CUTTING EDGE Health

Welcome to the Cutting Edge Health Podcast with Jane Rogers, where we discuss science to help prevent cognitive decline.

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[00:00:00] Jane Rogers: Welcome to the *Cutting Edge Health: Preventing Cognitive Decline* podcast. I'm Jane Rogers. Dr. Sharon Hausman-Cohen is our guest today. She co-founded IntellxxDNA. They've created a tool that can help identify the root causes of cognitive decline. Their research is focused on making genetics actionable and understandable for each individual patient. Dr. Hausman-Cohen got her medical degree from Harvard Medical School, and she also has a clinical practice in Austin, Texas called Resilient Health. I am so grateful for this interview and her work. It changed my life. Before we get going, I just want to thank you for just taking the time. I can just feel your busyness, I can tell you're a busy girl. I just really appreciate you saying, "I want to do this. This is important."

[00:02:22] Dr. Sharon Hausman-Cohen: Oh, no. It's my pleasure. I love doing this because without people like you, we can't get the word out. So many people find out they're an APOE ε4, and they get scared, and that's not helpful because—

[00:02:33] Jane: Not at all.

[00:02:34] Dr. Hausman-Cohen: —there's so much that can be done.

[00:02:36] Jane: Let's start at the very beginning. You're an MD, but you saw this need. Tell me your story. How did you end up helping people with their genetics?

[00:02:48] Dr. Hausman-Cohen: You could start anywhere. I could go back 30 years or even further because even when I was in college, the research I did, the interest I explored helped, but of course, you don't know at the time that all these different things that you're doing are going to lead you to the path that you end up on. I went to grad school, I went to medical school, and again, I was interested in research because that's why I'd gone to grad school to start with, but I never thought I would end up having a goal of trying to change the way that medicine is practiced.

I had gone actually to Harvard to get a PhD in Neuroscience. I was interested in how the brain worked on a very, very minute level on how the different hormones and brain signals happened, and then decided I wanted to work on a more global level and switched to become a family physician, which is the opposite of a PhD. We specialized in people, birth to death, so it's a broad topic, but I was still, of course, interested in cognition and how the brain worked.

Then I got into incorporating that more heavily into my practice a few years before I met Dr. Bredesen, more because my co-founder, Carol, and I were having people come to us with mold-related illness, and there was nobody in Texas at the time that was really doing any kind of mold-related illness and helping these patients. Then we went to an integrative medicine conference in

California, and Dr. Bredesen was presenting his initial recode work and the first paper that he wrote on aging. I think this was in 2015.

He talked about the different types of Alzheimer's that he had really come to the decision after decades of being a researcher that Alzheimer's wasn't one disease. It was people who had trophic components, and that's a lot of the APOE ε4 and the growth factors. People who had sweet components more than metabolic and the diabetes. Then he also talked about the toxic and started to mention mold.

I was going, "Oh, my gosh. A neurologist that's classically trained, acknowledging that molds can have an effect on the brain." I went up and spoke with him later. Then the next thing I knew, I was teaching about mold at his second training at the Buck Institute. Again, this was years ago. At the time, I had also, with Carol, my co-founder, started to try to work on how we could incorporate genomics into our practice.

Initially, we were doing this just for our practice because patients were asking for it. They were coming to me with their 23andMe at the time and saying, "Can you use this to help prevent cognitive decline, or macular degeneration, or heart disease?" We started looking, and there was no tool out there really geared at physicians, and licensed healthcare practitioners that took an academic approach to being able to say, "How can we use genomics in addressing true medical conditions?"

There were some nutrigenomics, some pharmacogenomics, but nothing for brain health for sure, but not even for really much for diabetes and heart disease. I talked to Dr. Bredesen about our work, and that we could take these categories that he had identified in these components, the mitochondria, inflammation, hormones, growth factors, nutrients, and all these different things, and we can map it out genomically, and make it so that his work could have more precision, or that clinicians wanting to help with reversal cognitive decline could better understand the root causes. That's how it started, and so we did it.

[00:06:37] Jane: Fabulous. Tell us about IntellxxDNA. How did you come up with that name?

[00:06:42] Dr. Hausman-Cohen: Oh, that actually is a little bit of a funny store in that initially, we were named In-Depth DNA. About two, three weeks before we were supposed to be going to a conference, we were just about to get all of our information printed, we found out that there was another company that had filed for a trademark too close to that name.

[00:07:01] Jane: Oops.

[00:07:01] Dr. Hausman-Cohen: They don't exist anymore, but at the time, so we had to come up with another name very quickly. It was Carol's son's birthday. We have become friends obviously over the years working together. We were going out to dinner, and so we said, "Help us brainstorm names." There were margaritas involved because it was a 21st birthday. [laughs] Someone threw out the name, "Two dumb chicks DNA." I was like, "No." [laughs] They were joking.

Carol was like, "Clearly, Sharon doesn't want to be called a dumb chick." I said, "Maybe we can do the opposite and have it like Intellxx, or something like that." Something from playing the word intelligent, and we came up with IntellxxDNA because Carol and I obviously, are both women, so the two Xs are alluding to the fact that as where co-founders are women, but also the two Xs are part of DNA, so that's how we came to the name. [laughs]

[00:07:57] Jane: Thank you for sharing that story. You mentioned Harvard a minute ago. I was just talking to a Harvard professor who has Alzheimer's in his family. I said, "Have you done your genetics?" He goes, "No." I said, "Oh, you've got to do your genetics." I went off on my spiel. He said, "No." He paused and paused. He goes, "I'm scared." How should I have helped him in that conversation? What do you say to people who say the same thing to you?

[00:08:27] Dr. Hausman-Cohen: I think people get confused between genetic illnesses and genomic illnesses. You can be a professor, you can be a physician, but we really don't get a lot of discussion of that in medical school. A genetic illness is something that is inherited. Cystic fibrosis, Tay-Sachs, if you get two copies of those genes that cause that Huntington's Disease, is another one of that's a genetic illness, if you have even one copy of a Huntington's repeats, you're going to get those diseases. Those are pathogenic genes, and so that genetics is the study of inheritance.

Genomics is the study of how small changes in our DNA have effects on our health and well-being. What we look at with IntellxxDNA are not pathogenic genes. Nobody's going to get bad news. You are going to get X, Y, or Z. Instead, what you're going to get is what are contributing factors. We'll step away from brain for a second and talk about heart disease because that's a little more familiar to most people. We know that heart disease is not just caused by high cholesterol. Heart disease has components of people putting calcium into their arteries.

It has components of inflammation. It has components of micro-clotting. It has components of the blood vessels squeezing too much. When you map out any disease with underlying components, then you have all these variables that you can address. What I tell people is, first of all, there's a paper that we publish that is pretty accessible and they can read that in the Frontiers of Neuroscience in Aging where we give three cases of three different APOE ε4 individuals. One was even an APOE ε4/4 who had been admitted into an Alzheimer's study because she had a positive PET scan. They all had borderline mild dementia and all of them got well, and we purposely gave three examples from across the country to help people say, "Oh, my goodness. You can get better." How do we do it? Well, it was different for different people. The reason to do Genomics is, for example, the woman who was the APOE ε4/4 who had been accepted into the study, she was 62 and having cognitive decline but there were a lot of reversible things.

She had a lot of things going on in inflammatory pathways, in pathways that related to how she removed toxins, intoxicants, pathways that related to her mitochondria, and even things that related to not being able to get enough blood flow to the brain. You address everything you can, and of course, there's also things you can do to help APOE ε4, that gene, as well. She actually got up to a 30, which is completely normal.

[00:11:12] Jane: Oh, that's fabulous.

[00:11:13] Dr. Hausman-Cohen: She did go down a little bit during COVID, which is not uncommon. She went from the top of normal to a little lower in normal, but still, she was ready to accept a diagnosis of Alzheimer's until she heard about what we were doing, and now it's years later and she's still doing really well. She doesn't feel like her memory is as good as it was when she was 20, but she's not worried about, "Gosh, I need assistance with my activities of daily living." That's a really big difference. There was another guy who was a firefighter. He couldn't do anything. He was in Florida, but he had been a firefighter in New York.

He couldn't do his taxes, he couldn't function well, was starting to get dementia. He had really bad detox pathways. That's not a good combination if you are a firefighter during 9/11 but once that was realized, again, his doctor did things, pushed his detox pathways, removed the toxins and actually did hyperbarics with him because, again, there were some blood flow issues and addressed nutrients and all these other things. Again, he actually wouldn't do the final follow-up of CNS vitals, which is a measurement for cognition when we reached out to him, because he's like, "I am so busy, I can tell you my cognition is fine. I just took my son on a hunting trip, and I did my own taxes and I'll get back to you."

Really, the message I would give, circling back to your question, sorry about that, is I would say, Genomics is empowering. APOE ε4 is not enough to know because it is one of many dozens of components that contribute to cognitive decline and the reason we do Genomics is because when you understand all of those other factors, you can have a precision plan for you. You can absolutely start with the work of Dr. Bredesen but if you read his books, and you go, "Oh, it could be choline, it could be homocysteine, it could be TNF alpha, it could be IL-6, it could be this, it could be that."

All of a sudden, you're taking 40 things a day and that can be pared down for most people when you use a precision approach of Genomics. It actually saves you money, stress, not everybody needs a keto diet. There're all kinds of different things that you can learn from your Genomics.

[00:13:30] Jane: That is so important because when I started showing signs of cognitive decline, at the same age my dad did, both my parents passed with it eventually, but I read Bredesen's book. It was 2015, it had just come out, and it changed my life. I went through and I did a spreadsheet of all, at the time, 36 different holes in the roof. These are all the things you need to look at in order to turn this cognitive issue around. You're right, I had all of them. Thinking, "I need to do every single thing on there," and I was able to reverse my trajectory. However, if I would've known about this, the precision medicine, you're saying--

It's expensive to have all those supplements and to take all those supplements, so thank you for sharing that, that you can get more precise with what is actually going on in your body.

[00:14:20] Dr. Hausman-Cohen: Right and you can monitor. Sometimes people that are afraid on the opposite. They started on 30 supplements and they're like, "Oh, my goodness, but if I drop this how am I going to do?" Well, you use the Genomics to come up with the precision plan for you, for a specific patient. Then, you also can use-- There's great testing. There's something called CNS vitals, which is a computer test online. There are other tests. That way you can see, am I still doing fine because we're not trying to make life difficult for people. We're trying to come up with

the most precise plan and the most effective plan for each individual that is easy as possible to implement.

Then, the other piece is a lot of people who have cognitive decline in their family, it is not due to APOE ε4. There are vascular components and again many other components, hormone components, something called white matter changes, so the more you know, the more you can figure out what's going to help you.

[00:15:19] Jane: Let's talk about the more you know. I know for IntellxxDNA you need to have a physician order this test so how does someone find a doc to do this?

[00:15:30] Dr. Hausman-Cohen: Well, that's actually pretty easy. If they go to the IntellxxDNA website and put in their zip code and their email, we can send them a list of physicians. There's MDs, DOs, naturopaths, nurse practitioners, PAs across the country that are trained and we're happy to give people a list of people who are trained in their area.

[00:15:51] Jane: Excellent. You mentioned there is a cost to this but in the end, because it helps you be so precise as to what you need it offsets that but what is the cost that someone can expect to do a brain panel?

[00:16:04] Dr. Hausman-Cohen: The test itself is one part of the cost and the brain panel itself is $900 but it depends on what the physician charges for the interpretation so it can vary a little bit because some people have it part of a year-long program, other people have it part of a consult, and then some people, and I really encourage this, we have three different basic reports for Genomics. You can do Genomics on anything, from liver disease to kidney disease to heart disease to diabetes to depression to anxiety.

Most of the time the physicians are going to want to do a combination for a patient so that they do both the medical overview report and look at heart and blood sugar and obesity and all of those things as well as the brain. Again, one of the things that Dr. Craig Tanio and I were talking about one day is he asked his patients a year after he had done their Genomics and found that he had tremendous patient satisfaction including with the cost because he said people had come to him often on a recode protocol and he's like, "Well, once we were able to optimize their supplements, they saved $1,000 in the first year by not being on as many things.

I think that it is an investment, but we have had incredible patient satisfaction because Genomics is not just about identifying snips, but it's about knowing what you are going to do about the information. I started out, as I said, as a researcher. That's where our research team has put in years and years of science and millions of dollars, to be honest, is to figure out for each gene variant how does that gene work and then what can you do about it? If you have a gene that relates to the mitochondrial membrane, then you're going to give things that support the mitochondrial membrane healing which are more like anti-lipid factor ATP 360.

There are different brands of things that support the mitochondrial membranes but if you have things that affect the inside of the mitochondria, that make it so you don't make enough CoQ10,

that's a whole different supplement but they're still both even mitochondrial. The other thing is a lot of what we get at, you can't get at with bloodwork because there's a blood-brain barrier. You can measure Interleukin-6 or TNF alpha in the blood but the levels in the brain could be dramatically different. You might have normal levels of B12 in the blood, but you might not be able to transport it to your brain.

Genomics lets you go so much deeper that it becomes a cost-effective intervention, and you only have to do it once because unlike other tests that can fluctuate your genome, your DNA doesn't change.

[00:19:00] Jane: To get this test, I can't remember, I had mine done eight months ago, is it a swab in the mouth?

[00:19:06] Dr. Hausman-Cohen: Yes. It's just a cheek swab.

[00:19:09] Jane: I remember it wasn't very invasive. Well, you and I talked before the podcast, and I have my results from you, but I've really never had them interpreted and thank you. You were kind enough to say, "I will interpret these for you." I'm a little apprehensive because I know I'm going to find out right now, "Okay, this is the verdict." Could you share your thoughts on my own results?

[00:19:34] Dr. Hausman-Cohen: Yes. When I opened your DNA last night when you kindly said that you thought that your listeners might enjoy hearing and learning more about how we do this-

[00:19:43] Jane: Oh, good.

[00:19:43] Dr. Hausman-Cohen: I was actually really happy for you because I know you have that family history, and you definitely have some things you need to pay attention to and we'll talk about that, but you also have a lot of good things. Let's start with that topic of APOE ε4 not being enough because so many people are just getting their APOE ε4. Well, APOE ε4 interacts with a number of genes dramatically. It interacts with hormone receptor genes. It interacts with things that relate to different kinds of inflammation. It interacts with a mitochondrial membrane gene, and it interacts with something called BChE-K variant, which you had actually asked me about in our conversation beforehand. You do have the BChE-K variant.

In fact, you have two copies of that so we should really talk about what that means. You have another gene variant in that BChE pathway, which stands for Butyrylcholinesterase so it's like acetylcholinesterase in the name. I'll explain how it's different but those other ones that you don't have are super important. I want to just talk about one that you don't have and why that's so exciting. On the same chromosome as APOE ε4, there's this mitochondrial membrane gene.

One copy of APOE ε4 gives about 3.4, 3.7 times the risk of Alzheimer's. It really depends on the study and the population, but if you look at APOE ε4 individuals in Africa, they have a much, much, much lower risk and you go, well, why would that be the case? There's not really that much difference. The difference is most Africans don't have that mitochondrial membrane gene.

That mitochondrial membrane gene conveys a tremendous-- Out of that 3.4, which means 3.4 times the risk that mitochondrial membrane gene, which is linked, meaning it's frequently co-inherited in 75% of Caucasians is 2.5 times that risk so that is great news. A lot of the risk is conveyed by the two coming together.

[00:21:53] Jane: It lessens my risk.

[00:21:54] Dr. Hausman-Cohen: Right. If you have the mitochondrial membrane and the APOE ε4 so 75% of APOE ε4 individuals have both of these problems together because they're right next to each other on the same chromosome. Again, just the way it is, 75% of Caucasians seem to get both of them together so a lot of the problems conveyed by APOE ε4 are conveyed by that combination so you don't have that mitochondrial membrane.

That makes your risk much less. In my experience, having done this now for seven years, the people who don't have that mitochondrial membrane, we do so much better with. We can get them well, so much easier. In fact, I have an 82-year-old woman in my practice who is an APOE ε4/4 and she's still in the 95th percentile on her CNS vitals.

[00:22:48] Jane: Great.

[00:22:48] Dr. Hausman-Cohen: That's great. A lot of it is because she doesn't have all these mitochondrial issues.

[00:22:54] Jane: What is the name of that gene?

[00:22:55] Dr. Hausman-Cohen: It's called TOMM40. Tom liked the boy's name. You also don't have some of the estrogen receptor variants that contribute to the risk of Alzheimer's combined and that doesn't mean APOE ε4s often do better with a little bit of hormone postmenopausally but the women and men, this is really an interesting topic.

Even the men who have these estrogen receptor SNPs combined with APOE ε4, it dramatically increases their risk so they really, really need hormones but the thing that you do have is this butyrylcholinesterase K variant.

[00:23:30] Jane: Two copies.

[00:23:31] Dr. Hausman-Cohen: Two copies, and a copy of another gene in that same pathway that is only found in 3.6% of the population. This is super important for you to know about for a couple of things. I don't know if you've ever-- We don't want to make you feel uncomfortable with your history, but I don't know if you've ever had general anesthesia.

[00:23:49] Jane: I have, and I have trouble.

[00:23:50] Dr. Hausman-Cohen: You probably did not wake up from it. Well, you were probably asleep an extra four or five hours.

[00:23:55] Jane: The whole week later I had problems. It just was not clearing from my body.

[00:24:00] Dr. Hausman-Cohen: Yes. You can't clear anesthesia and you actually should always write that. Let me just take a step back, Jane. I'm doing this as an example, but when I'm doing this, I'm in contact with your doctor and so he'll give you the exact recommendations. I'm going to talk about the genes. I don't want to be practicing medicine over a video.

[00:24:19] Jane: By you doing this, it's helping other people to see, oh my gosh, there's so many different factors.

[00:24:24] Dr. Hausman-Cohen: Right, and I'll tell you what I would tell my patients if they had these genes.

[00:24:27] Jane: Thank you, Sharon. Good.

[00:24:28] Dr. Hausman-Cohen: I don't want to be construed as giving again, doing a telemedicine on video. This gene is really important for metabolizing anesthesia. Anesthesia is not good for brains of people who have BChE-K variant. I tell my patients, if they have this, and again, you have two copies plus another more severe variant, every time you're having any surgery, say, I can't take any of these succinylcholine derivatives and the anesthesiologists know what that is or you just tell them, I've got this BChE problem.

I didn't wake up for hours and hours. Because again, that's super important. Nobody wants to be under anesthesia for an extra four or five hours. The other thing though that is very, very relevant is BChE is necessary for getting rid of pesticides. I tell my patients who have BChE, they cannot have exterminators. I actually have the same BChE variant that's only in 3% that you have, and I used to have fights with my husband about, I am not willing to have an exterminator.

I didn't know I had this gene at the time, but I knew I felt sick after the exterminator came. Then when I learned my genomics, it all made so much sense because you can't metabolize the pesticides so it's going to give you all kinds of brain fog, make you feel sick because it's just going to hang around, and be a neurotoxin for you so avoid pesticides.

[00:25:56] Jane: This makes sense, Sharon, because I'm a farmer's daughter from Iowa and we had toxic pesticides all over the farm. I would help my dad mix the roundup in these big tanks on his John Deere tractor and oops, I spilled it on myself.

[00:26:12] Dr. Hausman-Cohen: We're going to get to the roundup because you have another gene that makes it very, very difficult. Two copies to metabolize roundup, that's actually a different gene but you have two copies of that as well.

We can actually transition to that in a second but I'll tell you one other fun little thing to know about BChE is nightshades have a lot of colon inhibition so if you eat a little bit of a tomato or a potato, no problem but if you eat a big whole meal of rattly or a lot of nightshades, you may find that you feel anxious because that's going to be slightly neurotoxic to you. Again, I noticed it

because it was actually Carol, our co-founder one night right before we got my genomics back. This was years ago.

She had me over for dinner and she had made this dish that was eggplant, tomatoes, and potatoes. I was like, "I'm feeling a little bit anxious, and I don't know why." The next day we got the genomics back and we were still building it, and we were working on BChE the next day and I found the article showing that people who have very low, Butyrylcholinesterase activity will get more anxious with nightshades. Everything comes together and you get to know yourself in this really fun way.

[00:27:24] Jane: This is fabulous information.

[00:27:28] Dr. Hausman-Cohen: Before I go to the next gene, I want to say what I tell my patients who have that do about it because the problem with BChE from a cognition standpoint relates to the inability to clear all these toxins and pesticides and Butyrylcholinesterase normally helps to prevent the amyloid beta from forming tangles. That's the other part that's a problem. What do you do about that?

There's a lot of things, and again, in the tool we give and discuss all the potential interventions, and you can discuss with your doctor, I know you're going to talk more about them with it but ashwagandha is one thing that I use for my patients who have this because ashwagandha can help properly process the amyloid so that you don't get it into the form that gets into the tangles and ashwagandha and you can actually--

In the literature, in our tool, we have all the references, but you can see that ashwagandha helps to prevent those different kinds of tangles and so since BChE being low increases the-- It doesn't increase the amyloid beta, it increases it coming together and making those twists, those Fibrils so you can block that. That's one way, and I'll give you, on each of these things we talk about one way, and then again, you and your physician can decide what the best way is for you.

[00:28:44] Jane: This is fabulous. Fabulous. That's so exciting.

[00:28:47] Dr. Hausman-Cohen: Yes. It's really fun. Another gene that you have is what I call the roundup gene. It's GPx-1, glutathione peroxidase. This gene, it's an antioxidant for the mitochondria and for other parts of your body.

It's part of the detox pathway, but it's also, again, really important to keeping your mitochondria healthy because your mitochondria are taking oxygen and turning it into ATP into energy anytime you have any power plant so if you were to have a nuclear reactor, there's nuclear waste. Oxidative stress is your nuclear waste. It's your oxidative waste. GPx-1 does--

We have a ton of waste in the body for getting rid of this oxidative stress, but the mitochondria don't have quite as many, and the mitochondria use GPx-1. The other area that GPx-1 is involved is being able to get rid of roundup damage. Really interesting study was done in Ecuador on the Colombian-Ecuadorian border because they were spraying roundup to get rid of all the cocaine

that was being grown in Ecuador but the coffee growers, there's no like big fence in the air that prevents the Roundup from going over to Ecuador. The coffee growers in these villages were getting sprayed with it and they showed that the women who had two copies of GPx1, had a lot of health problems including obesity but they also had nine times the risk of their children having birth defects or them having miscarriages. Again, Roundup is really bad for you. I would say you need to be very careful about grains and not eat grains that aren't organic but even with organic, a lot of them can be fairly contaminated with Roundup. They're going to get better about that. In 2025, companies are going to voluntarily test grains.

[00:30:42] Jane: Oh, good.

[00:30:42] Dr. Hausman-Cohen: Even Cheerios are going to start to chest where their oats are because oats are horrible from a Roundup standpoint. Hopefully, we'll lower the amount of these things that we can allow in our food sources. It's gone up like 300 polls in the last 30 years. They have what the allowable amounts are but in the meanwhile, be really careful because the things that help the people who have problems with their GPx1 include getting enough selenium because selenium is the cofactor.

If you have a gene that's not working well, you don't want to be missing the cofactors that make it work better. I tell people, Brazil nuts-- I like to do whatever I can with food. Brazil nuts are a great source of selenium and if you can just make it so that you get seven Brazil nuts a week, at least that won't make your function any lower than it is.

[00:31:31] Jane: I'm eating more than that. I love Brazil nuts.

[00:31:34] Dr. Hausman-Cohen: Don't overeat Brazil nuts because too much selenium is not great either, so be a little careful. Don't have a cup of Brazil nuts.

[00:31:40] Jane: Okay.

[00:31:40] Dr. Hausman-Cohen: There's other things you can do. We have other ways that we can get rid of oxidative stress. Sulforaphane, sulforaphane is like Avmacol or BroccoProtect. That helps with those pathways, with the glutathione-dependent pathways but you can also help with the other pathways that get rid of oxidative stress like algae, chlorophyll, or algae bits is a brand of these little green things you can chew that can help with oxidative stress. You should talk to your doctor about what's the best way for you to protect the mitochondria and get rid of oxidative stress. Now, the next one that you have, that is, again, I think it's a really fun one. I don't know if you have any family history of cataracts.

[00:32:22] Jane: I do.

[00:32:24] Dr. Hausman-Cohen: Your eye uses vitamin C as an antioxidant. We have different antioxidants in the body. We have vitamin E, we have vitamin C, we have CoQ10, we have glutathione. Again, about 10% of the population don't recycle vitamin C. Humans don't make vitamin C, they have to get it from their foods, I mean, animals make it. You can't recycle it well.

That means you need vitamin C more than the typical person and if you look in the studies in the literature, low vitamin C is associated with a higher risk of cataracts but so is the gene that makes it so you can't recycle vitamin C.

This particular gene has been associated with about 250% increase in the risk of cataracts because you're low in vitamin C, you can overcome it by just making sure you get enough vitamin C. I don't want you to think you have every nutrient that you need. There were some nutrients that you do great with, you're fine at your absorption of zinc and magnesium. There are different people, B6, you're fine with. Everybody has the different things that they need. There were a couple of other nutrients that for you are important and one we already talked about when we were talking about transporters, and that is B12.

You are not good at carrying B12 into your brain, you can have completely normal B12 in your blood but if you can't transport it to the brain, that's really important because B12 is really necessary for your nerves to signal everything nerve-related, whether it's pain, cognition, **34:00]**, B12 is great. With my patients who have two copies of this, I tell them, instead of having a normal B12 level be for you, 300 to 800, I want your level to be 1000 to 1500 or even up to 2000 because we need to flood those receptors, so you have enough B12 for your brain. I've had patients with this where that makes a huge difference.

[00:34:25] Jane: A certain kind of B12, Adenosyl or methyl or hydroxy?

[00:34:30] Dr. Hausman-Cohen: No, you can use whichever B12 you want for that. We used to think people needed Adenosyl B12 for their mitochondria but then there was a paper that came out in 2017 that showed in order to get it to where the mitochondria are, you have to get it back to its basic form and then add the adenosyl group. It doesn't really matter as much as that. In the autism world, there definitely are some studies showing that methyl B12 seems to work better but I just give my patients a chewable 5000mg B12 once a week or 1000 a day. I think it is a methyl cobalamin but really your body can take care of or converting it to the form it needs to get across the blood-brain barrier.

I want to give you a chance to ask questions. Other things that we could talk about that relate to you relate to how you transport choline, your blood-brain barrier. There's some information there. How you kick out mold. There are some things regarding how you respond to exercise with your muscles. You tell me what you want to hear about.

[00:35:33] Jane: Oh, gosh. Mold is especially interesting because I've had mold issues, and I don't think I'm able to clear them as well.

[00:35:41] Dr. Hausman-Cohen: Exactly

[00:35:41] Jane: -as most people.

[00:35:43] Dr. Hausman-Cohen: There's this gene that is a bouncer gene. The gene is called ABCC1. Now, you have to realize you can't just go look at a report and go, "Oh, I see ABCC1 on

myself hacked or 23 me or any of those things because there are over 1000 variants in each gene and what a variant does depends on where in the gene it is. I'm going to take a step back and explain that before we talk about this so people don't try to go look and see, "Do I have it?" You have to know the particular location. I'm going to use vitamin D as an example. Vitamin D is actually a hormone not a vitamin.

[00:36:23] Jane: Really?

[00:36:24] Dr. Hausman-Cohen: Well, because it works with the vitamin D receptor. A hormone is something that it's absorbed and then has effects that are across the body. Vitamin D binds to the vitamin D receptor, think of it like a little docking station. Then the vitamin D receptor goes into the nucleus and causes changes in a hundred other genes in terms of transcription. It's a lot like how estrogen works. Estrogen binds to receptors and causes genes. That's why I say it's really, vitamin D is both a vitamin and a hormone. Well, the vitamin D receptor, when combined with vitamin D, its job is to turn things off but if you think of those old ribbon candies.

You know those candies that were up, down, up, down and they had all the rectangles, you can have a change in one location where the vitamin D receptor interacts with bone, another one where it interacts with muscles, another one where it interacts with the kidneys and another one where it interacts with the brain and all of those effects are specific to if you have a change at that location. Vitamin D's job is to turn things off. There's one vitamin D receptor variant that's associated with osteoporosis because you can't turn off bone remodeling and you can't turn off calcium excretion, you over-excrete it.

There's another vitamin D receptor that relates to overactive mast cells and high IgE because you can't turn off that. The vitamin D role in cancer is you can't turn off growth of your cells. There's even a vitamin D receptor associated with being taller because if you can't turn off bone growth. The same thing is true with ABCC1 but there's one particular variant. ABCC1 can relate to how you treat a lot of different drugs, but it depends on the variant.

There is one variant that isn't specific, been shown to relate to how you treat certain mold toxins. Think of ABCC1, I call it the bouncer gene. It identifies something that's not supposed to be in your brain and kicks it out. If you can't kick out mycotoxins from your brain, it's harder to clear them. Other variants in ABCC1 relate to how you kick out certain drugs so they can convey resistance to chemotherapy, for example.

[00:38:38] Jane: Oh, that's interesting.

[00:38:40] Dr. Hausman-Cohen: Yes, there's different variants but yes, you probably did have a little bit harder time, that same gene is involved in kicking mercury out of the brain.

[00:38:48] Jane: I have mercury problems.

[00:38:50] Dr. Hausman-Cohen: It's other tissues as well but right now, we're talking about the brain. For people who are having problems clearing mercury, I usually keep them on a

sulforaphane their whole life. That's one of your daily things and that's best taken with food because that increases your ability from all the other pathways to clear some of those toxins and mercury in particular and then I watched mercury levels.

[00:39:15] Jane: I know you've given me a certain amount of time and I know you're busy. I don't want to go over but tell me briefly about the muscles because I don't like to exercise. I do it but I don't like it. Is there a reason why I don't like it?

[00:39:29] Dr. Hausman-Cohen: I'm fine going over Jane. If you're fine, I'm fine going over.

[00:39:32] Jane: Okay and thank you.

[00:39:33] Dr. Hausman-Cohen: I love this one.

[00:39:33] Jane: Thank you.

[00:39:34] Dr. Hausman-Cohen: You have what's called an AMPD1 deficiency. Again, all of these little letters, what I like to tell doctors to do and what I tell patients is let's come up with a name for the gene that makes sense. That's the muscle storage gene. We normally use our blood-- with sugar we have that for a certain amount of quick energy but if you're going to do something sustained like exercise you're going to run for an hour, or even 20 or 30 minutes. You are going to need to use the muscle energy, the energy stored in each muscle. Well, people with an AMPD1 deficiency, they don't store the energy well in their muscles. The great thing about it is, they've figured out what to do about this. Really, what we do at IntellxxDNA is, we pile through the literature. Sometimes it takes us a very short time to come up with interventions, sometimes, like the estrogen receptor genes, figuring out why-- We can talk about that if you want, but why premenopausal women that had high estrogen states sometimes even need estrogen more postmenopausally. It took us 100 hours to figure out how these gene variants worked.

For the AMPD1, it really was pretty easy because there was a study of college students, there's a couple of different variants. Some are only in 3% of the population, some are in 19%. You have the one that's in 19%, so it's not as severe, but you will not be able to store the energy. In football players-- High school and college athletes, they looked at the ones who had this, and they found that if you give them ribose. D-ribose is a powder you can buy over the counter, you can buy it in bulk supplies and get a big old bag of it. If you take a scoop of ribose before you go and exercise, you're going to find that you don't get muscle fatigue and you're going to enjoy exercise a lot more. Exercise is great for the brain.

[00:41:26] Jane: Oh, it is. Sharon, this is an amazing interview for me, because I did not realize that you could get this precise with each individual. Now with what you and your partner have developed, you can. You can go deep. It's life-changing.

[00:41:43] Dr. Hausman-Cohen: Yes. It really is. That's why you and I are in the same situation that we're in the final third of our career. I think that people tend to have different careers early in their career, in the middle of their career, and different phases. I think when you're in that last third

of your career, your goal becomes, what legacy do I want to leave the world? What do I want? What kind of impact do I want to have? The work that we've been doing with genomics has been so gratifying. We've had tremendous success, not only with improving cognition for the brain. We have a couple of different studies.

Dr. Bredesen and his team, Dr. Thompson, Hathaway, and there's actually, about six different primary investigators are using our genomics as part of their research. We have another IRB, which is a stamp of approval study going on, showing genomically targeted improvement cognition. It's also being used for autism and children with complex illnesses. Our genomics is also being used for mental health, people with depression and anxiety. It's really exciting to me because we get stories. In my practice, my associate just had a 13-year-old, and her dad is like over the moon happy.

That's literally were his words, because she had such paralyzing anxiety, since she was a little girl, that she wouldn't get out of the car to go to school. It's gotten worse as she's gone to middle school. They had spent tens and 20s, 20,000, $30,000. They said they can't even add up how much they've spent with different therapists and evaluations and specialized testing. We did the genomics, and she has a gene variant that's really very, very rare, like 1% rare. She doesn't make something called tetrahydrobiopterin. Again, not to get too technical, but it's the co-factor. Just like selenium is the co-factor for that detox gene that you have, tetrahydrobiopterin, the co-factor for MTHFR, for making serotonin, dopamine, and norepinephrine,-

[00:43:40] Jane: Oh my.

[00:43:40] Dr. Hausman-Cohen: -as well as melatonin. If you can't make your brain chemicals--

[00:43:43] Jane: You're going to get anxious.

[00:43:44] Dr. Hausman-Cohen: Of course, mentally feel good. It was life-changing for her to describe that. Tetrahydrobiopterin is a pretty expensive prescription. It's about 100$ a month for what she needs. I was apologizing to the dad. I'm saying, "I'm so sorry that what we found out about your daughter is so expensive," and he goes, "Please don't apologize. My wife and I are over the moon unhappy. We now have a child that not only gets out of the car, but she is joining and participating in sports, going to parties, and she's acting like a normal teenager."

[00:44:15] Jane: Wow.

[00:44:16] Dr. Hausman-Cohen: I think that the value of genomics is, we're all different. Genomics gives insight as to what makes us unique. It's your blueprint.

[00:44:25] Jane: Dr. Sharon Hausman-Cohen, thank you. Thank you so much for taking this third of your life and giving it such wonderful purpose that you're helping so many people. It's totally impressive. Deep bow to you. [laughs].

[00:44:39] Dr. Hausman-Cohen: Thank you so much. Thank you for helping to spread the word. We will be here. I also want to just say, if any of your listeners have a doctor that have not yet trained in IntellxxDNA, they should just reach out to us. We have a fantastic training program and a mentoring program. When they order their first report, we don't charge our physicians for training and mentoring. We want to get people up and running because we need more people that are willing to do precision medicine. There's a lot of people out there asking for our help, and we need to partner with healthcare providers across the country. Just tell them we can help them, and we will make sure that they get great results even on their first report.

[00:45:20] Jane: If someone's interested in doing this, what's your URL?

[00:45:23] Dr. Hausman-Cohen: It's intellxxdna.com. There's a patient tab as well as a physician tab, and there's also some other podcasts and articles that they can look at. Reach out to us and we'll get you a list of names of people in your area that are offering this.

[00:45:46] Jane: Fabulous. Thank you. Thank you for your time. Have a great day.

[00:45:49] Dr. Hausman-Cohen: Thanks

[music]

[00:45:49] Jane: You've been listening to the Cutting Edge Health Preventing Cognitive Decline podcast. Any information shared here is for educational purposes only. Guest opinions are their own. This podcast is not responsible for the veracity of their statements. Do not use any of this information without first talking to your doctor. Cutting Edge Health, LLC is not responsible for what may happen to you if you use their information in place of official advice from a medical professional. Thanks for listening. Be well.

[00:46:28] [END OF AUDIO]

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