

[171: Resiliency Radio with Dr. Jill: Interviewing Dr. Jeffery Bland on Healthy Soils/Healthy Humans](#)

**Dr. Jill** 00:12

Well, hello, and welcome to another episode of Resiliency Radio with Dr. Jill! Today, I have a very, very special, beloved guest, Dr. Jeffrey Bland. He is lovingly known in our community as the father of functional medicine and it is absolutely my honor to have him here today. Our topic today is human health and healthy soils and how those two connect.

**Dr. Jill** 00:34

Whether you know it or not, the health of our soils does have a huge impact on the health of our bodies. We're going to dive really deep today and talk more about that connection and why it's so important to understand what we can do—what we can actually do in our communities, in our government, in our world, and even as physicians—to impact the health of our soils. Truly, this is one of our resources that, if not taken care of, we're going to lose. So welcome, Dr. Bland. Thanks so much for your time today!

**Dr. Jeffery Bland** 01:02

Well, Dr. Jill, first of all, you're one of my most special people in this whole field and I feel very privileged to be part of your program. Secondly, I think what you've illustrated [that] is going to be the topic of our conversation is right at the forefront of one of the present areas that is challenging but also solvable and that connects to so many of our health problems. So it's going to be really fun for us to have a little opportunity to kind of talk about: What can people do? And why do they need to do it?

**Dr. Jill** 01:35

It's so exciting. So let me introduce you and then we will dive right into our topic. Dr. Jeffrey Bland is an internationally recognized leader in the nutritional medicine field. He co-founded the Institute of Functional Medicine in 1991. As I said, he's lovingly known to many of us as the father of functional medicine. Dr. Bland has authored several books about nutritional medicine, both for healthcare professionals and for the general public. He's also the principal author of over 120 peer-reviewed research papers on nutritional biochemistry and medicine. Dr. Bland has self-published a monthly audio journal, *Functional Medicine Update*, for more

than 30 years that is distributed to healthcare practitioners in 36 countries.

**Dr. Jill 02:13**

And just a quick note on that, Dr. Bland—I'm sure you've heard this from so many other doctors like myself—I remember in residency knowing I wanted to do holistic biochemical root cause medicine, but there was no name for it back then. I remember getting your audio journal. I was in that small group of early adopters. I was literally in residency, not even a full-fledged practicing doctor on my own. And the first few lectures I heard, I was hooked. Again, I know you've heard this before, but your ability to describe the concepts that, in my heart, I knew were at the core of a true healer was so profound and so brilliantly stated. It was magnetic.

**Dr. Jill 02:53**

And you have really transformed not only my life but the lives of so many other practitioners. So truly, truly the first thing I want to say is just thank you because you changed the trajectory of my life by founding the concept of functional medicine. Let's go back there because before I heard you, you thought through this. You have a wonderful way of reading and taking concepts that are complex and then talking about them in a way that we understand and that anyone who's a physician or healer gets. They really, at a soul level, say, "Yes, that makes sense." Take us back to: How did you first get into functional medicine?

**Dr. Jeffery Bland 03:30**

First of all, I can't thank you enough. That was a very, very gracious and probably a little bit exaggerated review of my accomplishments. But I think I was very, very fortunate on a number of levels to meet some important people who took me under their wing and helped me along my road of development. I was fast to get out of college. I graduated when I was 17 from college and then fast into medical school, fast from medical school into a Ph.D. program, and fast from that into being a professor by 23. So I had a compressed whole educational history. I think I was probably in search of mentors who could help guide me and use whatever energy and skills I was developing in a positive way. I was very fortunate, after about 10 years as an academic, to have met Dr. Linus Pauling—a two-time Nobel Prize winner, once in chemistry and once in peace.

**Dr. Jeffery Bland 04:35**

And his wife, Eva Helen Pauling, was a remarkable power woman of her own reputation and skill. I think that their impact on me was extraordinarily important at an important juncture in my life. This would have been in my middle to late 30s, during which I then took a sabbatical of two years to work at the Linus Pauling Institute of Science and Medicine at Stanford in Palo Alto and put my professorship on hold for a couple of years. And what I learned from him and his wife, Eva Helen, was that if you think about science and you want to talk about where it could take a person who's connected to health sciences, it's all around finding ways to reduce human suffering. And how do you do that? What's a way you could apply your skills and knowledge to reduce human suffering?

**Dr. Jeffery Bland 05:29**

That then led me into... As I was packing my boxes to go back to my professorship with my young family, getting the car filled up in Palo Alto to drive back to Tacoma, Washington, the last thing he said to me was: "Jeff, I really appreciate being with you for these last couple of years. I hope we'll be able to continue to collaborate. You can have a great career ahead of you. But I wonder, do you think your classroom is big enough?" That was the last question he asked me before I got in the car with my young family to drive home. I had 1,200 miles in the car to think about it. What I finally recognized when I finally got home was that he was kind of challenging me to say [that] maybe from 35 on to retirement as an academic was not going to really fulfill all my objectives that I had laid out for what I wanted to accomplish and that maybe I needed to broaden my scope of vision. And what happened as a consequence [was that] I did the crazy. When I think back now, it truly was, I guess you'd call it, an irrational decision.

**Dr. Jeffery Bland 06:39**

By the time I got home, my parents had been very kind to have moved up to Washington State to watch our house for us while we were gone for those two years. I came, and we were very happy. They were happy to see the grandkids. We had a big celebratory moment. Then they said, "Oh, so you must be really excited, Jeff, to get back into your professorial role at the university." And I said, "Well, I've actually made a decision driving up here: I'm going to give up my tenure and I'm going to start an activity to teach doctors how to do nutritional medicine in their practice." Well, there was such a deathly silence that you could have heard a pin drop.

**Dr. Jeffery Bland 07:15**

To make the story complete, my father finally recognized that I was serious; I was going to do this. I was giving up my tenure and the security that the college education for my children would be paid for. I had a very great research program. The university president really liked me. I could teach virtually anything I wanted. But no, I was going to go on this new, uncharted path. Finally, he said, "If you're really serious about this, which it seems you are, then I think I'm going to have to come out of retirement." He had been an aerospace engineer. He said, "You know, I am an accountant by training. You don't know anything about business, so I guess I need to come back and help you." My mother, father, and wife then joined me in this enterprise that later grew up to have, over the next 25 years, 2,000 employees and we're in 36 countries.

**Dr. Jeffery Bland 08:06**

So that transition, which sounds in retrospect to be simple, was actually a fairly nonlinear path with lots of bits and starts and learnings. It got me to travel 6 million miles over those years, meeting all sorts of remarkable people. And from that, ultimately, my wife Susan said: "Jeff, you've been doing all this traveling. You always come home and talk about all these remarkable people you've met and you're establishing this concept that came out of your years with Linus Pauling. Maybe we need to sponsor a whiteboard meeting. You can bring, say, 40 of your top thought leaders that you have met together and I'll organize a meeting. We'll put it up on Vancouver Island in British Columbia," a kind of removed but nice thought place. "And we can talk about what medicine might be if you took licensure away and reimbursement and just talked theoretically [about] what a health-focused healthcare system really looks like." So that became a meeting in 1989. It was so successful, people decided we had to do it again in 1990. The same place a year later.

**Dr. Jeffery Bland 09:10**

In 1990, I had this aha in the middle of the Saturday night before our last Sunday meeting. I came back and said to the group: "It seems to me what we've really been talking about is the loss of function as a precedent to pathology. It seems that function could be categorized into four different areas: Physical function, metabolic or physiological function, cognitive function, and behavioral function. So maybe we ought to call this functional medicine." I had a pretty big pushback from my

colleagues. They said, "Well, we understand why you would say that but, Jeff, in medicine... " Remember, this is 1990; it was a big negative connotation as functional as medicine. It was either psychosomatic medicine, it was all in your mind, or it was rehabilitated medicine and geriatric medicine for older individuals.

**Dr. Jeffery Bland** 10:07

And I said: "Well, that is true. That's the historical way it's been thought of. But actually, if you look at the literature today, you're starting to see a redefining of functional. There's functional cardiology, functional radiology, and functional endocrinology. So we're starting to see a new definition of the term function in medicine. Maybe you ought to skate to where the puck is going," to use an analogy. So eventually people said, "Okay, let's give it a go." So we founded the Institute for Functional Medicine in 1991 to really focus on the precedence of later-stage pathology upstream or root cause. We had the fortune at that point, at least with the medical and scientific literature, [which] was starting for the first time to really understand the mechanisms of chronic disease at the cellular level. So we could appropriate that knowledge into this concept of redefining what functional meant at an early stage and bringing it into these four corners of function: Physical, metabolic, cognitive, and behavioral. And I think we were guided, quite honestly.

**Dr. Jeffery Bland** 10:54

Now, to finish this story, just to show you there's no such thing as a new idea, several years went by. By this time, we had started to develop a little bit of momentum in teaching this concept. And my wife, Susan, went to the American Council of Continuing Medical Education and got continuing medical education credits for the Institute for Functional Medicine. We were the first group to get that from the ACCME so we could provide category-one creditation curricula to health professionals, medical doctors. And it turned out that one of our early-stage faculty [members] came to me one day and said, "So Jeff, you realize that there are notes on functional medicine in the 1847 edition of *The Lancet* medical magazine? I said: "No, you've got to be kidding me," because I consider myself to be a bibliophile in following the literature. But no, I had missed this.

**Dr. Jeffery Bland** 12:10

There was actually this article that had been written by the Dean of Birmingham University Medical School in England in *The Lancet* medical magazine called

"Lectures in Functional Medicine". Now, it was in the language of its age so it would be different stylistically than today. But the concept was very, very similar. The difference was that they didn't have the tools that we had in 1990—the understanding of cellular biology. But the conceptual framework I can't claim credit for because he had kind of laid it out in those lectures on functional medicine.

**Dr. Jeffery Bland** 12:48

So it's been around and we're advancing it. And now we have, I think, over 200,000 health professionals who've gone through the courses, of which 65% are medical doctors. And I'm very proud: I think we may be the largest organization having female medical doctors as member leaders in our organization. So the vanguard of medicine is changing. When I first was a medical school professor, we had 10% of the students who were female. Now there are more women [who are] medical students in American medical schools than there are men. So we're starting to see a really interesting change, not only in the curriculum but [also] in how medicine is thought about and how it's practiced. And I think it's very much in concert with this concept of functional upstream root-cause medicine.

**Dr. Jill** 13:38

Wow! Now, as I hear you, some themes come out that I'm seeing. And then I'd be curious about what you think some of the qualities and characteristics of you as a human being led you to this. But my thoughts are, number one, vision. You drove back in the car and you had this vision of something that wasn't yet there. It took bravery to jump out of what was secure and follow this vision. And look where it's led. Not only you but what I want to keep coming back to is that you have influenced hundreds of thousands of lives—physicians like me. We're all so grateful for that vision.

**Dr. Jill** 14:11

The second thing [is that] when I was writing my book, I remember reading so deeply [about how] curiosity is one of the hallmarks of genius. And clearly, there's this imprint in your heart and soul from birth, probably of this curiosity. I feel like that's what really drives discovery on the changes in medicine—when we become curious and say, "What's working and what's not working?" and then follow that through. And you clearly have had that curious and brilliant soul.

**Dr. Jill** 14:36

The last thing, I think, is maybe the most important and I don't know how many people have told you this, but you have such grace and humility about you. Every time we ever speak together on boards or panels or in any room, you do nothing but lift up all of those around you. And you could, as the father of functional medicine, really... You are such a great influence in our field, but you always come with such grace and humility and that is absolutely beautiful. So thank you for those qualities. And I'd love to know, number one, if that resonates. But also, was there something, even as a child—the curiosity or the intellectual rigor? What was it? What was it that was the motor that drove you in this direction and really to make these discoveries and teach all of us the things that you put together with functional medicine?

**Dr. Jeffery Bland** 15:22

Well, again, thank you so much for that acknowledgment. That's probably the highest level of compliment that I can receive. I think I've gotten two very important things from my parents. First of all, my sister and I—I have this one sister that's a few years younger than I am—I think we both have acknowledged over the years that we've gotten some really remarkable things from our parents. I was born in 1946, so it was the first year of the baby boomers coming out of World War II. I think that my mother was a driving force for energetically pursuing anything that you found interesting and never being deterred from pursuing your curiosity. She was a tremendous stimulator of "Follow your heart, follow your passion."

**Dr. Jeffery Bland** 16:18

My father was, I think, looking back, an intellectual. He was a deep reader. He was a person of the mind and he always stimulated me... If I showed an interest, let's say it was in electronics, the next thing I would know, he'd be working with me to build transistor radios. If it were photography, the next thing he would be building was a dark room in our garage so that I could do photography. And we'd be studying and we wouldn't just do it superficially. My sister, I think, feels the same way with her upbringing: There was nothing that we couldn't do if we showed an interest and we would be supported. In music, the same thing. I showed an interest in music and before I knew it, I had all the opportunities to ultimately be successful playing the band and Disneyland and all sorts of things. So I think that this was very rare. I

think that children get that kind of support in different ways from their two parents.

**Dr. Jeffery Bland** 17:21

Now, I think there's another feature of this, and you share this, I know, as well. I have great admiration and respect for you and the way that you communicate your past and your experience and bring people into your experience so that they can learn and be part of their own life experiences. There's this sense that every human being has some magic in them. There is nobody without magic if you can find where it is. You have to open up the relationship to that opportunity. And the only way that can happen is if you meet people on a level of equanimity. If you assume that everybody's good until proven otherwise, which I try to do in my life... Now, I can be disillusioned at times. There's no question. Maybe it sounds a little polyannaish that you do that, but I would prefer to have the disillusionment versus the opposite, which is assuming that everybody's out to have an advantage or take advantage or whatever.

**Dr. Jeffery Bland** 18:22

That kind of construct of meeting people on their own level and trying to explore where their magic lies has opened up for me all sorts of learnings about what I might do better and the things that I want to be better at. So my wandering of the 6 million-mile journey I've been on has been trying to understand what makes this human being as remarkable as it is when it's in its full expression. So this whole concept of how we express the magic that's in our book of life—our book of life being our 23 pairs of chromosomes that constitute our genome—how do we get the radiation of the white light of goodness out of it? That, to me, is the fundamental construct underlying functional medicine.

**Dr. Jill (pre-recording)** 19:11

Hey, everybody. I just stopped by to let you know that my new book, *Unexpected: Finding Resilience through Functional Medicine, Science, and Faith*, is now available for order wherever you purchase books. In this book, I share my own journey of overcoming a life-threatening illness and the tools, tips, tricks, hope, and resilience I found along the way. This book includes practical advice for things like cancer and Crohn's disease and other autoimmune conditions, infections like Lyme or Epstein-Barr, and mold- and biotoxin-related illnesses. What I really hope is that as



you read this book, you find transformational wisdom for health and healing. If you want to get your own copy, stop by [ReadUnexpected.com](http://ReadUnexpected.com). There, you can also collect your free bonuses. So grab your copy today and begin your own transformational journey through functional medicine and finding resilience.

**Dr. Jill 20:08**

Wow! That was, as always so well put and so profound. I believe so truly that in the clinic, the true place where healing starts is completely unconditional—loving the person who's in front of you with no judgment, no ulterior motive, and no agenda. Literally just being there, holding that space, and listening to their story. And then, of course, as you've taught, [the] story is what drives our diagnosis.

**Dr. Jill 20:31**

So let's go to functional medicine now. Many, many of my listeners know what functional medicine is, but maybe you can just do a little overview. What is this thing we call functional medicine and why is it so powerful for the future of our medical field? I feel like there is an epidemic like never before of neurodegenerative diseases, cancer, and autoimmunity.

**Dr. Jeffery Bland 20:52**

Yes. So my mother, when I spoke with her in my adult years and asked when she could recognize in me some interest in what later was the path into functional medicine, thought that I started expressing questions about how people got sick before 10 years of age. This had been a thought that I'd had. At first, I started with a very strong interest in communicable and infectious diseases. That was through middle school, high school, science projects, and things of that nature.

**Dr. Jeffery Bland 21:35**

Then, as I got older, I started to recognize that there was another category of disorders called non-communicable diseases that were not necessarily infectious in origin. "How do they come about? Where do they come from?" And then I started to recognize, as I got more understanding of that, that there's an interconnection between infectious disease and non-infectious disease. They kind of hybridize because they interface with the body and its genome. Each individual carries this—their own select book of life. It responds to their environment, lifestyle, diet, stress patterns, and exposure to chemicals in a unique way that is related to their

genome. Then later, we started to recognize how the genomic patterns could become the epigenome by the marks that were put on them over the course of living.

**Dr. Jeffery Bland** 22:26

So that intellectual development ultimately got me to be more and more mindful of: What are the events upstream that trigger a downstream change in function that later becomes something we can observe under the microscope or with a CAT scan or some diagnostic profile or produce an abnormal lab value?—which is really based on focusing on what's called pathology, looking at the outcome. The cells, the tissues, and the organs have become so damaged that you can pick them out by diagnostic methods. But those started much earlier upstream by changes that could occur at the molecular cellular level that then transmitted different functional changes into what's called the phenotype, meaning how a person looks, acts, and feels. If we could read those things better, maybe we could move upstream to prevent the downstream injuries to cells that then require surgery, radiation, and chemotherapy to save a person from the state of pathology. So that construct has been with me, I think, even before high school, probably in middle school as a driver.

**Dr. Jeffery Bland** 23:40

Then I was fortunately guided into meeting these relationships with people who built from that architecture into: How do you actually deliver that concept? And at first, as you know, in this field, you're considered an outlier. There were people who were my mentors who thought I needed a brain transplant because I was "wasting my education" pursuing these sillinesses [and that] I should be staying where I was a fast learner on the standard track and everything would work out fine. I'm sure it would have worked out fine if I would have just stayed on the standard track. But it just wasn't where I wanted the pursuit of this training and this background education that I had to take me.

**Dr. Jeffery Bland** 24:30

I was very fortunate, I think, to be born when I was, because mirroring my curiosity in this area were new ways of actually examining these things at the cellular level. We got into antibody studies and we got into all sorts of new technologies that could look earlier and earlier as to how cells were behaving and how tissues were

behaving—ways that we didn't have an understanding of before until really moving into the 21st century. Now these tools have become much more prevalent. Therefore, in the development of functional medicine as a model, when I pulled together my colleagues—the foundational group; this would have been 1990—we started to say: "What do we know are defining principles that underlie later-stage disease?"

**Dr. Jeffery Bland 25:20**

We eventually defined what we call the seven core principles of physiological processes—the physiological processes that regulate our body's response to the outside and inside worlds. And those seven core principles became the tenets of functional medicine. And then we started to say: "Well, how do we assess each of those? Not just wait till they're so broken that they're going to have a diagnosis from an international classification of disease code but earlier on, how do we actually codify them?" That was the first beachhead for functional medicine.

**Dr. Jeffery Bland 25:55**

Then, over time, we watched how these things evolved and became more well understood so that what was criticized at birth has now... Let me use an example: We started using the word dysbiosis in the mid-80s and the concept of a leaky gut in the middle 80s. We were completely rejected by standard gastroenterology when we said this. They called it specious and they said: "No, hold on. If you had a leaky gut, you would have sepsis. If you have sepsis, you're going to be in the hospital and die." And we were talking about no; there could be step functions of degrees of endotoxemia. It's not just on or off; maybe there are degrees of that. And they said: "No, no. There are not degrees. Either you have sepsis or you don't. And you're either well or not." And we said, "Well, I don't think that that's true." Well, over time, I'd have to say we've been proven right. Now there are literally hundreds of papers being published in the theory of medical literature on dysbiosis, leaky gut, endotoxemia, and postprandial endotoxemia—after a person eats, how did that influence the toxic load in their blood?

**Dr. Jeffery Bland 27:01**

And now, with your brilliance, we started to bring all these various fungal metabolites and other agents that our bodies are exposed to with our unique immune systems that signal to the body alarm and produce things that now become

the diseases of our age. People call them diseases but they're actually responses of the body to an unfriendly environment—these pre-autoimmune disorders, cutting across 88 different diagnoses. All of these are part of upstream relationships between our bodies and a foreign environment in which our immune systems are trying to gain some control over the hostile environment in which they find themselves. And then what do we do with that? That's the functional medicine model, not just saying, "Well, let's wait till you're broken." Let's move upstream and ask how to correct your problem before you become broken.

**Dr. Jill** [27:48](#)

Brilliant. I graduated from medical school in 2003. About four or five years after you started functional medicine, that's right around the time I started hearing you and took on that training. But we were still taught just a couple of decades ago that your ultimate goal is to get to an ICD-9 or 10 code. That's the end game. But the thought of the question, the curiosity, and the why was never really addressed. What's really neat is that so often, myself and others, when we get into functional medicine, we get re-energized as to why we went into medicine in the first place. Most people going into medicine really do have curiosity and a desire. So to me, one of the most beautiful things about functional medicine is it really gives you the joy back of what we all set out to do as far as healers.

**Dr. Jill** [28:42](#)

Anyway, let's shift a little to the microbiome because the microbiome is our stepping stone to the soils. And you just kind of set up the lipopolysaccharides, the endotoxins. We often think of this outer world as our toxic load, so we talk about that bucket capacity of toxicity and all these chemicals. And really, truly, it is getting exponentially worse every year. And the synergism of even the hermetic effects of the very, very low levels is very harmful. And many people have no idea that they're swimming in toxic soup. But having said that, sometimes we forget that inside our body, whether it's metabolites of fungi or metabolites of bacteria or other organisms, we're sometimes getting a toxic load as much from within as from without. So do you want to talk just a little bit about that internal milieu in the gut and the microbiome? And then we can transition onto the soils and how that can impact our gut and our overall health as well.

**Dr. Jeffery Bland** [29:33](#)

Yes, and again, history can be a very good teacher. And this topic we're now

embarking on is a topic that has a rich history if you go back. So I'll go back. Not all the way to the beginning, but I'll go back to the turn of the last century, from the 19th to the 20th century. And this was the age in which bacteriology and microbiology were being discovered—the past era, so to speak. Pooke and Jenner on infectious disease, trying to look at immunotherapy. It was all coming out of that period of being able to—with the development of the microscope—see little critters that were not seen by the human eye but that we could see when they were magnified.

**Dr. Jeffery Bland 30:19**

So now suddenly we get into questions about: "Well, what are these microbes all about? What do they do? And are they associated with disease?" And of course, yes, some of them are. Louis Pasteur himself was obviously considered one of the world's leaders in this transforming concept of infectious disease. Well, it turns out that one of the people who was very important as a colleague of his was Élie Metchnikoff, a Russian physiologist who worked with him. Ultimately, when Louis Pasteur died, Metchnikoff took over the Pasteur Institute in France. Metchnikoff actually won a Nobel Prize in medicine and physiology in 1902. The prize was given to him and Paul Ehrlich for the discovery of the innate immune system.

**Dr. Jeffery Bland 31:20**

The way that he made this discovery was a cute little story. He was on the Prince Seacoast and was looking at a low tide, probably at the tide pools, and picked up a starfish and a sea urchin. The sea urchin has quills. And the starfish—everyone knows what they look like. He punctured the underbelly of the starfish with the quill of the sea urchin and had his monocle on. He was looking and he could see these little corpuscles coming to the site of the injury on the starfish. So his first thought, being in the field of microbiology and bacteriology: "These must be bacteria coming to the site of the injury." But then he said [in essence]: Well, why can I see these bacteria? I'm not using a microscope. I'm just using a little bit of magnifying glass from this monocle. These must be much bigger than microscopic organisms. So he went back and studied. And of course, these were immune cells that were members of what later became the innate immune system—macrophages, monocytes, and neutrophils. So he was then credited with discovering the innate immune system.

**Dr. Jeffery Bland 32:33**

It turns out that in 1903, he published a very interesting consumer book, which was around the discoveries about the microbes that were living in the human intestinal tract—what we now call the microbiome. And this book was around longevity. I'm actually very fortunate to have the first-edition copy of this in my library. It's my treasured book, Metchnikoff's first edition. What he was describing is the treatment of diseases of aging by using the installation of *Lactobacillus bulgaricus* enemas to re-inoculate the bowel with friendly bacteria. This would be like early-stage probiotics or fecal replacement therapy, in which he was describing this and the effect it had on health patterns in humans. Now if you then think of how that was transferred into medicine in American medical schools like Johns Hopkins, the first major medical school in American Baltimore, it was at first adopted as a concept.

**Dr. Jeffery Bland 33:50**

But then, as a consequence of some pretty horrendous problems that I won't go into great detail [about], at the Trenton state mental hospital, the largest mental hospital in the United States in New Jersey, it turned out that the head of psychiatry there started treating this concept by resecting the bowel. He was just taking parts of people's GI tracts out. And there were a huge number of unreported deaths. When that was later reported to the United States Senate, it completely not only got him defrocked, but it also had the spreading effect of [basically] saying: Well, anything related to the gut that has to do with mental illness or physical function, we're not teaching that in American medical schools. It's completely forbidden. So if you ever brought that concept up, like dysbiosis or endotoxemia, in American medical education for a period of 50 years, you were on the outs.

**Dr. Jeffery Bland 34:52**

So it wasn't until the body of literature started to energize itself by new investigators coming in and studying this. I would say somewhere around the mid-'80s [was] when we started talking about it [and] when we started to see the literature coming back. As I said, in the 21st century, this is the topic de jour—everyone wants to be involved in this field of the microbiome and its effect because we now recognize that more than 50%, more like 60%, of the body's immune system is clustered around the intestinal tract. It's speaking directly to those bugs, of which there are something like five to six pounds of living organisms

in our intestinal tract. In fact, there are more bugs in a gram of stool than there are stars in the known universe. Think of that. There are more organisms in a gram of stool than there are stars in the known universe. So this has now become much more well-appreciated and understood. And it had to go through this period of about 40 to 50 years of being expunged from all medical education. But now it's come back as it should, with the proper level of understanding.

**Dr. Jill** 35:57

Fascinating. I grew up on a farm in Illinois and realized early on that the soils were nourishing and so important. As farmers in Illinois, where they do crops over and over, that topsoil was so critical. Now that I really, really understand. I also understand the preciousness of soil and regenerative farming. Do you want to speak a little bit now that we transitioned about how in the world does a soil connect to the human body? Why is it one of our most precious resources? And what can we do about it? Let's just dive into soils and soil health and how they connect to the human body.

**Dr. Jeffery Bland** 36:32

Yes, thank you. So let's first start with a newborn. A newborn has a sterile GI tract until they've been exposed to some inoculation. Now, if they go down through the birth canal in normal delivery, they're going to pick up some of the mother's organisms from the reproductive tract. Then that will be incorporated eventually into their new microbiome. If they have a sterile birth by C-section, they may not be exposed. Now we have more and more; I think over 20% of births come by C-section in the United States. It's become a surgical procedure now: Baby delivery. That's a whole different microbiological exposure.

**Dr. Jeffery Bland** 37:28

So now what are those GI tracts like and how are they going to develop their community of organisms? It's going to be through whatever might be in the outside environment. Maybe it's in the hospital and it may not be all the good bugs that they might have needed if they were exposed to the mother's bacteria. But maybe the mother, even if it was a normal birth, had dysbiosis because she had challenges with her immune system, her diet, and exposure to various things. And then where did her biota come from? It came from what she was eating and what she was exposed to. And where did that come from? That came from the food that she was

eating. And where did that come from? That came from the ground on which the food was grown.

**Dr. Jeffery Bland** 38:16

So we start going back and then we say, "Well, is there a microbiome of the soil then?" Yes. There's a microbiome of the soil. The microbiome of the soil connects to the microbiome of the plant in the root nodules, which connects to the microbiome of the people who eat the plant in its natural state. But if you break that cycle at any one of those levels—you sterilize the soil, you sterilize the plant, you overprocess the food—you have overprocessed foods. Now suddenly you're open to whatever comes into your digestive tract, which may not be a good friend of your immune system. It may be a foreigner—what we call a parasitic organism—and now you've got a different personality going on. Now you have endotoxemia. So this construct of a system in which we're all interconnected, this planetary health view, is not esoteric. It is very real. What we have done is detach ourselves for a variety of reasons from this natural cycle that humans evolved through for millennia. And actually, agriculture initially grew up before we got into agribusiness and agrochemicals.

**Dr. Jeffery Bland** 38:16

I just finished seeing, and maybe you did as well, this extraordinary public service show on *The American Buffalo* [by] Ken Burns. And it's really powerful. It's on public TV. I recommend it to everyone because it gets us to think about systems. To think that there were several million buffalo running around in the prairies of the central plains of the United States until 1879... Think of that—1879 is the year that the buffalo hunters completely changed the grasslands of America, changed farming, changed agriculture, and changed culture. That buffalo or bison that had lived for millions and millions of years had been part of the ecology of the grasslands, part of the ecology of the soil, and part of the nourishment of the system that gave rise to support for people.

**Dr. Jeffery Bland** 40:42

So when you see *The American Buffalo* special education, you recognize it's much more than just the bison and buffalo. We're really talking about the ecology of how we, as human beings, live in communion [with], or distance and separation from, nature. And the price that we're paying for that separation right now... We've gotten



some advantages, but we've also paid some significant prices. When you get to the point of marginal return where the price you're paying is greater than the advantage of benefit, now you have a really difficult time.

**Dr. Jeffery Bland** 41:16

That's what some people are now concerned about—that maybe we're tipping that balance between advantage and disadvantage to net disadvantage with the increasing level of atopic diseases and disorders in children [such as] allergies, eczema, asthma, all the kinds of things we might even see as it relates to ADHD. Things that you are so skilled at helping your patients with, Dr. Jill. You're one of the world's experts in this whole area. But these come about in prevalence because of these imbalances that we've been producing in the Anthropocene, the era in which human activities are for the first time changing the complexion of large cycles in nature.

**Dr. Jill** 41:59

Yes, so true. And one of the things that has come about in my lifetime that has massively affected the farm that I grew up on and then our food supply is the use of Roundup or glyphosate. That was originally a mineral chelator and then they found it had antimicrobial activity because it held onto the minerals that the plants needed to survive the weeds. So it would kill the weeds. But what that did is that when we get that ingestion in our body, it actually chelates minerals in our gut as well and preferentially kills things like good bugs like lactobacillus and allows the growth of other things. I see that happening in the soil as well, because as we put on these chemicals like glyphosate or things that kill organisms, all of a sudden we have a microculture, or not a diverse culture, that's actually creating a rich, diverse, nutrient-dense food crop, right?

**Dr. Jill** 42:45

So what you're saying is that the soil affects our gut microbiome, but the soil then also affects our plants and the quality of our nutrients. And then we radiate the food so that it can be transported for two weeks in a refrigerated truck and won't go bad. But by doing that, the nutrient density of the foods that we're eating now is far, far inferior to what it was 10, 15, 20, or 50 years ago. Do you want to talk just a little about nutrient density, about foods, and especially about buckwheat and why that's been on your radar for the last several years?

**Dr. Jeffery Bland** 43:16

Yes, thank you. That's a really great, I think, example of what you're speaking to. So I got pulled into this, probably as a consequence of what you said earlier: Curiosity. In a one-month period, I had three what might be considered coincidences occur—serendipitous events—that were all interwoven together. So those three events were: I was reading an article in the Journal of Clinical Investigation at Vanderbilt University on this new way of treating blood pressure problems by treating the immune system. And I had never thought about how the immune system could be connected to blood pressure. I didn't know that mechanism existed. But then this work showed that there was this connection mechanistically. And they actually had studied a substance that could modify the immune system in such a way as to lower blood pressure. I was reading the article and I was intrigued. I said: "Maybe this is the person I ought to be interviewing for my podcast. It sounds very unique."

**Dr. Jeffery Bland** 44:22

It turned out that when I read the paper carefully in the appendix, this substance, which has a scientific name called 2-hydroxybenzylamine, or 2-HOBA, is found in only one food. That food is a form of buckwheat called tartary buckwheat. Tartary is the Tartar district of China. This is an ancient form of buckwheat that has been cultivated for over 4,000 years so it's one of the oldest foods. And I knew nothing of tartary buckwheat at all. I never even heard of it. I thought: "Wow, that's interesting. I'm going to learn more about that and this interesting ingredient." So then I said to my colleague, Trish Eury, who's worked with me now for over 25 years: "Trish, I'm going to be taking a trip to China next week. And while I'm gone, because you're a really good sleuther, could you look in to see who's growing tartary buckwheat in the United States?—because I'd like to learn more about this crop." She said: "Oh, yes, that's an interesting question, Jeff. While you're gone, I'll take a look."

**Dr. Jeffery Bland** 45:29

So then I got on the plane and went to Harbin, China, the northernmost big city in China between North Korea and Russia. [There are] about 28 million people, by the way, in Harbin. And I was speaking to something like 8,000 Chinese medical doctors at this health check annual meeting. And my guide there was a very, very sharp guy, my host. He had a PhD from the United States. But his MD was from Shanghai. He was Shanghainese—[he had] dual citizenship. So we were going to be coming back

from Harbin to Shanghai. That's, I think, about 2,200 miles or something like that, so all the way across China. And there was a typhoon in Shanghai, so the airport was closed.

**Dr. Jeffery Bland** 46:23

He said: "So, Jeff, we can either wait for the typhoon to go by or we could take the bullet train if you're interested and go all the way across China on the bullet train. It goes about 275 miles an hour, so it would take us like 10 hours or something. Are you interested in doing that?" I thought: "Wow, would that be cool!"—to go right down the middle of China on this train with the country just going by at 200 plus miles an hour. And I said, "Sure, I'd love that." Well, that gave us plenty of time to talk.

**Dr. Jeffery Bland** 46:53

So about halfway across China, as we were going through all these agricultural fields, suddenly a city would pop out of nowhere that had 5 million people in it. Then I said: "I know this is maybe a little bit of an outlier question, but I've really got an interest in this tartary buckwheat. Do you know anything about tartary buckwheat?" Well, it was so amazing. It was like we freeze-framed and stopped time. It's like the train stopped. His eyes were riveted on me and he goes, "You've got to be kidding me." I said no. I said, "Do you know anything about tartary buckwheat?" He said: "My research center is the center of excellence in China on tartary buckwheat. We've been looking for someone from the United States who might be interested—not only interested but with enough knowledge that we could collaborate with."

**Dr. Jeffery Bland** 46:53

So when I got back home, Trish had spent the week looking for tartary buckwheat in the United States. She could find only one person who was growing it. He was a former research professor from Cornell University in Ithaca, New York, who lived in Angelica, New York, with his nurse wife. They were both retired and they had a hobby farm on which he had gotten these seeds—this is like the Jack in the Beanstalk story—from the USDA because they wanted to grow something unique on their hobby farm. So they got these seeds that were just labeled with a number, not even the name. Well, it turns out it was Himalayan tartary buckwheat, the wild type of tartary buckwheat, the most [inaudible] seed. And they had been growing it for

several years. They put together an artisanal mill and they were having the flower at roadside stands and his wife was doing recipes. I think they had 10 acres. So I then cobbled together a relationship between [inaudible], Vanderbilt University, and my friend in Shanghai to say, "Let's bring tartary buckwheat back to the United States."

**Dr. Jeffery Bland** 49:02

Now we have tartary buckwheat fields. I have an organic farming cooperative. We're regeneratively farming. It turns out it was lost as a crop in the United States for 200 years. It was a food brought by the colonial ancestors because it was so hardy. It doesn't require pesticides, herbicides, or fertilizer. And it has so high a level of immune-active phytochemicals that bugs don't like it. It has natural insecticides so it doesn't need any chemicals. So now we are the first people to produce organically certified Himalayan tartary buckwheat. We just finished a U.S. FDA-approved clinical trial with humans, looking at the effect on their immune system by using epigenetic sequencing of 850,000 gene sites on a gene chip. And now we see exactly how it's speaking to our genes to improve immune functions. So it's just amazing what curiosity can do.

**Dr. Jeffery Bland** 49:59

Now, the last part of this, to go to your question... Sorry about the long round to get to the main point. Remember, these farmers that we have this property with are long-term organic farmers, so they're really stewards of their soil. We have a soil scientist here, Emily Reese, who is a Ph.D. and works with us. She did her degree at Cornell. She does soil sampling. And we do microbiome analysis of our soil. We wondered if we were to start inoculating the soil, even though it had been organically farmed for over 20 years, could we increase the health of the soil beyond that of good to maybe optimum, and would that have any impact upon the immune-active phytochemicals in the tartary buckwheat seed and flower?

**Dr. Jeffery Bland** 50:49

So we just finished a field trial, in which we broke the field into different districts and inoculated with different types of bugs—either fungi, bacteria, or a combination—that had been known to be healthy for reinoculating the soil. And then we harvested the crops. We did the analysis of the phytochemicals. Lo and behold, we're the first to find that we could increase the phytochemicals from good to excellent by re-nourishing the soil above good to now supplementing the soil.

And now we're inoculating all the fields that we're growing with these bugs that make them super rich for the microbiome. So we've proven the model that the soil speaks to the plants, it's the plant that speaks to the food, and it's the food that speaks to our immune system through our clinical trial and enhances its resilience. So this is a pretty exciting chapter in my evolving knowledge.

**Dr. Jill** 51:43

Who knew? You're a farmer now, right?

**Dr. Jeffery Bland** 51:46

Right. Now I can really appreciate the way you grew up. It's fun to go out there and see what's going on with our farm.

**Dr. Jill** 51:56

Jeff, I love that so much. It's so funny because I grew up on a farm and wanted to go to the big city. I wanted to study medicine. There were a few years in there—during college and shortly after—where I kind of denied and turned my back on farm life, the farm girl, and that history. I was almost ashamed. I'm sad to say that because I have the most beautiful and loving family and I grew up in one of the most Norman Rockwellesque places in the world. But you know how we go through those times. I remember being like: "Ugh, farming! It's so lame and it's not exciting; it's not intellectual." And just like you, I have gone back to like...

**Dr. Jill** 52:29

I have the deepest respect for my dad and brothers, who still farm in Illinois. They are one of the few farms in Illinois that is 100% non-GMO and partially organic. And you know that corn and soybeans in Illinois—that's not typical. I'm so proud of them. And now I'm talking about farming and soils and it's really neat to see that full circle and to see you in that as well. I think if we think of root, root, root cause, how else could we possibly affect the health of our system more than farming, truly giving nourishment to human beings through the soils and growing crops like tartary buckwheat? This is absolutely full circle.

**Dr. Jeffery Bland** 53:06

Well, thank you. It's been so great for me. Trish and my other colleague who worked with me for many years in the [inaudible] challenged me one day and said: "So, Jeff, I know you're getting down the road here in your life, but you're always coming in and you're having all these advocacies and you're all pumped up. And you're a fairly

big guy in stature and you have this bold personality. Maybe you need one more shot." So we formed this company, Big Bold Health.

**Dr. Jeffery Bland** 53:35

It's really surrounding how we take these concepts and deliver them into the marketplace to turn the cycle away from ultrapasteurized to looking at how we can produce foods of high quality that are actually fun to eat, have a diversity of flavor textures and compositions, but are doing our immune system good. Obviously, these are gluten-free products that we're talking about. It's been really interesting now because we've got a whole food lab, and we've got celebrity chefs who are doing recipes and developing new food compositions. So for me, it's like going full circle. It really has to me a sense that we've taken the esotericism of cell biology and converted it into an architecture that can be transformative in terms of planetary health.

**Dr. Jill** 54:25

Absolutely amazing. So Big Bold Health. And is there a website for that? I want to be sure to state that here.

**Dr. Jeffery Bland** 54:32

It's BigBoldHealth.com. And we've got a whole bunch of resources there. You can drill as deeply as you want in terms of understanding it. Actually, this year in the PubMed peer-reviewed scientific literature, just to show you what's going on with tartary buckwheat, there were over 275 papers that have been published on clinical aspects of different genotypes, soil health, and tartary buckwheat. This is an exponentially growing new knowledge area. Interestingly enough, most of it is occurring in Asia. So we're kind of the first translators of this into the United States marketplace.

**Dr. Jill** 55:13

Amazing. Well, as we close here, what is one bit of advice that you would give to up-and-coming doctors who are either interested in functional medicine or just getting out of medical school? What would you leave to the next generation?

**Dr. Jeffery Bland** 55:29

Well, I think you said it beautifully earlier in our discussion and that is curiosity but also patience. What I warn people about when they come into this door is that

they're going to be overwhelmed at first, but they're also going to feel like: "Why didn't I know this before? I got a really great education. I went to the right universities. I had great teachers. But I never heard of any of this. Why not?" And there's a little bit of disillusionment about their education. Like, "I wasn't told this. It was withheld." And my answer is no. Knowledge is always evolving. It's always changing. No one knows everything. So what we try to do is try to be patient as we're growing up our own knowledge and trying to find answers to the questions that are most important for us. If you are in a situation where you are in a sub-specialty of medicine and your interest and passion is a specific disease or a specific technology, you want to be the best in the world at that, and you don't worry about anything else, then maybe this is not [inaudible].

**Dr. Jill** 56:53

Oh, I still hear you. Can you hear me?

**Dr. Jeffery Bland** 56:55

Yes. I can hear you. I just lost your picture. But if you can hear me, that's good. There we go. But I think that this construct that I'm talking about is have patience, continue to do what you really want to do in the building out of your knowledge and do so by selectively gathering your information from people who are willing to be challenged and have references that you can go and do your homework and have a degree of authenticity. They're not just spouting philosophy. They're rooted in things that have historically sound backgrounds. And I think if you do that, it will lead that person to where they really want one to go in terms of their growth and development.

**Dr. Jeffery Bland** 57:44

We now recognize that this burden of chronic illness is the number one cost in our healthcare or disease-care system. The majority of those conditions are associated with non-infectious disorders that occur as a consequence of modifiable factors. If we know how to ask the right questions, we can find solutions. Your practice is brilliantly an example of that. So I think that there are solutions out there. It just depends on being patient and having your curiosity guide you to the right places.

**Dr. Jill** 58:17

Dr. Bland, as always, this was a fountain of wealth of information. Thank you for

your vision, for your curiosity, for encouraging all of us to continue being curious, and most of all, for your humility and grace. Thank you truly from the bottom of my heart.

**Dr. Jeffery Bland** 58:31

Well, thank you for you and all that you do. And all these people who are really trying to forge ahead in finding the solutions to things that are causing people... And I go back to Linus and Helen Pauling; they said our focus is on reducing human suffering. And there are many, many things. A friend of mine once said to me, "Well, Jeff, people are dying to know what you know." At first, I thought he was being humorous. And then I recognized, no, no, there are some very serious implications to that. There's much that we know—if we could spread that out and get people to do it—would prevent unnecessary suffering. And that's what our objective is.

**Dr. Jill** 59:12

What a great way to end—alleviating the suffering of humanity. Well, thank you for your contribution and for your time today.

**Dr. Jeffery Bland** 59:20

Thank you so much.

**Dr. Jill** 59:20

You're welcome.