Introduction to Dr. David Perlmutter

Everyone. My name is Doctor Richard Horowitz and I'm co-host for the healing from Lyme Summit and is my great pleasure today to introduce to you a good friend and colleague who I've known for a long time.

Doctor David Perlmutter. Doctor David Perlmutter is a board certified neurologist, six time I'll repeat this six time New York Times bestselling author.

He serves on the board of the directors and his fellow of the American College of Nutrition, currently serves as the director of Neuroscience Research at Bryan Therapeutics.

He receives his M. D. degrees from the University of Miami School of Medicine, where he was awarded the Leonard G. Ground Tree Research Award. He's a member of the editorial board for the Journal of Alzheimer's Disease.

We'll be doing some trial soon on that and has published extensively in peer reviewed journals. And Doctor Pearlmutter, his books have been published in 32 languages and include the number one New York Times bestseller, Green Brain The Surprising Truth About Wheat, Carbs and Sugar, which we'll be discussing today.

This over 1 million copies in print for this book. If you haven't gotten it, I really suggest you read it. Other New York Times bestsellers include Brain Maker, The Green Bean Cookbook, and The Green Brain.

Whole Life Plan, as well as brainwashed, co-written with his son, Austin Perlmutter. And he's the editor of The Microbiome and Brain, authored The Top Experts in the field, published in December 2019 by CRC press.

His latest New York Times bestselling book, Drop Acid, focuses on the pivotal role of uric acid in metabolic diseases. And David, we're going to discuss today maximizing brain health in those who have chronic Lyme disease.

So I want to thank you so much for coming today and and speaking to this audience. So thank you again. Delighted and good to see you again too. Yes, to you too.

So, let's just start off a little bit, you got into neurology. How did you get into neurology? How did you get into this? Specific field about brain health?

Because obviously a lot of neurologists are out there doing this, but you really focused on nutrition and diet and how to improve the brain. Why don't you tell us how you got into that a bit?

Well, how I got into neurology. It was pretty much a given that I was going to do something in the neurosciences, I think since I was a teenager and my dad was a neurosurgeon.

And you know, I was very much exposed to the whole the idea of neuroscience from a very early age. So it was actually a comfort lane for me growing up.

I entered neurology practice and practice pretty much mainstream neurology for about a decade, and towards the end of that decade began to feel a level of frustration in that I felt that all of my efforts were pretty much directed towards symptom management, you know, helping people feel better, managing their symptoms.

But I didn't really feel like I was doing much for the underlying problem. And I really wanted to focus on the fire, not the smoke, and began to explore not just what the underlying issues were that were related to the various diseases that I was treating.

But ultimately, once I began to understand what was causing these issues, it opened up the idea of prevention. And in those days, that was, you know, 25 years ago and the idea of prevention as related to neurodegenerative conditions, things like Alzheimer's, Parkinson's, multiple sclerosis, etc.

From Neurology to Brain Health Prevention

was really not just something that people wouldn't consider, but it was really off limits, because everything in those days was focused on understanding what drugs we can use to treat the symptoms.

And beyond that, everything else was really considered blasphemy. But, you know, the good news is that we hung in there and began trials, began exploring what we could do to modify brain metabolism, to work on the various risk factors for these very, very compelling, problems.

And nowadays, I think it's really very much on the table that we recognize that our lifestyle factors are huge levers that we can pull to create a brain that is fully functional, that remains fully functional as we age, and that is resistant to degeneration.

So, you know, the good news is that behind us, a lot of the blank areas have been filled in, really delineating the nuances of the lifestyle choices that we can make to not only prevent these illnesses, but really to improve functionality even once they have begun.

And, you know, you mentioned Lyme and co-infections and the neurologic consequences of having these, infections. And it's it's very interesting that there's a real, we're seeing so many of these, issues coalesce in terms of an upstream point at which they're all kind of unified.

I mean, we'd like to think that, the Lyme disease brain, the chemotherapy brain, the Covid long-covid brain, Alzheimer's, Parkinson's, etc. are all disparate.

And they are certainly they are in terms of their ultimate manifestations. But way upstream are issues related to energetics within the brain that kind of unite all of these issues and really can serve as, you know, a starting point for us to develop therapies that can be cross utilized in terms of multiple platforms involving multiple pathologies.

So it's kind of a very exciting time when we get our arms around the fact that what is leading to these energetic defects has downstream consequences in terms of changing immunity, changing autoimmunity, changing how our immune cells vis-a-vis the production of inflammatory chemicals that are so devastating.

These can be brought out by a variety of factors, including genetics, other exposures, infection. As I'm sure we are going to talk about toxic issues are changes in body hormones, for example.

So many roads lead to changing the energetics of the brain. That's the interesting news. The good news is this is a powerful tool right now. That's great.

And of course I got into it for the same reason, because the idea of just naming a disease and throwing drugs at it, right. It never really works because you've got to get to the underlying source.

And, you know, in medical school, they're teaching us a one cause, one disease model. But I think you and I have seen over time it's a multifactorial problem.

Right. The metabolic you're talking about with Alzheimer's, I mean, now we know that, you know, diet and insulin resistance and getting enough sleep and exercise and not being lonely.

And whether it's viruses, whether it's herpes viruses, Lyme disease, toxins, I mean, Jama neurology years ago was publishing on pesticides, right. Showing up in these brains with Alzheimer's.

And we're even finding Lyme skyrockets right under some of these biofilms and Alzheimer's. So, you know, I think

we all come to it right from a very similar path.

But but one thing you did differently, which I think really puts you apart, is you really highlighted the role of diet. So can you talk a little bit about Green Brain this, this New York Times amazing bestseller?

How did you get into the role of Like Wheat sugar diet. Exactly. And how it affects the brain because you did this differently than other neurologists most.

Yeah, for sure on this element. So how did you get into this again? You know, I was seeing some commonality in, in, many of our patients with a variety of neurological problems, movement disorders, headaches, cognitive decline, etc.

and it became clear that there were a couple of kind of pervasive themes that we kept seeing time and time again that back then, that book was published in 2013.

But I wrote it obviously during the two years prior that the literature literature was starting to reveal that, in fact, risk of brain degeneration was increased with people having only subtle elevation of their blood sugar, like 105, where doctors will give you a pat on the back and say, am I? You're fine, you're not diabetic.

And they wouldn't say yet, but that would be the the word in the background. A very strong correlation between atrophy or wasting away of the brain correlated with a one.

See, you know, people are always talking on television about their agency. I'm taking XYZ drug and I lowered my A1. See below seven. Well, you know, this study appearing in the New England Journal of Medicine demonstrated significant increase degeneration of the brain or atrophy of the brain at A1, CS 5.8 at six, you know, levels where doctors were saying, hey, this is perfectly fine.

You're just, you know, go on your merry way. We'll see you in a year. And I became frustrated that people were not aware of this information and certainly not acting on this information.

If there was such a strong correlation between something as simple as blood sugar and brain degeneration, people needed to talk about it. And at the same time, I was looking at literature that demonstrated that some people had issues with this protein found in wheat, barley and rye called gluten.

Specifically, part of it called alpha glide. And that was leading to a various types of problems like cognitive issues, depression, movement disorders, and headaches.

And by taking them off of gluten, putting them on what's called a gluten free diet. Who knew that these problems could be ameliorated in some people? And I became very fascinated by the work of a British researcher by the name of Doctor Mariusz Hadji Vassiliou, who started to publish this and started to actually demonstrate improvements in patients going gluten free and even changes in their brain scans.

So this lit me up. Not to say that there's this large nexus of individuals with neurological problems who have undiagnosed celiac disease.

Gluten Sensitivity and Brain Degeneration

No, quite apart from that, if these are people who were having negative responses to gluten consumption, who in fact did not have that unique autoimmune condition called celiac disease, meaning that these were people who were gluten sensitive.

And I began collecting the data on this. And after that book was written saying, hey, I don't know, since I'm the author of a book that you might or might not be gluten sensitive, but if you have longstanding headaches or this movement disorder or this twitch or depression or whatever it may be, why don't you give going gluten free a try for a month or two?

There's no downside. And let's just, you know, you'll find out whether it's right for you or not. And so we wrote this book, and people started writing to us that they were having these really significant improvements in their problems.

And, you know, there's one, interesting case I think I included in the book I did of a very successful investment banker here in my hometown, who was on narcotics, because of his persistent headaches.

And he tried to work this. He was a player, and yet he would be down, you know, out of commission with these devastating headaches. And it was the gluten sensitivity issue.

How do I know he went gluten free and his headaches immediately and permanently disappeared? Another woman with the gluten issue. And also headaches went gluten free.

Headaches disappeared. She saw her gastroenterologist, and he told her, there's not you don't need to be gluten free. You don't have celiac disease. He did an endoscopy and prove that she did not have the findings that are characteristic of celiac disease, the atrophy of the villi, if you will, and so he said you need to get right back on gluten.

Well, why what's the necessity of eating gluten? She did. And her headaches came back. So it was important to write a book like that. And you know, interestingly, thereafter we began seeing data published in, for example, Jama, the journal of the American Medical Association, that as many as 70% of humans may have some degree of gluten sensitivity, and that how it works is gluten sensitivity tends to disrupt the gut lining such that the bowel becomes permeable, that increases inflammation, and work thereafter revealed that, in fact, even the blood brain barrier can become leaky.

And we talk about leaky gut syndrome. That's a bad thing. But how about a leaky brain issue? And that work was developed by a researcher at Harvard showing that, in fact, in some people, alpha gliadin, a part of gluten, can lead to leakiness of the brain.

So that's why I wrote the book and know over the years, as you mentioned, it became published in multiple languages. I revised the book five years after it was written and, you know, just updated it with these, literature citations that really validated what we were talking about.

Yeah. So, so quick question on this, David. You know, most of my colleagues, when they check for gluten sensitivity, they're doing an antique lead in and a TTG, a tissue trans glutamate ace.

And if we're lucky, in New York, I can't get a psi Rex panel. Well, you can take these 20 gluten markers, but what you're saying is even someone who's antique lead in TTG negative, right?

They don't necessarily have the markers. And I don't know about this Pyrex panel specifically, but you're basically saying that, for example, the Lyme patients who are attending the summit, who many of them do have cognitive issues, even if they do a leaky gut profile.

I get one from lab core all the time that does a 95 IgG4, and we do sometimes find it, but it's interesting. It's the ones we see more often are like, it'll show up for, you know, black peppercorn and it'll show up for dairy.

I mean, in vast majority of the people, the wheat doesn't always show up. But you're saying even if it doesn't show up on the standard panels, it's still worth a one month trial because of this leaky brain syndrome that you're seeing, independent of the testing, your doctor may do.

You bet. But the fact is that, you know, this just may be adding fuel to the fire in terms of their issues. We understand that they have a very big underlying persistent, in fact, infectious types of similar type of situation.

But I suspect that the accompanying issues, along with that infection may enhance the likelihood of gluten sensitivity and that if, in fact, gluten sensitivity is contributing to this, what's the downside?

There are wonderful tests. You mentioned a couple anticline and antibody tissue transport. Tasmania's great the this panel super. You know I think these are wonderful tests.

But at the end of the day, a gluten free trial for a month I think is really valuable. You know, my sense is that there are a lot of people out there who can benefit from going gluten free.

And is there pushback? Yeah, there's pushback because to this day, you know, most of the medical community would believe that if you don't have celiac disease, then bring on the gluten and everything is great.

And, you know, that's not what the peer reviewed literature has been telling us for the past decade that there are plenty of individuals far more than than the 2 to 3% of the population that has celiac disease.

It may be, as mentioned, as high as 70% doesn't do well when they eat gluten. Now, I'm not saying that everybody needs to go gluten free, but it may be adding insult to injury here and is certainly worth considering.

Right? And the issue is with certain with gluten free diets going back, you know, most of the time when patients go and look for gluten free diets, they're really high in carbohydrates, right?

So you're saying that insulin resistance and sugar is a problem too? I mean, half of my patients have metabolic syndrome with blood sugars right in the morning or afternoon.

So if they do go on a gluten free diet, right, they have to be very careful looking for, for example, low carbs. Right? Because otherwise they may be swinging their blood sugar.

So in your books, you describe exactly the type of diets that people should be doing. Correct? That's right. But let me let me just, double click on something you just mentioned.

And that is the notion that so many of your patients have metabolic issues, are likely overweight and either pre-diabetic or diabetic. And one would wonder why that would be.

And I would submit that a likely candidate would be the fact that most of your patients are or have been on antibiotics, have disrupted their gut organisms, their microbiome, and as such have set the stage for this metabolic disruption or metabolic mayhem, if you will.

There's a vast body of literature that correlates antibiotic exposure with the risk for these types of metabolic issues. But if you you know, the beauty of the adaptation protocol that we've developed, and I just published my eighth article on it, it's a nine week oral antibiotic protocol using generic drugs, using persistent drugs, and pulsing with two week antibiotic pulses.

And we've been using up to four different probiotics, over 500 trillion actually twice a day. And by the way, and we do use a lot of bovine immunoglobulins to heal the gut, which stands transfer fractures.

And we find that we can actually heal the gut over time. So I mean you're right. Long term antibiotic use of course is a problem. The beauty of the protocols we've been developing is they're they're short term protocols for these chronic infections.

And in addition it may work the other way. It may be that those who are metabolically compromised may be at risk by virtue of the fact that their immune systems are dysregulated because of their overweight, obesity and or diabetes, etc., that their immune systems may be dysregulated enough that they are predisposed to persistent infection.

Right. And what, by the way, so regarding these type of tests and checking for glute, do you like the side panel when you're looking for leaky gut, the specific labs you like, to be able to actually prove it.

But what do you like doing? I would say that, the a real advantage is to be able to demonstrate to person black and

white. Here is a here's your lab study that demonstrates that what we've been talking about is active in you and very active.

And you as a matter of fact. And the other advantage is that it then is a benchmark that you can use in the future as you begin a program of intervention to demonstrate improvement, they may say, well, gee, why am I doing this, doc?

You know, what about my leaky gut, my etc. to be able to confront somebody to say, look, this number went down. It looks like we're well on the way to healing.

But ultimately that's really for just for reinforcement. I think that, the, you know, the gold standard is really just taking people off of if it's beyond gluten, then it would be a diet that, you know, we can't an elimination diet that's actually very spartan on the front end.

And then actually, when people feel better to, allow than the consumption of certain things along the way, reintroducing them one at a time via gluten, be it dairy, be it any number of things, and seeing if you can then pinpoint where those sensitivities may be.

At the lab, the various studies that are out there are, you know, are really effective. And and your Green Brain Cookbook is giving people those specific diets because I think a lot of people do struggle, like figuring out exactly what to eat. Right.

You've got those diets actually, in your books. That's right. But, you know, these days, people really want to know which diet should I be on? A green brain diet, a paleo diet, a keto diet, a vegan diet, you name it.

And I would say that, we can match your size this discussion by simply saying, you know, what is what is the goal? What are we trying to achieve with the diet?

And they're really, in my opinion, very few goals, which makes it very simple. First and foremost, we want to do right by our billions of organisms living within us, one to nurture our gut bacteria and not eat foods that threaten our gut bacteria, i.e.

Diet, Blood Sugar, and Metabolic Health

ultra processed foods. We could we'll talk about pharmaceuticals in a moment, how that threatens the gut, etc. but we want to make sure we have got a lot of fiber in our diets.

Number two, in terms of metastasizing it, how is the diet that I have adopted affecting my blood sugar? That is a home run because it's disruption of this balance of blood sugar that is really at the top of a cascade, leading to things like metabolic issues, cardiovascular disease, brain degeneration, obesity, diabetes, and even some forms of cancer.

So it's really whatever diet works for you now, to some degree, you could predict a diet being good for a person based upon his genetic or her genetic profile.

I get that other laboratory studies you can look at to help guide you, but at the end of the day, despite the various types of diets that are out there that are popular, to me the recommendation is, well, which diet works best in controlling your blood sugar? I.e.

get yourself a continuous glucose monitor, put it on your arm, connected to an app on your phone, and start to get a sent over the next couple of weeks.

How do various foods and timing of their consumption affect your blood sugar? In that regard, you might be very surprised to learn that certain things that you didn't expect that were spiking your blood sugar need to be considered, because that's not what you want to do.

And in addition, eating certain foods you see that are really good for your blood sugar. So that is valuable information. That's that's very, very helpful.

So David, where can people contact you if they want to contact you about your books and about all of these great research? Give me my cell phone number.

And the best place is Doctor Perlmutter. Dot com Dr. perlmutter.com. No period. And that's kind of the clearinghouse for my podcast and all the other stuff that I do. There's a lot of it's totally searchable.

We have a very, very robust library of peer reviewed studies, blogs that I've written. And I have a I host a podcast called The Empowering Neurologist.

So but I would say going to Doctor perlmutter.com is a great place to get started. I do it on Instagram and Facebook and all those things as well. For you younger, younger.

But I had to learn it too, David. And mostly because you helped me a bit with people half our age. So you were discussing a little bit earlier, the different types of diets.

So the stuff that's coming out, at least I've seen on Alzheimer's and brain degeneration, is the Mediterranean diet, right? The paleo slash Mediterranean diet seem to lower right, the inflammatory response.

But you're saying really that elimination diet has to be part of it. Do you suggested people, by the way, to try the eight hour eating, 16 hour fasting that's been discussed to help with metabolic health?

You discussing this with patients? Let me get there just a moment. First, I'll comment on what you just mentioned with respect to the Mediterranean diet.

So this is a diet. That is what it's high in fiber and it helps control blood sugar. To me that's a homerun right. It gets back to those two fundamentals we just talked about.

Now here's a diet that has provision of really good fats. Extra virgin olive oil that's high in things that are good for your brain, that's high in things that help reduce, that help reduce inflammation, that helps balance blood sugar.

So that plus again, the fiber, the the various colorful vegetables that it allows. It's really a terrific diet. And and as you've seen various mentioned, various studies predominantly the pre-med suite of studies have demonstrated significant risk reduction for a spectrum of issues in people that are more involved in consuming, that their diets are more in line with the how we would describe the Mediterranean diet.

Again, the olive oil being very high in polyphenols, which we know exert various positive effects on physiology and metabolism and brain energetics, for that matter.

And also, what do polyphenols do? They they enhance the functionality of the gut bacteria. So, you know, the main things are, again, keeping an eye on blood sugar, making sure there's plenty of fiber.

And for the most part, we want to make sure that this has got a lot of vegetables, a lot of plants. I am not a vegetarian, but most of my diet is plant based, so I do have good sources of animal protein, be it salmon, a grass fed beef.

Not everybody chooses to do that. That's great. And what are my metrics? You know, other things I look at in terms of my laboratory studies, in terms of what I recommend that would be, I think, another discussion.

But that said, if we could get one point across, that would be make sure your blood sugar is under control. Right. And you like the numbers, by the way, not 5.785.7 is considered.

You like it really below 5.5 and the lower the better, right? I think 5.25.3 on an A-1 C, I think is what you're referring

to is where you want to be.

And, you know, the you're fasting blood sugar could be in the upper 80s. That would be terrific. You know, if you go to the doctor and you come in with a fasting blood sugar of 105, you you're already on your way.

I mean, you've you've got to do some work. The other blood test that people should get when they get their annual, and I don't think it should be annual, should be much more frequently than that.

It should get is at fasting insulin level. And let me just explain why. So you your blood sugar looks pretty good. It's 100 105. But does is it 100 because your pancreas is working as hard as it possibly can to keep it there?

Or are you in good shape in terms of what we call insulin functionality not trending towards insulin resistance? The only way you're going to know that is to look at your blood sugar.

You like where it is, but where is your insulin level at your insulin levels low. That means everything is great. But if your insulin if your pancreas is working overtime to keep that blood sugar down at 100 or 105, you'd really want to know that.

Because if the if the insulin level is high, you are set up now for developing diabetes. So that's a very, very valuable piece of information to have.

And frankly, if you're getting blood work done is simply asking the doctor ahead of time. Oh, by the way, with my next round of bloodwork, I'd like to know my insulin level.

And she or he may say, well, why you're not diabetic, and you're going to say, exactly. That's not what I want to be. Right? David, can we turn a little bit to the microbiome?

We talked a little bit earlier about it. You're editor of a book on the subject is a lot obviously, the last couple of years talking about Prevotella species and Clostridium and Ackerman sia how beneficial can you talk a little bit about the role of the the gut brain axis?

I know this has been a really big interest and it's now showing up with Parkinson's, Alzheimer's, autoimmune diseases. Ms.. Talk a little bit about, you know, the microbiome, the importance and how to support it properly for people who are listening.

It's a big conversation. And, you know, it really is something that we need to get our arms around. The notion that these billions of organisms living within us are directly, moment to moment in, in charge of, and controlling things like our DNA expression.

Can you imagine that the bacteria living in you and on you are involved in the regulation of the expression of your life code? That's pretty heady. It takes a little while to take that deep breath and step back from that.

But as relates to your question relating to the brain gene expression is regulated. Mitochondrial function. The brain is regulated by the gut bacteria and the signals that they send, either directly through chemical messengers, through the vagus nerve, a direct channel, or through the bloodstream via, the products that they produce, various vitamins are produced, various neurotransmitters that everybody's all excited about, produced by the gut bacteria and even various transmitters slash fuels the short chain fatty acids that are produced by gut bacteria also play a very important role in regulating how brain cells work.

Had they communicate with each other, their health, their maintenance, and their ability to resist damage when confronted by trauma. So it's a very, very big story.

I'll break it down momentarily. Back to our discussion of metabolism and the blood glucose regulation and cuts back to our conversation about antibiotics, possibly predisposing some of your patients, making them more likely to have metabolic issues like overweight, obesity and prediabetes or full on diabetes that our gut bacteria play a huge

role in regulating our metabolism, regulating how we are able to control our blood sugar, how we are able to power our brains.

Microbiome, Oral Health, and Nitric Oxide

For example, the energetics of the brain are dependent upon the gut organisms, but the new and exciting information reveals that the energetics of the brain are significantly influenced by the state of health and functionality of bacteria living in the mouth.

Who knew the oral microbiome is now getting a lot of attention? And let me spend a moment with this, because I think it's really kind of interesting. On the top of our tongues live a suite of organisms names like Aker actin, omics and the Neisseria Group live on the top of the tongue, and they do something actually very vital for us.

They convert nitrates in our foods, foods that are rich in nitrates, like dark green leafy vegetables, beets, for example, rich in nitrates into nitrite.

So we go from n0 three to an or two. Nitrite then becomes available in your body to make something called nitric oxide. And I'm not saying nitrous oxide.

That's the laughing gas you get at the dentist if you're lucky. But it's nitric oxide. We call it a gas. So transmitter nitric oxide was the subject of the research that actually won the Nobel Prize in 1988.

It was identified as a factor that is involved in the dilatation, or the opening up of blood vessels to allow blood flow to various areas of the body, like the brain.

But since that time, since 1988, we've learned that nitric oxide is also fundamentally important for how insulin does its job in the human body. Therefore, nitric oxide is very much involved in regulating our blood sugar and the ability of the brain to use blood sugar glucose as a fuel.

Nitric oxide connected to the mouth. Bacteria. 50% of the nitric oxide in your body depends upon this relationship of these mouth related bacteria, in their conversion of the nitrate in our foods into nitrite.

Then, to make this nitric oxide, who knew? And let me provide an example. I think that'll bring this home. We're told that we have to kill 99.9% of the germs in our mouth.

Otherwise we'll have bad breath. Right? There's commercial. Tell us. Turns out that mouthwash, that, common mouthwash containing chlorhexidine, which does indeed kill a lot of bacteria in the mouth, you would think would not be a good thing, because you're going to kill off these really important bacteria living on the top of the tongue.

Well, it turns out research published about three years ago showed that people using mouthwash two or more times daily followed over. I think it was a three year period of time, had about a 47% increased risk of becoming diabetic, and a 100% increased risk of developing high blood pressure.

Why would that be? Because of the nitric oxide connection. So, you know, our understanding of the gut related organisms, I think has exploded, that's for sure.

And it's great. And so much work is being done. Now. There's a lot of research on the oral microbiome. Not to be left out because it's really fundamentally important.

And so, David, so the things that you use to help the regular microbiome of the gut, proper fire is fruits and vegetables, right. Getting all these in their short chain fatty acids, of course.

So these are the same things that if you're a for example, if someone's taking probiotics or they're eating a good Mediterranean paleo style diet, this is affecting the oral microbiome in a positive way.

That's right. And first you want to offload things that threaten the oral microbiome. And second, not to say you don't need good dental, a good dental health.

Of course you do. We can talk about that in just a moment. But second, you really want to focus on foods like our found in the Mediterranean diet for that matter.

Another reason why it seemed to be so effective. Foods that are rich in nitrates. And again, these are by and large colorful vegetables. Things like beets.

You know, you see a lot of products advertised now that are derived from beets to help, blood pressure and to help athletic performance. Matter of fact, there's some science there, that's for sure.

And you know, nitric oxide, when it becomes downregulated, we don't have enough nitric oxide. Then it threatens our metabolism. It threatens our blood sugar and our blood pressure and our blood flow to organs throughout the body.

Interesting study came out a couple of years ago that analyzed medical records of some 7 million individuals in terms of what drugs they were taking, what pharmaceuticals they were taking, and follow these individuals to determine who became demented and tried to correlate that with any type of medication they were taking.

And they found 60 candidate medications, but they ultimately discovered that one seemed to be really strongly related to a reduced risk of Alzheimer's.

A 69% reduced risk for a disease for which there is no pharmaceutical treatment, Alzheimer's disease. And this was a drug that actually increases nitric oxide.

It goes by the name of sildenafil, which many people have not heard of, but they may have heard of the trade name, which is Viagra. How does Viagra work?

Viagra increases nitric oxide so that it can increase blood supply. That's helpful then if you have erectile dysfunction, turns out that in this massive study, men predominantly.

But some women took it as well who were taking sildenafil, Viagra or other. The trade names had a remarkable reduction in Alzheimer's because they were actually increasing their nitric oxide availability.

That does two things in the brain. It increases blood flow and it increases metabolism by allowing insulin to do its job. What Doctor Perlmutter is not saying is that we should all go out and get some Viagra and take it every day, because it's good for the brain, it's good for metabolism.

But what I am suggesting is that we need to get our arms around this mechanism of nitric oxide, embrace the fact that it's regulating our metabolism. Yes, it won the Nobel Prize, this research.

So it's important. And think about all those things that are involved in nitric oxide for the better or for the worse. We talked about how to, you know, salvage our mouth bacteria, how to nurture them in terms of nitrate rich foods, but also recognize for example, the elevation of a chemical in the body called uric acid screws up nitric oxide production and threatens our metabolism.

So, you know, one of the major things that will raise uric acid. And let me just say parenthetically that, you know, until this understanding of uric acid threatening our metabolism came to light, most of us only thought about uric acid in terms of gout.

You have a high uric acid. Crystals accumulate in your toe. It hurts like the Dickens, and you take a medicine to lower the uric acid and to treat the gout.

Take colchicine and allopurinol, whatever the drugs may be. Now we know that uric acid is a much bigger player,

that uric acid that most people have checked and their annual bloodwork is a huge influence on inflammation.

So I'm putting uric acid up there in terms of measuring your body weight, measuring your blood pressure, measuring your blood sugar. Measure your uric acid every year.

Right. So the reason, by the way, getting back to Sydenham, Phil, I mean, in the medical literature, that's why they tell cardiac patients, by the way, do not take nitrates.

Right. For your angina if you're taking these type of drugs because it's increasing nitric oxide, it's going to lower your blood pressure too much. Right. Exactly. Right.

And is exactly why you don't take nitrate. Don't take sildenafil if you're taking nitrates. So a lot of work is being done. We actually have a study coming out that deals with enhancing nitric oxide availability in the brains of established Alzheimer's patients.

So it is really for the first time, I think, targeting the Alzheimer's brand in terms of its metabolism, as opposed to simply saying Alzheimer's is a consequence of the brain's accumulation of this aberrant protein called beta amyloid.

We can get rid of the bad amyloid presto change so the Alzheimer's will be cured. That hasn't happened. And it's a little bit of a bit of a loaded question, but some of the newer drugs that are trying to take out amyloid right now, does it make any sense to you?

I've looked at the drugs, have looked at what they're doing, the 15 to 20% brain bleeds. I mean, I understand that for some people who are advanced, there may not be a lot of other choices, but I'm a little concerned that they're going after pulling it out without looking at the reason why the amyloid production itself is taking place.

Because when you're looking at the literature, I mean, there's everything that I did a research, by the way, I for the new book that I'm writing right now, I did a research, a paper on Alzheimer's and looked at the 16 point M6 model to see how many of the 16.6 factors associated with dementia.

It turned out every one of them has been published in the literature from herpes virus. You know, seven and eight to Lyme disease and Bartonella to pesticides to parasites, to Candida.

That's that's now showing up as I mean, it's a whole host mitochondrial function, Potts disorder, Nami, a double bed. It just seems like it's a little bit backwards to try pulling it out without getting to the biochemical reasons why we're getting this amyloid production in the first place.

That's right. And these are the your work. We recognize that amyloid is an anti-microbial peptide, that it is secreted in response to the very infections that you described.

And that when we see Co localization of anti herpes simplex virus type one antibodies with beta amyloid, we begin to understand that something's going on that's bringing these things together.

And that was called to our attention probably 17 or 18 years ago by Doctor Ruth at Saki in England who demonstrated this. So, what you say is very true.

And, you know, the these anti amyloid drugs have failed, let's call it like it is that, when you look at the curves, these are 18 month studies done with, you know, 1800 people, 2000 people looking at, a do we rid the brain of amyloid and B, what's happening to their cognitive function?

And what you see is that, at least with respect to the most recent publication in November in the New England Journal of Medicine, that these drugs, in terms of comparison to placebo, the amyloid load in the brain, is dramatically lower in the treated group in comparison to the placebo group.

But there was no significant change in the level of cognitive decline in comparison, an intervention group with the

placebo group. But you brought up something, I think very important, and that is when you mentioned brain bleeding.

Amyloid, Alzheimeru2019s, and Mitochondrial Function

These are called areas, amyloid related imaging abnormalities that are seen in 20 to 25% of the treated group versus placebo. And these are micro hemorrhages, small hemorrhages, areas of a DMO or swelling.

And the other thing that hasn't been talked about is that in the Lacombe studies, there have been there's evidence of significant loss of brain tissue or atrophy demonstrated on the very scans that were used in the study, but that information was not reported.

So I think we've got to be and we really need to look at these drugs. It's it's a worrisome that they're targeting beta amyloid. There are plenty of patients developing full blown Alzheimer's who don't have abnormal levels of Alzheimer's in their brains.

And similarly, there are individuals whose brain scans for using Pittsburgh compound, are loaded with amyloid and are cognitively intact. What does it tell you?

It tells you that there's a bigger story going on here. And when, you know, the journal of the American Medical Association tells us that in Alzheimer's disease, glucose metabolism now moves to center stage, published in the American Medical Association back in, 2020, that we're really starting to focus on the bio energetic aspects of Alzheimer's, that Alzheimer's represents failure of brain metabolism, ultimately, a mitochondrial dysfunction.

And we know that's the case with various infectious agents in the brain as well, that Lyme induces a mitochondrial dysfunction, and that what we really need to do across the board is target mitochondrial dysfunction.

And that'll give us powerful downstream effects in terms of immune balance, immune regulations, reduction in inflammation, and, you know, better glucose utilization, right.

Have you seen any results yet? I mean, obviously we do a mitochondrial regeneration for our Lyme patients after we do antibiotics because of the free radical oxidative stress.

Some of the newer ones, like your elephant in a that's been coming out. But can can you speak a little bit about methylene blue has been talked about in low dose.

I use it for daptone, but it's also been talked about a mitochondrial regenerator. Do you think there's hope with some of these. Mitochondrial. There is, yes.

In fact there was a recent review article that was published about, I would say now a month ago that looked at this notion of what we call my autophagy, the ability that we have to clean out defective mitochondria.

And what happens when you induce might have is you also induce mitochondrial biogenesis or the increased production of healthy mitochondria. And your olefin A was on that list.

So your olefin is a way of targets. Actually this whole notion of mitochondrial functionality. Prior to that, plenty of literature came out demonstrating increased muscular functionality in elderly individuals.

Taking your olefin A and now the mechanisms whereby it works have been more delineated. You're olefin A is actually a post biotic, meaning that it is a product of gut bacteria such that when we consume ellagic acid, for example, that's high in certain foods like pomegranate, then our gut bacteria, certain gut bacteria that not everybody has converts that into your life.

And a the good news is you can just take your health in a now there's a product on the market that you can simply take. I take it myself that then helps you with this process.

What else can you do then to target mitochondria exercise? I think probably one of the most powerful things you can do to enhance this process of my AG and increase the growth and of new mitochondria is via, exercise and caloric restriction, ketogenic diet.

I certainly add it to the list. I think that to some degree, metformin as a medication, may act that way. Resveratrol perhaps. And, and I think that, quercetin, would certainly be something you'd want to add to the list.

So there there are things out there that people can be doing right now to enhance, the, the, the digestion, if you will, of defective mitochondria, that, you know, and it does bring to mind the notion that certain antibacterial antibiotics, as a matter of fact, threaten mitochondria.

Why might that be? Well, I think it gets back to the notion that mitochondria are, in fact, quite similar to bacteria with their circular DNA. That's quite apart from nuclear DNA and, you know, the thought being that, you know, mitochondria were at a long time ago were free living bacteria that ultimately took residence within other bacteria.

Hence we have these intracellular organelles now, but it turns out that certain antibiotics seem to threaten the mitochondria. And, you know, it's certainly something to think about if an individual does require antibiotics.

I mean, in fact, you probably know this, but almost every drug on the market, if you look at whatever's patients have been taking, they've all been linked with mitochondrial dysfunction.

It's not even just antibiotics. It's most of the things that people take at this point of have been associated with it. Yeah. But you know, mitochondrial threatening mitochondrial function is not necessarily a bad thing.

You know, metformin, for example, threatens complex one of my of electron chain transfer. And, you know, ultimately there's a good side to that and that it induces some things that are actually good for us, like mitochondrial biogenesis.

And and so there are some upsides to, in a way, compromising mitochondrial function. Doctor Steven Gundry has recently told us that the action of polyphenols isn't necessarily that they in are in and of themselves anti oxidant, but that they actually induce oxidative stress that damages mitochondria.

That then leads to mitochondrial biogenesis. So, you know, this notion of DNA take a lot of polyphenols. It's good because they're antioxidant. Maybe not.

So he brings up a very interesting discussion on that. By the way, do you like alpha lipoic acid? You were mentioning before resveratrol and and other things.

I believe that also has an effect. Of course, exercise is the best that there is with mitochondrial regeneration because we use it, of course, to regenerate intracellular glutathione on help stop oxidative stress.

And when both the fat and water soluble areas of the body, it pulls out heavy metals, it's protects the liver. Do you like it from mitochondrial regeneration?

Also, I like it for all the things you mentioned. I think most importantly because it is water and fat soluble means it works intracellular and it works exclusively as well.

I'm not going to to avoid talking about the idea that it is a heavy metal key later to some degree, but I think you're mentioning that it helps to regenerate glutathione.

That's a home run. So for anyone in Europe we're talking about sciatic acid. In America, alpha lipoic acid. We've been recommending that for, you know, a couple of decades.

Right. They had a can we turn a bit towards your New York Times bestseller, brainwashed? I just read this past week that one woman gave up her regular phone for a flip phone because she couldn't take the digital media

anymore.

She felt it was destroying herself. So you took just a little bit about the fact, like how in fact the digital media is affecting our brain these days.

Not to mention, of course, blue light from computers and keeping people up with melatonin. But you talk a little bit about how you detox people from this, what it's doing to people's brains.

You know, it's funny, I'm in a couple days going to Chile and going to do exactly that, taking a holiday from all of this stuff that we do. You know, the book was about the wiring of our brains and how we can change that wiring of the brain for the better and specifically dealt with who's in charge?

Is the adult in the room, or is is the brain functioning from the adolescent stage of simply doing what it wants to do? Right now, living in a world of lacking empathy and a world of fear?

And really, there are two parts of the brain that kind of observe those two approaches to life. The more advanced prefrontal cortex behind your forehead, that is, the adult in the room that allows you to make measured, contemplative decisions, have empathy, think about future consequences of today's actions and choices versus the more primitive part of the brain.

We call it the amygdala because it's almond shaped. That really doesn't think about consequences, that doesn't think about other people. It doesn't think about how my actions might affect those around me, my future self, or even the planet.

And we develop in our teenage years, a connection between the two that allows the adult to begin to exercise control over that more primitive part of the brain.

So we make better decisions. You know, we tend to think that as we reach our teenage years and into our 20s, that we make better decisions. It's why, you know, you don't drive a car till you're whatever age you don't vote, you don't join the military, you don't run for public office, or you can't be president until you're a certain age.

But as it turns out, there are things in our lives over which we have control that can further threaten to lock us in to the amygdala, to lock us into that adolescent brain and lock us into impulsivity, narcissism and lack of empathy.

And they include the types of food that we eat. Pro-inflammatory foods will will tend to sever that connection. The top down control from the adult in the room, take the adult out of the room and and the constant barrage of social media absolutely does it as well because of the stress that it induces in us, likely from, you know, the the constant sense that we don't measure up of comparison of ourselves to others, of threatening news, which is pervasive on social media.

And it's why people who do what that woman did that you just described, notice improvements very quickly.

Brainwashed, Stress, Sleep, and Digital Detox

We described in our book the notion in Japanese called showing Riku where people do what's called forest bathing without a cell phone. Believe it or not, how are you going to find your way around?

But an intervention where you reconnect with nature and get off social media for an hour or two a day, and we see brain scans looking at the connection to this amygdala, that the connection to increase in the amygdala is showing less activity.

Blood cortisol and salivary cortisol levels are diminished the stress hormone by simply putting the phone down and reconnecting with nature, by simply putting pictures of nature in your home or having a house plant.

These are powerful tools that we can use to really help allow us to improve our decision making and regain the

ability to understand that my neighbor is important as well, and her and his health and experience of life is important to them.

And it's important to me. You know, it's it's funny you mention that about the empathy, because when I was getting out of medical school and I was finishing my seventh year in Belgium, I went to my Tibetan teacher Lam again in Red Porsche, and I asked him and I said, Lama, what's the most important thing you want me to know when I get out of medical school?

And he said, Richard, it's compassion. Put yourself in people's shoes. Do for them what you would want done for yourself. And he said, everything will go well.

And it's interesting. When I walked into the Lyme epidemic up in Dutchess County, when I moved from New York City, I found myself in that situation like nobody knew what to do at that point.

This was like 35 years ago. I put myself in people's shoes and now I look back, you know what's going on 35, 40 years. And it's like that advice of having empathy and of course, meditating.

You know, I was taught meditation from these teachers as well as the TM programs early on. Do you feel I mean, I think the forest bathing and disconnecting from social media is really important with the warriors and everything that's going on, to make sure crazy you see a role for people to meditate at least 15 minutes a day.

Rolf, maybe from some of the newer neurofeedback techniques that are coming out like Gupta has an amygdala, amygdala, insular retraining program, and Hopper has a dynamic neural retraining.

Do you see some roles also to help with some of these? The techniques I do I mean, I think there are there are great techniques that we can utilize, meditation certainly being one.

But, you know, we have assisted meditation these days in ways of really hacking our way into these pathways and reducing stress and allowing those connections to improve.

There's a device called Apollo Apollo Neuro that, uses vibration to make that happen. But, you know, the big players and that it's exciting that these are developed.

But the big players are diet, getting enough sleep. And I think we exposing ourselves to nature. But let's you know, diet for one is hugely important.

Any diet that increases inflammation meaning you know, the global diet now, with the high levels of ultra processed foods, increasing inflammation via the changes in the gut bacteria that we talked about, this inflammation reduces our ability to rein in the amygdala.

It makes people more impulsive, makes them think about us versus them mentality day in and day out. We want more for ourselves at the expense of others.

And we wonder why things are going so crazy around the world. And it's one thing to understand is that diet affects how the brain works in this regard.

We used to call the standard American diet the Sad. Then it became the Western diet. Now it's pretty much the global diet. We talk about the Mediterranean diet, for example, as mentioned.

But if you go to the Mediterranean, that's not what people are eating there anymore. It's highly processed food. So it's huge. And you know, the other aspect is sleep after one night of bad sleep.

And when you examine the brains of individuals using what's called functional MRI, the amygdala is about 40% more active. It's why when you haven't slept well the night before, think back to residency that you don't make such great decisions the next day in terms of, for example, what you eat and we all grab for bad foods if we've been up

all night.

You remember that from residency. You know, my what I would do is I'd go down to the pediatrics floor and eat the, beach nut banana baby food. It was so good.

Why was it so good? Because it had so much sugar in it. I didn't know then what I know now about sugar, but it's why we reach for crappy food when we haven't slept well.

And what does that do? Ultimately, you eat that crappy food, you gain weight and that compromise your ability to sleep well. So sleep critically important.

Insulin sensitivity the next day is dramatically reduced. Lack of restorative sleep may be one of the biggest contributors to obesity and diabetes. So how do you know.

And that's again where various devices can be helpful, like wearing an aura ring or a newer Apple Watch to determine not just how long you sleep. What is the quantity of sleep, but what is the quality of your sleep?

How much REM sleep did you get? How long did it take you to fall asleep? How long did you sleep and how much deep sleep did you get? For example, these are parameters that appear on your smartphone when you wake up in the morning and you can say to yourself, well, gee, I did great last night, great, or I didn't do so well.

Maybe it was because of the three glasses of red wine that we had, while we were watching a movie till 10:00. And there's lots of changes that you can make.

Ultimately, these same influences affect immune function. And so this notion of inflammation, immunity, mitochondrial function, brain function, they all unite in terms of ultimately what we're able to do via making better lifestyle choices.

And these things are not, they're not patented. There's there's no one way to get them right, but it's things that we can be doing every single day to live a longer and happier life.

Now, David, this was great. In fact, we're coming to the end of our interview. I have to tell you, I've heard your speak many times. You're one of the finest neurology speakers in functional medicine I've ever heard.

And the thing that you really said today that makes me think about, like, even how I have to change it. I am exercising on my treadmill at 12% 20 minutes every day.

I'm getting enough sleep, I'm doing my diet. But I must admit, I have the knocking gene from from my Jewish lineage. And even though I do eat a good diet, you know everything you talked about today about especially diet and sugar and being very careful with gluten, you know, it feels like even though I've tried and I do generally follow Mediterranean paleo, it feels like I myself maybe want to try one month off gluten.

Really cutting back on sugar, seeing how I feel, and integrating it because of what you just described about inflammation, nitric oxide, mitochondrial function.

I think it's a very convincing argument. And even for someone like me, it feels like, wow, that's great information. I think, you know, the patients listening who want to maximize their brain health.

Closing Thoughts and Resources

This is something I think you should really listen to Doctor Perlmutter and and take his advice here. So any any last parting words, David, before we would leverage technology, get a continuous glucose monitor and see what you're doing with your diet levels.

Health is a great place to start. Levels health.com. And as you mentioned this noshing gene. Every person who's

whose birthday was born on a day that ends in Y day of the week that ends in a Y, has the noshing gene, meaning we all like sweet.

It's built into us as a survival mechanism. Sweet tells us that food is generally safe, at least is not poisonous, and it helps us make body fat so we could survive as primates.

So it's ubiquitous. We all have a sweet tooth. So this is information for everyone. Yes, David, I can't thank you enough. This was really, really an enlightening conversation.

And and for those again interested in listening to Doctor David Perlmutter, board certified neurologist, one of the leaders in functional urology in the world, gave it again, I want to thank you so much for taking the time today.

And please let people know again, how can they get in touch with you if they want to connect with you and all these great New York Times bestsellers that you've written?

Best place to be my website, which is Doctor perlmutter.com. No, period. Dr. perlmutter.com. My podcast is called The Empowering Neurologist. Great, David. Thank you again.

This was a fabulous talk. We've been talking about improving brain health and maximizing it in Lyme and generally chronic diseases. You've been with Doctor David Perlmutter and myself, doctor Richard Horowitz, co-host of this doctor Talk healing from Lyme Summit. Thank you for joining us.

We hope to join you on another episode soon and take care.