The Paleo Solution
Episode 3

Andy Deas: Robb, Andy Deas back for Episode 3 of the Paleolithic Solution.

Robb Wolf: Awesome! We haven't been kicked off the air yet so we're doing good.

Andy Deas: Apparently, we have enough people to listen to convince us to keep recording.

Robb Wolf: That's right. Poor sick folks. They couldn't find anything else on Sirius or whatever so we'll do our best.

Andy Deas: And now there's a rumor that we'll have some intro music soon so, you know, this is getting more legit by the week. I'm not sure that that's really positive, but I guess it's a move in the right direction for us.

Robb Wolf: Yeah. We'll see if we get the music that I want, then people are liable to be horrified so we'll see how that goes.

Andy Deas: I will see what I can do. Cool!

Well, we got a list of questions this week, which is awesome. So I think we're going to start with a couple from the blog.

Gabe had asked a really good question that we get a lot and that is we often recommend folks get the Omega-3 enriched eggs versus the standard eggs, and then the question is while those are a little more expensive depending where you get them, is that really a big deal and why do we prefer the Omega-3 eggs over the standard variety?

Robb Wolf: Yeah, yeah. It's a great one, and you know, there's kind of two pieces to that. In general, like when folks read The Paleo Diet by Professor Cordain, he tends to recommend less than six eggs in general per week, which is most people are eating like four to six eggs in a morning and so they're kind of like, "Oh, my God, am I going to kill myself with this?" And in general, I would say no, that's not that big of a deal, but it's even more beneficial or less of a problem if we're doing these Omega-3 enriched eggs.

And so what we're trying to battle with our standard diet is that we have an Omega-3 to Omega-6 ratio in our diet that should be about a 1 to 1

Omega-3 to Omega-6, and now it's 1 to 20, 1 to 30 in some situations; really, really bad diets of Omega-3 to Omega-6. And if everybody recalls, Omega-6's are the pro-inflammatory fats. They're critical. It's essential fat. We need them for life. It controls all kinds of cellular signaling, prostaglandins, leukotrienes, like a ton of different important things, but we're just heavily skewed the wrong direction. So if we eat these Omega-3 enriched eggs, we tend to get a bunch more Omega-3 and much reduced Omega-6 intake. So that's good.

And then there's some sideline to that. There are some interesting antioxidants like lutein, astaxanthin, zeaxanthin. These things are really, really important for like vascular health. There was a study that was done in rest homes in which in rest homes there's a very high incidence of macular degeneration, which the macula is the back part of the eye that actually senses light. That area is very prone to oxidative damage, and obviously, this accrues throughout the course of a lifetime.

But the diets of folks as they get older tend to get very monochromatic and they tend to not eat as many fruits and vegetables; and then as you can imagine, you get into an institutionalized setting, the amounts of fruits and vegetables get even less. What they've found was that feeding people just one regular egg a day ended up completely halting macular degeneration in this aged population.

And then there was a bunch of handwringing in the editorial on this paper, which was "Are we going to give these 80 and 90-year-old people cardiovascular disease while preventing them from going blind?" which I think is totally preposterous. But the amount of lutein, astaxanthin, zeaxanthin, all that sort of stuff in eggs that are Omega-3 enriched tend to be much, much higher than standard eggs, sometimes five to six times higher so it's good across the board for a variety of reasons.

Andy Deas: So the Omega-3 eggs, right, generally, the animals are fed flax, so why can't I just save a little money and eat the flaxseed directly?

Robb Wolf: Well, it's kind of a dirty trick. We feed that chicken the flax and then the chicken uses its liver to convert that short-chain Omega-3 fatty acid into the long-chain EPA and DHA.

And there's some side kind of downsides of a high alpha-linolenic acid intake, the short-chain Omega-3. That stuff will actually ramp up the pro-inflammatory Omega-6 pathways, and so if somebody is vegan or something like that and the only source of Omega-3's that they're generally going to get is going to be something like a flax oil or flax seed,

then that's the best that we can do; but outside of that, we'd rather let some other critters' metabolism deal with those short-chain Omega-3's and convert them into long-chain Omega-3's because those are really the money items that we want.

Andy Deas: Perfect! I think that is the million dollar question we always get is "Well, if the chickens are eating that stuff, why don't I just eat that stuff? That should work just as well." So good answer.

Robb Wolf: Yeah, unfortunately it doesn't. It's kind of a dirty trick. We feed the chicken the flax and then we steal its young and eat them, so not a very good deal for the chicken but good deal for us.

Andy Deas: Circle of life, Robb, circle of life.

Robb Wolf: Exactly.

Andy Deas: Cool! Next question from the blog, we got a good one from David Alexander from Kingman, Arizona; and he had a great question I think sometimes we take for granted 'cause we deal with folks a fair amount. But when folks are switching to this more Paleo-like diet, what's your recommendation as far as what they should expect to feel like weeks 1 to 4? You know, when do they start till they turn the corner? When do we see maybe a dip in energy versus some positive movement, "Hey, I'm feeling better, sleeping better"? And then also secondly, how fast are they burning the fat instead of the sugar?

Robb Wolf: Yeah, it's a great question. To some degree, or maybe not to some degree, really the thing that determines this is who is walking in your door? So like is this person already fairly lean and athletic? They will likely not see as significant of a dip in energy switching over to a Paleo type approach versus somebody who is pretty significantly metabolically deranged.

Now, that said, you could have somebody -- like Professor Cordain had a dare that he put out to Joe Friel, the pretty famous triathlon coach, and he told Joe that he would perform much better than what he had ever performed before eating a Paleo diet, but there would be an adaptation period, and the adaptation period can be upwards of three weeks before all of the enzymes that are involved in using fat as a more primary fuel source kind of get kicked over.

And it's kind of interesting because you can have people still eating like yams, sweet potatoes, fruits and all that, but it just kind of burns a little

differently than the standard beans, rice, bread sort of scenario. So even an athletic type of person can see a dip in energy that can last upwards of three weeks and then they should see some dramatic improvement in their performance, body composition and everything after that.

I did a blog post on the Zone and athletic performance that really gets in and details the metabolic changes that happen with that. It looks at the conversion to a completely ketogenic diet and what goes on with that and then extrapolates that to just kind of a higher fat Zone type diet, which is what many folks in CrossFit end up doing, Athletes Zone where they're at 3 to 5x fat, and so it's anywhere from like 40% to 50% fat in their diet.

If we have somebody roll through the front door who obviously got some obesity, got some metabolic derangement going on, the first couple of days to maybe 10 days is liable to be hell. It really depends on how bad they were rolling into it.

We had a guy at the Brooklyn CrossFit Nutrition cert like last year who had been on like a three-week bender and he didn't eat anything that he couldn't get out of a 7-Eleven. And he rolled into the talk with a Modelo Negro beer in his pocket, and one of them open, and I swear there was a cigarette butt floating in the one that he was drinking, and he was like, "Yeah, I knew I was going to change my life after this and so I was going to get my fun in while I could." And the dude ended up losing like 45 pounds after the cert and changed his food, but it was hell for him when he switched because this guy was living like a cockroach before.

So it really depends a lot on who is walking through your door. But that said, even somebody who is pretty healthy may have a dip in energy, a dip in performance that may last upwards of a month.

Andy Deas: Based on your experience, do you have a preference for folks whether or not they kind of start day 1 hardcore or do you prefer to break folks in over time? "Hey, let's start with breakfast and switch to lunch?" Or do you think that's really dependent on their individual situation and we'll kind of worry about the energy thing as a secondary effect?

Robb Wolf: Yeah. I mean I would obviously like to see people just kind of rip the Band-Aid off all at once and just kind of jump in, but it's just a little bit of an assessment with the person. You get a sense of who they are, what they're about, how aggressively they want to tackle this thing. Then you can get a sense of whether or not they're going to buy in to this whole

hog and want to change everything all at once, or if we're going to need to, like you said, just tackle breakfast.

Like Poliquin really likes using the meat and nuts breakfast as a change, and so you just get people waking up and they do like some scrambled eggs; they do some sausage; they do avocados or literally like a handful of nuts. So they're doing some protein; they're doing some fat.

Typically, these people were either not eating breakfast at all or they're eating like a bagel, juice, some sort of really refined carbohydrate deal; and if we just get people changing their breakfast, usually, it's going to change how they're feeling throughout the whole rest of the day. And so Poliquin will have people roll for like a week of just change the breakfast; then a week of change the breakfast and lunch, and usually at lunch you make sure that they add in some vegetable matter; and then breakfast, lunch, dinner; and then we talk about a snack here and there; and each layer of that, you're just kind of adding on okay, a little more vegetables.

And this is all for people typically who are needing to lean out. You're trying to keep a fairly low carbohydrate intake to get folks leaner. And I would say for most gym owners, like that body composition shift is the biggest factor that you're facing, like even though I think the bulk of the listeners are probably CrossFitters, CrossFit owners and all that, and we're very performance oriented, the reality is like if you get successful in your gym, it's largely due to the fact that people, you know, their ass looks good in their bikini.

And so this is all stuff that you need to keep in mind to direct people in the way that's going to make them happy and show that you know what you're doing and show some good results; and then all the performance stuff just kind of comes part and parcel with that.

Andy Deas: Perfect! Cool! Well, if we were to do one more question from the blog, I found another one that I think is pretty interesting; and then we'll switch to some of the email questions.

Robb Wolf: Cool!

Andy Deas: So Amanda had written on the blog that she's sure we're going to talk about sleep upcoming. She was curious one, do we notice people sleeping less on a lower carb program? She said she switched from Paleo to Paleo/Zone-ish limiting her carbs under 50 a day, which are coming primarily from veggies. So what's your thought on that question initially?

Robb Wolf: So the question here is that she might sleep a little less on a lower carb deal.

Andy Deas: Yup.

Robb Wolf: You know, what's interesting, the theory Barry Sears threw out for quite a while, and I never really found it to be super true for me, but some people have reported that when they get their hormonal ducks in a row, when their diet is kind of dialed in, that they end up sleeping a couple of hours less a night, anywhere from like an hour to an hour and a half, maybe even a little more.

I've never experienced that unfortunately. I still am pretty much like that 8 to 9 1/2 hour a night guy, which I'm basically spending half my life in bed; but if I don't do that, then I don't function the rest the day, like I'm just on the really long end of that. So I don't know about this other than some people have reported when they do get the air fuel mixture right that they tend to recover faster and they tend not to need as much sleep. So that may be what's going on there.

And again, the thing that you would hang your hat on is Amanda, does she look, feel, and perform as good or better than what she did before, despite the fact that she may be sleeping a little less? Is she waking up rested and feeling good and all that sort of jive? Then it's like "Dude, bonus!" Over the course of a month she gets a whole extra day of waking life, which is pretty cool.

Andy Deas: Right. So we're going to get to the second part of the question. I think we'll answer a couple of those and we'll hit on a couple other topics.

So essentially, the reason she was asking the question was she says she's been going to bed dead tired, waking up after only 4 to 5 hours. She's wondering maybe if she's not eating enough. It stresses her out, as she knows sleep is vital for performance and rejuvenation. She's about 5'8, 140 pounds and around 18% body fat.

She has a very active job, which she notes is shift work, I think that's an important point.

Robb Wolf: Yeah.

Andy Deas: And will admit to being a metcon-oholic. She wants to know, "Should I eat more? And if so, how am I going to achieve my body composition goals?" She is currently eating about 1200 calories a day, and on top of

shift work and being pretty busy, she's also started adding in some intermittent fasting twice a week.

Robb Wolf: Fuck! Wow! Okay, yeah, where to tackle that. So we see this again and again and again, people who are trying to lean out; and if they are particularly stalled in leaning out, when we do a little bit of digging, sometimes it's that they have too many carbs in the mix. Sometimes it's that the bulk of their protein is coming from dairy. But more often than not, we find something like shift work; we find a real high stress lifestyle.

Intermittent fasting can be good for the right situation. It can be absolutely the bullet in the back of the head in other situations. So it is rare that I see people in a real serious shift work situation in which they have really good body composition. We can get them pretty good, but usually, if that lasts a little bit, it's a little but tough.

When you throw on the fact that she's a metcon-oholic, that gets really cryptic because that all-on all the time, all glycolytic work, some is really good. Some CrossFit, some metabolic conditioning is amazing. It flips all the right genetic switches to make us strong and healthy and lean and all that. Then you go past the therapeutic dose and it actually starts doing the exact opposite.

And then if we add to the fact that it looks like Amanda in my opinion might be underfueled, then we've got a real serious problem here. Inadequate calories, which is a stress, shift work, which is a pretty significant known stress, sounds like she might be overtraining and then she threw in intermittent fasting on top of that, which just to me is nuts at this point. I wouldn't touch that with a stick.

Our training staff is a pretty good example of this. It's mainly chicks other than actually Andy and Eric are the only dudes on the staff. All of them, all these girls are like a Size 2 to a Size 4. All of them typically came in being significantly heavier and just bigger than that. All of them eat a pretty unweighed, unmeasured deal. They eat tons of protein, tons of fat. They eat to satiety. They maybe work out like three times a week, occasionally four times a week, so they're not metcon-oholics at all.

And when our girls went to a CrossFit Kit cert, a number of people were kind of like asking them questions like, "Hey, what do you guys do? Do you actually follow all that whacky stuff that Robb Wolf recommends?" And they're like, "Yeah!" And "How often do you work out?" and they're like, "Maybe like two to four times a week." And people were just shocked. These girls that were asking them these questions had nowhere

near as good a body composition but yet work out like six days a week; and most of them were on kind of calorically restricted programs, but I mean the stress deal is just huge.

So the things that I would tackle in this case, probably loosen up the food and kind of eat to satiety. I would keep the carbs kind of on the low side. Whatever sleep that Amanda is getting, I would make sure that it's the best quality sleep that she can get -- pitch-black room. If she can kill someone and get out of her shift work and work a different schedule, I think that would be great. Intermittent fasting I would ditch. And then some vitamin D, some magnesium on the supplementation side would be really good. Vitamin D may be about 2000 IUs of vitamin D3 per day. Andy turned me on to this stuff, Night Calm.

Andy Deas: Natural Calm.

Robb Wolf: Natural Calm. Natural Calm, which is a magnesium supplement. It's amazing. You take that before you go to bed. And I think that's doing the best that we can for Amanda. Andy, can you think of anything else?

Andy Deas: Also a few things. Natural Calm, I got to give credit to our good friend Dr. Garrett Smith from Tucson. That stuff is amazing. And I'm not sure if you've mentioned it but this whole metcon-oholic thing, like to your point, a little bit is good for a lot of people it's just too, too much. And I think when we see folks that are only sleeping 4 to 5 hours a night and they're going to bed dead tired, I guess she could be totally rested. My sense is he might have some cortisol stuff going on.

Robb Wolf: Yeah.

Andy Deas: You're waking up in the middle of the night. Your body thinks, "Oh, it's time to get up and go."

Robb Wolf: Yeah.

Andy Deas: So this is where something that Scotty Hagnas has been really pushing, kind of a little training journal, keeping track of sleep and just kind of tracking over time how some of that stuff changes, depending on what you do with your diet, what you do with your workout type of sleep. Some of that will be obvious, but as we get further out in time, sometimes we forget, "Oh, I'm getting a whole additional hour of sleep. Maybe it's still not enough." But I did remember four weeks ago that I was only getting three or four hours.

Robb Wolf: Right.

Andy Deas: And I totally agree on the eating this. This is why I push it sort of away for a lot of folks from the Zone, counting calories in the beginning 'cause I just end up with all of this weird stuff where you're just totally fixated on how many calories I'm eating, how that's impacting my waist; and really, we found lean meats, fruits, veggies, nuts and seeds is freaking magic, right? That's why we recommend it.

Robb Wolf: Yeah. And it's that easy shotgun approach, the Pareto like 80-20 or maybe even 90-10. Like 10% investment you get a 90% return out of it, and no neurosis, real, real simple.

And I'm glad you mentioned the cortisol piece to that. It's very, very common for people when they start getting more and more stressed to start waking up in the middle of the night, or even if she is in shift work, waking up mid normal sleep schedule. It's tough. It's really tough.

Andy Deas: Right. And I think the additional thing on the met-con thing, I mean we see great success at our gym, really focusing on strength and skill, most of the met-con work we do is probably like we'll say like 7 to 12 minutes on average. You got a gym full of fit, strong, athletic, healthy folks, and they're not really doing this 45-minute metabolic beat-downs that lots of folks in the CrossFit community get really excited about and think that that's required to see some of the positive results from that type of training.

Robb Wolf: Yeah. I mean just to -- unfortunately, we didn't get anybody individually placed at the games. We got actually kind of a whacky pregame bunch of drama and different stuff like that, but we did a really good Affiliate Cup showing and we have in-house about six guys who were sub 2 minute and 30 second Frans that have getting close to like a double bodyweight clean and jerk and different things like that, and females with scaled-down but kind of similar numbers, sub 4 minute Frans, a couple of man Frans for chicks around 4 minutes and stuff like that. So we're not pussies. We're doing good work. We're doing some smart training that has a little bit of periodization in it and it's been my experience.

And somebody asked a question related to some recovery stuff; or no, no, somebody shot me an email talking about sleep and its effects on -- there's a basketball team that's been cutting out a.m. training and making sure that their players sleep in. Like the players are almost held at gunpoint you got to get 9 to 10 hours of sleep. And so they ditched their a.m. training session which was usually around like 10 or 11 a.m. because

these guys would go to bed late and then they get up and they would be unrested.

They ditched their a.m. training session so these guys would actually sleep in and then they just do a single training session in the evening and then do a little less and see after that. They're doing way better, like everything is going better for these guys. That might actually be a good topic for the next time. But they finally figured out that sleep and recovery are huge.

And there was an early CrossFit Journal that we kind of looked at recovery myself. Tyler has. I forgot if Dan John had some stuff in there also. But kind of the theme of the thing was like nobody -- our theme was you should emphasize recovery. You should emphasize sleep. You should do any type or restorative methodology that you can do. And then the general theme of the editorial on it was nobody ever got anywhere -- nobody got to a championship level resting themselves. Here they are at the new restrooms I think was kind of the sentiment.

But it's interesting. I have never seen a lack of will to kill oneself on the part of our athletes; and quite the contrary, our people who do the best are the ones that we have to rein them in. Like a bulk of my job as a coach is not so much like motivating them to suffer. It is figuring out how fucked up they are and then reining them in so that I can save them from themselves, and making sure they do some restorative work.

Glen Cordoza, a great example, IFC lightweight champion, amazing mixed martial artist, 471-480 Fight Gone Bad, 275 clean and jerk, 225 snatch at 170 pounds bodyweight, and that dude we send home frequently during fight training because he's just beat to death. We'll have him do a nice, easy 2K row, foam rolls, stretch and go home because I look at him, I'm like, "How are you doing?" and he's always like, "Oh, I'm good, coach. I'm good." And like his eyes are crossed; they're glassy. His skin is ashen. He's had the piss beat out of him all day. But if I told him, "Glen, go do Filthy 50 and follow it up with six rounds of Fran," he would do it because he's just wired up crazy that way.

So I never see this stuff and this was getting a little far afield I guess from the original question, but I never see the limitation here being that people are pussies. I see the limitation being that they don't know when to say enough is enough and take a little bit of downtime.

Andy Deas: Yeah. I think that's a great point. I think the key I always come back to is the workout, whatever it is, Filthy 50 or whatever, that's just a means to

the end. That's not really the end. I think sometimes we get folks that are really focused in on thinking that's the end. And maybe it is for them, but it's like, "Okay, how is what you're doing affecting your goals? What kind of adaptations is it causing?" because you may be doing more harm than good depending on what the desired outcome of the regimen is.

Robb Wolf: Yeah, totally, totally. And CrossFit is great because it's fun, it's competitive, it's great community and all that sort of stuff; but occasionally, having a little bit of an eye on the outcome is great for folks especially if they want to kind of optimize their progress. That's not to say that you want to like so scrutinize it that you suck the soul and the life out of it and it's no longer any fun, but sometimes giving some thought to like, "Maybe I do need a day off or like every 5th or 6th week I'm going to take a half dose or something to get some better recovery," people end up further down the road when they're able to do that.

Andy Deas: Right. And I think the last thing before we get a little off topic, maybe you could speak to a little bit more on the intermittent fasting topic. I know that we'll say one to two years ago, I think you were a little more we'll say hopped up on the idea. It seems to be that we've seen a wide variety, a variation of how it responds in people or what outcomes we see.

And so what are your current thoughts on implementing intermittent fasting? Do we recommend this to folks generally? Because it's still something that every once in a while, when someone is trying to lean out, like I'm doing these seven things and I've started intermittent fasting twice a week.

Robb Wolf: Yeah. Everybody approaches the IF as an attempt to lean out, and my idea for the intermittent fasting is still that it's something that could maybe optimize insulin sensitivity and there might be some leaning out to it, but it's more of like a health/performance/longevity sort of focus.

And I think by in large the folks who should be using that if at all are people who have a pretty solid stable schedule -- police, mil, firefighter. I think trying to instill as much consistency in an otherwise chaotic life is the smart way to go for those folks. Somebody like Amanda who's doing shift work, I don't think the intermittent fasting is a good option.

And we still know so little about the intermittent fasting. Martin Berkhan, Leangains guy, I think he has some really good observations on this stuff. About 16 hours is a good, good dose response curve on this. He made a point in a blog post not too long ago that about 16 hours is how long you're going to have some liver or hepatic liver glycogen stores to kind of

maintain blood glucose levels. You go out past 16 hours and you start digging into usually your protein source. You start going into gluconeogenesis to keep the blood glucose levels for your brain and the red blood cells that have to run on glucose.

So like the 16-hour deal is kind of a nice, easy buy-in where you've got a really significant period of time where you're not eating, and so we should be reestablishing some insulin sensitivity; but it's not so long that we start doing some kind of whacky things to our metabolic machinery.

And then the interesting thing is from about 16 hours to 48 hours is the maximum amount of muscle loss that you're going to accrue from doing intermittent fasting. So beyond that then your body really shifts into ketosis and you really minimize the amount of protein that you turn into glucose, but you also get a massive downregulation in your metabolic rate so you become like super lethargic, really cold, and you start experiencing all the stuff that we see in usual caloric restriction.

So there's really no good argument for pushing these fasts out past 16 hours generally. I think that is definitely the maximum bang for your buck. I wouldn't do it in a situation in which you are real stressed out.

For me, I think the intermittent fasting, what it did for me coming from like kind of a competitive powerlifting background, all the bodybuilding magazines, which was all the stuff I had to read when I was competing as a teenager in my 20s, was basically like if you go two hours without eating you will go into negative nitrogen balance and you will fucking die, and so you're just horrified and all these guys end up with like this body dysmorphia that is akin to like anorexia-bulimia where they think that they've got to eat every like 15 minutes, and it's just not true.

So if nothing else, the intermittent fasting is there on the sideline where it's like if you get busy and you can't eat for 6 or 8 hours, don't sweat it. So I guess that's kind of the totality of where I'm at with the intermittent fasting. I still think there's some medicine there but it needs to be used at the right place at the right time.

Andy Deas: Absolutely! Great answer. Perfect! So we're going to switch to a couple of email questions, Robb; and actually, I think this was a great segue into -- Lauren had sent an email question. So I'll kind of break these into pieces so we can answer it step by step. So the first question was she was wondering if you are of the mindset that some people just aren't going to be able to change their body fat past a certain point. So I think we'll call that the set point theory?

Robb Wolf: Right.

Andy Deas: So what's your current thought on that?

Robb Wolf: I think that people -- set point theory, I think that you can change it. I think that there are definitely some parameters in which it gets hard to change that. I know for myself, I tend to -- my body just likes to be skinny and lean and it was a bugger to get myself to shift my baseline away from about 162-163 pounds up to where I'm running now, about 183 pounds.

And what I needed to do was dramatically curtail my metabolic conditioning, really focus on lifting heavy weights consistently, and I shifted back into my old way of eating, which was a low carb, high fat, high protein diet, but I don't have spectacular met-con under those circumstances. And so like I really had to shift my game plan around to able to effect that change.

If somebody has a tendency to store body fat, then they're going to have to be really fastidious in what they're doing to effect that body composition change. And frequently, that may mean less training, less cardio. They start doing things that make them look a lot more like a sprinter than it does some sort of like a cardio junkie.

Andy Deas: Perfect! So the next part of the question, she goes on to say she's been doing the Zone and CrossFit, mostly Paleo for two years, seeing some weight loss, lots of toning up and muscle gain, but little fat loss around the middle and it's kind of light on the inches lost area. At first she did pretty big cheat days, one a week, and then told herself that's why she wasn't losing at the rate that she had read about.

She eventually cut out the cheats, went straight Paleo on a 10 block system and still minimal loss. She then began doing tons of cardio for a triathlon with CrossFit so I figured that was why with cortisol and everything. Currently, she is just doing CrossFit, Max Effort Black Box and a low carb Zone, 11 blocks of protein, 3 carb, 35 fat. Still struggling. She has some energy and sleep issues along with it although she says she gets 9 hours a night. I wish I could sleep for 9 hours.

And so in general, she said, "What are your other thoughts on things to try? Could there be a thyroid issue?" She's going to have that tested. Cortisol issue? She goes on Paleo and CrossFit have changed her life, ending my depression, mood swing, helping with some energy issues, and she really wants to just get the maximum out of what she is doing and

improve her body composition but also be able to recommend things to her clients as she sees similar problems.

Robb Wolf: Wow! Okay, yeah.

Andy Deas: That was a mouthful for me right there.

Robb Wolf: It was a ton. And just to let folks know, these things are going to be -- the show notes are going to be posted with the podcast so like folks can go back through and read these questions.

Andy pointed this out actually before we got going when we were kind of reviewing this stuff to make sure we have our ducks in a row. Lauren has three different training protocols mentioned in this thing -- CrossFit, triathlon training, Max Effort Black Box, which I could be wrong. I could be jumping to conclusion here. But what this is telling me is like she is doing a ton of stuff. I may be reading into this too much, but I see potentially a ton of stuff.

Andy also pointed out that she was doing the triathlon training plus CrossFit. How long did she give herself some downtime after that before going into Max Effort Black Box? So like the potential that there's some cortisol-related problems here I think would be really, really high.

She might still be undereating. We don't know. Like that 10 block level, when Nicki was getting ready for the CrossFit Games '08, we ended up sticking her on like about a 10 to 11 block deal. And she was a little leaner but I really can't say her performance was any better than what she had had before, and she was just like angry all the time, whereas like she usually eats probably about like 25 to 30 blocks of protein and then does great on that.

Jolie Gentry, she was a 10 blocker. When she started eating unweighed, unmeasured Paleo, when we weighed and measured her food to see what she was actually eating, she was at like 26 blocks of protein, 6 to 8 blocks of carbs, and like 64 to 72 blocks of fat, and so it was nowhere near Zone proportions but she got leaner, stronger, and set PRs on everything.

So there's again a bunch of stuff here, maybe underfed, definitely a potential of like some overcardio type stuff going on, definitely a potential cortisol deal. This is where somebody who has some Biosignature training, Poliquin Biosignature training, they could do some Biosigs on Lauren and tell her, "Hey, yeah, you definitely have elevated

cortisol sites. You definitely have elevated insulin sites." And it would give her a little bit more of a focus on what she could do to address that stuff, possibly some phosphatidylserine, definitely modifying what she is doing with her training.

So the fact that she is mentioning that she is keeping all this weight through the midsection, it's definitely got me thinking cortisol, insulin, all that sort of stuff, although suppressed thyroid function could be a player here. A question that I would ask Lauren is is she having a normal menstrual cycle? And if she is, then the thyroid is probably not an issue. If she's got some patchy menstrual cycle type stuff, then the potential for that being a thyroid issue I would suspect would be higher, but that's where she would probably have to track down a good naturopath or an MD who would be open to doing some work in this area and investigate that stuff.

An adrenal stress index would tell her where the cortisol is at. A standard thyroid panel could tell here where that's at. And then someone doing some Biosignature work could give her a little bit better of an idea what else she has going on.

Because there can be some whacky things too. She could have kind of estrogen excess which she can dig up via a Biosig, and that could be blocking some of her insulin sensitivity. So there are some whacky things that can pop up that can limit insulin sensitivity.

Andy Deas: Yeah. I think additionally, on that whole cortisol/adrenal stress area she mentioned some concern about cost. I think the Doctor James -- I always get Doctor Wilson, right? That's the adrenal fatigue -- don't you have it lying right next to you, Robb, probably?

Robb Wolf: Is that the adrenal fatigue book?

Andy Deas: Yeah.

Robb Wolf: There's two of them. I forgot which one. Yeah, yeah. That sounds right though. Yeah.

Andy Deas: And so for folks educating themselves, learning about it, there's a lot of great checklists in there. I don't think we agree with everything, but I know both you and I have read it and got some good benefits out of there. Because some of the stuff I think a little more education about how your body responds may help with that.

I think if I see one more CrossFit plus triathlon question, I mean I feel like folks sometimes aren't realistic about how deep of a hole they may have dug, and I know both you and I have gone through some various levels of adrenal fatigue but it's like sometimes people have dug themselves a pretty deep hole and it's not going to go away with five days of rest. "Oh, I've rested five days. I'm ready to rock and roll and train balls out again."

Robb Wolf: Yeah. You know, for me it's been a good six months of really curtailed training and really being fastidious on my sleep and all that stuff, and I just now like about a week ago, I told Nicki, I'm like, "I actually feel really good today." And like I have been doing the Wendler 5-3-1 and doing some very much kind of met-con like kind of CrossFit Football, Max Effort Black Box, shorter type met-cons; and actually, I feel like I can tackle things with some intensity and some aggressiveness and not feel like on the back end of it I was literally dying, like I was digging a deeper hole than what I was getting out of it.

So yeah, it's a lot. I mean folks love that stuff. They love the volume. They love the kind of cardio high and all that. And some people can tolerate it better than others, but when you start getting some of these signs and symptoms of just retaining body fat and not leaning out, then it's kind of obvious what's probably going on.

For Lauren also, like this standard, you know, making sure she's getting adequate fish oil. Vitamin D is a huge one again, like I'm going to sound like a broken record on that deal. Magnesium, because magnesium is a -- everybody focuses on vitamin D and calcium, which is super important for fat loss and for metabolic regulation of everything that vitamin D does, which if I'm not mistaken, vitamin D and thyroid are the only hormones in the body that affect every single cell in our body. I need to double check that but I think that that's accurate. And so magnesium is even more important for optimizing what vitamin D does than the calcium. So these are some things that are real cheap, real easy to throw in there, and could pay huge dividends for people with regards to helping with the body comp.

But again, there's some lifestyle stuff that just kind of needs to be tackled. Maybe Lauren needs to really dial back the volume of the training, make the met-cons a little shorter, feed herself maybe even a little bit more interestingly and see if that doesn't help things.

Andy Deas: Yeah. I think my last comment on this is this. I feel like you see a ton of females rolling in, like, "Oh, I'm rocking the 10 block Zone system or 10 blocks kind of higher fat, lower carbs." And for me, personal experience,

I'm always like, "You know what, don't even mention that stuff. Just freaking eat and eat till you're full and worry about that other stuff later." I feel like we see a ton of folks that undereat and they spend a lot of time like weighing and measuring and really thinking that an additional ounce a day then spread out over a year is making an enormous difference because one day I ate 11 blocks and not 10.

Robb Wolf: Right, right. And I think you mentioned Ido Portal at the Gymnastic Bodies seminar, he was basically like, "Eat Paleo, eat a ton, and then fuel your activity." Like focus on your activity and get good work capacity and all that sort of stuff, then think about some sort of proportionality later, but fuel yourself sufficiently such that you're not digging a hole with your activity level. And I think that's genius but it's a little counterintuitive, like everybody wants to kind of get in and start doing some real significant caloric restriction, and I think that can have some downsides.

Andy Deas: Absolutely! Perfect! All right. Moving on, we got a good question from Lisa. She attended one of your CrossFit gymnastics or not gymnastics seminar because you got me all thinking about Coach Summer now. I'm totally spun up.

She attended one of your CrossFit nutrition seminars and I know you briefly touched on thyroid there, but obviously, it's just one of a ton of topics. And so her question is she was diagnosed with Hashimoto's thyroiditis at 16, so hypothyroidism. She took Synthroid religiously until recently and she switched to a natural thyroid, after which her levels dropped when she switched due to the different dosing and some of the changing.

So her long story short is she is reluctant to mess around with the thyroid. She added an iodine drop to her water in the morning and avoids certain "goitrocentric" foods. But to be honest, she says, "I have no clue what I'm doing or what I could to improve this diagnosis. I'm reluctant to go off thyroid because I don't want to be in and out of the doctor's office for blood tests and I don't want to have the symptoms of being hypo."

So I think this is a common question, this thyroid issue, so I'll let you kind of give the spiel.

Robb Wolf: Yeah. This Hashimoto's thyroiditis is a super common if not the most common form of hypo or low thyroid, and I will bet the farm that it is always a gluten-related issue. Some gut irritation leads to leaky gut and then we get a little bit of autoimmune reaction that can happen on any tissue, but it happens to be with these folks' thyroid tissue that they get

this autoimmune response. When the thyroid starts getting attacked, then we get some sort of a downregulation in the thyroid output, that's kind of issue number one.

Issue number two is if the gut lining is irritated from grains, legumes, dairy, you can't absorb nutrients properly and I just can't emphasize this enough. We get tons of questions about like bone mineral density and vitamin absorption and all that sort of stuff; and if you're not focused on your gut health, on the ability to actually digest nutrients and absorb them into your system, then you're just missing the boat. It doesn't matter what you're stuffing down the pie hole. It's all just going out the other end 'cause you need to actually absorb it for the stuff to work.

And the analogy I use on this is that everybody understands that if your lungs get damaged, say you get a real bad bacterial infection or you get smoke inhalation or something, if the lungs get damaged, if that mucosal membrane gets damaged, you don't transport oxygen or carbon dioxide through the alveoli. That stuff gets shut down.

The same process happens in the gut. If the gut is irritated you don't transport things. So you've likely, in Lisa's situation, probably got some sort of an autoimmune issue which is the Hashimoto's thyroiditis, plus just the general irritated gut lining. And so it's that old standby again.

Gluten-free, dairy-free, I would go all grains actually initially; grain, dairy, legume-free Paleo diet. Everything else she is doing is good. The natural thyroid medication she is probably taking is probably Armour, which is fine. Some people do better with that. Some people do better with Synthroid.

What would happen ideally is if she heals her gut lining and the autoimmune response to her thyroid goes down, she should necessitate less thyroid, and so it's not really a matter of her stopping this, but that she will necessitate less of it, and then she will ideally be able to titrate down on that over time. We won't know until she gives it a shot.

I'm really excited that she mentioned the goitrogenic foods. Goiter is when somebody's thyroid enlarges and they get like a giant Adam's apple looking sort of thing. That happens usually when folks aren't getting enough iodine in their diet or they have iodine malabsorption or something like that. Soy is massively goitrogenic, so are interestingly cruciferous vegetables like broccoli, kale, or not kale so much but cabbage, so all the cabbages, the Napa cabbage, all that sort of jive.

So that's not to say you shouldn't eat these things, but like every time I do the CrossFit nutrition seminar, when I do the food matrix, I ask for like a list of meats and a list of veggies. The first very first vegetable everybody mentions is broccoli. It's like the official CrossFit vegetable.

Folks need some variety in their food. Mat Lalonde, Harvard Ph.D. chemist, likes to make the point that the foods that we eat, particularly the vegetables, all of those foods have things that are good for us and bad for us. The toxicants actually fill up different metabolic pathways in our system and then we get backlogged trying to remove those toxicants out of our system. To some degree, that's good for us, but what argues is variety in our diet so that you're not completely hammering one pathway all the time.

So this kind of integrated approach -- don't eat goitrogenic foods, remove gut irritants that are feeding into autoimmunity and malabsorption and then just see. Then Lisa is just going to have to kind of sit back and see how she does. She'll probably, if this is working, she'll probably notice that she starts maybe having a little bit of sleep disturbance or some of the things that are typical of hyperthyroidism and that's where she would have to work with her doctor to start titrating this stuff down.

Andy Deas: Right. And this is one of those situations where when we say grain-free, dairy-free, etc., that means if you have any of these, do not fucking ever eat those items.

Robb Wolf: Yeah, and just, you know, for a period of time until you can reestablish health. And then from there, people can usually sneak in corn, rice, beans on a couple of times a week basis and be fine. The wheat, the gluten-containing things, wheat, rye, oats, barley, millet, are pretty much off limits if you want to stay healthy, and I've just recently done a number of blog posts on the type 1 diabetes and the autoimmune element of that.

And then the most recent one, just a couple of days ago, was on the all of these kids with type 1 diabetes ended up having autoantibodies to gluten, and there weren't any of them that didn't have the autoantibodies to gluten. But all of them had the autoantibodies to transglutaminase antibodies. They had it in such a way that none of these kids would have classically been diagnosed as being celiac.

So this rope-a-dope that happens when we talk to like the vegetarian doctors and different people who are like, "Well, celiac only affects one in a hundred people," or whatever, all of this stuff can be subclinical because it can all be going on just in the gut lining and there's not any

pathology in the microvilli of the gut or a full blown antibody titer that we could find via blood work. And so we would check the person then we'd say, "No, you don't have a problem," so they keep eating the gluten and this thing just gets worse and worse and worse and ends up manifesting in either singular or multiple autoimmune diseases.

It's just retarded. You remove people, remove that gluten out of the diet, establish a baseline of health, and then figure out where your buy-in is that you can get away with it without it making you sick. At least that would be my approach to it.

Andy Deas: Absolutely! Perfect! All right, next question which I think you may be actually able to share a little bit of personal history with this. I think you have some commonalities with KC who sent us an email.

He is a 31-year-old male with a chronic history of GI problems that started in his 20s, but he feels like he's probably had issues since his teens if he thinks about it. He's had two colonoscopies and an EGD. He remains undiagnosed but feels like it's mostly IBS. He's still awaiting blood work to rule out celiac disease and other possible diagnoses.

He's always been highly active, former U.S. Marine and current physical therapist. Over the past two to three years symptoms have become increasingly worse. During this time he has lost approximately 20 pounds of muscle mass, gained 20 pounds of fat. The past few months he has forced himself to get back in the gym; started Rippetoe's Starting Strength; tried the doctor's advice of high fiber, high starchy foods, low fat, low protein, but found that hasn't helped.

He bought recently The Paleo Diet book by Cordain, also Paleo Diet for Athletes. And then he goes on to say his background seems long and maybe pointless but he's desperate to find something that may help one, alleviate some of the symptoms; and two, help him remain active, put on some of that muscle that he lost ,and lose some of his additional body fat.

Robb Wolf: Yeah. I mean this is me in my mid 20s, graduated undergrad, started medical school, and got horribly, horribly sick, pulled out of med school, barely able to maintain a work schedule. I couldn't really train, got down to a low of 135 pounds, which I'll post that photo sometime when I was high carb, low fat vegan and sick as hell, like it's kind of horrifying to look at the photo now.

But this whole IBS deal, Crohn's, ulcerative colitis, all of this stuff, like I have huge Google ranking, really good Google ranking when folks check on those different search terms because folks navigate to the website, try a grain-free, dairy-free Paleo diet and they end up resolving their symptoms like almost immediately in some cases. So yeah, I would be shocked if a gluten-free, dairy-free Paleo diet wouldn't help the situation.

The unfortunate thing is that the doctors recommend their high fiber starchy foods. They feel like protein and fat are difficult to digest and all that stuff so they're trying to make the whole thing easier on his digestion. They're trying to give a bulking type diet to give some substance for the intestines to get peristalsis, the movement of the stool through the intestines and all that. But unfortunately, they just don't make any distinction about the quality of the carbohydrates that people are eating, and we are discovering more and more every day the quality really matters and like these grain, legume-containing items, dairy also to a significant degree irritates the gut lining and it can manifest in a multitude of ways.

During the CrossFit nutrition cert when I'm talking about leaky gut and the autoimmune response, I mentioned that the main autoantibody that we make is to the stuff called transglutaminase. Transglutaminase is an enzyme that modifies all the proteins in our body when they're made like hair, skin, nails, nervous tissue; like the whole assortment, transglutaminase is involved in this process called post-transcriptional modification, which is a big word. It just means that when proteins get made, they usually get modified after they're made. DNA gets translated into protein and then there are some modifications that happen. Transglutaminase is one of the main enzymes that does this modification.

Gluten and grain-containing type items affect the transglutaminase enzyme. If transglutaminase affects everything in our body then it can, you know, if you have a problem with gluten, which I think everybody does to some degree, then you could potentially have a problem in any organ, any system at any time and it can manifest differently in different people. But the solution ends up being the same. It doesn't matter what you have going on. You end up with the same solution. So yeah, I'd be shocked if KC didn't give this a shot and didn't see stunning improvement.

And if he feels like he does better with a little bit more like soluble fiber, then he could keep in like yams and sweet potatoes and stuff like that, lean proteins, maybe even going a little moderate on the vegetables at first or making sure to really, really cook them well. Like soups and stews

and stuff like that really make the digestive process easier on them. And then the same deal -- vitamin D, fish oil, that whole litany to help with all this stuff.

Andy Deas: Right. And as far -- I think he asked the books so I think The Paleo Diet original by Cordain is probably more appropriate for his goals. The Paleo Diet for Athletes, I like the book, but it's really written with an endurance athlete bent.

Robb Wolf: Yeah, yeah. And it really just focuses on a very high-carb post-workout refeed to optimize recovery. Yeah.

Andy Deas: Cool! All right. We then also got an interesting question emailed to us from Karl related to kidney stones. So basically, he's followed Paleo diet for a few months; healthier and stronger than ever. Shocker! His dad is a former athlete. He has put on 100 pounds with extra weight over the years, severely out shape and his diet really isn't very good. His dad has had kidney stones three or four times in his life and said it was probably the worst pain he has ever felt. His dad takes what his doctor says as gospel and has told him to avoid…

Robb Wolf: Oxalic acid foods.

Andy Deas: Yes, oxalic acid, thank you, foods because it gives him kidney stones. He avoids asparagus and a few other foods that contain that. When Karl had suggested he try the Paleo diet, his dad said he tried a similar diet called "Fit for Life" in the 80s and it gave him kidney stones and he's reluctant to try it now. His dad claims he researched the diet, I'm not sure if that's Paleo or Fit for Life, and apparently you are four times more likely to come down with kidney stones on that diet.

So long question, what are our thoughts on what causes kidney stones? Is there any type of increased risk for kidney stones on a Paleo diet? What are our general thoughts on that? I'm going to kick that one to you.

Robb Wolf: So yeah, kidney stones are a precipitation of an organic acid called oxalic acid, and so oxalic acid is found in real high concentrations in like kale, spinach, collards, any type of real green, leafy vegetable. I think they mentioned in there also asparagus has pretty high amounts of oxalic acid. Sometimes different vegetables will be so high in it you almost feel kind of a resin of it in your mouth. It's almost kind of a grainy sort of texture.

So the stuff gets in our system. If the oxalic acid is put in a high acid environment with calcium, then it precipitates out this calcium oxalate

crystals and that is what a kidney stone typically is, this calcium oxalate precipitate.

A really nice way to do this is like a British style tea with dairy because there are tannins and oxalic acids in the tea, and then you have a high concentration of calcium in the dairy, and so like the traditional British tea is actually kind of a high vector for creating kidney stones.

The final analysis in this whole thing is what we call a net acid yielding diet, and so meat, cheese, dairy, grains, legumes all produce acid at the kidney level. When everything gets metabolized down the results are like sulfates and phosphates, and they end up producing a net, what they call a net acid load. And then fruits and vegetables, some nuts and seeds produce what's called a net alkalinizing load. What we ideally want, when we look at a reconstructed Paleolithic diet is a net alkaline diet. A net alkaline diet should insulate an individual from precipitating kidney stones.

Now, there's obviously a little bit of anxiety in this whole recommendation. Because this guy has had kidney stones several times, the fact that he's this overweight, he likely has some metabolic derangement, maybe even some gouty type stuff, which is a uric acid precipitation problem. So the likelihood is this guy is already very, very kind of acid loaded so that's really dicey.

The thing that you could do is to push a Paleo-oriented diet but with low oxalate-containing fruits and vegetables, so like the vegetables would be more like cabbage, bell peppers. There's some list of that. We could pull it up and maybe stick it in the show notes, or this is something that Karl could just pretty easily Google is like low oxalate or oxalic acid vegetables, and his dad could make the emphasis of his foods come from that.

But then if his dad really cuts out the dairy, that's the biggest acid-containing acid load food that you can find, particularly like hard cheeses. Get a good amount of protein, and even though that's an acid load food, just balance that out with plenty of vegetables. If he is this overweight, then we'd probably go a modicum of fruit in the beginning to lean him out, but his dad should do fine on that. There should be no problems with that.

And if his dad wanted to, he could go into his doc periodically and just have a urinalysis, and they can check the urine for calcium oxalate crystals. It should be a simple, easy test, and this will give you a guide

ahead of time. If you are producing calcium oxalate crystals on a day-to-day basis, then you have a problem and you need to modify what you're doing with your nutrition. If you're free of calcium oxalate crystals, this should virtually guarantee that you don't have any type of problems happening up in the kidneys.

Andy Deas: So two things. One, I think that's a great reminder to look at thepaleodiet.com in the FAQ. Cordain has a great thing about acid-base balance.

Robb Wolf: Yeah. And I believe he mentions kidney stones in that acid-base balance. Yeah.

Andy Deas: Yeah. So I think that's super helpful for folks. And then also, Robb, I wanted to kind of turn this question around. I think we get a lot of questions around specific conditions and we're totally cool sort of talking through each condition, what causes it, some of the ramifications.

But I like the question, if we say, just like sometimes in the gym, we say there are no bad exercises, just athletes, and maybe you shouldn't do certain exercises based on injury, history or body setup, femur length, etc. In your opinion and experience, are there conditions or issues where we would not recommend the Paleo diet or conditions to just make the recommendation harder, in which case we might have to think about some more modifications for eliminating foods, etc.?

Robb Wolf: The only thing I could think of, like I've had a woman who's been posting on the blog who has a -- I don't know how she developed the condition, but it was nephritis, a kidney condition in which she has a heck of a time processing proteins properly at the kidney level.

And so for her, I've recommended like a Zone level of protein which is lower than what the Paleo diet would usually recommend in addition to a bunch of alkalinizing fruits and vegetables, and she seems to be doing really well with that, like her numbers are holding steady. There's a couple of different like kidney conditions that are both autoimmune and hyperinsulinism related, and so usually, modifying the diet towards the Paleo approach actually improves the kidney function.

So that's one thing that pops up that I could see being a problem. We've had situations in which people have suffered from like gastrointestinal cancer, they've had the colon removed, they've had part of the small intestines removed, and so those people are going to have a hell of a time with reabsorption of either water or nutrients, and so they just have

to be really careful with what they're eating. Make sure that it's cooked well and they have to play it very much what do they function well with.

But in those situations, it doesn't make any damn sense at all to -- if you have a compromised GI tract to stick grains, legumes, and dairy in it when we know that those things are going to be irritating, and so those are a given that they're going to be problematic. So avoid those foods and then try to introduce the foods that you do the best but kind of fit into that Paleo mindset.

But I can't really think of too many other situations where the generalized Paleo diet isn't going to be appropriate for folks, and I like that you mentioned that because folks, instead of each one of these things being kind of an individual treatment, it's like in general, the Paleo diet is appropriate for most of what folks have going on.

Andy Deas: Yeah. And I think this is one of those areas where we simply recommend the Paleo diet because it pretty much works for 100% of the people that we've ever seen, worked with, talked to, who are willing to give it a shot and kind of go through some of the adjustment periods, learn how to prepare food. The results are nothing short of magic for a lot of folks.

Robb Wolf: Yeah, yeah, and no nutrition in a box like Robb Wolf 2995, six easy installments. There's no bullshit with it. All I'm selling people on is try it. Give it a shot; try it; let me know what the results are.

And what I see again and again and again is that we don't see people going backwards. We don't see recidivism on this thing. If people really earnestly give it a shot, they're like, "Wow! I really feel better. I really look better. I really perform better."

And it's fully worth it from the perspective that I can find a buy-in with this, where like if I go to a family function, I can kick my heels up and have some off-the-rails foods, and then I'm generally back on the rails Monday thru Friday. So it's not this thing of trying to eat perfectly every day all the time, but it's finding a spot of kind of optimized health where you can live your best life and have all the options that you want instead of potentially being sick.

Andy Deas: This is why I always say I need the T-shirt that's like "Paleo Diet: It's almost like it works."

Robb Wolf: It's almost like it works. Absolutely! Yeah.

Andy Deas: All right, Robb. So we're way over on time today. We got way wrapped up in the questions and I'll take the blame for that. It's my job to keep us on the tracks.

But one thing that, you know, if folks were crazy enough to listen to a full hour of us, I heard you mention again yesterday and I always take it for granted 'cause I talk to you so much, you know, the joys of the NorCal margarita and sort of better drinking through chemistry. So I thought I'd let you sort of share the NorCal margarita recipe and also your biochemist explanation about why we like it so much.

Robb Wolf: Why it's so damn good. Okay, yeah. So the NorCal margarita is still one of our most popular recipes that we've ever posted before, and the recipe goes like this: two shots of tequila, preferably gold, the juice of one whole lime, and then a splash of soda water. Now, what's going on with that? Tequila is fundamentally delicious and just loosens you up and sets the stage for a good Friday or Saturday night.

The lime juice, because of the acid content, although interestingly, it registers as an acid in the gut but not at the kidney, so it's actually net alkalinizing. I'm not going to get into the whys of that but that's just the way it rolls. But that acid load actually blunts the insulin response so you don't get much of an insulin response from the drink.

And then because of the carbonated bubbles in the soda water, that carbonation, carbon dioxide is a non-polar molecule, and what that does is it kind of pulls the ethanol from the drink into that little bubble, and then that actually disperses the booze into your system faster so there's actually interestingly been some clinical studies showing that carbonated beverages end up speeding your path to drunkenness.

So we recommend the NorCal margarita because it's good, it's gluten-free, blunts insulin response, it's delicious, and it will get your head changed faster. So that's definitely better living through chemistry.

Andy Deas: And that folks is why taking chemistry class is cool.

Robb Wolf: Well, if not cool at least a benefit.

Andy Deas: That's right. Some useful knowledge came out of all that class.

Robb Wolf: Yeah, yeah.

Andy Deas: All right, Robb. Well, with that, I think we're going to wrap it up. We're at an hour 5 minutes today so we went like way over our goal, but I think we got some good information out there and answered some good questions. Those I'm sure will generate a host of additional good questions to talk through.

So Episode 3, Paleolithic Solution. Thanks for your time, Robb, and I'll talk to you again next week.

Robb Wolf: Thanks, Andy. And for the folks who are listening, if they'd give us some feedback, if they feel like a half hour is the good length, 45 minutes, an hour, like give us some feedback on what works for you guys and then we'll really try to stick to schedule. We want this to be of benefit to everybody. So let us know what you think and ways that we can improve it and if there's kind of an optimum time indexing for this too.

Andy Deas: Great point.

Robb Wolf: Awesome! Thanks, Andy.

Andy Deas: All right. Talk to you soon, Robb.

Robb Wolf: Okay.

Andy Deas: Bye.