



Your Functional Medicine Expert®
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[#25: Top Tips for a Healthy Brain with Dr. Jill, Dr. Gazda and Dr. Rusk](#)

Dr. Jill 0:12

Hey everybody, we are live! And you are in for a treat today. You always hear me say I talk to friends, and that's what I do, but today is a really special day because these are two of... If any of you have ever watched "Anne of Green Gables," one of my favorite movies and books of all time, there's this thing called 'bosom buddies,' or just sacred friends, and these two women are beautiful, professional, experts in brain health, but more than that, they have the heart of functional and integrative medicine. They're dear friends of mine, and I am so excited to be here today with them.

Dr. Jill 0:51

Today we're going to be talking about brain health, and I will be trying to watch the feed on the side. So if you guys have questions, comments, or anything [else] you want to know, put it in the feed. And if I don't get to your questions, we can go back later, all three of us, and we can pop in and answer your questions. So feel free to comment, add questions, or do whatever you want in there. And just a little housekeeping. In a minute, I will introduce both of my friends to you formally. But if you need to find us, you can find us at my website, jillcarnahan.com. You know where to find me. Also, [I have] a brand new YouTube channel where this will be played afterward. And if you just search my name on YouTube, you'll find that, and you can subscribe. And Dr. Gazda's website is SuzanneGazdaMD.com, is that right? Suzanne?

Dr. Gazda 1:38

Yes. Gazda Integrative Neurology.

Dr. Jill 1:41

Okay. Thank you, thank you, thank you. GazdaIntegrativeNeurology.com, right?

Dr. Gazda 1:46

[nodding]

Dr. Jill 1:46

And then, Dr. Rusk, I believe yours is your name, right? IleneNaomiRusk.com.

Dr. Rusk 1:52

And the clinic: HealthyBrain.clinic.

Dr. Jill 1:56

HealthyBrain.clinic. And I will, again, put those in the comments so you don't have to remember that. This is recorded, so you can come back and watch it anytime. If you like it, please do share, because I think we're going to have some great tips on brain health. We talked a little bit beforehand about what we were going to do. And I want this to be like you guys were sitting in on the coffee shop [with] us just talking about brain health. So it's going to be fun and casual, but hopefully with some really practical tools for all of you.

Dr. Jill 2:24

Before we start, I want to actually introduce these beautiful women. Dr. Ilene Naomi Rusk, in the upper left corner, is a co-director of the Healthy Brain Program in Colorado. She has so many credentials and so many things she's worked on, so this intro won't even come close to doing her justice. But what I love most is—I'm going to just talk from the heart—she is someone who is so science-based and yet intuitive and has really been an advocate for decades on trauma and the brain, and trauma and illness. And I love what she brings to Dr. Gazda and me as more traditional allopathic doctors in the sense of understanding. Oh, there goes the earring. [laughing] Right out of the ear. There's the other. So she brings to us a lot of really great insight on how to help the nervous system change and how much that affects health and illness. I know that as I've gotten to know her, when I see patients now in the clinic, we reach a threshold of wellness and the ability to get well, and I always think of her. It's like I have her sitting on my shoulder saying, "Jill, have you thought about trauma?" because there's often a component of trauma to these illnesses like autoimmunity and brain health. And we'll dive into that today.

Dr. Jill 3:41

Then Dr. Gazda was in San Antonio, and she recently moved here. We are so happy to have her in Colorado. She is a functional integrative neurologist. A lot of times, my patients will ask for specialists like rheumatology, gastroenterology, and neurology. They want a functionally or integratively trained doctor, and it's actually hard to find great, functionally trained specialists. So we have such a gem here with Dr. Gazda. Both she and I really believe in the power of immunoglobulins, and hopefully we can talk a little bit about that today.

Dr. Jill 4:16

So go to their website. They have so many more credentials than I shared, but I love to get the personal bit in there. And Dr. Rusk, let's start with you. I'd love to hear just a little bit about your journey into brain health and neuropsychology. How did you get started? What got your interest going? Your story.

Dr. Rusk 4:39

You know, when I look back... First of all, I'm so happy to be here. It's fun. It does feel like a little coffee clash. So thanks a lot for inviting me. You know, when I think back, I think of a pivotal moment in my own life when I was electrocuted, actually. I was in a cabin in northern Ontario. I was young. I was in my early teens. And lightning struck the cabin I was in, and it was partly in water. I remember that feeling of electricity going right through my body. The next few days were actually horrendous. I guess I dissociated. I didn't know it at the time. I hallucinated a bit. And I felt at that time that I was just kind of reconfigured in a way. It led me to try to understand more about how the brain works and how mental health works, because hallucinating for a few days was not fun.

Dr. Rusk 5:35

So that was a pivotal moment for me, a watershed time when I think I found my faith because I have a deep spiritual practice as well, which I consider [to be] an important component of brain health. So that's what integrated my interest in science. I actually became convinced. I learned more about brain health at that time. And I was very, very young. So I became a neuroscientist. Then I became a neuropsychologist interested in integrating the brain, mind, and body. But there was always a spiritual thread. That day when I was hit by that lightning bolt in that cabin, I was like, "I found faith." I remember that being one of my first big prayers. So that's a small story.

Dr. Jill 6:17

Oh, thank you so much for sharing. Isn't it funny how often trauma, suffering, and very strange experiences are the drivers that push us in a direction we maybe wouldn't have taken otherwise?

Dr. Rusk 6:29

I totally agree.

Dr. Jill 6:32

Dr. Gazda, I'd love to hear [from] you as far as: How did you get interested in medicine and even neurology way back then? Tell us a little about your journey.

Dr. Gazda 6:43

Well, I too want to thank you, Jill, for this opportunity for us to gather and share. But also this incredible opportunity to work with both of you to try to change the lives of patients who are struggling so much. So thank you so much, both of you. Well, you know, I started off by becoming a coach. I never thought I was smart enough to be a doctor. And maybe I'm not. I work really hard, though. I went to pharmacy school, got my pharmacy degree, and then said: "No, I want to become a doctor." I remember going to speak to the dean of the medical school, and I said: "Dean Pastano, what can I do to get into medical school? I want to be a doctor. I want to help people." And he looked at my transcripts and said, "You have a snowball's chance in hell of getting into medical school." So the reason I tell that story is, you know, I think the reason I'm here today is: It's God's grace. It's the power of the universe. It's how we are drawn to be, to do what we are called to do, and to live our life's purpose.

Dr. Gazda 7:58

And I got interested in neurology. I did love neuroscience. I love the brain. But back then, neurology was the specialty of 'diagnose and adios.' But I'm happy to tell you that that has changed. And then, going into integrative neurology hasn't been a very long journey. I just began to see that we had to find other ways to help people. I got interested in the root cause because of you. How you helped my daughter heal from a mold-related illness and what I learned from you really brought me to where I am sitting right at this moment. I'm very grateful.

Dr. Jill 8:38

And so am I. I feel like you two are some of the biggest blessings in my life because one thing I see in both of you is humility. The thing is, the more we know, the more all of us realize that we don't know. Yet you both are so beyond brilliant in what you bring, your dedication, and how you view the patient. When we're sitting in front of the patient, to me, that is the ultimate humbling experience because the cases that we see are so complex.

Dr. Jill 9:08

And if you're listening out there and you're suffering or you feel hopeless, I know one of the things we all talked about even before, and I'd love to hear your comments on... For those who are listening and feel like whether it's the pandemic that's caused a lot of disruption in their lives or whether they're dealing with a brain illness, a neurological illness, another type of autoimmune disease, toxic mold, Lyme disease, or any of these things, it's scary to be unwell and to not know. I found personally that when my brain wasn't working, I literally prayed to God with tears rolling down my face and said: "God, you can take anything. Please don't take my brain." I know if you're listening, some of you

can relate to that. And thank goodness, somehow he protected me. And I've had times of brain fog, word finding, and all the [other] things that you might be experiencing. But let's talk about that for a moment: The feeling that friends, family, or you as a listener, if you're suffering, what can we do to give hope and courage?

Dr. Rusk 10:13

Do you want to start talking to Gazda?

Dr. Gazda 10:15

Well, I've always said—and I'm probably not the one; don't quote me on this because I'm sure many people have said this—[that] without hope, no one could survive, and that what is missing, I believe, in a lot of medical practices... We have brilliant colleagues; we have brilliant physicians. But it's the power of the heart, and I think that's one thing for sure that the three of us have. We are very heart-centered. And when our patient sits across from us, I really think that that is a powerful healing force. That is remarkable, because maybe that's just the foothold that they need. Maybe that's just the one little piece that they can hold on to. I know, Jill, that's how people feel when they come into your office, and, Dr. Rusk, in your office as well. But absolutely, we are in a time where we need this more than ever.

Dr. Rusk?

Dr. Rusk 11:22

We need love more than ever. And I feel the same way about both of you. I love sending patients to you. I'm working with you with patients because I know they're taking care of—really—heart, mind, soul, and spirit. And just being seen and held in that way is incredibly healing for people. To know that there are people out there who really hold, love, and see their unique gifts, qualities, and wounds and help turn those wounds into healing, into their own wisdom, so they can then share—that's how I feel when I see patients as well.

Dr. Jill 12:00

And you both do such a great job of that. Like I said, I feel the same. When we share collaboration with patients, I know that they're going to be so loved and taken care of. Suzanne and I recently had a gentleman that we both saw. I think you asked him: What brings you joy? And he wept, and you said: "This poor man has lost hope, and we are hopefully going to do some things that will give him hope again." Dr. Rusk, are there any experiences or patients that come to mind?—we can obviously keep it confidential. But

[you can maybe share] an experience that would kind of bring this home as far as giving hope or even some practical things you could do when you see someone who's really, really at the end of the rope.

Dr. Rusk 12:45

Yes. It's hard to talk about specific patients. But yesterday, a patient said to me that she felt... Actually, I shared this with Dr. Jill yesterday. A patient said: "You know, I feel like I've only met a few really, really special people in my life—people who've come to me from the universe from God from source, in a way—and they introduced me to Dr. Jill and they introduced me to you because you're the ones who are going to buoy me, hold me up, and usher me through this. You're the ones who've given me hope again." And I think it's true that a lot of our patients are at their wit's end; they've sometimes seen a hundred providers. We've all seen patients who've seen a hundred providers who can't really get to the root cause or haven't looked for the root cause yet. So I feel that in that way too, we're willing to investigate; we're willing to do the deeper study. And more importantly, we're willing to take the time to see all of them and be on the journey with them. So, it's personalized, and it's beautiful. And I'm so grateful to work with you; it's like finding sisters.

Dr. Jill 13:57

Yes, I agree. It's a soul sister thing. Again, like I said, my brain is my most precious organ. And people, I think, take it for granted because we think about, "Oh, I've got a scab on my arm" or "I've got a heart issue." I think they forget. And they also forget—which will dive into this—the brain is connected to the body, which means if you have inflammation, if you have autoimmunity, if you have infection, if you have toxic exposure, any of these things can affect your brain. Let's talk about subjective cognitive decline. That's a fancy word that we medical people use for when you have some memory issues or feel like you're not quite as sharp as you used to be. Let's talk to the general person who's having some trouble. What would that look like? When should they be concerned [enough] to call one of us or another doctor in their life? What kinds of signs or symptoms would you say, "Hey, these are serious; take them seriously"? Dr. Gazda, let's start with you. What kinds of things would you recommend, "Hey, go see someone about those things"?

Dr. Gazda 15:07

Well, I always say that time is of the essence when it comes to neuroplasticity and that we shouldn't wait until we're having a big problem to try to do something about brain health. And I just don't agree when a patient says, "Oh, honey, I'm just getting old." I think we should have vivid, vibrant memories into old age. You see it in the blue zones, right? The people who live in the blue zones live into old age and are not developing dementia. I think

we should be concerned if we're not... Short-term memory, of course. Word-finding is probably the most common thing. But every single day, we should be working on improving memory. We work out. We exercise. We want our bodies to be fit. We should also be creating a protocol for brain fitness.

Dr. Gazda 16:12

When I was in neurology years ago, we were taught that [with] the brain, you got what you got; you couldn't teach an old dog new tricks, and that if you had a stroke, if you got MS, if you had a traumatic brain injury: "So sorry, too bad." Diagnose, adios. But in the '90s, which was the decade of the brain, that radically shifted. Now we know that no, that's really not true; the brain really can heal itself. That's my goal in the next decade of my career, if God gives me those years, to really give people hope that you may have been suffering for a long time, but there are definitely things that we can do to improve your brain function. We can build better brains every single day.

Dr. Jill 17:05

I love that because that is a core message of hope. I'll talk just really briefly about some of the practical [aspects] and then, Dr. Rusk, I want to know next from you: What kind of tips could people use to improve brain health? And this could be simple lifestyle things. I know we're all big fans of simple. And I've probably said this almost every time I talk, but I think we start with clean air, clean water, and clean food.

Dr. Jill 17:29

I remember hearing Walter Cronin quote, maybe a year or two ago before he passed away, that 80% of our environmental toxic exposure is air—nanoparticulates. So from fumes and gases, then, of course, indoor air quality with [things] like mold and other chemicals like off-gassing on the cabinets, formaldehyde, flooring, and laminate flooring. There are so many things. And people think: "Oh, a new house. I'm going to be great!" A new house is sometimes the worst for off-gassing chemicals. And then your old houses have mold. So really thinking about air quality [is important]. Clean air, clean water—so drinking pure, clean water out of non-plastic containers—and clean food.

Dr. Jill 18:07

And again, food is like: "Oh, does that really have to do with brain health?" I always feel like that's the foundation. And I never have a one-size-fits-all diet. But what I like to do is blow people's mind—plant-based paleo. Because people think of this [diet consisting of] bacon and butter—paleo. I eat a paleo diet, but I am a plant-based eater. I only eat meat three times a week, potentially. I don't eat any red meat. Not everybody has to have this diet, but I feel like the plants are so critical. There are some people who get by with not a lot of

animal protein, and that's okay. But I do find adding eggs, fish, and free-range chicken to be really critical for most people. What do you guys think? Let's talk real quick about diet, and then Dr. Rusk I want to get to you about special tips. What's your opinion on diet, Dr. Rusk? And what kind of diet would you say is best for brain health?

Dr. Rusk 18:55

A plant-based diet is data-driven and best for brain health. If people can get their guts assessed and get a sense of what's going on in their microbiome... Do they have parasites, pathogens, fungi, or Candida? There is so much very, very strong literature now on the health of the gut and the impact of the vagus nerve, which is that very long, snaky nerve that travels from the gut to the brain and the brain to the gut. It's very important. People think of it as really a highway—the highway between the gut and the brain. And there are so many ways to stimulate the vagus nerve in positive ways for emotional health, gut health, and brain health. I know that wasn't your question, but I just want to mention that as it pertains to—

Dr. Jill 19:44

That's perfect. But also, the vagus nerve: What could they practically do for that? I get that question all the time: "What do I do for my vagus nerve?"

Dr. Rusk 19:51

Well, I know the two of you are hysterical because you always have gadgets. You're the gadget girls. "Let's try this gadget." Well, I really wasn't raised in the world of gadgets. I was raised more in the world of: What can we do in terms of social engagement, in terms of cognitive strategies, in terms of behavioral strategies?—so the social engagement network. As the vagus nerve, there's a ventral and dorsal part of the vagus nerve. Social engagement in a very calm and loving way engages the vagus nerve. Humming engages the vagus nerve. Singing does too. Singing in community does too. One of my mentors, Peter Levine, who's one of the fathers of modern trauma therapy, has a sound that he uses. He may not have developed that sound, but he says it's the 'voo' sound. So humming or vibrating this area is very, very peaceful for the nervous system and stimulates the vagus nerve.

Dr. Rusk 20:54

You guys have gadgets, because I know Dr. Gazda actually just gave me one, which I tried and really liked. So let's think about how we can combine these things—these traditional social interaction and cognitive behavioral trauma release strategies—to make the vagus nerve healthy, which directly ties to gut health and then directly ties to brain health and all the other ways. And I want to actually go back to an important point about subjective cognitive impairment, if that's okay, because, Dr. Gazda, you answered that question really

beautifully and then spoke about neuroplasticity. But I guess my answer to the question, even though you didn't ask me particularly, is that I feel like it's important not to wonder. People wonder and worry and worry and wonder forever so long. And no, I don't think cognitive decline is part of normal aging, and we know from a data-driven definition lexicon point of view that there's a subjective cognitive impairment that probably many people who are watching this have maybe experienced at times.

Dr. Rusk 21:59

We have subjective cognitive impairment when we're super anxious or depressed. Our thinking isn't right because there's this very beautiful relationship between how we think and how we feel, so sometimes you have subjective cognitive impairment as you age and it stays that way, goes away, or modifies from day to day. That doesn't then lead to the next stages in progression, which ultimately can lead to Alzheimer's disease but certainly doesn't necessarily. The next stage is mild cognitive impairment, which sometimes leads to dementia. But the best way to find out is to get assessed by a good neuropsychologist and just get some data. Get baseline data. Don't start once you're really impaired. So that's kind of an invitation for everyone to get serious about their thinking. And nurture your mind and care for your brain in that way by getting diagnosed.

Dr. Jill 23:01

I love it. And I love that you're here, Dr. Rusk, because Suzanne and I both [have been trained by the] allopathic model. We haven't been taught to give all the respect that's deserved to your field. But I love that you taught... No, it's so important. I love what you taught us because we realize the critical component of a neuropsychologist in the game, in the assessment. And I know both of us couldn't do what we do without you because you give us that assessment and can recommend a neuropsychiatric evaluation and some of the other tools. And then even just the practical stuff—like you said, whether it's humming or breathing—you bring this integral part. And I love that with the vagus nerve, you're right, we have gadgets. I ran over to get one. I'll show you in a minute, so you can all laugh at me.

Dr. Rusk 23:44

I love your gadgets.

Dr. Jill 23:47

But what I was going to say is that some of these things are free and really practical. You don't have to have a couple thousand-dollar device to do it. So I love that. Dr. Gazda, I want to give you a chance to chime in on the vagus nerve and food. What would you advise your

patients with some sort of cognitive issues on diet first, then vagal nerve, or any sort of practical tips?

Dr. Gazda 24:08

I wouldn't change the recommendation that you have; I love it. We know now that a healthy gut means a healthy body and a healthy brain. A leaky gut means a leaky brain. The blood-brain barrier is very affected by gut health. And we know that some neurodegenerative diseases—maybe all; for sure, Parkinson's disease—probably begin in the gut and then travel via the vagus nerve to the brain. So absolutely, diet is the foundation of health, as is exercise. Movement increases neurotrophic factors. BDNF is kind of a miracle grower for your neurons. Sleep is so important. And most people don't get enough sleep. You can say, "I'll sleep when I die," but you really will die younger, I'm afraid. And sleep-disordered breathing is also very common as you age, so we've got to know what our oxygenation levels are.

Dr. Gazda 25:08

And I agree with you two that it is the perfect storm that brings down the brain; it's never one thing. And Dr. Bredesen has shown us that—that it's the 36 holes in the roof. It's your environment, so it's your epigenetics. It's your diet. It's your gut. It's how you handle stress. It's your relationships. It's all of those things, and that's why it's so complicated. There'll never be a pill—we know that—for Alzheimer's disease, so we have to be taking these steps and following these foundations of health early. There are 30 million people in America suffering not from Alzheimer's but from cognitive impairment. It probably begins at least two decades before presentation.

Dr. Jill 25:55

Yes, so if we could get patients in our office in their 30s and 40s... I get so excited when I do get these younger people. And I tend to practice more on deep toxicity issues, so chemical toxicity, heavy metals, and definitely mold, which is so toxic to the brain. I want to specifically talk about mold, but we'll table that just for a second. I'm getting so many fun ideas as I hear you guys talk because I want to talk about trauma too. So I want to talk about trauma. We'll come back to that. We'll come back to mold.

Dr. Jill 26:26

One little thing on the diet when I mentioned the paleo [diet]: Paleo, if you don't know, is grain-free. Again, not everybody needs to be grain-free. A lot of people can tolerate [foods] like quinoa, rice, and some of the non-gluten grains. I recommend that nearly 100% of my patients go gluten-free, dairy-free, sugar-free, and alcohol-free. That's kind of a baseline for my patients because I see so many inflammatory complications from those foods.

Those foods actually have the ability to create gluteo- and caseo-morphine, which act like a drug on the body if you have a permeable gut. So because I just think that's a pretty simple, basic thing to do in the beginning, I'll usually start there. And I wanted to mention that one of the reasons I think paleo is so successful is not just because it's grain-free but because grains are the most common food source contaminated with mold toxins. I actually think part of the reason we see such success with paleo diets is the fact that you're actually eliminating a major source of mold in your diet.

Dr. Gazda 27:21

That's really interesting.

Dr. Jill 27:24

Let's talk trauma really quickly. I just show you really quickly, this is my—

Dr. Rusk 27:28

Gadget.

Dr. Jill 27:28

Vielight. How funny I look! So you can see the little red lights; those are stimulating my mitochondria in the brain. I used to use it every day when I had mold. Now I use it maybe once a week. I probably should have used it before this interview, and I wouldn't be so silly. [laughter] But anyway, that's called a Vielight, if anyone wonders. And you can get those. They're kind of expensive, and I don't think you all need them. There are other ways, like Dr. Rusk and Dr. Gazda said, that you can... That's not a vagal nerve stimulator, just to be clear. That's our red light therapy that goes right through the skull. There's a piece I didn't show you that makes it even more funny.

Dr. Rusk 28:04

Right up your nose.

Dr. Jill 28:06

It goes right up your nose, and there's a light that shines right into my brain. But I'll tell you what, just for me personally, that's an Alpha Vielight. When I was in the midst of the mold, I tried a lot of things like binders, clay, charcoal, and stuff, and that device actually really helped to turn on my brain with no drug or chemical effect. And it doesn't work that way for everybody, but we have studies on red light and the brain. Do either of you want to comment on the red light in the brain? I know you both have seen all the research.

Dr. Rusk 28:37

Yes. And I don't know, Dr. Gazda, if you have any Vielights in your office. But we do. We have the gamma. They have one now that's an alpha and a gamma. I like to use that, again, as a tertiary thing. I feel like all the things we talked about in people's lives—internal factors that are root causes for dementia or cognitive problems and external factors that are root causes as well—I like to deal with those first. And I consider this a tertiary treatment, even though it's so super fun. But yes, we use the gamma for patients who have Alzheimer's disease or any type of neurodegenerative illness. And I don't know the indication for other neurodegenerative illnesses, but I do know about it for Alzheimer's disease. And there's some very good data now, actually, with Parkinson's disease as well. I like to pair it with cognitive stimulation, one of the neuroplasticity exercises. I like to pair things. To optimize neuroplasticity, I like to pair something like photobiomodulation with cognitive exercises or meditation with exercise or cognitive training. After you've oxygenated the brain and increased the brain-derived neurotrophic factors, then exercise. So that's another brain health tip that I think people can take into their lives. Think about pairing things.

Dr. Jill 29:55

I love it. If you noticed she threw in a word there, it's called biophotomodulation. That's the name of that—the technical term. Dr. Gazda, any comments on biophotomodulation or any other vagal nerve stimulation? Anything technical that's fun and progressive but may be more advanced?

Dr. Gazda 30:12

Well, I remember one time you sent us a picture of you wearing your device while you were driving to the coffee shop. I thought: "That is so smart! She's a time saver."

Dr. Jill 30:25

The other day I had a mask that looked like the Friday the 13th movie and the Vielight. And I'm like, "I'm going to walk the dogs, and I don't care what people think of me." And my neighbor—she looked at me like... I don't know what I was thinking, but I think my neighbors think I'm a little crazy. But it was quite fun to see the reactions.

Dr. Gazda 30:47

Oh, your dogs love you. Well, it's an exciting field—photobiomodulation. I think we're just scratching the surface of what this may offer. So I agree with both of you about the neurogamma device and the studies that Vielight has done [on] reducing amyloid plaque and neuroinflammation. I totally think we should keep it in our toolbox. You know,

breathwork is also an easy way to reset your vagal nerve. I mean, anybody can do that. They train the Navy seals [on] that on day number one is how to do breath work. But definitely, it's important. I think COVID has cast upon us [what] may be a tsunami upon a tsunami. Now we are already dealing with high levels of neurodegenerative disease and neuropsychiatric disease. And, Dr. Rusk, you and I have talked about this: Are we ready for what COVID will bring? So all of these tools are going to be very, very much needed.

Dr. Rusk 31:57

Very needed.

Dr. Jill 31:58

And it's interesting with the vagal nerve—one thing that people may not be aware of, and I was actually surprised to understand this recently—tick-borne infections and viruses can actually infect the vagal nerve. Years ago, I would see a lot of cases of small intestinal bacterial overgrowth, Lyme disease, or chronic infection. And I knew that there was a correlation, but I didn't really understand exactly how that worked. And now I understand that Ehrlichia, certain forms of Borrelia, and certain viruses like CMV can actually infect the vagus nerve. And the vagus nerve deals with the motility of the small bowel. So if you have that altered motility due to the infection in the nerve, you have this stagnation. It's like a pond that has no outflow, and then pond scum builds up, and that's when you get this overgrowth of things in your small bowel. Then that affects your digestion and ability to get nutrients, causes all kinds of things, creates some toxic waste that goes to your liver, and then can go and have problems with the brain. So it really is a cascade of events.

Dr. Jill 33:01

And you wouldn't necessarily think: What does Lyme have to do with the vagus nerve? But a lot of patients who have Lyme disease, co-infections, and other viruses actually have a lot of vagal dysfunction. So we're treating the gut, but I love that we're talking about the vagus nerve because a real root issue is vagal nerve dysfunction. So I love that we're talking about that.

Dr. Jill 33:21

Dr. Rusk, you're an expert in trauma, and I love that, again, you've really brought awareness to this in my life. And there are two types of trauma: There's trauma, like a concussion—a physical trauma. But there's also the psychological trauma. I'd love for you to dive in. And I'll just frame it because I'm just really simple, and especially the way I started, I thought: "Oh, I'm fine. I had a great childhood—no trauma." But I want to frame it for you listeners because often you can have a great childhood with wonderful parents, and we all have some trauma, and that could be your perception at a certain age of some sort of situation

and how it affected you and how you felt about yourself, the world, or whatever. But I'd love it, Dr. Rusk, if you wanted to talk just a little bit about trauma in the brain because I feel like this is a missing piece in functional medicine.

Dr. Rusk 34:09

Yes. I will speak to that just a little bit. I guess I want to say that we all have adversity and challenges. Some people in the field call them microtraumas. Some people call them microtraumas and macrotraumas. Big 'T', little 't'. I think, Dr. Jill, what you were speaking to is that yes, we all have family members, maybe parenting that we had when we were younger, maybe even birth trauma experiences that didn't really jive with our own individual nervous system.

Dr. Rusk 34:42

And I think I'll start there. Sometimes, of course, it can be more extreme, sadly, with children who are neglected, which is a big type of trauma. And people don't often look at neglect as trauma. But being forgotten about and not being seen... I think that both Dr. Gazda and you, Dr. Jill, agree that one of the biggest healers is seeing people. And sometimes they've come to us just to be seen, or their longing is just to be seen. I think that's true for all of us. So sometimes neglect in childhood can actually leave the imprint of a very big trauma.

Dr. Rusk 35:23

I think a relatively new field that I've been interested in for several decades is intergenerational trauma, or ancestral trauma, because we do carry imprints, both physiologic in terms of illness states... In fact, I was just reading an article today on ME, myalgic encephalomyelitis, and the impact that it brings with it—an ancestral piece sometimes. So I think it's good to just consider that we are just one link in a long chain and that sometimes we do bring trauma with us as well—yes, from early childhood. So I think a lot of functional medicine and integrative practitioners should have a trauma-informed eye on their patients and some tools. And also just for listeners and for everyone to be more sensitive to our reactivity—how angry we get, how sad we get. Those can all have roots in trauma. And trauma, yes, directly impacts the gut, the brain, and the relationship and conversation between the two.

Dr. Jill 36:27

Yes. And again, I feel like functional medicine does a great job of looking for the root cause—so, toxicity, infection, or inflammation. And they give credence to trauma, but to me, it's not just a side thing; it's maybe one of the most important things we could do.

Dr. Rusk 36:42

It's like the soup. I see it as kind of like the stew that everything else brews in—the immune system, our inflammatory reactions, the permeability of the gut. It's like the stew, the soup, the broth that everything kind of stews in, which somehow is a blind spot sometimes.

Dr. Jill 36:56

Yes. I'm going to actually share a thing that you sent me right before. It's just like a beautiful diagram of the whole functional medicine view of the brain and trauma. And then I'd love for both of you to comment because—

Dr. Rusk 37:06

It's a little much.

Dr. Jill 37:08

No, it's beautiful. Can you guys see that?

Dr. Rusk 37:12

Yes.

Dr. Jill 37:13

I won't leave it up for a long time because then you can't see us talking. But, Dr. Gadza, you've just seen this now. I'm sorry to put you on the spot, but you're an expert. This is from Dr. Rusk. This really gives us an overview of how we're looking at our patients. And then, too, Dr. Rusk, I'd love for you both to comment on this.

Dr. Gazda 37:34

Great diagram, Dr. Rusk. This, to me, is the perfect storm right here. It's all of these things that can lead to neurodegenerative disease or brain health reasons. I mean, we could talk for an hour on each one.

Dr. Rusk 37:51

That's right.

Dr. Gazda 37:52

They're individually equally important, depending on the patient.

Dr. Rusk 38:01

And let's use an example. I mean, I think that if we look at this model as Dr. Gazda says, they're all relevant, but some are going to be bigger or stand out more with certain people. So some listeners might be like: "Oh, I'm very toxic. I have a lot of toxins in my environment, and that's really what's leading me to have my cognitive or brain health issues or putting me at greater risk for brain health issues later on." I've had a patient this week who's had maybe 13 head traumas. That's going to kind of be the lead magnet that any of us will focus on as we look for root causes. And I want to give credit to our mentor—certainly a mentor of mine, and I know yours—Dr. Bredesen, who really helped make us look at the bigger picture. We all felt it; we all knew it. But it's this approach that I think was inspired and fertilized by his looking at brain health from a functional medicine point of view. And he changed things around with his aging paper in 2014. I think that was the date of that aging paper.

Dr. Jill 39:11

Yes, and great recall. And thanks for sharing. First of all, this is great. I was so glad you shared it because I think it really gives our listeners a visual of what we're thinking when we see them and how we're really looking at all the pieces of the puzzle. What I always do is like, "Oh my goodness, there might be a major infection" or "There's mold in the house," so we'll start with those big players. And then, as those things get resolved, we'll go into the mixture. Well, sleep is a pretty big player; food is a pretty big player. So at the same time, we're looking at all those factors. And it's not a magic pill. It's literally: How many hours of sleep do you get per night? What are you putting in your mouth for food and water? And it's kind of exciting because you don't have to pay \$10,000 per pill; you can actually just change your diet and get some traction on your brain health. And to me, that's exciting because it's accessible to everyone. It's really, really accessible.

Dr. Jill 40:08

So let's talk in the last few minutes: What about resources? I know that both of your websites are loaded with resources, and I'm going to be sure that in the notes and in the chat box here we will have all of those websites. But [do you have] any favorite books that you recommend for patients? You mentioned Dale Bredesen's book. If you look up 'Bredesen' on Amazon, you'll find it. What's the name of his book?

Dr. Rusk 40:31

The End of Alzheimer's is the first book. I think there's another one coming out, though.

Dr. Gazda 40:35

Yes, his second book was just released. I think it's called...

Dr. Rusk 40:39

It's a program.

Dr. Gazda 40:41

Yes. The Alzheimer's protocol or something like that. I definitely recommend those two. I just want to say, Jill and Naomi, that I think what we're dealing with is that we are living in the 21st century of immunodeficiency. It's shocking to me how impaired most people's immune system is. I mean, COVID showed us that, right? Why should you get COVID? Obviously, you were immune-impaired for some reason. It just wasn't bad luck. But even look at autoimmune disease: One in five Americans has an autoimmune disease now. And this new disease, PANS and PANDAS, neuropsychiatric disease. And even a new specialty now: Psycho-neuro immunology. We have really got to get our immune systems healthy, and this is more important than ever before. And it's really because we live in such a toxic environment; our immune systems are just totally overwhelmed. And yes, it's stress, and yes, trauma travels. It's all of these things. And knowing all of these things is truly how we can help people heal.

Dr. Jill 42:04

I love that. I always say we're swimming in toxic soup. Twenty years ago, when I first started doing functional medicine, we'd have a patient come in with Hashimoto's or menopause symptoms. I'd do a little hormone work, maybe a slight change in diet, take out gluten, and they'd get better. I don't see that anymore, period.

Dr. Rusk 42:23

No. I think we all agree. It's really scary. I really feel like people need to be focusing on—you're the first person who said it; it's simple enough—clean air, clean water, clean food. And I'd also like to say clean thinking. I mean, our mindset is so important in this equation, and we sometimes forget because we are in a toxic soup. We also have choices about our thoughts.

Dr. Jill 42:48

Yes. In the last five to six minutes or so, let's wrap up with stress and the stress effect. First of all, I love it if you have any studies, ideas, or just background. Stress—people are like,

"Yes, everybody has stress," right? How does that affect our bodies and our brains?—because I think this isn't talked about enough.

Dr. Rusk 43:10

Dr. Gazda, you go first.

Dr. Jill 43:11

Yes, go ahead.

Dr. Gazda 43:13

Dr. Rusk, you are the expert.

Dr. Rusk 43:15

I am not.

Dr. Gazda 43:18

I'll just briefly say that stress is as bad as smoking. It's something that needs to be greatly recognized. And again, not that this is a discussion about COVID-19, but I think stress and fear are now at a higher level collectively across the globe. And if we don't deal with stress, then that's a great way to bring down your brain—no question about that.

Dr. Jill 43:53

Dr. Rusk, any comments?

Dr. Rusk 43:55

The stress science has revealed that it has an incredibly impactful effect on our immune systems, cardiovascular health, obesity, and, of course, our brain health. There's a very interesting new paper on how we think negative thoughts. It's actually, I think, a 2019 paper—patterns of negative thinking. I just read a little blog on it. And increases in amyloid and tau—some proteins that are markers for the development of Alzheimer's disease. What was found was that patterns of negative thinking—and this is quite a recent paper—as opposed to positive thinking... And I'm not suggesting that you change your mindset and your thoughts automatically, because that's a superficial [idea that's] not possible to override. We are who we are, and we have to be compassionate and gentle with how we think. But to become more aware of our thoughts, because in this paper what I was saying was that they showed in patients who didn't have Alzheimer's disease or any diagnosed

neurodegenerative illness there was an increase in amyloid and tau—if you both know the paper, I'm not sure—in people who had negative thoughts, repetitive negative thinking.

Dr. Rusk 45:14

So I think our mindset and our thoughts hold so much power. And that's why I'm a firm believer in getting to know your mind, nurturing your mind, and managing your mind with things like breath work and mindfulness practices. And prayer manages your mind too; it settles, focuses, and allows you to have some empowerment over what you think. Include that in your everyday neuroplasticity protocol.

Dr. Jill 45:45

I love it. I would love to know... It's funny because I get calls at the office: "What washing machine do you use, Dr. Jill?" I'm like, "Well, who cares what washing machine I use?" But people want to know for you too and for me: What do we do? What do we do to combat stress? What do we take? So I'm going to give you guys the opportunity to talk briefly about mind-body things and then [mention] if there are any basic supplements that you wouldn't go without or basic practices. What's your daily practice that you really try to incorporate? Dr. Gazda, do you have any tips or things that you always try to make sure happen every day for you?

Dr. Gazda 46:22

Well, now that I'm here in Colorado, I can say that I'm so grateful that I can get out in nature every day. There's something incredibly healing about the connectivity of nature and realizing that every little living thing matters. Good sleep. Don't call me after 10; I'll be in bed; I'll be asleep, Dr. Rusk. [laughter]

Dr. Jill 46:48

I love it!

Dr. Rusk 46:49

[inaudible]

Dr. Jill 46:53

We have one night owl in the crew. Can you guess who that is?

Dr. Gazda 46:58

I love every, every ounce of my being. I'm a giver. I guess my weakest link is self-care. I need to do a better job of really nurturing myself. But supplements—oh gosh—vitamin D3, now vitamin C, quercetin, and Omega 3. Making sure my vitamin D levels are good. [There are] a few others, but those are probably the ones I would mention. And having friends like you and love in my life.

Dr. Rusk 47:32

I feel like that too.

Dr. Jill

Yes, Dr. Rusk, what about you? What are some daily tips that you do? And then if there are any supplements. If not, it's okay too.

Dr. Rusk 47:41

Well, I want to remind us that everything Dr. Gazda said was in this matrix of brain health, really, even to the point of being able to rely on friends. What I do: I really need to move my body, and I need to move my body in different ways. I love to do yoga, and I love to walk and just be in nature and attuned to the rhythm of nature. I think that's what's most helpful to me: To attune to the rhythm of nature and feel the rhythm of the earth. I think that slows me down enough. I take supplements. I love my family. I love my friends, and you are the dearest and closest to me. I pray. I read a lot of sacred texts. I try every morning to make sure that I thank the universe and all those mysterious forces for bringing me back into my body. I say a special prayer after I wake up. So those are some of the things I do. I really, really eat well and cook a lot. I love feeding other people.

Dr. Jill 48:49

Yes. I've been privy to that.

Dr. Rusk 48:52

It reduces my stress.

Dr. Jill 48:54

I have to tell a little secret because people like these fun stories. So, sometimes Dr. Rusk cooks for me, and she gives me these containers; they're all glass, so they're non-toxic. And on the lid, she'll write "Jill's special dinner." The first time it happened, I cried because do you know how special that makes you feel when someone writes in permanent marker on a gift meal on her special glass dishes? I was literally like, "This makes me feel so special that

you wrote my name on it in permanent marker!" And she does. She's a great cook, and one way she loves people is by feeding them. And I've been privy to it because I forget to feed myself, and she's like, "Sweetheart, have you eaten today?" So I love it because you really do love people well that way.

Dr. Rusk 49:39

Have I cooked for you, Dr. Gazda?

Dr. Gazda 49:41

My gosh. Every morsel, I've enjoyed.

Dr. Rusk 49:48

I also realized that I have methylation issues in my family. So I'm pretty aware of certain familial issues, speaking of the ancestral physiology that I carry. So I take a really good methylated complex and D3. I take K. I have a little bit of early heart disease—familial again. So I take a lot of omega-3s, C, quercetin, some lysine sometimes—those kinds of things.

Dr. Jill 50:21

Oh good. These are fantastic.

Dr. Rusk 50:22

[inaudible]

Dr. Jill 50:25

Yes. Oh, and I would just echo that sleep, for me, is like number one. I can do anything; I can be superhuman—not really—if I get a good night's sleep. And what's funny is that years ago, when I was so sick before Chron's and all that, and even before that, when I didn't know I had celiac and I was eating gluten, I needed like eight or nine hours of sleep. Now I can get six and a half or seven as long as I get lots of deep [sleep] and REM. And I get plenty, like two hours or so. I can actually feel really great after six and a half or seven hours because the efficiency is so good. So I think over my lifetime I've gone from probably very low efficiency at nine hours with the same amount of REM and deep [sleep]. Now I can get six and a half or seven [hours] and squeeze it in.

Dr. Jill 51:06

But you really need to look at more than just the total time. Most of us have an Oura ring, which is a ring that tracks our sleep. That's a great device. There are other ones out there, but this one's really cool because it can show you deep [sleep] and REM, and it can show you your heart rate variability, which is a whole other topic we'll have to come back to. It can show your respiration rate and your activity during the day. I love it. I literally wake up and am like, "How did I sleep?" Even though I should know because I wake up.

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Dr. Jill 51:30

I think a little coffee is good, and I drink really, really clean, mycotoxin-free coffee in the morning. I love acetyl-L-carnitine because it's a precursor of my favorite neurotransmitter, acetylcholine. Sometimes I'll combine that with herpazine, which prevents the breakdown, so I have more focus and concentration. And then, like they mentioned, B vitamins, vitamin D, zinc, minerals. I tend to deplete minerals because I don't absorb [them] well. So I love minerals and some of the basics.

Dr. Jill 51:59

Some of the basic detox stuff would be N-acetylcysteine, lipoic acid, milk thistle, and glutathione. And not everybody out there will tolerate all of those. And I don't recommend just getting everything we say; you really need to individualize. And there's no amount of supplements that can outwork a poor diet or lifestyle, so that's why we didn't talk a lot about pills. "What supplements should I take for the brain?" and it's not that easy.

Dr. Rusk 52:25

That's right. Yes. Thanks for not doing that, because really, it's a whole life we can alter and change for positive neuroplasticity to happen.

Dr. Jill 52:34

It is. And I want to honor your time, so we'll close here in a minute. But any last parting words of wisdom or hope-giving to our listeners today?

Dr. Gazda 52:49

I would just say that life should be good. It should be full of joy. We should have vibrant health. It should be this constant state of enrichment. We're always learning. We're always growing. And we're always loving more deeply and honoring our true sense of purpose and why we're here.

Dr. Jill 53:14

Thank you. That is so well said. Dr. Rusk?

Dr. Rusk 53:17

I think that's a great summary of brain health because brain health is really lifestyle health, emotional health, and mental health, and so often we don't equate those. I want to invite people to really start thinking about their nervous systems and how they want to feel and think. And I feel like that's not something we're taught about. We're not taught much about paying attention to how we feel. But start by becoming more self-aware of how we think and feel, and know that that's kind of the basis for beginning to take care of brain health.

Dr. Jill 53:58

Yes. Wonderful. Well said. Well, thank you both so much for joining me. I know we're going to do this again sometime, so you guys stay tuned. And if there are things that you want to hear more about—more topics, more questions—send them in because I will be sure to hear you. So thank you both for your time today.

Dr. Rusk 54:14

Thank you so much for [inaudible].

Dr. Gazda 54:15

Thank you so much, Jill. Bye, y'all.

Dr. Jill 54:17

Bye, everybody!

Dr. Rusk 54:19

Bye!