Introduction to Bob Miller and Functional Genomics

The structure can hold. Talk with another episode of the Peptide Summit. And today, wonderful guests. It's, Bob Miller with Functional genomics. And he's going to talk about functional genomics with Bob Miller.

Makes sense. And, think thanks, Bob, for being on. He is one of my favorite people and been working with them for, for a little bit. And I've just been so impressed.

And his, the way he's really kind of revolutionized genomics instead of just looking at, you know, Jeannette Wise, he's he's looking at, you know, functional genomics with name, very fitting and really shows you how you can treat these things.

And it's really allowed a number of things, tells you not only what to treat with, but what you don't need. Or if you're using too much of stuff, or we've had patients who, you know, crash or go to file and I'm like, what the heck?

And he shows you why it's it's incredible. He's like, fortune teller when you when you're done, he knows more about you than than you do. So thanks so much for being on and taking the time.

I know you're so busy. How many patients do you see a day? Well, I usually see people 9 to 12 hours a day. So somebody new, an hour recheck, half hour so I can know they can get up there pretty good.

But, I gotta tell people, I just get to visit with my friends all day and help them out. So it's just just a lot of fun. He's. He's like, he's too nice.

He's got to be a robot. It can't be human. I'm real man. So, he's a traditional naturopath, specialized in the field, genetic, special nutrition. He's earned his traditional naturopathic degree from Trinity School of Natural Health and is board certified through an AMA in 1993, opened the Tree of Life practice and has served as traditional that for 47 years.

In the past several years, he has engaged extensively with functional, nutritional, genetic variants and related research, specializing nutritional support for those with chronic Lyme disease and really kind of everything, you know, chronic multi-system disease.

And it's pretty amazing. I'll just ask him, I don't know, I do you sleep, you know, and, and, well, I guess he knows exactly what's wrong with him. You can take exactly what he need.

So, great educator. And, we've had him, on and with the patient, and it, it's pretty amazing. And it just correlates so well. We are very excited to have incorporated it, into our practice.

And it was so many steps above, you know, other ones out there. I'm not trying to bash anyone, but it's just kind of like, okay, you got the snap to snap, okay?

You're going to get Alzheimer's. And, you know, and, he'll tell you what to do. You can either, you know, formulate, you know, the different things or tell you what, supplement to the patient needs, or he can formulate them for you.

So it's really full service and and and very cost effective as well, which is nice. He's nationally. Internationally. A lecturer to educate health care practitioners about genetic variants and nutritional supplementation for achieving optimal health and holds live webinars every Thursday, which I highly recommend.

And, how would they find that? Go to that tournament genetics.com? Well, if they just go to our, our functional genomic nutrition website and we'll put that up at the end, you can then see how to, you know, get a free trial of the

software.

Listen to the webinars or subscribe or just email one of our help people here, Yvonne or Christy, and they'll help you get, get on the webinars every, every Thursday or every Thursday evening from, 8 to 9 p.m. Eastern Standard Time.

Yeah, it's all free and, yes, training program that hey, the first part is free. If you want to continue, it's very extensive. It's a, it's a minimal fee.

And he's, he's really there to, to give back. And he loves what he does. So it's it's just refreshing. He's created online certification course and know efficient for health care professionals.

So it has over 900 health care professionals in the program. He's, research and growing, genomic research field. In 2015, he founded, and personally funded which is here, the Neutral Genetic Research Institute, to research the relationship between genetic variants and presenting symptoms as first research.

This research project on genetic variants and those with chronic Lyme disease was one of two winners for research by, the AI labs, which, you know, they're pretty strict and pretty, you know, intense.

Meeting in Helsinki, Finland, his phase two study of Lyme disease presented at the American Islets Conference in November 2016, phase three was presented at the International Lyme Conference in Paris.

So you got to go to some nice places. And his phase four study on mTOR and autophagy, which I think is really an upcoming thing as well in Lyme disease, are presented in Boston, 2017 and phase five was presented in Warsaw, Poland.

How Functional Genomics Differs from Disease Testing

And they, there's a phase six, another winter in Chicago, Illinois, November 2018 showed increased variance in the heme pathway and mast cell genes, which obviously is getting tons of press, at least in the whole Lyme, you know, chronic, illness, group they seven presented in Madrid then all over in June 2019 show genetic variants and gene related to the production and utilization nad all huge topics right now.

And he's he's come up with a lot of new theories. Or at least I'm gonna all nad and nad Steele Fenton reaction. He talks a lot about and a research project on autism and pandas is being developed.

Hey, I can help you out in any way with that. That's exciting stuff. He's created 88 nutritional supplements. He's a formulator, for health care professionals.

Products been based on his, genetic research designed to support function, and that are impaired by genetic weakness. So it's so nice. You can just pick out what this person is going to need.

And I found is that, you know, you kind of gravitate towards what seems to help you. And when I look like flavonoids, who are a big part of my snips and I'm like, I discovered flavonoids, I just feel better.

Like you don't know for sure. But, so it's really interesting. He's, a software creator. My gosh. And and that's what I really like about his, software makes it understandable, you know, all these snips and so many companies that give you a 10,000 steps and it's like, oh my gosh.

And there are having, new generations of that and it organizes the genetic snips and really, you know, pattern recognition, which it can be daunting for the person starting.

But he has a system that that gets you going pretty quick. So he's, memberships, a National Association of Certified Natural Health professionals, and the American Association of Nutritional Consultants and works on a natural path and certified, with the accreditation Board there.

So again, Bob, thanks so much for being on, I have to say, one of my favorite people. And, I just love working with you and just kind of sit on the edge of my chair whenever you speak.

And, again, those, webinars are are wonderful. And, you know, going through the tests with patients, they are very happy. It's really an added bonus for the patient.

And I think, you know, patients are looking for that now. You know, it's it's becoming kind of the standard. But everyone you know I think certainly Bob is ahead of the curve and all this and you know developing the software to make it, you know, and I think I remember when I was like, writing research papers, I go to the, the medical library, try to find that journal, put it on the Xerox and, you know, get it now it's information overload.

And that's what I think. Genetics. It's just okay, you a million snips like, okay, what do you do with it? But, let's see. So, with your software, you, you call it's created functional genomic analysis.

We often think genetics like, you know, 23 and me, ancestry or professional journals, geneticists to look at potential disease. Tell us about your functional genomics.

What's the difference? Sure. Well, is everybody knows you can get 23 in me or ancestry. You know who your ancestors came from? That's that's okay. Professional geneticists, you know, they're trained on which genes might be related to a disease.

Well, we're taking a completely different approach. And this goes back to the traditional naturopathic philosophy, because way back in that is that inflammation is the root cause of most of our problems.

So I I'll never forget me. Around ten years ago, I saw there was an article that says science has made a major discovery on the root cause of disease and that is inflammation.

And I kind of had a chuckle that, you know, the naturopaths were saying that, about 100 years ago. So what we started looking at was, can we look at the genetics and find out if there's a predisposition to more inflammation or if there's a predisposition to less than optimal antioxidants?

So what we did is we started digging into the the DNA. And I had no training on this at all. I just sort of dug into it, fell in love with it. So rather than looking at disease, as you said, there are reports out there that look at your risk for disease.

We don't do that at all. We don't make any predictions. If someone's going to to get an illness because we're looking at function. So what we do in the software, we look at many different patterns where somebody something might go wrong, where they might make more inflammation, or we look at patterns where they may maybe not make enough antioxidants.

Then you also have, you know, phase one and phase two detox. So we look at salvation glucose. We'll look at how you're dealing with your fats. And the whole premise is this is personalized for the individual.

This is not the pill for the ill. This isn't like, what do you do for this disease? We don't even talk about that. We look at how might the person be making too many free radicals, not enough antioxidants, and then, more importantly, how to compensate?

As we all know that, the genetic pattern that you have, you received when you were born, at the moment that sperm and the egg went together. Boom. That's you.

And we can get what are called, snips, single nucleotide polymorphisms or mutations, they're called. And when we get those, the DNA may not be as effective in making an enzyme.

So some processes may not be optimal. So what we're looking at is where there might be something less than optimal. And then how we can intervene and either provide what the body's not making or support the enzymatic

function that the body comes back into balance.

We're creating homeostasis. So you could see ten people with the same condition and you might have ten different ways they got there. So in my opinion this has to be care of the future.

Personalized not the pill for the ill personalized care for the individual. And we're hoping that, we're pioneering that to some degree, I think it's great.

It is a different approach than, hey, you have, you know, ApoE4 gene. Very good. Alzheimer's. Okay, let's go on the next patient, you know, and, it's interesting how how you put it together and it makes sense of their symptoms.

Yeah, that's happens a lot of times. I'm, I'm talking to people, and I start saying, I don't suppose you have fill in the blank and they have this surprised look.

Okay, who are you? Who are you talking to? How did you know this? Well, when you understand functional genomics, it tells the story. Good example. There's two, neurotransmitters inside the body.

One is called glutamate, one is called Gaba. Glutamate makes you very intelligent, highly motivated, go getter garbage. The. Don't worry. Relax. Be happy by actually looking at the genes that turn the glutamate into the Gaba, or the genes that make more glutamate.

You can get clues if this person is high in glutamate and might have a hard time converting. So many times with people with high glutamate, they'll be anxious.

Tags on clothing bother them. Their mind races. But on the other hand, they might be extremely intelligent. They might be gifted or in the genius range, but they're dealing with anxiety.

And you can see that by looking at the, at the genome. Quite, quite amazing how you can see the personality traits that might be there. Same with histamine.

We look at, if the person might be creating too much estimate, if they have difficulty in the pathways that, the clear, the histamine, you can see if there's high histamine, then you can see if they have, some of those histamine properties in their mental outlook, or they get rashes quickly or they get hives or they have overreactions.

So, you can really look at someone's genome and get a good idea where their glutamate might be, their Gaba, where their inflammatory levels might be. And, that way you can give customized care.

So if the glutamate too high, we do things that either reduce the glutamate or support the glutamate to Gaba conversion. Or if their histamine is too high, we look at why they might be producing too much of it rather than just a histamine blocker.

And then we look at the pathways that clear histamine. There's an enzyme called diamine oxidase that degrades system. There's an enzyme called histamine in methyltransferase.

There's an emoji. And then you can also have overproduction of histamine from mast cells or an upregulation of an enzyme called histidine de carboxylate.

So if someone just has high histamine now you have an option rather than a histamine blocker you can look at. Are they overproducing? Are they not clearing?

How do we bring that into balance? So again someone with high histamine, you could have ten different protocols as to how they got there. For some people it's overproduction.

For other people it's inability to clear. For others it's a combination of both. So for the doctor who really wants to dig in, get to that root cause I believe this is where we have to start looking.

And just one other quick note, I think things are changing. One of the premises that we have is that many of the illnesses we're seeing today is related to environmental toxicity.

You know, we're living in a world that, you know, when you and I were kids, the world is changed dramatically. You know, when I was a kid, our milk came in, in glass jars, not plastics.

So we're inundated with plastics. When I was a kid, I played out in the woods and slopped around the creek. And now it's on your computer just being exposed to EMF.

Glyphosate may be impacting us dramatically. I think we're going to look back someday and say, what were we thinking giving our animals growth hormones to get them fatter, faster?

That's having an impact on us. You know, we're seeing, you know, girls maturing faster, sperm rates dropping. We're seeing autoimmune disease among children.

You know, when I was a kid, we used to call it adult onset diabetes. Now the kids are getting in. The inflammatory bowel disease is rising among children.

Mental health issues are rising. And I believe what's happening, our detox capacity is totally overwhelmed by the onslaught. Mold is getting stronger.

And I also think we're going to look back someday and say, what were we thinking putting transmitters in our ears to, to talk on our phones and be exposed to to all that EMF.

So cumulatively, it's taking a toll on us. And those who have genetic weakness are the proverbial canary in the mines.

Inflammation, Neurotransmitters, and Histamine Pathways

They're being hit the hardest, say with autism. You. Autism used to be relatively rare. Now what is it, one out of 43 or 1 out of 45, particularly the boys.

And it's got to be environmental factors. And that's why I think we're going to get away from the pill for the ill, because a lot of our kids are. The future is going to have to be supporting the body's ability to detox.

All of the environmental toxins were being exposed to something dramatic is happening. But, you know, I can't agree with you more. And but standard medicine isn't set up to do that.

Their pill for the ill, you know, and it's like you go to this specialist, the specialist, the specialist. And I just looked at their little section and yeah, you know, 20 years ago or grown up, no one was sick.

Like every time at a cocktail party or a people over, it's like, hey, you know, my sister's sick or I'm sick, my parents are sick. And and it's like this multi-functional doctors can figure it out.

And, yeah, this all this autoimmune and chronic fatigue syndrome and chronic Lyme and, it's it's scary. And where are we going to be? And, you know, 20 years from now and it's interesting.

So I was one of the high, basically, like, yeah, but what am I saying? A glutamate and I didn't get the intelligence part, but I got the desire to eat, don't sleep, and just, like, turn everything in.

I'm always worrying. And it's interesting. So you pick that out, and I'm like, wait a minute. I was asking a someone tell them about me. So, any, like, crazy, and and it's interesting too, because you can show whether or not, like you said, they're making enough or making too much or not breaking it down.

And so now, instead of shot and getting all the supplements, you can be very selective. So because I tell patients, I

can give you 100 things at work, but you can't take them all.

And this allows you to be more of a smart bomb and, and go after these genes. I just had somebody say that I'm like a sniper, that I know exactly where to go and put it, because I see people and I'm sure you see it as well.

People come in with, you know, shopping bags full of supplements, or medications. And, one of the interesting things is, you know, what I do is, you know, recommend nutrition for people.

But interestingly, I often say, I think I help people the most by taking them off things, because as we get more inflamed, and we put some take supplements that turn processes on, many times it backfires.

You know, many years ago, we learned about MT MT4, and it's a very important enzyme. It puts a methyl group on B12. And I'm sorry, I put a methyl group on folate.

And then there's another one that puts a methyl group on the B12. So the mTOR puts a methyl group on B12. And HFR puts a methyl group on folate. And it's very important to methyl eight.

I mean, everything we've heard about it is absolutely true. So what people did is they get their testing done, they find out they have HFR, and it's like, oh my gosh, I've got MT4.

I need methyl for weight, and they take 3 to 5mg of this. And you know, they might feel well for ten, 15 days. And all of a sudden what the heck is happening?

They get more anxious, they get more inflamed and they may not even tired to them. So although we need methyl for lead, we need a methylene. If something called nADPh pH is inadequate inside the body, or the processor going on that methyl foley can actually make you worse.

So in the pyramid that I created, I put methyl four lead at the top or last. Now, of course, the exception is pregnant woman. Somebody has got a massive homocysteine problem that has to be dealt with.

But other than that, I believe we are way overdosing on methyl folate. Another thing that I think we're overdosing on is glutamine. We hear about the term leaky gut.

So what do we do? Oh, well, glutamine is good for the gut. It helps build new cells. Absolutely true. But it does that by supporting enter mammalian target of rapamycin.

The growth of cells. And many people have that overactive so that when they take the glutamine, they get more anxious and they get more inflamed. And the final one that we have to be careful with is, many times people want to improve their blood flow or their muscles, so they'll take L-arginine.

Well, if you've got difficulty with your, nuts, enzymes or you don't have enough before, you just happen to make more superoxide free radical. So some poor guy thinks he's going to improve his, erectile function or muscle strength, and he ends up making himself hurt because he took L-arginine.

So it's not only the right things to take, it's also the things to avoid. You know, another problem we have is bone broth. Some people think that, it's this wonderful food, and it is, but it's high in glutamate and histamine.

And if you have a problem there, it'll make you like us worse. Yeah. So. And same with, fermented foods. You know, there's groups that tout the benefits of fermented food.

It's good for the gut. Absolutely true. But if you don't make enough of the dynamic oxidase enzyme, it backfires on you. So it's interesting. I often say I think I help people more by taking them off things than, putting them on.

Here's an interesting clinical pearl that we're working on. We all know the benefits of, of B6. I mean, it does lots of things. However, it works with the histidine de carboxylate enzyme to make histamine.

And we're now looking at the enzymes that degrade B6. And if someone doesn't degrade their B6 and they take too much B6, they actually significantly increase their histamine levels and can make themselves worse.

So and then sometimes people take supplements, they take a couple of them, they don't look at the ingredients, and all of a sudden 3 or 4 bottles have methyl fully or B6 in it and they're overdosing.

So we have to be careful not to overdose as much as we do need to take the, the right things as well. Yeah. And that was, my snips where I was taking pretty high dose of B6 for mast cell because it's good for Marcel.

And I had that exact same thing where I don't break it down. And so I'm making more, you know, histamine and, you know, and, making everything worse. So. Yeah. Yeah. Hey, when that happens.

Yeah. And I'm like, some is good, more is better, you know, and and with the mTOR part, I can totally see that. And I was kind of doing even the same thing that's, you know, whatever.

Methyl folate. Oh I got some I'll take ten, you know, whatever. But once a month. And now how does that relate to depression? Well, keep in mind that there's many ways we get to depression.

But, to keep in mind, to make serotonin, we need something called b4 tetroxide to br optim. And then that combines with your five FTP to make your serotonin lot can go wrong there.

Your B4 also plays a role in making nitric oxide. So if we, if we have not enough nADPh, then US enzymes aren't working properly. Rather than making, nitric oxide, we make superoxide that makes peroxide nitrite that further depresses your B4.

Most common thing we see in depression. But of course we don't have the protocol for depression because there's many ways to get there. That's just one that I think can get there.

Or I'm tending to think that, there also may be an inflammatory component where the brain still shutting down a little bit in a self-protective mode, that has to be researched, but the most common I see is that, inflammation dampens the precursor to the serotonin.

Interesting. And so we'll treat ALS patients, and, you know, they'll come in in wheelchairs and or, jogging and send them back to the religious neurologist because, it's a bit of misdiagnosis.

But, and so let's try and, really is all I pronounce at work on time, but, you know, blocks glutamate and it's not it doesn't work for ALS. But I found it work for depression and anxiety, which kind of makes sense.

You know? Absolutely, absolutely. If you can, I'd like to talk a little bit about, one of our most exciting discoveries. And that is what we call the nADPh steel.

I'm very intrigued by the NOx enzyme, nADPh oxidase and the enzyme in nADPh. Just very briefly, the image of the immune system we have is totally astonishing.

I mean, I'm just amazed at the complexity of the body and how it works, despite what we do to. So when we're exposed to a pathogen of some sort, there's an enzyme called nADPh oxidase that says there's somebody here that doesn't belong here.

We got to get rid of this. So when we're faced with a bacteria or a virus, this enzyme will take some oxygen from ion. An electron from nADPh, and create a storm.

It'll create superoxide. Hydrogen peroxide, Marcel's histamine to kill the pathogen. And if we didn't have that, or we die of infection, it wouldn't work.

But I believe what's happening? Going back to what I said earlier, environmental toxins are overstimulating. This

nADPh oxidase enzyme. And we're making too many mast cells, too much superoxide.

Now, what's interesting, there's a fascinating molecule called nADPh. I love any it is what takes your oxidized glutathione back to your reduced. It helps the H marks enzyme breakdown him.

It helps you make nitric oxide and does many, many important things. Without it, we wouldn't recycle or in oxidants, but that nADPh is used by the NOx enzyme to make all this inflammation.

So here's a molecule or an electron that recycles your antioxidants and is protective from free radicals, on the other hand, is used to make free radicals.

I am just totally thrilled by that thing. And I think that's what's happening to us, that environmental factors are shifting, that balance. So when we were faced with a pathogen, we wanted to stop antioxidants created inflammatory burst to kill the pathogen, then go back to homeostasis.

I believe environmental factors are over overstimulating. That knocks enzyme continuing to make inflammation and mass cells. You know I'm sure when you started your practice, you didn't hear much about mast cells.

Now doctors are hearing about it all the time.

Environmental Toxins, Detox, and the NADPH Steal

And those who have a genetic predisposition to the NOx enzyme being overactive or more sensitive, these environmental factors, or the ones being impacted by this, that's why I call it the nADPh steal or this very important nADPh, which is being used to make more inflammation that it should rather than recycle antioxidants.

Now additionally, we look in the software, there's genetic mutations where you may not make enough nADPh. So if you combine that with it, you've got a real problem.

And what we generally find is that when people are really ill, they can't get answers to their questions. They're usually overproducing free radicals by Fenton reaction or niacin uncoupling, or the excess glutamate or interleukin six being upregulated and then something wrong.

They're not making enough antioxidants or enough nADPh, or the nADPh is being used excessively in that nADPh, pH steel. And then finally, we've coined the phrase the home cycle, a term we came up with based on a relative of mine that I admired.

And it's where this inflammation then feeds the red and angiotensin system, creates more nADPh. And we just have one cycle of inflammation. And I believe that's what's happening to a lot of people that the inflammation can't be stopped.

They might get Lyme disease. And their doctor tells them, okay, your Lyme is over, but they're still sick as can be. Yeah, they get other some other inflammatory condition that just keeps going.

So I think the challenge we're seeing today is that environmental factors are up regulating the NOx enzyme. And primarily by overstimulation of interleukin six.

If anyone would like to listen to it, I did a one hour, 50 minute interview with Doctor Jill Carnahan. It's on her YouTube channel. Just go to YouTube, subscribe to Doctor Jill Carnahan.

And actually I have like 5 or 6 videos there, but the one on interleukin six, I think the doctors will really appreciate because we look at all the environmental factors combined with genetic weakness.

That's leading to upregulation of interleukin six. I'm seeing that in so many of the most ill people we do. And when we do console, I think that seems to be the key cytokine that just sets everything.

And just to backtrack a little bit. So, you know, you talk about any deep page, how does giving need affect nADPh? I guess it's because you can recycle it.

Yeah that's a good question. And again you know that's gotten a lot of attention. So I'm very well known people are talking about the benefits of, of NAD and everything you've heard is true.

It feeds the Parp enzyme which repairs your DNA. It makes your nADPh which is at the top of your electron transport for energy. It makes your nADPh. It stimulates the sirtuins that are your, you know, longevity, enzymes.

The balance is mature, and it haffajee. So you tend to think, well, the more energy I take, the better off I am. And, I talk to a lot of folks who are who do energy therapy.

And I'll say, if for some people is this the best thing they've ever done? It's like, yeah, that's great. And I say for other people, was it a horrible experience?

And it's like, yeah. So I think what's happening is there. And now this is just Bob Miller hypothesis okay. But I think what's happening when the NOx enzyme is upregulated and you start boosting nADPh, you've just given more fuel to the fire to make more information.

So what I've been recommending people do is first, calm down, NOx, find out what are the factors that are over stimulating nADPh oxidase. Call that down, then give it aid and watch what happens.

Then it works out. It seems like the NOx enzyme, which I hadn't heard about since they've, spoke to you, seems to be at the central to all this stuff.

Yeah. It's an interestingly, a paper just came out in December that said that anyone who had upregulation of NOx seemed to be more susceptible to more serious Covid, and that's kind of the path we've been going down because the cytokine storm is interleukin six.

And also, and also bradykinin is a piece of this as well. But we've been talking about upregulation of of the NOx enzyme and IL six in the cytokine storm.

But even if you said Covid aside, I believe many of the things that we're seeing today, are related to this il6 being over stimulated. Again, I encourage people to listen to my one hour, 15 minute interview with Doctor Jill Carnahan.

We go through slides, we don't make things up. We we look at all the peer reviewed studies and show how this upregulated interleukin six is behind so many of the conditions we're seeing today.

So I'm I'm seeing a very unique client base now many times people will come to me after nothing else is working. 80% of the people I talk to have upregulate interleukin six by other environmental factors or genetic factors, and mold is becoming a real problem.

Mold will stimulate interleukin six. It's believed that the lipopolysaccharide in Lyme is what's stimulating the interleukin six rate. Don will stimulate it over exercise.

And then internally histamine, homocysteine, dopamine, sulfides, all stimulate interleukin six. So the beauty of the software is, rather than guessing, you can actually look and see.

And we actually have interactive maps where the doctor can look and see where there's a genetic predisposition. And with that precision you can say, oh, I think it's the sulfites.

Oh, I think it's the dopamine. Calm those down. NOx calms down. Then you can put in your keep in mind we need nADPh to recycle glutathione. So here's another example.

We learn all about the benefits of glutathione the master antioxidant. The lower it goes, the sooner you die from all

causes. So we tend to think, let's take glutathione.

And many times you hear are people that say, you know, I felt good for five days, then I felt worse. And they don't understand why. Well, if you take glutathione in its reduced form, then it does its job through glutathione conjugation or by, glutathione per oxidase to remove hydrogen peroxide, it goes into the oxidized form.

And if you don't have enough Nadp to take it from oxidized to reduced, that oxidized glutathione ironically combines with oxygen and superoxide to make peroxide, nitrite and oxidizing agent that makes you more inflamed and depletes your teeth.

I am so who'd have thunk taking glutathione? Under the wrong conditions can make you more inflamed and deplete your lithium. So that's why you have to make sure that the, the global Ionis reductase enzyme is working.

Here's an interesting clinical pearl that we're just researching again, it's patterns that go together. I'm sure most of the doctors listening to this have heard of nerf to nuclear transaction factor that's controlled by keep one and nerve two controls GSR glutathione S reductase that takes the oxidized glutathione back to the reduced.

I'm observing that people that just have been everywhere and can't get any answers. They've got mutations on keep one that makes it stronger. Nerf two that makes it weaker.

And mutations in glutathione S reductase. And some well-meaning person says, let me give you a cysteine. They get worse. They say, well, let me give you glutathione.

They get worse, and they don't know why. So what you have to do is you have to make sure that nerve two is strong enough. You give the co-factors to help GSR that effect.

We're just formulating a product now called GSR assist that I think it's going to be incredible. It actually has things that stimulate the GSR as well as the cofactors.

Trying to use riboflavin to make fat. Then when you give lithium, it'll work. And, that's the kind of personalized care I believe we need. We just can't throw qualify onto the person because they're inflamed.

Yeah, because you see these doctors and, like, they give glutathione down to 100 people. What? I wake up and go, oh my gosh, I feel worse. Like what? Ever seen that before.

And they have and they have no idea. And just since we're on the peptide, some that just, you know, BPC tb4 CPT lower interleukin six, but nitric oxide is can be a double edged sword.

Right? Absolutely. Yes. Of course, if you if you Google nitric oxide Nobel Prize, you'll see the Nobel Prize. I can't remember the late 80s or early 90s.

You know what a Nobel Prize, three scientists for the importance of nitric oxide. We think of it as, you know, the dilator. You know, men needed for erectile function.

We need it for cardiovascular. But it's also very anti-inflammatory. It actually calms down mast cells and, has an anti-inflammatory role. However, I think nitric oxide has gotten somewhat of a bad rap because sometimes people look at nitric oxide as pro-inflammatory.

Well, what happens is that nitric oxide will combine with superoxide to make peroxide nitrite. Bob Miller opinion okay, just my hypothesis that the problem is that we're making too much superoxide, and if we don't have enough superoxide dismutase to neutralize it, that superoxide combines with nitric oxide to make that dangerous.

Peroxide nitrate. One of the potential causes of that could be, MF there are now published reports that show that EMF stimulates superoxide. Yeah. I'm telling you, I, I done a deep dive.

And the more you read about the maths, the scarier it is. Absolutely. Again, somebody goes to Doctor Jill Carnahan's website. We just did an hour, 20 minute video on EMF, where again, we went through the published literature.

We just didn't make things up. Somebody had on a blog. And the published literature is there that it stimulates free radicals and inhibits, your go to iron study and catalase.

And it's there, but no one wants to talk about it. It's like they deny it. It's like so much of medicine is just like, you know, just suppression of information and, well, look how long it took to, to admit that cigarets was a problem, you know, back in the 1940s.

I mean, you can, if you want to be entertained, or disgusted, go on YouTube and and type in 1940s cigaret commercials where you see doctors in their white coats recommending camel cigarets.

Yeah, it's good for your throat. Hey, I remember even in residency, like, doing that stage, and she always be smoking the cigaret in the Or, you know.

Yeah. Yeah. Well, we didn't know. We didn't know. And there was denial for a long time because, you know, you could smoke a cigaret for ten years and you were okay.

Smoke for 20 years, lung cancer and emphysema. Yeah. And I'm afraid we may see the same thing with EMF. Now, the cool thing about our software is we've identified the calcium voltage channels, and we can actually identify those people that might be more prone to EMF sensitivity.

We look at the, what I call the CAC and a one see genes that are the calcium voltage channel gates. And just as the gate implies, that's, it pushes calcium in by voltage.

And when you've got mutations, you're more prone for that EMF from outside sources to push calcium in as sodium. That then combines with, with nitric oxide and superoxide to make peroxide, nitrite.

And, I've spoken to many people who've had to move out, you know, in the middle of nowhere, you know, would, you know, in a wooden, log cabin and not have any EMF exposure because it makes them ill and, we've just, we've just done that and we just did a five webinar series.

If one of the doctors is interested, just contact us. We'll give you the links to the videos. We just did five, five webinars on how EMF will create Fenton reaction, interleukin six, through the, calcium voltage channels.

And then more importantly, how to identify that and then what to do about it. Where would we find those? Well, at the end here. Well, we'll just just go to our website, functional genomic analysis, dot com.

And, that's our website. And you can go inside and you'll find our contact information there. So what you may want to do is, is contact Yvonne Lucchese and I'll give you her email address.

Yvonne y Yvonne any and then the letter L at DNA supplementation.com your vernell at DNA supplementation a.com.

Glutathione, Methylation, and Supplement Pitfalls

And just ask her for the link for the, five webinars and they're free. Somebody can watch my five webinars, on MF and again, we're doing more EMF lectures.

I just keep adding and adding to them. And and we're finding, you know, BPC help stabilize those calcium channel, voltage gated, calcium channels. But yeah, it's, it's crazy stuff.

Tour. And and so your software is, I think really one of the keys and you're even upgrading it, and allows doctors

understand all this. Absolutely. Now, this is a lot to learn.

So one of the things we're doing and I'm going to try to do a screen share here. That way we can put, that email address up I think I can do a screen share.

Let's see. Let's see if it'll allow me to do that. Oops. Disabled from you. So if you turn on my ability to screen share, I'll screen share the, website.

Yes. What we're doing is we're, we have online certification courses for the doctors to, to train them. And then, then we also are creating software dynamic messages in the software that will actually give doctors messages on what to do.

There we go. So I will look at the screen two here. Yeah I love your figure and graph ability. Which, let's it allows you to understand all this stuff.

Sure. So here's the, here's the website functional genomic analysis.com. If you want the webinars Yvonne l y Yvonne and e l at DNA supplementation.com.

And just ask her for the, for the webinars and we'll be glad to send them at, at no charge. And while we're doing a screen share here, we didn't plan on this, but why don't I just very quickly bring over?

This is our inflammation map that we create. I love that stuff. Yeah. So here is a, here's the entire map, what it looks like, and maps out how you can make inflammation inside the body.

And then, you can zoom in. And if anyone would like this map again, we send it to you free of charge. Just ask us for it. Yeah, but here's here's what here's what I was talking about earlier.

The the NOx enzyme, nADPh, which is used by the NOx enzyme to make the superoxide, hydrogen peroxide, mast cells and histamine. But it's also needed by the US enzyme to make nitric oxide throw a toxin to the film, put your F the iron from him into ferritin.

And there's this battle here. The nADPh steel. And then as I spoke earlier, we we talked about interleukin six. I believe that many environmental factors are just over stimulating interleukin six which then creates a cascade of superoxide peroxide, nitrite, mast cells, histamine, they all come back and stimulate IL six even more.

They also then come down and stimulate the renin angiotensin system and create more IL six. And we're just on a merry go round of inflammation. And I think many doctors will find this fascinating that, glutamate will inhibit the Ace2 enzyme, which will allow bradykinin to go up and angiotensin to go up to stimulate.

So interleukin six. So this is something we need to look at. Interesting. Yeah. And then in the software this is what the software looks like. Here's the the pyramid.

And the ones down here are the ones related to, inflammation. When there's mutations. But let me just quickly show you the, the maps. Remember we talked earlier about, nitric oxide.

So what we do in the software, we allow the doctor to look at the pathway of how to make nitric oxide. Remember, we spoke about before, and then the software will actually even show you how many genetic mutations you have on each of these.

Like you can see on this person, they've got the MT Fri 1298 that will impede their before production. Or they may have mutations on their NOx enzyme.

You see it coming up over to the right. How many mutations. So the different colors or the degree or what. How does that work? Yeah, the, the the blue is good.

The green is a little bit better or a little worse. Then you go, orange yellow, red. And then you can click on them to see how many mutations there are.

Now, what's coming is going to be dynamic messages in here. And that's that's a simple one. But if somebody wants to see if I al six might be a problem, then you can pull up this chart and you can see in the center you've got the IL six, but all of the mutations that could allow that to be, upregulated.

So, this is not for the faint of heart. This is for the person who is really serious and wants to, crack the code. Yeah, it it it takes time, but it's it's not overwhelming, you know, it's it's you you can get it.

You've made it. So people just don't go for it, you know? So. Well, it's for the person who's serious. I mean, it takes some study to do this. And this is our latest upgrade.

Anything worth it does. Exactly. This is our latest upgrade where it shows how the potential is for Fenton reaction. So we put together the snips that could create the Fenton reaction.

Such as, you know, the hemochromatosis genes. We're not clearing hydrogen peroxide. And if you want to click on one of these, you will see if there's any snips.

And this really gives the doctor a really good, opportunity to add a snapshot. See, a Fenton reaction might be going on. This one helps you understand the snips that are related to, tenacious uncoupling.

And now you you talk about Fenton reaction a lot. Yeah. Let's talk about what that is so discovered in 1895 by Doctor Fenton. Let's just do a slide show from current slide.

So inside our cells we make energy. And as we do sometimes an electron flies off that combined with oxygen to make superoxide. If we have enough superoxide dismutase we'll make hydrogen peroxide.

But if we don't have enough catalase, glutathione peroxidase, thyroid action or Nadp h to clear it, that hydrogen peroxide will combine with iron to make hydroxyl radicals that are very inflammatory.

So that's the Fenton reaction. And this is one as you mentioned, we won the award for in Helsinki, Finland in 2016. Oh well, those with chronic Lyme had five times more opportunity or five times the, the, the snips in the Fenton in the HIV gene that causes you to absorb extra iron.

So we see this happening, quite a bit in individuals, the Fenton reaction. And, so if you want to just see the snips that are involved in that, here they are.

And again, color coded, like for this person, they've got a lot of mutations in marks which could allow them to, not break down their iron properly. So that's, that's what the software looks like.

It seems like there's a lot of ways to make hydrogen peroxide, you know, and people use hydrogen peroxide. And it's an accident. And you've got, like, Brownstein, study on Covid hydrogen peroxide, nebulizer, works for, you know, to stop the cytokine storm.

Can you kind of explain that? Well, certainly the, you know, hydrogen peroxide is one of the things that the body uses to kill pathogens. It's not all bad.

But again, everything has to be in balance.

EMF Sensitivity, NOX, and Interleukin-6

So if we, if we have genetic mutations or environmental factors that don't allow us to clear this, and we have iron absorption, extra, that's when that hydrogen peroxide can goes out on you.

So it's wonderful at killing some things, but for some individuals it makes them worse. Or if you do too much of it, which all goes back to the balance kind of short bursts.

And then and then recovery. Yes. Yeah. Yeah. Because if you have too much and if you, if we go back to my to my map here, let's see where's the map. The, you know, when we have when we have interleukin six being stimulated.

I, it's not on here, but the, the, the mast cells will make superoxide and hydrogen peroxide for the purpose of killing pathogens. So now, you know, they're not all bad.

They're considered just now. Terrible. Now, is there anything in particular ozone does, although it, you know, generally. Well, yeah. Of course. I mean ozone again kills pathogen does wonderful things.

But I've spoken to many people who ozone really made them sick because that has to be turned back into hydrogen peroxide. And if you clear that okay, great.

If you don't, it can create inflammation for you and like high dose vitamin C, same thing. Right? Sure. Absolutely. Absolutely. Yeah. And so that's, those are all the ways that we can, get ourselves into trouble that, you know, one person's medicine is another person's poison.

I love. I just it just makes sense, you know? And, I love it, so I so your software really combines, you know, the genetic snips, lab symptoms and and kind of brings everything together.

Absolutely. You can have the person fill out a symptom survey. Right now, we're putting in the urine organic acids from great planes because the snips is just a predisposition.

You know, we'd never make it to you know, you never say, oh, I've got this snip. Therefore I need to fill in the blank. I often tell doctors the snips are waving at you.

Think about looking here. But again, I think we have to look at patterns. When you look at our software, we don't make any predictions based upon one snip.

If you over absorb iron, if it looks as though you're not clearing hydrogen peroxide, if you're not making an ATP, that can create the Fenton reaction.

So I think we've got to get away from having this snip means this, know, just because you have more IFR doesn't mean you need methyl folate. You might need to do some other things first.

It's just other steps. Do you have that? That's what tell doctors like you know, we do you know 35 labs. You know normally is our normal intake for, you know, chronically ill which we could do 50 and paint a picture, you know, and you can't hang your hat on any one test. No, no. Particularly as things get more complex.

Yeah. And, I think this is just the way of the future. And, and let's see. So and then you also have it so, you tell doctors what the patients need. Either they can, you know, all of the supplements that they need or you have, you know, kind of all these things ready made for these doctors.

Yeah. Let's take a quick peek at that. So again, we don't have the pill for the ill. We're looking at the supplement for the function. So we'll do just another quick grill screen share here.

And here you will see the again the pyramid. But what you can do or you can go to the, you know, when you're in the, in the Fenton reaction, these the software might give you a suggestion that, we think Fenton reaction is going on like, here's a almost or here's a dynamic message.

This came up specifically for that person. So I put a logic in here that said, if these conditions exist right then. So these messages will be unique.

It's like having me sitting there talking to you. And I have to say that I did a lot of algorithms. And when you try to hear every scenario and that it is so much more difficult and you have so many things, to take into, consideration.

So, my hat goes off to you. Yeah. Well, we're working on that. So there's a product called Hydroxyl blocks that is designed in multiple ways to help the proper use of iron and not have the Fenton reaction going on.

So what's really cool here is that, you know, we've all done this. We we talk to someone and say, you know, we have a supplement here for you that we think is going to be good for you.

And they look at it and they say, oh, but I can't take fill in the blank, then what do we do? So that's why I'm so happy that I worked with a company called Personalized Nutrients that the doctor can actually make a custom product.

So say for example, we want that hydroxyl blocks. You can go to personalized nutrients here. And it will pop up the nutrients that are in there. And then you have the ability to customize them.

So logic is starting to go in here where it says catalase. And there's a little message over here. Click on it. It says with a mutation in this one you may want to increase the the catalase.

The doctor can then accept that or reject it. Oh interesting. You don't want to take a bunch of catalase. And I didn't correlated with my genetic test from you I don't know.

Is there anything that. Well, we look at the catalase. So genes. But here the doctor then has the ability to say you know what I yeah, this person has a real histamine problem.

I'm just going to take that out. So you just delete it out. Or if you want to add something, you can then say, you know what, I think I want to add a little fill in the blank.

Say you want to put a little naked to adman a nucleotide in, then it comes up and you decide, you know, I'll put 20mg in. So now you are making a custom supplement for that person.

Cool. That's what they're, petunias and adjusted to tourists at death. I like them. We've been working with them for a long time. Yeah. And then, then you just go up into the software here and you finish it up, and then the software sends it to them, and it's made for the person.

Dude, you're just got it down. So there's my there's my test and you can put several together. And then the good folks at Personalized Nutrients will make it.

So here you can see estimated dose for capsules wholesale. The doctor then gets to put in whatever they want to sell it for. And then when you're that when you're done, you save it and order it.

Send the order to, personalized nutrients. But you still have the ability to mess with it. You can. It's up or down. You can add something to it, a little tip.

It's usually better to get more bottles. It's going to cut down in price. Oh, sure. Yeah, yeah. You can do several things together. And the nice part about the program is that if two supplements have the same ingredient, it will just pick the one that's the highest.

It won't add them all together. Well, they're they're moving up too. That's that's great. Yeah. Yeah. So that's the that's the way that gives guidance to the physician on what to do.

Like here's a here's a product for supporting ATP autophagy. This is for interleukin six supporting the dough the dopamine.

Software, Custom Supplements, and Getting Started

You know, those are all the options that the doctor has to, put it together and the software gives them some guidance on, you know, what you want, what you might want to use.

And are those listed somewhere? If somebody goes to a functional genomic nutrition.com, they can see all the supplements. So they look under your name or whatever.

Well, just go functional genomic nutrition.com and all the supplements are there. So if they want to look at the labels and then the software helps them decide if they should use them or not.

Nice. Nice. Let's see. Before we tell people how to kind of get hooked up with you, would you highly, highly recommend anything else you want to mention?

You know, I think that's it. Other than that, we're just honored that, we're having an opportunity to, you know, hopefully be a little bit of a pioneer in helping, you know, functional doctors and those who are interested in functional medicine, how to really go under the hood.

So to speak, and, and find answers that they may not have had before. And, so if you go to the, functional genomic analysis.com, you can take the online certification course.

You can get a highly, highly recommend that. Yes. And you can try out a couple lectures, you know no charge. And all this is great at all that, you know.

Hey, I'm a bit of a geek. I'm not Mr. Excitement that I'm. Hey, we beg to differ. Okay, well, where are you? Where are you located, by the way? Where do you live? The.

Well, a little town called Ephrata, Pennsylvania, in Lancaster County. I'm among the Amish in the Mennonite in the. In the early days, I, I mostly saw the Amish in the Mennonite.

And then, then we got interested in the genomic, we kind of went worldwide. We now talk to people all over the world where, for whatever reason, were very popular in, in England and Australia and, in Canada.

Wow. So a lot of people there, graduations. I was going to say, well, I so I, I didn't know I was coming. No, I'm not Amish. No, I'm saying that, that we live in Amish territory here.

No, I'm, I'm English in German, but I'm in, I'm in Pennsylvania. Dutch country. It takes a while to commute in your buggy. Yeah. It's, Yeah, they're they're wonderful people.

They really are. They really are. No, no, that sounds good. So how the heck I'm watching this? How the heck do I get started with you? Well, I would encourage people go to functional genomic analysis.com and, just give us certification that you're, you know, a practicing, health professional. This is not for the public.

So if the public is watching this, sorry, we don't, we don't work with you on that. It is only for health professionals. Yeah, yeah. And, and sign up for the online certification.

It's free. You can take several modules and see if it's for you. And again, it's not for everybody. If, if somebody is looking for a report that says, I want a two page report that tells me what to do, this isn't it.

This is for the serious practitioner who really wants to dig in. Wants to, you know, take the online courses, think about this a little bit. And, what I offer, I can't do it, for every client.

But if someone's new, we'll do a one hour consult, either with the doctor or with the doctor in the patient until the doctor's up to speed and knows what, knows what to do.

Hey, I'm calling dibs on you. No matter. Because, yeah, we find you, come up with, you know, so many unique things and just, you know, just knowing it.

So well off the back of your hand. Well, yeah, I think it's just been a great addition, to our practice and, number of doctors like Doctor Hunt in our office has just embraced it.

And, I think you're just doing a great service, and and you're so dedicated and and still a nice guy. Well, thank you. And Doctor Hunt is a pleasure to work with. He really is.

But I always tell everybody there, oh, I better I didn't know, she she's awesome. I don't know where I'd be without her. But, Yeah. So we use it in the practice.

We're going to actually, put together a program for peptides where we look at your genomics that will offer a special discount. And along with this peptide summit, and of course, we're going to use Bob and, we're going to hassle them to be on all the calls.

Okay. He has nothing else to do. And, and, and, hey, Bob and I, as always, it's a pleasure. I just learn so much, every time I, talk with you. And I just appreciate everything you're doing.

Well, it's my honor. And we want to be of service to humanity. That's our major goal. So awesome. Awesome. Hey, thanks so much for taking the time. Appreciate it.

And I'm sure, the docs and the get a lot of out of this. And again, highly recommend that this is something you add to your, armamentarium. Another major tool for, treating your patients.

Excellent. Well, it's been a pleasure.