*Andy Deas: Six listeners can't be wrong.*

*Robb Wolf: Yeah, six listeners cannot be wrong.*

*Robb Wolf. Andy Deas. The Paleo Solution. Holy cow!*

Andy Deas: Robb Wolf, Andy Deas back episode 57, The Paleo Solution. What is going on today, Robb Wolf?

Robb Wolf: Dude, I'm actually in Seattle hanging with Dave Warner and his wife Nancy. Just wrapped up a Paleo Solution seminar up at Nick Nibler's place at the Agoge Gym in Woodinville and then we went to the Sci-Fi Museum and checked out the Battlestar Galactica exhibit today and it was fracking awesome.

Andy Deas: Were you skinnier than the average sci-fi attendee?

Robb Wolf: You know, there did seem to be a consistent body mass index of about 30 up there.

Andy Deas: Nice.

Robb Wolf: So we stood out a little bit. We definitely didn't seem to be the average sci-fi fan. Yeah, it seems to be the case.

Andy Deas: Did you recover yet from Ido Portal's visit to Chico?

Robb Wolf: Recover is kind of a vague term. I mean, it's kind of like after you've been hit by a train or you've had some sight of like a mugging and there's all the post-traumatic stress type of things, yeah, yeah, like scapula is getting more integrated. That was super fun. We had Ido and Scott Hagnas from across Portland hanging with us for almost a whole week and just did a ton of like Floreio art stuff, scap mobility. Dude, it was awesome. I had a ton of fun with those two. So I'm coming around. How about you? How are the hips, how are the shoulders, how is Trap 3?

Andy Deas: You know, poor Ido beat me up and I think he uses phrase when he was doing our little lecture too. He's like, "People don't want to hear this, Andy, but you're weak." Super Ido. Some of my scapula stabilizers are a little weak. I had a lot of fun playing with Ido. Also there was this funny gym effect, Robb, when Ido is practicing something that he makes look really easy like climbing upside down on the rope and then you have all these pretty good athletes go over there and try it and they're like, "Wow, that's a lot harder than it looks." I'm like that is why not many people climb up and down the rope upside down actually. That's why we don't teach that in elements class.

Robb Wolf: Right, right. Only to our really old class. It's kind of like putting your elderly ab on the ice flow to just see them disappear.

Andy Deas: Is the amount of work done in climbing the rope inverted the same as climbing the rope upright, Robb?

Robb Wolf: Broad time, total domains, Andy, and five fries.

Andy Deas: Five fries.

Robb Wolf: Oh, hey, I have to mention too Rueben Baca, he set a new standard at the Paleo Solution seminar when he walked in and I went to the restroom and came back out in a little podium I had set up. I had a bottle of tequila sitting up there waiting for me and he had the little 1 oz. like 7-11 shot of booze things.

Andy Deas: Oh yeah.

Robb Wolf: For the question he asked, he then put a 1 oz. bottle Tequila up on the podium for me so that was cool.

Andy Deas: Wow, wow.

Robb Wolf: Yeah, yeah. I've never experienced that.

Andy Deas: That's amazing.

Robb Wolf: Pretty cool.

Andy Deas: I don't want to ever go there but we do have confirmation, Robb, that Mat Lalonde is going to be on the show.

Robb Wolf: Cool. So all that we got, Andy and I just got an email that was like WTF with the many exclamation points and question marks and Mat seemed genuinely stirred up over this.

Andy Deas: He's on board and has been sending us some goodies that we'll be talking about. So I'm excited to have Mat, and then I guess we should mention soon we're going to have Sarah Fragoso from Everyday Paleo on our podcast. So what we're going to do is start doing some post like, hey, Mat is going to be on. We're going to record on this date. You have eight days just to make your question if you have something specific that you want to ask these folks. Because they're only going to let Sarah enter the questions about the kids, Robb, because they're not little people. That's joke around...

Robb Wolf: Sarah knows poop. Yeah, Sarah knows poop.

Andy Deas: The joke never gets less funny.

Robb Wolf: It never does get less funny. Then next week, Tuesday, we have the Tim Ferriss interview for The 4-Hour Body.

Andy Deas: Yes.

Robb Wolf: It's coming out, so December 14.

Andy Deas: Yeah. And if you haven't check it out, check out Tim Ferriss' commercial for his book. And then Robb Wolf, did you put your Dexter Wolf up on your blog?

Robb Wolf: Yeah. Dexter Wolf is up and running and people seem to like it. I wasn't sure if that was going to be a shark jumping event or what, but folks seem to like it.

Andy Deas: You jumped the shark long ago, Robb. It's over.

Robb Wolf: Okay. Well, that's good. There were amazing slip.

Andy Deas: That's right. How do you measure yourself against the golfers, Robb? That's really the important question today.

Robb Wolf: That's true.

Andy Deas: Are you ready for the questions? Do you have anything else we need to talk about?

Robb Wolf: I don't think so. This one is a fun one to start off. Andy is trying to provoke me right out of the gate here.

Andy Deas: So this is from Jon who actually posted this on my blog which is pretty funny. I don't think, Robb, you're going to respond to this or it would have been a flaming response but I thought I would throw this in the queue because I thought it was a good question.

Robb Wolf: It's a good question.

Andy Deas: Take a deep breath. It's kind of a long one. I'll read the whole thing and then you can kind of go from there and you saw the Battlestar Galactica visit today, I feel like you should be one with the universe.

Robb Wolf: I am, I am. It's the whole yeah, yeah, yeah. I'll just leave it at that. Yeah.

Andy Deas: Good. So Jon says, "I think a discussion of what the re-introduction of foods and subsequent reactions to them means and why would be very interesting as a podcast topic. The Paleo concept has expanded a lot from the original 'caveman did this so you should do' logic of guys like Cordain. Another thing mentioned recently on the show was how Robb has become more science-oriented because of Mat Lalonde, but I still think at times Robb reverts back to the 're-introduce it and see how you feel' logical fallacy too often because I bet almost any food completely eliminated for 30 days and then re-introduced would have negative effects and may take a few months to re-sensitize yourself too. So talk on why this matters, scientifically preferable rather than anecdotally, would be important. It needs to be more than just 'gluten makes my joints achy.' I'm very surprised that some of your clients, including Robb, seem to think 100% of people should avoid it 100% of the time. Another thing is the constant reference to autoimmunity. I get that anecdotally, people with these problems see benefits from Paleo. What relevance is this to the people without autoimmune conditions? If dairy aggravates autoimmune stuff, what does this mean? Sometimes it seems that Robb is implying that because people with Crohn's, rheumatoid arthritis, celiac, Hashimoto, etc., get messed up eating a certain food, that the food is bad for everyone but they are a special population and that's like comparing the carb needs of a type 2 diabetic to that of an athlete. Again, I recognize this is a problem of a very broad audience of the podcast, but I think some clarity on real underlying why's need to be answered. For example, these foods have only been around for 10,000 years line. This is assuming a linear evolution, which many experts suggest is not the case, so maybe Robb could discuss why we did or did not evolve more quickly after the invention of agriculture." Then we have a link to the1000yearexplosion.com which honestly until I saw this question, I've never been to that website, Robb. I will admit that.

Robb Wolf: I've seen that stuff and we can definitely try to rub that out in the end. So huge, huge questions. Some really good stuff here, but really kind of right at the heart. I know Jon's kind of a fan of like Lyle McDonald going kind of camp and this really kind of get right down to the heart, in my opinion, where these guys are kind of shitting the battle on all these stuff which is that they absolutely refuse to educate themselves on the mechanisms of what is underlying autoimmunity in a broad sense. So there's a bunch of stuff that we can kind of dig around here. One of these things, let's see here, "the Paleo concept is expanded a lot from the original cave man did this. I think at times Robb reverts back to the re-introduced and see how you feel logical fallacy too often because I bet almost any food completely eliminated for 30 days and then re-introduced would have negative effects." So Jon is implying that I have some sort of a logical fallacy here, but yet he leads into it with his own logical fallacy of saying "I bet it does happens," and with absolutely no substantiation about this at all. Andy and I were kind of talking about this, and Andy, clarify this for me if you want to, but Jon was kind of saying that if you pull beef

out and then re-introduce it it's his supposition that you have a problem with this. Right? Was that kind of the deal...?

Andy Deas: Yeah. I think what he was saying based on certain foods like for example some of the vegetarians we've worked with that haven't eaten meat for a fair amount of time, in the beginning sometimes his point was that some of them have issues adapting to eating meat again because they may not have adjusted enzymes built up or whatever but that doesn't, you know, his argument was that then that would imply that they should not eat meat based on like their immediate sensitivity to it. So I think that was what he was questioning basically.

Robb Wolf: Yeah. And here again, this is like a complete lack of understanding of what the heck is going on with this. A lack of digestive enzyme production is a state of hypochloridia like we have a lack of adequate digestive enzyme release because we're not getting adequate hydrochloric acid production so we're not getting cholecystokinin production which stimulates all the downstream signaling like bile salt release and pancreatic enzyme release, and so if we were to take a vegetarian who's eating what I would argue would be a sub-optimum diet with grains and legumes in it and we put them on digestive enzymes we're generally going to see better health as a baseline with this because their digestion is going to be improved. Then if we further refine the whole process by removing gut irritating foods and introducing foods that are more nutrient dense like meat and fruits and vegetables, then we're going to see further improvement in health. So this is a completely different scenario and you're kind of lumping all these stuff together. A food sensitivity issue or some sort of an autoimmune reactivity is completely different than somebody who's suffering from a hypochloretic state. Here again, like if you don't understand all these basic mechanisms which I mean we've been talking about this stuff radius, I delineate it in the book. But it seems like we just can't get some of these guys to get in and read some of the basic literature on this stuff to get going with it. So this is a completely different story that we're talking about here. Let's dig in a little bit further. There's just so much stuff in here. So it goes on to mention that I don't think that people should say gluten for, you know, across the board. There are some very, very good literature that shows increase inflammatory state in virtually any organism that consumes gluten and with this elimination diet deal it's a very simple kind of no BS intervention in which we can peel people out of consuming these foods and then re-introduce it. So I know that that's anecdotal like if you want the mechanistic elements, then gluten is brought into the intestinal lumen, the carrier molecule then is brought in intact that then stimulate some sort of immune response to the gluten protein-free goodly. The cross reactivity of that immune complex then ends up interacting with the enzyme transglutaminase. Transglutaminase is involve in the production or post-transcriptional modification of most proteins in our body, and so gluten can influence the tissues and cellular make-up of virtually any product that the body makes and this is why the problems of autoimmunity are so diffused and so far reaching and why it's far simpler to simply recommend an elimination diet approach than it is to get in and try to micromanage some of these effects. It's pretty well documented in literature even with celiac disease that not everybody with celiac disease expresses GI upset from a gluten exposure. They may have completely wiped out cilia and delay microvilli, all the kind of pitted scar damage intestinal mucosa that is typical of celiac but yet they experience no GI problems but they have D vitamin deficiencies, iron deficiencies, anemia, possibly bone mineral deficiency because of lack of calcium uptake but clinically they don't express any signs and symptoms that we would normally associate with celiac disease, but on a biopsy or/and blood work then they do show the signs and symptoms. So there's a vast spread of how people can manifest these diseases and this is where the genetic individuality really comes into play with this. Certain people with certain gene types that are going to manifest an autoimmune disease have a higher likelihood of manifesting Type 1 diabetes, so other people have a higher likelihood of manifesting like lupus or rheumatoid arthritis. There are some pretty papers on this and it just gets very

high level. We could throw this stuff up, we definitely could do a dissection on some of what determines if person A versus person B versus person C gets an autoimmune disease. The basic mechanisms are the same, some sort of gut irritation leading into antibodies related to transglutaminase and because transglutaminase is manifest in essentially all the tissues, all the cells of the body, then we can see some sort of a problem that arises in virtually any organ system. But depending on what your genetic makeup is, it can manifest in the beta cells of the pancreas or can manifest in the mile long sheet of your brain in the form of multiple sclerosis and so it can bounce all over the place. Then another layer of this is that we're just finding that more and more and more things have an autoimmune component to it. Huntington's disease has historically been relegated to a thing called a genetic disease. It's a DNA-based pair of repeat disease that is typically fatal. But what we found is that there is an epigenetic trigger which appears to be related to gluten and other grains that maybe is the precipitating factor in Huntington's disease. So even though susceptible individuals have a particular genotype, they have a particular DNA-based pair of repeat issue which causes oxidative damage in the brain, this may all be precipitated by an environmental trigger which is related to our food possibly mainly gluten. All this stuff is being investigated at UC San Diego, UCSD, and some other UC system schools. We've seen people with Porfiria Cutanea Tardia, which again is usually called a genetic disease, which appears to have a potent epigenetic trigger which again is gluten. So the frustrating thing for me, and I'm trying not to be a dick about this and really take this on and like answer it in a broad way, but the information about these basic autoimmune issues are out there. Cordain's paper on the serial brains, humanities double edge sword gets very, very deep into all this. I just can't fucking get people to read the literature and educate themselves on it and frankly it's kind of frustrating especially out of the kind of the Lyle McDonald camp of this stuff. These guys are really, really bright, but there's a whole world of potential therapy that's waiting to be given to people by just recommending the grain/legume/dairy-free diet for a chunk of time and see what they do. In athletic populations, if you are running around with a low-grade level of inflammation and you remove these foods, typically what we see is a pretty significant bump in performance subsequent to the removal of these foods. Again, yeah, this is anecdotal but we can understand this very clearly from a mechanistic standpoint which is that if we are allocating some elements of our immune response towards dealing with an inflamed gut, then we have less of our immune response and less of our recovery potential to be allocated into recovery and part of that inflamed gut is a predisposing agent for pains like non-Hodgkin's Lymphoma. So we have some very well established mechanisms here. It's just a matter of folks actually taking the time to educate themselves on it, and yeah, definitely like my level of sophistication and understanding of this stuff has grown in the last couple of years and I'll definitely credit Mat Lalonde strongly with that. You know, simply saying the whole argument that something is evolutionarily nullable doesn't really hold the water for me that it did at one time. If food is new, it does not necessarily mean that it's problematic and I think we need to be a little more sophisticated about those types of topics. There are new foods that are maybe very, very beneficial and very therapeutic to us. Something that folks have missed all the way along here with this, this is kind of wrapping up a 10,000-year explosion, is that nobody is really taking into account the fact that we don't necessarily need genetic adaptation or evolution to occur to either tolerate of not tolerate a particular food. We may have had that level of genetic variation within our population already just through random damn luck that have absolutely nothing to do with adapting to that particular food. You know I'm not a geneticist but my understanding of genetics and population dynamics is such that I'm kind of the opinion that evolution is actually at a stalled state because of the fact that we don't have selection pressures now. So there are a lot of people out there saying that evolution is accelerating. I'm not really in the camp that buys into that. We're getting a massive reshuffling of the genetic deck because you have people moving all around the planet and we don't have geographically isolated gene strains anymore. That is really where you find genetic drifting in the potential for adaptation to a specific bio. So did I get everything in that, Andy, or did I...?

Andy Deas: Robb, I think you've got enough because...

Robb Wolf: I got enough. So if Jon hears this and if this doesn't hit all the topics, by all means like let's get more specific, let's talk about this stuff in more depth, let's get people educated on this understanding of autoimmunity and how it relates to at least getting autoimmune response. Instead of saying evolutionary novel of foods, we'll say genetically incompatible foods. What I'm hoping to do with this is what I'm offering is a solution to these problems. It involves nothing more than people just giving the damn thing a shot, and that's part of the thing that also chaps my ass with these guys a little bit too. Okay, I have a book for sale. I guess fuck me, I'm that person. I'm capitalizing on all this stuff. But the success of the book initially happen from people who had already succeeded due to the message that was already in the book. The first couple of months sale of the book were driven by people who are already sold on the concept. The reason why the book is selling as well as it is now and seems to be accelerating in growth is that it seems to be working for more and more people. They get in and they give it a shot and it seems to work. You know, there's nothing in the book that isn't available for free on the website like I explain the whole autoimmune protocol on the website for free. People get in, take a look at it, it's all there available for free and our best understanding of this stuff right now seems to be manifest in an observational point. Get in, remove these foods for 30 days, see if you look, feel and perform better. We have some specific biomarkers of inflammation and other biomarkers of health that we can check and that's like as cheap and low tech as I could get to get the most effect out of this that you could possibly could. I could offer some blood work. I did an incentivized slice of when I refer people to testing labs, they would tell people a little bit more about what's going on but we could run $15,000 of blood work and it wouldn't tell us anything more than what an elimination diet would do. So although on the one hand it may seem very anecdotal and unscientific and all that sort of stuff, when we start getting populations involve with this in the tens of thousands and now hundreds of thousands and we are seeing a very consistent trend with this, I don't know, maybe it's mass hypnosis but the results that we're getting are pretty shocking when we asked a couple of weeks ago for people who had an autoimmune disease that was diagnosed. Professor Cordain had a graduate student that wanted to do, and it's very based-level science but it's just a survey essentially but they had wanted people who had been diagnosed with an autoimmune disease, have tried the Paleo diet and they've seen some sort of beneficial health outcome. Is that bias? Yes, it's massively bias. Is there a selection problem? Yeah, there are all kinds of selection problems. But they were expecting to get five or six people commenting on this and they got 212 in a couple of days and there's just no other protocol out there that is producing results like this and so maybe we're suffering from some sort of mass hypnosis with this but I'm really thinking that there's something here. We have a mechanistic understanding that seems to be consistent with what we are seeing in a large population dynamic sort of thing and we're just sharing as much data as we can with these people and then having them ping us back with the experiences and it would be nice to get more people involve with this because it can save lives. If there's something, if we're missing something, then I would like to see that. But I'm also reaching a point where I'm not going to be conversant with people if they haven't done some basic homework in this because the information is out there even just on my Frequently Asked Questions with the blog. Okay, now I've completely answered that one.

Andy Deas: All right. I'm just going to move on, Robb. That was good. Well said, brother.

Robb Wolf: Cool.

Andy Deas: Next we have a question from James. He says, "Dudes, Paleo + Pregnancy + Weight Loss + Risk. Go." This is a Facebook question I think.

Robb Wolf: I want to do a haiku on this one or something. You know, my God, everybody just get all stirred up about Paleo pregnancy gig. Women eat enough to have the regular weight gain that they need to have, I mean they're healthy and their inflammation goes down and the kids are fine. I don't know much more to say than that. I mean, this is just kind of a not so topic. What do you think, Andy? Do you have any deep insights on this?

Andy Deas: No. I mean, I think the point is you just eat enough that you need to.

Robb Wolf: Yeah.

Andy Deas: I mean, perhaps he is coming from the perspective where they're starting this kind of diet during intervention during privacy so there are some concerns but I don't think we've seen any problems.

Robb Wolf: Yeah, we haven't seen any problems and again you know this, that we've done some good analysis. Cordain did this analysis. I did a post on feeding kids Paleo. He can't get more vitamins and minerals, any oxidants per calorie eating Paleo foods than any other way of feeding and so it seems reasonable to make an argument when you're pregnant it will probably make sense to have as much nutritional density in your foods as you can possibly get so why not eat the healthiest food that you can possibly find and then you throw in the other things like reducing inflammation, reducing gut problems, preventing problems like gestational diabetes. I mean, it's like when, when, when, when, when and I know that we want to medicalize pregnancy and make this really like herbal dangerous kind of thing in it. You know, can complications happen in pregnancy? Can women die from pregnancy? Yeah, yeah, absolutely. But the whole process works pretty damn well like it's gotten quite a way over the course of history and it just weirds me out that people want to medicalize the pregnancy and birthing process. Emergency medicine is pretty magical like it's amazing stuff. That we have westernize emergency medicine, it's amazing. If we can somehow graph the bits, elements of that in with some really smart nutrition and good lifestyle factors and strong supportive community elements who help pregnant moms and the families and the kids, it just seems like a really good gig. But the massive medicalizing of pregnancy I think is a huge mistake and we can do better than that.

Andy Deas: Yes. And Robb, why wouldn't everyone want the highest amount of nutritious food? That seems like a preposterous superstition.

Robb Wolf: That's right. And people say, well, am I missing something with grains or with dairy, and then you can show them clearly no, you're not. You're not missing anything. You're actually getting more. Usually you get some buying with that, but there again I mean this information is well established out there and this is one of the directions that I kind of want to stir this whole Paleo boat emphasizing that Paleo I don't think that that's a good area for buying because we just get like reactionary kind of push back from that stuff so pushing more the nutrient density element. There's still some education that's necessary though which is kind of the bugger. But nutrient density decrease the allergenic potential, decrease gut irritation potential, balancing Omega 3, Omega 6 input, anti-inflammatory diet, I think all of these concepts or maybe more mainstream palatable and it's still is right in line with all the Paleo concepts but it removes the whole like cavemen loin cloth wearing element out of that and maybe we'll get a little bit more buying and people won't be so freaked out about it.

Andy Deas: Yup. All right, a question from Josh related to Lyle McDonald's work. I don't know. Are you sitting down still, Robb?

Robb Wolf: I'll do my best. Is it Josh or Cody?

Andy Deas: Oh, I got to jump ahead again. I'm so excited. We're on Cody, you're right. "Thanks for all the hard work and dedication to spreading the good word. I recently read an article about Mike Swick, the fighter, having a problem with esophageal spasms. Additionally, I have recently had a friend encounter some of the same problems. My intuition would lead me to believe this may be an auto-immune issue that could be solved by avoiding any gluten or other irritants. Any thoughts or input would be much appreciated."

Robb Wolf: Yeah, and this is one of these papers that are just kind of floating out there that I've been chipping away at for a long time which is cholecystokinin signaling and how it can be degraded from gut damage. Cholecystokinin signals all kinds of different processes including bile salt release, pancreatic enzyme release, but also is very important in the normal smooth muscle contractions within the totality of the digestive tract and what I've seen particularly in individuals with celiac disease is they end up with some lower, like some very far south GI problems like all sorts of colitis and different things like that, and then problems start moving north where we start seeing kind of acid reflux, and then later in the game we see some things with dysphagia where folks aren't able to swallow. Man, I would just bet the farm that a grain-free, dairy-free Paleo diet would fix this problem and it's that same thing where like you just have a minimal opportunity cost for this, it's like just give it a shot for a month and see what the heck happens with it. If it doesn't fix it, then that kind of sucks. But we've seen a lot of people solve issues very, very similar to this with a very simple intervention.

Andy Deas: Yup.

Robb Wolf: Okay, now you can get to your really juicy one.

Andy Deas: "Hey Robb, haven't listened to this episode yet. I'll probably listen to it on the way to work tomorrow. I saw this article linked to from Martin Berkhan..." There, I said his name. You're confusing me.

Robb Wolf: Yeah.

Andy Deas: Okay. "Written by Lyle saying how low carb can make depression symptoms worse. I know you've mentioned low carbs helping depression and Lyle's article is quite science-y, above my layman's comprehension. Does the science of what he's saying make sense? Do you agree with his conclusions? I think Martin mentioned people struggling with more of low carbs in winter. I know you mentioned higher carb intake over winter like in lights out, but what would you say about people prone to depression? Should they eat a higher carb and lower protein diet? And then Robb, here's your comment as stated by Josh. "Lights out recommends low carb in the winter. This has been a lifesaver for me. Lyle acknowledges in that piece there are many moving parts to this. I'd tinker and see what works for you as there are studies and anecdotes on both sides of this that to me point to some individual variances."

Robb Wolf: Yeah. You know, since I commented on that, I've also been thinking about this more. Loren Cordain and I were talking on the phone maybe two weeks ago and he was talking about some different nutrients, folic acid fully being one of this, but we can map this for a whole host of different processes where you can graph out a U-shape response to the intake of a nutrient and like with folic acid if we have very low intake of folate then you can have a whole host of problems including things like neural tooth defects, pregnancy-related neural tooth defects. So the powers that this started fortifying our grain-based products with the folic acid in the hopes of averting spina bifida and some other neural tooth defect-type diseases with some modest improvements in neural tooth defects, we started seeing some significant uptakes in things like breast, colon, and prostate cancer. One of the key regulators of cancer progression are methylating genes like the MTHFR gene, Methylenetetrahydrofolate reductase. So you don't necessarily want to hammer

your system with massive amounts of folic acid. Robert Crayhon who was very well known in the alternative medicine scene, this is like some correlation, is it really causation, this is anecdotal kind of gig, but the dude was really, really big in the mega-dose supplements and the guy died at I think age 49, and he's one of these guys that was supposed to be a beacon of health and watching what he ate and he exercise smart and he took a truckload of supplements, and what we find is that his supplementation intake was at levels that were just mountainous compared to what you can get dietarily even with a Paleo-type diet which is very nutrient dense. You know, you get anywhere from several hundred to several thousand times the RDA on various nutrients by eating lean meat, seafood, fruits and vegetables, but when you're taking a dietary supplement like your standard over-the-counter B-vitamin complex you're getting massive amounts of B vitamins as a baseline relative to what you could get out of any type of a normal home food dietary protocol and you're getting them in ratios that you would never see from basic home food nutritional approach and this is where some of this evolutionary biology stuff actually comes into play and can provide some benefit. So what Loren and I were talking about is that there are these U-shape curves for a lot of biological phenomenon related to like various nutrient intakes in which at very low intake you see disease processes related to deficiency and then as we get up to a normal level of intake, you see all disease processes related to that nutrient hit a very low ebb, at their low baseline, but then as that nutrient starts climbing higher and higher and higher and getting above super physiological levels we start seeing increasing levels of other types of diseases and I think that this is a lot of what's going on with the carbohydrate intake issue, I have absolutely no doubt, and you can find tons of support literature that a low carb diet implemented in individuals that have hyperinsulinism ends up uprooting significant elements of depression. But then once we get people down to a relatively lean insulin sensitive state, they may not be as benefited by a very low carbohydrate level. What we end up seeing is the same thing that we see with virtually all other nutrient-intake scenarios which is some sort of the U-shape curve and that the situation changes depending on what type of scenario we're running with. I know earlier like in question one, the deal with gluten is probably one of the things that I would say doesn't really have the U-shape curve. I don't see much benefit to consumption of that particular nutrient at all. It's kind of like consuming plutonium or something like that. But that's my further thought on this. You know, what Lyle was talking about, and it's a very, very well written piece, it's well researched, Lyle is a super bright dude, but I think that he is taking a very tight kind of microcosm of this. In insulin sensitive individuals, too low of carbohydrate could potentially cause some cortisol and subsequent serotonin degradation problems. I think we've kind of address this historically by just telling people who were lean and insulin sensitive that post-workout have some carbs and that seems like an easy way to deal with this stuff.

Andy Deas: Yeah. You didn't get near as spun up as I was hoping, Robb. I'm just...

Robb Wolf: It is because I'm in Seattle and the sun has gone down.

Andy Deas: All right, moving on Robb. This is like the question of the last several months. This is another one related to optimal training.

Robb Wolf: Hmm, hmm, hmm.

Andy Deas: There's only one answer. Comment from Adam. "Hey guys, you said something I found very interesting about mixing up our workouts with a combination of lifting/MovNat, O-lifting, sprinting/conditioning, and possibly gymnastics, it could be MovNat as well. That sounds great to me and intuitively makes a lot of sense but for one thing, time. I've been doing 5/3/1 for a couple of months, three weeks on, one week deloaded which includes some sprinting, swimming in my case, and four days of core lifts and two assistance lifts similar to the Lean Gains stuff in that sense as well I'd say. I was coming off of doing

three-on-one off main site WODs which particularly was killing me at the time and now I'm in much more of a minimum input/maximum output mindset and I try to keep my workouts short, sub-45 minutes, approximately 20 minutes for the sprinting. Even though they spread across five days per week, I generally like what I'm doing though occasionally I miss the metcon beat down feeling of accomplishment. So I guess how could I fit everything in without overtraining? Would a weekly O-lift session, two weekly weightlifting sessions combining say deads/shoulder press and chin squat, a weekly sprint and some kind of something else be sufficient? I have yet to figure out how to do MovNat stuff at home or in my school gym. I hate to say it but is that sort of Paleo? I don't have specific goals like you were mentioning, but I actually just really like feeling strong, fast, and capable in our squishy, lazy modern world. Anyway, I'm really interested in your thoughts on this. The eating thing has been pretty easy for me to accomplish, sleep is good, stress is ridiculous, grad school unsurprisingly at least, but this idea of optimal training is really starting to pique my interest. Thanks for all your consideration, dudes."

Robb Wolf: So Andy, what do feel like the main question is here?

Andy Deas: I guess basically what he's saying, Robb, and this is like I was telling you I got some email from someone about I want to know how to do mix several block box doing extra progression, kettle bells, without really knowing what the optimal training is for. Can you fit all these stuff in without actually overtraining...? So that's [unintelligible]. Obviously, I think there are people that kind of stop what they're doing... Any thoughts on if you were designing a program, high level, and kind of combine some of those stuff, how would you put that together?

Robb Wolf: You know, having hang out with Ido for four or five days and then having hang out with Erwan a couple of months ago, those guys have a really nice mix of this stuff where they'll hit the lower body. What I've seen both of those guys do is that they make good use of some things like squats and deads and power cleans, power snatches with the barbell movements because it's just hard to get the type of stimulation that you can get out of the lower body without barbell movements. Like Andy and I have talked about like there are some cool stuff out there like dudes working on one-legged dead lifts and stuff like that and getting really strong in doing that because of some orthopedic issues, but a kind of special population decided it seems like that's kind of a legit place to go and it doesn't take a ton of work to keep that lower body like really explosive, really wired up getting some cool progressions on like some climbing metric movements and stuff like that and I've seen Erwan and Andy do some really work with that sort of stuff. Then for other things like with Ido he has kind of a straight arm day which is working planche and levers and all kinds of progressions related to that, handstand walking and everything, Erwan ends up doing a lot of macro climbing, traversing like quadropedal-type movements and stuff like that, and then Ido will have what he calls a bench-arm day which is one arm chinning planche crucial type stuff. There's a lot of overlap within those things. You know, I just see this is -- use your word, Robb. Use your words. I want to say like 50 different things here. I think that this is where CrossFit had a huge opportunity to really go in some really interesting areas of getting deeper into the O-lifts, deeper particularly into gymnastic progressions, and deeper into the sprint modalities and focus on technical progression. So that's really like the part of this stuff I would say is kind of looking at where can you take your game in a more technical fashion because at some point when you're looking at this from an interest level, when you're looking at this from like an orthopedic overuse level, like we're seeing just significant problems with the standard keeping pull-up like it's a great movement up to a point but even where what Ido was talking about, if we don't have some basic scapular activation that is wired up with people then we have jumped over a developmental step that is never fixed later. In kind of a GPP increase work capacity across broad time model domains kind of gig, that lack of development, that lack of basic foundation is going to bite people on the ass at some

point. It's just not done like you want that developmental piece there. I think when we're considering like orthopedic issues, when we're thinking about interest over the long haul, you need to look at all of these stuff and what are the things that you can progress into the long, long distant and have technical progression and that's where I think things like macro climbing kind of MovNat part cool rest technical jump and land elements, stuff that Ido is doing with gymnastic progressions whether it's legit handstand, hand balancing, one arm pull ups, basic ring progressions. I wrote an article a long time ago for the performance menu talking about the multidimensional nature of training in that the direction we needed to take things in say like a work capacity fashion needed to be technical like I wanted to see a trend that involves, instead of a pull-up, a pull to front lever for like a 2159 and stuff like that or maybe we would modify the schemes or what-not. What I see with a lot of Ido's work is that he's doing stuff akin to that like he's kind of conditioning elements that involve really advance scapular retraction, protraction kind of caplets that are not only really, really demanding but also are laying the foundation for higher level movements. So I think out of all these stuff, when we start thinking about optimization we know that some O-lift and power lift derivatives are money for maintaining muscle mass, maintaining those large motor neurons that are, from a health and longevity standpoint, I think absolutely critical and then we have a massive focus on mobility and Andy and I have talked about this, it's that strength plus mobility. If you've got massive wicked mobility and you're really strong you can build metcon, you can build cardio. But if you move horribly because of orthopedic limitations and you're weak as a kitten, there's not much we can do with you. It used to be really an interesting gig. We had a guy that would come and he's about 45 years old, big dude like 210, 220 pounds, muscular, but he had seriously chungered up both knees from weight boarding and his rehab was haphazard at best, standard physical therapy, no mobility work, his training at this time was leg presses and knee extensions and some hamstring curls on isolation machine and he was coming to me for some boxing and kickboxing work and the guy had horrible movements. Right before he came in we had one of our clients who is in his 80s and this guy had always just done deep ass-to-grass squats everyday. He could do chest-to-bar pull ups, dead hang, and he had beautiful movements even in his 80s. He could crack the golf ball like 220, 230 yards and his golf game had improved when we started working some dumbbell variants of the O-lift, worked with him in doing some other stuff. But it was so interesting because we had this guy that was in his 80s, slender built but muscular like ruddy little arms of him even though he is 80 years old and great movement, he could hop around everywhere and have great movements. And this other guy who is kind of like your classic kind of high mileage body builder sort of dude, he couldn't move for shit. I mean, not at all and if we took both of these guys, one dude is 80 years old, one dude is like 45 years old, drop them off in the middle of Siberia more like you need to track 20 miles to get out of here, I would have put my money on the 80-year-old guy just because his movement was good and his strength was very, very good in kind of a relative sense and then it was getting better in absolute sense too. The other dude could bench 300 pounds, but he couldn't back squat with 95 pounds and he couldn't navigate himself from being on his back to on his feet in anything less than like a decade. I mean, it was horrible to see the guy trying to get up because of like scar tissue and lack of mobility in the knees and all that. So I know this thing is really getting longwinded but I think when we're thinking about optimized training, like a really big focus on mobility, really big focus on smart strength progressions that are technical in nature that you can chase for years and that you get excited about being kicked out on that stuff. Then I really just like to see people play with some open-ended things, Jiu-Jitsu, boxing, kickboxing, Lindy Hop, like anything that is a more open-ended lawn linear kind of gig. I was talking to Dallas and Melissa and they're kind of in a similar mode where they're going to some Tai boxing classes and stuff like that. Like you just need to do something else, whether it's a language or playing golf or whatever. You know, the gym is awesome. I love geeking out and playing around in the gym, but you need something else, one thing to just have something interesting to talk about too like you need to learn some other thing. But the mobility, the long term technical strength, it's kind of strength

and power-oriented but definitely a technical underpinning. I think that's where the money is at and I think that that provides this wicked return on investment and not everyday you're going to be able to put a huge amount of time to do it. Some days it's going to be less, some days it's going to be more particularly when you're in a grad school kind of format, but I think that you will get massive mileage out of that stuff.

Andy Deas: Yeah. Wow, Robb. We're long Wednesday. Two quick thoughts, one this reminds me of a client that's a super nice dude and he is in his early 30s, but yeah, he benches in the mid-400s, legit like 450, but we did this workout the other day with him that literally involved 200 feet of total bare crawl and like in 15 minutes kind of metcon-ish thing and the dude's shoulders were so sore for like a week and I was like clearly there was a flaw in your physical breathe. If you can push 400 plus pounds off your chest but bare crawling for what probably amounted to 45 seconds total time, quadruped movements across the floor, I'm like I think this indicates a problem.

Robb Wolf: Yeah. I mean it's that thing again where like if you're going to go to the Westside Barbell and be a world champion in power lift. Andy, I think you've mentioned that when they did some range of movement on these guys like they had about 30 or 40 degrees of movement...

Andy Deas: Shoulder-to-shoulder...

Robb Wolf: Yeah. You know, some of these dudes that are real good benchers probably have some tight capsules, some limited range of movements and some of what is popping out of that hole is connective tissue. You know, I mean some of how they squat like that toes forward real wide stance, they'll say that what they're doing is teaching you how to squat off the connective tissue.

Andy Deas: Yeah.

Robb Wolf: And that's where like the specialization deal, okay, that's wholly righteous but from a health, longevity, little bit of mobility gig, it's like I'm not too sure how fired up about that I am. I mean, that's still where even though I'm kind of power and sprint bias I like to be a bit generalist. I like to be able to do some sprinting, and jumping, and tumbling, and Jits, and kickboxing and just have a little bit of capacity in all that stuff. If I want to be able to specialize I one area then really it's that old GPP model, but I think done in a much more intelligent manner and not support a fitness type stuff which is just glycolytic workouts.

Andy Deas: One of the thoughts I've been kicking around, Robb, I want to run this fast, it's like we have opportunities to see some interesting folks come to the gym periodically from other areas or country either for consult or just visit or whatever, but a lot of what I feel like we see with folks that have a high general capacity is that most of them have built a base doing one form of exercise and got really pretty proficient at it kind of whether it's gymnastics or power lifting or whatever, and then they were able to layer on all these other skills on top of it rather than having spent time trying to figure out 3,700 different exercises that they're going to get good at over the next two years.

Robb Wolf: Yeah, totally, totally. You know, if you dig back way back when, you even Glassman mention this, that he would like to see people do a couple of years of gymnastics and different power lifts and then some more lifts and then become technical or layer on that kind of GPP finisher. The argument from that standpoint was it's too long of a process and my argument is that it's too valuable of a process not to have an orientation in that direction. The fact that we run a commercial facility, like Andy and I kind of largely feeding water ourselves from training people and people coming in the front door, we need to have some of the metcony type stuff to lean people out and change metabolic arrangement, different stuff like that, but more and more and more we just get so much

mileage and better retention of people when the emphasis is on mobility and power production, technicality and all that sort of jibe and this is true whether we're dealing with like 70-year-old folks or 22-year-old type fitters that have aspirations to go to the CrossFit games or whatever. It's truly leaving money on the table to try to take that quick and easy path and just get into metcon bill and not take the time to lay all those foundations.

Andy Deas: Yeah.

Robb Wolf: People will experiment with it and it's kind of seems to be boiling down into one of two PMs, people who really take the coaching seriously and take the time to develop people and do movement screens and all that stuff. Andy has been a huge driver of trying to get some legitimate movement screens besides simply the functional movements for NorCal because he's like, "Hey man, people are just looking through the cracks. We need to do a better job." I'm like "Okay man, research this," and then you going to OPTs gig and different stuff like that like we're integrating all that stuff in trying to elevate our aims so that we always better ourselves and staying interested but providing a better product. Then you've got other folks that are taking the quick and easy path and I see a very quickly diverging scene of the two camps, the two different approaches there.

Andy Deas: Yeah. All right, Robb, moving on.

Robb Wolf: We've got to move.

Andy Deas: We've got to move. A question from Paleo Pete. "Hi, Robb. How much does food allergies and leaky gut affect hormones? I have very low testosterone level of 105 pg/ml, range is 95 to 650. I also have found that after I eat eggs, soy, gluten, dairy or nightshades, I feel very tired, achy and ill-tempered afterwards. I've felt this way since around 14 years old so I was always subscribe to anxiety and depression. But as I pull these foods out, my anxiety and depression level has dropped significantly. However, my testosterone is still low. I'm a 30-year-old make, I follow a 4 x 5 version of Starting Strength, get nine hours of sleep a night, and supplement with Natural Calm, Vitamin D3 and fish oil. The past month I've added in Now Foods Super Enzymes, L-glutamine, Quercetin, turmeric ginger and probiotics. Estrogen and cortisol level are fine. FSH and LH levels are low. Thanks, Robb. Your podcast has been a life saver."

Robb Wolf: You know, just trying to be quick on this because I know we've been long in the truth already on the stuff. We can get autoimmune response in effect in all kinds of different to-do's and one of the things that we've seen, and I've just done some research on this, is the kind of reproductive tissues and if you do a little google around about transglutaminase antibodies and [unintelligible] transglutaminase actively with regards to overuse, you'll see a lot of interesting stuff there. This situation with Paleo Pete, the fact that his FSH and luteinizing hormones are low, I don't know if this problem that's happening is more in the brain or from a feedback loop happening more in the [unintelligible] but the direction you're going is good. Make sure that your vitamin D levels are also really good. That's something that we need to talk about later. I was talking to Scottie Hagnas about this and like when we produce vitamin D from sunlight we get a very different effect than what we do out of just oral supplement. Taking vitamin D, we should probably discuss that at some later date, but dropping in some of the FSH luteinizing hormone stimulants like tribulus or something like that could really help in this scenario. So I would just keep doing the same thing that you're doing. One thing that you could check or what's mentioned in here is if DHEA sulfate is at an adequate level so that would be an interesting thing to find out too and then you could do some of the supplements like Holy Basil and tribulus which can be helpful with increasing FSH and luteinizing hormone.

Andy Deas: Yup. All right, Robb, I'm going to make the following proposal because your signal is breaking up, which sometimes happens. Are you on the MiFi thing? What are you on now?

Robb Wolf: No. I'm on the Dave and Nancy's internet.

Andy Deas: Yeah. We're at an hour and I say we push the rest of the questions for a week and you go hang out with Dave and Nancy and I'll post this for Tuesday and then Tim Ferriss the week after and we will back in the money.

Robb Wolf: Sweet. That sounds good.

Andy Deas: All right, Robb. Thank you very much. That is the end of episode 57.

Robb Wolf: [Unintelligible] Andy.

Andy Deas: All right. See you, Robb.

Robb Wolf: All right, man. Take care.

Andy Deas: Bye.