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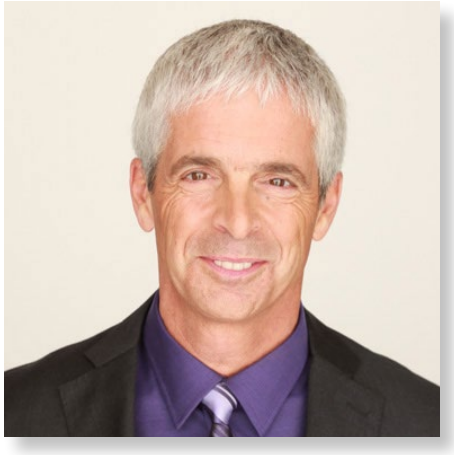

Tackling Autoimmune Diseases

Carrie Diulus, MD and Mark Hyman, MD with Tom O'Bryan DC, CCN, DACBN

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Dr. Diulus: Hi, everyone, welcome to The Fat Summit 2. I'm excited to introduce Dr. Tom O'Bryan. Dr. O'Bryan is a Functional Medicine doctor and an internationally recognized speaker and workshop leader, specializing in the complications of non-celiac gluten sensitivity and celiac disease and how they occur both inside and outside the intestines.

He's the founder of the Dr.com. He recently hosted the paradigm shift, The Gluten Summit - A Grain of Truth, bringing together 29 of the world's experts on celiac disease and non-celiac gluten sensitivity.

So, welcome, Dr. O'Bryan.

Dr. O'Bryan: Thank you very much. It's an honor to be with you today. Thank you.

Dr. Diulus: It's a pleasure to have you. So for those out there who haven't seen your work, tell us a little bit about your story and how you got here as opposed to the traditional medical practice.

Dr. O'Bryan: Well, when I was still in my internship, my ex and I could not get pregnant. And so I called the seven most famous holistic doctors I've ever heard of. This was in 1979. And I'd asked them all what you do you do for infertility. And they all told me their thoughts and they'd say things like "You know what a category one is?" And I'd say, "No." And they'd say, "Learn."

So I wrote down category one. And I put a protocol together and we were pregnant in six weeks. And my neighbors in married housing, we lived on campus at the time, they've gone through artificial insemination and nothing had worked for them at all. And they asked if I'd work with them. And my response was, "Well, I don't think that it's going to harm you in any way. And sure why not?" And they were pregnant in three months.

Dr. Diulus: Wow.

Dr. O'Bryan: So before I got into practice, I was hot to trot and get out in the world and help every couple get pregnant that wanted to get pregnant.

Dr. Diulus: It's a little bit concerning though if you have a group of women who say that you got them pregnant, right?

Dr. O'Bryan: Well, it's actually quite flattering. I'd get these cards every year at Christmas of these babies at 2 years old and 3 years old and 4 years old, and it's really quite nice. So from that experience, I learned—and we've helped hundreds of people since then with infertility or recurrent miscarriages or hormone irregularities. And there's little in medicine that's all or every. But this turned out to be an every.

Dr. Diulus: Okay.

Dr. O'Bryan: Every couple that had some problem in that arena, every single one of them had problems with foods that they were eating that they didn't know were a problem for them.

Dr. Diulus: Okay.

Dr. O'Bryan: And when you have a food sensitivity in general and you eat the food, it triggers inflammation. And as we know, inflammation is fire. At the cellular level, it's always fire. And so one of the rules of thumb became in my practice, stop throwing gasoline on the fire. And so you have to learn what is inflammatory to my body. What does my body say it's not good for? Whether I feel good when I eat it or not, if internally it's triggering inflammation...The people that are blessed are the ones that get stomach pains or abdominal problems when they eat certain foods because it's obvious. It's a no-brainer.

Dr. Diulus: Right.

Dr. O'Bryan: But if you get a migraine, you don't know that it may be from the food you ate last night that's triggering the migraine eight hours later or 12 hours later.

Dr. Diulus: Yup.

Dr. O'Bryan: If you have infertility or if you have recurrent miscarriages, you don't know that it's the food, it's the toast you had for breakfast and the sandwich for lunch and the

pasta for dinner that accumulatively has put more gasoline on the fire and causing this huge inflammatory cascade. You don't know.

So the ones that get sick when they eat a food are actually blessed. Because there's no arguing with that. It's the ones that don't feel sick when they eat the food that you have to educate them and do the test, the proper test. And then identify, "Look, here is the evidence. This is the problem. So let's just give this a trial period and see what happens."

And the results have turned out time and time and time again to be almost miraculous in terms of—I'm on stage a lot now and I teach a lot. And in this last year, I've been using a particular case study that was published in early 2015 of a 3-1/2-year-old who was diagnosed with celiac disease.

And when she was diagnosed with celiac disease, they did an endoscopy, which is sending a tube down the mouth, down the throat, past the stomach, into the small intestines. And they look at the intestines and they snip a little piece. And they will take it out and look at it under a microscope. And they said, "You daughter's got celiac disease." "Well, your daughter also seems to have something wrong with her eye. You need to take her to an ophthalmologist right away."

So the gastroenterologist made an appointment for them with an ophthalmologist one week later. And so they went in one week later to see the ophthalmologist. And you see the picture in the journal article where they had the child look down. So the pupil of the eyes, the black part of the eye is looking down. And they lift up the eyelid. And there's this big, ugly, mucusy looking tumor on the eye.

And the differential diagnosis, there are a whole bunch of things they thought it might be. But what they said is, "This looks like to us is Kaposi's sarcoma, which is a cancer from HIV, being positive for HIV, because the mother had a history of HIV. So they jumped to that conclusion. But when they checked the little girl's blood, she was negative for HIV. So they said, "Well, what is this?

We don't know. So we have to do a biopsy. We're going to cut out a piece of your daughter's eye and take a look at this tumor. To do that, we have to put her under general anesthetic."

And the parents said, "No, no, no, no, our child was put under general anesthetic last week for the celiac diagnosis and she had a reaction to the medication. We want to give her another week or so to recover before we do this. So we'll come back in a week and then we'll do this again."

And so they came back a week later to have the general anesthetic and have the biopsy to see what this tumor was in the eye. And the ophthalmologist when they looked in the eye, "Well, wait a minute here," and he pulled out the records of the week before and looked at the picture they had taken and this little girl's tumor was smaller.

He said, "Well, what's this?" And the only thing that was different is that when the child was diagnosed with celiac disease, the parents immediately put her on a gluten-free diet. Nothing else changed. So the ophthalmologist decided, "Let's wait a little bit and see what happens here."

So the next picture is two months later and the tumor's completely gone, completely gone. And they wrote in this article in the medical journal on ophthalmology, they wrote that "We don't understand what happened here but it looks like this autoimmune mechanism, causing a tumor in the eye, was caused by a sensitivity to wheat, and produced celiac disease."

Dr. Diulus: Interesting.

Dr. O'Bryan: And we see that in the literature again and again and again. The most unusual things that you think may not be caused by food sensitivity, specifically wheat, that's why I studied them all, is you can reverse. And there are studies reversing ALS, which is a life-threatening diagnosis, Lou-Gehrig's disease, with the gluten-free diet. And all the lesions in the brain that show on the MRI, they're gone. They're gone in a year and a half to two years. The lesions are gone on a gluten-free diet.

Now, that obviously is not in every ALS patient but the neurologists who write these articles, and I have five articles on ALS, they say, "You have to check every ALS patient because if it's something so simple as a sensitivity to wheat, get the wheat out of there." And it's kind of rare for all of the patients to get ALS, but it happens. So you just want to check.
And the ophthalmologist with the 3-1/2-year-old said, "Every time you have a tumor in the eye, you just want to check because it's so simple and non- threatening a protocol." And that's the way it is with this gluten sensitivity, with or without celiac disease, is when you have a condition that is just not responding the way it should to the normal protocols that you think should fix that problem, whatever it is, you just check.

Dr. Diulus: Check.

Dr. O'Bryan: And see, is there a problem? I'll give you one more example and then we'll move on. In the *Journal of Gastroenterology*, they published a paper on children with

drug-resistant epilepsy.

Dr. Diulus: Okay.

Dr. O'Bryan: Now, if you're a parent and your child's having seizures and you've been to two or three neurologists and they've all tried two or three different drugs that not working, that child is diagnosed with drug-resistant epilepsy. It's terrible to see your child go through something like that and it's very scary. They published a paper that said 50% of children with drug-resistant epilepsy go into complete remission on a gluten-free diet, 50%.

Dr. Diulus: Wow.

Dr. O'Bryan: Now, why don't our neurologists know that? Because the article was written in a gastroenterology journal and neurologists don't read gastroenterology journals. They read neurology journals.

Dr. Diulus: And so it wasn't a ketogenic diet. It was gluten free.

Dr. O'Bryan: Just a gluten-free diet.

Dr. Diulus: Fascinating.

Dr. O'Bryan: Now, we know that a ketogenic diet, in many cases, is helpful with seizures.

Dr. Diulus: Right, right.

Dr. O'Bryan: But when your protocols don't work, when they should work and they don't work, just consider maybe it's something so simple as a sensitivity to a food. Because I've got case after case of reversing cancers, reversing tumors, reversing life-threatening diagnoses of diseases in the brain, reversing Alzheimer's, reversing Parkinson's, reversing rheumatoid arthritis, MS, lupus. So many different diseases may be arrested by putting people one a gluten-free diet, maybe, it'd be very silly to say everyone has a sensitivity to gluten. But it's rational to say anyone may have a sensitivity to gluten.

Dr. Diulus: Right. So this is a really sort of personal topic for me, as we talked about a little bit before. I was diagnosed 20-plus years ago and I was about 100 pounds heavier than I am right now when I was diagnosed.

Dr. O'Bryan: Congratulations.

Dr. Diulus: Yeah, thank you. And they said, "First of all, this doesn't make sense because you're supposed to be thin. And it also doesn't make sense because you really say you don't have any symptoms." It was kind of random I got a biopsy and that was... and then I did the elimination diet and then they get fixed. So there weren't even the antibodies testing back then.

So there's a couple points that you brought up in there about looking for these things even when it's not the most obvious cause. But also let's talk about, for the audience, what is the difference between celiac disease and gluten sensitivity and the distinctions between the two?

Dr. O'Bryan: Sure. You bet. If you pull at a chain, the chain always breaks at the weakest link. It could be at one end, at the middle, the other end. It could be your heart, your brain, your liver, your kidneys. But when you pull on the chain, that's where the chain's going to break. Right? So the pull on the chain is inflammation. So anything that triggers inflammation is pulling on your chain. And if you have a weak link, that's where you're going to eventually get symptoms.

So what happens with celiac disease if you have a particular gene—so genes don't determine that you get a disease, for the most part. Genes determine that you are vulnerable to getting a disease. It's a weak link in your chain.

Dr. Diulus: Right.

Dr. O'Bryan: So what you have to do is avoid pulling on that chain or that link. And that's called epigenetics, what happens around the genes, right? So if you have the genes or celiac disease, we now know that if you have the gene, you got the problem.

And whether or not it manifests as full-fledged celiac disease, you have the sensitivity to not breaking down wheat completely and it manifests in your gut. The symptoms will manifest eventually in your gut by wearing down of the shags, I call it shag carpeting.

Your intestines are a tube. The tube is 20 to 25 feet long, kind of winds around in there. The inside of the tube is lined with shag carpeting. They're called microvilli. But they're shags. This shag absorbs calcium. This shag absorbs vitamin C. This shag absorbs amino acids. All the shags absorb different nutrients. While celiac disease is when your shags wear down and then you've got Berber. And if you got Berber, you'll only absorb calcium. You get osteoporosis. It's not rocket science.

Dr. Diulus: Right.

Dr. O'Bryan: But it just makes perfect sense. That's why in the Annals of Internal Medicine in 2006, they said, every osteoporotic patient just needs to be checked for celiac disease, because it's so common the cause.

Dr. Diulus: And let me tell you, it doesn't happen because I treat osteoporosis every day. And they come to me with the diagnosis of osteoporosis and nobody's checked.

Dr. O'Bryan: Yeah exactly. They

don't check. Let's stay with that topic and then we'll get to the differentiation.

Dr. Diulus: Yup.

Dr. O'Bryan: The protocol for osteoporosis once it's diagnosed is to give bisphosphonates, that's a category of drugs.

Dr. Diulus: Right.

Dr. O'Bryan: And there's no argument, when you look at medical journal articles about bisphosphonates and you see the pre and the post-x-rays. The post-x-rays, there's more bone. There is no question. You look at the x-rays, there's more bone.

Dr. Diulus: Or at least it preserves bone.

Dr. O'Bryan: Many of the studies, there's more bone. In the study showed that women that take bisphosphonates, post-menopausal women that take bisphosphonates, and post-menopausal women with the same type of osteoporosis that do not take bisphosphonates have about the same level of fractures.

Dr. Diulus: Right.

Dr. O'Bryan: That the drug don't seem to make a difference. But wait a minute, "No, it's either you make more bone." And so what the drug companies emphasize to doctors—they show them the studies. They show them the pictures. It makes more bone. It makes more bone. The problem is the bone is balsa wood.

Dr. Diulus: Right.

Dr. O'Bryan: It's not oak. So the balsa wood breaks very easily. Why does it break? Because if you have inflammation in your gut and you're not absorbing your nutrients, you'll lay down more bone. It's the skeleton of the bone. So on an x-ray it looks really good. But it's not filled in with the bricks. You've got the girds of a building, the girders of a building, the frame of it. But you don't have the drywall and you don't have the bricks to make it nice and solid.

That's why women who take bisphosphonates have about the same number of fractures as the women that don't. So if you just want to check, and as you say, every day, you see these people in practice and their doctors haven't checked them.

Dr. Diulus: Right.

Dr. O'Bryan: You just want to check.

Dr. Diulus: Or an A1c, but that's a whole separate discussion.

Dr. O'Bryan: Right, right.

Dr. Diulus: Okay. The orthopods are running labs on you now.

Dr. O'Bryan: Right. So now, let's differentiate between celiac and non-celiac gluten sensitivity. And the big kahuna term is actually non-celiac wheat sensitivity. So if you have the gene and if you're exposed to the trigger, the gasoline on the fire, which is wheat, you develop your shags wearing down that's called celiac disease.

Dr. Diulus: Right.

Dr. O'Bryan: Those that don't have the gene, I'll correct that because 50% of non-celiac gluten sensitivity patients have the gene for celiac but they don't have celiac disease. So if it doesn't manifest as celiac disease, it may manifest anywhere else in your body. And so when the studies have been published to try to differentiate the two what they say is that celiac disease causes the gut problems, the wearing down of the gut. And non-celiac gluten sensitivity causes—and the term of the use is lack of well-being, meaning everywhere else in your body...

Dr. Diulus: Right. Okay.

Dr. O'Bryan: ...there's something that may go wrong. And in Italy, there are 34 centers designated by the government as a gluten-related disorder centers. And so if you have a concern about a sensitivity to wheat, you go to one of these centers, there's 28 of them that are gastroenterology centers, 4 that are pediatric, a couple that are allergy centers. You go there for your diagnosis because if you get a diagnosis that you've got a problem with wheat, celiac or not, then all the food you buy you get a tax credit with the government. But you have to be diagnosed in one of those 34 centers around the country of Italy.

So they did a study of people that came to them, 17,000 people. They did a study of them. And 93% of the people that came to those centers had non- celiac gluten sensitivity, 7% had celiac disease. And they looked at the symptoms that the people presented with. And what they found was that with NCGS (non-celiac gluten sensitivity), it was headaches, fatigue, joint pain, muscle aches, brain fog. The list went on and on and on of every other system of your body. But for celiac, it was gut problems.

So the difference between celiac and non-celiac gluten sensitivity, it's a 9 to 1 ratio, 9 more people will have a sensitivity to wheat than will have celiac disease. So out of 10 people that have the problem, 1 has celiac, 9 have non- celiac wheat sensitivity that's going to manifest somewhere else in the body.

Dr. Diulus: So what is it about the wheat that causes so many

problems for people?

Dr. O'Bryan: Good question. Hallan and Fasano at Harvard published a paper last year. They looked at four different groups: They looked at people recently diagnosed with celiac disease, so they were still eating wheat; people who were diagnosed with celiac disease like you and been on a wheat-free diet for at least a year to two years; people diagnosed with non-celiac gluten sensitivity at Harvard—so for all those that say there's no such thing, wake up, just wake up; and then those that didn't seem to have a problem with wheat.

They looked at all four groups then what did they find? They found that all four groups, when exposed to wheat, triggered the genes in the gut that cause intestinal permeability.

Dr. Diulus: Okay.

Dr. O'Bryan: All four groups get intestinal permeability within five minutes of exposure.

Dr. Diulus: Really?

Dr. O'Bryan: Within five minutes of the wheat getting down into the gut, you got permeability. Now, what that does mean? So here's our shags.

Dr. Diulus: Right.

Dr. O'Bryan: Going through the tube of the intestines. The shags are covered with a cheesecloth. So when you eat a filet mignon, really nice dinner, you have a filet. Most of us chew three or four times and we swallow. We should chew 30 times before we swallow to break it down and let saliva really coat it and start to break down the food. But we don't. We shovel more than we eat, right? So these clumps of filet, kind of ground down a little bit with three or four chews, get down there. The stomach acid starts to break them down, break down the fibers more. But they're still big fibers.

So they get into the small intestine and those fibers of meat can't get through the cheesecloth to get into the bloodstream. They're too big. That's why the pancreas puts enzymes into the intestines. And the gallbladder puts enzymes into the intestines. And the microbiota puts enzymes into the intestines to break down the food more.So that it keeps being broken down smaller and smaller and smaller as it's going down the tube. Until it gets so far down the tube, now it's small enough to fit through the cheesecloth. And it gets to the cheesecloth further down the tube.

And that's the way we absorb all of our food. Some foods get absorbed right in the front part, because they're already really small, like B-vitamins break off of food really quickly. And they are absorbed in the first part of the intestines as soon as it comes out of the stomach. That's why people that have celiac disease have B-vitamin deficiency so commonly is because they're not absorbing.

So what happens though when you eat wheat is, within five minutes of getting wheat, of eating wheat and it gets into your gut, you tear the cheesecloth. When you tear the cheesecloth, bigger molecules of food get in through the tears of the cheesecloth before there's enough time for it to get moved down further the intestines to get broken down the way it should be.

So when you get tears in the cheesecloth, they're called macromolecules. Big molecules get through into the bloodstream. So now you've got a big molecule of filet mignon getting into the bloodstream. Now, they're still really tiny to our naked eye but they're still macromolecules to the body, right?

They get into the bloodstream and your immune system says, "Whoa, what's this?" This is not something I can use to build new bone tissue or new muscle or new brain cells. I better fight this. This is an invader." And you make antibodies to beef; or you make antibodies to bananas, if the banana got through the tears in the cheesecloth; or tomatoes; or chicken; or whatever macromolecules get through, that's the person that does a 90-food allergy test. And they come back sensitive to 25 or 30 foods. And they say, "Oh my God, that's everything I eat."

Dr. Diulus: Or 43.

Dr. O'Bryan: Yeah, 43 foods. All right. And you say, "Oh my God, that's everything I eat." Well, of course, it is. Because your body is trying to protect you.

Dr. Diulus: Right.

Dr. O'Bryan: There's nothing wrong with your immune system. It's doing the job it's supposed to. Heal the intestines and then wait six months and, usually, you're fine with that food, usually. You are. You go back and you recheck and the 43 foods have now gone down to three. Avoid those three and you're healthy and vibrant and your symptoms are gone.

Dr. Diulus: Well, and this is one of the issues with the IgG testing for food sensitivities is exactly the dynamic process exactly what you're talking about.

Dr. O'Bryan: Yeah. Now, to continue the story.

Dr. Diulus: Right.

Dr. O'Bryan: So when you eat wheat, you tear the cheesecloth within five minutes, every human. Let me say that again, every human

tears the cheesecloth every time they eat wheat. Whether they feel fine or not, you tear the cheesecloth. We have a whole new body every seven years. Every cell in your body regenerates. Some cells are really quick, like the inside lining of your gut. The cheesecloth is every three to seven days. You have a whole new lining.

So you eat toast for breakfast, you tear the cheesecloth, it heals. You eat a sandwich for lunch, you tear the cheesecloth, it heals. You had pasta for dinner, you tear the cheesecloth, it heals. Croutons on your salad, tear the cheesecloth, it heals. Day after week after month after year after year until one day, you don't heal anymore. And when you don't heal anymore, now you have what is called pathogenic intestinal permeability. The slang term is the leaky gut.

Dr. Diulus: Right.

Dr. O'Bryan: And now these macromolecules get through every single day of anything that you eat or everything that you eat. It just depends, one or all. And the result is that you make antibodies to that food. And then there is another concept I'm going to introduce here because it's very relevant for people with food sensitivities and why gluten sensitivity affects so many different parts of the body. The concept is called molecular mimicry.

So when we make antibodies—when the immune system says, "Whoa, what's this? I better fight this." And let's say you make antibodies to wheat. When you make those antibodies to wheat, the most common portion of wheat that the body fights is called alpha-gliadin. It's 33 amino acids long. But I'm going to say AABCD. I am not going to say 33 letters, but just AABCD. So now you make antibodies looking for AABCD. The antibodies are going through your bloodstream. They're traveling everywhere. Now, the bloodstream is a highway. It's just a highway.

So when you do a blood draw, you're just looking to see what's on the highway. Like you could have enough thyroid hormone and when you do a blood test...but you have lots of thyroid symptoms because being on the highway doesn't mean it's getting into the cells and being used properly. It's just a highway.

So now you've got the antibodies to wheat on the highway looking for AABCD. And everything's bouncing around in there. There is no lanes of traffic. If you ever see a video of blood flowing, it's like boom, boom, boom. It's just constant bumper cars in there. So you've got the antibodies. And they fire chemical bullets called cytokines to destroy whatever it is they're trained to look for. They're looking for AABCD.

Now, when the blood goes past the thyroid, the inside of the thyroid facing the bloodstream is made up of proteins and fats. The walls are made up of proteins and fats. The proteins are made up of amino acids, hundreds of amino acids long. Part of the surface of the thyroid facing the bloodstream, hundreds of amino acids long, includes AABCD.

So now you've got this antibody looking for wheat that goes, "Oh, look, AABCD," and it fires a chemical bullet at your thyroid. Now, you've got a damaged thyroid cell. Now, the body has to make antibodies to thyroid to get rid of the damaged thyroid cell. And then you make new thyroid cells. It happens every day. That's why there's a normal level of antibodies to your thyroid or to your brain or to your liver, your heart.

There's a normal level because your immune system is getting rid of the old cells, the sick cells, and making room for new cells to come. That's not a problem at all. It's a wonderful system. We wouldn't be here without that.

But you had toast for breakfast, antibodies to AABCD. You had a sandwich for lunch, antibodies to AABCD. Pasta for dinner, croutons, a cookie, a little bit of this, a little bit of that with wheat day in, day out, day in, day out. And you keep firing, if the weak link in your chain was the thyroid and AABCD goes after the AABCD on your thyroid, those antibodies go after the thyroid, you keep it in the thyroid, the thyroid, the thyroid. You make antibodies to your thyroid to get rid of the damaged cell. Antibodies to get rid of the damaged cell. Antibodies to get rid of the damaged cell.

Well, that's a tongue twister if you say that fast. Then eventually the immune system becomes self-perpetuating making antibodies for your thyroid. Now, you start to develop the autoimmune disease Hashimoto's. That is the mechanism, the main mechanism—because there are seven mechanisms. But that's the main mechanism of how a sensitivity to a food will cause an autoimmune condition, is by molecular mimicry.

AABCD looks enough like wheat that the antibody gets confused and goes after your thyroid or your myelin wrapped around your nerves in your brain, which causes MS or the cerebellum in your brain or in your joints. And there are studies on all of these different molecular mimicry mechanisms that occur.

Dr. Diulus: And we tend to see autoimmune conditions going together, as well.

Dr. O'Bryan: Exactly. Exactly. I think it's fairly rare that someone gets one autoimmune condition. You're diagnosed with one.

Dr. Diulus: Right.

Dr. O'Bryan: Because that's what your symptoms are so that's what they look for. But if you were to look deeper, you would see that you got two or three or four weak links in your chain and this is just the main one. You've killed off enough tissue there that, that's where the main symptoms are. So that's the one they look for. Yup, there it is, you got Hashimoto's or you got lupus or you got diabetes or whatever it should be.

Dr. Diulus: Right. So how do people get tested? You're basically saying that pretty much everybody, if I'm hearing you correctly, needs to limit their exposure to wheat.

Dr. O'Bryan: Well, I never say that because then I sound like a nutcase, right?

Dr. Diulus: Got it.

Dr. O'Bryan: But I do say, everyone who is not satisfied with their current level of health, if the protocols you're implementing are not working well enough, just check properly.

Dr. Diulus: So how do we do that, for the spectrum?

Dr. O'Bryan: Right. Mrs. Patient, proteins are like a pearl necklace. Hydrochloric acid undoes the clasp of the pearl necklace. Now you have a string of pearls. Our enzymes are supposed to act like scissors to cut off each pearl of the pearl necklace. Each pearl is called amino acid.

And those amino acids then go through the cheesecloth into the bloodstream your body uses them to make new cells, whatever kind of cell its making. The problem with wheat is that we don't have the scissors to cut off each pearl of the pearl necklace. Wheat is so twisted up that our enzymes that the body makes can't break it down. It just can't. The best our enzymes can do is to break it into clumps of the pearl necklace.

Dr. Diulus: Okay.

Dr. O'Bryan: There's a 33-pearl clump that I just talked about, the alpha- gliadin. There's a 17-pearl clump, 11-pearl clump, 21-pearl clump. There are all these different clumps of the pearl necklace that's the best we can do. Now, those clumps are inflammatory. They're gasoline on the fire in the gut. Every human tears the cheesecloth every time they eat wheat because they're inflammatory. They just are. They're not meant for human consumption.

Yes, we've been eating it for 10,000 years. No, we're not meant to eat it. We've been on the planet much, much longer than 10,000 years. And humans can't break it down completely. Yes, it's got benefit for us. Yes, we've saved millions of lives by shipping wheat over to Africa when they've got a famine. And they eat the wheat and they survive. So the body can use some of the protein, yes, they can, but it causes inflammatory cascade of damage that eventually causes the disease that will take you down, wherever the weak link in your chain is, right?

So we don't have the enzymes to break down every amino acid off of wheat. The result is that we get these clumps of the pearl necklace. Now, every laboratory in the country will check for the 33-pearl clump, alpha-gliadin. Most every laboratory, that's all they check for...

Dr. Diulus: Right.

Dr. O'Bryan: ...is the 33. Now, 50% of celiacs will have problems with the 33. But 50% do not. Well, wait a minute. celiac is a problem with wheat. But when you do the test for wheat sensitivity, it comes back negative. And the doc will say, "Well, yes, that's true but you have celiac." They don't have an explanation until you think about it and then it makes common sense, most people—and these studies are very clear—they're reacting to the 17-pearl clump or the 21-pearl clump or the 9-pearl clump. Still causing the tears in the cheesecloth. Still causing all the problems but not recognizable when you're only testing the 33-pearl clump. So the 33-pearl clump that every doctor will order the test on is a valid test. If it comes back positive, you got a problem.

Dr. Diulus: Right.

Dr. O'Bryan: But if it comes back negative, it doesn't mean you don't have a problem, it just means you don't have a problem with the 33.

Dr. Diulus: Right. High-false negatives.

Dr. O'Bryan: Yes. But doctors don't know that until they listened to yourself or Dr. Hyman or me speak about this concept. And they go, "Oh okay, that makes sense." So you want to use the laboratory that looks at more than just one clump of the pearl necklace. The more clumps you look at, the more comprehensive the test is.

Dr. Diulus: And even some hospital systems, when you order it, if the anti- gliadin is negative, they'll cancel the rest of the test even if you order all of the appropriate tests. They'll reflexively cancel it.

Dr. O'Bryan: We call that living in the dark ages. There's no rationale to do that except, "Well, that's the way we've always thought. And so that's the way we're going to think." As you may know, Dr. Hyman and I teach for the Institute for Functional Medicine. And when we do our five-day course where we bring in doctors and introduce them into this whole bigger concept about healthcare, we always invite Deans

of Medicine or Deans of Education at different medical school and universities.

And they all say the same thing after they've sat there for five full days. They all the same thing, "This is the healthcare that we need today. This is absolutely right on the money. This enhances the effectiveness of everything we're doing." And it'll take us 10 to 20 years to implement.

Dr. Diulus: And you did your functional medicine training at the same time as Dr. Hyman, correct?

Dr. O'Bryan: Exactly, that's right. We were in the second class to go through in 1988, a bit ago. And I started listening to Dr. Bland who founded the Institute for Functional Medicine in 1978, his first talk in Chicago and it's been a privilege to do that. But doctors just don't know this information. They just don't know. So you want to do a test that's more comprehensive. And if your doctor doesn't know about those tests, tell them to find out. Just tell them to find out. I know there's going to be thousands and thousands of people listening to this interview, which is so great to be able to carry this message out.

So Dr. Hyman's office offers more comprehensive test. We have more comprehensive tests, same tests. Find your doctor. And if your doctor doesn't know about this concept, then look on Dr. Hyman's site, look on your Fat Summit site if you have the information. Look on my site. But it's not hard to find the information to find someone in your area who knows more comprehensive information on this.

Dr. Diulus: And depending on the laws in your state, you may even be able to order some of those tests yourself to get it done...

Dr. O'Bryan: That is correct.

Dr. Diulus: ...through some of the varying labs that people can access that.

Dr. O'Bryan: That's correct. And I do that in my website. I let people order on my website.

Dr. Diulus: Perfect. So if you test positive for any of those or a combination of those and then you fall into the celiac category, how does the testing come out? Talk about that for people if you have non-celiac gluten sensitivity.

Dr. O'Bryan: Sure. Any one of the clumps of the pearl necklace that comes back positive, any one—if you check 25 different clumps of the pearl necklace and two come back positive, it's really tempting to say, "Oh, there's only two out of 25, that's not so bad." No, 98% of all the doctors in the country only test one. And if that one comes back positive, you've got a problem.

So just because you can look at more clumps, it doesn't mean if you only have two out of 25 that come back positive, that's not so bad. No, it's bad. It's gasoline on the fire. It is probably contributing to whatever your symptoms are. So when you look at these test results, it comes back positive, you got a problem. And it's non-negotiable. And we want to negotiate with it. We want to say, "Well, I don't feel bad if I have a little wheat once in a while. I don't feel bad."

So let me give you just a way to hold that concept, if I may. There's something called the standard mortality ratio, and it's 2 to 1 with celiacs. That means for you, as a celiac, it's 2 to 1. What does that mean? I'm 64. If I were to have celiac disease, I don't, but if I were and my brother who's 63 did not have celiac disease, I'm twice as likely to die at 64 of something, heart disease, cancer, Alzheimer's, than when my brother gets to be 64. I'm twice as likely to die at 32 than when my brother gets to be 32. I'm twice as likely to die at 90 than when my brother gets to be 90 of something if you have celiac disease.
And that's with or without a gluten-free diet. The stats are the same. They looked at everybody when they did those stats. Yeah, this is a wakeup call. They looked at everybody when—those on the gluten-free diet and those not in the gluten-free diet.

Dr. Diulus: Fortunately, my life insurance company didn't seem to know that when I got it.

Dr. O'Bryan: Yeah, that is fortunate. And we'll talk about how to fix that, if not decrease those odds. They did a study where they looked at 1,356 celiacs, 1,356. And there's a 3,352 first-degree relatives, parents or siblings. They followed them for over 20 years. Every year, they got the blood test from their physicals. They had them fill out questionnaires: How are you doing? How's your health? How do you feel? How are you with the diet? Do you cheat? If you cheat, how do you cheat? When do you cheat? All of that.

And they followed them for over 20 years. What'd they find? Those that were meticulous at following the gluten-free diet, really working hard at it, their SMR was 0, meaning the same as everybody else, or 0.5, meaning half as often as twice as often, because it's twice as often for everybody else.

So it was half as often or 0. Those that were not meticulous, this is what they said and I've got it memorized because I've said it so often, "Death was most significantly affected by diagnostic delay, meaning not getting the test done pattern of presentation, meaning what your symptoms were; and adherence to the gluten-free diet. Non-adherence to the gluten-free

diet, defined as eating gluten once per month, increased the SMR to 6 to 1. You are six times more likely to die early of something in life if you have gluten once a month.

Dr. Diulus: Got it. For somebody with celiac, yes.

Dr. O'Bryan: With celiac. You can't be a little pregnant. You can't have a little gluten because when you have an exposure, one exposure, you turn on the immune system to fight it and that activated immune system stays turned on for at least three months.

Dr. Diulus: Right. And it's not dose dependent. So it can be a crumb in a jar of peanut butter.

Dr. O'Bryan: That's why we came out with the digestive enzymes we did that work so well to protect people. They're called GI Shield. And we recommend everyone take them who has a gluten sensitivity any time there's a possibility of being exposed, any time. You take it beforehand because it really does work to protect you.

Dr. Diulus: Got it. Fascinating. So we're looking at all of these things and you break down the cheesecloth, as you talked about. So the tight junction is open and you get a leaky gut but then we talk about malabsorption at the same time. And so for some people that's a tricky concept. So if you're opening the junctions and things are absorbing that shouldn't, why are you getting malabsorption at the same time? They seem contradictory.

Dr. O'Bryan: That's a really good point. When you absorb a pearl of a pearl necklace, it goes into the bloodstream and is traveling around and somebody says, "I need lysine molecule," which is one of the amino acids. And that lysine molecule [suction sound] and goes right over there. When you absorb a clump of the pearl necklace that may be 15 pearls long, someone says, "I need a lysine molecule," and it goes in the bloodstream but just keeps traveling by because the lysine's all locked up amongst all this other stuff. But if you redo a blood test for lysine, it might show that you have enough lysine in your blood stream but you have the symptoms of a lysine deficiency. Because you can't break it apart from this clump of the pearl necklace. That's the first thing.

The second thing is when you have—this is what killed my father. My father died of a massive coronary and when the autopsy was done the forensic pathologist called me and said, "Dr. O'Bryan, I don't know why your dad died." "What do you mean?"

"Well, he had a massive heart attack but there was no evidence of a clot. And he only had 30% blockage in his left descending coronary. Now, that's the widowmaker. But that's not enough to cause a heart attack. I don't know why your dad died. I suspected foul play. I'm sorry but that's the law. So I did a toxicology screen, there was nothing. I looked for needle marks all over the body, there was nothing. I did lung biopsy to see if he had breathed something, there was nothing. I don't know why he had a heart attack. I don't know. It's the second time in my career." This was the chief pathologist for the city of Detroit. So this guy had seen thousands and thousands and he's a friend of the family.

So that sent me at a hunt and I won't go into all the detail—well, no I had to go into some of the details—that led me to Dr. Kilmer McCully. Dr. McCully who was at Harvard in the late 60s and 70s, publishing papers saying, "We have to put B-vitamins in the cereals because hundreds of thousands of people are dying from B-vitamin deficiencies causing heart attacks."

And they thought he was a nutcase. No one was talking about this back in the 60s and 70s. And there was a lobbying effort to have Dr. McCully fired from Harvard. And if you follow the money trail, you'll see who put the money up to get him fired. It was the people who were going to have spend millions of dollars to put the B-vitamins in the cereals, right?

Kilmer McCully was fired from Harvard. And the only place he could get a job was in a basement laboratory in the VA Hospital in Maryland. So he went from being Associate Professor of Medicine at Harvard doing first class research to a basement lab in the VA Hospital in Maryland, still doing first class research, publishing his papers. Now, he's considered the godfather of homocysteine research.

So I called Dr. McCully and I said, "Hi, this is Tom O'Bryan." "Oh, hello, Tom." And I told him what happened. Then he was saying, "I'm so sorry." And I said, "Dr. McCully, I know that when you have elevated homocysteine levels, they can cause basal spasm," meaning the blood vessels to spasm. And for all of you out there, that's a little pearl. If you have restless leg syndrome, you might want to check.

And he said, "Yes, it can cause basal spasm." I said, "Can it cause basal spasm at the site of a 30% blockage, effectively making it a 100% blockage?" He said, "Yes, we reproduce it in the laboratory often." That's how my dad died. And no one knew he had an elevated homocysteine. I checked myself. I have elevated homocysteine. My brother does. My sister. Nineteen of my 21 first cousins. I made them all do the test because I'm the oldest. And I said, "Do the test." And 19 of 21 of them have it.

So how do you get elevated homocysteine levels? It's the lack of B-vitamins that your body doesn't have enough folic acid, B6, B12, or trimethylglycine. Why do you get a lack of B-vitamins when you're eating a good diet? Because the B-vitamins are absorbed right in the first part of the small intestine. As soon as food comes out of the stomach, the B-vitamins break off really easily so they get absorbed right there through the cheesecloth.

But what happens when you have so much inflammation in the area? When you have so much inflammation in the first part of the intestines where celiac disease causes the shags to wear down first, when you have all that inflammation there, you can't get nutrients through. The receptors that pull in the nutrients just don't work. There's too much inflammation there. They can't get in. So the B-vitamins just go down and out with the bowel movements. So you have a B-vitamin deficiency that in my father's case caused an elevated homocysteine level that killed him.

Dr. Diulus: And you're not even talking about methylation issues here.

Dr. O'Bryan: Oh no. Oh gosh, no. No, it's just getting the nutrients into the bloodstream. They don't get in. The inflammation inhibits absorption. Yes, you get the tears in the cheesecloth. You think they'd fit right through but it's not that simple. It's really more like rocket science than that.

But there's so much inflammation the nutrients can't get in. The macromolecules can get pushed in and the immune system reacts to the macromolecules. And you make the antibodies with the molecular mimicry. Now, you go after your thyroid or your myelin or your joints or somewhere else. But the nutrients, the fats, this is the fats—

Dr. Diulus: Fat malabsorption. Yes.

Dr. O'Bryan: You don't absorb vitamin D, vitamin K, vitamin A. You get fat malabsorption. So people crave more food because our body's not getting enough food. And they get obese from it. That may be part of the story. That is not that you were gluttonous for food, it's that your body was saying I need more because I don't have enough. I don't have enough. And you were eating enough but it wasn't getting through the cheesecloth into the bloodstream for your body to use it.

Dr. Diulus: Yup. So to kind of bring this back and to sort of hit on fats again here since we are doing The Fat Summit, the link then between fat deficiencies and fat intake and heart disease and other medical problems—and I know it's kind of a broad topic and were sort of limited in time here, but can you just talk a little bit about those.

Dr. O'Bryan: Sure. One moment [blows nose]. I think it would be good not to cut out that last nose blow. Because, for everyone out there, I ate a little blue cheese last night. And I have a dairy sensitivity. And this is what happens. I didn't see it in there until I took a couple bites, "Oh, that's really good." And so I kept eating it. Here's the result. I get all these mucus congestion.

Dr. Diulus: Hey, my husband will probably kill me for this, but he had bad reflux and wanted to get off his proton pump inhibitors because I've been seeing a whole lot of people, men in their 40s, with pelvic insufficiency fractures far more than—and the only thing that we can find is that they had long-term use of proton pump inhibitors. So long story short, he swapped out some supplements but didn't want to change his diet. And then, finally, I made the whole house go gluten and dairy free, three days, reflux gone.

Dr. O'Bryan: High five to you.

Dr. Diulus: So, yeah, it's amazing. People come back into my office and I have put them on an elimination diet to really find all of the things that can be problematic. But it's pretty amazing how different people feel. And then once you realize those foods, just like you're having the symptoms now, that they trigger things quickly.

Dr. O'Bryan: You're absolutely right. And we joke a little high five about that story but you've just saved your husband many quality years of his life. That the wear-and-tear damage that accrues from proton pump inhibitors or other medications like that and the lack of absorption of nutrients your body ages quickly.

Dr. Diulus: Yup.

Dr. O'Bryan: Much quicker than it should. Your vitality in your cells goes down. Your life force goes down. And when you're in your 60s or 70s, you're like "Oh yeah, it's nice, ha-ha." As opposed to "Well, that's really great, thanks so much man." That you just don't have the vitality anymore. "Well, you know, I'm getting older." No, you're getting worn down.

Dr. Diulus: Right.

Dr. O'Bryan: Work down. That's the difference.

Dr. Diulus: Okay, fats. Yes.

Dr. O'Bryan: Now, I'll talk to you about fats. So what we have to understand is that when you have inflammation in your intestines, the function of the intestines is compromised, perhaps completely compromised or partially compromised. And depending on your vulnerabilities and the inhabitants of your intestines will determine how they're compromised.

But if there's only one thing that you were to focus on to be healthier, this is my belief. And I believe, Dr. Hyman and I have talked about this also before and he agrees. If there's only one thing that you are going to do, and we really hope that's not the case for anyone, but if there were one thing, what would it be to focus on? A healthy microbiome.

Dr. Diulus: Oh yeah, for sure.

Dr. O'Bryan: That the environment of your intestines be the healthiest most vibrant you can. Because if the environment's healthy, you don't get inflammation in the gut. And so what does it mean? Well, to have a healthy microbiome, you don't throw gasoline on the fire.

Dr. Diulus: Right. We need a microbiome summit.

Dr. O'Bryan: That's right. That's exactly right.

Dr. Diulus: Yeah.

Dr. O'Bryan: And it's just in the last 10 years that the information has just flooded out here about the microbiome.

Dr. Diulus: Right.

Dr. O'Bryan: And we think that we have these bacteria in our gut. And it's a wakeup call. And I just read a paper a couple of weeks ago that startled the heck out of me. That the bacteria in the breast of a woman, in the tissue that has breast cancer, the bacteria is different on the side where the cancer is than on the side that doesn't have cancer. And women that have breast cancer consistently have the same high concentrations of bacteria in the breast cancer breast.

Dr. Diulus: Interesting.

Dr. O'Bryan: It's like the microbiome of the gut. That there's many, many more of them than there are of us, 10 times maybe 12, 15 times more cells of the microbiome and the bacteria than there are human cells. So we've had this discussion before over the second glass of wine after a long day of teaching at a seminar or something. So are we humans with a whole lot of bacteria or are we bacteria having a human experience? And it's kind of a funny topic. But when you look at the science, it's a rational discussion.

Dr. Diulus: Yeah.

Dr. O'Bryan: Can we step out of our preconceived notions of who we are, what's the 'we' of who we are? And if we look at the science, it says, "Wow, we need to have a whole lot more respect for these bacteria that are along for the ride with us, right?"

Dr. Diulus: Right.

Dr. O'Bryan: So if there's only one thing you can do, it would be to have a healthy microbiome. You want to absorb your fats, your good fats, have a healthy microbiome. You want to absorb proteins, have a healthy microbiome. And so what does it mean to have a healthy microbiome? Stop throwing gasoline on the fire. How do I stop throwing gasoline on the fire? You have to find out what the foods are that are gasoline to your body.

Dr. Diulus: Right.

Dr. O'Bryan: You have to find out. It's not rocket science. And it makes so much sense and when you find this out, like you say with your husband, the response is just jaw dropping. After years of suffering, three days, symptoms are gone.

Dr. Diulus: Yeah.

Dr. O'Bryan: And we see that time and time again. It doesn't matter what they present with. And here's my bottom line, my bottom line in practice is, if you're following our recommendations to the T as best as you can whatever those are, in three weeks, you better know that you're in the right place and you're noticing some improvements. It could take two years for you to get better depending on how much damage there is.
But within three weeks, you should know. And I know in your clinic, there is a similar philosophy that you need to know really quickly that you're on the right track and that, that reinforces you staying on track, staying on purpose.

Dr. Diulus: Right.

Dr. O'Bryan: But after three weeks, if you aren't noticing that you're better, you go back and you re-evaluate. And our friend, Dr. David Jones, the President Emeritus of The Institute for Functional Medicine, he's got a great story on this. When he comes into the room with a patient and he sits down and he says, "How are you doing today?" And they say, "I'm no better."

And he looks at the file. And he says, "Have you been doing..." "Yes." Have you've been taking..." "Yes." "Have you been doing..." "Yes." And so they're following his recommendations. He looks at the file and he looks at them. He closes the file, says, "Excuse me." Stands up and walks out of the room. Closes the door.

Dr. Diulus: Okay.

Dr. O'Bryan: Takes a deep breath and walks back into the room and says, "Hi I'm Dr. Smith. Dr. Jones asked me to come in because he really doesn't have a clue as to what's wrong." Let's start at the beginning. And he starts over. Because he missed something. You should feel better within three weeks or the doctor has missed something. I don't care if you've got

cancer. I don't care what you've got. You should notice that your body is functioning better within three weeks. And that's being generous, three weeks. Right?

Dr. Diulus: Right. Because some people notice it in a shortest, three to five days, right.

Dr. O'Bryan: Yeah.

Dr. Diulus: Right. Some it takes—Dr. Hyman's 10-day detox. Right? Dr. O'Bryan: Yes, yes. But they notice in three days, they're better. Dr. Diulus: Right, right.

Dr. O'Bryan: Now, the only exception to that is like when you stop coffee and you have three days of withdrawal.

Dr. Diulus: Or a week and a half of withdrawal

Dr. O'Bryan: Oh!

Dr. Diulus: Yeah.

Dr. O'Bryan: A java queen.

Dr. Diulus: Yeah. Anyone would ask why I started drinking coffee again. But, yeah, but I'm not giving it up again. Okay. If there was good reason, I would give it up again.

Dr. O'Bryan: Yes.

Dr. Diulus: Yeah.

Dr. O'Bryan: As we're healthier. The thing about coffee—and my book is out now, The Autoimmune Fix, and I did a few pages on coffee. And if you carry a particular gene—HLA B1 I think it was—if you carry that particular gene, 30% of the population does, you can't really do coffee because you're a slow metabolizer.

Dr. Diulus: Yeah, slow metabolizer versus fast metabolizers.

Dr. O'Bryan: Right. And those people have higher risks of heart attacks, higher risks of brain deterioration diseases. But if you don't have that gene, you're fine to have one to two cups a day.

Dr. Diulus: Right. And if you're a fast metabolizer, you actually lower your cardiac risk…

Dr. O'Bryan: That's right.

Dr. Diulus: …with having caffeine.

Dr. O'Bryan: And I've got some really nice graphs in there that show that. The same with green tea. With one cup of green tea versus two or three or four about lowering the risk of heart disease, cancer, and mortality with green tea. It's not that coffee is good or coffee is bad. It depends on your environment, who you are.

Dr. Diulus: Right. Right, for sure. So this has been fascinating. Is there one thing that you want to leave our listeners with that we didn't talk about today?

Dr. O'Bryan: Well, I would say the whole concept of the microbiome. If you're going to spend a little time—and I teach at my alma mater to these young interns about coming out into practice and things like that. And one of the recommendations I give, I also give to our patients, and that is if you're willing to allocate one hour a week to learning something new, one hour a week, and you say "All right, every Tuesday at 8 o'clock," and with the students, the interns it's, "All right, every Tuesdays in the library at 8 o'clock."

Because they're in the library every night or whenever it is. Whenever you pick a time, one hour a week though. And you're going to study something outside what you really need to study or you need to read. And for our audience here, I'd recommend one hour a week of reading a little more about the microbiome. Just go to Google and type in microbiome and see what comes up.

And here comes an article from GreenMedInfo or here comes an article from Dr. Hyman's site or here comes an article from my site. You just look at the list, say "Oh I think I'll read that one." You click on it and you start reading, "Oh, that's not interesting," you go to another one. But you set a timer for one hour.

At the end of one hour, you're done. And just do that once a week. Within three to four months, you really have it down. You hear what this doctor had said or this author had said or this author had said. And now you've got a bigger picture overview.

And if you're diagnosed with Hashimoto's or you're diagnosed with lupus, maybe you'll do one hour a day if it's really important to you. But be kind and patient with yourself. Don't say, "Okay, I got to get it fixed today. I got to get fixed today." Be kind and understand that base hits win the ballgame.

Dr. Diulus: Yeah.

Dr. O'Bryan: And there's one last thing I'm going to say that I just came up recently and I think this is so powerful. I'm hoping, I don't know how I will carry the message out but here it comes. And that is, the difference between a remission and a cure. Everybody wants to be cured.

Dr. Diulus: Yeah.

Dr. O'Bryan: Being cured means you don't have the symptom anymore. You don't have any biomarkers of a problem like blood tests or things. And you can do whatever you want.

Dr. Diulus: Right.

Dr. O'Bryan: It doesn't happen. But that's what we all want. A remission means you don't have the symptoms anymore. You don't have any biomarkers that are positive saying you've got a problem. And you've learned the lifestyle so that you can live symptom-free and vibrant and dynamic.

Dr. Diulus: Yup.

Dr. O'Bryan: That's a remission. Everyone needs to consider remission from whatever your health complaint is. And how do you get to remission? You identify the lifestyle choices that got you where you don't want to be. And then when you reverse that and you notice usually very quickly, I'm getting better. I'm getting better. I'm getting better. You're reversing that and you get to where you want to be, that's a remission.

Dr. Diulus: Right.

Dr. O'Bryan: You think you can go back to the old lifestyle like, "I can have a little gluten once in a while." No, you can't. Six-fold increase risk of early death at once a month, but you don't feel bad when you leave it once a month. But that's the statistics.

And that's true across the board. So please consider this concept of remission versus cure. One hour a week or more, and whatever the health topic is you're concerned about, be kind and patient to yourself and you will win the ballgame.

Dr. Diulus: Oh, that's very, very true to heart words of wisdom. I love it. I love it. And we see the same thing when you talk about remission. Even in osteoarthritis. It's an inflammatory condition with mechanical properties, right?

So when we inject into an arthritic knee, we're not changing the mechanics of the knee or the structure of the knee but the pain goes away for a period of time. And we have the same response when patients go into some remission with their osteoarthritis, when they get rid of sugars or the other varying things that are inflammatory form. Well, they'll come in and say, "My joint pain is gone."

Dr. O'Bryan: Yes.

Dr. Diulus: And we don't change the biomechanics at all, right?

Dr. O'Bryan: Yes.

Dr. Diulus: And these same things, it's the same holds true for diabetes, for both type 1 and type 2. Type 1, we ease it off to manage with some insulin but it can be very different when you change lifestyle. And metabolic syndrome and all the autoimmune conditions.

Dr. O'Bryan: This is the big kahuna in healthcare. The big kahuna is understanding it's lifestyle choices that got us to where we are. Now, there's trauma that occurs, of course.

Dr. Diulus: Right. For sure.

Dr. O'Bryan: And there's inadvertent exposures to too much mercury in the fish or whatever.

Dr. Diulus: Right.

Dr. O'Bryan: All that stuff occurs but the lifestyle is the foods you eat. You can't keep eating high-mercury fish and expect that you're going to get rid of your symptoms if they're caused by high mercury.

Dr. Diulus: Right.

Dr. O'Bryan: So it's lifestyle. That is the key. Here's a great example, if you have a heart attack and you survived, everybody knows that, yeah, change your diet, do a little exercise, you're going to live a number of years, you'll be fine. If you have cancer and you go through protocols and it goes into remission, you know that you've got some time left. But what if you're diagnosed with a brain deterioration disease. Scares the heck out of us. Because you think there's nothing you can do. You're toast. Well, Dr. Dale Bredesen who runs The Buck Institute at UCLA, the Alzheimer's Research Center at UCLA, published his paper of reversing 9 out of 10 card-carrying Alzheimer's patients by changing the lifestyle.

Dr. Diulus: Yup.

Dr. O'Bryan: And he went through 34 things on the checklist. Is it this? Is it gluten? Is it dairy? Is it homocysteine? Baba-baba-bababa. And then you just fix every one of them and the body wants to be healthy when you give it the opportunity to be healthy.

And you reverse Alzheimer's where people that were in facilities were able to be checked out to go back home to live with family because they're functional again. People who couldn't work anymore were able to go back to work, card- carrying Alzheimer's patients at UCLA. Want something to drop your jaw? That drops the jaw.

Dr. Diulus: Yup. Yeah, absolutely fascinating.

Dr. O'Bryan: It's all lifestyle. So be kind to yourself. Take an hour a week to learn more about lifestyle changes. And you will win the ballgame.

Dr. Diulus: Well, thank you so much, Dr. O'Bryan, for your words of wisdom. I'm sure our viewers appreciated this as much as I did. And we'll have the link for your website and your latest book that's

come out is available.

Dr. O'Bryan: Yes, *The Autoimmune Fix.*

Dr. Diulus: *The Autoimmune Fix*. And it's available on Amazon...

Dr. O'Bryan: Amazon.

Dr. Diulus: ...and in local bookstores. Yup, perfect. Well, thank you so much, I greatly appreciate this. And let's thank Dr. Hyman for making this opportunity available to us.

Dr. O'Bryan: Yes. Thank you so much.

Dr. Diulus: Yes, thank you.

Autoimmunity, Infection, Dysbiosis, Oh My! How the Bacteria in Your Child's Gut Affects Their Health

Carla Atherton, MA, FDN, TNC with Jill Carnahan MD, ABFM, ABIHM, IFMCP

Click here to watch this interview!

The purpose of this presentation is to convey information. It is not intended to diagnose, treat, or cure your condition or to be a substitute for advice from your physician or other healthcare professional.

Carla: Hello. And welcome to the third annual Children's and Teen Health Summit. I'm your host, Carla Atherton, founder and director of the Lotus Health Project, LotusHealthProject.com, where we empower people to get healthy and stay healthy in mind, body, and spirit, and on the social, global, and environmental levels.

For this session of the summit, I'm excited to be speaking with Dr. Jill Carnahan about how gut health directly affects the overall health of your child. Dr. Carnahan completed her residency at the University of Illinois program in family medicine at Methodist Medical Center.

In 2006, she was voted by faculty to receive the Resident Teacher of the Year Award and elected to Central Illinois 40 Leaders Under 40. She received her medical degree from Loyola University Stritch School of Medicine in Chicago and her bachelor of science degree in bio-engineering at the University of Illinois in Champaign-Urbana.

She's duly board-certified in family medicine and integrative holistic medicine. In 2008, Dr. Carnahan's vision for health and healing resulted in the creation of Methodist Center for Integrative Medicine in Peoria, Illinois, where she served as the medical director for two years. In 2010, she founded Flatiron Functional Medicine in Boulder, Colorado, where she practices functional medicine with medical partner, Dr. Robert Rountree, author and expert speaker.

Dr. Carnahan is also a 10-year survivor of breast cancer and Crohn's disease and passionate about teaching patients how to live well and thrive in the midst of complex and chronic illness. She's also committed to teaching other physicians how to address underlying causes of illness, rather than just treating symptoms through the principles of functional medicine. She's a prolific writer, speaker, and loves to infuse others with her passion for health and healing.

Welcome to the summit, Dr. Carnahan!

Dr. Carnahan: Thank you, Carla. I'm so excited to be here with you!

Carla: I am so excited to pick your brain. I'm just so excited because I was just telling Dr. Jill before we started recording here that I have been following her work for quite some time. And I love how she speaks. I love how her brain works. And she's just full, full, full of information for you. So I can't wait to get started and give you the information that Dr. Jill has to share. So welcome, welcome, welcome.

Dr. Carnahan: Thank you, Carla.

Carla: Yay! Okay. So I would like to ask you, first and foremost, everybody's got a reason for why they enter this work. And some people just like the science. And you have a different story to tell. So I would love for you to tell our listeners what got you started and what your personal health journey has been.

Dr. Carnahan: Absolutely. It's so funny because I think almost any great functional medicine doctor that I know has either a very close friend or family member or themselves that has had a health crisis. And it's driven us to that level of not only being the doctor, but having lived as a patient.

And so for me what happened is I always enjoyed the learning part. I know you and I talked about that, too, Carla. We love the lifelong learning. In fact, this is just a cool pearl for your listeners. Did you know the two things that are most correlated with happiness are number one, gratitude and number two, lifelong learning. So isn't that cool.

Carla: I'm full up. Yeah!

Dr. Carnahan: Yeah, me too. Anyway, I always enjoyed studying. I enjoyed reading. And I knew I wanted to help people. And so obviously, medicine is a good profession for that. But I really didn't know I was going to be allopathic doctor. I applied to actually acupuncture school, traditional oriental medicine, doctor of osteopath. I still applied to chiropractic college. And I got accepted to Loyola and several other allopathic schools in Chicago.

And so what I decided at that point, this is in my undergrad years, was to go and pursue allopath medicine, even though I didn't agree with everything that they taught, because I believed in more natural cures and the healing power of the body, even before medical school. But I really felt my best route was to infiltrate the ranks of the conventional world and actually make change from within.

So and I'm really happy I did that because really, even now, even though I work with all kinds of alternative and complementary practitioners, I still believe the allopathic model has the most influence on our healthcare system. And so being in that model, helps me make changes. So that's the background of why I went into medical school. And I loved it. I loved studying. But times were incredibly stressful, as you can imagine.

And during my third year of medical school, I was 25 years old, and suddenly found a lump on my breast. And I really did not think anything of it because I was 25. I knew the statistics. I knew that that was vary rare for young women at that age to get breast cancer. And so you know where the story's going. And the week of my biopsy, I found out I did have a very aggressive form of breast cancer at 25 years old. I'd just been married three, four years. And so I was battling for my life.

And I've said this many times when I told my story. But breast cancer in a 25 year old is a whole different disease, than it is in older women. It's much more slow growing, less aggressive in an older woman. And in a younger woman, we just know the mortality's incredibly high. It's a very aggressive disease. And many people do not live. So I was really battling for my life at that time.

And I decided to go and pursue all the conventional treatment to give me the best chance of survival. So I did multiple rounds of three agents of chemotherapy. I did radiation. I did multiple surgeries. And I made it through. And obviously, I'm here today to talk about it. So that was a good choice.

But what I often share is that I have been recovering from that toxic chemical and all the treatment I had ever since. And that was 14 years ago. And it had a profound effect on our topic for today, which is the gut.

We know now, in hindsight, that chemotherapy agents have a very, very dramatic toxic effect on the intestinal lining. So I went right out of chemotherapy. I probably had an incredible permeable gut. And about a year later, I was diagnosed with Crohn's disease, which is basically an autoimmune disease, where the body attacks itself and the intestinal lining.

And I was incredibly sick. I was actually sicker about a year after that than I was when I was first diagnosed with the Crohn's. And I remember, the doctor said, "You're going to need immunomodulating medications. You're going to need surgery. This will never be cured." And the last thing he told me was, "Diet has nothing to do with it, Jill."

And I knew. I knew in my heart of hearts intuitively. I hadn't really done anything with functional medicine at that time, but I knew intuitively I hadn't really done anything with functional medicine at that time, but I knew intuitively that wasn't true. So I'm pretty stubborn by nature. And I was on a quest to prove him wrong. And so I looked at alternatives as far as diet and changes. And in hindsight, first of all, what I did was the Specific Carbohydrate Diet by Elaine Gottschall in the beginning.

And, Carla, you would not believe within two weeks...I was so sick. I was losing weight. I was malnourished. I was so, so, so sick, having cyclical fevers. And within two weeks of my diet change, I wasn't cured. But most of my symptoms were completely gone. And you hear this all the time. And your diet, you know it has a profound effect.

And again, we'll talk all about this today. But what I learned at that moment was that food has the ability to heal or to kill. And for me, in hindsight, I had the high, high-risk genetics for celiac disease. I did not know it. So by eliminating gluten, that was also a big effect on my healing. And, of course, now I'm completely gluten and grain-free, and have stayed in remission from Crohn's disease these past years with no issues at all.

Carla: Wow. That story is absolutely incredible because when you're told that there's nothing you can do about it, and there's not only something you did about it and you didn't only just manage your symptoms, you actually healed your body.

Dr. Carnahan: Yeah. Yeah.

Carla: That's absolutely amazing. I won't keep talking about my story. But I have to say that's exactly what

we were told by the endocrinologist that food has nothing to do with it when my daughter was first diagnosed with type 1 diabetes.

Dr. Carnahan: Oh, wow.

Carla: Right. So wow! Okay, so that's exactly what I said. I said, "Mmm, I don't think so." And so awesome! Okay. So let's go from there, Dr. Jill. Okay, so let's get started talking about the microbiome. Let's go a little deeper. So let's start with birth. So how does birth affect the microbiome?

Dr. Carnahan: Yes. So this is so critical because as more and more we have scheduled C-section around the OB gynes golf schedule and things like that, what we're doing is we are harming future generations. Now, obviously, there's a need for emergency C-sections. And sometimes those are absolutely lifesaving. So if you're a mom out there and you've had a baby and had to have a C-section, there is no guilt involved here at all. I want to just be sure you can reinoculate our baby. We'll talk about ways to do that and have a healthy microbiome through the food you feed them.

But if you have a choice, by all means do not choose to have a C-section because what happens is that vaginal delivery is how the baby is inoculated into this world with the mother's microbiome. They actually inhale and ingest on the way through, not only the vaginal flora, but some of the fecal flora, as well.

So they basically enter into this world being inoculated by their mother. And I see it all the time that can be very good if the mother's healthy. And if the mother's in an extremely unhealthy state, that can even be a problem, as well, because they'll be inoculated with any dysbiosis or abnormal organisms or imbalances that the mother has.

So the mother's health preconception, the gut health, the probiotics she takes is absolutely critical to her baby's health. So number one, basically if patients are inoculated through the vaginal birth canal, that is the fist line of intervention.

Carla: And in particular, a living food diet, right?

Dr. Carnahan: Yes.

Carla: So do you want to be a little more specific about that? So how does it do that? How does it do that?

Dr. Carnahan: Sure. Sure. So you hear a lot about fermented foods. And those can be profoundly helpful. I see a population with lots of autoimmunity and gut disorders. And there are certain conditions where there's fermentation happening in the gut. So those conditions might include certain yeast overgrowth species like saccharomyces or candida. It could include certain species of bacteria like in the small bowel, something called SIBO or Small Intestinal Bacterial Overgrowth, where there's Streptococcus feces and Enterobacter species in excess.

And some of those types of things, when there's fermentation, those are the patients that do not tolerate fermented foods. So there is a small percentage of the population that cannot do well with fermented foods. But, in general, fermented foods, kimchi, sauerkraut, fermented vegetables, all good things like that are very helpful because they contain billions of probiotics.

But if someone can't tolerate fermented foods, you can still feed the microbiome with some wonderful things. And that would be your leafy greens, your vegetables, your plant fibers are the basis. So you need to have lots of greens and fruits and vegetables and things that are fresh, organic, homegrown, if possible, or at least local and not traveling hundreds of miles across the United States in a truck. And living foods, like you said.

And then other than that, things like the fibers. I love to add flax seed or Chia seed, or psyllium or inulin or these foods to our diet that enrich. Things like soups and broths and bone broths are easy to adjust and very helpful for the gut and healing. as well.

And then all nuts and seeds. I typically alternate between the Mediterranean-style diet and the more Paleo-style diet, depending on the patient, and the underlying issues depends. But foods can be healing. And those are some of the basics.

Carla: Nice. Okay. And so what a tool, right?

Dr. Carnahan: Yes.

Carla: It's just the stuff we put in our mouths. You just put it on the table.

The kids eat it. It's nothing like take your pills or vitamins. That can happen, too. But this is the easiest way to do this.

Dr. Carnahan: I couldn't agree more. And you know those moms who are like, "Oh, my children doesn't like vegetables." It's all how you train them. And it's how you model. So when you model that you love these foods, this is what we eat, they grow up eating those foods, they're going to like them. You don't pretend that broccoli's a bad thing or it's going to be difficult. You say, "This is my favorite food. It's delicious." And the kids will grow up loving that.

I just was skiing with my nieces and nephews. I have like 14 of them. And some of them or just darling

little five year olds. I sat at the table with them. I said, You know, Liz and Aleese, and Gracie, what are your favorite foods?" And we were talking about food. And the very first thing Liz talked about, "I like vegetables the best."

So and then Gracie even said, "Me, too. And my favorite is cucumber. And my favorite is carrots." And so they were all comparing. I thought it was so wonderful how my sister-in-laws had trained them up to love vegetables. And their favorite thing wasn't ice cream. And it wasn't candy. It was vegetables.

Carla: Yeah. And there's no depravation there, right?

Dr. Carnahan: No. No, they love it.

Carla: Yeah. Yeah. And this is one trick I love to share is that when you're just trying to figure out, "Okay, what do we do? What do we put out?" It's all in the snacking, too, because kids like...They love to just have something to nibble through the day. And well, they're hungry more often than we are, it seems. And so I just put out a tray.

I don't even say, "Come and eat la, la, la." I just it out. And it's gone. They eat it. So those little things like that, it's just there. It's part of your life. It's part of what you do is eat vegetables, right?

Dr. Carnahan: Yes. Exactly. And then again, parents need to model. So if you don't like vegetables, you better start before you have children because you're going to be modeling. If they see you go for the ice cream late at night for a snack, get in front of the TV, instead of carrots and hummus, then they're going to model after what you do.

Carla: Yeah, that's right. That's right. We got to work on ourselves and our own bad habits.

Dr. Carnahan: Yes.

Carla: Yeah. Okay. So let's do the flip side. We know what's good for us. Okay. So we know what's going to help and encourage health in our children. What about processed foods? How do they affect the microbiome? What if you had a poor diet?

Dr. Carnahan: Yes. So basically, if you are living on all the processed, boxed, packaged stuff, the stuff that's in the center of the grocery store, which is why I talk about shopping the perimeter with the fresh foods, the raw foods, those are the things that really have no nutritional value. And they're going to, not only feed overgrowth of the wrong organisms through the processed flours and carbohydrates and sugars...And most of these things are loaded with processed salt.

Now, let this be said that I'm a huge fan of true sea salt and the Himalayan salt. That's a very healthy part of the diet. But this processed NaCL that's in all of the typical lunchmeats and foods and processed packaged Lunchables and things, these are very detrimental to the health.

So the processed foods, the packaged foods, devoid of nutrients, and they're loaded with chemicals. And then the other thing that's problematic about these processed foods is they're generally made from three ingredients.

One of three or multiple that will be processed corn, processed soy, and processed wheat. And all three of those are very, very heavily laden with chemicals, pesticides, and glyphosate. So there's a profound effect on the gut.

And years ago, there wasn't near as many people with celiac or non-celiac gluten intolerance. And part of that was they might have had wheat on a special occasion with a home-baked bread that was organic. But it wasn't every single food that we ate, which all processed foods have those ingredients in it.

So our children are getting such an exponential exposure to those processed foods and the chemicals that are in them. And they have an affect on the brain. They have an affect on the gut microbiome. And it will really, really be detrimental to that child's health.

Carla: Yeah. Okay. So let's talk a little bit more. You were talking earlier about expanding on glyphosate.

Dr. Carnahan: Yes.

Carla: So tell us more about that.

Dr. Carnahan: Yes. So this is critical. And I just think that the reason I love to talk about it is because people do not understand how awfully harmful it is.
So glyphosate is another name for the commercial brand Roundup. And typically, there's multiple ingredients in Roundup. But glyphosate happens to be an herbicide that will preferentially kill plant species.

And the reason it's so important is as we introduce genetically-modified corn and soy and other crops into the environment in the late '90s or mid '90s, then the farmers could start to apply this glyphosate or Roundup to the crops without killing the crops because they were genetically modified to withstand that chemical. Because of that, exponential increased in Roundup has been used since that time.
And because they can apply more and more, they can kill the weeds without harming the plants.
But what happens is with these genetically modified plants, that it's

actually incorporated into the plant, it's not something you can wash off.

And we see, it's interesting when they first did the studies in putting out glyphosate and Roundup, they said, "Oh, this has no harmful effects on human disease." Well, they're partially right, and mainly wrong. And here's why. As far as the cells of the human body, maybe there's not a profound affect.

Although, more and more data's coming out showing it's even a carcinogen or cancer causing. But what it does affect dramatically is the soil and the microorganisms in the soil and our gut. So it actually has a profound effect on the microbiome. And what it does is preferentially kill off lactobacillus species and allow for those clostridial species to overgrow.

And in addition, what it will do is it will bind up. It's a chelator. It was originally discovered as a mineral chelator. What that means is it binds the minerals in the plant. So if you can imagine, if you eat a plant that was treated with glyphosate or genetically modified to withstand glyphosate, then when you eat that plant, you're not going to have those availability of minerals like you would in a typical plant.

And this is another reason why we're seeing epidemics of deficiencies of magnesium, and selenium, and zinc, and trace minerals such as molybdenum and manganese. Manganese, in particular, is bound by glyphosate. So if we're eating a typically processed diet that's loaded with chemicals and glyphosate, then we are going to be deficient in minerals, as well as altered microbiome.
And it's just having a pretty profound affect.

We've done studies and seen that patients who test their glyphosate level in the urine, and they go on an organic diet for just four weeks, their levels of glyphosate dramatically decrease in just a few weeks on an organic diet. So it's something we should probably all strive for.

Carla: Yeah. And a lot of people think like, "Organic is a money grab. It's too expensive. It's not worth it. What's a little bit of this? I'll just wash it off." But really, it's like it's part of the chemical structure of the plant and the food that you're eating, right? And so there is a huge difference between organic and inorganic food.

Dr. Carnahan: There really is.

Carla: Yeah.

Dr. Carnahan: And I really believe nowadays everyone will be healthy. It's almost essential that we do organic. And what you can do is if you don't have a huge budget for food, what you can do is at least look up The Dirty Dozen. Which every year the Environmental Working Group, it's EWG.org, puts out a list of the top foods that have chemical pesticides applied. And at least, on those, you want to buy organic.

Carla: Yeah. Yeah. At the very least, The Dirty Dozen.

Dr. Carnahan: Yes.

Carla: That's for sure. And yeah, yeah, you can find that very easily on the Net. Okay. So let's get into a few of the real problems that we can see, just to give people a good idea of like, "Okay, what am I going to see concretely in my children?" Like, we can talk about ill health and all that stuff. And that's very important so we can see people dragging and being a little foggy. But what about things like how an unhealthy microbiome may predispose your children to things like autoimmune disease?

Dr. Carnahan: Yes. So if I can give out the top three areas where you might see concrete evidence of illness in your children, number one would be brain related. So that would be like we already talked about, the attention, the focus, ADHD, even autistic spectrums. You might have a child who's just on the spectrum, but performing pretty well, but could be performing better and mood disorders. And nowadays, it's so sad. We're seeing five year olds, four year olds being diagnosed with depression and bipolar. And maybe it's just their microbiome. And if we could treat that and give them a healthy diet, they wouldn't have to take drugs, which I think is just a crime to prescribe at that age. So brain is probably number one.

Number two would be immune dysfunction. And as I mentioned earlier, we're seeing epidemics in autoimmunity younger and younger. I treat several four and five-year-olds with Hashimoto's thyroiditis, which is an autoimmune disease of the thyroid. Or things like skin disorders, autoimmune like psoriasis or Lupus. Or you mentioned type one diabetes, which is an autoimmune disease of the pancreas. Crohn's and colitis, which is happening in younger and younger ages.

And then things just like MS and neurological disordersn, as well. And then, of course gut disorders themselves, which would be IBS and SIBO, Small Intestinal Bacterial Overgrowth. And all those are symptomatic. And eosinophilic esophagitis, I mentioned, that would be an inflammation of the esophogeal lining, the tube that connects your mouth to the stomach. And that's more and more common in children, as well.

Carla: Okay. So let's say your kids

have trouble like this. These are big-time problems. Like, this is no joke.

Dr. Carnahan: Yes.

Carla: And so that's how very important the gut health is. And so with brain, immune dysfunction, gut, are there different things that you can do that help you address those three different areas?

Dr. Carnahan: Yes.

Carla: Or is it all the same? Yeah. Okay.

Dr. Carnahan: Yeah. So I would say, it's interesting because I've been doing functional medicine for a lot of years. And always in the beginning, I would start with the gut. And even now I always feel like that's such a foundation because if you're wanting to do detox, if the patient has toxicity issues, you still have to have a healthy gut to detox. If the patient has autoimmune disease, it starts in the gut.

So in connection, it may be worth explaining a little bit about the connection between autoimmunity and the gut. So we know from Dr. Alessio Fasano's research that there is a triad or three things that are always present in autoimmune disease. Number one is a genetic predisposition. So these patients are prone to having autoimmune disease. And patients who don't have a genetic predisposition will probably never get auto immunity. So number one is genetic.

Number two is an environmental trigger. That could be a toxic exposure like chemicals on the food, like we mentioned or it could be stress. Or it could be something like an altered microbiome, so an infection or overgrowth of the wrong bacteria, but some sort of an environmental trigger. And that leads to the third thing, which is intestinal permeability.
And again, this is related to autoimmune disease because you have those three things. And what happens is you have this crosstalk between the lining and the lumen, the insides of the gut, which should have these healthy microbes. But instead, they cross over into the blood stream. And the immune system sees these foreign molecules.

And it could even be undigested food particles or larger things that should never be in the bloodstream that have no business being there. And when they cross over into the bloodstream, then they can create this immune response that triggers and escalates and all of a sudden becomes an autoimmune disease, where the patient's body...So for example, say you have a coating of a bacteria. We call that LPS or lipopolysaccharides.

So say that bacteria crosses over into the bloodstream, through a permeable gut membrane. And then the body sees that and says, "Hey, this is bad. We have to send out the troops, the Army, the Navy Seals, and send them out and attack." And they try to attack.

But what happens is they cross react. So those attacking molecules, instead of just attacking the bacteria that should never have been there in the first place, they start to attack the body's own tissues. And again, that could be pancreas and type 1 diabetes. It could be thyroid and Hashimoto's thyroiditis. It could be skin and psoriasis, gut and Crohn's disease, any number of tissues in the body from this attack on self.

Carla: Yep. Okay. And so can you explain a little bit more about the brain? Like, what's going on with the brain and the microbiome? How do those two connect?

Dr. Carnahan: Yes. So a leaky gut, a leaky brain, we can have that, as well. And what happens is there's one particular enzyme in the gut that if there's an imbalance in the microbiome, it gets upregulated. And that enzyme is called IDO. And if that enzyme is upregulated, it will take and steal from your stores of tryptophan. Tryptophan's a precursor of serotonin. And that's your happy chemical. So if you have tryptophan and you have serotonin and you have melatonin, you are happy. You sleep good. You're content with life. No depression. No anxiety.

But if you have this imbalance in the gut microbiome, and that can be a candida yeast overgrowth, it could be a bacterial overgrowth, it could be a blatant infection or a parasitic infection, something that upregulates this enzyme, then you convert all of your tryptophan to kynurenine, which is a chemical that can cross over into the brain, and create quinolinic acid, another chemical that's really, really toxic to the brain.

So a lot of our children that have mood disorders, acting out, behavioral disorders, attention deficit, autism, they are basically having an inflamed brain. And that starts with the gut often because if the gut is inflamed and you're having permeability issues and this enzyme is upregulated, these chemicals will cross over into the brain and, either create inflammation as in the case of quinolinic acid, or they will create just an inflamed brain condition just from the toxic waste products of the gut and those things, as well.

Carla: Okay. So your third one was gut. Okay. So if we...How am I going to formulate this question. Okay. So when you have issues in the brain or immune dysfunction and obviously there's a problem in the gut, right. So this is almost like the basic. You need that to malfunction first for it to affect the brain and the immune system. So is the precursor

usually things like fungal dysbiosis and SIBO and parasites and things like that, or can you just have a leaky gut?

Dr. Carnahan: Yes. So you could have...So say you had a toxic chemical. So say you ate all processed food as a child and you had no whole fruits or vegetables or things like that. And those chemicals could have an effect, just as chemicals on the lining of the gut could create permeability. Although, they would probably also kill off some good microbes, so they would probably be imbalanced at the same time, but even toxic chemical exposure.

Like, for example, with me with chemotherapy. At that time, I might had had a pretty healthy microbiome. I don't know. But that chemical, that chemotherapy, that drug had a really profoundly inflammatory effect on my gut lining.

And children could have the same thing, whether it be drugs or chemicals in the foods or that kind of thing. But often there is an imbalance of the microbiome happening right alongside, either chemical exposure or stress can have an effect, too. So if children are under great stress, we know that some of the catecholamines like norepinephrine and epinephrine, preferentially alter the microbiome, as well.

So it just profound, the effect of all these different things on the microbes and on the permeability of the gut.

Carla: Okay. So and then when you talk about stress, you're not talking like really horrific things. It doesn't necessarily have to be like that, does it?

Dr. Carnahan: Right. Right. It can absolutely be day to day. Or even like for a child who is not getting enough sleep or has a bully at school, those things can have an effect.

Carla: Yeah. Yeah. Yeah. Okay. And then, okay, let's get into a couple of like little specifics like the gut gives itself an infection. So some kids are battling things like SIBO, which is Small Bacterial Overgrowth, right?

Dr. Carnahan: Yes.

Carla: Or dysbiosis like fungus or candida that you were talking about earlier on and maybe even parasites, which a lot of parents are going like, "Eew, we don't have that."

Dr. Carnahan: Yes.

Carla: But so many people have parasites. You would not believe it. And just maybe are asymptomatic or just smoldering along, just affecting their health a bit here and there, but not really paying attention to that as a possibility. So do you want to speak to that a little bit, those things and how to deal with those things if the parents discover that their kids have these issues?

Dr. Carnahan: Yes. So one of my mottos is test, don't guess.

Carla: Yeah.

Dr. Carnahan: You probably want to find a good functional medicine practitioner of some sort to help you find. Your typical blood tests are not going to find these things. There are certain tests that you can do in the blood. But like, say, a child first comes in and is suspicious of gut disorders. So what I would do is a stool profile, a Comprehensive Digestive Stool Analysis.

And then I would also do organic acids, which is a urine test, and easy for children to do. And then I would often do blood tests, as well. Because this three-pronged approach, you're going to get a whole lot of data on what's growing in the gut and what organisms or problems there might be.

If patients, if we suspect that either through stool testing or symptoms that they have a bacterial overgrowth called SIBO that you already mentioned, Carla, then we might want to do a breath test, which is a whole different test.

If you think about this, if you do a stool test, you're going to see the colonic or the lower part of the gut organisms. And there can be definitely problems there that you can treat. You can see yeast. You could see parasites. You could see overgrowth of certain bacterial species or pathogens. But sometimes if the overgrowth is in the small bowel, which is in the upper, right between the stomach and large bowel, you will not see those organisms or those problems on the stool test.

So if you suspect SIBO, you need to do a breath test. And that will basically measure the off-gassing of methane and hydrogen through the breath of these organisms in the small bowel. And that will detect and diagnose a SIBO case.

Yeast is tricky because you may find it in stool. But if it's in the small bowel or the stomach or other parts of the body, the stool may be clean. And that's why organic acids is a great way to test for yeast in the entire body. And there are certain markers like arabinose that will tell you if there's yeast in the gut. And you can treat. So there's multiple ways to look at that.

And if you suspect a patient has issues, you want to get a functional medicine doctor or physician or practitioner to do those tests so you can determine what needs to be treated.

Carla: And it's important to know what needs to be treated, right. Because there's different things that you need to do for each condition, correct?

Dr. Carnahan: Yes, that's exactly right. So you would treat, for example, SIBO very differently than you would treat a yeast overgrowth. And sometimes, you can have simultaneous things. So if someone has a really unhealthy small bowel, they can have SIFO, which is Small Intestinal Fungal Overgrowth at the same time as Small Intestinal Bacterial Overgrowth.

And if you're just throwing antibiotics at that patient, of course, the fungal or the yeast may flare. This is why, especially in children, I'll often use herbal combinations so you're treating everything dysbiotic at once. And you're not flaring one thing or the another.

And the beautiful thing about herbs is many things like berberine or caprylic acid or oregano or grapefruit seed extract have activity against bad bacteria and against yeast. So you can use them at the same time.

Carla: And they don't kill the good bugs? I don't want to say good/bad, but the beneficial bacteria.

Dr. Carnahan: Yes. Yeah, and one caveat, I suppose if you had someone on a really strong antibiotic herb like oregano or berberine for a very long time, you could have some effect on the good bacteria. Like you said, it's hard to say good and bad. But still, in general, they're much, much safer for the microbiome. And there usually is not a big problem with eradicating species.

Carla: Okay. Wonderful. Good information. Okay. So what other tips do you have to help enhance your child's microbiome? I'll just let you go with that one.

Dr. Carnahan: Sure. Sure. So we talked about foods. And like I said you want to do...You need to have prebiotic foods to feed the good bacteria. And that would include types of fibers. And most things from fruits and vegetables already have those within them. So if you're eating whole fruits and vegetables, you're covered.

I'm a huge fan of teaching kids to like even just a little shot of a smoothie or a green juice because you can throw a lot of good stuff in a smoothie, usually making it taste pretty good. And the kids love it. And they're getting leafy greens.

And a typical smoothie recipe that I would recommend for a patient would be lots of leafy greens, like the majority of the smoothie is handfuls of leafy greens. And then throwing in some fiber like flax or Chia or psyllium. I often add a little cinnamon just because it tastes great. It's good for blood sugar. It's good for all kinds of things. And then a base might be like coconut milk and water.

And coconut milk has lots of healthy fats for a child's developing brain. And then typically, berries are very low glycemic. They've got tons of antioxidants and phytonutrients. So for example, wild blueberries are my absolute favorite: wild blueberries, spinach, coconut milk, some Chia seed, some ice, water to taste. And then you can add some other things. One of my favorite would be parsley. Parsley's a potent detox for heavy metals. And I pretty much everyday in my smoothie, throw a handful of parsley and just for the detoxifying.

You can throw in a little lemon to alkalinize the body. Like I said, cinnamon is a favorite of mine. And yoiu can also throw in things like glutamine powder.

So L-Glutamine has a really healthy affect on feeding the enterocytes, the cells that line the gut. And that could be a part of a healthy smoothie. And then typically, I'll put some protein powder, either a pea-based or rice-based or a combination organic protein in there so it can actually be as a meal substitute or snack for the child.

And again, you can have your children help cut up vegetables. They can help make the smoothies. Because when you get them active in the kitchen and interacting with food, whether it be pulling carrots out of the garden or cutting up vegetables on the counter or throwing things in the blender for a smoothie, they get excited. And they actually see that they have a part in eating a healthy diet. So that'd be a start. And then probiotics are pretty essential

nowadays. And it would be nice if we could do it all through food, but adding probiotics into the diet as a supplement is a pretty important piece for most patients.

Typically with the infants, like I mentioned, we'll start with bifidobacteria species. And there's all kinds of good formulas that are made for infants that are majority bifidobacteria species because we know that's usually what the babies are colonized with first. And as they grow later in life, they add the lactobacillus.

For your typical, say, 5 to 18 year old, a combination probiotic would be best with lactobacillus bifodobacteria species and multiple different organisms there. And there are lots of good products out there. But typically, if they're based with multiple strains of lactobacillus and bifidobacteria, those would be a good place to start.

Now, we mentioned certain conditions like candida or SIBO. And

there are often specific probiotics I will use in those conditions. If someone has candida or yeast overgrowth, there is a healthy yeast that you can use as a probiotic called Saccharomyces boulardii. So then we'll often add that probiotic to the mix if they have a candida overgrowth. And it's also a really good probiotic if the patient has to have an antibiotic, for some reason. That's a whole another topic we can dive into.

But basically antibiotics are going to preferentially kill off good bacteria. And often, you can have some antibiotic-associated bacteria. And that Saccharomyces boulardii, because it's a yeast and it isn't affected by the antibiotic, you can give that to a patient or a child when they have to take an antibiotic and actually protect them from the side effects of the antibiotic like diarrhea.

And then in a patient with SIBO, Small Intestinal Bacterial Growth, the important thing to understand about that is that is not a pathogenic bacteria. It's actually typically lactobacillus species and others. They're good organisms.

They're like probiotics. But they're just in the wrong location. So our small bowel's not meant to handle that load of debris and waste products from the bacteria, and when you get an overgrowth in the small bowel, these guys will actually cause damage to the microvilli and affect nutrient absorption and cause gas and bloating and diarrhea. So for those patients, sometimes giving your typical lactobacillus is actually harmful. They'll feel worse.

So with that SIBO population, they often do with well with spore-forming probiotics. And my favorite is lactobacillus coagulans. So it's bacillus coagulans. And that is a really good probiotic for patients with SIBO. The way you know if it's a problem is if they take that probiotic and it causes intense gas and bloating and worsening of symptoms, it's probably not the right one for them. And you can do some trial and error and try some different species.

Carla: Okay. So sometimes probiotics, you have to know what's going on in there to know what probiotics to use.

Dr. Carnahan: Yes. And you now what's funny? Because I hear patients all the time. This is mostly adults because they're aware of their bodies. But they're like, "Well, I know probiotics are good for me. But every time I take them I feel sick or I have diarrhea or I don't feel well." Well, that's a pretty good sign that you are talking the wrong probiotic. And a lot of them just push because they know, "Oh, this is good for me." But in some cases, it's not the right one.

Carla: Oh, very interesting. Okay. So any other tips to help enhance the microbiome, your kids microbiome?

Dr. Carnahan: Yeah, so we mentioned emotional stress in that. So making sure your child gets plenty of sleep that's appropriate for their age. Making sure that they have a safe home where they're not threatened and even at school, but especially at home. That's the majority where they spend their time. And if they feel like it's unsafe or if there's alcohol abuse in the home or those things, they can profoundly affect the child.

And when they have that fear-based response, that's going to affect the gut. It's going to affect their health. It's going to affect all sorts of things in the body. So a safe place for them, plenty of sleep, and a stress-free environment. And obviously, we all have stress, including our children. But for the most part with what you can control, you want to give them an environment where they can thrive.

Carla: Yes. Yes. Okay. And then you also mentioned fermented foods.

Dr. Carnahan: Yes. So this is a huge, wonderful, healthy part of a diet. And you can make your own, like homemade yogurts. You can make things like sauerkraut.

And our great grandfathers and grandmothers, this is how they got their probiotics. They didn't take probiotics. They just fermented foods. And that was actually a survival mechanism because it helped them preserve foods during the months when they didn't have fresh produce.

And like I said, the majority of people do very well. And it's a wonderful part of a healthy diet. There are certain populations that would not do well. Those are the ones that if they actually have fermentation going on in their gut. They add fermented foods to that, and they won't feel well.

One exception I will say, Kombucha. I'm not a fan because often there's wild strains of yeast and things. And so I will just say, I'll put that out there. Not everybody's going to agree with me. But I've seen more harm than good, especially home-brewed Kombucha can be a big problem. So, in general, I have patients avoid that.

Carla: Interesting. Okay. So one more topic that I'd like to just quickly cover with you, Dr. Jill. We're seeing a lot of kids with food sensitivities nowadays. And not every doctor is really recognizing that fact. But if we talk to any family about this, like there's at least one child within that family that has some deal, like some diarrhea or brain fog or something that's tied to a food that they're eating. So would you address food

sensitivities in the gut and then how parents can deal with them with their children?

Dr. Carnahan: Yes. So you're so right because you know we've all been on those flights because they can't serve the peanuts because someone has a peanut allergy. Or the kids in school, where this kid has peanut. This kid has soy. This kid has...And it's so epidemic. And nowadays, the schools are much more geared to deal with it. But it's just, literally, classes of kids have, half the kids have food allergies.

So this is the perfect storm because we have more stress, more processed foods. We have less probiotics. We have more C-section babies. We have less breast-fed babies. All the things we're talking about. And you add to that chemicals like glyphosate on pretty much all the processed foods that we consume, which a typical, average child's going to be consuming a lot of those processed food. This is just a setup for development of food allergies. And the way that that happens is when you have a permeable gut lining.

So I think of those cells as tiles. And when those tiles lose their grout, in between you have this leakage of contents that are in the stomach, either microbes or food particles. And those go into their bloodstream. And then the immune system because they're not fully digested sees them as bad or foreign and starts to create a reaction.

So what happens is that permeability leads to these foods that are probably not fully digested due to digestive insufficiencies that cross over into the bloodstream. The body creates this antibody reaction to that. And then that perpetuates because every time that food, say, it's egg or say it's a piece of milk or dairy or gluten, when those particles cross over, that will create a reaction every time. And it usually intensifies over time so that the patient becomes more and more sensitive to certain foods.

Carla: And then so how, we just eliminate them? Is that how we deal with this?

Dr. Carnahan: So great question, Carla, because that can be a start. And one way to do this for free without any testing is an elimination diet. And your listeners may even probably be familiar with that. Whether it's a child or adult, you can take the top seven foods out for 30 days. Those would be gluten, dairy, egg, soy, corn, sugar, and alcohol. And with children, I would add in peanuts.

And you can take out those foods for 30 days. And then what you do after 30 days, first of all, you'll probably feel like a million bucks. But after those 30 days, you can add them back in one by one, every separated by three to five days so that you can determine if your body has a reaction. These types of reactivities are usually delayed.

So they're not the typical histamine mediator reaction where you have swelling and hives. They're delayed. So you could have egg in the morning and have a headache the next day. Or you could have dairy in the morning and have loose stools and joint pain 48 hours later. So sometimes it can take a day or two to manifest.

And when you're eating those foods all the time and inflamed and having reactions, it's very hard to determine what's going on and what's causing what. So by doing an elimination diet, you can determine which foods are causing what problems. And then say, you add dairy in and you have no problem. But then you add gluten and you have a terrible stomach ache and joint pain, well then you know that gluten is an issue and you keep that out of the diet for a longer period of time.

But as you mentioned, just taking the foods out isn't enough. And what I see all the time is patients who feel like there are box of foods they can [inaudible] enclosing on them. And it's smaller and smaller. And they're more restricted. And that's no way to live.

Now, certainly like someone like me who's healed from Crohn's disease, I am lifelong dairy-free, gluten-free, egg-free, nut-free. And I am totally content with that. I don't miss those foods at all. And like I said, I'm perfectly healthy and happy. But I don't continue to restrict my diet. I have a wonderful healthy whole food diet within that realm. And I'm not continuing to restrict foods.

When someone gets in that pattern when they continue to get more and more sensitivities, there's something going on, either dysbiosis in the gut that needs to be dealt with or a permeability issue that needs to be dealt with. And so you really have to go to the gut and start to heal the gut and treat those root causes in order so that patient won't continue to get more and more sensitive.

Carla: And so when you're dealing with children, though, do you think they can ever go back to certain foods? Like, let's take broccoli. You know what I mean?

Dr. Carnahan: Yeah. So there's things like gluten that can be profoundly interactive. It's a whole different ball game with gluten. It's such a large molecule. And there's some people with, either true celiac or non-celiac gluten sensitivity. And that's usually a lifelong thing. So if someone really truly has a sensitivity or even true celiac, of course, it's a lifelong avoidance of gluten.

But then there's other things. Like, you might have a temporary sensitivity to pineapple and broccoli or some of these healthy whole foods. And those are things that after you start to heal the gut, very often you can start to add those foods back in. Usually, if they've been sensitive in the past, I have them do a trial. And say they do okay with it, well, I say, "You don't want to be eating this every day, three meals a day. You can have it once or twice a week at most. Or you rotate those foods and make sure you're not getting excessive exposure."

Because part of your problem is like I said the processed food diet is so reliant on a few ingredients, corn, soy, and wheat. So we get huge exposure to these processed foods. And we develop sensitivities. But if we were back in our grandparents' day, we'd have wheat maybe twice a month or we'd have certain grains. We'd rotate them, depending on seasonal foods and availability. And we wouldn't develop so many sensitivities.

Carla: That's really good. And it gives parents some hope that are listening. They're like, "Are you kidding me?" If I have one of those children that has a zillion sensitivities, there's some hope there. Heal the gut. Heal the gut.

Dr. Carnahan: Exactly.

Carla: Yeah. Well, okay, Dr. Jill, I won't keep you too long. You've been so generous with your time. I just would like to know if there's anything else you'd like to share with our summit participants about any of your current projects, where we can find you, and what your websites are again, or one website?

Dr. Carnahan: Sure, Carla. Thank you so much. Boy, if you've enjoyed this, I'd just love to write and share content information with readers and the public and my patients. And I have a website. It's just my name. JillCarnahan.com. And I've got a free newsletter.

I would love for you to come join my community. And it's all free. I send it out every few weeks. And it just has a great content. Stuff that I'm reading. Stuff that I'm writing about. Events that I'm part of, like this one. And so I would love for you to come over and join me and be a part of that content.

If you do sign up, I have a free snack guide for all of these food allergies for your kids. They won't eat a quick snack. Well, you'll get that for free if you sign up.

Carla: Oh, yeah, and do because she's super busy. She's busy. And she does a lot of good work. I just love listening to her. And so any concluding thoughts you'd like to leave with our participants listening, Dr. Jill?

Dr. Carnahan: Sure. Sure. So I would say get your children involved in their own food and their own health and start a garden. If you have a balcony like I do, well then use planters on the balcony. Do what you can where you're at.

But get your children involved in the growing and the cutting up and the eating of food because the more they're involved, the more they learn how important food is. And food is medicine.

Carla: Awesome. Really great words to leave us with. Thank you so much, Dr. Jill, for being here. And you have yourself a wonderful day!

Dr. Carnahan: You, too, Carla. Thank you so much!

Dietary Approaches for Autoimmune Toxicity

Deanna Minich, PhD, CNS, IFMCP with Terry Wahls MD

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The purpose of this presentation is to convey information. It is not intended to diagnose, treat, or cure your condition or to be a substitute for advice from your physician or other healthcare professional.

Dr. Minich: Hello, everyone. This is Deanna Minich. And welcome to The Detox Summit.

Today, we have as our guest Dr. Terry Wahls. Dr. Terry Wahls is a clinical professor of medicine at the University of Iowa where she teaches internal medicine residence. She also sees patients in a traumatic brain injury clinic and conducts clinical trials. So I really like her diverse background of teacher, clinician, and researcher. So she really has a wide breadth of experience to bring to our discussion today.

Now, not only is she a trained physician and researcher, but she's also been a patient herself. And has had secondary progressive multiple sclerosis, which confined her to a tilt reclined wheelchair for four years. And if you haven't been to Dr. Wahls' website, she shows the pictures of her progression. And we're going to hear more about her story.

So she has completely recovered. She's restored her health. And she now bikes to work every day as best she can. I'm assuming in Iowa where she lives. She is the author of *The Wahls Protocol*: *How I Beat Progressive MS Using Paleo Principles and Functional Medicine*. And she teaches the public and the medical community about the healing power of intensive nutrition.

So welcome, Dr. Wahls, to The Detox Summit!

Dr. Wahls: Great! Thank you so much for having me.

Dr. Minich: Well, it's a pleasure. You were definitely high on my list of people that I wanted to speak because not only are you a book-trained physician and researcher, but you've actually healed yourself through nutrition. So I'm wondering if you can tell the listeners a little bit about you and your own personal journey through this experience.

Dr. Wahls: Sure. So I've been a true medical doc, very much a conventional medicine doc. Thought the supplements, alternative medicine was a colossal waste of money. And I was an academic doc. And so I thought the way to cure people was drugs, surgeries, procedures.

But then in 2000, I started having some weakness in my left leg and was evaluated by several physicians, had MRIs of my spinal cord, of my brain, lots of blood tests, some nerve conduction velocities. And they saw lesions in my spinal cord. I had abnormal spinal fluid oligo bands. And then when they looked back at my medical records, they saw that I had had a problem with dimming vision thirteen years earlier.

So on the basis of having lesions separated by time—thirteen years—and space, problems with my vision and problems with my leg, the diagnosis of multiple sclerosis was made. I was told to go on a disease-modifying drug. I decided to go see a second opinion at an internationally recognized MS center, the Cleveland Clinic. They looked everything over, agreed that I had relapsing remitting MS. And they began one of the disease-modifying drugs called Paxil.

So for the next three years, I had just one episode of arm weakness. And that's called a relapse. I responded well to steroids. And so that would be considered a success if it was a drug trial. But the problem was I'd been getting steadily weaker, less endurance, weaker back muscles.

My doc told me, "It's time to get a scooter," and then said, "No, why don't you get a tilt reclined wheelchair because of the fatigue." So that was in 2003. I, at that time, took Novantrone. And then when it became available, I took Tysabri. And then when that was pulled from the market, I switched over to CellCept, which is a transplant drug that suppresses your immune cells.

Now, when I was first diagnosed with MS, I started reading the medical literature and was very upset because within ten years, half

of people are disabled by fatigue and are no longer working. And a third have some level of walking disability. My family convinced me that I should stop reading the literature because it was so upsetting. And so that's why I sought out the best people in the country to go take care of me.

And in 2002, my neurologist suggested that I check out the work of Dr. Ashton Embry, director of MS Charity of Canada. And he was a big fan of Loren Cordain and eating a Paleolithic diet. And so at that time, after having been a vegetarian for about twenty years, I switched over and gradually reintroduced meats into my diet, went dairy-, legume-free, and grain-free. But I continued to decline.

So in 2003, I needed the wheelchair. And that's when I decided, "Okay. I'll go back to reading the literature" because I knew how bad it was going to be. I couldn't be any more upset. And I began reading basic science papers because I knew it was in the basic science—the mouse and rat studies—that would have the treatments that we'd be using in thirty to fifty years.

Then it occurred to me that I was wasting my time reading drug studies. I should try and read studies about vitamins, nutrients, supplements. And as I was doing my reading and I was reading about multiple sclerosis, Parkinson's, Alzheimer's, Lou Gehrig's, I saw that in all these brain conditions with shrinking brains—and with MS you have a shrinking brain—that the mitochondria were becoming defective in signaling the time to die too early in the brain cell and in the spinal cord.

And then with more searching, I found articles where those mouse brains had been protected along with the mitochondria using a variety of vitamins and supplements. So I would translate these mouse sized doses into human size doses and began taking them.

And after a few months, I got disgusted, stopped them, and discovered that I couldn't get out of bed anymore. So I resumed my supplements and decided that they were doing something very powerful for me. And they seemed to be slowing down my decline, though I certainly was not recovering.

I was still eating a Paleolithic diet. By 2007 I could walk short distances using two walking sticks. I could sit up in a regular chair for about ten minutes. Otherwise, I was too exhausted. So I was in a zero gravity recliner—fully reclined—or in bed. That's how weak I was.

That's when I discovered the Institute for Functional Medicine, took their course Neuroprotection: a Functional Medicine Approach for Common and Uncommon Neurological Syndromes. And after taking that, I had a much deeper understanding of what I could do to help my brain and a much longer list of vitamins and supplements, which I started taking.

Then later that fall, it occurred to me that if I redesigned my diet to make sure it's getting all these things I was taking in pill forms in the food, I'd probably get the naturally-occurring form of those items. And they'd be more biologically active. They'd have more of the related compounds. And in addition, I'd probably get thousands, maybe millions of other molecules in that food that would likely be very helpful for my brain.

So I went to my registered dietician friends. They didn't know where these things were in the food supply. I went to the Health Sciences Library and couldn't find answers there. So then I went back to the internet, started searching and was able to find those food sources.

And so I reorganized my diet still using Paleo principles. But I was maximizing the foods that had the nutrients for these nineteen key nutrients. And within a month, my energy was markedly better. My brain fog was markedly less. In three months, I'm walking in the hospital without a cane, although I still had a limp. So it was obvious that I had MS. But I'm walking easily. In about six months, I'm on my bike for the first time in about five years. And in a year, I'm able to do an eighteen mile bike ride with my family.

Then I started lecturing the public about food. And we do a Grand Rounds at the medical college. And after that the Dean of the medical school helps me get a study team together to design a clinical trial. And I write the grant, get funding to conduct this clinical trial. So in October of 2010, we then started doing a clinical trial testing my full protocol in others with progressive MS.

I've since written this book. And I've made it my mission to go out and teach the public. And do medical conferences, seminars, etcetera around the country, and now internationally teaching people about the critical role of nutrition, toxins, lifestyle in health and disease.

Dr. Minich: Dr. Wahls, I get goose bumps listening to you tell this story. And, of course, I've seen you at these functional medicine conferences. And you and I have talked before. And then seeing

the picture on your website, but hearing you tell the details again, I can imagine that the listeners, their jaws are dropping. This is really an amazing story.

And the beauty of this is that you are a physician. And that you are in the, really the healthcare medical community where you can make an impact. You can take this to another level. So I'm just curious. I just feel like asking you this question. But how do your colleagues...I mean, obviously it seems like you've got some receptivity, obviously, because there's the support on the part of studying what you've been doing. But do you ever get resistance?

Dr. Wahls: Sure.

Dr. Minich: Physicians just aren't trained in nutrition. So how does that work? Are some people just completely polarized to what you're doing? And then other people really like it?

Dr. Wahls: So this has been an evolution. So in 2007, I'm wheelchair bound. In 2008, I start walking around. People are amazed when they see me. And then I do this Grand Rounds in, I think, the beginning of 2009.

And this is a very unusual Grand Rounds. Physicians don't do things like this. You go up and you present a case, which is yourself. And then you discuss the theoretic mechanisms by why you recovered. I assure you, I can't imagine any other Grand Rounds has ever done that.

There were two kinds of responses. One was, "This was the most brilliant, engaging Grand Rounds there ever was." And the other was, "This person's a crackpot. What is she doing being a professor of medicine?"

And people, I think correctly said, "Okay, one case. So what? We know MS is an unpredictable disease. So what? We don't really know why you got better." But the person who is the dean of the College of Medicine had been the chair of medicine when I was hired. He watched my decline, saw my early recovery. And he called me in and said, "Now, Terry, this is really very important." He had given me advice to get the first report written up as a case report, which I did, and then helped me get the research program going.

And every year there are two meetings at the University of Iowa, the College of Medicine Research Day and the Internal Medicine Research Day. So at those meetings, we have our research posted, tell people the status of our research, the preliminary data. And so we're able to show that, yep, people could do this, that it was safe. And then we have the preliminary outcome results. And as people came by and saw that I could get people to actually eat vegetables in a huge way, which my nutrition experts were like, "Oh my God! This is amazing! No one ever gets this kind of dietary change. Ever!" So they're impressed that we could create that change.

And then the change that we're reporting and showing in terms of change on fatigue, energy, brain fog, and walking speed and people would come by, would be very impressed, asked to join my study team because they knew that I was freezing blood. And then I started getting invited to give research seminars to various departments across the University and then across the country. And now most recently, last fall I was in China talking about my research.

Dr. Minich: Oh, that's wonderful. I'm so glad that you're getting the word out. So being that this is a Detox Summit, I do want us to connect into toxicity because toxins really do play into autoimmune diseases like multiple sclerosis and other debilitating conditions. And I'm wondering, throughout the course of your own personal journey, were you ever tested for any kind of toxins? Or had you come into contact with any kind of toxin exposure?

Dr. Wahls: Oh, yeah.

Dr. Minich: What was the connection? Yeah. Maybe you could tell us about that.

Dr. Wahls: And I talk about this in my book at length. So in a real high level, my toxin exposures...I grew up on a farm in Iowa, drank from a private well. I'd say a vast majority of private wells in Iowa have been contaminated by atrazine. We were not an organic farm. So we were using atrazine, other herbicides. I helped my dad deworm the pigs. And you pour this deworming compound on the hogs and occasionally on cattle. So I'm exposed to all of that.

I am an artist. I have my undergraduate degree of Bachelor of Fine Arts in painting. So during my studio art degree, I did metallurgy with a lot of solder exposure. I was painting, a variety of solvents exposures there, as well. Then I had a dentist convince me to put in some fillings prophylactically. So he had four mercury fillings placed within a month's time. So it was sort of a big load there.

Then I went to medical school and had a lot of formaldehyde exposure during my first year. And then during that summer, I decided to strip the paint off a condominium woodwork that I was living in. So I had three

months of very intensive solvent exposure. There was not a lot of ventilation. So that was pretty big.

And then you have the toxicity of how intense the medical school training is. Some of the teachers are a little more "warm and fuzzy." And some are a little more intimidating. So I'd say that was not the most nurturing environment to be in for four years in medical school and then four years doing residency, as well. So sometimes it was very nurturing. And sometimes it was very toxic.

And I'll tell you another very interesting tidbit. So two years into my recovery, I'm walking around very well. I'm biking out with my family, feeling really good. And I thought, "You know what? I'm curious about my toxic load" because I figured toxins were a part of my problem. And my protocol was designed to reduce toxins. So I did a twenty-four hour urine looking for a tox screen. And it came back diffusely positive. I think in the twenty heavy metals that were tested, there were only four that were not in the toxic range.

And so that probably reflected less efficient metabolism of the toxins. Years of as a vegetarian and being vitamin B12 deficient likely didn't help. And so I created some modifications to my protocol that I was using. I did some genetic testing, myself, to figure out which enzymes were not working so well. And then two years later when I repeated my toxic screen, I'd cleared everything out.

So, absolutely, I think toxins were part of why I became ill. And for many, many people with an autoimmune condition, they likely have enzymes that are less efficient at metabolizing and removing those toxins. So they're more likely to build up. And if you have someone do a careful functional medicine history, they can have some good ideas as to which toxins enzymes are not working so well and help you bypass that through some food choices and supplement choices.

Dr. Minich: Excellent! And so when you had taken this two years to really release this toxin burden, the release of those toxins, did you start to see symptom relief during that time? Or did it come much later? Or was it really hand in hand with letting go of the toxins in your body?

Dr. Wahls: Well, now, keep in mind, I think the first two years of my recovery, I had made a host of dietary changes that would really improve your detoxification. So I was probably detoxing then. Then when I realized how toxic I was, I made further refinements and continued detoxing.

I've had a pretty steady rate of improvement in terms of my tolerance for standing, for walking, energy improvement. And I'd have to say while I'm not quite normal yet. I still can't jog for a long time. And while I can stand comfortably for an hour to give a lecture, it would be pretty tough for me to do that for two hours. But every time I see my physical therapist, he measures me—I'm stronger—and advances my exercise program. And I had predicted that it would take seven to ten years to fully recover from the MS, if full recovery was possible. You have to really be in this for the long haul once the brain is affected.

Dr. Minich: Exactly. It's an ongoing process.

Now, Terry, you talk about the mitochondria. And for our listeners, perhaps you can tell us a little bit more. How does the mitochondria play into conditions like autoimmune diseases, especially multiple sclerosis? And is the mitochondria sensitive to toxicity?

Dr. Wahls: So a quick refresher for people. One-half billion years ago, there was this terrible poison came to the planet Earth called oxygen, wiped out nearly all of life. And most of life was a single cellular thing at that time. There were a few bacteria that could take this poison and use it to generate energy more efficiently from the food they were digesting. These little bacteria were engulfed by bigger bacteria. And these little tiny bacteria are the forerunners of all of our mitochondria.

And now, all animals have cells that have mitochondria that run the energy for that cell. In all of our cells will have these mitochondria. The organs that use the most energy like brain, retina, heart have the most mitochondria per cell. And, unfortunately, we aren't teaching physicians that you have to eat a very nutrient-dense diet to keep those mitochondria running well.

And the toxins in the world, particularly, heavy metals, arsenic, lead, mercury are toxic to the enzymes involved in mitochondria. And, furthermore, the antibiotics that we all take or most people have taken some time in their lives, are designed to harm bacteria. And what physicians forget is that our mitochondria are bacteria. And so these antibiotics are harmful for our bacteria. The longer you're on the antibiotic, the more damage you have to your mitochondria and the greater the risk for brain fog, chronic exhaustion, chronic fatigue, multiple organ system dysfunction. And the

more toxins we have, particularly, the heavy metals, but the other pollutants can also damage those enzymes that are involved in the mitochondria and how they generate energy.

And clinically, Deanna, the mitochondria are a source of efficient energy. When the mitochondria are strained, people are going to be fatigued. They'll have brain fog. And they'll often have decreasing exercise endurance as the heart becomes less and less effective. So those are the three big clues that tell me mitochondria are not working well. And I have to help the person learn how to resuscitate and revive their ancient mitochondria.

Dr. Minich: So, of course, the listeners are going to want to know how to revive those ancient mitochondria. If we think of the nineteen key nutrients that you mentioned—and much of your plan is really focused around helping the mitochondria to be vital. That this is our source of cheese, so to speak—what is your protocol? How do we really focus on the mitochondria to get healthy? And, in so doing, we let go off a lot of those toxins, and we can better equip the body to deal with any kind of insults.

Dr. Wahls: So I have a food-based protocol that really stresses the B vitamins, organic sulfur, antioxidants, and minerals. So now, the quick translate that into, "Okay. So what foods do I have to eat?" Green leaves, sulfur-rich vegetables. Here I'm talking the cabbage family, onion family, mushroom family. And that's because sulfur's so important in the mitochondria and in removing toxins. And colors for those antioxidants. Those should be things that are colored all the way through. So berries, beets would be colored. But an apple, red on the outside, white on the inside is not in that colored category.

I'm also very, very fond of getting more minerals into the diet. And life began in the ancient seas. Our blood reflects mineral content of those ancient seas. And so I'm very fond of having people consume sea salt and seaweed to get more of those minerals.

And, of course, I go over this in much more detail with food list and more specific guidance in my book.

Dr. Minich: Yeah. And B vitamins that seems to be something if you look at the Krebs cycle, you look at how the body gets energy, we definitely need those B vitamins. So that makes sense. And sulfur, we've been talking about that with various other presenters as part of The Detox Summit and how important sulfur is for the liver detox process.

So it sounds like, basically, what you've described is also a detoxification really optimizing how our body detoxes.

Dr. Wahls: Yes. Now, let me put it in a little more comment. So the three food groups that I emphasize in the sulfur category are cabbage family, onion family, and mushrooms.

Now, in the cabbage family eating those foods will ramp up the enzymes that your liver and kidneys use to process and eliminate toxins. It also ramps up the enzymes in the brain. In all of our cells, they increase the production of glutathione, which is a very potent cellular antioxidant that helps protect the cells against free radical damage.

Since we're chemical factories, in addition to the toxins that we eat and consume, I think your listeners should know that the very act of being alive and running the chemistry of life will generate free radicals and will generate some levels of toxins that you need to, ideally, have your liver and kidney metabolize.

Dr. Minich: Right. And that's why you mentioned the antioxidants as being so important for that process and getting colored foods, right?

Dr. Wahls: Yes. Absolutely.

Dr. Minich: Now, another thing that you mentioned that I think that everybody would have found very intriguing is this idea that you had some genetic tests to determine how well you metabolized. And you used that information to help you select foods to help your body do a better job. Can you talk a little bit more about those genetic tests because there is this notion out there that, "Well, the body detoxes on its own very well." That's why we have the liver, and the kidneys, and the gut, and the skin, and the lymph. And we don't have to detoxification protocols because our body is primed to do that."

So what can you tell us about what you did to personalize your approach. Should we be personalizing nutrition?

Dr. Wahls: So the protocol that I've created is a great first step. And for the vast majority of people that's going to be sufficient. But for people who are not getting the results that were hoped for, the next thing they can do is personalize the intervention by getting functional medicine testing. And one of the test you can do is a look at how efficient the enzymes are that are involved in processing and eliminating toxins.

And so some of these genetic tests can tell you do you have the wild

type enzyme or a mutation? And if you have a mutation, the test is not going to tell you if it's a more efficient enzyme or a less efficient enzyme. It will just tell you that you have a mutation. And it will probably give you some suggestions for vitamins, supplements, and foodstuffs that would help your cells bypass that step in the detoxification process.

Now, what I think is really very interesting is as I have gone through this testing, I saw that for many of these bypasses, the suggestion is eat more cabbage, eat more color, and get more iodine in place. So that's an important part of the protocol. In addition, they may suggest some specific amino acids supplements or a higher dose of particular vitamins to get you pass that step.

It can be very, very helpful for the person who does not respond sufficiently well to the standard protocol, but certainly not required by the majority. It would be a small minority that will need it. But it can be very helpful for them.

Dr. Minich: Yes. Exactly. And as you mentioned, that's a functional medicine based test.

So I'm curious. So you've personalized your approach. You're doing a lot better. So based on the protocol you described, I didn't hear any supplements. I heard that this is a food-based approach.

Dr. Wahls: Yes.

Dr. Minich: There are, however, many detox regiments available that do use supplements. And I'm just wondering, so what is your take? Do people need to take supplements in order to effectively detox? Should they be doing this detoxification quarterly? One time a year, twice a year? Or should they be doing it all the time with food? What's your personal preference?

Dr. Wahls: So in my clinical practice, my clinical trials, we do food all the time. And in my clinical practice, I will tailor the vitamin and supplement recommendations based on the history and the results of some pretty straightforward tests that your primary care doc can do. And I talk about that in the book, actually. In my clinical trial, because of the nature of clinical trials, you have to have everybody get the same thing. We use some B vitamins for the clinical trial.

And, certainly, supplements can be helpful. My caution to the listeners are that you want to have somebody helping you with the supplements because the nutrition that nourishes our cells depends on ratios of amino acids, ratio of essential fats, ratio of vitamins, ratio of minerals. And as soon as we begin taking them in supplement form, we run the risk of getting the ratios outside of the optimal health range.

So supplements can be extremely helpful. They're sometimes necessary. Best to have them targeted based on history and lab monitoring. As soon as you take supplements, there's some hazard of getting the ratios outside the optimal health range and either not having the benefit or having side effects.

Dr. Minich: So, Terry, there's been a lot of studies on supplements, whether it's multivitamins, vitamin E. And some of it is not very positive. And I think that many people are very fearful about taking supplements. And so I think that a lot of the guidance that you just provided about getting tested and working with somebody. I think that those are really good rules of thumbs.

Dr. Wahls: Let me comment about those studies. So what those studies tell me is if you don't change your diet and you just take supplements, you've wasted your money. The magic is in the food, getting more of the right stuff, taking the harmful things away. And for some people, targeted supplements based on history and testing, will add terrific benefit. But if you're just going to keep eating this toxic Standard American Diet and take vitamins, you probably didn't do much.

Dr. Minich: Yeah. People might see it as a band aid. Or just then they can go out and eat nutrient-poor foods because they took their supplement, right?

Dr. Wahls: Yeah. Correct. Correct.

Dr. Minich: Yeah. Now, one thing you have not mentioned yet...But I'm going to go back to the mitochondria because there's a lot of great literature on the mitochondria and fasting. Or giving the mitochondria a break so it doesn't produce all of these aging compounds, these free radicals.

What's your take on fasting? Is that healthy for a detoxification? Is it healthy, in general? And if it is, what are the parameters that you would place around fasting?

Dr. Wahls: This is a wonderful question. I talk about it a lot in my book. And when you fast, you increase the number of mitochondria. You increase the efficiency. It's how you and I survived war, famine, starvation,

all those things. In fact, our brain cells and bodies do very well fasting. And it has a nice anti-aging effect.

So you can do that by going on a fast, eating thirty percent less calories than what your metabolism requires. You could do that by fasting for twenty-four hours every other day and not eating extra than more than what your metabolism needs on the days you get to eat. Or you can fast for twelve to sixteen hours every day. My preference is to do the twelve to sixteen hour fast every day. I find that to be just more comfortable.

Dr. Minich: But you know, what I hear from researchers and even practitioners is that the liver needs nutrients in order to best detoxify. So how do we reconcile those two aspects? Needing things like protein and certain nutrients versus using fasting?

And I'm just curious, too, if you can talk about this. Is fasting good for everybody? Or do we have to think about certain people that might have diabetes? Or other conditions that warrants more eating?

Dr. Wahls: So fasting's not good for pregnant, not good for children. So those two groups you would not want to fast. Everyone else would be unlikely to be harmed. Now, one, of course, has to realize there may be specific medical conditions where fasting's not going to be appropriate.

Dr. Minich: Good. And I like the fact that you give us a number of different ways that fasting can be brought in. That's great.

What else? Just looking at lifestyle even. So I know that you cover food is medicine very thoroughly in your books. Are there other aspects that we need to be thinking about in our lifestyle when it comes to toxins? Different types of toxins, how do we avoid them? And how have you even changed your life. Living in Iowa, you're surrounded by agriculture, by farms, farms that are sprayed. So how do we live our lives in a more clean way?

Dr. Wahls: Well, you certainly want to be mindful of your food. The organic or as organic as your budget will allow you. And then think very carefully about everything you put on your skin. A lot of the personal care products have been marketed convincing us that we smell bad, taste bad, whatever. And most of those personal care products have a lot of toxics: heavy metals, plastic solvents, things that will confuse our biology.

So decrease the use of personal care products that have compounds in whose name you cannot pronounce. That's a good reason to think that it is a compound that's going to confuse your biology. You take a shower every day. Wash your armpits. I don't think you're going to need...And you have a clean diet. Quit putting on deodorant and antiperspirants, which have a lot of heavy metals in them.

Think about your indoor environment. A lot of the paints, floor covering, furniture is made with compounds that will release toxic fumes. So the more you get into this, the more you can think about your choices in your living space and the air that you're going to breathe, the things that you're going to put on your skin to minimize the synthetic compounds. That will be extremely helpful.

Dr. Minich: Yeah. So toxicity is really all around us. Do you think that for some of the patients that you work with, do you think that people have an initial response of fear and almost, "Oh, my goodness. I can't control these things. I can't move out of my house. Or I can't really do certain things about toxins in my life." So what do we do in those cases?

Dr. Wahls: We just start one step at a time. I help them ease into The Wahls' Diet. And then as they get that more successful, then we can begin a conversation about the other toxins in the environment. I talk about personal care products and the use of other chemicals in their home. And we also talk about workplace exposures and what exposures do they have solvent wise, the chemicals at work.

Dr. Minich: Yeah, exactly. And there are some of those hidden toxins we may not always be aware of.

So, Terry, I just have a question for you—back to food, briefly. A lot of the presenters are talking about if they were to create an ideal meal or a smoothie for enhancing detoxification in the body, this is what it would be. And I'm curious. If you were on a desert island and you had to take with you the perfect meal to keep you alive and your mitochondria healthy, your liver working well, your gut working well, you had to stay clean of toxins. What might you have as that perfect meal?

Dr.Wahls: What I'll do, maybe is more practical... So when I travel, what do I take with me to make sure I can be okay away from my house for a week.

Dr. Minich: Yes.

Dr. Wahls: We'll take algae. Powdered algae that I'll mix and I'll drink every morning. So I'm going to get plenty of greens and sulfur that

way. I'll probably take a small head of red cabbage because that would get me my cabbage. It's also going to be brightly colored. I'm probably going to be able to get berries while I'm away. So that's going to be okay. I can probably get some meat while I'm away. And that's okay. But it's going to be hard to get my organ meat. So I'll make dehydrated liver, also liver jerky. And I will have that because liver pure and organic is really a super food. It is a tremendous source of your vitamins, minerals, and antioxidants. But it has to be organic. Must, must be organic.

Dr. Minich: Gosh. It's so interesting that you came from a more or less a vegetarian path for twenty years, and now have transitioned into doing much more in the way of meat. And I know for many listeners, they may not eat meat. That may not be part of their daily living. Do you feel like that's an essential for people that are very concerned about immune issues?

Dr. Wahls: I had many, many requests for a vegetarian version of my protocol. So we did, in fact, create that. In my book, I talk about what I see as the nutritional risks and the health risks of a vegetarian diet, why animal protein may be very helpful. But I also recognize that for some people based on their religious and spiritual beliefs that animal protein is not going to be acceptable to them. And so I give them the strategies to reduce their risks and maximize their health outcomes. And I also am quite frank in saying that I think the best health outcomes would require animal protein.

However, I also acknowledge that if you have a very nutrient dense diet that's vegetarian and vegan, and you follow the strategies I've recommended for reducing the potential downside risk of a vegetarian/vegan diet, I think people can do quite well. And I acknowledge that there certainly have been wonderful healing stories with the vegetarian/vegan diet. And there are people who have terrific health with those diets.

And so if someone is that ideal body mass and is enjoying terrific health, then they are apparently doing the vegetarian/vegan diet very successfully. But if they have a chronic complex medical problem as a vegetarian and vegan, that to me tells me that their nutrition is likely part of the problem and needs to be adjusted in some way.

Dr. Minich: Okay. Good guidance. Good guidance there. And even on the liver, what I've heard from various people even within functional medicine is since the liver does a lot of the detoxifying, that they would not advocate that their patients eat liver. But you're saying because it has all these cofactors, it's a very nutritious part of the animal that can give us a lot of those nutrients that we need for detox.

Dr. Wahls: It's actually critical nutrition. And if you look in the wild, our carnivores will eat organ meats and leave the muscle meat behind. If you look at traditional hunter- gatherer societies, a large proportion—a third, quite routinely—of the animal protein is organ meat. If you look at modern society, for thousands of generations organ meats were a vital part of the nutrition. I have this wonderful book, *The Companion of Modern Cookery* from 1890 that my great-grandmother had. Wonderful chapter in there about organ meats and the critical role organ meats play in health.

And then somehow, we got confused. Just because the liver is where you detoxify compounds, doesn't make the liver toxic. I take great exception to my functional medicine folks who say that organ meats should not be consumed. It absolutely should be consumed. But you have to be very careful that it's nutritionally clean, that it's organic and as free of hormones as possible.

Dr. Minich: And, Terry, how's the taste? Have you made it palatable? When you say that you dehydrate it, does it taste good then?

Dr. Wahls: You marinate it. You put it in with a lot of spices. I like things hot and spicy. So I think it's quite delicious. Learning how to make liver and onions, you have to be careful not to overcook it. If you overcook it, it's awful. But if you leave it medium rare, it's really quite wonderful. Make liver pate. Wonderful! My teenage kids actually like that.

Heart, also excellent, excellent source. My kids and my family say this is like the best steak they've ever had. And it used to be that brains was a terrific delicacy. And certainly, there's great anthropologic evidence that the reasons humans were able to grow big brains is that when we were in Africa, we were bashing in the skulls and eating brains that the lions, etcetera could not eat.

Dr. Minich: Oh, interesting. So it really brings in the medical anthropology side, too.

Dr. Wahls: Yes. Yes. So the organ meats can be quite delicious. And I remind everyone that we all acquire a taste for our culture. And taste is very much a culturally required taste. That for most of us we have to be exposed to a new taste five to thirty times before we really enjoy it and crave it. Just because something does not taste as pleasing as you expected the first time does not mean that if you continue eating it you won't develop a great appreciation for

those more complex flavors.

Dr. Minich: It's true. And it's back to the concept of food being medicine. Food is information. And so if we see it in that way, perhaps, we can bring down our taste benchmark a bit more and learn to appreciate food for the medicinal qualities it imparts to us.

Dr. Wahls: Absolutely! Absolutely!

Dr. Minich: So, Terry, we're at the close of our interview. I'm wondering a couple of things. So first of all, I'm wondering if you could summarize three main takeaways for the listener. Based on everything that you said, if you wanted them just to remember three things that are so important for them with respect to toxicity and keeping their bodies clean, what would those be?

Dr. Wahls: Eat more non-starchy vegetables. Eat organ meat. Eat seaweed.

Dr. Minich: Great! I love it and very memorable. I really like those. We'll post those on our social media, too.

So how can people find you? Obviously, you've written your book. Just give us the soundbyte here on your websites and everything going on for you.

Dr. Wahls: So go to TerryWahls.com. Please put in your email so you can get the free materials we talk about in the book. Of course, we would like you to pre-order *The Wahls Protocol* so you can get that life changing information as soon as possible.

Dr. Minich: Yes. I would highly recommend it. Everything that Terry has talked about is so incredibly valuable. And so the question is, "How can you put that into motion?" So I think that getting her book and really working with your practitioner is a great first step.

So thank you, Dr. Wahls, so much for being part of The Detox Summit. It's been a pleasure to have you and to hear your story and to bask in your wisdom, which is immense. So thank you so much.

Dr. Wahls: And thank you!

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