How Dr. Jennifer Stagg found functional medicine.)

How many of us get How many of us get nervous before a big presentation? Do we feel our? Do we feel our stomach clench under stress or lose our stomach clench under stress or lose our appetite when we get anxious?

appetite when we get anxious? Most people attribute it to Most people attribute it to nerves, but the real story is much nerves, but the real story is much more interesting. Your gut isn't just more interesting. Your gut isn't just responding to responding to your brain's mood. Your your brain's mood. Your gut bacteria are gut bacteria are actively shaping what you think and feel.

actively shaping what you think and feel. We constantly talk about the We constantly talk about the gut-brain axis in gut-brain axis in functional medicine, but what does it functional medicine, but what does it really mean? And more importantly, really mean? And more importantly, how do we restore balance how do we restore balance when it is broken? Today I'm speaking with Dr.

when it is broken? Today I'm speaking with Dr. Jennifer Stagg, a national authority Jennifer Stagg, a national authority on precision lifestyle medicine on precision lifestyle medicine and founder of the Whole Health and founder of the Whole Health Wellness Center in Connecticut. Dr.

Wellness Center in Connecticut. Dr. Stagg holds degrees in biochemistry and Stagg holds degrees in biochemistry and nutrition from Memorial University of nutrition from Memorial University of Newfoundland and her degree in Newfoundland and her degree in naturopathic medicine from Bastyr University. She naturopathic medicine from Bastyr University. She is an author, educator, and is an author, educator, and clinical researcher who has spent years clinical researcher who has spent years deciphering how the microbiota, deciphering how the microbiota, metabolite production, and metabolite production, and vagal signaling create a vagal signaling create a two-way highway between the two-way highway between the gut and the brain—and more gut and the brain—and more importantly, how to repair that highway importantly, how to repair that highway when dysbiosis, inflammation, or when dysbiosis, inflammation, or chronic stress have damaged it.

chronic stress have damaged it. This is the deep dive into This is the deep dive into gut-brain axis restoration gut-brain axis restoration that our audience has been that our audience has been asking for. So, Dr. Stagg, asking for. So, Dr. Stagg, welcome to the podcast.

Jen, welcome to the show. Jen, welcome to the show. Thank you for inviting me. I'm so Thank you for inviting me. I'm so excited to do this. No, excited to do this. No, thank you. And we were talking earlier about how thank you. And we were talking earlier about how for the people who are going to see this, it's for the people who are going to see this, it's 8 o'clock on the East Coast. I 8 o'clock on the East Coast. I 'm there around five in the afternoon. I 'm there around five in the afternoon. I come in here like, "Hey, let's do the come in here like, "Hey, let's do the podcast." And you're like, "Dude, it podcast." And you're like, "Dude, it 's 8 o'clock." "We have to 's 8 o'clock." "We have to start." "It's, it's late." "At least it's start." "It's, it's late." "At least it's the time of year when there's still the time of year when there's still daylight here." daylight here." It's true. It's true. And it's always an It's true. It's true. And it's always an honor to have a fellow honor to have a fellow naturopathic doctor on the show, because it touches my naturopathic doctor on the show, because it touches my heart to see you, as you are heart to see you, as you are an inspiration to doctors like me an inspiration to doctors like me who are trying to learn and make their way who are trying to learn and make their way in health and medicine, trying to in health and medicine, trying to show that we can be successful and show that we can be successful and really make an impact. So I really make an impact. So I want to say that I'm extremely want to say that I'm extremely honored to have you here on the show. Well, I'm very excited to be. Well, I'm very excited to be here and to actually be on a here and to actually be on a show where the host show where the host is also a naturopathic doctor, something that's not very common is also a

naturopathic doctor, something that's not very common. So,. So, not really. Not really. No, we need to not really. Not really. No, we need to improve our level of podcasting improve our level of podcasting as a profession here. So, I hope I can as a profession here. So, I hope I can be a motivation for some be a motivation for some people out there. So, people out there. So, speaking of naturopathic medicine, speaking of naturopathic medicine, again, I always tell people again, I always tell people that I had no idea I would that I had no idea I would end up doing this in my life. It end up doing this in my life. It was never something like, "What do you want to be when you was never something like, "What do you want to be when you grow up?" I never thought about it.

grow up?" I never thought about it. Yes. So what was your journey like? How did you get here…? How did you get here…? Yes. Exactly the same. I had never Yes. Exactly the same. I had never heard of this being a profession. I grew up in eastern Canada and, you. I grew up in eastern Canada and, you know, I did my bachelor's degree in know, I did my bachelor's degree in biochemistry; Then I moved to the biochemistry; Then I moved to the United States and entered a United States and entered a PhD program in biochemistry, thinking I would PhD program in biochemistry, thinking I would just be a scientist. And when just be a scientist. And when I entered the program, I said to myself, "Hmm, I I entered the program, I said to myself, "Hmm, I really don't want to be in the really don't want to be in the lab until 1:00 in the morning lab until 1:00 in the morning checking my checking my chromatography columns." So I started chromatography columns." So I started thinking, "Oh, maybe I want to work thinking, "Oh, maybe I want to work with people." I think I'm more of a with people." I think I'm more of a sociable person. So, I took sociable person. So, I took the MCAT and started telling myself, " the MCAT and started telling myself, " Okay, I'll do the medical doctorate." Okay, I'll do the medical doctorate." Because I saw people in our Because I saw people in our labs doing that. I labs doing that. I was literally starting down that path, was literally starting down that path, I took the MCAT and then went to the I took the MCAT and then went to the career planning center at the career planning center at the University of Iowa, and in this little University of Iowa, and in this little folder, you know, that's how folder, you know, that's how life happens. There was a pamphlet on life happens. There was a pamphlet on naturopathic medicine from naturopathic medicine from Bastyr University and I said, what is Bastyr University and I said, what is this? And here I am, a doctor of this? And here I am, a doctor of naturopathy. It's naturopathy. It's really great. And yes, I ended up really great. And yes, I ended up doing this by accident, I stumbled upon doing this by accident, I stumbled upon it. I went to the graduation of the it. I went to the graduation of the sister of a good friend from sister of a good friend from college. And I thought it was a college. And I thought it was a regular allopathic medical school.

regular allopathic medical school. And I said, "Okay, I'll sit down and And I said, "Okay, I'll sit down and watch this." And I asked myself, "What is watch this." And I asked myself, "What is this?" It was like that moment when this?" It was like that moment when the sky opens up and the sun comes out and the sky opens up and the sun comes out and you think, "Okay, this is it." And like you think, "Okay, this is it." And like you, I never looked back. I you, I never looked back. I never looked back and here we are. And never looked back and here we are. And now I can't see myself doing anything else, maybe in the future, but for now,, maybe in the future, but for now, it's what I love to do. Yes, but it's what I love to do. Yes, but in this field, without a doubt, understanding the in this field, without a doubt, understanding the root cause and the whole journey we root cause and the whole journey we 're on is super cool. And 're on is super cool. And I find it really fascinating because I I find it really fascinating because I probably graduated a long time ago probably graduated a long time ago than you did, in 2003.

Why so many health problems start in the gut.)

And back then than you did, in 2003. And back then, you know, I know we'll be, you know, I know we'll be talking about gut health, but talking about gut health, but some of the things we some of the things we talked about, like talked about, like leaky gut, were considered leaky gut, were considered quackery. That had no quackery. That had no scientific basis. You know, it was scientific basis. You know, it was apparently nonsense. And here apparently nonsense. And here we are more than 20 years later, and you we are more than 20 years later, and you know, you can look in any know, you can look in any prestigious medical journal and read prestigious medical journal and read how intestinal permeability and how intestinal permeability and leaky gut are the cause of leaky gut are the cause of almost all chronic diseases, almost all chronic diseases, right?

right? right? Oh, exactly. Exactly. And that's Oh, exactly. Exactly. And that's all. From time to time I get a little all. From time to time I get a little rejection like, "Oh, that's not rejection like, "Oh, that's not real." And I say, "Okay,

perfect. And intestinal permeability. If. And intestinal permeability. If you want to be technical, it's the same thing. It's the you want to be technical, it's the same thing. It's the same thing, right? And heaven forbid you same thing, right? And heaven forbid you say leaky brain. Oh say leaky brain. Oh my God, if you say that, you better be prepared my God, if you say that, you better be prepared to to to pull out PubMed on your phone and say, pull out PubMed on your phone and say, no, look, here's the no, look, here's the blood-brain barrier, zunulin, LPS, blood-brain barrier, zunulin, LPS, and all of that. So, it's and all of that. So, it's fascinating how things have changed fascinating how things have changed. And that's a good transition. And that's a good transition because when I think about because when I think about naturopathic medicine, I also think that there naturopathic medicine, I also think that there are so many branches of that tree are so many branches of that tree that you can grab onto, build your that you can grab onto, build your tree house on, grow your practice on, and tree house on, grow your practice on, and help patients on, because it's so diverse. How did, because it's so diverse. How did you arrive at the gut-brain axis and you arrive at the gut-brain axis and gut health as the focus of your gut health as the focus of your practice? Yeah, I mean, the practice? Yeah, I mean, the nature, as you know, of being in nature, as you know, of being in naturopathic medicine is that naturopathic medicine is that we're always looking for the root cause, right? And we're always looking for the root cause, right? And we ask people about their we ask people about their gut health and gut health and digestive function, and it all comes back to those digestive function, and it all comes back to those fundamental principles that many fundamental principles that many Diseases often begin in the gut, which is Diseases often begin in the gut, which is exactly what we were discussing regarding exactly what we were discussing regarding intestinal permeability. So, intestinal permeability. So, as a naturopath, I take a step back as a naturopath, I take a step back when someone sits across from me when someone sits across from me describing their symptoms, and I think, describing their symptoms, and I think, mechanically, how far back does mechanically, how far back does this go? A lot of times, it ends up in this go? A lot of times, it ends up in the gut, right? And then, you the gut, right? And then, you know, certainly with my background know, certainly with my background and always being so interested in the science and always being so interested in the science and the whys, the whys, the whys, it always came back to the gut.

, it always came back to the gut. Well, I certainly encountered Well, I certainly encountered patients complaining of patients complaining of intestinal symptoms; of course, okay, intestinal symptoms; of course, okay, now let's see what's going on now let's see what's going on with their gut health and function.

with their gut health and function. But then other patients, even But then other patients, even now, come in and have now, come in and have cardiovascular disease, right? And we're cardiovascular disease, right? And we're examining their gut thinking, " What's going on in there?" "Could What's going on in there?" "Could this be affecting the plaque in his this be affecting the plaque in his heart?" Exactly, uh, so it heart?" Exactly, uh, so it really is, I think, the nature of really is, I think, the nature of trying to understand the trying to understand the fundamental causes that led me to try so much fundamental causes that led me to try so much and look at those and look at those basic foundations, but you know, certainly basic foundations, but you know, certainly other advanced things have come up as well other advanced things have come up as well.

. Oh, absolutely. And we're going to Oh, absolutely.

What is the gut-brain axis?.)

And we're going to delve much deeper into that here. And delve much deeper into that here. And so, I really want to get into the so, I really want to get into the gut-brain axis because I think it gut-brain axis because I think it 's fascinating. And, you know, a kind 's fascinating. And, you know, a kind of blatant advertisement here. We will both be of blatant advertisement here. We will both be speaking at the Epicotics Epic Conference speaking at the Epicotics Epic Conference this November in Houston, this November in Houston, Texas. The link will be in the Texas. The link will be in the program notes for those of you program notes for those of you who want to purchase your tickets. So who want to purchase your tickets. So, that's my only cheeky ad. I feel terrible and there will be another announcement. I feel terrible and there will be another announcement at some point, but they won't have to at some point, but they won't have to be subject to that. It will be like a be subject to that. It will be like a commercial in the middle of the episode.

commercial in the middle of the episode. So, when we talk about the So, when we talk about the gut-brain axis and

that communication, gut-brain axis and that communication, it's such a fascinating concept, is n't it? Because everyone knows their n't it? Because everyone knows their instincts and it's a form of communication. And by the way instincts and it's a form of communication. And by the way, before I learned about it,, before I learned about it, I felt like I had a I felt like I had a gut-brain axis. It went something like this. My gut-brain axis. It went something like this. My gut would say, "Don't eat that." "My gut would say, "Don't eat that." "My brain would say, 'Shut up.'" "You don't know what you brain would say, 'Shut up.'" "You don't know what you 're talking about." " 're talking about." " We need to eat that." My gut would We need to eat that." My gut would later say that night, "I told you later say that night, "I told you not to eat this." "TRUE?" And not to eat this." "TRUE?" And so, we know they talk, right?

so, we know they talk, right? But for patients, what's it like But for patients, what's it like when you're sitting across from that when you're sitting across from that patient and they say, "Hey, I have these patient and they say, "Hey, I have these mood problems, these mood problems, these stress problems." "I'm a little foggy-headed stress problems." "I'm a little foggy-headed here." And when you start to delve deeper here." And when you start to delve deeper into questions about the gut, how do you make the connection? Because how do you make the connection? Because most people might look at you like, most people might look at you like, "Hey, I told you why I "Hey, I told you why I was here." "Why are you asking me was here." "Why are you asking me about my gut?" about my gut?" Yes. Well, I think a big part, I would say Yes. Well, I think a big part, I would say, of the way it's commonly, of the way it's commonly started is because I also work started is because I also work with a lot of women on with a lot of women on weight loss, right? Or that they want to lose weight loss, right? Or that they want to lose weight. Or we're working on weight. Or we're working on weight control, and you know what? They have weight control, and you know what? They have problems with cravings, appetite, and problems with cravings, appetite, and all that. And, obviously yes, there are now all that. And, obviously yes, there are now many more tools, uh, to many more tools, uh, to overcome that. But let's go back a few overcome that. But let's go back a few years, and this was a big part of the years, and this was a big part of the conversation: well, where do conversation: well, where do these cravings come from? Is there some these cravings come from? Is there some dysbiosis, some imbalance in the dysbiosis, some imbalance in the gut bacteria? And teach them gut bacteria? And teach them how those organisms secrete how those organisms secrete tiny chemical messages that tiny chemical messages that actually go to your brain and control actually go to your brain and control what food you might start looking for, what food you might start looking for, right? And that's part of, you right? And that's part of, you know, the survival of that bacterium, right? It's about getting us, you, right? It's about getting us, you know, to have this relationship, an know, to have this relationship, an intimate relationship of, well, get intimate relationship of, well, get some sugar because that will help me some sugar because that will help me grow, like yeast and grow, like yeast and bacteria. And then, people bacteria. And then, people really, I think, uh, that part is really, I think, uh, that part is pretty easy to understand when they pretty easy to understand when they think, well, I'm craving think, well, I'm craving sugar and there might be an sugar and there might be an imbalance in my gut, and they imbalance in my gut, and they might also be having might also be having symptoms, right? They might symptoms, right? They might be bloated or have, you know, be bloated or have, you know, gas or digestive problems. So that's gas or digestive problems. So that's a pretty a pretty straightforward conversation. I think, you know, we still straightforward conversation. I think, you know, we still have these conversations, but I think it have these conversations, but I think it gets a little more complicated gets a little more complicated when you say, well, you have a patient when you say, well, you have a patient and they tell you, "I'm anxious or I'm and they tell you, "I'm anxious or I'm depressed." Okay, so what does this have to do depressed." Okay, so what does this have to do with the gut? And a good with the gut? And a good way to explain this is to start way to explain this is to start talking about neurotransmitters. TRUE?

talking about neurotransmitters. TRUE? People are often educated People are often educated when dealing with depression, when dealing with depression, anxiety, or mood imbalances, who anxiety, or mood imbalances, who may already be under some kind of may already be under some kind of medication, potentially, right? They're medication, potentially, right? They're taking an SSRI and they understand, taking an SSRI and they understand, well, serotonin, but they may well, serotonin, but they may never have known that it's never have known that it's produced in the gut, right?

produced in the gut, right? So, that's an So, that's an easy conversation to start having with people. easy conversation to start having with people. Definitely. Definitely. And that's Definitely. Definitely. And that's good too because I think once good too because I think once people understand and you start to break down people understand and you start to break down these are the things these are the things the gut is responsible for,

everything opens up, the gut is responsible for, everything opens up, especially when you start to generate especially when you start to generate that impact and then it's like, "wait that impact and then it's like, "wait a minute, you're right," and now it's about a minute, you're right," and now it's about sustaining it.

sustaining it. Yes. Yes. Yes. But the gut is a challenge, and But the gut is a challenge, and we'll get into that too, because we'll get into that too, because I feel like my gut always plays tricks on me I feel like my gut always plays tricks on me a little. It's like, oh, you've got it a little. It's like, oh, you've got it, let's do this, and then you say, oh, that didn't work. I really thought that would, that didn't work. I really thought that would help. But then it's just a help. But then it's just a matter of getting the matter of getting the information. So I want to information. So I want to delve into that a little more delve into that a little more later. But to begin with, uh, when later.

How the vagus nerve connects your gut and brain.)

But to begin with, uh, when we think about the gut-brain axis, we think about the gut-brain axis, I want to make sure people are I want to make sure people are clear on this because, you know, if you went clear on this because, you know, if you went to medical or nursing school, most people with, most people with medical training or who understand medical training or who understand biohacking know that there is the biohacking know that there is the vagus nerve, and this nerve is like the vagus nerve, and this nerve is like the main communication system. But is main communication system. But is that that that a one-way system, or are there other a one-way system, or are there other types of networks or paths that lead types of networks or paths that lead there? Because obviously the vagus nerve, I'm thinking of this giant nerve that, I'm thinking of this giant nerve that connects both of them.

connects both of them. Yes. Yes. Yes. But I know it might seem like a But I know it might seem like a simple question, but again, is there anything simple question, but again, is there anything else to know besides that?

else to know besides that? Yes. That is, the understanding is Yes. That is, the understanding is interesting because interesting because experiments have been done on this in mice experiments have been done on this in mice where they basically vagotomy them.

where they basically vagotomy them. So, they kind of cut off that So, they kind of cut off that vagus nerve and the probiotics. So there are vagus nerve and the probiotics. So there are probiotics in mice that have been probiotics in mice that have been shown to help affect their shown to help affect their mood. So, they make these mood. So, they make these mice anxious. They give them mice anxious. They give them probiotics, it works, and then you cut probiotics, it works, and then you cut that vagus nerve, and the probiotic no longer that vagus nerve, and the probiotic no longer works. So it's like, okay, this works. So it's like, okay, this probiotic is communicating probiotic is communicating through that vagus nerve. It's quite through that vagus nerve. It's quite straightforward in that regard. Uh, so that's straightforward in that regard. Uh, so that's, you know, the kind of, you know, the kind of thought model, but I think there are a thought model, but I think there are a lot more complexities to it as well. And lot more complexities to it as well. And certainly, you know, there are many other certainly, you know, there are many other signals and peptides and things in the signals and peptides and things in the gut, but I would definitely say that the gut, but I would definitely say that the main communication highway is main communication highway is that vagus nerve.

that vagus nerve. OK. And I mention that because there's a OK. And I mention that because there's a lot of information out there about the lot of information out there about the vagus nerve, and we see vagus nerve, and we see vagus nerve stimulators and types of vagus nerve stimulators and types of vagus nerve breathing exercises you can do, vagus nerve breathing exercises you can do, right? So, when someone has right? So, when someone has that that that gut-brain axis dysfunction, when you see that, is gut-brain axis dysfunction, when you see that, is vagus nerve stimulation or, vagus nerve stimulation or, like, doing a specific treatment like, doing a specific treatment for vagus nerve optimization for vagus nerve optimization something you include in a plan, or do you something you include in a plan, or do you just focus more on the just focus more on the gut and say the vagus nerve gut and say the vagus nerve will follow suit?

will follow suit? Yes. Because it's like yes. I would say that the Yes. Because it's like yes. I would say that the vagus nerve has, let's say, a vagus nerve has, let's say, a dual or even triple function.

dual or even triple function. Correct. So you need to keep Correct. So you need to keep that line of communication open. that line of communication open.

But it is there, and this is where, if it But it is there, and this is where, if it weren't there…if it were damaged in weren't there…if it were damaged in some way, right? And we really can't some way, right? And we really can't assess vagus nerve damage assess vagus nerve damage, right? The way we use, right? The way we use these vagal stimulators, some of these vagal stimulators, some of these different practices and so on, and these different practices and so on, and certainly people can get certainly people can get results with that, whether it's the only thing that results with that, whether it's the only thing that happens or it's an important element.

But what if nothing happens, if we're not But what if nothing happens, if we're not treating the microbiome, for example? So you can have a healthy vagus nerve So you can have a healthy vagus nerve. You can use that. You can use that vagus nerve stimulator as much as you want. It's not going vagus nerve stimulator as much as you want. It's not going to fix the bacteria in your to fix the bacteria in your gut, is it? And then there's the gut, is it? And then there's the third part. So it's like the third part. So it's like the nerve itself, what's happening with nerve itself, what's happening with your gut? And then we have your gut? And then we have feedback because it's a feedback because it's a two-way street. So you have two-way street. So you have someone who is chronically someone who is chronically stressed. They think they are managing stressed. They think they are managing their stress well, but maybe they are not their stress well, but maybe they are not doing a good job or it doing a good job or it is simply not enough and that will maintain is simply not enough and that will maintain that vicious cycle. That's why it's so that vicious cycle. That's why it's so complex, because we are complex, because we are complex creatures.

Absolutely. Absolutely. And I want to Absolutely. Absolutely. And I want to go back to something you mentioned earlier go back to something you mentioned earlier about dysbiosis because it's a about dysbiosis because it's a fascinating topic and how it affects the body.

fascinating topic and how it affects the body. So, essentially, So, essentially, in many ways, people haven't in many ways, people haven't heard of it. It's like you heard of it.

What dysbiosis really means.)

It's like you have, I call them, the have, I call them, the good guys in white hats, the good guys in white hats, the heroes, and you have the villains, the heroes, and you have the villains, the bad bacteria. And, you know, they're bad bacteria. And, you know, they're there. It's just a matter of balance, there. It's just a matter of balance, right? And keep them under control. And right? And keep them under control. And when you have more of these when you have more of these opportunistic bacteria, they tend to wreak havoc, right? But the point is that, right? But the point is that dysbiosis is fascinating because dysbiosis is fascinating because analyzing it is like doing a analyzing it is like doing a stool analysis, which is the most important, stool analysis, which is the most important, but in reality you are only seeing a but in reality you are only seeing a snapshot in time.

snapshot in time. So someone does a So someone does a stool analysis and says, "Hey, it looks like I have a stool analysis and says, "Hey, it looks like I have a dysbiosis gut." How dysbiosis gut." How important should they consider that important should they consider that test, knowing that the microbiome can test, knowing that the microbiome can change from meal to meal, day to day?

Yes. You're right about that, aren't you? So, I'd say you can trust So, I'd say you can trust that test if your lifestyle is that test if your lifestyle is fairly consistent, right? If this fairly consistent, right? If this is preparation, you have a is preparation, you have a consistently high level of stress. You know, consistently high level of stress. You know, maybe you eat well, whatever it is you maybe you eat well, whatever it is you eat, but it's something consistent. Your eat, but it's something consistent. Your exercise is consistent. So it's like exercise is consistent. So it's like a snapshot based on how a snapshot based on how you feel. You're right, because, let's you feel. You're right, because, let's say, I'm usually a very say, I'm usually a very routine-oriented person and the week before the routine-oriented person and the week before the test everything becomes chaotic, you know? As if something you know? As if something incredibly stressful had happened. Suddenly, I incredibly stressful had happened. Suddenly, I no longer eat what I cook at home and no longer eat what I cook at home and I start eating fast food.

So your microbiome could look So your microbiome could look very different even in that short very different even in that short period of time. Or if you take certain period of time. Or if you take certain medications, antibiotics or something like that, that's why there are guidelines on when you, that's why there are guidelines on when you should stop taking them before the should stop taking them before the test. We know you can get a test. We know you can get a microbiome test. It's been done before ; They take a sample, then the person ; They take a sample, then the person takes a transpacific flight, like from takes a transpacific flight, like from Los Angeles to Tokyo, they take another Los Angeles to Tokyo, they take another sample and the microbiome looks different, right? So it, right? So it can definitely change. But what I've seen in can definitely change. But what I've seen in clinical practice is that the clinical practice is that the patterns tend to be consistent when patterns tend to be consistent when we repeat tests and patients make we repeat tests and patients make changes; there are still things to treat. It seems they still have shortcomings seems they still have shortcomings in certain areas, doesn't it? Perhaps their in certain areas, doesn't it? Perhaps their diversity improves a little, but they still diversity improves a little, but they still have yeast overgrowth have yeast overgrowth or are still low in lactobacilli or something like that or are still low in lactobacilli or something like that. You know, some of those. You know, some of those microbiome markers you see there.

microbiome markers you see there. That makes sense. And one of the things I That makes sense. And one of the things I also like to analyze, and also like to analyze, and you're absolutely right, is that you're absolutely right, is that consistency in the face of that consistency in the face of that specific moment. I feel like that specific moment. I feel like that snapshot analogy is great, because let's snapshot analogy is great, because let's say you take a picture of me while I'm say you take a picture of me while I'm running at full speed. It's like, "Wow, running at full speed. It's like, "Wow, look at Greg." "He runs really fast," does n't he? And you take that picture. Like… I did n't he? And you take that picture. Like… I did n't start running that fast on the n't start running that fast on the first day. I had to pick up speed, first day. I had to pick up speed, right? It's not just in the moment, right? It's not just in the moment, but there's a prior accumulation.

but there's a prior accumulation. So you probably won't experience So you probably won't experience severe overgrowth in a single severe overgrowth in a single day. I think you can use it to say day. I think you can use it to say "well, maybe it could be lower "well, maybe it could be lower day by day, but this is high for a day by day, but this is high for a reason and it's probably been like this for a reason and it's probably been like this for a while." while." while." One hundred percent. Looking at some of One hundred percent. Looking at some of these tests, one of the main ones we these tests, one of the main ones we use has a use has a diversity score, like from one to ten. And the diversity score, like from one to ten. And the way I would see it is: "Okay, way I would see it is: "Okay, maybe you could change a point or two maybe you could change a point or two in diversity, but you're not going to go from in diversity, but you're not going to go from a two to a nine." It's not going to change to a two to a nine." It's not going to change to that level.

that level. Sure. Definitely. Let's talk a little Sure. Definitely. Let's talk a little about stress.

How stress changes your gut.)

about stress. Because, I mean, we're in a Because, I mean, we're in a very calm time in the world right now very calm time in the world right now. Nobody is under stress. Nothing. Nobody is under stress. Nothing stressful here.

stressful here. Yes. But how does stress affect the Yes. But how does stress affect the microbiome? Because, again, many microbiome? Because, again, many people think that stress is here, in the brain; You feel tired,, in the brain; You feel tired, fatigued, irritable, but many fatigued, irritable, but many people under stress have people under stress have different symptoms: "I'm stressed and I'm different symptoms: "I'm stressed and I'm not eating." not eating." Either "I'm stressed and can't stop Either "I'm stressed and can't stop eating," or there's diarrhea, constipation; It eating," or there's diarrhea, constipation; It 's so varied that because of that…

What's your opinion on it, What's your opinion on it, really? I say "opinion" perhaps it's really? I say "opinion" perhaps it's a bad way to ask, so, a bad way to ask, so, in the end, where do you see that stress in the end, where do you see that stress affects the gut? Yes, I mean, it's affects the gut? Yes, I mean, it's probably one of the probably one of the main things that I think affects main things that I think affects gut health in people who are gut

health in people who are really trying to lead a really trying to lead a healthy lifestyle. Many of the patients healthy lifestyle. Many of the patients who go to naturopathic doctors who go to naturopathic doctors eat well, you know, quite well.

They largely avoid They largely avoid ultra-processed foods, which I believe are the ultra-processed foods, which I believe are the number one cause of poor number one cause of poor gut health in the United States and almost gut health in the United States and almost everywhere else, because they have infiltrated everywhere else, because they have infiltrated the entire world. But this is something I've the entire world. But this is something I've always said. Okay, this is the always said. Okay, this is the elephant in the room, because elephant in the room, because you have this healthy population that you have this healthy population that exercises, tries to do everything right, exercises, tries to do everything right, puts microgreens on everything, and yet, puts microgreens on everything, and yet, what about their gut? They are what about their gut? They are experiencing symptoms. We are doing experiencing symptoms. We are doing microbiome testing. Things aren't microbiome testing. Things aren't right, and it's usually a right, and it's usually a response to stress. And maybe they're even response to stress. And maybe they're even sitting right in front of you saying, " I'm not that stressed." And yes, maybe I'm not that stressed." And yes, maybe they think they're not that they think they're not that stressed. But then, when stressed. But then, when you start digging a little deeper and you start digging a little deeper and asking about their sleep habits, asking about their sleep habits, how reactive they are, and all that how reactive they are, and all that stuff, you start to say, "Uh oh," this stuff, you start to say, "Uh oh," this starts to paint a different picture.

It's fascinating, because again it's one It's fascinating, because again it's one of those things that's why I love what of those things that's why I love what we do, because we get to talk to we do, because we get to talk to patients, dedicate time and patients, dedicate time and really delve into those questions, like: "Hey, when you feel, like: "Hey, when you feel stressed, are you snacking?" stressed, are you snacking?" Or you feel like there are a lot of presentations Or you feel like there are a lot of presentations there and it's very important to know that.

there and it's very important to know that. So I think the key is to So I think the key is to dig deeper, because you mentioned that dig deeper, because you mentioned that root cause. Stress is enormous for root cause. Stress is enormous for many people. Just look at what it does many people. Just look at what it does with inflammation. I mean, with inflammation. I mean, you start following the waterfall. It's like you you start following the waterfall. It's like you 're under chronic stress.

're under chronic stress. Now you have chronic inflammation. Now you have chronic inflammation. Chronic inflammation affects the Chronic inflammation affects the intestinal barrier. Now you have intestinal barrier. Now you have leaky gut. And so, now you're in leaky gut. And so, now you're in the cycle. Once it's the cycle.

the cycle. Once it's the cycle. Yes. Yes. Yes. You know, you're in the vortex, You know, you're in the vortex, right? It's simply hard to right? It's simply hard to find. But our job is to find. But our job is to discover where to break the cycle. Like: discover where to break the cycle. Like: Where do I intervene? How do I fix Where do I intervene? How do I fix this? And not just in the moment, but this? And not just in the moment, but sustainably.

sustainably. sustainably. Yes. Exactly. And that's the challenge, because Yes. Exactly. And that's the challenge, because people just…you can't people just…you can't take them out and put them in a bubble, can you? We still have to live in you? We still have to live in this world. But some of the things we this world. But some of the things we talk about are old talk about are old school. I'm sending more and more school. I'm sending more and more people outdoors. Let's take advantage of the people outdoors. Let's take advantage of the morning light. Walk barefoot on the morning light. Walk barefoot on the earth. This sounded super earth. This sounded super weird. It might still weird. It might still sound super strange to many people, but sound super strange to many people, but increasingly, this is something that, you know, in the increasingly, this is something that, you know, in the age of social media and age of social media and podcasts, it's not so far-fetched to have podcasts, it's not so far-fetched to have these conversations about these these conversations about these practices. Because people say, "Oh practices. Because people say, "Oh yeah, I saw that," or "That would help me," or yeah, I saw that," or "That would help me," or sometimes I tell people and they reply, "Oh yeah, I'm walking barefoot, "Oh yeah, I'm walking barefoot outside in the morning." Yes, I'm outside in the morning." Yes, I'm all for finding what works, right? Because if you can get outside, ground yourself,, right? Because if you can get outside, ground yourself, and feel and feel good,

do it. If you just relax in a good, do it. If you just relax in a chair, staring at the ceiling for 10 or 15 chair, staring at the ceiling for 10 or 15 minutes, and do square breathing, minutes, and do square breathing, do that, right? Because do that, right? Because I agree that this business of I agree that this business of stopping and doing nothing is another stopping and doing nothing is another prescription I give my patients more prescription I give my patients more often lately.

often lately. Yes. Yes. And I think it's just about Yes. Yes. And I think it's just about finding it, because I think what finding it, because I think what happens is almost like Netflix, right?

Where there are so many things to choose from that Where there are so many things to choose from that sometimes you end up not seeing anything. You can't sometimes you end up not seeing anything. You can't imagine how many times I've gone on imagine how many times I've gone on Netflix and just browsed, and then I said, Netflix and just browsed, and then I said, well, I'm not going to watch anything because there are well, I'm not going to watch anything because there are too many options, right? And I feel like too many options, right? And I feel like if you tell someone to meditate, or if you tell someone to meditate, or do acupuncture, or massages, or this do acupuncture, or massages, or this other thing, it's like, well, too many other thing, it's like, well, too many options. You know, just focus on one thing and options. You know, just focus on one thing and maybe do it one at a time, see how it maybe do it one at a time, see how it works for you, and if not, move on to the works for you, and if not, move on to the next one. TRUE. But it's difficult to next one. TRUE. But it's difficult to try to do too many things.

try to do too many things. Yes Yes Yes it's true. Because they're already stressed it's true. Because they're already stressed and you start giving them more, and a big part and you start giving them more, and a big part of their stress is that they don't have of their stress is that they don't have enough time. It's true. And you're absolutely right that we do enough time. It's true. And you're absolutely right that we do n't want to arrive n't want to arrive with this 20-point protocol, aren't you? I know, buddy. I was obsessed, buddy. I was obsessed with that. I miss the 20- with that. I miss the 20- point protocol from when I first started, man.

point protocol from when I first started, man. I was totally into it. I was like, " Oh, oh, you're here. How about Oh, oh, you're here. How about this?" It was like a scroll of things this?" It was like a scroll of things to do. What on earth was that? Now to do. What on earth was that? Now I'm more of a "Okay, let's start I'm more of a "Okay, let's start here, you here, you know, and give it some time, know, and give it some time, then maybe we'll add something or then maybe we'll add something or take something away" kind of person. But it's simply… and it's not… It was… and it's not… It was all done with love, man. It's like: all done with love, man. It's like: I want you to improve and here are all I want you to improve and here are all these things these things and you know, all these things that and you know, all these things that could help you improve, but could help you improve, but then it just…yeah. For many then it just…yeah. For many people, when they are in the situation they are in people, when they are in the situation they are in, it is too much, it is too much to process and they end up doing nothing.

.. Yes. Let's find that one thing. Yes. Let's find that one thing. Find what works. Find what works. So, let's move on a bit. The So, let's move on a bit. The patient is standing in front of you, and you know, patient is standing in front of you, and you know, from what they say, that there is from what they say, that there is some dysfunction in the some dysfunction in the gut-brain axis. You know, there's gut-brain axis. You know, there's dysbiosis present simply from dysbiosis present simply from how they present themselves, even before we how they present themselves, even before we do intestinal tests. It's as do intestinal tests. It's as if, in many ways, you could say, if, in many ways, you could say, "Yes, I'm pretty sure something's going on "Yes, I'm pretty sure something's going on here," but then what we here," but then what we want is for them to start improving.

want is for them to start improving.

How to choose the right probiotic.)

So, when it comes down to it, is there a point at which point at which we start with probiotics, since we start with probiotics, since we'll be getting into this whole we'll be getting into this whole psychobiotic topic? I definitely want to psychobiotic topic? I definitely want to ask you about that, ask you about that, but how do you do it if that person but how do you do it if that person is there? Is there a process you is there? Is there a process you use to choose a

use to choose a probiotic strain? Because no matter how probiotic strain? Because no matter how much I want to say that much I want to say that probiotics are good for everyone, we know probiotics are good for everyone, we know that's not the case. And sometimes you can make that's not the case. And sometimes you can make a person worse, but is there…

…… is there a way to find the is there a way to find the right probiotic? Is it through right probiotic? Is it through trial and error? Is it by using a GI map?

trial and error? Is it by using a GI map? So, from your perspective, how do So, from your perspective, how do you approach that? you approach that? Yes. I wouldn't say I can take many Yes. I wouldn't say I can take many different approaches with patients.

different approaches with patients. So it's not a " cut and paste" situation. You may prefer to cut and paste" situation. You may prefer to do some testing before do some testing before recommending a probiotic. Sometimes, that recommending a probiotic. Sometimes, that 's the direction it might take. It is often based on their often based on their clinical picture and history. It could be a clinical picture and history. It could be a patient who comes in with some kind patient who comes in with some kind of digestive symptom, and upon of digestive symptom, and upon further questioning, it turns out that further questioning, it turns out that this started after they began this started after they began taking antibiotics, right? So, now we know that we have some kind, now we know that we have some kind of dysbiosis. It's probably more of dysbiosis. It's probably more a lack of growth of their a lack of growth of their foundational types, so this is where I would foundational types, so this is where I would probably use more of a probably use more of a balance like bifidobacteria, balance like bifidobacteria, lactobacillus, you know, some of lactobacillus, you know, some of those basic foundational strains to those basic foundational strains to help them out. Or it could be someone who help them out. Or it could be someone who has diarrhea, and then I know has diarrhea, and then I know immediately, "Okay, I'll probably immediately, "Okay, I'll probably just use Saccharomyces just use Saccharomyces boulardii, a yeast, something like that which I boulardii, a yeast, something like that which I know clinically will probably know clinically will probably sort things out, and then we'll sort things out, and then we'll follow up to do some follow up to do some more restorative work." So, when more restorative work." So, when I think about probiotics, it's more like…

yes, questions, medical history, their yes, questions, medical history, their symptoms, and considering testing. symptoms, and considering testing. Well, but then there's the whole aspect Well, but then there's the whole aspect of, okay, you know, we have these of, okay, you know, we have these patients for whom things, you know, haven't been going well for a long time. They've, haven't been going well for a long time. They've had chronic digestive problems had chronic digestive problems, vague things, not, vague things, not necessarily a real illness or necessarily a real illness or disorder. And then we started disorder. And then we started thinking, okay, what's going on thinking, okay, what's going on here? Is this what they eat?

here? Is this what they eat? Because, of course, we look at the diet, Because, of course, we look at the diet, right? That's the first thing. Let's right? That's the first thing. Let's analyze that. But what if it's analyze that. But what if it's a situation where someone has a situation where someone has some kind of some kind of digestive secretion deficiency? Naturopaths digestive secretion deficiency? Naturopaths are very aware of that, aren't they? Is are very aware of that, aren't they? Is it that there aren't enough it that there aren't enough digestive enzymes? Is it like low digestive enzymes? Is it like low stomach acid? Is it bile salts? And if you stomach acid? Is it bile salts? And if you 're not looking at those things, people aren't 're not looking at those things, people aren't going to get such good results, right? Yes, probiotics can right? Yes, probiotics can literally change symptoms literally change symptoms overnight, but overnight, but often, when you have these cases where you often, when you have these cases where you don't get big answers, don't get big answers, you're often missing something more fundamental.

Yes. And I always think of it as if you were, as a doctor, a casting director, as a doctor, a casting director for a film, and you want to get for a film, and you want to get the right actor for the the right actor for the right role. You can't just pick right role. You can't just pick a random actor off the street and a random actor off the street and say, 'Hey, I need you to act in say, 'Hey, I need you to act in Shakespeare,' and have the guy say, 'Dude, Shakespeare,' and have the guy say, 'Dude, no.' So, it's not going to turn out well, is no.' So, it's not going to turn out well, is it? So we want to make sure you it? So we want to make sure you make the right choice. I make the right choice. I

understand. Choosing supplements can understand. Choosing supplements can be overwhelming. There are hundreds of brands.

be overwhelming. There are hundreds of brands. There are conflicting claims and there's no There are conflicting claims and there's no way to know what's really way to know what's really good and what will improve your health. That's why good and what will improve your health. That's why I created I created Dr. Jones' supplement store. Every product in the store Dr. Jones' supplement store. Every product in the store for energy, gut health, sleep, hormone optimization, recovery,, hormone optimization, recovery, and more, is personally evaluated, and more, is personally evaluated, tested, and recommended. These are the tested, and recommended. These are the formulas I use and recommend to my formulas I use and recommend to my patients, friends, and family.

patients, friends, and family. So, go to dronesupplements.com, So, go to dronesupplements.com, sign up for the mailing list and sign up for the mailing list and you'll receive a 10% discount on your you'll receive a 10% discount on your first order. You'll also get first order. You'll also get exclusive protocols and knowledge exclusive protocols and knowledge that I only share with my community.

that I only share with my community. So, ignore the noise and let's get So, ignore the noise and let's get what really works. So what really works.

What causes leaky gut?.)

So I want to tie this together a bit, because I want to tie this together a bit, because we're going into this topic of the we're going into this topic of the gut-brain axis and we know that gut-brain axis and we know that leaky gut and leaky gut and intestinal permeability have a big impact, but intestinal permeability have a big impact, but how do you put that together? Or better yet, how does intestinal barrier dysfunction or integrity intestinal barrier dysfunction or integrity even matter to brain health?

?? Yes. Well, it's like you mentioned something about Yes. Well, it's like you mentioned something about this at the beginning when we were talking. So, when you have, you know, an So, when you have, you know, an increase in intestinal permeability, increase in intestinal permeability, what can happen is that you what can happen is that you basically start to have LPS, this basically start to have LPS, this very inflammatory molecule that comes very inflammatory molecule that comes from the outside of bacteria, from the from the outside of bacteria, from the cell membrane or wall, and reaches your cell membrane or wall, and reaches your bloodstream; That shouldn't bloodstream; That shouldn't be in our blood. So this be in our blood. So this is another area we would talk about, is another area we would talk about, like when we talked about the vagus nerve like when we talked about the vagus nerve as a direct line of communication as a direct line of communication between the gut and the brain. Now we have something that shouldn't be. Now we have something that shouldn't be happening. This is like, you happening. This is like, you know, a breakdown in the know, a breakdown in the intestinal barrier. We shouldn't have LPS intestinal barrier. We shouldn't have LPS passing through it. When that happens, it passing through it. When that happens, it can go anywhere, since it can go anywhere, since it 's in the bloodstream. It can 's in the bloodstream. It can go to your heart. It can go to your brain. And now we really have. And now we really have systemic inflammation, right? That systemic inflammation, right? That can happen anywhere. And can happen anywhere. And we know that with many we know that with many mood disorders and, you know, mood disorders and, you know, neurological disorders, neurological disorders, neurodegenerative diseases, a lot of it is neurodegenerative diseases, a lot of it is inflammation, right? Such as inflammation, right? Such as brain neuroinflammation. And that's brain neuroinflammation. And that's where the intestinal barrier problem comes into play where the intestinal barrier problem comes into play. No, that's. No, that's fascinating because, again, this will be fascinating because, again, this will be the key theme of this whole episode: the key theme of this whole episode: all roads lead to the gut all roads lead to the gut in many ways, right? All in many ways, right? All roads originate in the gut.

roads originate in the gut. Yes. Yes. Yes. Or, as we've heard so many times, everything else starts in the, everything else starts in the gut. It ends in the intestine, it gut. It ends in the intestine, it begins in the intestine. It is, you know, begins in the intestine. It is, you know, understanding that is one of the understanding that is one of the most powerful tools you will have as a most powerful tools you will have as a clinician. You know, for those who

clinician. You know, for those who listen, not just the clinicians, but the patients and the people who, but the patients and the people who listen, it's that if you fix your listen, it's that if you fix your gut…you fix a lot of problems.

gut…you fix a lot of problems. Yes. Like many, 100%. It is also very Yes. Like many, 100%. It is also very fundamental for metabolic health fundamental for metabolic health. We know that all of this is. We know that all of this is linked to fatty liver, linked to fatty liver, diabetes, and, you know, obesity. There is a diabetes, and, you know, obesity. There is a lot of influence from what happens in the lot of influence from what happens in the gut there.

Definitely. What a great transition to Definitely.

Why butyrate is important for gut health.)

What a great transition to metabolism, because one of the metabolism, because one of the supplements I actually started supplements I actually started using was after the fact, right?

using was after the fact, right? After I began to After I began to clumsily navigate the world of clumsily navigate the world of gut health, I learned about butyrate. I gut health, I learned about butyrate. I was at a conference and they were talking was at a conference and they were talking about butyrate and I said, "Oh my God, this is incredible." And then I started, this is incredible." And then I started using it and I wondered, "Which of using it and I wondered, "Which of all the butyrates should I choose?" all the butyrates should I choose?" Because there are many forms of it, right? Among them, you know, is right? Among them, you know, is sodium butyrate, calcium butyrate, sodium butyrate, calcium butyrate, magnesium butyrate, was it calcium-magnesium butyrate? And magnesium butyrate, was it calcium-magnesium butyrate? And then I finally decided then I finally decided on tributirina. Um, we'll on tributirina. Um, we'll go into detail about that later. But having said that, go into detail about that later. But having said that, is butyrate important for this is butyrate important for this gut-brain axis and for gut-brain axis and for brain health in relation to the gut?

brain health in relation to the gut? Yes. It's very interesting, because when Yes. It's very interesting, because when we think about that intestinal barrier, we think about that intestinal barrier, we have to say: okay, you have we have to say: okay, you have a leaky gut. Why?

Right? We keep asking: Right? We keep asking: Why is there a leak? Why is Why is there a leak? Why is this barrier deteriorating? And much of it comes this barrier deteriorating? And much of it comes down to the down to the microbiome layer that resides there. You have that microbiome layer that resides there. You have that intestinal wall, those intestinal wall, those intestinal cells that are a kind of intestinal cells that are a kind of physical barrier, and then you have a physical barrier, and then you have a mucous barrier over them. There are all mucous barrier over them. There are all these different levels, but then these different levels, but then you have this microbiome layer. And you have this microbiome layer. And butyrate is a short-chain fatty acid butyrate is a short-chain fatty acid. It serves as fuel, comes. It serves as fuel, comes from bacteria, and feeds from bacteria, and feeds enterocytes, that is, those enterocytes, that is, those intestinal cells. So, if you don't get intestinal cells. So, if you don't get enough, this leads to dysbiosis, right? So, if you don't have, right? So, if you don't have enough butyrate-producing bacteria enough butyrate-producing bacteria, you have some, you have some vulnerabilities in the intestinal wall, right? So when, right? So when you actually provide butyrate, you can, I don't know if I you actually provide butyrate, you can, I don't know if I want to say trick the system, but want to say trick the system, but take a sort of shortcut, take a sort of shortcut, basically take some butyrate and basically take some butyrate and that can influence the that can influence the bacterial balance and help with bacterial balance and help with intestinal integrity, right? That's intestinal integrity, right? That's fascinating too. And regarding butyrate itself, do fascinating too. And regarding butyrate itself, do you have a you have a favorite presentation that you love to use with favorite presentation that you love to use with people, or is it on a case-by-case basis? I know people, or is it on a case-by-case basis? I know we obviously like to personalize, but we obviously like to personalize, but maybe you have a favorite. Perhaps maybe you have a favorite. Perhaps you have a favorite.

you have a favorite. I use the one from biotics. Oh, am I I use the one from biotics. Oh, am I allowed to say, am I allowed to use allowed to say, am I allowed to use trademarks here? Yes. Oh God, now you've trademarks here? Yes. Oh God, now you've ruined it. We can no longer obtain continuing medical education credits. You can talk

about whatever you continuing medical education credits. You can talk about whatever you want. It's like, oh God, want. It's like, oh God, if you want. You did if you want. You did not make your not make your disclosure statement this time. You've ruined everything.

disclosure statement this time. You've ruined everything. You know, you ruined it. That was a You know, you ruined it. That was a conflict of interest, and I had… I conflict of interest, and I had… I mean, I analyzed this, and we have some mean, I analyzed this, and we have some private label products in our private label products in our practice, so the butyrate we practice, so the butyrate we use is the Biotics version.

Biotics version. Yes. No, same here. Same here. So Yes. No, same here. Same here. So, you know, that's it. And I was at, you know, that's it. And I was at this conference and there was a this conference and there was a really fascinating conversation. One really fascinating conversation. One of the speakers was talking about of the speakers was talking about butyrate, and something great he mentioned butyrate, and something great he mentioned was that, when I started, I was only was that, when I started, I was only using sodium or calcium butyrate. And using sodium or calcium butyrate. And the concept she had was like, " Well, because that butyrate Well, because that butyrate isn't attached to that kind of isn't attached to that kind of glycerol structure, so to speak, it glycerol structure, so to speak, it could actually make it into the could actually make it into the small intestine." Like, hey, this is where small intestine." Like, hey, this is where I am. You I am. You know, and if someone has SIBO it know, and if someone has SIBO it could make that worse.

could make that worse. Yes. Yes. Yes. Where tributyrin, because of, you Where tributyrin, because of, you know, okay, those three know, okay, those three butyrate molecules in that structure, is going to reach butyrate molecules in that structure, is going to reach the colon where it's supposed to be.

.. Yes. Yes. Yes. Um, so what do you think about that? Um, so what do you think about that? Because that was the first time Because that was the first time I heard that at that conference. I I heard that at that conference. I know. I say clinically, because I've know. I say clinically, because I've honestly gone back and forth between the two. I do n't like it, in terms of results, I n't like it, in terms of results, I haven't seen many haven't seen many adverse effects in patients, apart adverse effects in patients, apart from potentially these patients with from potentially these patients with SIBO, and anyway they are complicated SIBO, and anyway they are complicated because they can have outbreaks even with because they can have outbreaks even with probiotics that you wouldn't even probiotics that you wouldn't even think would cause outbreaks.

think would cause outbreaks. No, absolutely not. Absolutely. So No, absolutely not. Absolutely. So yes, you can definitely talk yes, you can definitely talk about the products. I'm sure about the products. I'm sure our biotics people are our biotics people are really happy that you said that. They really happy that you said that. They were probably waiting like: were probably waiting like: you guys have been at this for 30 minutes. They're you guys have been at this for 30 minutes. They're simply not talking about it.

Speaking of that here. Speaking of that here. No, that works very well. So, um, let's see here. Uh, I want to, speaking of, let's see here. Uh, I want to, speaking of that, let me change the subject a little. Let me that, let me change the subject a little. Let me look here. So, this will be look here. So, this will be our first pause in the action right here our first pause in the action right here while I recalibrate.

while I recalibrate. We cover all our content. I We cover all our content. I know. I know. So, I have a lot of know. I know. So, I have a lot of good ones here. Um, okay, let's get into, good ones here. Um, okay, let's get into, let's talk about the enteric nervous system. I think it will be a good one. Oh,. I think it will be a good one. Oh, actually, um, let's do a little bit about actually, um, let's do a little bit about neurotransmitters. So, let's do a neurotransmitters. So, let's do a little bit about neurotransmitters, a little bit little bit about neurotransmitters, a little bit about the enteric nervous system.

about the enteric nervous system. Then we'll move on to, uh, something like Then we'll move on to, uh, something like supplements, like your supplements, like your favorite gut health supplements, and favorite gut health supplements, and then you'll leave. You can continue then you'll leave. You can continue with your afternoon.

with your afternoon. Yes. Yes. Yes. Around there now. Around there now. So, let's talk a little bit about the So, let's talk a little bit about the gut as the second brain.

gut as the second brain.

Why your gut is called the second brain.)

We hear that a lot in different We hear that a lot in different podcasts and, you know, different blogs podcasts and, you know, different blogs and all that. And this, as I and all that. And this, as I understand it, focuses on the understand it, focuses on the enteric nervous system. So enteric nervous system. So I always think of the brain I always think of the brain as something independent. It's something as something independent. It's something you do, the brain does, there's really no you do, the brain does, there's really no control. You can control some control. You can control some thoughts here. For the most part it thoughts here. For the most part it 's difficult, you know, to tame that 's difficult, you know, to tame that wild colt, because if you start thinking about wild colt, because if you start thinking about the process, that's where it's going to go.

TRUE? That TRUE? That said, how independent is said, how independent is that enteric nervous system in the that enteric nervous system in the gut? So, is this something gut? So, is this something that can be improved with diet, that can be improved with diet, supplementation, or lifestyle changes? And supplementation, or lifestyle changes? And when that happens, are you seeing those when that happens, are you seeing those patient responses in the patient responses in the clinic?

clinic? clinic? Yes. So yes, the enteric nervous system Yes. So yes, the enteric nervous system is what's is what's basically known as the second brain, and it's basically known as the second brain, and it's not like we can not like we can intentionally control it with our intentionally control it with our thoughts, just like you said. Now, thoughts, just like you said. Now, sometimes you'll hear researchers sometimes you'll hear researchers talk about it as if it were actually talk about it as if it were actually the first brain, because it's kind of more the first brain, because it's kind of more important, right? What's going on important, right? What's going on in the gut? But, from a point in the gut? But, from a point of view, I suppose, of supplements and an of view, I suppose, of supplements and an indirect impact on lifestyle, we do indirect impact on lifestyle, we do see that patients have, you see that patients have, you know, results. Motility is a know, results. Motility is a big conversation that people are big conversation that people are having, especially in the realm having, especially in the realm of SIBO, in the GLP-1 space, of SIBO, in the GLP-1 space, where, of course, one of the where, of course, one of the main side effects can be main side effects can be decreased intestinal motility, right?

decreased intestinal motility, right? So people are really starting to So people are really starting to understand this language about understand this language about motility, and that motility comes motility, and that motility comes from the enteric nervous system.

from the enteric nervous system. So, if we have a patient, for So, if we have a patient, for example, as we age the example, as we age the bowel slows down, that's why, you bowel slows down, that's why, you know, in nursing homes everyone know, in nursing homes everyone takes Metamucil, as if to say: let's takes Metamucil, as if to say: let's give this to the patients because they give this to the patients because they all have constipation. So all have constipation. So we know that aging affects we know that aging affects that. But there are herbs that that. But there are herbs that we can actually use that will help with we can actually use that will help with intestinal motility, right? There are intestinal motility, right? There are things like ginger, artichoke, things like ginger, artichoke, supplements like 5-HTP; these are what supplements like 5-HTP; these are what we call prokinetic agents, and they we call prokinetic agents, and they are compounds, molecules that can are compounds, molecules that can improve that motility. So, this improve that motility. So, this is when we think of a is when we think of a slow bowel. This is where, you know, slow bowel. This is where, you know, we could use a we could use a motility product like the one Biotics makes.

But vice versa, sometimes it's a But vice versa, sometimes it's a motility problem where things move motility problem where things move too fast, right? You have too fast, right? You have hypermotility. You have a situation hypermotility. You have a situation where people have urgency, where people have urgency, diarrhea, loose stools.

Now it's like, diarrhea, loose stools. Now it's like, okay, maybe we want to slow that down.

okay, maybe we want to slow that down. So we thought about some of these So we thought about some of these really good botanicals really good botanicals that calm the entire nervous system.

that calm the entire nervous system. So they can help people So they can help people feel calm, but they also feel calm, but they also act on the gut. So act on the gut. So we thought about passionflower, valerian, we thought about passionflower, valerian, hops and things like that. And I suppose hops and things like that. And I suppose the third profile we can see is a the third profile we can see is a more spasmodic one, right? And that's more spasmodic one, right? And that's when we started thinking about when we started thinking about chamomile, which is really good chamomile, which is really good for spasms. Mint, for spasms. Mint, enteric-coated mint. Uh, you know, enteric-coated mint. Uh, you know, you can also use them in infusions.

you can also use them in infusions. So yes, there's a lot that can be So yes, there's a lot that can be done there. But then we done there. But then we ask ourselves again, what is happening with ask ourselves again, what is happening with the vagus nerve and how does it affect our the vagus nerve and how does it affect our motility?

motility? Okay. Understood. Understood. And I was about Okay. Understood. Understood. And I was about to ask you what to ask you what some of your favorite supplements are some of your favorite supplements are for gut health. And I feel like you got for gut health. And I feel like you got a little ahead of yourself. You simply a little ahead of yourself. You simply laid it all bare.

laid it all bare. You checked the boxes. You checked the boxes. Yes. Like, these are the ones, these are the Yes. Like, these are the ones, these are the right ones. These are the ones.

right ones. These are the ones. So, we know that the cases are So, we know that the cases are different. The presentation of different. The presentation of each person's case is different. But each person's case is different. But of all the supplements you've put of all the supplements you've put on your favorites list, is there one that on your favorites list, is there one that you see more success with? I don't you see more success with? I don't mean the most successful one, but the one mean the most successful one, but the one you say, "Hey, you know what? This one you say, "Hey, you know what? This one usually works really well for my usually works really well for my patients." And you know, it's very useful to them. Are there any, even if you don't have. Are there any, even if you don't have to choose one, maybe a top three, to choose one, maybe a top three, that are the ones that really…

that are the ones that really… Impact, obviously, we use all kinds Impact, obviously, we use all kinds of digestive support enzymes. You of digestive support enzymes. You know, we use things like hydrozyme, know, we use things like hydrozyme, betaine plus HP, all those basics.

But if I think of a single formula But if I think of a single formula that would be very useful for someone who that would be very useful for someone who presents with clinical symptoms, with presents with clinical symptoms, with leaky gut, leaky gut, intestinal barrier problems, you know, who intestinal barrier problems, you know, who might have diarrhea or urgency. GI might have diarrhea or urgency. GI Resolve is very well formulated. And I've Resolve is very well formulated. And I've used many of these used many of these intestinal barrier products over the intestinal barrier products over the years. And this one really changes the years. And this one really changes the game. It works much better game. It works much better than many of the other products I than many of the other products I 've used for years.

've used for years. Very good. That's great. I have to Very good. That's great. I have to keep that in mind. I'll put it in my keep that in mind. I'll put it in my little mental agenda. I'm not little mental agenda. I'm not using it much. That's why I love making using it much. That's why I love making these podcasts. I'm always these podcasts. I'm always learning too. I'm not just learning too. I'm not just asking questions. I'm trying to asking questions. I'm trying to find a find a find a doctor, yes. It's really high in doctor, yes. It's really high in glutamine. So many products don't glutamine. So many products don't have much of that. And then it has have much of that. And then it has other compounds that also soothe the other compounds that also soothe the digestive tract.

digestive tract. Good. Good. I use a lot of glutamine Good. Good. I use a lot of glutamine when we have patients with when we have patients with intestinal health issues or leaky gut. And intestinal health issues or leaky gut. And some supplements just aren't some supplements just aren't enough, you know, to be enough, you know, to be effective. So we ended up using a effective. So we ended up using a lot of powders separately. But lot of powders separately. But again, that becomes a again, that becomes a compliance issue because you have your compliance issue because you have your supplements. It's easy to take a few supplements. It's easy to take a few capsules, but taking out your bottle of capsules, but taking out your bottle of glutamine and measuring it while you're at glutamine and measuring it while you're at work can be a bit work can be a bit complicated for people. So, I'm complicated for people.

Can probiotics improve mood?.)

So, I'm definitely going to look into that one. definitely going to look into that one. Yes. Yes. Yes. Um, before we wrap up, I wanted to ask you Um, before we wrap up, I wanted to ask you about a subgroup of probiotics I about a subgroup of probiotics I 've been reading about. The psycho- psycho-psychobiotics. I know it's psycho-psychobiotics. I know it's a very strange name. Like, a very strange name. Like, I know a better name than that.

I know a better name than that. Yes, exactly. Like "psycho," like, no, it sounds like it doesn't help people,, it sounds like it doesn't help people, like it does like it does n't make them that much, but they're literally n't make them that much, but they're literally psychobiotic, right? Uh, and as I psychobiotic, right? Uh, and as I understand it, they are probiotic strains that understand it, they are probiotic strains that can specifically help with neurotransmitter balance and production. Have you seen this neurotransmitter balance and production. Have you seen this clinically or do you use them, or is it a clinically or do you use them, or is it a matter of finding the matter of finding the right probiotic strain and letting it do right probiotic strain and letting it do its job?

its job? Yes, I mean, there are some of these strains Yes, I mean, there are some of these strains that are being labeled as that are being labeled as psychobiotics and have, you know, this psychobiotics and have, you know, this statement that usually goes more along the statement that usually goes more along the lines of them potentially helping with lines of them potentially helping with sleep quality, potentially helping with sleep quality, potentially helping with cortisol management, that kind of cortisol management, that kind of thing. They do not make statements about thing. They do not make statements about treating a mood disorder treating a mood disorder, for example. But they come from, for example. But they come from very specific strains; There are a couple of very specific strains; There are a couple of strains of Bifidobacterium longum that strains of Bifidobacterium longum that have good evidence now and I've have good evidence now and I've used them in practice and they can be used them in practice and they can be quite great. I've seen some quite great. I've seen some really good results with them, but I would say really good results with them, but I would say no…you know, I've seen patients we've no…you know, I've seen patients we've worked on their worked on their gut health with and incorporated probiotics gut health with and incorporated probiotics that aren't necessarily that aren't necessarily labeled as psychobiotics, and after labeled as psychobiotics, and after doing all the gut health work doing all the gut health work, the, the mood disorders, you know, have either mood disorders, you know, have either completely resolved or improved by more than 50%, completely resolved or improved by more than 50%, right? So it's not like, oh God, I've been right? So it's not like, oh God, I've been waiting forever and we waiting forever and we finally have this because before we finally have this because before we couldn't help people using couldn't help people using other probiotics and other probiotics and gut health support.

gut health support. Oh, of course. Definitely. Yes, it's kind of like that. Oh, of course. Definitely. Yes, it's kind of like that. And when I was And when I was researching here, there are a lot of researching here, there are a lot of different supplement companies different supplement companies that produce psychobiotics, and some that produce psychobiotics, and some of them are strains I'd never seen before, like of them are strains I'd never seen before, like Nurelli or something. I thought: I've never Nurelli or something. I thought: I've never heard of that. So, um, maybe heard of that. So, um, maybe that's more on the that's more on the mental health side. So, for now, I'll mental health side. So, for now, I'll personally keep it simple.

personally keep it simple. As if to say: hey, let me see what As if to say: hey, let me see what I can do. Find the root cause. I can do. Find the root cause.

Let's see if we can make your Let's see if we can make your gut function better, reduce gut function better, reduce intestinal inflammation, and heal the intestinal inflammation, and heal the intestinal barrier. And maybe once intestinal barrier. And maybe once that's in a better place, that's in a better place, we can talk about using some of these we can talk about using some of these more exotic strains because I feel like more exotic strains because I feel like you have to establish the foundation first, you have to establish the foundation first, you know?

you know? Exactly. You've been doing this long Exactly. You've been doing this long enough now. That's enough now. That's exactly what you need to do. And exactly what you need to do. And then at the end it's like, well, can we refine this a little more? We've can we refine this a little more? We've done so much work and now done so much work and now perhaps at the end we're adjusting and perhaps at the end we're adjusting and getting a little more out of it. It's not that I don't, getting a little more out of it. It's not that I don't, you know, I really want probiotics you know, I really want probiotics with identified strains because that's with identified strains because that's important. But yes, then you know, important. But yes, then you know, look for very specific strains that look for very specific strains that we might introduce this we might introduce this probiotic to now that everything is working probiotic to now that everything is working better. We have reduced the inflammation.

better. We have reduced the inflammation. You are digesting correctly. Your You are digesting correctly. Your intestinal barrier is fine. Good. Could we do a little Could we do a little manipulation with a psychobiotic?

manipulation with a psychobiotic?

Simple ways to improve your gut health.)

Yes, definitely. So we talked about it Yes, definitely. So we talked about it because I feel like, and I don't want to forget because I feel like, and I don't want to forget the matter of, you know, getting the the matter of, you know, getting the job done, right? Because especially job done, right? Because especially if you're under stress or anxiety, it's if you're under stress or anxiety, it's like, look, and I tell people this like, look, and I tell people this all the time. It's like, look, I can all the time. It's like, look, I can help you with help you with neurotransmitter balance. I can help you with your neurotransmitter balance. I can help you with your gut health. I can't just walk around with gut health. I can't just walk around with you, you know, as your you, you know, as your teammate, and start teammate, and start hitting people who cause you stress. You hitting people who cause you stress. You still have to deal with still have to deal with stressful people and stressful people and stressful environments in your life, right? I think it's a stressful environments in your life, right? I think it's a matter of identifying matter of identifying not only the physiological side, but not only the physiological side, but also the psychological side. Like, what is my trigger and how do I deal with what is my trigger and how do I deal with it?

it? it? The difficult part, Jen, is when you say, "Okay, what is your source of "Okay, what is your source of stress?" And they say, "My husband and my stress?" And they say, "My husband and my children." And I say, "Okay, look, I children." And I say, "Okay, look, I can't interfere." It's like, I stay out of that.

It's like, I stay out of that. Yes. If you said it was driving in Yes. If you said it was driving in traffic, I'd say, "Okay, fine traffic, I'd say, "Okay, fine. We can work on that." If. We can work on that." If you said, "I'm training too you said, "I'm training too hard." Good. I can help you a little with hard." Good. I can help you a little with that. But in certain things you have to that. But in certain things you have to find a balance. And perhaps it's a find a balance. And perhaps it's a matter of having that conversation matter of having that conversation with the family. I mean, there are with the family. I mean, there are many ways to do it, but sometimes many ways to do it, but sometimes that source of stress is difficult.

that source of stress is difficult. Yes. Yes. Yes. You know, especially for parents You know, especially for parents with teenagers. I understand. I with teenagers. I understand. I pity you. I pity you.

pity you. I pity you. I was a teenager once too. I know I I was a teenager once too. I know I stressed out my mom and my stressed out my mom and my parents. I know I did it. I know I did it parents. I know I did it. I know I did it. So I am guilty of the. So I am guilty of the charges.

charges. charges. So yeah So yeah, man. I think it's very important to, man. I think it's very important to identify that. I want people to identify that. I want people to know that, although we love these things and know that, although we love these things and they are magical, magic requires a lot of they are magical, magic requires a lot of personal work. So I never want to personal work. So I never want to stop talking about it. Okay, before I stop talking about it. Okay, before I let you go, first of all, I want to let you go, first of all, I want to thank you for your time. I mean, I thank you for your time. I mean, I really appreciate this. Thank you for really appreciate this. Thank you for being flexible with the dates and being flexible with the dates and times. I think we rescheduled this.

times. I think we rescheduled this. Was it a rescheduling? Friends. I think it Was it a rescheduling? Friends. I think it could have been me. So, thank you. Do could have been me. So, thank you. Do n't know. It could have been me, at n't know. It could have been me, at this point I don't know. We're this point I don't know. We're here. We're here.

here. We're here. Yes. Yes. Yes. Before I let you go, I mentioned in your Before I let you go, I mentioned in your introduction that you're also an author.

So, first of all, I want the So, first of all, I want the listeners of this podcast to follow you, listeners of this podcast to follow you, because you have amazing work and books because you have amazing work and books. How can we find. How can we find your work, your books, and "The Bitter your work, your books, and "The Bitter Prescription"? Yes.

Prescription"? Yes. And "Unzip Your Genes". And "Unzip Your Genes". Yes. "Unzip Your Genes" was the first one Yes. "Unzip Your Genes" was the first one about genetics.

But the one that really applies to this But the one that really applies to this conversation, which is very much about conversation, which is very much about gut health, is "The Bitter gut health, is "The Bitter Prescription". It deals a lot with Prescription". It deals a lot with bitter receptors, phytonutrients, bitter receptors, phytonutrients, and gut health. We go into and gut health. We go into detail and, moreover, it's not a detail and, moreover, it's not a difficult read. A little self-promotion difficult read. A little self-promotion there. And where people can there. And where people can find me, well, I'm on find me, well, I'm on social media, but another naturopath and I social media, but another naturopath and I created our own platform created our own platform called The Natural Doctor. We are very called The Natural Doctor. We are very active on social media and YouTube, active on social media and YouTube, so you can find us there.

so you can find us there. Okay, we'll put it in the Okay, we'll put it in the show notes. So, is it a podcast or do show notes. So, is it a podcast or do they just create content? What are they they just create content? What are they doing with…?

doing with…? It's a rather strange story. We thought, It's a rather strange story. We thought, "We should do more social media." We went to a local television station." We went to a local television station because they had space and we thought we'd because they had space and we thought we'd record something there. We walked in and the record something there. We walked in and the station manager started station manager started talking about a program, about how we could talking about a program, about how we could do our own show, and we were do our own show, and we were like, "What?" "What are you like, "What?" "What are you talking about?" He said, "Yes, I think talking about?" He said, "Yes, I think you guys would be good at making your you guys would be good at making your own show." We said, "Oh, okay." That was a year ago and, okay." That was a year ago and we started recording. Are you trying we started recording. Are you trying to tell me you have a to tell me you have a TV show? Wait, did you just TV show? Wait, did you just humbly say, "Oh, by the way, I have a humbly say, "Oh, by the way, I have a TV show"? What? What?

?? Something like that. Yes. What channel is the Something like that. Yes. What channel is the program on? Well, it's on local TV Well, it's on local TV here in Connecticut, but it's also here in Connecticut, but it's also streamed on YouTube through their streamed on YouTube through their platform, although we also have it platform, although we also have it on our own YouTube channel on our own YouTube channel where it's available as well.

Understood. Okay. I'll put it in the Understood. Okay. I'll put it in the show notes, because this is… you have to start

with that, Jay. Like: you have to start with that, Jay. Like: "Oh, by the way, I have a "Oh, by the way, I have a TV show." Just so you know, I am, TV show." Just so you know, I am, I am quite, quite famous here in I am quite, quite famous here in Connecticut and throughout the entire Connecticut and throughout the entire YouTube universe. So this is incredible, YouTube universe. So this is incredible, even though I… I'm very happy to hear that even though I… I'm very happy to hear that too. And the simple fact that too. And the simple fact that you can spread more information, you can spread more information, reach more people and impact reach more people and impact more people, not just locally there on more people, not just locally there on the East Coast, but the fact that it's being the East Coast, but the fact that it's being broadcast on the YouTube platform broadcast on the YouTube platform is really great. So you get is really great. So you get more interaction and teach more more interaction and teach more people, that's really fantastic.

people, that's really fantastic. So I'll do it. So I'll do it. The reason we do this is to The reason we do this is to really teach people how to really teach people how to take care of themselves and what really take care of themselves and what really matters for true health, right?

right? right? Absolutely. Absolutely. Then I will Absolutely. Absolutely. Then I will definitely include it in the definitely include it in the program notes. Alright program notes. Alright.

.. Thank you. Thank you. Well, again, I want to thank you Well, again, I want to thank you. It has been a pleasure. It has been a. It has been a pleasure. It has been a joy. I'm honored that you joy. I'm honored that you made time for this and I'll see you made time for this and I'll see you in about four months or so.

in about four months or so. Yes. It will be a lot of fun. Yes. It will be a lot of fun. More or less, more or less. So it's going to More or less, more or less. So it's going to be amazing. So, before we be amazing. So, before we let you go, is there anything you'd like to let you go, is there anything you'd like to leave for our audience, any…?

Yes, I mean, if anyone at Yes, I mean, if anyone at all, even if you don't have all, even if you don't have digestive symptoms, I would say digestive symptoms, I would say you really need to keep thinking about you really need to keep thinking about gut health. Because I see this gut health. Because I see this all the time: that people don't have all the time: that people don't have other things going on, and we start other things going on, and we start analyzing their gut health and analyzing their gut health and find all sorts of things there, find all sorts of things there, that you don't need to have symptoms for that you don't need to have symptoms for something to be wrong with your gut.

something to be wrong with your gut. So, for So, for sure. I would sure. I would definitely point that out to definitely point that out to people. people.

people. Definitely. Definitely. Definitely. Definitely. So, I really appreciate that. And So, I really appreciate that.

Gut health problems you should not ignore.)

And also, I was going to finish, but it made me also, I was going to finish, but it made me think about something important here, because think about something important here, because the human body, as you mentioned the human body, as you mentioned before, is such a complex organism. There will before, is such a complex organism. There will be a day when you'll say: wait be a day when you'll say: wait a minute, I didn't go to the bathroom today or, oh, I a minute, I didn't go to the bathroom today or, oh, I need a little…that's part of need a little…that's part of human nature. That's going to happen.

human nature. That's going to happen. But if it's abdominal pain that doesn't But if it's abdominal pain that doesn't go away, that's sharp or stabbing, if there's go away, that's sharp or stabbing, if there's blood in your stool, blood on the blood in your stool, blood on the toilet paper, there are certain things where you toilet paper, there are certain things where you really need to say: wait really need to say: wait a minute, this isn't normal. And I think a minute, this isn't normal. And I think people have to…it's that people have to…it's that difficult part of distinguishing between something difficult part of distinguishing between something temporary versus, for example, I have temporary versus, for example, I have severe acid reflux and it doesn't severe acid reflux and it doesn't go away. I think people go away. I think people should also have a mindset of, well, don't stay like this, because if it's not, don't stay

like this, because if it's not improving, it's probably getting improving, it's probably getting worse internally. So, I think it's worse internally. So, I think it's key that people key that people know this too.

know this too. Yes, I totally agree. Ignoring what you might think is Ignoring what you might think is a minor symptom could often be a minor symptom could often be catching something early or simply catching something early or simply a sign that something is wrong. So we a sign that something is wrong. So we should try to find out should try to find out what it is. But yes, I totally what it is. But yes, I totally agree. You know, many people ignore what agree. You know, many people ignore what we would call serious symptoms.

we would call serious symptoms. Oh, no. Don't ignore it. Definitely do Oh, no. Don't ignore it.

Final thoughts on protecting your gut.)

Definitely do n't ignore it. Very good. Well, n't ignore it. Very good. Well, again, thank you very much. I apreciate it. again, thank you very much. I apreciate it.

And I'm going to let everyone go so they And I'm going to let everyone go so they can get on with their night and can get on with their night and relax and all that. So this has relax and all that. So this has been another episode of been another episode of Dr. Jones' Optimization Academy. Again, Dr. Jones' Optimization Academy. Again, I'll put all the information about I'll put all the information about Dr. Jen in the show notes so you Dr. Jen in the show notes so you can follow along. Take a look at can follow along. Take a look at their books. Take a look at their books. Take a look at naturopathic doctors. If you're in naturopathic doctors. If you're in Connecticut, watch the show. We want Connecticut, watch the show. We want those audience ratings to go up.

those audience ratings to go up. We are trying to go national. We are trying to go national. I said we're trying to go I said we're trying to go national. I national. I love it. Thank you. Hey, I appreciate you, love it. Thank you. Hey, I appreciate you, have a good day, and I'll see you have a good day, and I'll see you all.