

Nicki: It is time to make your health an act of rebellion. We're tackling personalized nutrition, metabolic flexibility, resilient aging, and answering your diet and lifestyle questions. This is the only show with the bold aim to help 1 million people liberate themselves from the sick care system. You're listening to this Healthy Rebellion Radio.

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Robb: Welcome back, everybody.

Nicki: Hello everyone. This is episode 173 of the Healthy Rebellion Radio. Happy holidays. We're gearing up here for our first brown Christmas in Montana.

Robb: I think maybe it's the first brown Christmas for all Montanans ever, maybe.

Nicki: No, no, actually, actually I was talking to the girls' piano teacher who's lived here for 30 years and she says it's been, they've had snow on Christmas for four or five times.

Robb: Oh, really?

Nicki: In the 30 years, so. But typically when it's like this then it means we're around January 15th-

Robb: It's going to be super late.

Nicki: It's just going to completely dump and then we could have snow all the way through June and July.

Robb: Sweet, sweet.

Nicki: So anyway, let's see. Anything else up front that you want to [inaudible 00:01:43]?

Robb: It's all on the back end, baby.

Nicki: All on the back end, all right. Well we will jump in then to our news topic today.

Robb: So there was a paper, the title is, On Hens, Eggs, Temperatures, and CO2 Causal Links in Earth's Atmosphere. It's a fascinating paper, I've read through it twice. It chagrined that the math is at a level that I can barely keep up on it,

which tells me I probably need to do some sort of a Udemy refresher course because I like to at least be able to follow along with this stuff. It's pretty high level, but it's essentially some modeling look, really it's not modeling. This is one of the problems is that historically these climate analyses have been models. What these folks did is just took raw data and then they asked the question, which one is most likely causative versus trailing? They base that off of which one goes up first, and the two things are temperature and CO2.

So I'll pull a few pieces out of the paper. All evidence resulting from the analysis of the longest available modern time series of atmospheric concentration of CO2 at Mauna Loa, Hawaii, along with that of globally average temperature, suggests a unidirectional potentially causal link with temperature as the cause and CO2 is the effect. This direction of causality holds for the entire time period covered by the observations, more than 60 years.

So again, this is a really interesting group of folks, climatologists, data scientists, two of them are retired, just professors emeritus, and they got in and started poking around. Clearly, these guys are funded by the oil companies and stuff like that. They had no funding. This was just what started off as a back of the napkin experiment and they used off the shelf data analysis and readily available government data on all this stuff. So it's just a bunch of people very good at data analysis and they got in and crunched these numbers.

Let me read a few more of these things. In particular, the analysis of climate model outputs reveals a misrepresentation of the causal link by these models, which suggests a causality direction opposite to the one found when the real measurements are used. They explain a lot of the detail on that with regards to, I mean first and foremost is that when you really look closely at this information, temperature is the leading variable. Temperature increases and then carbon dioxide increases and if we followed the standard thoughts around climate change, it's that CO2 goes up, it acts as a greenhouse gas, which it absolutely does, but then temperature would then trail and go up, and that's not what the data suggests. There've been people who've mentioned that before, but I've never seen as rigorous an analysis as this.

We do not claim to have the answer to the question. The question is, well, if CO2 isn't driving up the temperature, then what is? Whose study is far beyond this article scope? Neither do we believe that the mainstream climate theory, which is focused upon human CO2 emissions as the main cause in regards to everything else as feedback as the single main cause, can explain what happened on earth for 4.5 billion years of climactic change.

So there's a lot more to it than that and part of what they were able to do with these stochastic models, which a lot of it is used in economic analysis. Stochastic refers to chaotic systems and being able to suss out what is a driver and what is a trailing feature, so that you can start determining what causality is. They do in the paper make some suggestions around what might be the driver in

climactic change and they make the case that if we're really honest, the earth has been on a general warming trend since the little ice age in the 1780s or something to that effect.

So it's really fascinating and it's getting a fair amount of press and looks. It's becoming one of the more highly cited papers. What's interesting is that it's just simple and elegant and the analysis tools are difficult to argue with. It'll be interesting to see how this is spun, how these people are attacked, because again, most of them, two of them that I could discover were retired. I can't see that any of them work for the oil industry or anything like that. There was no direct funding with this. Who knows, there could be some sort of nefarious activity here, but they go on to make all kinds of interesting points, which is that as the earth warms ostensibly if their model is correct, you get more biological activity on the earth and more geological activity to some degree, more weather activity, and this is going to increase the carbon dioxide content. But they make the case that upwards of 96% of the carbon flux on the planet is due to natural variables and that only 4% of the carbon flux is attributable to human activity.

Which then also puts all the stuff that we talked about in Sacred Cow into a pretty interesting context. So it's one I'll be following and trying to dig into. I'm really trying to find some folks that have done a counterpoint analysis and I haven't found one yet, which I think is interesting. It's mainly been other climate scientists that are basically like this is some really solid work.

Nicki: Very cool. We will definitely include a link for that in the show notes.

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Robb: Nicely done. Lots of hand gesticulating too if you guys can see this, man, it's-

Nicki: I have to gesticulate when I read.

Robb: It's fine, it's fine.

Nicki: All right. We've got three questions for you today. The first one is from Brenna on high A1C. She says, hello from Minnesota. I'm an active 38 years young, full-time mom to two boys, ages five and three and I have an A1C problem. This isn't a new problem, so I can't blame it on my still occasionally disrupted sleep. Years before my kids. My A1C was 5.7, and as a dietician I couldn't for the life of me figure out why. At that time I lifted weights, occasionally swam and ran one to two times per week. I didn't eat 100% paleo, but I also didn't eat junk and I was relatively lean at around 14% to 16% body fat.

I worked with a naturopath on some hormone issues, low estrogen and progesterone from not eating enough to fuel exercise, and she never had a good answer as to why my A1C was on the high side of normal. The only factor we found was my fasting insulin was kind of low at three. I did get my A1C down into the fours following a keto diet, but was again not eating enough food to maintain my weight or support hormone production and I lost my period. I used a CGM for a while and nothing surprising came from it other than sweet potatoes equal giant spikes, but pasta and white potatoes do not.

Fast forward to now, 5'3", 124 pounds and guessing at around 18% body fat. I started competing in kettlebell sport two years ago and I want to continue getting stronger so I can lift 16 kilo bells this coming year. My coach wants me to put on three to five pounds of muscle, but my recent A1C once again is at 5.7, has me scared to eat the 180 to 200 grams of carbs recommended by him and most fitness calculators. I'm in a hypertrophy phase for the next couple of months and lifting heavy four times per week with no real cardio.

Daily food is often a high protein/fiber smoothie with about 30 to 40 grams of carbs and 10 or more grams of fiber. Post-workout, I usually have a cup of cereal or a kid's cliff bar plus whey protein powder. Lunch is usually a big ass salad plus a piece of bread or leftover meat with veggies, rice, pasta, potato. When I track these days, I do get 130 to 150 grams of protein.

I have a dietician friend who has gone through Joel Greene's program and she believes the issue lies in my gut and that underlying inflammation is disrupting my insulin signaling, because we can't come up with any other ideas as to the cause. So what's a girl to do? Keto gains, lean gains, Jason Seib's old alt shift diet, Joel Greene's two day core? How do I eat enough calories to support my goals of strength and maintaining my hormone levels while simultaneously not overeating carbs? Or, is a 5.7 A1C good enough?

Robb: Man, there's a lot in there. There's a lot of different ways that we could look at this, like I've found in the past that there is definitely correlation between gut issues and problems with glycemic control. I'll be damned though if I've seen a whole lot of improvement. I think the Joel Greene stuff is good, he seems like a great guy. He produces a lot of material, but myself and a few other people that I

know personally have gone through his reset and really didn't see any improvements with anything. It actually made me super gassy and bloated. Again, I may be an outlier, but I know a couple other people are sharp, fastidious, they really enacted it, and it just didn't do much of anything for them. So maybe, again, this is all just outliers. I think that these gut resets of feed and seed are reasonable places to start and it makes sense, but I wish they worked more often. I don't see them work to the degree that I would really like to see them work.

I will say, I definitely get the challenge around eating enough. This is a constant bugger for me because I'm limited enough on my food and I do get some blood sugar swings with too many carbs. That said, I'm 165, 170 pounds and I never eat 180 or 200 grams of carbs. I do find it from other sources. Some days when I'm really active I might hit 100 grams of carbs. So I also think that there might be a middle ground in this, like, eat enough carbs to maybe stoke your appetite so that you want to eat more and then just fill things in from there. I've been doing a lot of soaked sprouted nuts where I'll get cashews, almonds, pecans, I soak them overnight, dry them in an air dryer and then I roast them in the oven for 30 minutes at 300 degrees. I used to have a lot of digestive problems with nuts and I've been crushing this stuff and I just rotate through. I'll do mainly one type of nut one week, another type of nut the next week, and then just rotate through them. It's been working great and a super calorically dense way to get your food in.

A couple other thoughts, you could think about something like berberine or even a low dose of Glucophage, those things will help with hepatic-driven glucose elevations. We know that stress can elevate blood glucose levels. We know that too much exercise can elevate blood glucose levels. And berberine and Glucophage, and metformin can help those things. So that might be something, if this is just one of these weird things and you're not overeating, you're not gaining weight, you don't have these other dyslipidemic things going on, maybe that could help bring just the number within a more reasonable parameter. Then I would just assess that for like, do you look, feel and perform better? Are other metrics working well?

It's worth mentioning some of the mechanism of action of both metformin and berberine, it includes alterations to the gut, it decreases gut permeability. Part of the reason why metformin is so valuable is that it sensitizes the muscle, it decreases the hepatic glucose output, and it seems to have some interesting effects on the gut.

So could modified amount and types of carbohydrates... You're mentioning a few shakes and maybe processed food, so focusing more on less processed food, maybe decreasing the carb content to some degree. Not necessarily like keto, but maybe a middle ground between where you are currently and super low-carb, and then you might think about some glucose modifying substances like Glucophage and berberine.

Nicki: All right, sounds good. All right, our next question is from Angie on supplement absorption. She says, I'm looking for solid information on vitamin and supplement absorption and best time of day to be taken. Can you shed any light on this? It is one thing to know or prescribe for a supplement, but another when and with what to take it or not to take it with?

Robb: It's a really good question. I almost passed on this one because I'm not really going to have a spectacular answer. It is just super, super complex. If you want to enhance the absorption of iron, then you can supplement with vitamin C and that could be the form of eating some fruit with an iron source or it could be taking an actual vitamin C supplement. You can block the absorption of iron by consuming it with things with polyphenols like chocolate and green tea. There's some wisdom around taking some minerals like calcium and magnesium more in the evening. There's some thought that maybe taking vitamin D earlier in the day because it goes more with circadian biology.

Probably the most knowledgeable person that I know in this space is Chris Masterjohn and he has tackled more individual nutrients and more like if you're deficient in iron, do this. If you have iron excess, do this. So optimizing either the absorption or the blunting of the absorption of different things. He's gotten in a little bit and talked about the circadian biology of some of this stuff.

We know for sure that different drugs, there are chemotherapeutics that work markedly better depending on the time of day that they're administered, like the type of cancer, the type of chemotherapeutic. So the circadian biology piece of this is a big deal and it's also something that to me just is begging for neurosis. I just find that it ends up being this multivariate calculus problem and I think you're so much better served just eating minimally processed whole foods. Maybe take something like Adapt Naturals, like Chris Kresser has this whole food supplement line and I think you take four of the main supplement for the recommended daily dose. Maybe take one of those and just throw it in with your breakfast or your lunch or your dinner or maybe randomize it and do breakfast one day, lunch the next and dinner the third day and then repeat.

I just think there's so many moving parts to this that the only part where I would really get super geeked out on this is if you had an overt deficiency in something like you're magnesium deficient, iron deficient or some sort of deficiency and then see if the food combining or timing of the consumption of that food or the supplement was hampering absorption, because otherwise starting in on the front load of that and trying to optimize it, it just seems crazy.

Nicki: Right. Have your alarms on your phone going off every 15 minutes and different baggies in your pocket.

Robb: Yeah, yeah, it seems like a lot. Yeah.

Nicki: So to recap, ideally you're getting all of your nutrients from whole

unprocessed foods. If there's something that you absolutely need to take because you're deficient in it, definitely look and see if the absorption of that is blunted by something that you might be eating and avoid that at that time. But there's not a one size fits all time of day for all supplements?

Robb: No, no. Well, I mean some of them might be better on a circadian biology side, but I'm not really familiar with it. I know both Chris Masterjohn and actually Rhonda Patrick have talked a little bit about some of this stuff, but I also think the science is super nascent. Again, I feel like this is super majoring in the minors. Unless you have an overt nutrient deficiency of some kind and we really need to address that, it's like, get your minimally processed whole food, get a gram of protein per pound body weight, get in bed early, sleep well, do your sauna, lift some weights, do some cardio. All these other things seem to-

Nicki: Be higher up the list if you had to-

Robb: Such a guarantee of better-

Nicki: ... Rank order.

Robb: Yeah.

Nicki: Things to make sure you're prioritizing first.

Robb: Absolutely.

Nicki: That would be towards the bottom.

Robb: Yeah.

Nicki: Okay, all righty. All right, lastly, we have a question from Jason on, what do we feed our dogs? Jason writes, I've been a fan of y'all since I read Sacred Cow. Currently I'm reading Wired to Eat. I try to practice carnivore, but with life and kids I'm moderately successful, but overall happy with my diet choices. I'm also a veterinarian and after reading your books and thinking about our four-legged friends, I'm trying to figure out what diets to recommend. I've recommended canned foods for cats for years because they are obligate carnivores. Dogs are a little tougher. I feel like they would benefit from the carnivore lifestyle, but who has time to cook for their pets that much? I barely have time to feed myself and family. So what do the wolfs feed their dogs?

This is a really good question, Jason. When we first got Dutch seven years ago, I wanted to feed him raw so a friend of mine fed her dogs raw and she did chicken wings and bony things. So I tried that with him. He's always had a sensitive stomach and he would just throw up. I've since learned that he doesn't do well digesting any kind of bone, even if I give him marrow from a knuckle bone or a femur bone. He loves it.

Robb: When he starts breaking off chunks.

Nicki: But as soon as he'll get all the marrow out, but if he starts actually chewing on it and swallowing the chunks, he's absolutely going to throw up later that day.

So early on I was concerned because he didn't seem that excited about it and he was throwing up. So we went to a grain-free, high protein kibble. Fast-forward to just about three months ago, Grizz started getting... And so we've been on just a grain-free kibble for the duration. Always in the back of my head I wanted to go raw, but again, like you say, it seems like this big daunting thing to prepare this food and you want to make sure you get all the nutrients right and whatnot. But Grizz ended up developing, he had an ear infection, it was super red and itchy, scratched it enough to where he was bleeding. Then also on his abdomen belly area, he had this strange looking rash that it almost looked like ringworm, but it wasn't. Took him to the vet and they put him on an antibiotic and some Apoquel and I'm like, I don't want him to be on. We have had family, other dogs that we've known who've had to be on a prescription itch medication because of allergies. I'm like, this is not the route I want to go. So let's go the raw route here.

So we had a friend, or a gentleman that we met in Big Fork when we were back in the Kalispell area at the gym, who shared a book with us called The Forever Dog. So I read that and it's actually a great book. It's the dog canine version of the Paleo Solution.

Robb: The Paleo Solution, yeah.

Nicki: Because it touches on everything from diet to lifestyle and environmental allergens. For example, some people have a lot of Febreze or air fresheners and whatnot in their homes and that can be really problematic for all animals, not just dogs. So anyway, it just goes through all of the things that we would recommend for a human, exercise, time outside, whatnot, food, sleep, for canines, but, so anyway, I read that dog.

They also have recipes for raw food, but they emphasize that it's not necessarily financially doable for everybody to go that direction because as you know, unless you... One person that I know that is completely raw, their husband hunts a lot. Actually, my cousin's friend in Texas, they get a lot of roadkill that people know that they will take the deer and they just process it and they do it, they give it all to their dog. So if you are in a situation like that where you have a lot of either game or just excess parts from farming or whatever, you have all of this stuff, then I think that's really easy but that's not 99.9% of us.

So, let's see where I'm at. So with Grizz, I found a recipe on this Forever Dog lifestyle or this Forever Dog website and they have several recipes on there. Found one that looked reasonably easy and we fed him that way for, it was a full



30 days, if not a little bit longer. So it was like ground beef, liver, Brussels sprouts, mushrooms, cloves, ground cloves, kelp, some calcium, all the things and we'd cook it up. Spinach, cook it up and scoop it out into little aliquots for him. But he's a 70-pound yellow lab, and I think we had to do some calculation on how much, because the recipes on there, most of them are for small animals and little Pomeranian sized critters. So we figured out what we need to feed him so we would get adequate calories, and he loved it. But it's quite a bit of work.

Robb: It's a lot of work, yeah.

Nicki: And it's costly. So I was saying I'm like, gosh, all these recipes are for these little dogs and I would make.... Because she's like, oh, this is a 30-day recipe, which for us was a five-day recipe. That was just doing Grizz, our 70-pound dog, not to mention Dutch, who's our 120-pound dog. So I think if you have large dogs who eat a lot of food, this is a big undertaking. By all means, if somebody listening has large dogs and has figured out this, the way to do this easily and in a reasonably affordable way, please write in and share because I would love to know and I'm sure there are listeners out here who would also like to know. But so what we've ended up doing is we're using a kibble that seems to be the highest rated carnivore-esque kibble among people that are in that raw space.

Robb: One of the things that happened when grain free became popular, they replace the grains with legumes. I think that that may have been an even worse move because these legumes have potentially even worse immunogenic effects. Although technically dogs are omnivores, they're just not out eating fucking split peas and all of it. I don't know to what degree these things get processed, but they would have a primary protein and then it was like three or four different types of legume, which I think were really propping up the total protein content of the thing.

Nicki: That might also be contributing to what, a lot of vets are very anti grain-free kibbles because of the elevated cardio risk-

Robb: Cardiomyopathy, and yeah, yeah.

Nicki: ... for dogs. So perhaps that's stemming from the legumes also.

So yeah, we're now, so Jason, to your question. What do we feed our dogs? They currently are fed part kibble. So we are using Farmina, there's a pumpkin, grain-free venison, apple mixture, and I'll put a link to the one we get in the show notes. Then I'm also adding, so they eat twice a day, we still are getting some ground beef, liver and beef heart and grinding that up and I'm freezing little half cup-

Robb: Pucks.

Nicki: I call them hockey pucks. So then at each mealtime, I'll take one of those out, I take it out the night before, defrost in the fridge, so they get that mixed in.

Sometimes a raw egg and a scoop of whole fat yogurt. Our jujitsu coach in Kalispell, that's how they do this sort of hybrid version, and so she shared that with me and that's what we've been running with and it seems to be, the dogs love it.

One thing in this Forever dog book, one thing they talk about is it's not, again, different people have a different ability to implement things based on time and financial resources that they want to allocate towards this. But we can improve our dog's quality of life and their nutrition just by adding some variety and mixing things up here and there, it doesn't have to be a full straight to raw all the time. So I feel like this is definitely a better move from where we were.

We were on a pretty high quality grain-free kibble, this one in particular from Farmina that we're on, you don't see pea... There's not any, the only legume in it is a pea starch and it's like ingredient number 10 versus the previous one was there was some legume ingredient number three or four. So I feel like that's an improvement and I think it's the cleanest carnivore kibble out there but again, this is the great thing about talking about this.

Robb: The interwebs, yeah.

Nicki: I'm sure there are those, many of you out there who clearly have animals and have experience in this realm. So I'm happy to hear, we'd love to hear from those of you that have other suggestions in this regard because obviously our pets are part of our family and we want to [inaudible 00:30:58].

Robb: Make them... I saw something, and I don't know how credible it was, but the guy, it was a YouTube channel and the intro said in the 1950s, the average lab's lifespan was like 15 years or 17 years and now it's like nine, and it's largely due to poor diet. I'm not surprised by that at all because I think the garbage processing that has infiltrated human food is in lockstep with pet food.

Nicki: This Forever Dog book is a great read. For those of you who have read the Paleo solution or in this ancestral health space, you'll be reading it like nodding your head like you know, but it's all tailored towards dogs and makes a ton of sense. I feel sensitive to heavily scented air fresheners or candles. When I walk into a room or a store or-

Robb: Our oldest, too.

Nicki: ... I'm on an airplane, then there's a lady with lots of perfume, it makes me feel terrible. So you think about a lot of times people's homes, they love the scented candles and whatnot, but if you have an animal, even their noses are so much more sensitive to that stuff.

Robb: Well, and it's not just sensing it, it's a toxicant, it's poisoning you. These things are xenoestrogens and folks. It's funny, we used to talk about how we would run into a client here and there that they literally did every, it sounds

terrible, but they did everything wrong. It's like the fruit they ate was a ripe banana.

Nicki: Or dried mango.

Robb: Unaccompanied by protein. It was just like every single thing, which is off. Not infrequently, you see people where they've got all these problems, they've got all these health problems, and they wash all their clothes and the scented detergent, they've got the scented laundry-

Nicki: Hand soap is scented.

Robb: ... deal. The hand soap is scented.

Nicki: Candles are scented.

Robb: They got Febreeze all over the house and it's like, no wonder you're fucking having problems. It's a bastard to reel those folks back from that, but yeah.

Nicki: Yeah, anyway, so it's a great book. Again, I'll link to this. Again, if any of you listening have ideas for us or other things you want to share, please write in. We'd love to hear. I think that's a wrap for this week.

Robb: Cool.

Nicki: Wishing you all a very Merry Christmas, happy holidays, and hopefully you have a white one if you're in a northern climate and not in Montana, maybe you will.

Robb: Send us a picture.

Nicki: Send us a picture and we'll see you all next week. Be sure if you have questions for the show, please send those in [robbwolf.com](http://robbwolf.com), click on the contact page and there's a spot to so submit a question for the podcast. Remember to check out our show sponsor LMNT for all of your electrolyte needs. You can grab your electrolytes [drinklmnt.com/robb](http://drinklmnt.com/robb). Again, have a very Merry Christmas, happy holidays, and we'll see you next time.

Robb: Bye, everybody.