

# Dr. Jill

Your Functional Medicine Expert®  
Jill Carnahan, MD ABIM, ABOLM, IFMCP

## [#132: Dr. Jill interviews Dr. Brian Plante on Brain-Immune Connection](#)

### **Text:**

Dr. Jill 0:13

Hello everybody! Good afternoon, and welcome to another episode of Dr. Jill Live. Today I have Brian Plante with me, and I will introduce him in just a moment. I'm super excited for you to hear more about [the] brain-immune connection and all of the complex and chronic illnesses that both of us treat. Many of you suffer from Lyme [disease], mold toxicity, and everything in between. If you've missed any previous episodes, you can find all of them on my YouTube channel, on iTunes, on Stitcher, or anywhere that you listen to podcasts. I hope if you haven't already, you'll stop by and leave a review because that helps us stay on and get more subscribers, which we want to do because this is great free information about your health conditions.

Dr. Jill 0:56

I'm super excited to have Dr. Brian Plante today. We were just reminiscing about how we got introduced by a mutual friend who is also a previous guest of our show. Dr. Brian Plante is a licensed naturopathic doctor with extensive training in integrative whole-person health care. His comprehensive evaluation helps people identify and remove patterns of imbalance that prevent them from living their healthiest lives, and he tailors treatments to each unique individual. Dr. Plante is a graduate of the National University of Natural Medicine in Portland, Oregon, and a member of ILADS, which you and I know is a professional group, the International Lyme and Associated Disease Society. We're going to definitely talk about Lyme disease and what's happening in that world. Both he and I work closely with complex, chronic immune dysfunction. We're going to talk today about the brain and the immune [system] and some of their connections with the body. He worked with Amen Clinics and applies his approach to treating neurological and psychiatric/mental health conditions. I'm super excited to dive into this today, Dr. Plante, because so many people are suffering. I won't read the entire bio. You've got lots of great credentials and experience. I'm super excited to have you here. I'd love to start with your story of: How did you get into medicine? What drove you? You told me you grew up in the Midwest. Tell me a little bit about your background.

Dr. Brian Plante 2:11

Yes. I'm super excited to be here. Thanks. What really got me interested in this... I was a science nerd in high school, and I was like: "What do I want to do going into college? Do I want to do chemistry? Do I want to do medical research?" I knew I liked some of that stuff. It never really occurred to me, "Oh, I should become a doctor." Some people just know when they're kids; they're like, "Oh, yes, I knew I wanted to always be a doctor." For me, it was the words 'healing' and 'healer' that really grabbed me. I was reading a book—I don't remember what the name of it was—and in the introduction, the author was talking about how her brother was a healer. I'm like: "What is that? How does that relate to medicine?" So, I did a quick search online on 'medicine' and 'healing' and I came across naturopathic medicine. It was one of the campaigns from one of the schools; it said, "Do you have the mind of a doctor and the heart of a healer?" I just loved that—that grabbed me. So, I don't call myself a healer; I think that's a title that's earned, not claimed, but whole-person healing and transformation have always been what this is about for me. I wanted to really get to the root of who we are as human beings. What causes us to suffer? What is health, and how do we get there, create it, or explore it? Maybe it's not a destination as much as it is a journey that we walk with each other as humans. What I love about being a naturopathic doctor and being in the integrative medicine space is that we get to ask these questions every day. What does the person in front of me really need for health, and what is making them sick?

Dr. Jill 3:49

I love, love, love everything you just said. It's funny because I'm on the other end of the spectrum with allopathic medicine, but I always joke and say truthfully, I have the heart of a naturopath. I probably had more naturopaths on my show than MDs. While we both have value, I've learned so much from my naturopathic colleagues because you really dive into systems and systems biology. And before functional medicine was popular, naturopaths were doing that. So, I have such great respect for you and for that pathway. And for me, I've kind of infiltrated the system—between you and me—and hopefully, I'm making some changes to bring a more holistic approach. So, I think we think a lot alike. So [the] brain-immune [connection]. Let's just start [at a] really high level, and then we can go into maybe some of the Lyme diseases and what we're seeing and how you're looking at them. I noted the Amen Clinic in your bio. Clarify for me: Are you working with them? Or tell me a little about that connection.

Dr. Brian Plante 4:38

Yes. I now work at the Amen Clinics in our Orange County location. We're a brain health optimization clinic.

Dr. Jill 4:44

Okay, fantastic. So, you guys go really deep. Let's talk about that first because again, there's this brain-immune connection. And obviously, you see the things that affect our brains like Lyme, mold, toxicity, and all these things in between. Talk about [the] brain-immune [connection]. How is it connected? Why would someone want to think about the two of them?—because maybe someone listening is like, "Oh, those are two separate systems." Talk a little about that connection and how you're looking at it.

Dr. Brian Plante 5:09

If it's all right with you, [I'll give] a little bit of a backstory. When I was in medical school, I was like, "I know that I want to do integrative mental health because a lot of people are suffering from anxiety and depression." I was doing a lot of that, and then when I was in residency, I got exposed to a lot of Lyme and mold patients, and I was like, "Wow! A lot of these folks have mental health challenges, but there's a lot going on with their physiology, their immune system, and their environment. How do we get really good at treating that?" So, I spent the last few years really diving into that. And then, when this opportunity opened up, it was like the universe brought [me] full circle. It was like, "We're bringing you back into integrative mental health, but you're going to do it now from this new lens of the immune system." And a lot of our patients do have untreated chronic infections and environmental illnesses. I think that the future of psychiatry requires an understanding of the immune system.

Dr. Brian Plante 6:05

So, what is this brain-immune connection that we're talking about? There are several dimensions to it. There is the fact that inflammatory signaling molecules can cross the blood-brain barrier. If there is a systemic inflammatory response from allergies, autoimmunity, leaky gut, infections, or toxins, we can have an increase in neurological inflammation that can drive or perpetuate emotional and cognitive dysfunction. We can have the vagus nerve, which connects the brain to many of our visceral organs, become dysregulated—that's our rest and digest system. There can be imbalances there. And then, of course, no discussion about the connection between the immune system and the brain is complete without mentioning the microbiome. There are so many microbes that are creating.. I think I read in a book a few years ago that the microbial cells in our gut, on our skin, and all over our body outnumber ours ten to one, but the metabolites that they make outnumber human cell metabolites by a hundred to one. We're not an organism; we're an ecosystem. I talk a lot about that. I also talk about how the limbic system,

which is that part of the brain that is involved in emotional regulation and safety, has the same job that the immune system does; it's just that the immune system is out in the field, so to speak, doing that. So, differentiating between self, and differentiating between safety and threat becomes really, really important. Many of the folks that we work with—and I'm sure you see this too—who have chronic immune dysfunction also have limbic dysregulation and have a difficult time regulating a sense of safety. I'm finding that as we try to pull these apart and say, "We're dealing with the brain" or "We're dealing with the immune system," we can't do that. We can intervene at different levels, of course, but we're really dealing with this integrated system, which includes the gut and the hormones and nutrients and all of that. So, in a nutshell, that's how I would think about it.

Dr. Jill 8:15

I love it. You've really outlined all the connections. There are so many things that came to mind as you were talking. First of all, maybe we can start with infections because I think we can talk about toxins, infections, trauma, and all those things and how they play in—maybe we can take each category. And maybe there's more that you want to talk about and say what's common that you see. Usually, these interplay; it's not that someone just has one—they often have multiple layers. One interesting thing—and I'd love your comment on this—is that in my research for my book I looked at limbic system triggers, and obviously I deal a lot with mold and biotoxin illness, and what I found is something that I see and I'm sure you see it as well: Almost 100% of patients who've had a biotoxin illness like mold, and maybe Lyme as well, [have] this limbic overactivation. Even if they're healthy, they've done the emotional work, and they have a great family system, they still... What I read in the research is that there's literally a chemical trigger [that travels] directly through the hypothalamic-pituitary axis through our nose, so we smell a chemical in someone who's susceptible. It triggers limbic activation on a chemical level even if your emotions are steady. So, what I've found in some of the treatments is that you have to decouple that; you have to work with that limbic system. What you mentioned before, and again, let's start here, is safety. [For] our body, feeling safe in our environment is so core to healing. How does that fit into these diseases and the brain? 'Safety' is such a generic word, but it's all related to the limbic [system], the neuroendocrine system, right? How do you address the person even if they think they're okay but you know from studies and [other] things that they're likely feeling unsafe or their limbic [system is] activated?

Dr. Brian Plante 9:47

Yes, that's a great question. I think it's really a sign of our times. We're exposed to so many foreign molecules that our biochemistry is not used to. Humans have been

dealing with trauma—complex psychological and social trauma—since the beginning. But now we're in an environment—a biochemical milieu, so to speak—that we've never really had to deal with before to quite the same degree. We also don't get the stress response resolution that we used to. Say we're in starvation mode; we get to feast, or we outrun the predator, and there's a resolution. Now, with technology and our need to constantly be on, there is no resolution there. To some extent, we're all dealing with this chronic sympathetic "fight or flight" activation, and most of the time we feed ourselves pro-inflammatory foods and we're not getting deep restorative sleep. Our circadian rhythms are altered using our technology late at night. I always take that into account and try to normalize it for the person in front of me. It's also really, really important because of how many folks that we both work with that I don't give the impression that I'm saying that their illness is in their head. It's physiologic; there are hardwired connections as well as the 'wireless' between inflammatory signaling molecules. Most of these folks have had the physiology of their immune dysregulation under-addressed and under-respected. But there is a possibility that the pendulum can swing too far in the other way. There is so much attention [paid] to antibiotics and detox protocols, and we neglect the brain.

Dr. Brian Plante 11:30

Part of why I'm so excited to talk about this topic with you is that when we think about the brain as an organ that is interrelated with these other organs, it's a lot easier to talk about the mental, emotional, and cognitive symptoms and our responses to environmental triggers than if we make it seem like it's just an emotional response. So, the example you gave is great; there is a biochemical initiator. But the limbic system, because of psychosocial stress and other inflammatory stresses, has become primed to respond as if it's a threat—usually under the radar of conscious awareness. What that may look like on the ground is just a really casual, open conversation around the role of stress in chronic illness. Most people will tell you right away, "Oh yes, I feel so much worse when I'm stressed out" or "I feel so much better when I get a good night's sleep" or "when I get to comb my pet." And then we talk about how some infections can come from [inaudible]. We'll get into that. That's loaded. I've learned that the hard way, saying, "You should get rid of your cat," and they're like, "Wait. What?" But I think normalizing it is key. Talking about just how complex all these variables are and how they interact with each other is not to say, "Oh, this is your fault that your limbic system was disrupted." Your brain is doing the best that it can, just like the rest of your body, to survive and flourish in the circumstances and conditions that surround your life. But how do we start to slowly pick apart these things and create a little bit more of a space for curiosity in that therapeutic relationship? And usually, people will tell you: "Wow, I have a lot of traumas" or "All of this has made

me more reactive to stress since I got chronically ill." Our approach is very individualized, but it more or less revolves around those key topics and support needs that people have.

Dr. Jill 13:18

Wow! I love how you're describing this—it's so relevant. I'm sure the people listening are having 'aha!' [moments] and they are understanding themselves in this too. The "Aha!" for me in this book was: I know that from my personal experience with mold and Lyme and [from] my patients—like you said, there's a fine line—we all have difficult situations, stressful situations, maybe traumas from our past, but there isn't a blaming here of the symptoms. Even that 'aha!' with me and a chemical trigger, it's like, 'Oh!' People who have this PTSD around mold and mold exposure may be really healthy, emotionally stable, and all those good things, but if you don't decouple that chemical trigger, it could still be a physiological trigger that causes trauma even though you're like, "I am okay." You can even walk into a moldy [environment] and be like, "I'm going to be fine," but your chemical system still triggers that limbic response, so there are so many layers [to it]. So that's one, and we clearly covered that. The second thing I love that you said I want to be clear for the listeners is that depression, anxiety, bipolar [disorder], mania, schizophrenia, and there's more, insomnia—any sort of realm of these mental disorders is what you're saying, and I love this... I guess for so long psychiatrists have just labeled this as "This is a disorder;" boom. But when we go to the root cause, we realize—not that we can't have some control; there is some agency—it's not like you're destined to have this forever. Especially now when we label these five-year-olds with mental illness, what you and I are saying is that there are real chemical, immune, endocrine, and inflammatory triggers [such as] infections and toxins—and we could go through that list—that can cause mental illness. I'm sure you would agree. I would guess that 90% of mental illnesses have an underlying trigger that's not just, "I was born with this; it's forever; I'm going to have this forever," correct? Talk about that a little because I think it takes away from the stigma around mental illness, right?

Dr. Brian Plante 15:15

Yes, absolutely. That's a huge goal of ours at Amen Clinics, and with Dr. Amen in particular, the end of mental illness is [possible] by leading a revolution in brain health. When we change the conversation from "You're fundamentally broken" to "There are brain imbalances that are at play here," then it's much more empowering. That isn't to say that there aren't emotional or cognitive patterns at play that need to be untangled and looked at. But it's a lot easier to do that from a place of resilience and resourcefulness if you're sleeping well and if you're not living in a

toxic environment—both environmentally toxic and maybe emotionally toxic. If you're in difficult relationships or you don't feel safe at home, it's going to be very, very difficult to get well in those types of contexts. How much is going on with the brain at an organ level? I don't know why it's so easy for us as a society to say, "Forget that." We wouldn't say that about the heart, and we wouldn't say that about the gut, although there are some emotional dimensions to those organs. But the liver [for example], you wouldn't blame somebody for their liver issue necessarily. To the same extent, we just hyper focus on the software of the brain. It's a lot easier to rewrite the software and download updates, so to speak, if we have a well-functioning machine, so to speak.

Dr. Jill 16:40

That's a great way to frame it. One of my friends, a neurosurgeon for the Denver Broncos, has done a lot of work with concussions; I'm sure you deal with this as well. He pulled the papers and did some research. A concussion by itself can be harmful, but often people recover quickly. But concussion plus underlying Lyme [disease], plus underlying mold toxicity, plus underlying inflammation is a way different beast to treat or [has a greater level of] difficulty because [of] the layers. So, if you already come in with an unknown tick-borne infection or an unknown mold exposure and then you get a concussion, he showed in his research in his clinic that it's a lot more difficult to treat. And it sounds like that makes sense. Again, that's what you do all day long. But any comments? Does that fit with what you're seeing, [that] the layers of the complexity are more difficult?

Dr. Brian Plante 17:25

Absolutely. Yes, so a lot of that has to do with the microglia, which are these resident immune cells in our brain, and their job is to prune. The way we think about pruning and gardening [is that] you clip away the branches that are dead or dying so that you can have a really flourishing system. When these microglia become exposed to toxins and other inflammatory stressors, they start to prune healthy, living neurons, and that's a problem. So, with that plus some of the inflammatory signaling involved, we're looking at brain fog, mood changes, anxiety, and neurodegenerative diseases. So absolutely. What we do is have those conversations with patients who are like: "We're here; just fix my brain." And I'm asking them about cat scratches and flea bites, and they're like, "Why are we talking about this?" It's like, "Well, occult infections contributing to immune dysregulation may compound your concussion and the mold and the genetics and all of that."

Dr. Jill 18:24

[inaudible] function. They're like, "Wait, I thought we were here about my brain," right?

Dr. Brian Plante 18:27

Right. And I love using this analogy. It's kind of a weird analogy, but I say it's not a salad where you have, "Oh, here's the tomato, here's the lettuce, here's the onion." It's a pureed soup where all of these ingredients are synergistically bleeding into one another. You pull the Lyme string, and it's attached to co-infections and PTSD, and then you're like, "Okay, well which one first?" "Yes!" And it depends on the individual, of course. There are strategies that we use, but absolutely, they're connected. They seem to have not just an additive effect on one another, like one plus one equals three, but a synergistic effect where the sum is greater than the whole.

Dr. Jill 19:11

Right, it's so critical because if someone's really having trouble post-concussion, there may be something underlying besides just that concussion that needs treating in order for them to get well. Tell us, say a patient came to your clinic; how do you approach [it]? I'm sure you sit down with them, but what are some of the basics, kind of the workup of what you would do as far as testing and questions and things like that?

Brian Plante 19:30

Yes. We have a program at Amen Clinics where we do a several-component, comprehensive evaluation. Someone will sit down and speak with one of our patient outcome managers, who will take a comprehensive history. They'll do functional neuroimaging studies. We do SPECT here, which measures blood flow to different parts of the brain, so you can see if there's overactivity, underactivity, or what we consider normative activity in different parts of the brain. And then they have a visit with one of our psychiatrists, who reviews the scan and gets more of an idea of the brain-specific elements, which, of course, these boundaries are a little bit blurry in terms of physiology. But in terms of what we're focusing on, then, I come in with functional and integrative medicine, and we'll run a comprehensive lab panel that's more or less a template. And then I'll do more individualized workup at that point. When they're seeing me, my point with all that is that I have a lot of information already—there's been a lot of foundational information—so I get to go right to what hasn't been talked about yet, what has not been looked at. What does the person in front of me need at this particular point? Maybe they've already started to do some of the psychiatric—whether natural or pharmacologic or both—recommendations

and some of the brain-specific lifestyle recommendations recommended by one of our psychiatrists. And [we'll] say [something like], "We really need to take a deep dive into testing your home for mold and doing a comprehensive mycotoxicity analysis for you and some of the biomarkers," and all those kinds of things. I'll do more of an environmental-specific or functional medicine-specific workup in addition to all that. We get a lot of information, and I think that's really important because, without that, it can be very easy to hyper-focus on the tip of the iceberg instead of looking at how all this stuff fits together.

Dr. Jill 21:22

That's tremendous. What a great system. I'm very familiar with the Amen Clinic, so I've always had a deep respect [for it]. Talk briefly [about] functional MRI. Describe what it is. And then, can you see differences in patterns that are diagnostic? Or is it just suggestive of things, like, say, anoxic energy versus Lyme infection versus toxic [load] versus birth trauma—any of those kinds of [things]. How much can that really tell?

Dr. Brian Plante 21:45

Yes, that's a great question. The one that we use is SPECT neuroimaging, which is a type of CT versus volumetric MRI, which measures volume, versus functional MRI. Both SPECT and fMRI are functionally oriented. Essentially, what we're able to see is if there is an inflammatory pattern. But we are not, unfortunately, able to differentiate without doing a more comprehensive analysis of what the cause is. So, it looks like a bumpy pattern, patchy [inaudible]. And if that's diffuse, we often think of environmental illness or toxicity with that. And then usually the history gives us some clues on: What additional specialty testing do we need to do for Lyme co-infections, mycotoxicity, heavy metals, or all of the above? With traumatic brain injuries, it really depends on what the injury was. If it was a blunt-force trauma to a particular part of the cranium, you will often see that. I was talking to one of our other doctors about a scan where there was what looked like a hole, and it just means decreased blood flow in a part of the parietal lobe up there. She was like, "This didn't happen with this patient, but with one of my other patients, an anvil literally fell on her head." She was like, "Well, it looks like an anvil fell... " because it was right [there]—a hole. I'm like, "I don't even know where they make anvils anymore." But an example like that. Or if you were to have a frontal injury, the brain would hit the front and then hit the back, and so you'd often see what we call blunting of the frontal pole and the occiput as well, or decreased blood flow to the cerebellum. There are ways that we can infer [things]. And then the temporal lobes, which rest inside the cradle of the sphenoid bone—think about a catcher's mitt and a ball. The brain is soft; the skull is hard. So, if the brain is sliding around, even if it

wasn't a major one-time injury but a repetitive injury, you'll start to see the wearing down of those temporal lobes because they're constantly being shuffled around that hard cradle, so to speak. We are able to see some patterns that can give us a lot of clarity on what is most in need of support, but the toughest cases are when we have infections and toxins plus traumatic brain injuries that are more non-specific, like getting hit once [because] you played a contact sport. And then it becomes: "Okay, how do we prioritize here? What's mostly making you sick now? But we're going to probably need to address all these to some extent."

Dr. Jill 24:18

Yes. I [can] relate to all of that. I know that with the ILADS, you deal with a lot of tick-borne infections, as do many of our listeners. Are there some prototypes... Obviously, Bartonella [is something] we typically associate with more rage, mood disorders, or whatever. But [could you provide] any sort of brief bits on some of these infections and how you might see brain or immune dysfunction?

Dr. Brian Plante 24:41

Yes, so I'll never forget the first case of Bartonella that I saw when I was a resident. It was a teenager. I was with a Lyme doctor, Dr. Jamie Kunkel, who was brilliant and taught me a lot. She didn't want to do anything; she was very irritable [and] not interested in [receiving] care, but she was there because her mom made her and would have these rage episodes. I was like, "I had never heard about Bartonella." We didn't learn about it in naturopathic school. We barely learned about Lyme. So that became this template in my mind of like, "Okay, it looks kind of like this," and then I just started to see it more and more, and it was like, "Wow!" I've done podcasts on Bartonella and talked about Bartonella before. I didn't expect to really get into Bartonella, but I see quite a bit.

Dr. Jill 25:27

Really quickly, I didn't mean to interrupt, but I just want to say this. It is massively increasing in incidence, isn't it? You and I both [see it, I'm sure]. At least for me, [there are] more and more and more cases of Bartonella, so this is very relevant. Keep going.

Dr. Brian Plante 25:41

Totally, I love it. I mean, it's an unfortunate reality. I was practicing in Sacramento; it was my second year of practice. where I was seeing more Bartonella than Lyme, and I was like, "What's the deal here?" I know we're not able to say that yet—that in the U.S., it's the fastest-growing vector-borne infection. There's a lot of research

being done on it, but it's something that's a lot more common than people realize: Cat scratches and bites, dog scratches and bites, and flea bites more so even than ticks.

Dr. Jill 26:10

And spiders—a ton of spiders carry it too.

Dr. Brian Plante 26:13

Okay, that's interesting. That's one that I have seen less often. A lot of times, people don't remember an insect bite. They're like, "I just woke up and I had these weird bites; maybe it was bug bites," you know, that kind of thing. Bartonella does seem to have some of the more obvious psychiatric manifestations. In fact, there was an article that came out fairly recently, 'Swamp Boy.' I still have to read that.

Dr. Jill 26:38

I totally just got that and read through it. It's fascinating. It's like a comic book, the way it's done.

Dr. Brian Plante 26:41

Yes. And was that schizophrenia or some kind of psychotic disorder?

Dr. Jill 26:46

Yes, exactly. A young boy in his teens was diagnosed and put in a mental hospital, and it turned out to be Bartonella.

Dr. Brian Plante 26:53

Yes. This is why psychiatrists, especially frontline psychiatrists, and emergency care facilities have to become aware of these infections because we could treat that. We could treat it with psych medications all day, but there's still an inflammatory process happening. And while some of these medications may have anti-inflammatory and immune-modulating side effects or benefits, that's not their primary mechanism of action—at least, that's not how we understand them. But anyway—tangent. Toxoplasma can show up in psychiatric manifestations. Lyme—I don't see it as often; it tends to look more neurologic or neurodegenerative. So, I'm seeing a lot of folks with dementia, early-onset Alzheimer's, and we're finding Lyme; we're finding a history of tick bites. But of course, there are usually other variables going on as well. There have been some studies that showed that they found

Borrelia spirochetes, Lyme spirochetes—the bacteria—in the brain cells of folks post autopsies, which begs the question: What really is Alzheimer's? What really causes these degenerative—

Dr. Jill 27:58

In the plaques, they've seen all kinds of HSV and Borrelia spirochetes. I think some of the research has been done around: Do the plaques actually protect us from infection? Are they actually being created? Who knows, but that may be part of the theory. Taxo[plasmosis], you mentioned—it's super important. Can you tell us anything briefly about [it]? That one seems a little bit more tricky. Obviously, there are titers. Are there any other good ways to diagnose that?

Dr. Brian Plante 28:23

Yes, that's a great question. I don't treat a ton of toxoplasmosis. I usually will just run Labcorp titers, and I've found them to be reliable at detecting it—I wish that was the case for some of these others. But that was transmitted through cats—cat litter. What's interesting about it is that there was an article recently that talked about how wolves that tended to be leaders of packs tended to have higher levels of toxoplasma. Now, this is a correlation, not causation, but it's an interesting concept because they will infect mice and make the mice disinhibited. They will approach cats so that it will perpetuate the lifestyle, which is wild because these organisms are—

Dr. Jill 29:06

Yes. If you want to talk about weird psychiatric infections, toxo[plasmosis] is at the top. When I read about it, I was like, "This is crazy!" This organism actually [makes a] change in your brain and your function—you mentioned disinhibition—because it perpetuates the species. It's insane.

Dr. Biran Plante 29:23

Yes, and that's kind of how I describe—maybe not to that extent—how some of these vector-borne infections... People say: "Well, why can't we test for them reliably?" [To them], this sounds like pseudoscience—they won't say it, but you get that look. And you're like, "Okay, how do we defend this?" The way I describe it is: If you were this organism and you wanted to get picked up by the next deer or lice or fly to pass on to the next deer, you would want to remain undetected. You would not want to create a massive immune response that would either kill you or kill the host. But it is very interesting how some of these organisms can affect behavior in very observable ways.

Dr. Jill 30:04

This always helped me frame things. The Ebola virus can kill someone in three days—it's very virulent or aggressive. Obviously, you and I deal with Lyme, mold, EBV, HSV, and some of these other viruses frequently, so we know that they're significant for overall health, the immune system, and the brain. But when I heard someone talk about it, they said Lyme and EBV (Epstein-Barr virus) are actually very low-virulence, which is kind of what you're describing—they go under the radar. There are people walking around who can have both of those from past infections, and they're fine. There's this thing between the immune system either noticing it or that infection being more active and the symptoms [appear]. That actually helped me frame it because Lyme, Epstein-Barr, and some of these [other] things we see a lot are actually not super aggressive, which sounds weird because there are so many people affected by them. But when we think about that, the people who are presenting with symptoms or brain dysfunction or mood disorders or any of these things we're talking about, are actually [in the category of] suppressed immunity. And then, why would that happen? There can be this play. For example, chickenpox. We almost all get it when we're a kid or if you didn't you had a vaccine against it. But it can pop up as shingles later in life, and that's usually a time when you're stressed, lacking sleep, under surgery, or in some weakened immune state. So, there's this really important combination. If our immune systems are really working robustly, we can have a lot of past infections that don't cause illness, and I like thinking about it that way. How does that work in the brain? Do you think about treating the immune system as a whole—as part of your protocol—as far as balancing the immune system?

Dr. Brian Plante 31:30

I do, yes. Absolutely. I remember reading an article that came out in a mainstream news source during COVID. It was exciting to see them talk about this, but I don't think they went deep enough. The title of the article is something like: You probably have a chronic infection right now. It was talking about cytomegalovirus, and what was interesting about the article that I appreciated in more of a mainstream context—we don't often think about this—[is that] our immune systems are fighting a war all the time; all the time for every one of us. And it was designed to do that, and that's not a problem. The problem is when this very delicate balance between... I don't want to call it balance. But the war is happening below the threshold of symptomatology, so at some point, the immune system will become overburdened. Either the host immune system becomes suppressed or the infectious or toxic burdens exceed the body's ability to deal with that. I use the analogy—because I'm a chemistry nerd—of the supersaturated solution. You have a glass vial [with] some

kind of salt dissolved, and you mix it all in. You get as much of that into the solution as you possibly can, and then you show an unsuspected viewer what's in the vial. It just looks like a clear solution. And then you add one grain of that salt, and all of a sudden it crystallizes out of solution, and you can't get it back into solution. It's kind of what we're seeing here. So, I don't necessarily have a brain-specific protocol for chronic infections that are affecting the brain as much as I'm saying what can we do to decrease neurological inflammation. What can we do to increase blood flow and nitric oxide recycling, glutathione recycling, and NAD to some extent, support detox there, and then address these systemic toxins?—because they're in all likelihood in multiple tissues. But I'm always considering: What's the relative burden?—because a lot of times I've seen folks, particularly in my last clinic, who're like, "I was totally fine until I got COVID. Like, I was perfect." Or "I was perfect until I got the COVID vaccination, and now all of a sudden I have these weird symptoms" that look like autoimmunity, that look like severe limbic dysregulation, dysautonomia, and POTS, mast cell activation syndrome, and they're like, "Where did this come from?" And then I have to walk them back and say, "Look, your immune system was fighting this war for a while." We live in a culture where it's like we don't want to look at it unless it's right in front of our faces. There's a lot of opportunity there to go back and say: "Where might there have been mold exposure?" "Oh, I didn't realize that it was at that office that I worked at for a few years." Or "Where might have been that infection?" "Well, I guess I did get bit by a dog when I was a kid, and I had some joint pain for a little while." [There can be] things that people don't often associate [with their current condition].

Dr. Jill 34:22

You're absolutely right.

Dr. Brian Plante 34:23

I'm sorry. That was a little off [from] your question, right?

Dr. Jill 34:25

No, that's perfect. I think it's so relevant because it's the tipping point. That's why I wanted to emphasize [it] because a lot of people get freaked out if the Lyme [test results] come back positive, and even in the clinic, sometimes if they're not having massive fatigue and joint pain and they're asymptomatic, I don't treat them. And I want that to be, even here, a place where not everybody [receives the same treatment]. Again, I always say that if you tested 10,000 people on the street, you might find that 30% of them have had Lyme, but they're fine, so there is a tipping point of when these old infections [can begin to manifest]. Again, shingles. We don't

have shingles, but many of us have a history of varicella, so what's that point where the immune system can no longer keep it in check? I think you and I both describe that well. [We've reached our] last few minutes. Let's just talk briefly. Say someone [has] Lyme and maybe a little bit of toxic load maybe, they hit their head—kind of a classic, general [case]. Where would you start with treatment? Would you start with just basic nutrients and detox support? What pieces would you put into [the treatment plan]. I know they're individualized. But maybe they have some depression, fatigue, a history of Lyme, and a concussion. Where would you start with that person?

Dr. Brian Plante 35:26

Yes, great question. For me, it's always about [laying the] foundations first. I've learned this the hard way because I think a lot of us get really excited about some of these [inaudible] regenerative medicine or fancy therapies, and we want to go right to that silver bullet. But my naturopathic training reminds me repeatedly that the most effective treatments are usually the ones that are the least glorious and the least exciting. I will use a lot of supplements; I'm pretty supplement-heavy in terms of regulating the HPA axis. I call it "anti-inflammatory buffering," where it's like: "I want to make sure your vitamin D is good. I want to make sure your cortisol production is good. I want to make sure you get some kind of fish oil—or an anti-inflammatory Treg response supporting thing if they don't tolerate fish oil, because not everybody does—something to recycle or support glutathione or the glutathione pathway. It's like this is pouring the concrete foundation for this multi-level mansion we're going to be building. If someone has an acute infection or acute traumatic brain injury, that's a different story. Then we're thinking antibiotics and or hyperbaric oxygen respectively as well as things like a combination [of] curcumin resveratrol products for the TBI. But for a chronic case, it's [about] getting these foundations in place. Now, if they're so depressed or so anxious that they can't incorporate some of these foundational lifestyle things, then we work on that. That's where psychiatric medication and nutraceuticals for brain chemistry balance are really important. But getting those foundations in place is going to make detox treatment, antimicrobial treatment, and anything to calm down that microglial activation in the brain—say from a head injury—way more effective, a lot more sustainable, and better tolerated too, especially when it comes to detox. Folks might come in with mast cell activation syndrome and they're like, "I want to treat my Lyme." And it's like, "Well, if we don't calm the limbic system and calm the mast cell system, we're not going to get very far."

Dr. Jill 37:22

And I know they will not tolerate treatments.

Dr. Brian Plante 37:25

Yes, exactly. More or less, I would say that there's a structure and an approach, but it's not a black-and-white protocol. The foundation is, first, diet, lifestyle, and anti-inflammatory supplements; make sure we're not living in a toxic environment [or] a severe ongoing psychosocial stress type state and then we begin to chip away. And sometimes it is a little bit of both, so I might use immune-modulating mushrooms or lysine to prevent viral replication. These things don't really [cause a] Herx[heimer reaction in] people most of the time, but they are supporting host immunity. Or astragalus, or immune-modulating peptides, rather than going for some of the big guns like NAD, glutathione, aggressive sauna protocols, or antibiotics. These things are more [akin to]—if we're going to use the house analogy—the interior design.

Dr. Jill 38:14

I love that you say that too, because I think whether you throw stuff at methylation, really upregulate NAD, these things can be powerhouses. But if you have someone that's so toxic and so infected or so sick and you all of a sudden ramp up all these pathways, they can get way, way worse. So, I love that. I think my approach is identical. This has been so fun, Dr. Plante. Tell the listeners for sure: Where can people find you? Where can we get more information about you, your job, and where you work? Tell us a little bit about where we can find you.

Dr. Brian Plante 38:41

Yes. So, on our Amen Clinic's website, if you go to our Orange County location, you'll see me listed under a team of providers. I don't have my assistance email right off the top of my head, but I'd be happy to share that to reach [me] directly. But give us a call; we have a call center that fields calls from all over the country. We do work with folks across the country. I see folks for functional medicine and integrative medicine consults only through Amen Clinics, in addition to the part of the Amen Clinics package where they do the brain scan and see one of our psychiatrists. And to be clear, the psychiatrist's visit to review the brain scan is not just for psychiatric illness; it's also for traumatic brain injuries, neurodegenerative illnesses, and neurodevelopmental [issues]—all that kind of stuff. We'd be happy to support you. I'd love to talk to you if you have questions about tick-borne illness, chronic inflammatory, or chronic fatigue illnesses in general, and how it interfaces with brain health.

Dr. Jill 39:38

I love it. This has been packed with great information. I'll be sure to link, wherever you're listening to this, to Dr. Plante and the Amen Clinic. And Brian, thank you so much for your time. This has been fantastic!

Dr. Brian Plante 39:48

Yes, thank you so much! I really enjoyed this.