Michael Roesslein:

All right, I pushed the button. We're recording. We're live with episode three of Rebel Health Spotlight, another familiar face. The first episode, it was just solo with me. Second was with Joe, co-founder of RHT, and if there was a third founder of RHT, it would be this guy. Kiran Krishnan, thank you for being here and for doing one of these interviews with us.

Kiran Krishnan:

Of course, of course. It's my pleasure.

Michael Roesslein:

Yeah, yeah. Well, you were at the top of the list. I was like, "I can't do one of these things and not have Kiran on it." So this is going to be a little different. We usually do like an hour or two or three of microbiome deep dive information over the last almost 10 years.

Our first conversation was at the end of 2014, and so it was nine years ago, and we've done dozens of webinars and podcasts and all those other things you can find on our site. This is going to be a little different. This is more about you and what you're doing, and introducing our audience to some new stuff.

Because our people all know you as the microbiologist who talks about the microbiome and probiotics and Microbiome Labs, and I've been dropping some hints and teasers to them that you're making some professional and career shifts, and so we can talk about that a little bit today. But if you want to just introduce yourself, your background a little bit, and we'll go from there.

Kiran Krishnan:

Yeah, yeah, absolutely. Well, thank you for having me on. And yes, it's really fascinating. It's been 10 years. I'm just thinking about the number of hours that we've spent on the screen together. It certainly dwarfs the amount of time we spent in-person together, which we need to try to figure out how to rectify. But it-

Michael Roesslein:

You're welcome to come to me at any time.

Kiran Krishnan:

... [inaudible] right, but it... Exactly, I need to do that. But it's always been really awesome and fulfilling.

So, I was trained as a research microbiologist. I come from a scientific family. My dad was a microelectronics engineer, and my mom's a medical doctor, both very different parts of the scientific world.

My mom is what we call in the science world, "the soft sciences," which is biology and botany and things like that are the soft sciences. And then the math-based things are kind of more of the hard sciences, chemistry, physics and so on.

So my dad was amazing at the hard sciences, and my mom's amazing at the soft sciences, and of course she's got all the clinical aspect of her as well. What is the same in both of them is this drive to connect the dots on complex issues. Right?

So anything we think about in the natural world, whether you're looking at a microchip, which is what my dad did, he built microchips and memories. Memory chips in particular was his specialty, and in fact, he has well over 200 US patents in his name-

Michael Roesslein:

Wow.

Kiran Krishnan:

... in the space of memory chips, right? So I remember back in the day when computers and all first came out, they were like the size of a room.

Michael Roesslein:

Okay.

Kiran Krishnan:

And a big reason they were size of a room was because the memory chips were so big-

Michael Roesslein:

Now it's this.

Kiran Krishnan:

... and circuit boards were so big, right? And then we used to have the big floppy discs that would barely have a megabyte worth of data, and then it shrinks, shrink, shrinks, and now these tiny phones have terabytes of data.

So, that was his specialty was how do you shrink memory chips down? And he was very much an out-of-the-box thinker, had an amazing ability to connect the dots on how do all of these things work? How do bits and bytes and circuits and electrical engineering work? And that's why he was so good at what he did, why he had so many inventions in this space.

My mom on the clinical side is similar as well. She's won top docs and a number of awards over the time. But one of the things that any one of her colleagues or patients would say is that she's an amazing diagnostician, and that's because she's really good at looking at the variables and connecting the dots and understanding what the conditions are.

And so I've kind of pulled a little bit of both of those, right? I love the physical, sorry, the hard sciences. I also am very partial to soft sciences, but my big drive is about connecting the dots and revealing things that may not have previously been known.

And my motivation is always through health. I'm insanely passionate about health and wellness and people being healthy and getting healthy and staying healthy. I take that seriously for myself personally, for my family and friends around me as well.

But I'm also practical in the sense that I have two views on health. One is, true health to me is about resilience, where you should be able to be healthy without making a hundred percent the right choices. You should at the least have an 80/20 capability where you make at least 20% bad choices, but still be fine, right? And that comes with resilience.

And number two, I don't think health needs to be achieved through doing 700 things every day. You know? You shouldn't have to wake up and dunk yourself in an ice bath and then do this, and then do that chamber and do that chamber and take this spoon and that spoonful of this and that. And I mean, it just becomes so complicated for people, right, if you start going down the world of biohacking and all that.

And there's merits and benefits, a lot of that, and some of those things that I pull into what I do personally as well. But I also don't think it should be extremely complicated for people, right? Where your full-time job and focus is being healthy. You should be able to be healthy casually if you focus on a few of the most important things.

So that becomes two of my goals, is giving people resilience or a path to resilience, and making it easy and making it tangible. So, at the end of the day, I spend a lot of my time trying to understand the true root cause of disease, and the true root cause of dysfunction, and what is the root cause of creating instability and a lack of resilience in the human body?

And of course, the microbiome became a very big source of that because of course, the biome and its issues drives a lot of instability, drives a lot of root cause disease pathologies. And so that's why it was natural for me to get into the microbiome, and of course it helps that I was trained as a microbiologist. So the understanding there is simple.

So in general, everything I've done and everything I currently do is to service those two goals, right? Find the root causes that can help people become resilient. And number two, make it simple so that you don't have to do 700 things every day in order to be healthy. You don't have to take 50 capsules of things. You don't need a team of doctors. You don't need all kinds of stuff every single day just to be healthy.

Michael Roesslein:

Okay. Those are two good goals, and you've done a Hell of a job with doing this with Microbiome Labs, which you founded, and everybody knows you from around here, formulated what is now probably the top probiotic product in the functional medicine space of MegaSporeBiotic that's helped thousands and thousands of people make their health more simple.

You're shifting your career now, and you've got two new ventures in the works that you are working on. I just found out about one of them about five minutes before we hit record on this. The other one I've got a little bit more heads up on, you're a difficult guy to keep up with.

But what are the two... And we will host you to come back and talk at length about details around these things so we don't need to get into tons of detail around it yet. We want to leave a little bit of mystery, and we'll have you back in the fall when some of this stuff is live to talk at greater length... But what are the two new directions in which your career is heading?

Kiran Krishnan:

Yeah. And with Microbiome Labs, what was exciting about it is we were able to come in, make an impact, start to realign some thinking at least on what a probiotic is, what it should be, what should a company in our space do, right? The amount of money you invest in research, elevating the science, all that. So that corporate citizen role for a company that services our space, we wanted to set the bar on that, and I think we did to a certain degree.

And of course, we've illuminated a lot of root cause issues and done a lot of education and put out a lot of research, and hopefully we've pushed functional medicine and holistic health-

Michael Roesslein:

I haven't seen another company do all that.

Kiran Krishnan:

... in that direction.

Michael Roesslein:

... do all that. I haven't seen any other company do all that these days.

Kiran Krishnan:

Yeah, yeah. Right, exactly. And-

Michael Roesslein:

Because there might be some that do a little bit of research, but they don't put out the amount of education. There might be some that put out tons of education, but they don't have any research to back the products. And then there's others that just make the same formulas as everybody else.

Kiran Krishnan:

Right. And they just-

Michael Roesslein:

And it was always innovative, always solving a problem that you saw needed to be solved, always backing it up with research, and providing tons and tons of education. So it was-

Kiran Krishnan:

Yeah-

Michael Roesslein:

... A list.

Kiran Krishnan:

... and thank you for that. And so we got it to a point where we felt that we've done enough and now it's time for somebody else to take that and ship and sail it down the open waters and add in more resources like biotechnology and research capability and so on. So it was the right time for us to sell the business to a Danish health company called Novozymes, the biggest enzyme manufacturer in the world.

They will soon be one of the biggest probiotic companies in the world based on a merger that's happening. So it's the right place for Microbiome Labs to sit and get nurtured and continue to scale what we had already set out doing.

It also then provided us, the founders of Microbiome Labs, myself and Tom, the capability to go and solve other problems. Right? So these next two ventures are really ones that I've seen as big problems that are occurring in the world of health that needed to be addressed.

So the first one is a company called Endo Axis. And to give a quick summary on that, it's really about utilizing the power of supercomputing to help and assist practitioners truly identify root cause in complex conditions. Right? So what I've seen, and now I've worked in this world of functional medicine and all for 15 years if you count the years before Microbiome Labs.

What I've seen is one of the limitations that we tend to have is the limitation of human capability. Right? We're smart creatures. There's different variations of intelligence in our world, but nonetheless, health is a big data problem. Right?

There are some tests, for example, the wonderful DUTCH test, which is a urine metabolite test for understanding hormone imbalances. Just that one test alone has almost 40 variables, 40 outcome measures, and the report is like 17 pages long. Right?

So if you know how to really utilize that test, you can gain tremendous insights into exactly what's going on with that individual, because each one of those almost 40 outcomes tells a story of a pathway that's either dysfunctional or functioning correctly.

But each one on its own is not the complete story. How they all connect and the pattern that's developing is a true story, and it's really difficult for any clinician to know enough about every one of those variables, all its upstream and downstream drivers, and then how genetics play into that and how lifestyle and how diet and all of that stuff plays into driving those patterns.

It's virtually impossible for a human to be able to do that. Now, we can take our, and certainly to do that in a given amount of time, right, that you have to see a patient or a client. And-

Michael Roesslein:

Yeah. "Your lab tests in, I'll get back to you in nine months."

Kiran Krishnan:

Exactly, right? It's like, "I've got to dig into the research and-

Michael Roesslein:

I got it.

Kiran Krishnan:

... all that and maybe figure it out. But the problem is that it's a big data problem. Right? So for us, well, how do you solve big data problems is you use computers to crunch the data for you.

So what we did in this case is we took the top clinicians in this space, we went through every single variable that comes out of that test. We not only looked at the variable, what its results would tend to tell you, but then also how that connects back to every single other variable.

So we created this amazing web of all the variables and all of their connections to all the other variables. We went through that painstakingly one by one, and then we built an algorithm to do all of that very quickly.

So, we're basically taking what a clinician would do, a very, very experienced clinician, adding in the research side of it, so digging through the literature to understand all the connections, and then coding all of that in an algorithm so that the computer can do it like this for us.

So, it's like a year and a half of analytical work that now can be achieved in 5 to 10 seconds by using the power of computing. Now, we don't tell the computer to figure this out. We show the computer how you figure it out, but then the computer can do it much faster in subsequent cases.

So my whole goal with Endo Axis is about utilizing the power of supercomputing algorithms and to some degree, machine learning, to assist practitioners in utilizing data to truly identify root causes. Because to me, it solves two problems.

One is the limitations of human capability to truly go through all the data and utilize the data to understand patterns and root causes. And this is just the hormone metabolite component, right? What if that patient also has a microbiome test?

What if that patient also has blood markers, and immunological tests and so on? How do you put all those variables in? We need a computer to help us do that. And so putting that together to try to really understand root causes.

And then second thing is to help clinicians stay away from symptom treatment as much as they do even in the holistic space, right? Because that becomes a default easy thing to do. And inevitably, that's where we go as humans. Right? So we complain about that in the allopathic space all the time.

We say, "Hey, we're functional medicine, holistic health. We look at root causes, we look at the whole person. That allopathic space, well they're only treating symptoms." In so many cases here in the world of holistic health and functional medicine, we're also primarily going after symptoms. Right?

We may use natural compounds to do it versus prescription compounds, but nonetheless, that ends up being the default in many cases because it's a simpler route. For example, food sensitivities, right? You do a food sensitivity panel and then you go, "Oh, okay, so the treatment is you avoid all these things."

Well, avoidance is a way of mitigating the symptoms that they get from consuming foods that they are intolerant to, but it doesn't do anything to identify the root cause of what's going on, right? If you are histamine intolerant, okay, then maybe you use some immunomodulatory herbs to reduce the inflammatory response, which again is the same in the allopathic world as using steroids, but this is a natural version, and then go low histamine diet. So avoidance. Right?

That becomes a therapeutic. Well, does that actually go after the root cause in any way? It doesn't. Or take SIBO, for example. We're all hyper-focused on the bloat. Well, what do we do to try to reduce the bloat? Let's hit them with antimicrobials. What an allopath will do, antibiotics, it's the same approach. We're not going after the root cause.

And so I see a lot of that, and it's because root cause identification is highly complicated. And we are inherently limited as humans in being able to do that within a given amount of time.

So that's what Endo is going to do, it's going to really help solve that problem for clinicians in our space by providing that computational assistance in understanding all the variables, connecting the dots, identifying the patterns so that they have a chance of really understanding the root cause.

Michael Roesslein:

And when can clinicians expect this to be ready?

Kiran Krishnan:

So with regards to hormones, we're starting with hormones because to us that's one of the biggest gaps right now in terms of treatments and understanding is hormone imbalances. So hormones will be available by the end of this year. We're still slated to make it available to a select number of clinicians in November and do a full-scale launch in December as well.

So it's really a technology platform that you can upload your test results into. It'll scan it, and then it'll do the analysis and provide you all the answers. And not only will it tell you what the pattern is, but it also explain why, right?

And so it becomes a really significant learning tool for practitioners to become a hormone expert by the end of it, and it does this in seconds. Now, the other beauty of it is then the second hard step after you understand the dysfunction is to understand what to do about it. So what do I take?

I could tell you with a great deal of certainty in working with lots of hormone docs in the space now, is that there aren't any products that services the needs properly. So for example, you might find this pattern dysfunction of estrogen dominance and you might want to use DIM at a certain level, but you also want to support phase II detox.

So you might need a broccoli extract or sulforaphane or whatever it may be. What practitioners now need to do is then they have to find a product that has DIM at the right level and then the right vitamin at the right level,

and then sulforaphane at the right level and all of these different ingredients. So they're piecemealing together six, seven different products that the individual has to take because they're interested in one or two ingredients in each of those products.

The other problem is those products also come with ingredients that they probably don't need for that pattern, which can actually interfere with the progress of that pattern. Right? And so we saw that as a big problem as well because the whole "What do you do about it?" becomes complicated.

So then what we did is we went through all the patterns that we've discerned, and there are just under 300 pattern dysfunctions that you can find in men and women, about 222 in women and around 50 or so in men of hormone pattern dysfunctions that you can find.

And we've basically gone through all those pathologies and looked at what kind of products you would need in order to intervene in those specific patterns. So we've also created products at the right clinical doses with the right ingredients, and nothing you don't need that can be utilized to intervene in those patterns.

So not only do you have the interpretation and analytical guide that tells you exactly what's going on, connects all the dots for you, explains the dysfunction, then you also have the tool that's immediately accessible to utilize to improve that patient's outcome.

So we're starting that in November, December-

Michael Roesslein:

So just making a little-

Kiran Krishnan:

... as we scale.

Michael Roesslein:

... small project, no big deal.

Kiran Krishnan:

Yeah. Just a tiny 400,000-plus lines of code and rewriting a whole algorithm and solving a bunch of other problems, it's-

Michael Roesslein:

With a very pointy-

Kiran Krishnan:

... it's been quite the task.

Michael Roesslein:

... I'm sure you didn't write 400 lines of code, I'm guessing.

Kiran Krishnan:

I don't know how-

Michael Roesslein:

So-

Kiran Krishnan:

... to write a single line of code, no.

Michael Roesslein:

Yeah.

Kiran Krishnan:

We've got people who are really, really good at that that we've been awesome to work with. So, it's been awesome.

Michael Roesslein:

Is there any website or any place where people can get on a list or do anything at this point? Does that exist yet or is that coming soon?

Kiran Krishnan:

The website is coming soon, but they can actually, if they reach out to me through social media, like Instagram for example, my handle is kiranbiome, K-I-R-A-N-B-I-O-M-E, just shoot me a message that you want to be kept up to date on it, whether you're a practitioner or a patient.

Then we are forming a list-

Michael Roesslein:

Okay.

Kiran Krishnan:

... and we are keeping people up to date, and then the moment it's available, we're making it accessible to practitioners. There's no cost to use the technology. If you already have Dutch tests for example, you can upload it and see what the results are and compare it to, for example, with how you had analyzed the results previously, so there could be some fun learning tools right off the bat for you.

Michael Roesslein:

All right, well we'll put a link to that right below the video here. So we'll put a link to your Instagram message. And then the other one that I just-

Kiran Krishnan:

Yeah.

Michael Roesslein:

... heard about [inaudible], I don't even know how to talk about it.

Kiran Krishnan:

The other one is super interesting and it goes right in my original wheelhouse around the world of the microbiome. So one of the things we started doing when I was at Microbiome Labs is looking at all the other biomes in the body.

We were heavily focused on the gut microbiome, which is a predominant area of influence, but then as it turns out, the biomes in all other parts of the body also have very significant influence on how your body responds to the world around you and your outcomes, and most importantly, your resilience, right? Again, that becomes my constant goal.

So, the second company is called "SIV," SIV Care. This is a company that I'm supporting in many different ways. The founder is somebody named Isabelle, but she started working with me early on and I'm here supporting her and helping with the science and the development and so on.

The idea here is around looking at skin as the important organ that it is, and understanding that the microbiome on the skin dictates the function of the skin, and that's becoming more and more clear through research that's coming out is that the skin has very specific functionality.

One of its first functionalities is that it's a barrier, right, and it's a very important barrier because it's a two-way barrier. It's a barrier to things entering in as well as a barrier to things going out. One of the predominant things that leaves the skin in unhealthy ways is water and hydration.

So that your skin and the level of ceramides and the health of the skin cells and oxidative levels and the types of microbes, all of that determines how well your skin maintains moisture and holds on to water, and that is a very critical component of the overall health of your skin, the functionality of your melanocytes, your keratinocytes, all of these different types of skin cells inside and how the immune system in your skin functions as well.

Just think about that. Water is such a basic fundamental thing. We all understand that intuitively because what happens if we go a couple of days without drinking water, we will die. We can go 30 days almost without eating food, but if we go two or three days without drinking water, we will die.

And we know in searching in the universe for other life and all that, what's the first thing they look for is water. If water exists, then there's a chance that life exists. So that's the same thing that happens in the skin. The skin is a very important container for water, and in order for the barrier to function properly, you need to hold onto water.

Evaporation is constantly occurring, but we have features in the skin to try to hold onto that moisture as much as possible. A lot of those features are dictated by the types of microbes that are on the skin.

Also, the skin acting as a barrier to prevent things like toxins, pathogens, and all from entering in is also determined by what the microbiome on the skin looks like. So two revelations in science that has really driven the motivation for this new entity, the revelations are one that the vast majority of skin disorders are driven in part at least by dysbiosis on the skin.

So atopic dermatitis, eczema, acne, psoriasis, even aging of the skin, wrinkling, thinning of the skin, dehydration, all of these features have a microbiome characteristic to it, meaning there's a fingerprint of what an atopic dermatitis skin microbiome looks like.

There is a fingerprint of what an acne skin looks like. There's a microbial fingerprint of what a psoriasis skin looks like. So we know that dysbiosis on the skin is a driver of conditions. Right? So that's revelation number one.

Revelation number two comes from this large scale study that was kicked off in 1958, so it's been going on for more than 60 years now. This is called the Baltimore Longitudinal Study on Aging. What they did different than no other aging study did is they decided, "We're going to follow individuals throughout their process of aging."

Normally what aging studies do is they compare aged individuals versus young individuals to try to discern differences in tissue and mitochondria and all that stuff, but that doesn't really tell the whole story. What they

want to understand is what the aging process looks like, what starts to dismantle in what order and sequence, what are the drivers based on looking at these individual's diets and lifestyles and surroundings and all of that stuff. They want to understand all that.

And the best way to do that is to do a longitudinal study where you follow individuals from when they are 30, 35, 40, all the way until they become 80, 90 and beyond. So this study has revealed something very, very interesting, and what they revealed was that one of the best predictors of longevity and risk for chronic disease and death is how your skin looks, the weathering and the aging on your skin. That was mind-boggling.

Now, and it's not for the reason you think most people will automatically go, "Well, okay, that makes sense because if you're unhealthy on the inside, then your skin will reflect that on the outside." So the reflection on the outside is just saying that you're unhealthy on the inside. And so yes, it correlates with disease, death, and so on. But that's not-

Michael Roesslein:

This is why we have age-

Kiran Krishnan:

... actually what happens.

Michael Roesslein:

... spots. Right? Before-

Kiran Krishnan:

Exactly.

Michael Roesslein:

... we went on air you told me this, and that was my immediate response was, "Of course your skin looks like this if you're unhealthy because you're unhealthy on the inside." But he's going to correct-

Kiran Krishnan:

Yeah.

Michael Roesslein:

... that viewpoint, but.

Kiran Krishnan:

Totally. And then that's what I thought at first too before really digging into the study outcomes, right? What they're actually showing is that's not the actual case. What they're showing is that the aging on the skin actually occurs before the disease conditions on the inside.

And in fact it's the age skin and the loss of barrier function and other functionalities of the skin, thereby causing something, what I refer to as leaky skin. And I've heard a few people use that term as well.

That leakiness in the skin is actually the driver of chronic low grade inflammation that's happening in the body that leads to unrelated conditions or seemingly unrelated conditions like diabetes and heart disease and Parkinson's and Alzheimer's, and other neurodegenerative conditions.

So dysfunction on your skin is actually an independent risk factor driving your risk for Parkinson's disease and heart disease and diabetes. Right? It's mind-boggling when you think about it, because it's so counterintuitive.

But that's absolutely true. When you start to go back and go, "Ah, okay, the skin is one of the largest organs in the body, it does have very specific function in terms of its barrier, its barrier functionality.

It has a very specific microbiome," so no different than the lining of the gut becoming leaky, becoming dysfunctional, losing its functionality because of dysbiosis, the skin does that as well. And if the skin is dismantled, it creates risk.

So we started developing this technology to be able to rebalance the microbiome on the skin just like you would try to rebalance the microbiome in the gut. And our goal is to create a number of personal care products, things that people would normally use on a regular basis, right?

Moisturizer, cleanser, toner, serums, things like that. But all of them that will have an underlying function of balancing the biome on the skin and regenerating the barrier function of the skin, so essentially targeting leaky skin.

And you continue through your normal routine of cleaning your skin, moisturizing, toning in it, and all that. But all of those will have an underlying function of fixing the barrier, fixing the microbiome of the skin.

So this company is called SIV, S-I-V. It started off as Skin IV, but that wasn't available from a number of URL issues and all that. So it evolved to SIV, S-I-V, and the website is called sivcare.com.

The website right now is kind of the crude initial version. It's all getting kind of rebranded and retooled and all that. And the full on commercial product will be available from November onwards as well.

And we're starting with the biome balancing serum, which is a couple of drops that you would put on your face or anywhere on your body and just rub it in once a day. That will start to shift your skin microbiome, and that's just, you can use that on top of any other skincare product and regimen that you have.

But then the next iterations will be things that will drive repair of the barrier in addition to supporting the biome. So it'll be like a moisturizer, for example, with specific barrier repair component to it, and then of course a biome-balancing component to it as well.

So lots of exciting stuff coming out on that. We've got a three to 400 patient real-world evidence trial going on. We already have a bunch of data on the microbiome side of it. So super exciting, and again, it services my need because if your skin is stable, your microbiome on your skin is stable, your barrier function of your skin is stable, it provides a significant amount of resilience.

Because you're much more resilient to the world around you, to UV radiation, to being exposed to toxins, to not taking care of your skin for a few days, to what you eat. We all know what we eat has a direct impact on our skin. For those that have acne. You know if you eat dairy and certain things, all of a sudden you break out in lesions.

Those with eczema and all that, that there's certain foods that will trigger all of that response. All of those things will become much more resilient, and the barrier function of your skin will become much more resilient if we can repair the microbiome and the barrier.

So that's another business that services that need.

Michael Roesslein:

Okay. That is a lot. And you're, quote, "in retirement phase" right now.

Kiran Krishnan:

This is retirement-

Michael Roesslein:

So-

Kiran Krishnan:

... yes.

Michael Roesslein:

Yeah, yeah. The last couple of times we've recorded, he's been at home, which I commented on because Kiran's always everywhere. So okay, I have questions, I have things we can talk about. I will have you come back in the fall to talk about each of these things at more depth when they're ready.

We'll put the links that exist now and the information that exists now down below, and we'll update it when possible so people that see this in the future can check it out. Both of these sound really cool.

Now, before we go, the last thing is to ask you to share a few tips with the audience that can either be based on your work with the gut microbiome, the skin microbiome, for practitioners who are looking to interpret lab tests, for anything that you've been involved in.

We're trying to give the audience just a few takeaways that are practical for them to do like starting tomorrow-

Kiran Krishnan:

Yeah-

Michael Roesslein:

... so they can pick up the needle.

Kiran Krishnan:

... yeah. So again, going back to the idea of resilience. So my wish for people is that they're resilient and they can be healthy with making even 20% bad decisions. So the most fundamental thing to think about when you're trying to build resilience in your body is about diversification of your gut microbiome, and reducing diversification of your skin microbiome.

Right? So if you think of those two barriers. One is a barrier on the outside, the other one's a barrier on the inside, but the inside barrier is actually a component of the outside barrier because for something to be truly inside your body, it still has to go through the gut microbiome, right? So if you shore up those two barriers, that will provide you a significant amount of resilience. So how do you do that in the most practical sense?

The first one is about diversification of the gut microbiome. The easiest way to do that are a few things that you could start incorporating. Number one is diversifying your diet, right? That's really, really important. You need to have a diversity in the types of foods you eat on a regular basis.

If you just take an account of what you're eating, let's say in a given week, you'll see that you probably eat no more than around 15 to 20 different types of foods. If you count vegetables, fruits, nuts, all of those things, most people are in that 15 to 20.

People who are really making an effort, could be close to 30. But nonetheless, compared to how we evolve, we're significantly less. So there are studies that show that our ancestors ate upwards of 600 different types of foods. So just know that one big goal is to increase the diversity of your diet.

An easy way to do that that I always recommend to people is look at ethnic grocery stores in your region. So Asian markets, Middle Eastern markets and so on. Pop in there once a week, pick up a root, a tuber, a fruit, a

vegetable, a meat, something that you don't find in your regular grocery store, and just add it to one or two meals throughout that week, right?

You don't have to make a whole meal out of it, just add it in. For example, if you're having a salad, grab a version of lettuce or bok choy or something like that from the Asian market, add it into that. Or if you're having a stir fry or some sort that you're making, or pot roast or whatever you may be making at home, take some vegetables that you find at the Middle Eastern market or the Asian market, add it into it.

So that can just add diversity to your diet, and then try to keep those new foods that you've added in when you go and add in new things. So by the end of the year, you would've probably added in almost 30 new foods into your diet. And these can be fruits, vegetables, meats, whatever category of foods you want to add. So that's one thing. Diversify your diet.

Intermittent fasting is probably one of the most easy and effective things you can do to build resilience. I've been intermittent fasting for seven years now, I think, and it's one of my non-negotiables. Even when I'm traveling and I'm on vacation and all that, I still get in at least 13 to 14 hours, 90% of the time I'm shooting for 16.

And it's one of those very important things to me that has kept me relatively healthy through my years and years of hundreds of thousands of miles, if not millions of miles of traveling.

So intermittent fasting-

Michael Roesslein:

I'm sure you've hit a million.

Kiran Krishnan:

... 16, eight. Say that again?

Michael Roesslein:

I'm sure you've hit a million.

Kiran Krishnan:

Oh my God, yeah. My lifetime miles is, on American, is almost 3 million miles, and on United-

Michael Roesslein:

Wow.

Kiran Krishnan:

... it's getting to a million. So I've sat on a plane for almost 4 million miles. Just to put that in perspective for people, right, the moon is about 200,000 miles away-

Michael Roesslein:

Wow.

Kiran Krishnan:

So I've been able to-

Michael Roesslein:

You've gone back and forth a dozen times.

Kiran Krishnan:

Yeah, a couple dozen times. Yeah, 20-plus times to the moon sitting in a plane.

Michael Roesslein:

Do you own part of American Airlines now?

Kiran Krishnan:

I do have that, if anyone ever saw that movie Up In the Air with that George Clooney movie, and it is a guy who travels a lot for business and all that, there's this kind of special unspoken status that he achieves at the end of that movie. And there is a status called "Concierge Key" in American Airlines that they don't tell you what you have to do to achieve it. They don't have any parameters. You don't actually know what all you get for it once you do achieve it, but I've had it for five years now.

So "I've got the George Clooney status," I like to say-

Michael Roesslein:

I'll have to ask you-

Kiran Krishnan:

... on American.

Michael Roesslein:

... about [inaudible].

Kiran Krishnan:

Oh, it's really cool. There's some really cool stuff that you get to do, but again, you have to live on a plane, which is the offside-

Michael Roesslein:

[inaudible].

Kiran Krishnan:

... of it.

Michael Roesslein:

Okay.

Kiran Krishnan:

So intermittent fasting, improving the diversity of your diet, and then taking a good probiotic. Right? So like the MegaSpore, which protects against leaky gut, which modulates immune response in the mucosa, which then

changes immune response throughout the body, increases short chain fatty acids, which are critical in most people.

That is a really important thing because we are supposed to be doing that by engaging with nature and getting these organisms into our system naturally, but we don't, right? So we need to put that in. It becomes a foundational aspect of how we function on a daily basis.

And then I would say the last thing, I'll just combine these two things together, so I'll give you four. The last thing is really stress management, and there's a variety of things you can do to that.

I think most people can Google and find lots of things between apps and mindfulness work and exercise and all of that. And I would add exercise into the stress management side of it. That's a really powerful way of mitigating stress is by working out and especially lifting.

And then the other part is making sleep really a skill and a habit, like Molly Eastman would say, "Making sleep a skill." So sleep and stress management, taking the right probiotic that works on the barrier function of your gut, diversifying your diet, and then intermittent fasting.

We do those four things. Those are four very basic things that will build so much resilience, and it negates having to do a 55 other things if you get those four things down pat.

Michael Roesslein:

Perfect. Thank you. And I remember the first time I heard you talk about the number of foods that Americans eat versus the number of foods that you'll find in the diet of certain cultures, and it was years and years and years ago, and I almost got offended.

I was like, "No, man, I eat really well. I eat all kinds of different foods. I go to the farmer's market, I go to the organic grocer. We grow a couple things." And so you said on the webinar, it was almost 10 years ago, it was one of the first ones you said, "Count the number of foods you eat in a week."

And you gave a number of examples, like 10, 20 is normal, and then 80 is great, or whatever. And I'm like, "I bet I get at least 50." And I had like 19-

Kiran Krishnan:

Yeah.

Michael Roesslein:

... and I was like-

Kiran Krishnan:

Yeah.

Michael Roesslein:

... "Damnit." So we did. We started buying weird stuff and eating weird stuff, and now we still eat some of the weird stuff. Now we moved to a new country with all kinds of different stuff.

Kiran Krishnan:

Yeah? That's awesome.

Michael Roesslein:

And then right down the street from us, there's a Sri Lankan grocer that carries all the strange things that Italians don't eat, so it's good. And the farmer's markets here are completely seasonal, so I can't even get certain things certain times a year, and then it all changes.

So it makes a decision for you to diversify your diet because the food that you can purchase changes. And so I'm not getting oranges in July, it's impossible. So it's-

Kiran Krishnan:

Exactly.

Michael Roesslein:

... [inaudible] juice.

Kiran Krishnan:

Yeah.

Michael Roesslein:

Amazing. Thank you for this. Congrats on everything that has transpired in this last year and for building such an incredible company that changed the game when it came to research-backed health supplements, and I'm excited to see both of these things come to fruition. We'll have you back on to answer some questions and announce the launches and do details. We'll put the links down below.

I'm always excited to see what you're up to, and I know that you don't half-ass anything. So all of these things are going to be really, really well done and really thorough, and have science behind them, and back up what you're claiming and what you're talking about, and provide new solutions to problems that didn't have them.

So, thanks a lot. I'm grateful that-

Kiran Krishnan:

My pleasure.

Michael Roesslein:

... your parents have instilled in you this obsession with solving problems because I'm excited to see the answers that come. So thanks a lot, Kiran, and we'll talk-

Kiran Krishnan:

My pleasure.

Michael Roesslein:

... to you soon.

Kiran Krishnan:

Thank you guys.

Michael Roesslein:

Okay.