarkable food stability and sustainability out of the mix. So it's pretty interesting.

Robb Wolf: Yeah. I think I've read a similar paper and what better invention -- if you had to invent a machine to take a substance that is inedible to humans and we turn it into a high quality food product, what better way to go than with a cow or an herbivore or sheep, any animal because clearly the foods that you can put cows on in the middle of a desert in Nevada and make food that is edible to humans is brilliant -- a brilliant invention by mother nature.

Greg Everett: Isn't that a good a sell to the vegetarians though? It's eating a stick -- it's just like a little piece of sunshine.

Loren Cordain: Well, I don't know that we need to polarize the two because I think that it's kind of like Republicans and Democrats, you don't really get anywhere with those kind of arguments but I think what we should do as I've mentioned earlier is let's put the data out and let people make the decision for themselves. And Robb's point is well taken is that anecdotal information in science and a dollar or buy a cup of coffee back for real people, anecdotal evidence is way more powerful than scientific evidence.

If their next door neighbor has high blood cholesterol, high triglycerides, their overweight and they have all of these health problems and they went on a Paleo diet and everything went beautifully, what are they going to do? Are they going to read the papers that Loren Cordain wrote? Or are they going to see what their neighbors said? If they're going to see what their neighbors said and then maybe at a later point they'll still look at the papers we wrote and say "Oh, there is really science behind this."

Robb Wolf: Well, you know Loren that ties into a quick -- I had something in my notes and it's something that just kind of pops up frequently or has been popping up more frequently, and honestly it's a little bit annoying to me because I've been hammering on this thing since 1998 when I first met you and you've been hammering on this significantly longer but there's this kind of -- a little bit of groundswell where people are like -- of the opinion that Paleo should get a different name, it should get a rebranding, it's off-putting because some people don't like the cavemen vision. It's off-putting because some people don't like the evolution kind of deal.

And for me having seen this thing grow from literally just like the lunatic fringe, nobody is buying into this to this thing being on national or international television all the time. Like Loren and I just received a call from like a French TV and film production crew wanting to talk to people in like Miami. Why the French are going to Miami to talk to people? I have no idea but they are. It's just funny but there are these people that I feel like they're kind of like panty-twisted that we -- you know this thing needs a rebranding and write at the point where we're getting some sort of traction and some sort of broader public acceptance or at least understanding of this concept. I mean, Loren what do you think of that?

Loren Cordain: Well, I guess I have to blame Boyd Eaton for this because he called it Paleolithic Nutrition. I always thought that was a pretty good idea

because I think that the evolutionary basis for biology is the most powerful idea that humans have ever created and so you pointed this out, and so does everyone, Dobzhansky said that nothing in biology makes sense except under the light of evolution. Well, we can say the same thing is that nothing in nutrition makes sense except under the light of evolution.

And so many people -- what is it? 60% of most Americans don't believe in evolution so... But many of those folks are doing Paleo and I don't have any problems with that. I really don't. I think that the bottom line is that healthy eating and you don't have to believe in evolution to realize that real foods, living foods are much healthier for us than processed foods that come in cardboard packages and marketing, advertising and hype.

So in that regard you know the maybe the choice of the word really was it. You know maybe sustainability or some other buzz might have had a louder appeal and I think this is one of the reasons why we're having trouble with some of the government agencies coming on board is that 88 type dieticians look at this as a fad diet, but it's not a fad diet whatsoever. It's soundly grounded in science and the basis for it is irrefutable. There's absolutely no good science to show otherwise.

And I think what we're finding now and I'm very happy with this is that we now have about half dozen Randomized Controlled Trials that albeit with small samples and not really completely good research designs that are showing this is the superior way of eating the USDA food pyramid, the Mediterranean diet, the diabetes type diet, so how I feel is that when you have the answer correct or complex question and it works, when you're in a network of people, they tell people about it and we're in the largest network of people the world has ever seen with the internet.

If what you and I were suggesting cause people's blood chemistry to go out of whack, it was impossible to follow, it was too extensive, it was this, it was that, whatever -- it would die a natural death. It would be like any other diet that we're fads. But this isn't a fad. This is a lifelong way of eating that has continued to snowball. And my editor at John Wiley & Sons has been in the publication business for 35 years or more, he says he has never seen anything like it.

He says diet books are like dwarf stars that if they burn hot at first and then they all fade away, he says he has never seen a book like the Paleo Diet that started off slow or continued to accelerate like a snow ball going downhill. And my feeling is that because the book came of age in the internet, in this huge network of people that everyone is talking to one

another and it's not just the CrossFitters or the people that are in gyms, it's everyone. Physicians are talking to people, the immunologist are talking to people that deal with patients with autoimmune disease are talking. And so it has become really I think the healthiest way that people can eat if they can afford it.

Robb Wolf:

And you know for me it's just nice and that we can put this general concept out there, ask people to give it a shot, see how you look, feel and perform, track by all markers of health and disease, see if they go into favorable direction, and if doesn't work for you then you've got other options. You got the China study. You got Dean Ornish, whatever. You've got other places. You know I'm still waiting for those people that we don't see things go well but I mean scientifically I guess I've got to maintain that skepticism and assume that there's going to be some statistical outlier within all that.

But I feel like it's kind of cool that we don't need to get neurotic, religious, evangelical about this thing even though people do, like occasionally that's something that's annoying for other people. You know folks will be so evangelical about the Paleo diet concept but I know was because I was dying. Like I had ulcerative colitis so bad that I needed a bowel resection at the age of like 26-27 and when something intervenes and completely transforms your life you're usually pretty damn motivated by that initially so...

Loren Cordain:

You know I'm there with you too. I don't think that there needs to be any evangelical role in this. I think that you know as a scientist I say let the data drive the idea and it's a lot like any other human behavior. People are going to do whatever they want. You know eating is a very personal thing and people will apply their own kind of rules and regulations of how they do it. But this notion is so literal. We've only been doing Paleo -- contemporary Paleo, well, 10 years ago. Nobody as you mentioned, there's a very small group. Yourself and perhaps a couple of thousand people worldwide that either were aware that this was an option of eating and now we are one of the major options of the way people can eat and particularly young people can try it.

And I think that one thing that's so cool as it involves another movement, sustainability movement, the agreeing movement, you know the notion that we can lead healthy life without this massive infusion of health care money, the pharmaceuticals from the government which is driving the economy whackos. So it's a much bigger issue and people can stop off at these stair steps of this concept at any level they want. So that dovetails with what you were saying.

Robb Wolf:

And actually that concept that I'm actually getting ready to shackle myself down and start working on another book, and that the first chapter of the book is basically this idea that any technology that you look at, if you look at computer processing, you know power and cost, like a gigabyte of processing in the 1960s was like 2 or 5 million dollars. Like it was absolutely crazy and now a gigabyte of processing or storage is so cheap that people will put their business logo on it and give it away as an advertising fob.

And typically, any time the technology progresses, even in the realm of non-sustainable resources like procuring metals out of the earth and stuff like that, it gets cheaper and cheaper and cheaper, but yet, we know more about genetics, human biology, human physiology and medicine than we've ever known in history yet people are getting sicker and sicker and health care costs are getting greater and greater.

And this is like the only example of this that you can find in all of like technology or science. If you understand more about a problem it should get cheaper, but yet our stuff is getting more expensive and we're failing in accelerating rate, so obviously somewhere along the line we're doing something wrong. You know, government subsidized grains that you could turn into corn syrup and all the rest of it, yeah.

Loren Cordain:

Yeah, absolutely Robb and that was -- a point that was brought up, there's a movie produced by two young men called "King Corn" and it's just a real eye-opener on how government subsidy for corn is this cyclic process that's driving this enormous productivity of foods that are killing us and the government ends up paying the health care cost because of the subsidy that it's giving to -- for the farmers to lose money to produce a product that is unhealthy as we could possibly imagine.

And what we should be getting subsidies for is not about products that are killing us like corn, high fructose corn syrup, corn oil and feeding corn to our cows and making them sick as well and producing unhealthy beef. We should be subsidizing sustainability of local farmers and grass-fed beef and we should be subsidizing programs that bring healthy food to the inner city instead of the food stamp programs in which people can go to their local fast food and buy junk food and those kind of issues.

They are the ones that should be taxed like cigarette and tobacco tax. Those producers of those unhealthy products are the ones that we should have the high taxes on and the subsidies should be going to the

people that are producing healthy foods. And I think that the end result would be that health care cost would be dramatically reduced.

Robb Wolf: It should drop down, not zero but it should follow the same trend that we see with other technologies. It should get cheaper and cheaper as time goes on because we understand these problems better.

Loren Cordain: Absolutely.

Robb Wolf: So Loren, how do you get folks started with the book? Like what -- people buy the book, they get you know fired up by the science and then how do they get going on this thing? Like how do you introduce the concept in a livable, sustainable way for folks?

Loren Cordain: Well, kind of the cliff notes for this book if you know, people just want to know how to do it is to read our Paleo diet cook book or even the Paleo Diet I think. And this book actually tells you how to get going on it but it's for the -- it's all the other elements that I wasn't able to talk about that I bring the science up. It's like how come legumes are not a good idea? Why are cooking at very high temperature is not a very good idea? How about women who are pregnant, what should they be thinking about when they adopt this diet? Is there a limit to protein? Does it have a risk for their developing fetus? Yes, it does. And I explained why that is. How about your young children, is this an appropriate diet for young children? How about people that are interested in getting pregnant? Both men and women, how can this diet help them to get pregnant?

So many of these issues they never really came up and because this Paleo concept is really so new, it's only about 10 years that -- probably less than that. What? Four or five we're up since the --

Robb Wolf: It's hot, yeah.

Loren Cordain: It's the massive adoption of this throughout the world. So there's a lot of unanswered question is that, what we're trying to do is we're trying to emulate Stone Age diet with contemporary foods. And clearly we're not eating hunter gatherer diets, don't anybody think that they are because we're not. We're not eating wild game, we're not eating wild plant foods, we're emulating the characteristics and we're getting pretty close. But there's a lot of problems that we really have never considered and I bring up many of these issues in this book.

For instance, if you walk into your supermarket and you go the produce section and you noticed that a lot of the produce looks real shiny. Well,

it's waxed. Well, why do they wax it? And there are many problems with eating waxed foods and vegetables? So, in my book I can tell you about those.

How about potatoes? What's wrong with potatoes? Well, we all know that potatoes have glycemic indices but they are also a chock-full of anti-nutrients that increase intestinal permeability. There are two glycoalkaloids, alpha-solanine and alpha-chaconine and we know from human studies that healthy and normal college students who eat just a normal amount of potatoes, those glycoalkaloids end up in bloodstream. Is there any problem with that? Is there any problem with that for people with autoimmune disease? We've talked a little bit about the problems with milk.

People who drink milk particularly men have an incredibly increase with prostate cancer. Women who drink milk have an increase for breast cancer and also for cervical cancer. Well, why is that? Well, it's the way that we produce milk and the substances that are found in milk. If you're a dairy farmer and you want to have your cow make a lot of milk, well, you'd like to be producing milk all year round right? Well, mammals don't do that. We all know that if you're married and you have children and your wife nurses, is you realize that there's only a certain period when milk is available and that's slightly before pregnancy and then during the period afterwards.

Well, cows are like mammals but what we do is that once they give birth and they start milking, we immediately impregnate them artificially -- we artificially inseminate them. And so, what that allows them to do is to produce milk about 300 days out of the year. But the problem with that is that it artificially elevates the estrogen in the milk particularly an estrogen compound called Estrogen Sulfate. And estrogen sulfate has high biological availability -- meaning that we absorb it very, very easily.

So what used to be thought is that most hormones in milk which is basically filtered cow's blood doesn't get into our bloodstream. But now we know that it does. We know in the last two years, there have been studies done in men, women and children showing that if you drink milk that is produced in this manner, where we artificially inseminate them, estrogen sulfate immediately gets into plasma. And we know that high levels of estrogen in plasma mechanistically are involved in testicular and prostate cancer in men and breast and cervical cancer in women.

So those women that are worried about osteoporosis and they're still drinking milk and taking yogurt and dairy need to go back and look at the

evolutionary template. So the book is chock-full of these kind of concepts and there's one -- I know that we're kind of running low on time here, but there's one other that I'd like to point out and it goes back to this idea that we focus upon individual nutrients, vitamins and minerals to prevent specific diseases and so that notion came out of World War II with the ability of scientists to synthesize all kinds of vitamins, put them into pills and you can take these things.

And one of the population-wide governmental mandates that has occurred in the last 15 years happened in 1998. The United States Department of Agriculture along with the Center for Disease Control, the CDC decided that every man, woman and child in the United States should take a compound that was only synthesized in 1948 and that compound is called Folic Acid. And scientists at Lederly laboratory synthesized folic acid for the very first time in 1947 and in 1998 it was mandated that every person in the United States now should have this artificial compound.

Well, what was the reason -- what is the rationale for doing it? And how did they manage to get this compound into the diet of every person in the United States? Well, how they did it is they fortified cereal, so things like tortillas and hotdog and hamburger buns and all commercial white bread, anything made with white flour now has folic acid in it because a government mandate that we had put folic acid into our grain supply. And the reason for it was, was to prevent neural tube defects, okay. So neural tube defects are caused not by a lack of folic acid but rather by a lack of folate.

Folate is a B-vitamin that's found naturally in leafy greens and nuts and organ meats and so forth, and it's an essential nutrient that we all have to have. It's a B-vitamin. Folic acid on the other hand is converted to Folate in the liver. And so the notion always was that the conversion is 100% efficient. If you feed people folic acid, the liver turns it all into Folate and we're all in good shape, we all have adequate level of folate in our bloodstream.

And so the notion was then is these neural tube defects things like spina bifida and others, we could prevent them because we know that a lack of folate not folic acid per se causes neural tube defects. So what a great idea, 1998, without voting on it, without going to any other scientific boards, without having scientific studies, as a country, we adopted this policy of fortifying our grain with folic acid. So the first year, the year before folic acid was put into the food supply 1,500 deaths occurred from

neural tube defects. The year afterwards, 1,300 deaths in the United States occurred from neural tube defects.

So we saved 200 fetuses or infants from this horrible disease but at the risk of putting 300 million Americans at taking folic acid. So it turns out in the subsequent 15 years from very good Randomized Controlled Trials, epidemiologic studies in the United States and in Europe, we find out that excessive folate, folic acid increases the risk for a variety of cancers, prostate cancer on men, breast cancer on women, colon cancer and we know have a clue for mammal studies mechanistically why excessive folic acid, folate does this.

And so the liver doesn't convert folic acid efficiently into folate and we build up blood pools of folic acid and that's where the problem seems to lie is that the successive folic acid pool seems to increase the total amount of free folate that's available for cells which tends to promote in the DNA of cancer cells, so a very, very bad idea.

And the only countries that did this --the major countries were Canada and the United States and most European countries have looked at the data and didn't follow lockstep with us, so this appears to be one of the worst blunders in the history of U.S. public health and had we followed the evolutionary template, the recommendation would not be to supplement with an artificial substance in our food supply but to encourage people to eat more leafy greens and real foods.

Robb Wolf: And just so folks have a little context, like one of the most potent or commonly used chemotherapeutics for both cancer and autoimmune disease, like methotrexate, it deals with folate metabolism specifically and dealing with the turning on or turning off of various genes. So then when you goose the production of folate or folic acid into the system at a supra-physiological level you've really got some potential problems there.

Loren Cordain: Yeah. And once again, it goes back to the -- when we started this conversation with was the notion that we can -- we have these silver bullets that can improve our health whereas if you look at Alice Lichtenstein at Harvard and many other people around the country, the concept is rapidly changing from traced nutrients and vitamins and minerals to what we're not eating, i.e. eat processed junk food to nutritious healthy foods that we are eating, i.e. eggs and meat and fish and fruits and veggies.

Robb Wolf: Well, it's a nice change and hopefully it's you know, kind of the dawn of a new age here and it's kind of cool having been at ground zero and

knowing you at the very beginning of this. It was my hope originally with the podcast that I would get Art DeVany on here and then get you on here early and both you guys we're slipperier than a Kentucky catfish.

Greg Everett: Instead, you just got me.

Robb Wolf: Yeah. We drugged Greg in and then he never left so... So Loren, thank you so much for being on the show. And you know thank you for being my friend, thank you for being my mentor, thank you for doing all the work that you're doing. Like everything that I do, running the gym, doing the blog, doing the book, writing and everything, I would not do any of these had you not done the work that you've done. So you get all the credit. You've always supported me on this stuff and I just have to say a huge thank you for that. And really encourage folks to pick up your book, The Paleo Answer. We're going to have a link to this in the show notes when the podcast goes up.

Loren Cordain: Well, thank you for such kind words. And what I can say is, it's been such a pleasure to have known you all these years and you know from the ground floor up and for you to be such a positive supporter in this because I know that my work would have never achieved a notoriety that it did without your work. And so it's gratifying I think for both of us and it's bigger than all of us and hopefully we'll continue. So thanks so much as well.

Robb Wolf: My pleasure, thanks. And we'll put it on the docket now to get you back on here sometime soon and we'll start planning. Usually it takes us about a year to corner you and get you on so...

Loren Cordain: Well, now that I got the Skype technology controlled.

Robb Wolf: We brought Loren squarely into about 1998-99 today so... Anything else before we --

Loren Cordain: Well, it sounds like we've never done it.

Robb Wolf: I would say -- anything else before we wrap up? Anything else you want to share with folks or --

Loren Cordain: Oh hey, happy holidays, Merry Christmas and get yourself a great big Paleo feast for Christmas dinner.

Robb Wolf: Done. I think Greg will include probably some nachos but he'll lead Paleo and then finish with nachos but not too bad.

Greg Everett: I eat a Paleo foundation.

Robb Wolf: There you go, there you go.

Greg Everett: And then dress it up a little bit. And so where can people get your book? What's the easiest way? Do you sell it through your website?

Loren Cordain: I sell it through my website, thepaleodiet.com or you can get it on Amazon or Barnes & Noble. If you go to my website and buy it, you get an autographed copy and we've got some other goodies, some free white papers that I've written that go along with it, to kind of get people incentive to get the book and a little bit more.

Robb Wolf: Nice!

Greg Everett: Well, there you go. It's in time for the New Year.

Loren Cordain: That's right.

Robb Wolf: Cool! Awesome Loren! Well, thank you so much for being on and we'll look forward to getting you on here again.

Loren Cordain: Thanks Robb.

Robb Wolf: Okay, take care.