Dr. Jill

Your Functional Medicine Expert®

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#96: Dr. Jill interviews Sharon Hausman-Cohen on Genomics and Personalized Medicine

Dr. Jill 00:12

Hey, everybody! Good afternoon and thank you for joining us again for Dr. Jill Live. A little bit of housekeeping and then I'll introduce our guest for today. First of all, thank you all for your responses, donations, and everything. With the wildfires, it's been amazing to see the community respond. We've been able to give away some free air filters donated by different companies and products. I want to thank you all in the community. Even listeners all over the nation have reached out to me and said: "How can I help?" It's been really precious to feel the support of everybody out there.

Dr. Jill 00:43

Second, if you want to find me, you can find me at JillCarnahan.com. [There are] all kinds of free blogs and resources there. Ten years of lots and lots of data and information on Lyme, chronic disease, environmental illness, and now the wildfires I've been writing about. That's all free there. My product website is DrJillHealth.com. Once in a while, we mention a product and you can find anything there. Finally, the YouTube channel has 90+ interviews now and you can find all of these recorded there. You can also find all of the episodes in audio wherever you watch or listen to podcasts—iTunes and Stitcher.

Dr. Jill 01:20

Today I have a guest I've had before, and we had a great conversation. I know today will be no different. Sharon Hausman is the Chief Medical Officer and Head of Research for IntellxxDNA. We're going to be talking about some specific testing today. She's founded a company. But like I say, with products and services, I only talk to people whose product and service I believe in. I'll talk today a little bit about my experience using IntellxxDNA. It's a profound help for these chronic, complex cases. I love Sharon for her desire to get the details out there and be research-driven.

Dr. Jill 01:57
She and her team have developed a platform that makes genetics actionable for integrative and functional medicine. I keep commenting on the bio, but I want to say that what so often happens is that you guys might have brought in these 400-page reports to your doctor and you completely overwhelm them. We love the data but it's not very actionable. That's one thing I love about IntellxxDNA: We have very specific data-driven, research-based things that we can do about it. There's no sense in having all the data if there's nothing you can do about it. I know, Sharon, you'll agree.

Dr. Jill 02:29
This platform is being used across the US and in Australia, particularly to improve outcomes in brain-related disorders—we'll talk a lot about that today—including memory loss, autism, and mental health concerns. That's been one of my experiences, as well—some of these tough cases [such as] OCD, anxiety, insomnia, depression, and autism and spectrum disorders. Recent publications focus on her work with the reversal of cognitive decline—she co-authored a study done by Dale Bredesen and colleagues—as well as on improving outcomes in children with autism, which we'll talk about today too, and genomic-related environmentally acquired illness. As you all know, I love to talk about mold and how it affects us. We'll dive into that today too.

Dr. Jill 03:14
She is board-certified in family and integrative medicine. She obtained both her master's degree and medical degree from Harvard Medical School. Welcome, Sharon! I'm so glad to have you here again.

Dr. Sharon Hausman-Cohen 03:24
It's so great to be back! Thank you for having me again, Jill.

Dr. Jill 03:27
You're so welcome. Let's talk a little bit about the basics on IntellxxDNA. What is it? I want to be clear, and then you can talk about this: It is a doctor-ordered test. If you're out there as a patient, you can ask your doctor to sign up and get this for you, but you can't order it yourself. Tell us a little bit about the background of the company and maybe even a little bit about your story and getting into this field.

Dr. Sharon Hausman-Cohen 03:49
Yes. Before I was a physician, I worked in research because I thought I was going to become a PhD. I did a lot of different kinds of research, but part of it was genetic research. Long story short, I didn't like spending my whole life on one little pathway. So I became a family physician, which is the opposite of a PhD. We specialize in people [from] birth to death. Nothing too broad. [giggles] But I always knew I'd go back to research. After the 23andMe revolution, patients would come to me and say: "Can you use my DNA to help me figure out how not to get Alzheimer's"—I did a lot of brain science—"how not to get heart disease, and how to help with my mood issues?" All of that.

Dr. Sharon Hausman-Cohen 04:32
There was really no product out there designed for physicians. There were things that you could say, "You might do better with a little bit more vitamin E," "vitamin A," or "B12." But [there was] nothing that said: "How come I am having high blood sugar when no one in my family had it?" "How come I'm having memory loss?—because I don't have that ApoE4 gene that people talk about." "How come when I get exposed to mold, I have all this brain fog but my husband can walk into the same building and have no problems?" So we started to build this tool. Then I also met a wonderful scientist from Australia who is doing similar kinds of work, trying to figure out how she could use people's DNA to untangle autism. Her name is Dr. Heather Way. We also joined forces and built our autism report.

Dr. Sharon Hausman-Cohen 05:29
Our specialty is the brain. But we're the company that is driven by physicians' needs—and naturopaths, nurse practitioners, and PAs—[for] clinicians to say: When I have this patient in front of me and they're a mystery, give me some clues as to how I can help them in terms of dietary things and supplements. Even medications might be beneficial to them at times. And what are the root causes causing one person to be so susceptible to these environmental factors and somebody else not to be susceptible?

Dr. Jill 06:03
I love that concise description of what's going on because, as a clinician, you bring that knowledge of clinical experience and the kinds of questions that we have. You come with this base of understanding, like, "What do we need as clinicians?"

Number one, the complexity can be overwhelming. I get stacks of new patients that are inches and inches thick. They're like, "Is this too much?" I'm like: "No. I love data; I love complexity." However, genetics have been a consistent source of overwhelm because there's no way to go through [them] in a visit a lot of times, [due to] the way other reports and things are brought to us.

Dr. Jill 06:37
So I love how you distill the information [and] how useful [it is]. And we'll talk in a second about the new things. But I know you have a new way of doing your platform—the next version—and it's even better than before as far as bringing to light the key points. In my experience, I tend to track the super complex chronic people who've been everywhere and done everything. And I love that. I love being a detective. But with that, it also brings very unique genetic polymorphisms. Maybe they're one in a hundred, one in a thousand, or one in a million. Because of that, sometimes these pieces that I found through your test have been game-changers in the clinical outcomes, which for the layperson means people get better when I know what to do.

Dr. Jill 07:17
And it's very specific. For example, someone with very severe fatigue, muscle weakness, and OCD ended up having a thyroid conversion issue and another issue with dopamine metabolism that affected the predisposition towards mood disorders. Another patient had an issue. She was trying a certain diet and then we found out she was really susceptible to glucose as a trigger for inflammation so we got her off glucose and low-carb. It made all the difference. While those things are fairly practical, you wouldn't have known what to do in that case without that data. So when I got to a stuck point with these patients, I did your test. It got me unstuck and the patient made massive changes.

Dr. Sharon Hausman-Cohen 07:58
Yes. And I think that's the fun. It's because you have this patient and they come with these weird symptoms. And, of course, we do have these reports. We'll have one report that we call 'Brain Optimization'. That's geared at cognitive decline, whether it's from classic things like ApoE4—so much more—or classic things that contribute to Alzheimer's versus low oxygen to the brain, or brain ischemia, versus

environmental illness, like not being able to clear pollutants. But we also have all these inflammatory pathways, detox pathways, and nutrient pathways.

Dr. Sharon Hausman-Cohen 08:30
And sometimes I'll have someone who's a mystery that has nothing to do with one of our topics in the report. I had a woman who came to me. She's a makeup artist in the film industry, so she's doing body and face makeup. She has her hand go into these huge spasms and then the brush will drop. Literally, the actor will have to catch her brush. She doesn't want to lose her job but, of course, she also wants to be able to feel better. She gets her toes and hands curling up. I was trying the classic things like potassium and magnesium.

Dr. Sharon Hausman-Cohen 09:03
You mentioned our new report. Our new report sorts and puts the less common variants at the top. At the top of her report, she was in the 1% of the population that could not recycle CoQ10 to its active form or vitamin E. It was really interesting. I was like: "Let's try one thing. Let's try going high on CoQ10 and vitamin E this week." Within two days, those hand and foot spasms were gone. Ironically, she did call me [and say] that she got a stomach ache because the form of CoQ10 I gave her had a soy product and she's very allergic to soy. But we fixed that. She was like: "I got this stomach ache that felt like soy." But that was easy.

Dr. Sharon Hausman-Cohen 09:49
It was amazing because we had been trying to figure out these spasms for months. But then, when we looked at that—we call them 'hot spot reports'—we were like: "Well, let's address these. We haven't addressed this." It was better in two days. Not everybody gets that instantaneous response. But with the hotspot report and the way that we now have it sorted—by addressing those 5, 10, or 15 SNPs that are highlighted as the most important because they're less common—we often get improvement in things we wouldn't expect. You think about how magnesium is related to relaxing muscles. But it's really important for mood, attention, and focus. So if you're bad at making it, it makes a big difference.

Dr. Jill 10:34
I love that. Let's talk a little for the layperson who's listening. First of all, the thing that you're testing is these differences in base pairs and how they express a protein,

an enzyme, or something. You're looking at the genetics. The other thing I want to talk about is: What is it that we're testing? The second thing is: You mentioned this 0.1% chance or whatever. Why is it that those unique mutations are the things that usually make a difference in the outcome? Do you want to talk a little about those two things?

Dr. Sharon Hausman-Cohen 11:07
Yes. I'm laughing because this afternoon my co-founder and I were having lunch and she was saying: "One question I think that people are going to ask is, 'Why aren't the common variants that are more important?'" You guys pretty much think alike. The way I think about it is that everybody has these changes. They're called SNPs. I always say that SNPs sound like they should be a little piece of cloth, but they stand for a single nucleotide—or a single little letter in your DNA—polymorphism, or a variant or change. When you make that change, it sometimes has very minimal effects on function and sometimes has profound effects. For example, the one I was talking about with recycling CoQ10 is in the NQO1 pathway. Two copies of it, which are only found in 1% of the population, decrease your ability to recycle CoQ10 by 98%. That's a big deal.

Dr. Jill 12:06
Wow, massive! In my mind, as you're telling me, it's like the needle in the haystack. Describing my experience, it was like: "What's the needle I'm missing? I could be a brilliant clinician, but I can't find that needle."

Dr. Sharon Hausman-Cohen 12:18
It takes a long time with trial and error. The reason we look for these less common things is because they're going to help you solve those medical mysteries. Something that is found in 47% of the population is not likely causing a problem that's unique. If you look at our cardiac report, there's a gene that promotes people to have hardening of the arteries—calcium buildup in their arteries. One copy of that gene is really common—45% of the population. Two copies—20-something percent of the population. But think of the prevalence of heart disease; it is like 20% of the population. That's a more common gene. But when I talk to my doctors—we do have doctors that deal with more common problems [such as] heart disease, diabetes, thyroid, and obesity—they use our report because it helps optimize health.

Dr. Sharon Hausman-Cohen 13:08
But when I talked to the doctors who are dealing with mold and who are dealing with complex illness, those are the doctors who are taking care of the patients who were told they were crazy. It's because that doctor goes: "Well, I've been in a moldy building and I'm fine. So why should it be bothering you? You must be oversensitive," or you must be crazy. They don't say crazy, but they go: "Oh, you're sensitive to things." Then the patient leaves, feeling it's their fault. It's true they're sensitive to things, but it's not because they're being emotional. It's because they're in that 1%, 2%, or even 5% of the population that has gene variants—a change in their DNA—and they can't properly kick out those mold toxins. Or, they can't properly defend, for example, against Lyme disease when they're first exposed to it. So they get a higher burden, which gives them a higher chance of having it persist.

Dr. Sharon Hausman-Cohen 14:04
What we're learning is that as we understand the root causes—the things that make people different—we can then come up with targeted ways of helping them to support themselves. There are hundreds of options at any supplement store for what you can do. But this is kind of saying: "If I'm only going to use five things, what are going to be the five that help me the most?"

Dr. Jill 14:28
I love that. And thank you so much for making it so clear, because I'm sure if you're not a physician, you're like: What are you talking about? What does this mean? It's good because we have a lot of clinicians who listen too, and I'm sure that they will enjoy this episode as well. Like you said, this is a test that is ordered by your physician. Any physician can sign up, is that correct?

Dr. Sharon Hausman-Cohen 14:48
Yes. There's no cost for a physician to have an account. In medicine, we talk about the rate-limiting step. I think the one thing that physicians need to know is that none of us got a good genomics education in medical school, nurse practitioner training, or even naturopathic training. We encourage anyone to sign up. But know that in order to use it effectively, you do have to say: "I'm going to dedicate a weekend to really learning this." We do have a great training platform—we call it Genomics University—where they can learn and get started. And we will, for all

your Dr. Jill listeners, be happy to give them complimentary access to the learning platform when they order their first report. But it is not worthwhile for a physician to sign up and go: "I can skip the learning platform. I don't have to do it. I'm really smart. I'm going to be able to do it."

Dr. Sharon Hausman-Cohen 15:47
I've trained lots of super-smart doctors and everybody finds that the learning platform helps them get the hang of it. Even though in our tool, next to the gene function and next to the gene variant, we say: This is how this gene works; here's why it's clinically significant; here are ways that you can have potential interventions. By having the Genomics University and going through case studies and seeing how it fits in and how to use the tool, you don't get overwhelmed and go: "Do I have to look at 600 things?" No, absolutely not. You want to focus on the top six panels or the top six things. But if we didn't have 600 things, we wouldn't work for most humans who have problems that make them unique; we would only work for the person who has no problems.

Dr. Jill 16:35
I love that. And I'll attest to that too. We were talking before this. I've done a few of the courses. It's on my list. The whole thing was that we had to get my book in. And now I can have time to learn and do these things. But it has been on top of my list, Sharon, for a while—to go through that in depth. I've done a few modules. I highly recommend that, and I love that. If you're a patient listening and you're like, "I'm really interested," you will have to ask your physician to order this or to get an account. But it's free. It's not going to cost you anything and it's not difficult.

Dr. Sharon Hausman-Cohen 17:05
Right. One of the things we realize about genomics is that it is so new. Physicians like to do things well. Why would we do something and go, "I don't know how to do this but I'll do it"? So we have a mentoring program that is also free where we walk you through your first three reports so that you can get the same great success with your first patient as you do with your 30th. There's nothing to be afraid of. I do some of the walkthroughs. My research staff helps me with some of the others. Once you've done four or five, you're going to be really hooked. It's so much more fun to practice medicine when you are able to figure out what's going on than to go, "Well, maybe this will work." Even for people who have high blood pressure and get

labeled treatment-resistant hypertension, it's not that there's something wrong with them that's different; it's that you're not addressing the root cause.

Dr. Jill 17:59
I love that! And like I said, I can attest to that as well. You've been amazing at helping me walk through my first reports! I felt this massive 'Aha!' Like: "Wow, this is important information!" And really, now we're competing against machines. In our society, technology and AI are going in that direction. If you're a clinician listening, I'm going to tell you something really important here: If you don't up your ante and your game and do complex things, machines are going to replace us. I have no doubt. We already have all kinds of AI apps that are doing basic primary care, which is crazy to me but it's true. And this would give you a tool to be an expert in your field because you're going to have data and information that you may not have access to with the routine CBC and CMP and our routine blood panels.

Dr. Sharon Hausman-Cohen 18:46
Yes. With blood work, we can get 10, 20, or 30 data points. With genomics, you can get hundreds or thousands of data points. Tens of thousands eventually. We're still building the tool for so many other things. I think it's also, for me and most of the clinicians I've talked to, so satisfying to take something that people say you can't treat. We have a publication coming out for example. It's a publication done in three different offices of case studies with people with cognitive decline. All of the people in this publication happen to have ApoE4. So you go: "Oh, well, they have ApoE4. There's nothing you can really do." But by looking for the other underlying contributing ideologies that these people had, we were able... I say 'we' but I was purposely not one of the treating physicians. From a non-biased standpoint, when we do publications, I want the cases to be from other doctor's offices. But the physicians were able to get huge gains in cognitive improvement. And they were all different reasons.

Dr. Sharon Hausman-Cohen 19:49
One person had problems with their nitric oxide pathways. For your patients who are listening or your laypeople, nitric oxide is what makes blood vessels open up from small to big. If your blood vessels are clamped down in your brain, then you're not going to get enough oxygen to the brain. Then things were done, including hyperbaric oxygen for this patient. There was a tremendous improvement in their

cognition. Also, other pathways were addressed. Another person had problems where he had fibrinogen too high in his blood and blood too thick. The doctor was able to see that. He also had some other problems in different pathways. I'm oversimplifying. They gave things like lumbrokinase—which is something that thins the blood—and pycnogenol and addressed all these other issues. And the patient did much better.

Dr. Sharon Hausman-Cohen 20:45
The third patient had already been accepted into an Alzheimer's study because she had a positive amyloid PET scan. She's an APOE4/4. She had a lot of problems with gluten sensitivity that she did not know about and with detox issues. We gave her things to help support her glutathione. Glutathione is the master paper towel of our brain. It picks up all the toxins and helps you get rid of them. We taught her how to eat in a gluten-free way. We addressed other things. There were some vitamin pathways. We can't change the fact that she's an APOE4/4, but instead of having a 21 on her cognition score, she has a score of 27. That's really different—21 is the borderline between Alzheimer's and having a mild cognitive impairment, and 27 is the bottom of normal. That's a huge difference in terms of function.

Dr. Jill 21:47
That's amazing! And I love how each of those had this one thing where we would say, "They're all in one bucket," but they're really not. You separated them out, and we're able to do individual variations.

Dr. Jill 21:56
Let's talk briefly about an environmental illness which a lot of my listeners deal with. I always say functional medicine can be simplified into infectious burden and toxic load. Of course, there are other little variations, like inflammation driven by those. But at its core, most of the stuff we deal with is environmental toxins and infectious burden. There's a lot of evidence now that post-COVID, some of the long-haul is related to viral reactivation and certain subsets of T cells that are impaired after COVID and maybe long-term. There are all these kinds of things. Let's talk [about] environmentally acquired illness. It could be Lyme, mold, or some of these things. What are some of the things you see that might differentiate someone with mold-related cognitive brain fog, depression, or anxiety? What are some of the variants you might see in these kinds of cases?

Dr. Sharon Hausman-Cohen 22:50
That's a great question, Jill. The way I like to think of it is that I'll think of a couple of my mold patients and how they were different. There are a lot of things that can contribute to brain fog and mold. We see this clinically. With one person, they might have variants that make them have higher reactivity to their allergic system.

Dr. Jill 23:11
Histamine, right?

Dr. Sharon Hausman-Cohen 23:13
Yes. There are certain vitamin D receptors that activate the mast cells. There are certain inflammatory interleukins. Some of the different interleukins will go down different pathways, but one of the interleukin pathways triggers mast cell activation. I had one patient—she had heavy, heavy mast cell [activation] and also a pathway that triggered microglial inflammation. That pathway is really rare. It's only in about 0.2% to 0.5% of the population. For our listeners who are going, "What's a microglia?" microglia are the garbage collectors of your brain. An immune cell that's supposed to get rid of waste products in the brain. But they can also trigger inflammation and can also relate to chronic fatigue and your response to viruses. You can address microglia with things like green tea extract. You can address it with low-dose naltrexone. You can address the mast cell-type things with quercetin, luteolin, and things like Singulair. But also quail egg protein, for example. The things that helped her were in one category.

Dr. Sharon Hausman-Cohen 24:29
And then in the same month, we had another woman who had bad mold issues in her family. The first person got more of the POTS picture, problems with blood pressure and heart [rate] going fast and all those symptoms, because that's what that combination led to. The second person was the one who got such brain fog and fatigue… You know how some of the mold patients don't want to get out of bed and can't do anything? It can mimic depression. They feel like, "I can't do anything!" In the second person with that, her issues were more mitochondrial. When your mitochondria are off, you have no energy. That's your backup energy source. She also had some major detox issues. But there are a whole lot of different detox issues. Hers related to what we call efflux transporters. I will explain that.

Dr. Sharon Hausman-Cohen 25:26
Efflux transporters are, simply put, the bouncers. The bouncers in your brain are supposed to be able to recognize stuff that doesn't belong there and kick it out. There are certain bouncer gene variants that help recognize some of those different mold toxins and say: Get out of my brain. They kick it back out of the blood-brain barrier. She had two variants in her bouncer genes, so she got that tired thing. For her, things like KPAX [were used], which is a mitochondrial support vitamin. There's ATP 360—you probably have other suggestions—or ATP Fuel that helped her build her mitochondria up. Things that help: Lots of CoQ10. For the detox pathways, lots of sulforaphane, which is from three-day-old broccoli sprouts. But you can't just eat broccoli.

Dr. Jill 26:18
I think one cap is two pounds of broccoli. Yes, it's pretty hard to get that amount every day.

Dr. Sharon Hausman-Cohen 26:23
Yes. So we use the Johns Hopkins version of that instead—what they used in the studies with autism. I think that there are all these different things. You go to a mold website, read, [and say to yourself]: "Oh, EGCG, sulforaphane, and clay can help you. And this can help you. And magnesium can help you. And mitochondrial supplements and CoQ10." And you're like: "Well, what do I start with?"

Dr. Sharon Hausman-Cohen 26:48
So both of those people are well. They were both some of my first patients. They're now supporting other colleagues, friends, and people when they get mold. But they're living their lives. In fact, the woman who had the mast cell [activation] and the microglia [inflammation], when I asked her if somebody who was stressed over her new diagnosis of mold illness could talk to her—because she had to live in a trailer for over a year while she was redoing her house—she said: "Yes. I almost forgot about those years."

Dr. Jill 27:18
Right. Oh, I love it! That's amazing.

Dr. Sharon Hausman-Cohen 27:20

Selective memory.

Dr. Jill 27:21
Yes. You can kind of pass through. I love that. It makes so much sense. In my personal experience, I have all kinds of weird genetic things. There are some glutathione issues. But it really did help, even for me. I was someone who didn't tolerate a lot of glutathione. I would oxidize it. Everybody says glutathione, but for me, that made it worse. The same with NAD, this powerhouse of a nutrient we love. I crash and burn if I have a very narrow window. I can do a little but I deplete methyl donors and crash if I do too much. That's one thing.

Dr. Jill 27:52
I have a platelet issue so a lot of these inflammatory disorders make my blood thicker, like your person with the fibrin. I'm more prone to clotting. I've noticed that at different times in those interventions. And then you mentioned nitric oxide. I'm on the other spectrum, where I produce too much. I'm in like a 0.01% variant. I've noticed I get hypotensive—blood pressure like 85/55—when I get a mold exposure. So it makes a ton of sense.

Dr. Sharon Hausman-Cohen 28:18
So do I.

Dr. Jill 28:19
Yes, exactly.

So let's talk a little bit about autism. A lot of patients and people have friends and family that [have it]. I think it's above 25% now in some areas. I don't know what the percentages are. But there's a very, very large percentage of autism diagnosed. What can you find there? What are some of the stories that you've seen?

Dr. Sharon Hausman-Cohen 28:40
Well, I wouldn't have been willing to talk about autism until about six months ago because we were still testing. One of the things we do at IntellxxDNA is, when we build a report, we kind of go: "Okay, this gene has been associated with autism. This gene has been associated with autism." We put them all together. We figure out how the gene works and how you should be able to address it. But we don't release the

panels or train physicians on them until a group of expert physicians on the topic have used the panel and say: "Yes, it's ready to go. It's working." We are now feeling excited about the fact that all of our alpha testers have said: "This is helping tremendously." And we do have a publication. At the end, I'll be happy to show people where they can access that on our website with some of the initial cases that come out of Australia.

Dr. Sharon Hausman-Cohen 29:34
[It's about] looking at some of those root causes, whether they be problems with how the brain hooks together—that's called brain plasticity—or problems with neurotransmitters, [like] how you handle dopamine, norepinephrine, and adrenaline. Or problems with nutrients like magnesium and folic acid, things that make you predisposed to glutathione problems or gut problems—all of those contribute to autism. Mitochondria as well.

Dr. Sharon Hausman-Cohen 30:07
There are some fun cases. There's one case of a young man who's given me permission to talk about his case. He is the first case in our publication that came out last year in the Journal of Personalized Medicine. He is a young man who was diagnosed with profound autism at age two. He was nonverbal. His mother worked with him extensively and then became a nutritionist so that she could help her son. She got some benefit by going gluten-free, dairy-free, and all of that. But on a score of 1 to 100+, having a low score—like a normal neurotypical child with a score of less than 20—her son had a score of 114 when first tested on the ATEC.

Dr. Sharon Hausman-Cohen 30:58
She met Dr. Way in Australia, who was our initial alpha tester. They got his score to 71. It was still so much better. And that was by getting rid of inflammation, addressing gut issues, and all of that. But then they got our genomics a few years later. They retested him. He was still at 71. They were able to understand why he was having some brain plasticity issues. That particular gene needed huge amounts of zinc to help overcome it. Oxytocin and melatonin helped overcome it. They addressed that. They addressed some mitochondrial issues that he had. They addressed other issues and particular kinds of inflammation, [such as] one that responded to sulforaphane.

Dr. Sharon Hausman-Cohen 31:40
The long story short is that a year later, this young man had his IQ go up 20 points. He was mainstreamed instead of being in a special school because of that. He was able to speak so much better because it wasn't that he had that low of an IQ; he was locked in there because of some of the plasticity issues. He got a job in a cafe. He got a driver's license. He eventually saved up money and bought a car. He is now helping his mother with her online platform and has taken some pre-college courses in botany. He was wetting his bed every night and now he's not.

Dr. Sharon Hausman-Cohen 32:23
That's an extreme case. But I just got an email from a patient who I have been helping. I have only had one visit so far with his son, who was already in mainstream school and doing well. The father said: "With the changes you've made, my son used to answer one-word sentences like 'Okay.'" He gave the example of [when] they saw Girl Scout cookies for sale. The father said: "We'll get Girl Scout cookies another time." Instead of the son saying 'No,' 'Why?' or something like that, he said: "But why? They're here right now." He's speaking in full sentences when he used to answer questions with one word.

Dr. Sharon Hausman-Cohen 33:09
That's with one visit. We added about five things. We changed what he was doing and added about five things. I'm really excited about that work. I do have to warn you, if you are a family member or a parent, that the work just finished its alpha testing, which means we only have coverage in about 15 states in the United States right now. We are training a whole new group of doctors in March. If you are a clinician and want to get trained, we would love to train you. Reach out to us. If you want to learn more about that, you can go to our website and email information. But unless you're in one of the states where we have a doctor trained, there may be a slight wait. But you can nominate your doctor.

Dr. Jill 33:56
Yes. And give me the website for your company because people are asking. I want to put that in right now. If you're listening, I'll put that in, and you'll see it below if you're watching this recorded.

Dr. Sharon Hausman-Cohen 34:06
And I do want to say that it's really important that IntellxxDNA is not meant to diagnose a disease. We're not looking at pathogenic variants. There are some children with autism or some people with Alzheimer's who have what's called a pathogenic variant. We're not looking for that. What we're looking at are common variants. We don't look at the one-in-a-million variants. We look at the things that are found in about 0.5% of the population and up. Those are considered common in geneticist terms. They would not even show up in a whole genomic sequencing report because they're not pathogenic. They don't cause disease.

Dr. Sharon Hausman-Cohen 34:48
But when you combine somebody who can't stop inflammation or who makes too much brain inflammation with different insults, like you mentioned, environmental... For example, there's some evidence that sometimes tick-borne illness can be a trigger for autism. There is all kinds of fascinating research. That's not a common cause, but it definitely is out there. We're looking at common variants. But looking at 20 or 30 common variants together could cause problems. That's more the child who's born and seems pretty neurotypical and then regresses. Those kids do really well with genomics. Or, in some cases, many of the children who are born with autism will still make significant improvements—they may not quite get to 'neurotypical'—when you address their nutrients, their gut, their brain plasticity, and brain chemicals. Does that make sense?

Dr. Jill 35:46
One hundred percent. I love how you framed that because we still do this great functional medicine baseline. We do the diet, the lifestyle, and the basic nutrients. This has been my experience, too. And maybe we should be doing it for everybody sooner, but you do the basics and then this is the detailed work—like extracting the details out of the needle in the haystack kind of example—where the real things might make a difference in this particular personalized approach.

Dr. Sharon Hausman-Cohen 36:17
Yes. That's what we call the 'Clinical Decision Support Tool'. Just like pharmacogenomics, a doctor might order a test to go: "What medicines do you metabolize well, and which ones do you need to be more careful with?" This is the same principle. A physician or healthcare provider orders it to say: "Let me better

understand what might be part of the root cause." Then the physician or clinician makes the decision: "What makes the most sense for my patient?"—because we'll give a number of choices of things that might work on that pathway. And they go: "I think for this history and this going on, I'm going to try" X, Y, and Z.

Dr. Jill 36:53
Yes. What I love too is that there are sometimes medications that are appropriate, but you also include all kinds of research-based recommendations for nutrients, whether it's a vitamin or mineral or whether it's something like broccoli extract, resveratrol, or whatever we're doing.

Dr. Sharon Hausman-Cohen 37:09
I think that's a really good point. I think that's one thing that differentiates us from other genomic tools as well as other people's work in this space. Because we're a clinical decision support tool, by definition, every single sentence in our report has to have a reference. If we say sulforaphane might be an intervention for the interleukin 1 beta gene in autism, we have to have evidence not only that the interleukin 1 beta gene variant has been associated with autism, but that sulforaphane has been shown to cross the blood-brain barrier and help in outcomes in autism. We don't put just anything in the report.

Dr. Sharon Hausman-Cohen 37:48
I have doctors all the time come and say: Have you considered putting such and such in the report? We're always happy to add new interventions. I say: "Send me the reference showing where it helps and the mechanisms." Then we vet it and then we can add it. Then we have discussions of the interventions and the dosing in the studies so that physicians can know: Is the study done on an adult or a child? What were the outcomes? [They can find out] a little bit more about what's going on.

Dr. Sharon Hausman-Cohen 38:20
Sometimes, in the autism part of the study, they will have animal models. Then they will have done human safety studies on adults. But they won't have biopsied the brain to see if it decreased the inflammation. It's frowned upon to biopsy children's brains. [laughter]

Dr. Jill 38:38
Yes! [laughs] I was going to say that that's the thing that I think differentiates you and what you're doing from a lot of the other ones out there. I won't name any names, but we were talking about that before, where there are some recommendations, but it's all based on hypothesis and not on clinical evidence. I think that's a slippery slope. It can be tricky.

Dr. Sharon Hausman-Cohen 38:59
Yes. And because of my research background—because I thought I was going to become a PhD those couple of years at Harvard doing my master's degree—I really understood what we need to do in the clinical process to prove to the scientific community that something makes sense. My ultimate goal is that we go through all the levels of clinical trials needed so that there's very, very clear evidence that this is a great approach for precision medicine. We are at different levels of those kinds of studies with different topics.

Dr. Sharon Hausman-Cohen 39:35
We're supporting a study on autism that will start in March on the East Coast. I don't want to give too many details about it yet. But it's not being done through IntellxxDNA. It's being done through an organization that is in the autism world. I have to get their permission to say who it is. But I will let you know, Jill, if you can do it—because they're always looking for people to help support their research—and then we can post that.

Dr. Sharon Hausman-Cohen 40:03
Then, we're going to do some more prospective study work in the cognition field. We are working with some physicians to get more case studies and publications in the mental health field as well. During COVID, depression and anxiety have been huge. Being able to help people untangle why they tend to get so much more anxious than somebody else has been really beneficial.

Dr. Jill 40:27
Yes, gosh, we were briefly talking before we got on here: I think it's about a 400% increase in prescriptions for SSRIs during COVID. That just shows you the state of, I think, fatigue and stress and all these things that are contributing. Often, like you said, if there's a threshold where life is pretty good and everything's going well, they

may not hit that genetic tipping point where they become depressed. But there have been so many stressors and so much going on—isolation—during COVID that I think a lot of people have hit that tipping point. And with the testing that you do, you can find out what is causing that. Is it a nutrient? Is it inflammation?

Dr. Sharon Hausman-Cohen 41:03
Yes. And at the top of both the depression and anxiety panels... I keep referring to these panels. Our report is a collection of about 20 panels. All of our reports are going to have what I call functional medicine basics—things relating to nutrients, inflammation, detox, and the gut. But then they'll have particular panels relating to the topic. In our mental wellness panel, we're going to have depression, anxiety, OCD, addiction, and those kinds of things. PANS/PANDAS—we have neurodevelopment. We have all kinds of topics.

Dr. Sharon Hausman-Cohen 41:36
In our depression and anxiety panel, one of the serotonin transporters is at the top. It does make people have like 2.4 times or 140 times the risk of depression. Those people might respond really well to pushing serotonin, but that's not everyone. Even those people might also have problems with certain amino acids or problems with cortisol. So I think that it's really helpful to look for the underlying root causes. Particularly if somebody has started on a serotonin medicine and they're like, "I'm not fully well" or "I'm not getting better at all," then you go: "Maybe serotonin is not your issue." There are a lot of things that contribute to depression.

Dr. Jill 42:22
Yes. I love that. And at the core, this is helping us do personalized medicine. I love that. That's what most of us doing integrative personalized and functional medicine want—to have that personalized approach.

Dr. Jill 42:36
First of all, I put your website in the links here, and we'll have it. Wherever you're watching or hearing this, you'll have a link to find the website. But let's talk about: If you're a patient, what do you do if you want this test? Or, if you're a clinician. Talk about those two groups and give people resources on how they can get connected.

Dr. Sharon Hausman-Cohen 42:52
Can I share my screen and then show some things on the website?

Dr. Jill 42:56
Yes, absolutely. One second here. I'll get you up. Okay, all set.

Dr. Sharon Hausman-Cohen 43:01
Okay. So let me share here. This is our IntellxxDNA website. That's the homepage. If you are a clinician, click on 'Clinicians', and you can request a demo, request an account, or ask your questions. If you're a patient, click on the patient one. It'll help you find a provider that's licensed in your state and give you more information. If you want to learn more, if you click on our podcast and video page, you'll see Dr. Jill from our last talk right up at the top. But there are some different podcasts and videos that you can watch. This is with Dr. Bredesen. This is with Dr. Perlmutter. I was scheduled to do another one with Dr. Perlmutter, but we had to delay it. It will be soon. And if you are someone who wants to read more science, you can read some of the publications. So that's where I would recommend [going]. Just hop on our website. Please, do not call. We are a small team. It is much easier for us, if you don't mind, if you email or go through the website to reach out for information.

Dr. Jill 44:09
And for those listening who aren't in front of their computers, spell out your website. Just give us the website for those listening.

Dr. Sharon Hausman-Cohen 44:18
It's www.IntellxxDNA.com. The way to remember it is that it's an intelligent approach to DNA. 'Intell' from Intelligent, the 'xx' because the co-founders are two women—the two X chromosomes—and then 'DNA'.

Dr. Jill 44:37
I love it. I didn't even know that, and I've known you and the company for a while. Sharon, as always, it's such a pleasure. I love what you're doing. We'll have to update again in six months or a year because I'm sure there'll be new things coming out. Thanks for the work that you're doing in the world and for this great tool that we have!

Dr. Sharon Hausman-Cohen 44:55
Thank you again for having me, Jill! It's always a pleasure.