Introduction to Neuroinflammation

Welcome back to the conversation. Today, I have a very special guest. Dr. Austin Perlmutter, welcome. Thanks for having me, Laura. I'm excited about this conversation we're going to have about neuroinflammation. Now, you're an internal medicine physician, New York Times bestselling author.

You're a published researcher. You're an international educator. Your mission is to help people improve their health by targeting the biological basis of stuckness.

I love this word. And that's the stuckness in our brains and in our bodies. You've been featured on PBS, Rolling Stone, Medpage today and NPR and a whole bunch of other media outlets.

You're currently the managing director at Big Bold Health We're going to talk about that today and what this company does and it's a food is medicine company focused on helping people rejuvenate health through better immune function, which makes you perfectly placed on this summit to talk about the brain, the immune system, inflammation, all of it.

So I'm excited to get into this today and we'll jump right in. Could you start off by telling us, you know, I think it would be helpful just to have an overview of what neuroinflammation is and as it's related to diseases in general.

We've seen over the last couple of decades a surge in people's interest in this term, which is inflammation. You know, if you were to Google now, if you were to open a magazine, if you were to open a book, you would see this term come up.

And it usually has really negative connotations. We think inflammation is bad and if we were to point at inflammation would probably point to something like a swollen knee, a red hot swollen knee, and say there's inflammation there that's no good, or maybe a rash.

And we'd say, Oh, there's inflammation there, and that's no good. And so what we know is that inflammation and when it's left unchecked, when it becomes chronic in any part of the body, is a major problem.

But it's really interesting because it's so much easier to see what it looks like when it's in the heart, when it's in the lungs, when it's in our skin, when it's in our joints.

But what happens when inflammation gets into the brain? This is the question that we need to be asking, because the brain isn't going to necessarily feel hot and swollen and feel painful like the joint would.

What may actually happen is that we experience something like depression, that we experience worse cognition, that we experience a higher rate of developing conditions like Alzheimer's disease.

So in many ways, inflammation in the brain is probably the most important form of inflammation that exists because it compromises the very engine of our life experience.

And that's the piece that people really need to understand. So the engine talk to me more about the engine. Right. I mean, if you think about what it is that enables us to experience life, what allows us to wake up and feel good, feel energized, feel excited about the day, to have good moods, be able to interact with others and engage in healthy relationships.

It is all the brain. I don't mean to take away from the value of everything else because we know that the body is one interconnected system. It's not like you have the brain and then you have the body.

They all speak together. But if our goal and I would say our goal should be. But if our goal is better experience of life, what we're really talking about is setting up the healthiest, best connected, best overall functioning brain possible, because that is the engine of our life experience.

That is the driver of what enables you to wake up and experience a good day. And we just so often forget that in favor of looking at all these other surrogates that are either inside our body or outside our body.

I love that you're positioning it like this. And we're going to get into a little bit of science and we're going to get into a little bit of environmental stuff and I, I would really like for us to connect the dots right now on what, you know, neuroinflammation can really impact someone's quality of life and really make it difficult to feel like they're ever going to get out of this or get better.

So what are some of the body systems, the body pathways that lead to this, that are influenced by this, that contribute to neuroinflammation. And Laura, you know, we spoke about this a little bit in the context of the lecture.

You recently heard me give a short, very short lecture, I guess. But on the fact that about 15% of all the cells in our brains are immune cells. And that's really just an incredible statistic.

So we've often thought about our brains being filled with neurons. And realistically, that's not the case because only about half of the cells in our brain are neurons.

How Brain Inflammation Affects Mood and Cognition

The other half are glial cells. And in the aggregate, again, about 15% of our total cells in our brains. So what we're talking about here is somewhere in the order of about 20 billion cells are called micro glial cells.

Those are immune cells that live in the brain, that respond to data coming in from our environment and then change the immune set point of the brain. They can actually create inflammation or they can calm inflammation down.

So why that matters is because, as I have said, we know that inflammation in the brain is linked to mood disorders, is linked to cognitive disorders, but is also linked to such processes as memory, even personality traits.

So this whole thing about the brain's immune system is actually a much, much bigger discussion. Now, it's really easy to go to this point of saying, Well, if you have inflammation in the body, in the brain, that's a problem.

If you don't, you're in the clear. The reality of it is that inflammation is not a binary system. Inflammation is not good or bad. Intrinsically, inflammation is just a set point of the immune system.

And I've been thinking about this a lot lately. Really. Inflammation occurs in response to a danger signal. Now we get danger signals in a number of different ways.

It can be eating ultra processed food. It can be watching a scary movie. But the end result of this is the body saying, Hey, I need to do something about this because the environment out there is telling me there's something scary, something dangerous, something I need to respond to.

And one of the ways that it responds to this is elevating inflammation to prepare the body to fight off a perceived threat. That all makes a ton of sense if there is an acute threat.

So if there is something out there that's actually going to threaten our health. For example, I live in the Pacific Northwest. If I'm on a walk and I hear a crunching in the underbrush, I guess that could be a mountain lion or a cougar that is that is a real threat.

So increasing stress in my body, which then kind of promotes the activation of the immune system, may not be a bad thing. However, in the long run, what we see is that the activation of the immune system towards a state of

inflammation is really pathological.

So what we really need to be thinking about are what are the chronic exposures that are perceived as our body, as danger signals that are revving up inflammation in our bodies and in our brains?

And what can we do to decrease the amount that these signals are ramping up inflammation and simultaneously, how can we put in healthy signals that help to calm and regulate inflammation to get our bodies and our brain to a state of better immune balance which has been linked to better health across the board.

So you mentioned that danger signals. So what? Let's just go right into what's causing our body to raise this red flag to feel like it's in danger to launch and inflammatory immune response.

Right. So first of all, you have an immune cells or types of immune cells in basically every tissue, every organ system in your body. There are immune cells in your liver and your skin, your lungs.

And as we said, they're immune cells in your brain, but the majority of your immune cells are located in your gut. And all of this makes perfect sense from the perspective of saying what is the data coming in from the outside world that is going to be picked up and acted upon by the immune system?

And specifically, where may they be, places where that signal is perceived as dangerous. So one of the interesting aspects, let's say, of the gut is that eating certain foods and having a certain microbiome can actually program the immune system towards a state of inflammation or towards a state of relative tolerance and balance.

So a diet that is high in ultra processed foods and added sugars seems to influence the microbiome and in doing so, programed the immune cells in the gut towards a state of relative inflammation, whereas a diet that is rich in a variety of minimally processed foods, plant, polyphenols, fiber and so on and so forth, actually programs, immune system towards a relative state of balance.

Similarly, what we see in the brain is that the data that comes in through our eyes and through our ears is actually teaching the brain's immune system about what's going on.

And I think stress is the best way to describe this. So if our brains perceive stress, chronic stress in particular, it programed the immune system towards a state of relative inflammation.

And there are a number of other ways you can go down this path. One that I spend a lot of time educating on now is the air actually having a major impact on our immune checkpoint?

And many people are not aware of this, but we take somewhere around 20,000 breaths a day. And while people like James Nestor have provided a whole lot of insight into the mechanisms of breathing and why it's so important to focus on breathing in a healthy way, many people are not aware of the idea that the quality of what we're breathing matters, just like the quality of what we're eating changes our bodies.

So, yes, it's important to be mindful when we eat, and also it's important to pay attention to what we eat. It is the same thing as it relates to the air that we breathe.

Air contains a wide variety of molecules. It's not just the oxygen, the nitrogen and the trace gases. It actually can be packed with these tiny part particles called PMS or volatile organic compounds, both of which have been linked to activation in the immune system.

And you can actually see a correlation with people's brains. These are people who have passed away where you look at how much air pollution were they exposed to and the relative state and activation of their immune cells in their brain.

Immune Cells, Danger Signals, and Chronic Inflammation

And you can see that people who are exposed to more air pollution while they were alive have data showing that they had an increased activation of these inflammatory immune cells in their brain.

So this is a lot of different things that we can talk about, some specific things that each of us can do to help reprogram the immune system. But suffice it to say that no matter what you do each day, when you wake up, you are taking in data that is programing your immune system for the better and for the worse.

Now, you you had mentioned or I had mentioned that when I went over your bio that you're the director of Big, Bold Health. And that's a food is medicine emphasis.

That's that's what you're working towards with your with your clients and patients. So could you talk a little bit about that? So you just presented a huge set of problems and input that's creating this reaction and then you've got this food as medicine philosophy.

So let's give some solutions right now and maybe we can go back and forth with problem solutions here. I mean, this idea of food is medicine and I'll just start with is it's gaining popularity right now.

We see the White House is interested in it. Various academic institutions are interested in it. People have been using food as medicine. That approach for thousands of years.

Ancient Egyptians looked at how using liver could actually help with night blindness because of the vitamin content. So that's not new. But for the last 100 years or so, we've looked at food as basically two things.

It's calories and then it is a source of nutrients. So we don't get deficiency efficiency. And by and large, that commitment to food as a basic building block for calories and micronutrients as opposed to a comprehensive set of data that programs our bodies and our immune systems, has led to a large percentage of these chronic diseases that are leading to shorter lifespans and more disability.

So now we're looking at food as medicine, as a solution for basically the fact that food has been toxic or food has been poison for the last couple of decades.

At Big Bowl Health, we have this idea that food is medicine, not just for whole health, but rather for the immune system. That food helps to reprogram the immune system towards a state of resilience.

We call this immune rejuvenation the idea that you can actually reprogram your immune system and by doing so dramatically enhance kind of your wellness.

And we look at certain categories of nutrients that have been well-studied as helping to program the immune system towards balance. So Omega three is not highly processed, omega three is, but omega three is that occur naturally because they actually have additional molecules within these fat.

So it's not just the omega three is it's the vitamin A, it's the vitamin D and it's these pro resulting mediators that are found in natural sources of omega three, specifically cold water fish.

In addition, we're doing a lot of research around a plant called Himalayan Tardigrade Buckwheat. It's an ancient plant. It's been around for thousands of years, used medicinally for thousands of years.

But we're analyzing what it does to the immune systems of modern day humans, specifically using kind of complicated stuff, but epigenetics to ask How does this food act on reprograming the immune system?

And we've done this using some clinical research and some pretty advanced technology. The core of this whole idea, though, is the idea that food is medicine specifically for the immune system.

And when you look at immune related disorders right now, so 50 million Americans with autoimmunity, 50 million Americans with allergies, hundreds of millions of people, probably billions of people around the world suffering from

chronic inflammatory related diseases.

This is just it's an essential part of the conversation. We are in a place where most people have at least one chronic disease and the vast majority of them have some component of inflammation behind it.

So the concept here being it's not enough to just wait until the person gets sick enough to need a doctor. We need solutions that can actually reprogram immunity, and many of these can come from simply eating more real food.

We're big proponents here of a couple of key nutrient groups being omega threes as well as pre and probiotics to support a healthy gut. And then finally, polyphenols, which are a family of nutrients found in a variety of plant foods to help reprogram the immune system.

You know, you know, what comes to mind is that I feel like it's getting harder and harder for communities and individual families to get access to really clean, high quality food.

I mean, I was at the grocery store last week and I brought three bags of groceries home and it was $350. And. Right, so we've got, you know, the cost of food is is is getting higher, the cost of organic food and, you know, clean meat. And are you working on some solutions or do you have some solutions on how to help people with that?

It's so true. I mean, I don't shop at Erewhon, but I went in there one time, I bought a salad and it was basically the entire budget for food for the month.

But even, you know, just trying to go to your local stores or farmer's markets and purchasing quality food, not even all organic things have just gotten so expensive.

And I think we can't continue to operate in this setting of saying a person needs to eat 100% organic all the time from their farmer's market or grow the food and think that that's operationalized for the majority of Americans.

What I would say is this as you look at the things that you can do to enhance your quality of life, specifically your immune balance, I think the low hanging fruit is really to cut out the stuff that we know across the board is damaging our immune system.

And what is that? Well, I really think sugar sweetened beverages are about the worst offenders for two reasons. One is they're an ultra processed food, which we know is basically the worst thing for our overall health.

And the second one is you're giving your your immune system and your metabolic state concentrate a dose of sugar without any sort of fiber or anything to blunt it.

So I really think that as much as it's great to eat organic and all the other things, if you're still drinking soda sweetened energy, drink sweetened coffee, that's the stuff to work on first because you're not really doing yourself a big service.

Even if you eat a giant bowl of kale with pumpkin seeds for breakfast. If you go out and get the Frappuccino and you're basically just taking in a massive load of kind of unknown or massively processed sugar.

So I would say, again, this is a complicated thing. There are many variables. The first thing is to cut out the stuff that is doing, you know, service, right?

So nobody needs those ultra processed, sugar sweetened beverages. And we know that they're linked to worse overall health as well as worse immune health.

I think to the more we can generally migrate away from ultra processed foods and to real foods, the better. And I know everyone has different perspectives on, you know, should I go vegan, should I go Carnivore, should I go Quito?

Food as Medicine for Immune Rejuvenation

Should I be eating X numbers of grams of protein and should that be from whey protein or should it be from animal sources? But for most people and most of the time, anything you can do to eat more real food, I think is the first step.

And then simultaneously it is cutting out the stuff that has no value for any person. There is almost nobody out there that is getting value from sugary beverages.

And there's almost everyone out there, I believe, who is experiencing a health detriment from those things. So in between, there's all sorts of nuance, right?

It's saying, well, what is the kind of cost effectiveness of purchasing a frozen fruit? Food, which may be cheaper, still have a lot of nutrients and still be minimally processed if processed at all.

There's all these kind of cost saving measures, and we could talk about that. But at a macro level, I think it is cutting out the real junk and then generally trying to trend towards eating real food.

And that may not mean purchasing organic across the board. I mean, I don't purchase organic for everything. I would love to, but some stuff is just really, really expensive to consistently purchase organic, like you want to buy organic almond butter, that's basically $25.

So there's all these specifics around it. And I think that the core of it is just to say it's not about perfection, it's about progress. So cutting out the real junk and bringing in more real food.

Yeah, I think oftentimes, you know, we get in this perfection state where we feel like if we can't get it right, if we can't get it perfect, why am I trying at all?

And I think it's really important to encourage people that perfectionism isn't possible in anything in life. It truly isn't. It will stop you. So doing the best you can and getting rid of those those foods.

I love how you call them ultra processed foods. I actually wrote that down, so I remember to always think of it that way. I think this is a good segue way.

You know, in the in the last 5 minutes that we have in the first part of our talk today, I'd like you to touch on I mean, it's a perfect segue way to talk about policies that you think need to be implemented to address what's going on with neuroinflammation.

We have a major problem in our food source. That that is one of the more significant parts of this equation. And we, of course, want to focus on food.

I think that's just the most popular way to get into this conversation. Is it reasonable that the United States government subsidizes to the tune of several billion dollars a year the sugar industry?

No, it's not it's really not a good plan. Is it reasonable that we subsidize corn and by doing so make high fructose corn sirup widely available and it added to so many foods and beverages around the country?

Nope. No, it's not reasonable either. I think in the kind of aggregate the question is what are the incentives and what are the priorities for a government?

And then you can ask what are the priorities for the individuals within that government? If you're to ask what is the goal of the United States government?

What are kind of its top tier if you ever use the objectives and key results strategy, but basically saying what are the objectives that it's driving towards?

You know, it's GDP, it's domestic security, and then somewhere down the line it's health. But really, I don't think it's preventive health in a meaningful way because there are so many basic things that the government could be doing that we know are evidence based to support higher levels of preventive health.

The United States, as a country, especially as a highly developed country, is at the bottom of the list as far as health outcomes, you know, so you achieve the things you set out to to achieve.

And health is really never been at the top of the order of priorities there. Now, I think the United States has done amazing things in many domains. One of them is when we look at the quality of the air that we breathe, we've seen an incredible improvement in air quality across the United States over the last hundred years as a result of policies that were put in place, because people were literally dying because of poor air quality. I don't think it's enough.

One area that I feel passionate about is we need more regulation around air pollution in our homes. So if you were to go to the store and specifically into the air fragrances aisle, you would find a host of products ranging from, you know, the aerosols that we're supposed to spray to get rid of our teens.

BO To the scented candles, to the little dangly things that go in the back of our rearview mirror, that make our car smell good. Those are potent sources of air pollution that we know are linked to inflammation in our bodies and in our brains.

We absolutely need to regulate that. So I think there a number of kind of components around you could break out. What are the things that are linked to brain and systemic inflammation that we need to do something about and decide what the policies are?

But I think, you know, the big ones would be around food, would be around air pollution. And I think, you know, we could talk about promotion of sleep promotion and exercise, promotion of stress reduction interventions.

But I think so much of that is ingrained in Americans in this mentality of the hustle. And so it's not really a government level oversight that I think would quell that.

Rather, it's more psychological or even philosophical change. We need to see with the prioritization of health over kind of material achievement that I think is a deeper conversation than simply changing some policy.

Yeah, you're giving us a lot to think about. And, you know, Dr. Perlmutter, I want to thank you so much for joining us today for this talk on neuroinflammation and how it pertains to the root causes of chronic health conditions, chronic inflammation.

And to our audience, I hope you found our conversation insightful and helpful if you're a summit purchaser. Stay right here, because we're about to dove even deeper into this discussion with Dr.

Perlmutter. And if you're not, click on the button on this page to get access to a continuation of this conversation and many others and get the tools you need to reclaim your health.

If you're watching this continuation of my talk with Dr. Perlmutter, thank you for being a valuable member of our community. We're going to dove right back in. And Dr.

Perlmutter, I would love we've touched a little bit on air to air pollution and some of the dangers in our food source. But I'd love for you to dig in a little deeper on environmental toxins.

You know, we have we're really digging in in this summit on the hidden, silent killers that really are at the root of many, many, many chronic inflammatory diseases, things like cancer, things like heart disease, things like Alzheimer's and Parkinson's and ALS.

And these these terrible conditions that people can descend to as their health becomes more and more fragile. And much of it is driven by the huge load of toxins that we're exposed to day in and day out.

And you've talked a little bit about these, you know, body sprays and air fresheners and things that we just kind of don't even think about and use day in and day out.

But there's a lot of sources of toxins. So can you dig into some of that with us today? Yeah, I'm happy to get into that. I mean, I got to say, at the start of it all, it's really easy when you start this conversation to get to the point of saying, well, I shouldn't leave my bubble because everything is toxic.

Affordable Nutrition and Cutting Ultra-Processed Foods

It's the water, it's the air, it's the food, it's the relationships. And if the question is, is that true? I mean, kind of. Yes, but also kind of there needs to be pragmatic steps we can take so that we can go out and experience life and still have a participation in this larger world.

It is 100% true that our environments have become progressively toxin or toxin rich, and the reason for this is we've created so many new substances that simply did not exist a couple hundred years ago.

We have these persistent pollutants that can exist in our environment for thousands of years. We have a number of chemicals in our food supply that just didn't exist a couple of decades ago.

And these are a reflection of pesticides that we use on our plants, is a reflection of things that we give to animals that we now consume. All of it matters.

And it's again, it gets to the point of saying, well, I'm only going to eat things that are 100% clean. I'm only going to drink water that's 100% clean.

And I don't think that's really helpful either. So I you know, I recommend the Environmental Working Group's recommendations on food. The same has to be said for skin products.

I think that it is I kind of have a bone to pick here, but it feels to me like the kind of skin product industry has capitalized on are insecure ideas and desire for purity, where the evidence behind the majority of these products, and specifically I'm talking about things for acne, face washes and the like is almost minimal.

And in conjunction with that, we're actually just bathing our bodies in these things that are absorbed and then get into our systems. So I think that looking at what we're actually putting on our skin is a huge deal.

Again, the Environmental Working Group has some recommendations on what they would say are are better products. But I do think that that is something that we should be aware of.

You know, all the all the the creams, the washes. We know, for example, that the skin has a microbiome and that if we're constantly toasting that with soaps and other abrasive chemicals, I guarantee you 5 to 10 years from now, we'll say what were we doing?

And it would be the equivalent of saying we shouldn't be taking excess antibiotics for the gut microbiome. But instead we'll be asking, why did we continue to treat our skin with these harsh, abrasive chemicals?

So I think there's something there. I do want to mention I've been in conversation recently with a dentist named Mark McKenna. And so one of the things that he's focused on is the role of various things that we put into our mouth on basically creating an unhealthy oral microbiome.

And that is a domain of toxins that has been really new in my life as far as that understanding. Now, to back up for just a moment here, we think about the gut microbiome is playing a major role in our health.

The majority of bacteria in our bodies are found in the lower microbiome, meaning in the large intestine. But your mouth has a microbiome. And we now know that the state of that microbiome, of the mouth may actually influence what happens in the brain and predispose us to higher risk of Alzheimer's if there's dysbiosis in the mouth.

Now, why that's relevant to the toxin conversation is that when we use these intensive mouthwashes, we actually may be creating a whole lot of negative consequences to the oral microbiome because those microbes that mouthwash is actually toxic to a lot of what's happening in the mouth that's natural and necessary.

Dr. Barnett really believes that fluoride is actually an incredible toxin to our brains and that it is systemically absorbed when we use fluoride mouthwashes, when we use fluoride in our toothbrushes or toothpaste.

And that that actually may be a major contributor to cognitive decline. And it really kind of subtle thing that is obviously found in water supplies in many places.

So that's an interesting area. I think that there's still a lot to be kind of determined as far as saying what that means for policy. But the point here being what happens in our mouth and the things that we put into our mouth is more than just what we actually swallow and what gets down.

And from a food perspective, I think that you can kind of go to the root of the toxins in our news. This is an area that I've spoken about a lot, which is that when we think about what's happening in our brains, it turns out to be that, you know, what we take in through our eyes and ears has a major role to play in our brains.

Immune system. And so depending on how you use the word toxic, I think that certain types of highly stressful media are actually toxic to the brain because they activate stress pathways, because they activate inflammation, and because they're linked to higher risk for developing brain disorders.

So I think it's it seems like not a big deal to be in taking a whole lot of kind of stressful content on social media to be comparing yourself with the incredibly successful people we see on Facebook and Instagram to be consuming 2 hours of kind of incredibly stressful news on the TV right before bed.

But the reality of that is that that will impair your health just like any other environmental toxin, because it's activating these same pathways. So this is a broad brush overview, right?

There are many things we could talk about, heavy metals in the water supply and so on and so forth. I would say the first step is just to be aware of trying to be a more conscious consumer.

You don't have to nail that. You don't have to get it right each day. But one example might just be Don't drink water out of plastic bottles, bring a reusable metal water bottle with you.

So you're not getting the leaching of BPA and other chemicals from that hot plastic water bottle into your water supply.

Policy, Food Systems, and Public Health

If you can and you're at home, use a water filtration system and don't drink the tap water if you can. So there's lots of little pieces around there. But the first point is just to be a bit more of a conscious consumer and appreciating that there are so many elements of what we consume that actually can impact our physiology. Yes.

And you and I both know we could have a very long talk about toxins. I could spend a lot there and hours. But I think, you know, you're giving people an idea here.

I'd like to shift you know, as we continue on this discussion, I'd like to shift to a message of hope for people. So we're really talking about like, oh, my gosh, we've got a big problem here.

But there is hope. And I know that, you know, you your your organization, big, bold health, you're working on solutions for people. And can you talk about some of the research around it or some of the statistics we have or what we know about the impact of lifestyle factors like diet and exercise on actually the modulation of neuroinflammation?

Because it can make an impact. It can. That's it's such an important point. I'll start with a couple of statistics. And one of them is the understanding that our brains in particular are incredibly plastic.

Now, granted that plasticity is more intense earlier in life, but each of us have 80 billion or so neurons connected by these thousands of synapses. We have trillions of synapses.

And those are changing moment to moment with each breath we take. And so we get to change how those neurons are connected with our decisions that we make, with the food that we eat, with all of these lifestyle variables that are within our ability to control.

So our brain is plastic, our immune system is also plastic. We know that, for example, the immune system turns over the majority of its cells are roughly the equivalent to the majority of its cells.

There are some immune cells that are long lived, but somewhere around the 90 day mark, meaning that over the course of three months you can really kind of change the set point of your immune system by various interventions.

And so all of that is to say that we have a ton of agency over our brain function, over our immune system, with the choices that we make. And that can be for the better or for the worse.

But the message of hope here is that you have the ability to change it for the better. So how do you do that? I mean, there are so many different strategies that can be used and we know it's all the basics better sleep, exercise, meaningful connections with other people, stress reduction.

But the area that we've been most focused on in big, bold help is this idea that nature has the power to heal when you combine the best of nature with the best of science.

And so that's why we're so fixated on studying some of the most resilient animals and plants on Earth and asking, how are they doing so well? How are they able to survive?

In the example of the Himalayan territory, Buckwheat, how does it survive at 16,000 feet above sea level? The way it does this is that it amps up production of these polyphenols.

So basically it amps up its immune resilience. And the lesson that we might be able to learn is, one, developing resistance and resilience to varied environmental stressors is critical to our survival and to our health.

But also, when we consume this plant, we actually get a substantial dose of these same molecules the plant uses to defend itself against environmental stressors.

And lo and behold, they actually turn out to activate aspects of our immune system. And so what we're studying is how does that happen? And we've seen in a group of people who are aging faster than others that there was improvements in their rate of aging, meaning it slowed their rate of aging when they consume the nutrients found in this plant.

Emily and Tarry Buckwheat. So there are a number of examples like that. But I think the kind of major empowering notion that I would say is it is because we are so sensitive to change that we have these opportunities to change ourselves for the better.

There would be no point to being alive and experiencing life if we weren't able to change. That is kind of the essence of what it means to be human learning, new things, going through new experiences.

Many times this can be perceived as changing us for the worse. And as it relates to our health, unfortunately, I think that is the default. But those exact same programs that can take us towards a state of chronic disease are the same programs that can be activated for our benefit to move us closer to a state of health.

So it is certainly the basic things that I think are most strongly correlated with making that change go in a positive

direction. And as it relates to brain immunity in particular, the thing that I always like to leave people with is this idea that there is one single intervention that you can engage in that will objective early enhance your brain function.

Environmental Toxins and Hidden Exposures

Today it is been shown to be more effective than any sort of supplement, any sort of food, any sort of intervention that is pharmaceutical. And the intervention is sleep.

Getting 7 to 9 hours of quality sleep tonight is going to be both free and incredibly effective for enhancing your brain function. Turns out sleep is bi directionally implicated in the immune system.

We're getting good sleep keeps the immune system in balance and getting bad sleep can throw the immune system out of whack. So I am all for trying to provide cost effective solutions for people that actually work, that are evidence based.

And I think I would really go with out of all of the I've said here today, if your goal is to make your brain a better brain tomorrow to help improve your immunity to that point in your brain, I would really go with committing to that 7 to 9 hour window of quality sleep tonight.

You know, I've heard you speak before and you have a way of making these simple things that everybody is talking about sound so much more exciting. You just do.

It's the way you present the information. It's like, Yeah, maybe I should sleep like that. That, as it turns out. Turns out you should. Yeah, yeah. It's so good.

You have such a way with words. I definitely see multiple TEDTalks in your future, so if you have a few more minutes, I'd love to ask you a few more questions.

Doing okay on time. Okay, good. Because I'm really enjoying this. So I would like to know if you can talk about other treatments or preventive strategies that are up and coming that you're working on, that you know, of that that just the the medical community is working on that can really target the those environmental issues, the environmental you know, triggers of neuroinflammation.

Yeah. Well, let's let's do some nerdy science here stuff for just a second. So if we think about what is triggering neuroinflammation, I'd say, you know, you have to think about your surfaces and your barriers with the outside world because that's where the outside world is getting in.

That's where the environment is programing us one of the big areas is the gut. And so understanding that the majority of your immune system is in your gut, the gut communicates with the brain through the vagus nerve, through the bloodstream.

So finding ways to support better gut health is in fact finding ways to support better brain health. There's a whole lot that's being said around things like pre post thin biotics, basically any sort of variant on a gut bacteria or something that comes from a gut bacterium or something that feeds a healthy gut bacteria.

And combining multiple of these, the concept being that when we create a healthier gut and when we actually find the right things that are created by a healthy gut, we may support a healthy brain and a healthy brain immune system.

We know, for example, that short chain fatty acids that are produced by gut bacteria may have immune effects in the brain. They may actually epigenetically reprogram our immune cells, which is kind of a technical point being, though, the gut and the brain are linked.

And one of the ways they're linked is through the immune system. And we're now learning about categories of bacteria called psycho biotics, which means that by consumer higher doses of specific groups of bacteria, we may

actually be programing our brains towards the state of better health.

So there are multiple studies being done right now, some that have already out looking at specific strains of lactobacillus and other bacteria that should help to keep our brains in a healthier set point.

So there's a lot going on there, specifically around the gut. Now, if you were to ask what about other types of inputs? I mean, I think there's a lot to be said as far as, you know, the air quality and what we can do to both decrease those exposures and offset it.

So some studies have been done around things like diet. A mediterranean diet, for example, seems to help offset some of the inflammatory effects of air pollution.

Similarly, B, vitamins may have a role to play in offsetting some of the effects of air pollution. A number of reasons for that, but it may have something to do with the epigenetic effects which means that air pollution may modify the way our DNA is used.

Breastfeeding, for example, may also help to offset the effects of air pollution. If a mother is breastfeeding their kids, those kids may not have as much of a significant impact of the air pollution.

So some interesting stuff there as a really quick. Question, is it less asthma in children? I mean, how are they measuring that? Yeah. So when you look at what happens from air pollution, you know, you can look at kind of the short run as far as is there an increase, inflammatory markers and I think that's what they were looking at there.

But you're right, air pollution, specifically exposure to VOCs in the context of gas stoves has been a major topic as far as the correlation between air pollution and the development of asthma.

And as I think you're alluding to, we know that there's some protection that's translated to an infant from being breastfed as it relates to keeping their immune system in a healthier state.

Interestingly, as well, we know that kids who grow up in a more rural environment around farms have a lower rate of developing asthma. Part of the reason for that may be because they're exposed to microbes in their environment that then program their immune system towards a state of relative balance so they're not as likely to develop these allergic diseases like asthma.

So there's a couple of different ways that you can get to that mechanism. But the point being here, we're starting to learn, you know, ideally we don't want the exposure.

And I think that's the point people need to know is decrease your exposure to air pollution. But if you are being exposed, these are some of the strategies that seem to be mitigating some of that risk.

And the other one that I spent a lot of time thinking about is this isn't necessarily mitigating the environmental risk or sorry, it isn't necessarily decreasing the actual exposure, but it is mitigating the risk.

Is the role of plant molecules on the immune system. And specifically what I'm talking about is actually psychedelics, which you didn't think we were going to get to this conversation from what you.

I wasn't expecting this. But here's the thing. You know, we think about psychedelics often in the context of mental health benefits, and that's where they've been most studied.

It's MDMA for PTSD. It's psilocybin. Then for end of life, depression and the way they work is something something serotonin. But now we're looking at psychedelics as immunomodulators to potentially help prevent conditions like Alzheimer's disease and autoimmunity.

That's really interesting stuff. Why is this the case? It's because psychedelics seem like they can act on the immune system. Not only do immune cells have the same serotonin to a receptor that our neurons have, that kind

of gives the psychedelic experience.

But also some psychedelics work on an additional receptor called the Sigma eight or Sigma receptor, and this Sigma receptor is actually programs. The immune system has immune related outcomes.

Hope Through Lifestyle and Sleep

So specifically certain psychedelics that contain DMT like ayahuasca, seem to work on this sigma one receptor. And in doing so they program the immune system.

So again, you didn't think we're going to get there, but it's one of the things that really fascinates me about it is if you if you're really committed to understanding the immune system, which again, we've got hundreds of millions of people around the world with immune issues, not to mention the billions of people with chronic inflammatory issues.

Then we've got to think about all of these potential solutions. And have a question about. Go ahead. Yeah. I mean, I'm you know, I'm like million questions are coming up.

So can you utilize psychedelics in a way that minimizes the psychedelic experience? So can you use it without having that side effect? Is there a way is it been you know.

Yeah, it's it's. It's hard in a lab. But it's being studied right now. So there are a number of companies who are looking at can you still have the effects of, let's say, psilocybin without the the trip, right?

So you get the physiological effects on your immune system or neuroplasticity, but you don't have the psychological experience of tripping. What I would say is my perspective on that is I'm not interested in that research, to be honest with you.

And the reason is that there's something really important, I think, about the ability to have that psychological opening. Yes, I'm all for trying to find ways to reprogram health for the better and looking at those solutions.

But if you really were to ask this question, which I think is fundamental, is, you know, do we believe that nature has the ability to heal us? I think we're going right down that same path of trying to strip the nutrients out of food and, saying, look, eat a junk diet, but take this B supplement and you'll be fine.

That's not correct. What's correct is to say that we know that plants, fungi and animals have evolved alongside humans, and those relationships are incredibly deep.

So there's a reason that people have been using these psychedelics in these medicinal ways for thousands of years. Right. So if you look at psilocybin, if you look at the compound DMT, which is found in both animals as well as plant products, these have historically been used in their natural context for specific effects.

And and I just think will very rapidly get to the same point that we got to with food, which is the idea of it's just calories. It's not about the psychedelic experience.

And I think there's there's a whole lot of meaning that we haven't necessarily given enough attention to, which comes from the ability to have the the mind changing effects of these molecules in the right set, in the right setting.

And what what is a really interesting question for me is, is the psychological experience of a psychedelic molecule actually the reflection of some of these molecular pathways being engaged?

Right. So we know it. We know it's linked to the to a receptor being bound. Is there a sigma one receptor component to it or are we actually experiencing what opening of neuroplasticity is at a higher level?

So my kind of bias is, yes, that research is being done. Maybe it will be helpful, but it's not the thing I'm most interested in. As a fascinating response.

Not what I expected. What a fun conversation. Okay, so just have a few minutes left. So I'd like to know a little bit more about big, bold health, about, you know, how people get involved with this.

What do you have going on over there? What's the vision that you have? What how is it going to help people? Let's talk a little bit about that, because I know this is a big thing you're working on right now.

Yeah. And and people health is all about the immune system. So it's kind of apropos. People's health was started by Dr. Jeffrey Bland, who also was it's kind of seen as the father of functional medicine.

So he has been for decades committed to this idea of trying to help people with their health. There are a number of different ways, and the whole premise of it is our immune systems are progressively imbalanced, and that leads to a variety of catastrophes, both for humans and for the planet.

And then everything is interconnected. The immune system of the humans link to the immune system of the animal and the plant. And so if we're really looking at a big picture solutions focused perspective on how to enhance the human experience, we've got to look at the whole ecosystem.

So the commitment at Big Bold Health is to try to create not just healthier humans, but a healthier planet. So the goal is regenerative and sustainable agriculture.

Emerging Therapies and Gut-Brain Immunity

The goal is to source the highest quality nutrients from the planet that includes sustainably fished salmon from Alaska, where we get our omega threes from.

And the clinical research side of what we're doing, which is what I've been most significantly involved with, is trying to understand this, this conversation at a deeper level, which has been, you know, historically, plants are good for human health because they have some they've got some vitamins and they have this family of thousands of what are called phytochemicals, which are antioxidants.

And antioxidants are good for health. Yet there's a paradox there, because when you give people high doses of antioxidants, they don't do better. In many cases, they actually do worse and develop more diseases.

So our goal is to try to uncover how is it that certain nutrients in plants beyond just the macros, the fats, carbs, the proteins and the microbes, meaning the vitamins, the minerals, how do they influence human wellness?

And so we've been doing this study with these nutrients found in this Himalayan territory, Buckwheat, to see how it reprograms the immune system by way of the epigenome.

And again, I know this is all very complicated stuff, but that the kind of core messages that we're starting to uncover that that the food that we eat and specifically certain foods that we eat seem to convey, you know, such a nuance, a signal to our immune systems that this this is just it's like we've been looking at the whole conversation wrong.

It's like we've had two dimensions when we really what we needed is for. And I think really what we're saying here is that everything is interconnected and that there are ways that when we harness that information, both when we understand it at a deeper level and when we engage with it as far as what we do in a given day, that we we see that there's there's more to this story, both in terms of what matters to us and to the planet.

So at a basic level, what we do is provide kind of there's supplements, there's food and there's education. But at a higher level, the goal is to raise the collective consciousness of what it means to be a human involved in this planet.

And by using this language of the immune system to help people to enhance their understanding of all this interconnectedness. So it's been a fun ride so far.

There's there's a lot going on. And it's an interesting combination of, you know, as we've said, this idea of food is medicine and the immune system that I don't think has ever been done before.

And so Big Bold Health is doing this research right now. It's very important research. And you also help people. I mean, you're not just doing research.

People can come and find you and work with you. Right. So we've done kind of a number of different studies around this. The clinical study that we're referring to here, this was a study that was done in 50 healthy people.

So people without a variety of existing diseases. And so we have on our team got myself another M. D., we've got PhD's, we've got nutritionists, we've got registered dietitians.

And so it ranges the gamut of kind of the skill set here. And the goal is really just to try to convey this information translated into a way that meaningful to people in a clinical context, in a research context, in an educational context.

So I think the the easiest way for people to just learn about this is to to start reading some of the content.

Big Bold Health and Final Takeaways

We obviously have a podcast and lots of other information, but you know, fundamental to the whole thing is basically this idea that food has the power to heal and specifically to heal immune imbalances.

So there are many ways to get to that end point. But yes, there's there's lots of work being done in different ways for people to get involved. I'm assuming they can just go to Big Bold Health everywhere @bigboldhealth on social media.

bigboldhealth.com. bigboldhealth.com. Okay, great. I'd love to just give you the floor for any final, you know, words of wisdom and hope and any parting message that you'd like our audience to hear today.

Well, first I'd say thank you, Laura, and thank you to everybody who has watched to the end of this interview. I'm so appreciative the fact that you care enough to hear what we're talking about.

You know, I think the reality is we live in a world where things are very challenging. If you want to be somebody who is able to experience life for all, it is to be able to have brain and an immune system that is in a good place that is rapidly becoming a rarity.

And I don't think it has to be that way. And I think what's so empowering about this summit and the messages that we're putting forth is that we know based on the best available science, that each of us has the power to take steps right now to improve our health.

And these don't have to be things that cost you thousands of dollars. They don't have to be things that come in a bottle. They don't have to be things that require you to wait until you know your next doctor's appointment.

I am a doctor. I'm so appreciative of the work that people do in the clinic and in the hospital. But the reality is, if we wait until we need them, we've already lost our best chance of being healthy.

And our best chance of being healthy is right now. There is never going to be a better moment to make changes to improve your health than this moment right now.

So my hope is that you've taken a couple of ideas. From what we discussed today can be as straightforward as changing your sleep habits, making improvements to your diet, even moving your body a little bit, getting some stress mitigation effects.

The point being is that the basics are the things that work the best, and it's not going to necessarily feel like that

radical transformation that everyone keeps talking about with the diet that's going to have you lose 20 pounds in January or the high intensity training that's going to have you ready by February.

But the point is, this is the stuff that works. So my hope is just that you take something away from this that you're able to apply today and realize that we're all on the journey with you.

It's not an easy journey, but it's a necessary journey. Thank you so much. This has been a fascinating interview. I think our viewers going to rewind, take notes, go back, listen again, get excited about going to sleep because you make going to sleep.

So very exciting. And and I think I just want to say perfection isn't possible. Everyone just put one foot in front of the other and do something. And if it doesn't work out, you have tomorrow to try again.

So thank you so much. Until next time, everyone take good care. Bye now.