Paleo Solution - 350

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Robb: Hey, folks. We have here another edition of The Paleo Solution podcast. Super excited for today's guest. You guys know that I'm a huge fan of ketogenic diets, trying to figure out the best return on investment with regards to anti-aging therapeutics and interventions.

Today's guest is Dr. Ron Rosedale. He is a world renowned expert on ketogenic diet, metabolic medicine and one of the most knowledgeable people that I know on these topics. And the topic is ever expanding and we're probably going to know more about this stuff in the next five years than we discovered in the last 50 years. But the guy that's probably going to be on top of most of it is Dr. Ron Rosedale. So doc, welcome to the show.

Ron: Well, thank you for having me. It's a pleasure being here.

Robb: A huge honor to have you on the show. I've been a huge fan of your work for a long time. And you know, doc, clearly I think we both like geeking out about ketogenic diet and anti-aging therapeutics and whatnot. But more and more the folks that listen to the podcast are kind of career path interested and are wondering, "Should I go to medical school? Should I be a physician assistant?" And so I think it's always interesting to hear a little bit about one's life path and what brought you to this spot. Because it tends to help kind of inform people about maybe what type of path they should take.

Ron: Well, my path was a bit abnormal I would assume. I went to a good medical school and didn't like it. It just didn't make sense to me really. The science didn't really correlate with the clinical practice. And so I actually got out of it for about a year. So I just did photography and just kind of got sucked back in.

And mostly I ended up where I am now because I just didn't agree with three quarters I suppose of what I was having to learn especially on the chronic diseases of aging. I guess it could be summarized pretty well by a commencement speech that was given at Harvard quite a few years ago. And the president of the medical school was addressing the graduating class. And he congratulated them for all their hard work and staying up all night and being on call and having to memorize so many different things.

And he said he had good and bad news for them. He said, "The good news is that half of everything that they toiled so hard to learn will be found to be wrong." And he said, "The bad news is we don't know which half." And I think that really

kind of summarizes up a lot of medicine although I would put the percentage higher than 50%, probably closer to 75%.

And when you come into the chronic diseases of aging I'd even go up higher than that. So almost everything that we've learned about cardiovascular disease and diabetes and osteoporosis, calcium, et cetera, is not just wrong, but it's diametrically wrong. It's like 180 degrees wrong. You know that about diet. We've been told for a century to eat a low-fat diet. And of course that's been turned on its ears and certainly appropriately so.

Talking about that over two decades ago that we needed to eat a high fat diet and actually a very low carb diet and exactly opposite to what everybody was being taught. But you could also pretty much pick any of the chronic diseases of aging and you'll find the exact same thing.

Robb: Right. That topic is fascinating to me because medicine has really just shined and has been incredible with things like emergency medicine, trauma. We could make an argument that it's done pretty amazing stuff with infectious disease. Why has chronic, degenerative disease just, like you said it's like people are trying to read something held up in a mirror. It's just completely transposed and backwards and about as off-based as we could possible get.

And I know that there's money, there's politics. But you know there's money and politics even in acute care medicine. Like how did chronic medicine get it so wrong given that we have people out there experimenting with this stuff all the time?

Ron: Yeah and that's a great question and you are very right to point out the kind of the two divisions of medicine. There's the emergency and acute care, critical care medicine which is miraculous. You're right. They do wonderful things. If the aim is to kick you alive until tomorrow, medicine is unbelievable and that's where the miracles lie.

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The other part of medicine, the treatment of the chronic diseases basically is quite the opposite. And why are they so wrong? As you mentioned, there's a number of reasons, one being money. There isn't really profit in getting people healthy at least certainly not with diet. Medicine has evolved as a profit-generating machine and the greatest profit are going to be those therapies that don't kill you right away, but keep you sick for longtime, like cholesterol-lowering drugs are a good example. They want to start teenagers on them.

The medicine is owned by large corporations who's really sole motive is to increase profit. And in fact in this country it's required by law that they look after their shareholders and the shareholders aren't there to get you healthy. They're there to make money.

So that's one reason, but it goes deeper than that even. I think the biggest reason is that they don't really know what the endpoint is. They don't know what life is. So if you try to keep somebody alive or keep somebody healthy for a long time, certainly health and life are tied together. You really need to know what it is, otherwise you're shooting in the dark and that's really what medicine is doing. They have no idea what life is. And so trying to extend it or make it healthier is virtually an impossibility because they don't know what it is. And so they're relegated to treating symptoms.

And the problem with that also is that when you treat symptoms, you are negating billions of years of evolutionary knowledge on essentially how to cope with a particular disease. So for instance, we get a fever not to make us uncomfortable and make us sweat, but it kind of wraps up the immune system.

So of course the first thing medicine does is tell you to cut your fever, take a Tylenol or aspirin to lower your fever, which is for most people the last thing you should do. They tell you to take a decongestant if you have a runny nose because you have a cold. And again the same thing.

The reason you have a runny nose is not to cause you embarrassment or suffering. It's because it's time to clean out your mucus membranes and wash away the virus. It's one of your first lines of defense. And so decongestants dry that up and just prolong the infection, basically negating the way your body has learned how to deal with the problem.

So it deals very much on kind of surface symptoms. That's what, for instance, cholesterol lowering drugs do. They found that cholesterol was correlated with coronary disease and it's very weak correlation at that, but the correlation doesn't imply cause. But they make so much money on it that even though it's been disproven over and over and over again. And in fact as you lower cholesterol you very much tend to reduce lifespan, you reduce mortality. Forget about cardiovascular disease. I don't think anybody prefers to be in a coffin with clean arteries. It doesn't make sense.

So the bottom line is it's going to be mortality rate. And mortality rate goes up as you take Statins, cholesterol-lowering drugs. And if you lower cholesterol, mortality really doesn't increase until cholesterol levels are abysmally high. And I would maintain that there's other reasons for that having to do with inflammation and things like that.

But they've made so much money on it that they continue to push it even it means kind of twisting the statistics which they found happened for instance on the JUPITER study. I mean they knew. They're not dumb. That ultimately they have to show that there's an improvement in mortality rate after having used cholesterol-lowering drugs for decades and they couldn't find it.

I mean they tried over and over and over again. And most people, they're not required to show negative results. And so they do a study and it doesn't come out, they throw away the results. We'll never hear about it which some people are trying to change. But medicine is not the same as other real sciences. It's a profit generating business and so they don't want you to know negative results.

But ultimately, they came up with a study called the JUPITER study that showed reduction in mortality when people took cholesterol-lowering drugs. But further review of that study showed that the only way that they could have gotten those statistics is they were very political. But to say it in real lay terms, they cheated. There were some inconsistencies in the statistics that would have been impossible to get unless they had made them up.

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And so when you have so many billions of dollars at stake, which you do on many of these drugs, there's an incentive to not be totally forthcoming. And again, the real reason that all of this is occurring in the way it is basically fake news is kind of the term of the month I suppose. But that happens so much in medicine.

And there's so much confusion among the general public that they don't know who to believe anymore. And it's because there's so many different special interest. And there are some people who really are talking about the real science and other people who are kind of twisting the science for their own profit, which happens all too often unfortunately.

But hardly anybody knows what the end point should be which is really what life is. And if you don't know where you're going, you're not going to get there. And I think that's the deepest reason why there are so many falsities that are told to people such that it shortens their lifespan. I mean U.S. has a life expectancy that is almost last among industrialized nations and yet we spend more than the next nine countries combined per capita on health care. Obviously getting very good bang for a buck.

They're saying, "Well, we need to get health care into more rural areas and things like that." They don't want to actually look at what it's really telling them. Well, maybe it's the health care that's actually shortening the lifespan.

Robb: Right, which would be problematic to say the least.

Ron: Yeah, but that's really the most probable and simplest answer if you just look at the statistics. They keep trying to screw up the real issue in trying to find alternative explanations, but there really aren't any. So I think you have to come face-to-face with what we're dealing with here. And it's not a matter of increasing the scope of medicine and getting out there. It's changing medicine and changing what they're teaching.

Robb: You know, there's a few rays of hope out there at least for me. Like Cleveland Clinic is now getting folks schooled up in functional medicine. Folks like Chris Kresser have some fantastic certifications for health care providers that are pretty well steeped in this evolutionary medicine kind of story.

What type of timeline do you think that we are looking at such that someone goes into what we'll call an average family physician and they have kind of a perspective similar to what you're going to have? That that becomes more than norm versus the exception. Are we talking five years, 20 years? I've seen this stuff change much faster than what I thought it would, but there's still a lot of work to do.

Ron: Yeah. I'll tell a little story that might shed light on that I suppose. Over 20, 22, 23 years ago I suppose now. I was asked to give a talk on insulin. At the time I was probably the only person really interested in the physiology of insulin and how it's related to chronic diseases at the time. One has to understand nobody knew anything about insulin other than diabetics to get to lower the blood sugar. And even among doctors, the function of insulin was to control blood sugar. That couldn't have been further from the truth actually, not then or not now.

And so I gave a talk to a large group of doctors about insulin. And then a couple years later, insulin and its metabolic effects. That I really thought was a very factual talk. I talked about how insulin was associated and how it actually caused cardiovascular disease, how it was tied with aging itself, how it can lead to cancer as a growth factor. I talked about, I think for the first time anybody had talked about the glycemic index in one of those talks. And it started many, many studies.

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We talked about a study on diabetes in dogs where Anatolio Cruz was the physician. And he was infusing insulin into the femoral artery of a dog and noticed that that artery became obstructed with plaque just from the infusion where the contralateral, the opposite leg femoral artery didn't have any plaque at all. So it was just really the contact of insulin on the lining of the artery, the endothelium that caused it to accumulate plaque.

Talked about the vagal constriction, the spasticity of the arteries that the glucose to glycation, advance glycated end products. This was 20 years ago. And nobody had ever heard of any of these things and knew these concepts at the time, but the science was really compelling and the science was very firm and wasn't particularly even that new.

So I really thought that this would be spread like wildfire that this was known. I even went on to talking about it in different placed in the world. Belgium, Rio, all over the world. So the knowledge was out there. And I was absolutely certain that a low carb diet would just spread to people. That they would understand the problems with carbohydrates turning into glucose and glycation and advanced glycated end products and aging and increasing insulin and insulin resistance.

Nobody had heard of it at the time actually. It wasn't called that. It was called "syndrome X" at that point by Gerald Reaven at Stanford, had coined that name as a correlation of a group of symptoms, which included hypotension and things like that, high uric acid, high triglycerides. There were a group of symptoms that he noticed that were associated with high insulin. He called it "syndrome X." That's what it was known at, but that's really insulin resistance.

And I talked about the problems of hyperinsulinemia. So I really felt that a high carb diet had really run its course, seen better days. People were going to understand the importance of lowering carbohydrate. And I know my friends became associates. We opened a practice in Boulder with Mike and Mary Dan Eades who were one of the handful of people recommending a low carb diet in the world, although they were recommending a high protein. They wrote a book called "Protein Power." Whereas I took the road really of a high fat diet.

There were problems with high protein to me which not the least at which that high protein itself could turn to glucose. But there are other problems with high protein and I think that's ending up being correct. And the point of the story is that it is still being debated.

When I was asked to give this first talk to a group of physicians in Chicago by a work associate who was head of a group of doctors called the Great Lakes College of Advancement in Medicine, GLACAM. And I told them that I don't want

to give a talk on insulin. I mean this stuff has to be known. And he said, "Trust me. Nobody has heard any of it."

It was the first talk on insulin, but I remember being embarrassed talking about it thinking that this stuff must be known. I know that a low carb diet, nobody was doing that especially for heart disease. And what my initial use of this diet was not for weight loss. I didn't care at all really about weight loss. It was to treat diabetes and cardiovascular disease for the most part. And the doctor I was working with had many patients with cardiovascular disease. Many of those had diabetes. And so I was treating them right away with a very low carb, high fat diet and their diabetes disappeared most of the time very quickly.

And their neuropathy disappeared. And so this doctor I was working with, John Wilson, thought that was amazing. And that's who enticed me to talk to these doctor groups. And nobody heard any of these stuff.

But I remember the first talk being embarrassed to get up there and to say the obvious. Don't feed diabetics sugar basically, foods that turn to sugar. But he was right. It turned out nobody had heard of any of these. But when they did, it was still obvious I mentioned that I thought that the science would catch on very quickly around the world.

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Twenty years later, over 20 years later, almost 25 years later, it is still being debated. Most doctors don't test fasting insulin as a routine. When I did some work for a life insurance company and we looked at medical records, hardly -- I would say maybe one in 50 charts, maybe close to one in 100 charts had ever tested insulin. Still that's to this day.

So it's taken a quarter of a century for extremely compelling science to make its way into medicine and it still hasn't fully. I would venture to say that 99% of doctors really do not have a grasp on what insulin does to the body, let alone leptin and let alone the target of rapamycin, who they still have never heard of. Hardly anybody is testing leptin. Testing insulin is even rare.

They still prescribe insulin like it's candy. They still give drugs to diabetics that raise insulin to type two diabetics where hyperinsulinemia, high levels of insulin is really the disease. And you have to give drugs that raise it even more or they give insulin that raises it even more which is the main reason that they have insulin resistance in the first place. Their insulin levels were too high.

So rather than trying to lower them, they make them even higher. Again, doing the opposite of what one should do because they don't have the knowledge of

really how the body works on a deeper level. They have only the knowledge basically that the drug companies have taught them. I mean the drug companies have really filtered their way into medical training to an extreme extent. I mean they finance the vast majority of medical meetings that take place.

And now, they're actually even financing medical schools. Because medical schools have really come into economic hardships and they're being now subsidized by drug companies too. So they filtered their way all the way down into medical training as medical students. We knew that drug reps kind of train doctors once they graduated, but now they're training them right from the beginning.

And they train them in what will make money for the drug companies, what will make money for the procedures that are being done. And trying to get somebody healthy by taking them off drugs. And when you do get a person healthy, you have to get them off the drugs for instance when you lower insulin and you get rid of a person's diabetes. Their blood pressure comes down also. They have to get off their blood pressure medication. You need to get them off of the cholesterol-lowering drugs.

So the profit behind proper medical treatment declines a great deal for these companies and they don't want it. And so they put out contrary articles. So you will see articles that eating cereal lowers blood sugar for instance. That couldn't be further from the truth. But you'll find articles that say that.

Most people I think would be surprised to understand how medical research takes place. You don't see this anywhere else. It's not really science. Again, this is a business. There are corporations. And so the vast majority of medical studies, the last I heard, this was a few years ago, 75% of all medical studies were financed by the pharmaceutical industry. It might be higher now.

But even if it's not, there's a goal behind the study. Studies now are very expensive. And they are almost always farmed out even by pharmaceutical companies to contract research organizations, CROs, whose job it is, they get paid a lot of money by the vendor, by the pharmaceutical company or whoever to do the study. And if they do a "good" job, they get bonuses and they get future work and a good job means that the study will come out in the company's favor.

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And so it's designed to make it come out for instance if you're doing a study on a drug that might cause cancer. They will know ahead of time how many years, how many people years it would take to show a statistical increase in cancer

risks for instance. It might take 5,000 people five years to show 5% increase in cancer which is statistically significant.

And so they'll make sure that they use fewer people for four years so that even if it did cause cancer, it wouldn't be so called statistically significant and they wouldn't have to report. They will do studies on many more people than would be necessary and break it down for instance into quartiles and different age groups.

For instance, they might do a study on a particular drug that they will purport to say improves heart disease. And so they will test it on men and women between the ages of let's say 50 and 70 and break it down into five year age groups. So they'll test men between the ages of 50 and 55, between 55 and 60, 60-65, 65-70 and they'll do it the same on women.

They will follow these people and they will take a drug. And everybody might do worse. They might have a much higher rate of death. They might have even a higher rate of cardiovascular disease. But just by chance, one age groups, let's say men between the ages of 60 and 65 had a 3% improvement in second coronary events.

That is the age group, that is the statistic that they will take. They will throw out the others and publish a paper that says, "Men between the ages of 60 and 65 had a 5% lesser chance of secondary coronary events. And if you then extrapolated this to the entire population, you would save 100,000 lives a year." And they'll make front-page headlines in USA Today. And that is how medical knowledge gets decimated.

Robb: So what you're saying is that we have incredible job security. Nobody is going to come in and fix this problem right from under us.

Ron: Unfortunately. We are up against the wealthiest corporations on earth.

Robb: I completely agree with all of that. What's fascinating to me is the mismanagement of all the stuff is becoming so incredibly expensive. That even though some people are making some money over on this one side, it's so expensive to deal with diabesity and the mismanaged fashion that we've done. Like the U.S. military is looking at diabesity as an existential crisis to the U.S. economy.

They know that it could crush the economy. And so we're starting to get some stuff even out of the deep state where people are kind of popping their heads up and they're like, "Whoa, man. Something else needs to happen. Like we're clearly not addressing this problem."

So I've seen a few cracks in that and it's fascinating to me that even though the economics have -- people always follow incentives and so the drug companies have followed the incentives of creating patented pharmaceuticals that theoretically deal with things like elevated cholesterol or abnormal blood glucose levels. But that stuff is so ineffective at really dealing with the root cause that it's ending up costing society at large an enormous sum. And I'm just curious how that's going to resolve. It's going to be very fascinating to watch that.

Ron: Well and it's going to have to resolve from people like yourself that have podcasts like these where the real truth can get disseminated, where the truth is not owned by large corporations that are out to maximize profit. That by people that really care about the truth of health and what is behind it and what really works and what's fact from myth. That's how it will have to be done. We've seen it.

As you mentioned, there is some -- I don't want to say everything is a lost cause. We know and the government has retracted their statement that eating fat is going to kill you. They now say that eating fat is okay. They don't go far enough because if you're going to say eating fat is okay, you have to go and say that eating carbs isn't. You can't say that you can have both, which you shouldn't do.

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That might be the worst combination of eating high carb and high fat at the same time. You eat the high carbs, you raise insulin and then you can't burn the fat. One of the things I've said for decades now is that people get fat and get sick not because they eat fat, but because they can't burn it.

And burning fat is under the control of like everything else really, hormones that tell the different cells how to integrate as collectively as one. And just insulin, if you want to just talk about that. You eat a piece of bread. So let's say you have bread and butter.

And now, they're saying it's fine to put butter on the bread. And which it's fine to have the butter. It's not so fine to have the bread. The bread will raise glucose which will raise insulin and which will make it impossible to burn the fat and then you just store it.

So if you're going to eat fat, you don't want to eat carbs with it or you don't really want to eat a bunch of protein either. You have to have some protein for sure. Unlike carbohydrates, it is an essential nutrient. So you have to some, but too much will also turn to sugar and too much will also raise insulin, make it more difficult to burn fat. It'll raise more importantly a pathway, not really a

hormone, more important than a hormone. It's really kind of a switchboard called mammalian target of rapamycin, which kind of integrates all the nutrient signals and strongest stimulus mTOR is protein.

And when mTOR goes up, a lot of bad things happen. Not only will it increase your risk of cancer, but it will cause new fat cells to be made, increase inflammation, accelerates aging, all sorts of nasty things. So it's a pathway that I've been researching now for the last decade or so.

Largely, a good portion of the book I'm writing now will be educating people about that pathway. Because it really kind of ties together all of the different nutrient sensors and then tells the body what to do. So it's really important pathway, but again if you go to your doctor and just even mention it, they'll look at you like you're an alien.

Robb: Doc, would it be possible to order this out kind of epistemologically where maybe on the one side we have a high fat, moderate to low protein diet that might be optimized for health and longevity, possibly some anti-aging elements to it? And then as we, let's say and I guess there could be bifurcations. As you increase protein, we might have some potential for improved, say like, body composition if someone's an athlete. And they might get some performance boost for that with a potential decrease in overall longevity again because of this mTOR signaling.

But then we bifurcate from the higher protein story into the higher carb store where we start getting maybe inappropriate insulin signaling. Do you see kind of a gradation there or there are some really hard inflection points with that?

Ron: Well, yeah, the protein story is I would say still being worked on. I think I have some pretty good opinions on it. But certainly, the main fact that one needs to be concerned about is the TOR, target of rapamycin. It could have so many different effects on the body.

Calorie restriction for instance for the last 80 years has been shown to extend lifespan just about every specie they've ever tested. And it's been pretty shown over the last decade or so that the reason that calorie restriction works for many different benefits in addition to extending lifespan is by lowering TOR.

If you raise TOR and restrict calorie, you don't get the benefit. So it's obviously a very important pathway, but as you mentioned it's also necessary to build muscle. You're not going to be able to repair properly if you don't have some TOR.

TOR also is important for immunity. TOR is quite a complex topic. It's really kind of two major TOR complex. It's TOR1 and TOR2 and they do different things. And when you lower TOR2, it actually worsens insulin resistance and impairs immunity it appears. In fact, the main use of TOR inhibitors rapamycin for instance is to inhibit organ rejection by impairing the immune system.

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Obviously, that doesn't seem like a good thing, but there's different aspects of that too. It gets much more complicated than that. But what I would say, putting a lot of information together, what you want is a higher TOR up to a certain point in your life, let's say your mid-30s. And after that then you want to lower it.

So younger people who are exercising and really want to kind of build their muscle and athletic performance and that kind of thing would probably do fine with a little bit of extra protein. You still don't want to use too much because if you use too much you'll convert it into glucose and it'll just be like a high carb diet.

So there's only so much you can actually utilize. You can't just kind of sit on the couch and eat protein and expect muscles to form. Everything works via signal. So if you're going to build muscle, you have to have usually hormonal signals that will tell you build muscles. You have to have signals that will tell you to build bone. You have to have signals that will tell you to burn fat for instance.

So you really have to control those signals. You can't just have protein and build muscle. So if you're insulin resistant, then the insulin itself is an anabolic hormone and will help people build muscle. And that's why protein raises insulin so that the amino acids that make up the protein can then actually enter the muscle cells.

If you don't have enough insulin, there's like four or five major essential amino acids that can't even enter the muscular cells. So that's why you have a relative of insulin called insulin-like growth factor, which is made from growth hormone, which is necessary to build muscle along with testosterone and some other things.

So you have to have the proper signaling. And the proper signaling doesn't necessarily mean how much of it is there. So when we test, we just test them out. But for instance we know and this is one of the things that I talked about almost of a quarter of a century ago that it's not how much of a hormone that you have, but how well it's acting.

So for instance, we measure a person's fasting insulin. And we now know that generally when a person has a lower fasting insulin, it will translate into lower blood sugars because they have greater insulin sensitivity. And so fasting insulin is kind of a surrogate measure for insulin sensitivity. And the lower the number usually the higher the sensitivity.

In other words, you'll get a lot more bang for each insulin buck that insulin will be able to talk louder to your cells the lower you keep it. It's like walking into a smelly room, pretty soon you can't smell it because you're overexposed. Your olfactory nerve that allows you to smell becomes essentially burned out. The neurotransmitters gets used up and you can't smell it anymore.

And the treatment there is not to just make the odor stronger which would just accelerate the desensitization of the smell. What you want to do is you want to reduce the odor so that you can recover your sensitivity. Same with insulin and that's what I essentially recognized when I first started treating diabetics over a couple of decades ago, is that the aim, everybody else was trying to raise insulin.

But I knew that would just worsen insulin sensitivity that the way to get it back was to lower insulin. That's actually how I came up with the low carb diet at the time and a high fat diet. Because both carbohydrates and protein raise insulin. I wanted to lower it so that I could recover the patient's insulin sensitivity. And sure enough it worked extremely well.

But it doesn't just happen that way with insulin. It's almost any hormone. So you have to take blood tests with a grain of salt. We know that there are also free fractions. So you have IGF, you have estrogen is a good example.

Estrogen's physiology is very complex. If you just measure estrogen levels, you have really no idea of how it's actually being used in the body. All of the steroid hormones, in fact most hormones are carried around by proteins especially the hormones that are made from cholesterol which are all the steroid hormones. They don't mix with water, so they have to be made more water-soluble. Blood is a very watery environment.

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And so they're connected to proteins and that which is actually bound to a protein is ineffective actually in doing anything. They're just transporters. They're like a bus that is taking the hormone to where it's needed. After which it will become unbound or there's a certain fraction that's unbound that's circulating, the so-called free fraction.

And that's generally two or three percent of the total, very small percent. But that's the only part that actually does anything. So if you just measure the total, you don't know. And so the amount that's actually bound is not just determined by how much of the hormone is there, but how much of the protein is there.

The more of the binding protein, so you have IGF binding protein that will bind to IGF, a hormone that causes growth and can cause muscle building, but also is very intimately connected with cancer and shorten lifespan. And the amount of IGF that will be available is more determined by the amount of the binding protein than by the amount of IGF that's available.

So it gets very complicated. And then you have the excretion rate and the recycling rate and what the liver and you have metabolites. So we know that estrogen is bound to sex hormone binding globulin. And then it gets circulated, it does its thing then gets it excreted either in the urine and also into the stool.

But then you have bacteria in the stool that can cause the estrogen to become re-circulated. So increasing the levels of estrogen depending on the type of bacteria you have in your gut. And then when you talk about the amount of a hormone, where? You have to understand that when you measure the blood levels of a hormone, you are measuring the hormone that's not doing anything.

Most hormones do nothing when they're circulating in the blood. They have to go to where the end organ is. So for instance the brain. Estrogen is necessary for brain function, but it has to get there first. So you have to have proper circulation and then it has to get freed from the binding protein. And then there's a conversion, let's say, on testosterone. Testosterone converts into estrogen depending on how fat you are. You produce a hormone called aromatase that converts testosterone into estrogen. And so the aromatase is made by visceral fat and under the control really of leptin.

And of course leptin then also has to do with how hungry you are. So it's all tied together. So when people are leptin resistant, you get leptin resistant the same way you get insulin resistant by having too high levels for too long. You become leptin resistant and your brain can't listen to leptin properly and you stay hungry all the time.

And you get fat and then you produce visceral fat, belly fat. And that produces all sorts of inflammatory agents, cause inflammation, cardiovascular disease. Also produces aromatase that converts the testosterone into estrogen. So you see the fat men with big bellies also have breasts and that's because they're converting into testosterone into estrogen.

If you measure their testosterone it will be low. And so then maybe doctors will give them testosterone. Well, that would be terrible because that will just cause greater quantities of estrogen. What you want to do is reduce the conversion. Conversion is produced by aromatase from the visceral fat.

So you can have aromatase inhibitors and you can do that short-term, but the real key there is to get rid of the visceral fat. And the way you get rid of the visceral fat is by becoming more leptin sensitive. And the way you become more leptin sensitive is by lowering leptin. The way you lower leptin is the same way you lower insulin. And they're controlled by -- the nutrient sensors are controlled by what you eat.

And so if you eat a high fat, low carbohydrate, moderate protein diet, you will lower leptin. Even though it controls -- fat is actually made by fat. It's not secreted when you eat fat. It's actually secreted when you eat carbohydrates and when you eat protein. And it's the spikes in leptin that to me cause the leptin resistance.

And when you're leptin resistant, it can't do its thing in your brain. It can't trigger a society. It can't keep you from being hungry, which is one of the major purposes of leptin in the brain is to signal your brain that you've eaten enough and not to be hungry. But if you're leptin resistant, the hypothalamus in your brain can't hear the leptin. And so you'll stay hungry because there's a disconnect now between the body and the brain.

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And it's these disconnects in communication that will always cause disease. And we talked earlier about why doesn't medicine get this. Why can't they treat chronic diseases? And we talked about that they don't really understand what life is and what the underlying mechanism of how the body really works. They're treating the symptom.

They treat diabetes as the disease is the blood sugar for instance. You ask any doctor, even experts around the world, what diabetes is and they'll call is a disease of blood sugar. And that could not be further from the truth. It's not a disease of blood sugar.

Sugar, glucose is just listening to orders. It's doing what it's being told to do. And it's being told to do stuff by hormones and by insulin and by glucagon and by cortisol and growth hormone and epinephrine and norepinephrine. It's those things you have to control, not the glucose.

The glucose will follow what insulin tells it to do and what glucagon will tell it to do and what leptin will tell it to do. We know that leptin largely controls how much glucose is made by your liver. And that comes from the brain. So things are a lot more -- I wouldn't even call it complicated, but just deeper than what they're being taught in medical school.

And what they're being taught is to take drugs. So you have high blood sugar. You take drugs to lower the blood sugar and all will be fine and dandy, but it's not fine and dandy. So you have things like the ACCORD study that was published a number of years ago. And New York Times actually broke this.

So just a brief history because I think this is a very important study not just for diabetics, but just how medicine works and how they're broken really, how medicine is just broken. So ACCORD study was a study done by a pharmaceutical company and it was a diabetes study. And what they wanted to show is that if you control blood sugars better, you have a better outcome namely mortality and cardiovascular disease.

And they were absolutely certain about this. That in a diabetic, this was taught for decades. That if you control a diabetic's sugar, if you control their glucose better, that they will do better. I mean the whole purpose of therapy in diabetics is to lower their blood sugar. I mean that's the mantra.

The god in diabetes is just measure your blood sugar and keep it down and keep it normalized as much as you can and you'll do better. You'll live longer. You'll have fewer diseases. And so they were so certain of the result that they actually publicized the study called ACCORD when they initiated the study. It was going to be a five-year study.

It's unusual by the way for drug companies to make known that they're doing a study like this. Because if it doesn't come out, they don't want it published. And so they tend to keep studies secret until they know that it's come out in their favor. And then they'll publicize the hell out of it.

But this one, they knew that it was going to come out and so they publicized it. And two years or so into the study, they started getting very surprised in results. That those people whose hemoglobin A1c which is a measure of how much glucose is sticking to your hemoglobin. And it's kind of a measure of average blood sugar so to speak.

And the crux of the study was to have hemoglobin A1c in the experimental group, in the group that they were controlling the blood sugar better. I think some are around 6.5, which to me by the way is not that great.

Robb: Yeah, they're kind of far gone at that point. Yeah, yeah.

Ron: They think that's great. And so the control group that was just treated with the typical treatment, a little bit of exercise. They are so-called diabetic diet which is really a low fat diet oddly enough, basically high sugar diet. They call it a diabetic diet which is by the way still given in hospitals.

Anyway, they had an average hemoglobin A1c, about 7.5. So the experimental group that they were giving more medication to or giving more insulin to. Whatever they had to do to lower the blood sugar, to have hemoglobin A1c somewhere between 6.2 and 6.5, were those people had a 30% higher risk of cardiovascular disease and death after two years.

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And so it was going to be a five-year study. They had to cut it short. And it was publicized. They couldn't hide it. And there are series of articles in the New York Times that told about this. To this day, they're still trying to explain it.

And I wrote a letter to the New York Times at the time and they were a lot of letters to the editor that were trying to explain the study away by the Cleveland Clinic, et cetera, and by the president of the American Diabetes Association who said, "Well, maybe lowering their blood sugar like that was just too much of a stress on these people and the stress is really what was killing them."

And I wrote a letter. I was surprised they actually published it because it's pretty scathing to the medical profession. And I just said, "Until medicine learns to distinguish symptoms from disease, they're going to continue to see studies like this that kill people and where medicine itself is becoming the disease." That the real problem was not that diabetes is a disease of blood sugar, but a disease of hormonal signaling such as insulin.

And the treatments that they were giving these people to lower the blood sugar was just raising their insulin. And what the study was really showing was that high insulin was worse for you than high sugar. In other words, the treatment was the disease and that's still the case. And until you get an understanding, not you, Robb, but I mean the doctors of medicine, an understanding of what disease really is then the treatments will always be worse for you than for the most part doing nothing.

And that's the major reason why you see all of these opposite results. I've talked about calcium and people, they're still taking calcium for osteoporosis. And what they don't understand is that high calcium levels actually is associated with a

much higher incidents of death and osteoporosis. That osteoporosis has nothing to do with calcium for the vast majority of people.

That the strength of bone is not due to bone mineralization, which means that getting bone density is not going to give you the answer. That the strength of bone is coming from the foundation of the bone which is really the framework of the bone which is protein, which is what keeps your bone strong. Babies have much stronger bones than you or I even.

That's because they're flexible and they haven't actually even then mineralized yet. You do a bone density study on an infant, it'll look like the worst case of osteoporosis ever, but they have flexible bones. We did that actually in medical school on a little infant. You could actually bend their forearm and it doesn't hurt them.

But it's the flexibility and the strength from the protein that gives the bone strength. Nothing to do with bone density, but bone studies make a lot of money. And they tell people, "Take a bunch of calcium." It was great for the dairy industry.

But high calcium is associated with greater mortality because cells try and get rid of calcium. I won't go into the whole calcium physiology, but again I've talked about this for decades and it hasn't made an effect. So it still takes decades even when the science is compelling because it just takes a long time to change people's mind of things that they think they absolutely know.

Like of course calcium builds bone. Well, no, it doesn't. That was just something for the dairy industry to make some money.

Robb: This stuff always reminds me of Ignaz Semmelweiss, the guy who had, mid-1800s I believe, late 1800s, made the really audacious recommendation that doctors should wash their hands with some sort of a dilute bleach solution between doing autopsies and delivering babies. And he was laughed out of the profession, eventually ended up in an insane asylum.

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And he was one of the first people to actually do a bit of statistical epidemiological analysis kind of supporting. He did a little bit of -- it would be very non-rigorous by today's standard, but women having babies on the street had better infant survivability than they did being delivered by doctors within the hospitals. Because these docs were back there carving up corpses and then they wouldn't even wash their hands.

And then cruise right in and deliver a baby. And so this was before the germ theory of an infection had really popped up and then Koch's postulate and all that. That stuff happened and then it was like, "Oh, well, I guess the guy was right." And not every idea in medicine is correct or every idea in science is correct, but maybe a point to wrap this up is somewhere along the line and maybe this is just human nature.

But it would be wonderful if skepticism was a bit more focused on curiosity and a bit less about just continuing the entrenched dogma of the current paradigm. It doesn't mean throw everything out. But if there's a new idea or an alternate hypothesis, let's give it a little bit of a shake instead of just burying it until the weight of decades finally push the thing forward.

Ron: Yeah, no, exactly. There's a quote and I won't get it exact, but it says that the most important pathway to learn anything is to first unlearn. And that's really true. You have to have an open mind and be willing to unlearn what you think is unshakeable.

And one of the things I do want to make sure that people understand because we keep talking about kind of the roots of health and that diabetes is not a disease of blood sugar. Osteoporosis is not a disease of calcium. Cardiovascular disease is not a disease of cholesterol, et cetera. Obesity is not a disease of eating fat.

All of these things have been kind of pushed down our throats and have been found to be not only wrong, but diametrically opposing wrong. And again, because of the inability of medicine to even want to know what health is and what really controls health, but it's really quite simple.

One of the things that we've alluded to that I just want to just state explicitly is that all diseases will be due to some sort of miscommunication. That we are 15 to 20 trillion cells and five to ten times that many bacteria that are kind of having to work collectively as one. And to do that, you need communication among all of those cells. And it's communication that tell cells what to do.

After four billion years of evolution, there isn't a whole lot that we're exposed to that we haven't been exposed to before. And the body knows what to do if we let it and if we find out what it is that it wants to do and augment it rather than go against it. For instance, when people catch an upper respiratory infection, I tell them, "Take a hot bath," even though they have a fever.

You want to augment what nature has learned and not try and go against it. But if you understand that the communication, there's some sort of faulty communication whether it's the insulin resistance or the leptin resistance, that

there will be some sort of miscommunication that is behind all chronic diseases. And it's that miscommunication that you have to deal with.

If it's insulin resistance, then you need to improve the communication of insulin. You have to improve the communication of leptin. Usually, you have to do that by lowering it, not by raising it. It isn't how loud you talk, it's how accurate you talk.

If I kept yelling into the microphone right now, people would plug their ears and probably turn off the radio. You want to speak accurately, but at a lower volume to preserve people hearing and preserve the cellular hearing that they need to be able to listen to insulin, be able to listen to leptin, to be able to listen to the orchestration of all of these hormones.

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But all disease, there will be no exception to that, chronic diseases especially, will have to do with some sort of problem in communication. It's always going to be the communication that has to be addressed and not just lowering cholesterol or take calcium or lowering blood sugar. And that's the real reason why medicine has not just poor results, but deadly results when they are treating these diseases right now is because they don't understand them.

Robb: I love it. I love it. Doc, fantastic stuff and it reminds me of Art De Vany has talked about this signaling story and looking at so much of this more from a perspective of information processing and less about calories in, calories out, bomb calorimeters. So I really love that.

Ron: Yeah. That is true. Yeah.

Robb: Doc, I want to be respectful of your time. We could easily go on for hours and hours here. We should wrap this one up and then maybe get you back on in a couple of months when your book launches and possibly collect some listener questions when that happens. But let folks know where they can find you on the interwebs.

Ron: All right, just drrosedale.com.

Robb: Okay. Any social media handles you prefer or…?

Ron: They'll be on that site.

Robb: Okay, okay. Track everything down there. Okay, we'll get that in the show notes.

Ron: I think on Facebook I think I'm just Dr. Rosedale.

Robb: Okay, okay, I'll make sure that Chris get squatchy, gets all the details on that. Doc, are you going to Paleo f(x) this year?

Ron: I should actually. I don't know. I'm speaking next week actually in Miami at the Physicians for Ancestral Health and actually go to f(x). Actually Jimmy Moore mentioned that last year. So I will be going to that.

Robb: Okay, okay, look forward to seeing you there. I haven't seen you in the flesh in a couple of years so it will be fantastic to see you again.

Ron: I would like that. Thanks so much.

Robb: Awesome! Well, doc, thank you for coming on the show. Huge honor having you on. And again, just to let folks know, what's the timeline on the book approximately?

Ron: Probably I would say July, maybe August. They put in a fast-track which is really nice. So it'll certainly before the end of the year and I'm thinking closer to maybe I would say July or August would probably be realistic.

Robb: Fantastic. Well, let's get you back on the podcast when that thing launches and circle back and see what's new in your life and then also explore this new book.

Ron: That would be great. I think you'll enjoy it.

Robb: Fantastic! I'm super excited. Well, doc, again, thank you for coming on the show and have a great rest of your day.

Ron: Thank you. Thank you for having me and you also.

Robb: Okay, take care.

Ron: Take care. Bye-bye.

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