Introduction and Guest Background

– Hello and welcome to this episode of the environmental toxic ins auto immunity and chronic diseases summit. I'm Wendie Trubow, MD, MBA. And I'll be your host of today's episode.

I'm so excited I guess. I'm always excited right But I really am so excited to have this discussion today. Our guest today is Dr. Stephanie Seneff and she is a senior research scientist at M. I. T. S. Computer science and artificial intelligence lab in Cambridge mass, go Boston.

And she received her B. S. Or M. S. Or PhD. So in other words in boston terms she's wicked smack. She got them all from M. I. T. And she now focuses on glyphosate which is near and dear to my heart to she's also the author of toxic legacy how the weed killer glyphosate is destroying our health and environment.

And today obviously we're gonna talk about glyphosate, the gut microbiome and really how it ties into auto immunity and chronic diseases and then what can we do about it?

So Stephanie welcome. I'm delighted to have you here. This really is near and dear to my heart. So the first question is did I miss anything that you want to make sure people know about you? – That was perfect.

Thank you. Very succinct and your wicked smell. The important points right. Like you have the Boston accent to go with. – My parents are from Michigan so I never talked like a Bostonian because they didn't.

But you know I can play a play a bostonian everyone so I live in boston so I can play one every once in a while. So, so let's dive in. How do you even get interested in glyphosate? Like what happened that it caught your attention? – It really started with autism because I was concerned about the rising rates of autism and I wanted to figure out, I figured it had to be something in the environment that was causing it.

And and I looked long and hard um for five years actually I learned a lot about autism but I couldn't, I knew there had to be something like a smoking gun that I wasn't able to recognize. And I identified the gut as being a major problem with autism. The autistic kids have a lot of issues with the gut. So I thought it might be something in the food.

I was as far as that. And then I happened to hear a presentation by professor Don huber who's he's in his eighties, he's still active and he's retired professor from Purdue University and expert on plant plant pathology, plant physiology. He gave a two hour lecture that blew my mind and I was like, wow, this is it. And I really hadn't, you know, I knew there was roundup, I never use it.

I never bought roundup because I just don't like to use toxic chemicals on my lawn and especially when I had young kids, you know, it just seemed like a stupid thing to do, but I didn't think of it as being I wasn't on my list of things to look for for the autism because it's supposed to be so safe, you know, and we're all talking about it.

– Can I just ask you what caught your attention for autism? Like is it personal for you? Or – It is a little personal actually, because, well, it started way back when when I was a child and I saw a tv show about it was just introducing these strange kids and they were they seemed so weird because they looked perfectly normal, but they but they were so remote, you know, and you couldn't get their attention. They were and then they talked about the refrigerator moms in that, in that at that time, you know, that the mother was somehow harsh and didn't give love and this child was affected by the mother's unemotional. The child was not getting enough emotional support. I mean, I thought that can't be right, that just can't be the right reason. So, even way back when I think I was a teenager at that time, and then when I was an adult with my young Children, my a friend of mine had a child who was diagnosed with severe autism.

So I, Um, and that that this was in the early 1980s. So that sort of also planted a seed, I just was really fascinated and puzzled by by the disease.

How Glyphosate Entered the Research

And then I watched the rates go up and every year they would say, oh yeah, I got more and they were going up exponentially in the first they're still going up exponentially it's very scary. So I was very concerned about that exponential growth and of course I care about Children and Children have a lot of other issues that they suffer from today to that um that they did in the past.

And I think a lot of them are connected to it. It's not just like obviously there's lots of things in the food, there's all the insecticides and fungicides, um inadequate nutrition. I mean all those things are playing a role that processed foods, the lack of whole foods especially plant based, I mean all these exciting molecules that plants produce that kids aren't getting enough of because they're eating all these processed foods.

So there's a huge problem with the diet. But I think life is a central. – Yeah, I think it's amazing you really struck on a couple of things. One is this rain barrel effect where when I presented on this recently, I said glyphosate is but one of like 500,000 chemicals were exposed to. And so this is one.

But when you start to think about the impact of all of the just piling them on and piling them and then you layer on your diet and don't forget how were you born with your C section baby or vaginal breast or bottle fed and did your mom detox into you.

Is she a hot toxic mess like I was so all of these things start to add up and what's your genetics throw that in the soup. And so the first, that's the first thing that you just pointed out.

That's really pointed. And the second thing that really struck me is it's so cool when researchers catch that something catches the attention of a researcher because you have the resources and the training to do the research on the data.

So that's what's so amazing. – That's central. And in fact, I think I pick and choose and there's this vast space in biology and I love biology and I feel really excited about the work that's going on right now with what I call my team. But these are just people that, you know, smart people that I collaborate with. Um some of them I've never met personally, I've met them just through email contact. It's quite amazing, you know. But collaborating and and it's been a thrill ride for me um to learn so much about biology. And really I learned a lot of it as a concert, understanding what glyphosate does to mess it up.

So you can learn a lot about biology by virtue of breaking it, you know, and that's what I see with glyphosate. So it's become a huge story. And as you mentioned my book, toxic, like I said, I have it here.

There's a paperback version available, I think either now or very soon. So, watch for that and. – Let's back up a step Stephanie talk to me about for the listeners.

What is it? What is glyphosate and why is it so important in the development of disease? – Right. So glyphosate is the active ingredient in the pervasive herbicide roundup. And I want to say that it's all over the food supply. This is one thing that I find very frustrating with the government because the government says, oh, Roundup is safe.

We don't have, we know it's all over the food, we don't care. So you have these regulators are supposed to be watching out for our health. They don't bother to test how much glyphosate is in the food.

But there are activists who are doing so. And I want to point out Van Honeycutt, I want to give a shout out for her. She's really awesome. She's a friend of mine and she's a mother of 43 sons who had some health issues, including, you know, an autism diagnosis for one of them at one point and now her kids are doing great and she's gone on this complete certified organic diet, blah blah blah. But she's become she founded the organization called Moms across America and she recently took the initiative to get moms that she's connected up with to send

samples of food that were gathered From their school lunch programs.

So people actually bought a school lunch and sent it to the, to the lab to be tested. And so, um and then she reported the results and the results were astonishing 95% over 95% of the samples had in them.

And there were quite high levels, shockingly high levels really and things like pizza, you know, bread based products, weed is a big one. And you know, a lot of people have gluten intolerance these days.

That was another one that really intrigued me. And I remember when I was thinking, what is going on with all these gluten free sections in the grocery store.

That's kind of how I first became aware, why are there are all these people who can't eat wheat? Wheat is so basic to me, it's like the bread basket, right? It's such a basic food.

How come they can't eat wheat? And I suspected like today, and I knew it wasn't a GMO crops. So they have the GMOs.

What Glyphosate Is and Where It Shows Up

I should mention that with the glyph. Roundup is used very heavily in agriculture and that's why it's showing up all over the food and particularly in the processed foods. But the wheat is a non GMO so they engineered certain plants and these are core crops of the processed food industry, The corn, the soy, the canola sugar beets, which is going to be sugar.

Um They've all been engineered to be resistant to glyphosate. – I think we need to talk about that because it's it's the fact that these crops meaning so for people who are listening, they've been genetically modified.

So now you can use more herbicide called Roundup on the product. So because the product won't die when it gets exposed to that, which means that when you're eating that product and especially with sugar, think about the sugar beets, they get processed down.

When you process it down, you concentrate the glyphosate, so you're getting a bigger exposure than if you just ate the sugar beet fresh and whole or the corn instead of the high fructose corn syrup. So you're getting a much higher dosing. So but let's back up a step. Why?

Like why does this even matter what impact does glyphosate have on the body? That it's such a problem. – There's a huge problem with the gut and particularly the gut microbiome. And that was certainly where I started is in fact the first paper I wrote together with Anthony Samsel back in 2012, I think maybe 2013 um was about the gut, I mean it was centered on the gut microbiome and also about the disruption of critical enzyme class in the liver, which is cytochrome P 4 50 enzymes, Those are super important enzymes in the liver that have been shown to be suppressed by life. And that is a serious problem because those enzymes, First of all they produced by their critical for making bile acids, which are critical for digesting fats, um they're critical for detoxifying um many different fat soluble toxic chemicals get detoxified through the cytochrome P450 enzymes.

And they also detoxify drugs. So you can take a drug that doesn't get metabolized because of these enzymes being broken. And then you and then you end up with the drug becoming toxic like Tylenol for example, Tylenol is depends upon them to be metabolized. – And then can you talk more specifically about what happens in the gut? Because I thought this was fascinating that I don't I don't want to blow the punchline about what happens with the good bacteria and what we'll call the bad bacteria. But can you talk about the good, good and the harmful bacteria and who's who's getting impacted by glyphosate?

– Right. Yeah. And that's the interesting thing. And they did, there's a study on chick, on the chickens, the gut of chickens, you know? And so they exposed the gut microbiome of chickens to glyphosate. And they looked at the different microbes to see which ones are more sensitive and which ones were less sensitive.

And there were two that stood out which was lactobacillus and bifida bacteria that are especially sensitive to life state. And those two are absolutely critical in the infant gut. I mean that's where you start lactobacillus digest milk. It's really, really important.

It helps you digest digest milk. And so I looked into the lactobacillus. First of all, they really depend on manganese. They have, they have a lactobacillus have an interesting metabolism that is um relies on manganese to keep them healthy and manganese get severely life grabs onto manganese and won't let go.

It's called a key later. So the manganese becomes unavailable to the to the lactobacillus. And then that's one of the reasons why they get sick. But they also have the enzyme that famously is disrupted in the plants which is the in the chicken made pathway.

Uh you know uh – the five E. P. S. P. S. P. S. Right there. – That's the one I was trying to say is a human enzyme that is modeled after the PSP. That's why I got confused because there's a human enzyme that has a whole lot of look alike to that one that I think also gets disrupted. That was the one I just messing up when I was trying to say. – So I just wanted to jump on that because so the lactobacillus, the bacterium, I think the E coli they all have I call it am I saying it wrong? – Well I don't know would be correct if it's a Japanese pronunciation of it. It just feels like, all right. So I'm going to I think it might be correct actually but I think the scientists have turned it into a probably just with the english influence. – Okay so So those bacteria all have this pathway and glyphosate is interrupting at this step.

Five E. P. S. P. S. Where you're converting through different things and the impact of that is that the bacteria can't make their amino acids and if they can't do that they can't live right. And also of course they're making those amino acids for the host as well. And that's really important.

These are the aromatic amino acids. There's three of them as you probably know that there's about 20 of these coding amino acids that are super important in biology there.

So fascinating. They get assembled like beads on a string to make proteins according to the D. N. A. Code. So the code is all about making these proteins out of these amino acids. And when you have a deficiency in in any amino acid you've got a big problem because lots of proteins are gonna be be in trouble if they don't have enough of that amino acids. And so these aromatics they there it's tryptophan tyrosine phenylalanine and they are also precursors to these neurotransmitters and also thyroid hormones. So you have potential for deficiency in serotonin melatonin dopamine uh melanin, the skin tanning agent.

Um And and of course just the deficiencies in those amino acids that's going to disrupt the proteins that that need those. So it's it's quite a mess when you don't have enough of those aromatics.

How Glyphosate Disrupts the Gut and Enzymes

– I mean I think it's fascinating because what so jumped out at me when I was doing this research is that the C. Difficile and the salmonella. These are not sense.

These don't have the pathway. So they're not they're not responding. They're not inhibited by glyphosate. So the good guys get killed off and can't do their job. The bad guys who wreak havoc and chaos are like bring it on because. – Yeah, exactly. And then that that causes the inflammation and the immune cells get involved and then you get the information, you get the damage to the gut barrier to get leaky gut.

You get a whole bunch of issues. But the other thing I want to talk about that people aren't aware of is the disruption in approaching metabolism that happens because of these microbes getting killed. So when you don't have enough lactobacillus, lactobacillus makes several four or five different proteins, enzymes that specialized in picking praline apart from the amino acid sequence.

Pro lien is an unusual amino asset. Um and it's it's difficult to pull it apart. You need to separate all the when you eat a protein, it's all stuck together.

You know, the beads on the string and you need to use these enzymes to pick them apart. And and the the lactobacillus assists the host to help them break down the rolling in particular in the in the proteins. And it turns out casing and gluten both have lots of protein. And so I think that the reason why the people have trouble digesting those particular proteins is because the lactobacillus are being killed off. – They don't they don't have what you need to break the prolean down. So you just you're presented with food and you can't even deal with it. Well, yeah, you end up with these peptide sequences that are stuck there that can't be broken down and that causes lots of problems.

And certainly one of them is autoimmune disease. And of course celiac disease is a consequence of this problem. Yeah, with the gluten. – I have celiac disease.

My whole family has celiac actually. – There you go. Yeah. And of course there's a genetic component to it. But you but I think it's become an epidemic because of life.

It's been going up actually, we had a paper on that that showed that celiac disease is going up in the population in step with the rising glyphosate usage on wheat, it's specifically matches wheat as opposed to corn and soy.

And I wanted to get back to wheat because we get sprayed with glyphosate right before the harvest. That's the critical thing. It's not that I remember was such a shock to me when I always like, gosh, I wonder with this gluten intolerance or wheat, it's not gmo so what's going on with that? And then I had to go look and say, oh my God, they're using it as a desiccant on wheat. So wheat ends up with more consist.

That's why I said pizza the pizza crust, you know, the pizza and then kind of breads and of course noodles. All these things that can, cookies that contain wheat oats and that's also sprayed right before harvest.

That's absolutely the case interior is sky high levels and also people don't realize this, but Garbanzo beans and chickpeas, the lagoons incredibly high levels of life that have been found in those foods because they're also sprayed right before harvest.

So those are the ones that actually have even higher levels on average than the ones that are GMO crops because they're being sprayed throughout the season to control the weeds but they're not being specifically sprayed at that harvest.

That's a very short time. – Little secret, right? – Yeah. I know the orchards looks so beautiful, right? When the orchard looks beautiful, that means they're using glyphosate to kill the weeds and it's getting into the wine.

In fact, that's another things. And Hanukkah, did you know, she's been really good at getting, she got breast milk and found breast milk was contaminated with state. She got it from several of her mom's and I think a third of them tested positive for glyphosate in their breast milk.

And of course soy protein. Soy based formula is gonna have even more probably on average depending upon how much glyphosate the person has been exposed to.

– But you know, do you do any work on on what impact the glyphosate has on the soil? Microbiome and I don't think most people think about that, the soil has a microbiome to it and there are bugs and I mean just think about all this work on bees. And now they're really struggling.

– Yes, – glyphosate is looks like it's toxic to bees. – It is, I think it's, I think it may be the most important factor and they've been all over the insecticides and they're not good for the bees for sure because they're insects.

But I think they've missed the boat with glyphosate. And in fact John Huber thinks that too. And he's done in his presentations, he has slides where he shows and there are studies that have actually shown that the bees develop a cognitive disorder and they leave the hive too soon and they don't take care of the, of the larvae, the larvae get neglected by the because they're so messed up.

They don't have this somehow, they don't have this nurturing instinct or they want to go out and forage and then they get lost and can't come back to the hive.

I mean it's amazing. They get cognitive disorder which is really like Alzheimer's and that's another one I wanted to say. Alzheimer's just going up dramatically in our population also.

Exactly in step, autism and Alzheimer's and many other diseases are going up dramatically. Exactly in step with the rising and glyph is that usage on court crops, this huge list of diseases. – You really highlighted essentially any gut dysfunction.

If all disease, if we say all disease starts in the gut and the gut is dysfunctional then if you're you have a dysfunctional gut, then you have a disease essentially this that you've set the stage for disease. And so then you look at auto immunity like celiac disease, but also multiple sclerosis, Lou Gehrig's disease, Alzheimer's dementia, fibromyalgia, cancer, anything degenerative.

It's really pervasive in our society. unfortunately, – It's so critical and I think we, you know, it's interesting because we didn't realize how important the gut microbiome was for as long as it was working fine. This is again the point that when you have a toxic exposure, it reveals biology by virtue of what's not working, you know, and all the problems that come up and we have really come, researchers have come to appreciate the vast importance of the gut microbiome.

So many things that they do for the host that we didn't realize. And there's lots and lots of papers coming out now. They're really dense papers that really challenging to read with beautiful pictures with all these color charts and stuff and it's like, oh my God, this is way too much information. So those papers are difficult.

I had, I have a chapter in my book on the gut and I worked really, really hard on that chapter. It was one of my most challenging chapters and I'm proud of it actually because I feel like I kind of built the whole story starting with the lactobacillus getting messed up in those enzymes and then the baptized sticking around, they're gonna cause autoimmune disease when your body.

When you're immune cells see undigested foreign peptides, they get upset. It doesn't it's not human and that's the reason to get to react. You know you get antibodies and then those antibodies start attacking your own tissues through something called auto immune diseases and well known you know, molecular memory because the antibodies miss recognize your protein as being similar enough to the one that it is upset with that it starts attacking your tissues and that's how you get these autoimmune diseases. You know, rheumatoid arthritis and multiple sclerosis and of course um probably chronic fatigue is an autoimmune disease. So you have these problems with these wayward proteins that didn't get digested. But even more interesting to me or at least also interesting is that those peptides there normally would be broken down into amino acids in the mid gut and they would get absorbed, you know that the upper intestine, they would get absorbed into the body and they would be used to make new proteins.

That's the whole point, break the protein down into the individual amino acids and then you reassemble the amino acids according to your own codes to make new protests really an elegant you know solution. But when those peptides don't get digested, they end up in the colon undigested and now it becomes the task of the microbes in the colon to break them down and they can do that, they break them down but they have to go all the way they don't stop with the amino acids they break up all the way down to nitrogen.

And then they make ammonia out of that nitrogen because amino acids contain nitrogen. That's a definition. You know they all contain nitrogen and that nitrogen becomes free nitrogen becomes ammonia, pneumonia has a very very um high ph very opposite of acidic. It's very basic and so it raises the ph of the gut and of course the ph of the gut is really critical for the bacteria.

Certain bacteria every bacterium sort of has an optimal ph the acidity acid versus base. You know they have an optimal ph level that they're happiest at.

And the and in particular the bacteria that make acetate. Like the aceto bacteria. The bacteria that make acetate don't like a high ph and so they get they get clobbered so then you don't have enough of them.

You don't make enough acetate and then you have an acetate deficiency problem. Acetate is really really important nutrient because that's what makes this eagle coins coins are made that goes into the citric acid cycle to make A G.

P.

Autoimmunity, Celiac Disease, and Gut Damage

You know so it's a really great energy source acetate gets put together two of them to make literate and illiterate is the is the primary fuel for the gut lining in the in the colon. So the colon loves butyrate And it comes from a state which comes from these bacteria that are getting disrupted by glyphosate.

So when there's not enough to rate the colon gets sick and then you end up with these inflammatory problems you know irritable bowel syndrome and inflammatory bowel disease.

And then you can get colon cancer. I mean these things can get really really bad. – This is I mean you've drawn the picture of how it starts and how it works.

You know really walking through it. It's very clear. So talk to me I mean I'm always interested in what how can people take control of this narrative. But actually before we do that you mentioned something at the very beginning that I wanted to highlight because you talked about it Glyphosate was looked at as being safe. But very interestingly the E.

P. A. Doesn't have to prove it's safe. They just have to prove it's not unreasonably risky. Which is now not the same as safe. Safe is a much higher bar than unreasonably risky. Because you know you might go cliff diving and I might be like never or vice versa right? Because to me that's unreasonably risky.

And for you it's okay. But I was talking to Dr. Michael Antonio about this and what he said to me was the studies that were done on glyphosate originally used a level of glyphosate that would show an exposure that's a fraction of what we're exposed to today. So the studies are based on outdated and way too low levels. So you know if you are getting one part per billion. Now we're Getting 150 parts per billion.

So the exposure is so much higher than the studies were done on that they're essentially useless. – But there's another problem too which is that glyphosate is an endocrine disruptor. That's become very clear.

And there's actually a recent paper that reviews all the literature that shows that and endocrine disruptors have a very interesting property that they actually are more toxic at low doses than they are at high doses. And and so it's actually what happened was in the early days like in the 19 seventies when they were first trying to prove that life state was safe, they were using very high doses of life is eight and so they were completely missing any kind of endocrine disrupting effects that life is they might have.

And then they set up a rule. They sort of said the dose makes the poison and they said if you don't see toxicity at a high level then you don't have to test at a low level. They made that rule.

And they also said if you don't see toxicity after three months you don't have to look any longer than that. Like if you're with an animal studies with mice, if you expose them to glyphosate for three months And you don't see any obvious problems then you can quit. It's good to go.

They set up those both of those rules right before they approved of glyphosate and what Sarah Lini, Sarah Lini wrote a very important paper in 2012. And actually that was the first paper I read. Once I heard my lecture from Don Huber.

I went back and started looking and I found that paper really amazing paper where he used a low dose of

glyphosate um over the entire lifespan for mice um for rats and rats. And he compared to the rice.

And we're not being exposed to the glyphosate. And he said after three months things look good that he couldn't really tell the difference between the two groups.

But they let them go for the whole lifespan of the rats. And in the end they found the females had massive mammary tumors, the males had liver issues and kidney issues. Both genders had reproductive issues.

And they had early death. He found all of that happened when they were exposed over the entire lifespan. And once that paper 2012 came out, they got retracted by the way because the industry was so upset with me.

But then it got republished in a different journal. So it still holds as a legitimate publication. And and since then and in fact increasingly in the last few years, studies are now coming out based on low dose glyphosate and showing this endocrine disrupting effect. And so um so that's really interesting to me that they were able to sort of life states a slow kill.

And that's part of the problem and I write about that in my book. – I mean I think part of just part of the issue here is you're damned if you do it in small doses, you're damned if you do at high doses and what's a person to do.

Let's go back to what are the action items someone can take to minimize their exposure, improve their excretion and just generally up the game. – Yeah, well certainly the most important thing you can do and thank God you can do that in this country which is certified organic food. Um It's becoming more and more available even in sort of the ordinary grocery stores. You're seeing sections that offer certified organic or you'll see a certified organic product, there'll be a whole bunch of, you know, spaghetti and then there'll be one over in the corner that's certified Organic, you have to look for it. Um And of course there are health food stores where they offer a lot more, but we're finding and of course now that you've got amazon, you know you can order foods on the web and we find when we can't find it locally, we go to the web and we can often find the product uh certified organic version of something that we're looking for, we can find it on the web and get it shipped to us.

So we do that and we can't find it locally, were very strict now and we've been, we've been shopping only certified organic for at least a decade now.

My husband and I think that's the most important. Do you measure your own? – Yes. And I was not negative. I tested positive. It wasn't much, but it was, it was detectable in my urine. And I was really upset because we've been eating certified organic. So I think we're getting it, we are getting it from other sources. We're getting it.

And that that's another question. What's the biggest contributor to our God, life is a burden. What is the most, you know, from what are we getting the most visited? And we could be drinking it in our water, we could be breathing it in our air. And that's when I've been very concerned about recently in particular because I've become aware of, I started looking into the whole business of bio biofuels.

Do you know about biofuels? Yeah, I got interested in that a couple of years ago. Um because I was kind of like, because I found, I mean, for example autism, my voice thought autism is connected to glyphosate.

And I read a paper from California that showed that kids who live near highways have an increased risk in California to uh, to autism. So then I thought, well highways, you know pollution of course pollution from the air and there's a lot of nasty stuff in there. Is there life is it?

And I think that the answer is yes and this is of course a controversial statement. It's not like anyone's proven that that's the case. But ethanol, you know, we have now 5% ethanol even is a 10%.

Now I know that uh, we're talking about fuel derived from corn fuel, drive from corn. This is a whole trying to reduce the consumption of oil as, as a move towards, you know, sustainability and also arguing that it's going to help the climate change.

I don't think that's true by the way, but to grow the, to get the oil from the crops to get the fuel from the crops and what we get is ethanol from the corn and the corn of course is exposed to glyphosate.

So the ethanol is probably got glyphosate in it and then, um, the glyphosate I think can evaporate, It can evaporate, um, from the ethanol, it can evaporate from the fuel.

Um, and if, if you have a poorly tuned engine, you know, because if it got, if it reached combustion, it would get broken down. If the temperature of combustion would break down, I'm glad to say.

But the question is, does the glyphosate leak out before it reaches combustion? – And there's also so many more issues with this because if you're living in a polluted area, you're also likely not buying organic foods and you're exposed to planned communities that are spraying their, their yard and their trees and one of my family members just told me they bought a house on a golf course and I was like, you know, I'm like the black sheep right that they're all doing their thing and I'm just like, right, Yeah, no, no, that's really bad for you because they spray, you know, nature hates a monoculture and in order to get that beautiful line, you have to spray to get rid of all of the diversity in the culture and that's glyphosate.

Exposure Sources, Regulations, and Endocrine Effects

So you know, if you live near a farm, if you work on a farm, if you live near a golf course, if you live in a polluted area, you know, you're getting exposed in all these different ways, especially if they're spraying glyphosate nearby, you're going to breathe it in the air.

– You know, that's a direct hit if you live near a farm where if you live on the farm, you work on the farm. And in fact, I just wrote an article together with, sorry Jennifer Margolis. Um, and I wrote an article together recently on the epic times that talked about the farmer and if you don't feel you need to buy organic for your own health, buy it for the farmer because the farmers are getting really hurt by the glyphosate and I've written more than what, several papers, I think three papers on the kidney failure problem among the agricultural workers and it's quite striking in central America, particularly with the sugarcane farmers and those farmers are spraying the cane with glyphosate just before harvest and then they're out there harvesting the crop manually.

And, and so they're getting really, really bad exposure to glyphosate during the harvest. And these and these agricultural workers are dying of kidney failure in their forties.

It's really, really tragic and it's so clear to me that the glyphosate is a, is the probably the most important factor in their kidney disease. And yet the industry has managed to divert funding to try to figure out this disease.

It's called meso american. Uh, it's got various names, but it's a sort of puzzling form of kidney failure that is not related to things like diabetes. It's a toxic form of kidney failure and they refused to admit that it was the glyphosate, even though the state is staring them in the face. I mean the obvious thing and yet they write these papers that would try to argue it with something else because the, the industry controlled the funding.

– Let's go back to what else people can do because I'm always, I'm interested in people walking away with like what's a practical tool. So we've talked about eat organic if you have choice over where you live, don't choose to live on a golf course or try to live in a healthy area?

And then what I mean, do you recommend? Like, what do you recommend people to stay away from highways to I would say try to try to stay away from major roads?

– Do you recommend people filter their water? – I think you can test your water for glyphosate and then if it tests positive and definitely you can use a reverse osmosis filter to get rid of it.

Be careful because not all filters will remove the glyphosate and and then of course I also am a big fan of sunlight exposure and I talk about that a lot getting out in the sun, making sure you have sufficient sunlight exposure, not just for the vitamin D by the way, but also for the enzymes that respond to the sunlight to make cholesterol sulfate

and vitamin D sulfate. I talked about this in my book actually, I think it's very, very important. I think people have underrated the value of sunlight exposure compared to just popping the vitamin detail.

I'm saying specifically to get out in the sun as opposed to taking a vitamin D pill, but vitamin D of course is very important. Are you in massachusetts in hawaii?

– You are okay, – So into Hawaii? Yes, alright, I'm still working but I can do everything remotely, which is awesome. – That's awesome. So here, I mean if you used to live here, you know that I did not nine months of the year, you're getting a useless sun exposure because so you need vitamin D.

If you someplace that's cloudy or or the weather is not nice, You need D but I think what you're also talking about is not only what happens when you go out in the sun, but also what happens when you're in nature, like what happens when you connect to the earth and get present?

– That's why walking the beach, for example, walking the beach on a sunny day in the water is really great in the ocean. The ocean actually has so much value for your health. Probably swimming in the ocean might be even better. Of course you've got issues with toxicity in the ocean as well because things wash off into the ocean.

So it's kind of sad that we're poisoning so many things like fish is a really healthy food but they might be mercury. You know, it's just like and liver of course liver is a very nutritious all the organ meats have tremendous amounts of nutrition in terms of minerals and vitamins and and another important molecules healthy fats, but but they're often contaminated with with nasty stuff, you know, the liver is is responsible for removing the toxins.

And so if you've got a toxic, got a cow that's getting exposed to a lot of toxins, the liver's probably toxic to. So it's frustrating that these um nutritious foods that would otherwise be very nutritious, but you have to worry about whether they are contaminated something that might completely offset that nutrition.

I mean I think you want to pick your battles, right? – So I always say to people do your best 80% of the time. And and there's always gonna be something you can't fix.

So don't sweat the small stuff. But I think what you're highlighting is first off organ meats are super, super healthy for you and you're gonna want to try to get organically grown grass fed grass finished and not not go grass that's been sprayed with glyphosate to be all right. – I know that's the other question because the grass actually, they have a GMO roundup ready grass now, which is really terrifying to me, but do your best and it would be better to eat the liver than not eat the liver, but try to level up the and you can get organic chicken livers, which I find are delicious.

And of course it's also true for seafood, seafood is a good match too to the organic uh to the organ meats. Things like oysters are fantastically healthy.

They have so much nutrition and clams and crabs and lobster and oysters and there, I guess they can be expensive, but they're very nutritious and of course fish as well.

– Any other tips you'd recommend for people? – Vegetables, you know, eating lots and lots of vegetables and especially cruciferous vegetables and and then herbs, I've really gotten into herbs lately. It took me a long time in my life to realize that you could buy fresh herbs. You know, I was always using the powder.

And of course we've got all organic spices now to throughout all our non organic spices to replace them with organic people don't necessarily realize that you need to even buy organic spices, but now we buy we buy a lot of fresh herbs, you know coriander, uh thai basil, thai basil and tarragon. I mean we just had we just really enjoy the fresh herbs and I think really anything you can get fresh is better and then getting it processed. – Organic, organic fresh. – Yeah, so it gets challenging.

We spend a lot of time shopping, you know, trying to find what we want but but it's we've gotten to be real foodies, especially my husband and I have to say he's the cook in the family, he does a terrific job and and he really takes

the extra time to make sure that everything is healthy. So eating whole foods, you know don't eat soy protein bar, even an organic soy protein bar wouldn't eat it.

You know, I just think that the processing is really bad. It strips away a lot of the important nutrients we think in terms of, you know, fats, carbs and proteins as kind of the you know, basic food groups and but there's all these other molecules, especially like the plant space, make all kinds of interesting polyphony als and flavonoids, you know, all these interesting molecules that they make actually to defend themselves against stressors. And then when we eat them we benefit from those molecules and so eating a lot of green plants and fresh vegetables.

Even we do stir fried with a little bit of meat. You know, that's a my husband's chinese. So he cooks a kind of a chinese dinner. That's a often a stir fry of various interesting vegetables with chinese vegetables too.

Practical Ways to Reduce Exposure

– Yeah, I mean these are these are these are all the cruciferous and the the cleansing improved Phase one improves Phase two which is your detox pathways.

I mean this is super beneficial for people. – That's right, yeah. And Phase Two is Phase One is actually the side of company for 50 enzymes that I mentioned earlier.

They get disrupted by glyphosate And Phase two. It often involves salvation and salvation pathways get wrecked by life. And say I write extensively about that in my book and I think that's a crucial component of its toxicity.

The lack of a smooth ride for sulfate through the body and and so sulfate becomes a huge problem. And sulfur deficiency also. And many people have sensitivities to sulfur sulfur sensitivities that try to avoid sulfur containing foods. That's an indicator in my opinion.

Many cases of glyphosate poisoning because glyphosate will cause that sulfur sensitivity. Your enzymes aren't able to process the sulfur in particular converting inorganic sulfur to organic sulfur in the form of Methionine. Methionine is the base of the sulfur containing amino acids. You have Methionine and Sistine and taurine these are really important. You know, for example, glutathione contains uh the assisting which is a which comes from the Methionine.

Methionine is made by the gut microbes. But they but life state messes that up. And so the sulfur becomes toxic. Cell fight becomes this very reactive and your body can't convert it into organic sulfur. And so you get you get paid, you get a reaction to the sulfur. And the wrong thing to do is to avoid the sulfur containing foods because now you're gonna have a systemic sulfur deficiency problem.

– But you kind of circle the drain right. Like you start to make it a little worse, make it a little worse, make it a little worse. And then it's even harder to deal with.

– Yeah, it's really unfortunate that many of these problems you try to solve them by a roundabout way that's not gonna work because as long as that enzyme is broken, you're stuck, you have to fix the enzyme and the way you fix the enzyme is to stop the poison. And and certainly life is a is a really important one. – Yeah, I always say to people stop filling the pump and then we can work on clearing out the pump but stop filling it up because we're just inundated with all these chemicals at this point. – And there are people that are recommending phobic acid and human acid. Have you heard about that?

Which is organic complex organic molecules from the soil. The claim is that they can attract the trap the glyphosate and remove it from your gut. And and and a lot of people have said they've seen beneficial results of taking those.

Um I don't have the I don't have the proof, you know, in terms of a scientific paper that shows that. But I think it's um there seems to be a lot of evidence in favor of that working. – I don't think you're going to harm yourself by taking things that are purported to be good binders.

You know, it's at least if you think about, is it gonna hurt me? Probably not. So, so – I even found some papers that talked about enzymes, they get trapped in those complex molecules.

Um and that those enzymes are very versatile and they can break down lots of different toxic chemicals. So that was really quite interesting. So I'm suspecting it could be that there's actually enzymes in the public acid that are able to break down the state. That's what you really want us to break it down.

And I was actually quite happy to see that acinetobacter can break down to say that there are species of acinetobacter should be careful because there's actually very few microbes that can break down that has a really tough bond A C. P bond it's called that most microbes don't know what to do with. So that's an important thing about life.

It's hard to break it down, which means it sticks around for a long time. And that's another thing that the industry denied. They said, oh yeah, it disappears in a couple of weeks from the soil.

And but they are finding a study in Brazil showed there was more glyphosate every year. They were using glyphosate on these gmo crops and they studied over time and every year there was more glyphosate in the soil. So it was accumulating, it wasn't being broken down from the year before, before you were adding more from the new year. So it's really scary that it can last a study in Canada found it in trees 10 years after the trees had been sprayed with glyphosate, just so you can stick around for a really long time.

I mean it doesn't get to something that can break it down. That's the problem that – I can see why this has become your passion project because it you can't unsee it once you start. – It's kind of like those forever chemicals, you know, you've heard about the forever chemicals Um and then those just don't break down. And then and there, you know, we're still being hurt by things that were introduced into the environment 2030 years ago.

It's quite scary. – So I think the most important thing for people is to work on not exposing and doing your best to make sure your gut is in, I would say optimal shape or at least do your best so that you can put things in it and get them out as opposed to recycle constantly. So Stephanie, I mean you and I could talk for hours about this because this is also one of my like passion plays, but I think we're probably going to bring this to a close, but I'm sure people are gonna want to find you, how do they find you?

– I have a web page about StephanieSeneff.net so you can go there and and I have several sections there where there's some of my just, I post some of my interviews like this one and some of my papers and whatnot. And I have a page about my book and so of course you can buy my book. My book will tell you a lot about my thoughts on glyphosate and of course I haven't gotten into all the deep biochemistry involved, but it's quite fascinating exactly how life is, it disrupts your metabolism and it's really, really scary and I think I really hope the government will finally wake up.

I do want to say it's good news with respect to Bayer because Bayer has decided to stop selling life is a based round up to the residential community in the United States.

They've gotten because of all these lawsuits from these people who claim non non Hodgkin's lymphoma, I've heard about that, but big success there and and and it's coming from the residential community and so they're they're happy to continue to spray the glyphosate on the, on the food, you know, but but because they're getting the lawsuits from the residential community, they wanted to stop the possibility of those lawsuits in the future by not selling it the residential community anymore.

– Yeah, I think, I mean one step at a time, right? – And Mexico has decided to ban it altogether. So I think that's another really, really good result. If we've got our neighbors banning it, you would think the American U. S. Government might start to wake up and see that we need to do the same. – Yeah. I mean what I feel like one step at a time and with people like you who are really advocating for this, this is this is going to happen. – Yeah. And I really think we can do it, consumers can do it bottom up, you know, just buy organic, tell your friends to buy organic, tell your neighbors to buy organic eventually the farmers will, they'll stop making the food if we won't buy it.

– Yeah. I call that, voting with your feet don't buy it and they won't make it. – I think that's really, really good advice and it's money well spent because you know, you spend more for organic but you stay healthy and that's it's very expensive to be sick, not weak.

The fact that you feel miserable, but it's very expensive to be sick. So if you want to save money buy organic and you will and you'll have a healthier longer, healthier life. – We talked about that.

Pay the farmer now or pay the doctor later, and I think that's probably a perfect thing to end on. So um thank you, thank you for joining us for this episode of the environmental toxicants, auto immunity and chronic disease summit.

Our guest today is Stephanie, who is a huge wealth of information about glyphosate and Stephanie from the bottom of my heart. Thank you for engaging in this conversation with us because this is super valuable for people.

– Thank you so much. My pleasure. – Thank you.