Introduction and Speaker Background

Again, welcome to the MS and Neuroimmune Summit. I am here, with my good friend, Jocelyn Strand. and let me welcome, her with her bio. Jocelyn Strand is a Naturopathic doctor, and she's the director of Clinical Education and Research at Biocidin she brings both a reverence for botanicals.

Those are the plant based products and the passion for science to her role. Dr. Jocelyn monitor of some participates in research. She trains clinicians.

She's a respected and engaging speaker. She's an avid participant in microbiome research and lectures around the world with the vision to increase awareness of the power of natural medicine.

before joining Biocidin, Dr. Jocelyn was in private practice at Lake Superior Natural Medicine in Duluth, Minnesota, which, by the way, is a beautiful community.

I've been there many times. She specializes in GI system disorders, Lyme, and autoimmune conditions. Welcome, Dr. Jocelyn. Thank you so much, Dr. Wahls.

I'm always excited to be here talking with you. Yeah. So what we're talking about today is the oral microbiome connection. You know, I've heard a lot of people talk about gut health, and that's sort of always talking about poop in the, lower colon.

But we're talking today about the mouth. So why are we why do we care about the mouth? Isn't it all about the poop? I mean, I think that's a great question.

And what's interesting is if you if you go on PubMed to look at the literature, if you put in microbiome, there's over 100,000 published research articles.

But if you put an oral microbiome there, I can't remember the number, but it's only a couple of hundred. So the research on the oral microbiome is really sort of where the gut microbiome research was about 20 years ago.

We're just really starting to get some traction on the oral microbiome. but what's happening in the mouth and the microorganisms in the mouth are just as important, believe it or not, as what's happening in the gut.

And, we can go into that in a little bit more depth about why I think that we see such an important clinical link between what's happening in the mouth and what's happening systemically.

today specifically, we're going to talk based on your audience about what I'm calling the gut brain or the mouth. Excuse me? The Mouth-Brain Axis. So what is happening in the mouth and how it influences brain health?

And we're talking, of course, any neuro inflammation, autoimmunity, but also mood disorders. So it's all what's happening in the mouth can affect all of those things.

And I think just to sort of set the stage, part of the reason I love this as a therapeutic is that it's easy to access. We know we can see largely what's happening in the mouth.

So if we do an oral health exam as practitioners or if we look in the mirror for ourselves, if we're flossing, if we, are getting regular dental care, we know are things in good shape or not in the mouth. So.

Well, so how do we know? What are the clues that things are not in good shape? so there's some really obvious things. I think, you know, if we have cavities, if we're continually having cavities or dental caries.

so erosion of the tooth surface. So that's the dental area. Or if you have, I'm sure that you've talked a lot in your summits about, you know, any kind of mercury or metal amalgam in the mouth is a is a source of toxicity.

Why the Oral Microbiome Matters

So that's one thing that we want to pay close attention to is the presence of, mercury amalgams, implants, root canals. All of those things are play an important, potential, important role.

And where the microbiome is concerned, then we think of things like the fuzzy teeth. So a sweater teeth that people talk about that's, made created by.

What are fuzzy cheese. You know what the fuzzy tooth, Sweater teeth. That's the other thing we call it in our company. But when your teeth get fuzzy by the end of the day, that, you know, when they feel, after you brush, if they usually feel smooth and clean, that's how we want them to feel.

If they start to feel a little fuzzy. And most people notice that when they eat a high carb meal or if they're, they're having candy, or, you know, high sugar, that it will come on more rapidly.

But a lot of people will have if we have oral dysbiosis, that is a biofilm. Fuzzy teeth is a biofilm generated by the microorganisms that live in the mouth.

So you can see where. I suppose that when you wake up in the in the morning and your, you know, your teeth feel a little coated and you may have some coating on your tongue that's that fuzzy or sweater tongue, tooth kind of feeling.

Yes. And so oral dysbiosis is one of the main causes of that. In fact, for me it would come in that if people you if people have regulated blood sugar, low inflammation, we wouldn't expect to have have after they brush their teeth until they eat again, we wouldn't expect to see fuzzy fuzzy teeth unless they have microbial dysbiosis in the mouth.

and there are certain microorganisms that are primarily responsible for the production of, of those biofilms or the the fuzzy teeth in the mouth. Okay.

So, which, which, which are those microorganisms that may make us fuzzy, which bugs? so the primary producers in the mouth of oral biofilm, the fuzzy teeth are Candida albicans.

So we think of candidiasis. That's that's a common bug that we talk about in gastrointestinal and even systemic dysbiosis as well. It also it lives in the mouth.

It's in infants. It's thrush. So when they get that white coating on the tongue that's a biofilm that's caused by can Candida albicans typically. But it could be other Candida species as well.

And then Streptococcus mutants. Now I think it gets that's a gram positive bacteria. And it it produces so much acid that it is really closely linked to cavities.

And what happens, you know, it's a full system. And as a naturopathic doctor, I tend to think about the whole system, not just a single microorganism, but these are poly microbial, meaning many different microorganisms in a biofilm.

And biofilms are not innately bad. There are good microorganisms in a biofilm as well. What we want to see is the beneficial microorganisms predominating, the biofilm and what what can happen over time is that some of the pathogens can start to or harmful organisms can start to predominate.

And they have most people have heard of a keystone species of a of a microorganism. Hang on. Let's explain. Keystone okay. So a keystone beneficial microorganism sets the stage for other beneficial microorganisms to flourish in the gut, in the mouth, anywhere on the body.

the same is true for a keystone pathogen or a harmful organism. So if we have it can move either direction. So we want to see some of these good bugs that we know are really good players that are that are keystone.

That will set the stage for a beneficial, biofilm to grow.

Signs of Oral Dysbiosis and Biofilms

But what we do know is that some of these bugs are keystone pathogens. When we see them start to flourish, then we know that we could be looking at what is the beginning of a sort of a forward feedforward cycle.

So we talked about teeth. I haven't mentioned gums yet, and I want to make sure I don't forget to mention what happens with the gums when we get oral dysbiosis as well.

Do you want me to do that right now or if. Well, I'm going to take just a moment to expand on the term keystone. Okay. You know, there are these bridges and arches that have been built, a long, long time ago that, are built, using a wooden arch.

You you put all the rocks, on there. They fit snugly and then there is a keystone that is at the top of the arch. When you when you put that in, it locks all of the, stones in the arch together.

And you can take away the wooden supports. And now the bridge is held up. And that's how bridges were built thousands and thousands of years ago. We have more of those wonderful bridges in my hometown, Elk, Iowa, 3000, Keystone Bridge.

And my great, great grandfather helped help helped build them at school. so what what what we're telling you is that if you have these particular organisms, either helpful promoters or harmful promoters, their presence keeps the other organisms that may, may or may not be, sustainable without that keystone.

Exactly. Okay. Now I'm going to hand it back to you. I just had to share my. I love that story. And I think it helps people understand the importance of, just what a single overgrowth of a single microorganism, if it's a pathogen or a keystone pathogen, will create a problem.

You know, that that. Troublemaker. Ripple effect. Can make other organisms that would not be troublemakers into now bad actors. Exactly, exactly. Perfectly. Perfectly put.

so what, the other piece that I kind of went sideways with, with the past when the keystone aspect of this. But it is important because the other thing that happens when we have biofilms that are produced by, by pathogens in the mouth, those will eventually work their way down between the tooth and the gum and remember, we're a whole organism.

So it's not just the microorganism, it's how our immune system's interacting with a microorganism, which is where the neuroinflammation comes from, that when we're talking about the mouth brain axis.

So you think about those bugs are wedged there. Our immune system sends up a red flag. There's a bug here we need to address it. But the issue is that our immune system cannot break down the biofilms.

So what happens instead is that it fires and fires and fires at the biofilm, and it causes all the way that it's trying to kill. It is with reactive oxygen species or inflammatory damage.

And that causes damage, collateral damage to our own tissue and the lining of the. So the cell with between the periodontal pocket and our systemic blood flow is just a single cell layer.

Okay. Hang on. Periodontal pocket. I'm sure our our audience doesn't know what that is talking about. Okay I get excited, I get going. So I'm grateful that you're here to read me a little bit.

so I'll back it up a little bit. So we have the tooth and we have the gum sitting adjacent to the tooth. Where the where the before the tooth enters into the bone.

And between this sort of it's called gingival area. So the gum right in between those two areas is a periodontal pocket. So there's when you go to the dentist and you hear them saying 1 to 1, three, four, one, they're measuring the, the depth the in millimeters of those periodontal pockets.

And we want to see those, you know sort of the shallower they are the healthier they are. It's kind of the rule when you get to fours and fives. That's not a good sign.

and so that would indicate that you have a deeper periodontal pocket. It will absolutely have some biofilm and some inflammation in it. And I think the easiest way to see that for the consumer is when you floss, you get bleeding in your gums because that bleeding fragile. Yes.

You have fragile tissue in that area. or when you brush, you know, if you. Spit, brush vigorously brush hard, hard, hard, hard. Does it cause bleeding floss?

Do you see blood? That's trouble. And so I said you. And not brushing hard is actually not a good idea. So brushing softly is a better idea. Really? Well, but we don't want to brush hard all the time.

If you're doing the test for bleeding, you have to brush hard. Oh I see. Okay, so we want you to brush softly when you're just doing your dental hygiene.

We want you to floss. But you can you can floss. You see blood. you can also brush. and I've done this test, when I've examined my patients. give them a fresh toothpaste. I say brush hard.

I want to see if we can get any blood or not. And that's easier than getting people to floss in front of me. I love that you said that. Okay, I was I had it backwards in my head.

So, Yes, as part of the sort of a test, right? To see if we want to see, like, typically you asked me this question, and I tend to I tend to meander a little bit, but I want to go back to the question you asked, which is what basically, what would we be looking for to identify signs of issues in the mouth.

Right. And so pink puff or pink, we want pink kind of firm gums. If they're red and puffy bleeding. That is a those are all symptoms of periodontal or so.

Periodontal disease is an umbrella term for both gingivitis.

Gums, Periodontal Disease, and Inflammation

So inflammation in the gums and also periodontitis. and so it covers both of those things. And it's actually the single most common inflammatory disease on the planet.

You know, I. Think it's a, a leading cause for why people lose their teeth. I mean, it would not surprise me. I don't know that, but I. That is the leading cause of too fast.

So, so what what why does this happen? So the causes of of microbial dysbiosis and or poor, it looks very similar. All that because I assume it's a spectrum.

We start with dysbiosis. So we end up with this periodontal disease and losing our teeth. Yes it is a spectrum. I I've had a conversation with a couple of experts, both Ron MacLennan and Tom Nabors, both, doctors, dentists who are owners of labs, that do testing for pathogens.

And, and they both. Now, I've lost my train of thought. What was I talking about? I can't remember what you asked me, Terry. I'm sorry. So we asked, how does it occur?

How does the oral dysbiosis occur? Oh, okay. So what they both told me was that before you can even have visual signs, oftentimes you can detect the, the, oral pathogens with testing.

So that's one piece to be aware of is that we can do our due diligence by looking in our mouth. But sometimes the, the, the issues partly underway already.

and what causes that. So I kind of put it into areas. The first is that obviously hygiene is important, but I think we're largely talking to people who have good oral hygiene and what can be frustrating is that you can have perfect oral hygiene, but if you have something else that's creating an underlying issue, you need to address that too.

and so those are things like diet. I think these are a lot of the things that you talk to your, to your clients, consumer base and practitioner base about.

So eating a healthy diet, low refined carbs, low in refined carbohydrates, which are for sure. Well, create an overgrowth of yeast and, pathogenic flora in the mouth.

And, stress is it has a huge connection to oral, disposal biases as well. I think of it very similarly to what causes gut dysbiosis. So smoking is a problem as well.

not getting enough sleep, toxic relationships, toxic work environment, all of these, diet and lifestyle events, I would say the standard American diet, you know, of course, plays a huge role as well, in creating a problem there.

okay. Okay. So, I think I heard suggestions that testing your oral microbiome might be useful. Is that part of what you were trying to tell us? Yeah, it can be very useful.

And it was the reason I wanted to share it is because, it's something that I wasn't aware of and I wouldn't have necessarily. It's not wouldn't have been intuitive to me, which is that, and, you know, I would think about it the same way as maybe any chronic illness.

the stage is set well before the symptoms arise. And the same is true in the mouth that the stage has been set. You know, we'll start to have again, you mentioned that spectrum.

So we might have, you know, healthy, or the other thing I would think about is antibiotic use. Of course, that could help to dysbiosis as well. So say you have a healthy child, vaginal birth, nursed for a couple of years.

Mom is eating a healthy diet, babies eating a healthy diet. Great microbiome. They're kind of cruising along. They lose their first set of teeth. They're getting good teeth.

They get some sort of strep infection. I'm just this is just an example. Right. And then they go on an antibiotic and that can create some oral dysbiosis.

And over time it may not show up right away. But maybe in a year or two they start to have some dental caries. They'll start to have some cavities. And that will, over the course of time, become more of an issue.

And when you get those keystone pathogens involved or pathogens involved, but then you'll start to see the development of not just dental issues, but also the periodontal issues.

The soft tissue will also be involved as well. So it's it is a spectrum and there's a lot we can do to prevent it. Probiotics. And you know of course good oral hygiene but antimicrobials, toothpaste and all of that.

And probiotics, for the mouth. Yes. You know what? I love that you said that because that's exactly the like. That's exactly how I think about it. Everybody thinks I'm already taking probiotics for my gut. Why?

For the mouth. So the first thing is that they're separate. They're different microorganisms that we want to focus on in the mouth. and the second thing is that, okay.

Now I'll stop. So if I'm taking probiotics for my gut, I'm taking it and I'm swallowing it and it goes down to my stomach, and you have to worry about does it, you know, stomach acid deactivated.

If I'm taking it from my mouth and I swallow it and it goes to my gut, or what? Do I take a probiotic solution and I swish it around in my mouth. How do I take oral probiotics?

Well, so you can take there are some microorganisms that are beneficial both in the gut and the mouth, but there are very particular microorganisms that that are beneficial in the oral cavity.

Those we will swallow those. So this is a I think this is amazing data okay. You know I'm confused and what this in my mouth. But I'm going to swallow I'm going to put it in my mouth.

And we take a glass of water, a swallow. It goes to my stomach. It's a tablet. They're taken as a tablet that dissolves in the mouth. Okay. Now it's making a. Lot of stuff present in it.

Keep it present in the mouth. Let it dissolve in the mouth. Don't rinse the mouth if you can help it afterwards. Yeah. Okay. Perfect. Yeah, I hear that.

Now I get why you're confused. Yeah, I like okay, I want to make that clear to everyone that when you're taking your oral, probiotic, you want to keep it in your mouth.

I know there are some gums out there that work. I don't know if there are solutions, but this tablet, makes sense as well. Yeah. So just to dissolve it slowly and let it sit there.

And we do have ten to the eighth microorganisms in a milliliter of saliva. And we swallow a liter of saliva a day. so it's pretty important what's growing in your mouth, too, for what's going to grow in your gut.

And there is research showing that people who brush after every meal will have less yeast Candida species in their stool than people who do not brush after the meal right after their meals.

Oral Probiotics and Mouth Health

So really proof positive that not only is it going to affect the microbiome in the mouth, but what's growing in your mouth will also translocate or move to the gut and populate there as well.

Should we also talk about nitric oxide? I mean, I would love to talk about nitric oxide. I think it's very, very fascinating. And do you do you want me to lead or would you like me.

Or you go ahead because I would. You know, we're talking about the mouth. People don't realize how important we need the bugs in our mouth to help us with nitric oxide.

And I'm going to hand it off to you. And you get to tell me why. So I'm not going to be able to come up with the names of the microorganism. But what I can tell you, the listening people listening, is that we have microorganisms that live in what are called the ruby.

So that way down inside of our tongues and those microorganisms will take nitrogen that we eat in our food and make it into something called nitric oxide.

And nitric oxide out in systemic tissue helps us with circulation is kind of the easiest way to think about it. but so many other things. But if we're talking specifically brain and I would love to hear your perspective on this as well.

Doctor walls is that we want perfusion. We want movement of blood into the capillaries of the brain, nutrients. We want to move out any kind of, toxicity or, you know, the lymphatic flow.

We want all of those vessels dilated in the brain, in the whole body. But that's where I would go specifically. And

the the thing to be aware of with nitric oxide producing microorganisms in the mouth, in particular, is that many of the mouthwashes that are on the market right now will completely sterilize the mouth, and it does kill those.

Some of those beneficial nitrogen fixing bacteria, to the point that you can actually detect differences in blood pressure after people use those, those mouthwash is so that's.

Yeah, what I love. I think part of the reason, the Wall Street's been so helpful, it's very high in nitrates. This, nitrogen. So it's, high, because you have so many greens.

we encourage beets that gets those dietary nitrates to get into our bloodstream, which then comes out in our saliva, which then feeds our bacteria to help us make the nitric oxide, which is important for, blood vessel health.

But we now know it's also a signaling molecule in our brain. It's a signaling molecule and many more physiologic symptoms than we had appreciated in the past.

So I think it's another example of how as the science gets better, we're unraveling more and more that we are very dependent on the microbes that live in and on our body. and, the more we can help support having the right microbes with this, the healthier our our bodies will be in, the better our chemistry of life will be.

It's beautifully said. And the other thing I love about what you just said is the mystery of it. Great, is that we only know what we know right now. In ten years, it's going to look different. It's going to look different.

You know, we didn't know any of this stuff when I was, you know, going to medical school, back in the 1980s, we didn't know the microbes were all bad.

and we thought that was a we had a very different understanding. And, of course, the things that you and I know to be true now, we'll learn in another ten years or so that we have a few things wrong.

and as our science gets better, we can unravel more of these mysteries. you know, just before, our meeting, I was meeting with the, computer engineering folks, and we're talking about using artificial intelligence, to understand some of our data that we have, in our studies, we are just learning so many, new things about how the chemistry of life works.

And now that we can use more sophisticated big data analysis. So we'll we'll learn more and more about what are the key elements to have healthy physiology.

And one other thing I love about what you said is that just now is that I think what what you recommend, you know, the what you bring forward with the walls protocol.

and I think what plants offer and what sinking into natural plastic medicine for me offers is that we've we've been around for a while, and we know plants have been around for a while.

We know the microbiome has been around for a while and we know how to work with our diet and our lifestyle to optimize our own function. So while we're learning all these other things and they're very, very cool, I tend to really lean back into how did our ancestors eat?

How did we.

Nitric Oxide, Diet, and the Microbiome

Yeah, I mean, it's so it's how can we this is how we support health. And a healthy microbiome is to is to replicate what whatever your belief systems are.

However long we've been here, we've been here longer than the last 100, 120 years of of human innovation and understanding. physiology. And so I do tend to lean back into that with, with a lot of humility because to, you know,

that's somebody knows better than I do, whether it's evolutionary creation, how to make all of this happen.

You know, you know, I think it's really helpful. and I want to point out to the listeners, you know, our ancestors evolved in equatorial Africa. we separate from other primates 6 million years ago, and for our genus, 2.5 million years ago, and then our species 250,000 years ago.

And humans migrated all over the world eating a wide variety of stuff in a wide variety of ecosystems. So there will never be one correct diet. And if you ever find someone who says there's only one correct diet, stop following them immediately because they're wrong.

But we do know that the standard westernized diet that leads to poor health, and we can have debates over ketogenic period, the Mediterranean, intermittent fasting, calorie restriction diets, and the carnivore diet even, and the all that will be helpful for some people.

super interesting what I, what I love about getting into big data and more AI research is the more I can show the mechanisms of why my dietary and lifestyle interventions work, the more my conventional scientists say, God, doctor walls, you really are on to something.

I love. This movie. That's why it's so important, because I have to convince them that the mechanisms of why diet and lifestyle work, all of you can look back at, if we look back to what our great grandparents were doing and people weren't fat, it wasn't so many diabetes.

It wasn't so big cancers. They died early from infection and trauma, but they had healthier physiologies. Right. And joint space is intact. Right. And right.

And, you know, they were vigorous, into their 70s, 80s, 90s. My, grandfather was baling hay at age 88, taking his, bale of hay, throwing it up over his head.

he is a strong, strong guy. So there are many ways to have good health in many different diets, to have good health. The standard westernized diet is that one of them.

Here, here. and, you know, there, and for plants, you know, it's sort of I'm going to have you give me your comment to this. My, my carnivore friends, will tell their followers that plants are poisonous because, plants make poisons to fight off the insects and everyone else that's trying to eat them.

Therefore, we shouldn't eat the plants. We should just eat meat. And that's their, take on life. Okay. how would you respond to that feedback? And then I'll tell you how my, my personal response.

But okay. so I haven't studied the carnivore diet except for to know just basically what that what you said. my, my initial response is that we would be in a particularly in relation to the microbiome, we would be completely starving out the microorganisms in the gut if we only ate meat.

So all of these beneficial microorganisms depend upon prebiotic fibers in order to replicate in the gut. And I know we haven't gotten into into I mean, nitric oxide is just one where, the nitrate in the food that you eat is the prebiotic.

And that's coming in that it's not coming in meat. Right? I mean, I know there's nitrogen and amino acids, but I don't think that's a source of nitrogen.

I have a very different microbiome. You have a very different microbiome. Yes, absolutely. Yes. so that's one thing. And then, of course, I think of the rainbow of colors, the phytonutrients that we use as antioxidants in the body.

so I would, I would be hard. It would be a hard sell for me personally to take out all vegetables. So, there are a few societies that do thrive on, carnivore diets, eating only animal products, particularly in the Arctic.

most of humanity has eaten a combination of plants and animals and, let's say evolutionary. We're probably better

adapted to that, in my responses that, yep, it's the dose that makes something medicinal or toxic.

and so if you're eating plants, having a wide variety of plants, we have all these little poisons in small doses that optimizes how my cells run the chemistry of life.

And it's the same kind of hermetic stress that my carnivore folks love when they talk about saunas and ice plunges and strength training. so, we're getting our Homeric stress by eating a wide variety of plants.

It is why I tell my tribe. As much as I love kale and asparagus, if you have kale every single day at every meal, eventually all those toxins and kale will begin to compromise my health.

But if I have kale today, let us smile. Spinach the next day beat greens, in a parsley onion salad. The next day that I'm getting all of the a little hermetic stress, and all thrive.

I love that it's very thoughtful. And I. And there may be some people, for it to carnivore diet may be hopeful. but the kind of where people haven't done their homework in writing up case reports in case series.

So you and I don't know how to use it. so I'm a little frustrated about that. I'm hoping someday they will write, some, scientific papers for us. and get published in peer reviewed literature so we know how to utilize these things.

Yeah, I agree. So, how is oral health related to brain health? so we talked a little bit about the oral biofilms and the damage that happens in the periodontal pocket when we get a biofilm there.

one of the there are few pathogens. Now, this is not a keystone pathogen, but a different gram negative bacteria. It's called por from honest gingival.

It's the bacteria AP gingival that's most closely linked to autoimmunity. And, and any kind of oral dysbiosis. It's has quite a lot of research behind it at this point.

and so I'm going to use that as an example for what can happen when things go awry. So if you get overgrowth of gingival in the periodontal pocket it produces lipopolysaccharide LPs.

And that is since we are just on toxins we can say this is also a microbial toxin. So this is something is being produced by the microorganism that is so toxic.

It is actually the single most potent inflammatory molecule to the human body.

Oral Health, Brain Health, and Treatment Options

It's so it's so inflammatory. It's used LPs is used to damage human tissue when they're doing research in it because it causes so much inflammatory damage in it.

so in my head, this is me grappling, right? So we have this huge gut microbiome, way more microorganisms, you know, in terms of sheer quantity in the gut than and diversity in the gut than we do in the mouth.

So in my head, I'm like, why? Why is it so important? What's growing in the mouth? Why are we seeing such a strong link between oral dysbiosis and and brain issues in particular, some other, autoimmunity as well?

But we're seeing it particularly with things like Parkinson's, Alzheimer's disease, multiple sclerosis. And and, and it occurred to me that in the gut, it's a very heavily policed area in that everything that leaves the gut goes to the liver for the first pass, and it gets cleared by the liver.

LPs this very inflammatory molecule is cleared by the liver as a priority. So we know in the research that the any LPs it's given into the systemic circulation is cleared immediately by the liver.

But when it's in the mouth you can think about the proximity, just the anatomical proximity to the brain. But if you get leaky mouth, right, we think of leaky gut.

But if you get leaky mouth from damage to the periodontal tissue, you can get movement of those metabolites that LPs and other pro-inflammatory metabolites directly from the periodontal pocket into the circulation right adjacent to the brain.

It gets to go through your whole body before it gets cleared by the liver, rather than getting cleared immediately when it gets into circulation. And so that's why it's so important, even though it's a relatively small in terms of quantity, the bacteria living there, it's still it's it packs a much bigger punch in terms of stomach inflammation causing systemic inflammation.

And I didn't know this when I was in practice. I wish I had, I, you know, you didn't. Have to send in medical school either. Yeah. I think, if I'd only known, and I would have, I would have been including oral health exams, more physical exam in my practice.

If I had known this and understood the, the importance of it. but it's just so fascinating. And it again, you know, it it it makes sense once you think about it in that way.

Well, hopefully on the listeners are fired up now about their mouth. They're like, okay, I want to get my mouth tuned up. make sure I don't have this leaky mouth.

don't have LPs getting from my around my teeth, in my bloodstream, into my brain. So, what what what can they be doing or what should they be doing? So of course, regular dental appointments, brushing twice a day, flossing every day.

and so the oral hygiene you need to have that dialed in as sort of a first thing. Now the other thing that you can do and something that not a lot of, toothpastes out there offer is that you can use a tooth based like the dental side and is an anti-microbial toothpaste.

So it depends upon, plant based antimicrobials to help to balance the oral microbiome. So what we don't see is this complete wipe out of all of them, flora that you might see with some of the other sort of more, chlorhexidine or some of the oral rinses that will have or mouthwashes.

where are you, where are you basically wiping out all the good and the bad, akin to something like what an antibiotic would do? so the nice thing about working with these plants is that what we have been able to see in the pilot research that we've done is that it restores balance.

It's not coming in wiping things out. It's working. We know it's immunomodulatory. In addition to being antimicrobial, it also supports a healthy immune response.

So you can imagine it just at that intersection where the microbiome is interacting with the human body. It also modifies that in a very good way. and so we start to see promotion of healing of the tissue of the oral tissue.

And we, I mean, we just have excellent feedback and we also have some, some research underway as well. So that's a, antimicrobial toothpaste is a is a very powerful.

And what we hear all the time is my teeth aren't fuzzy. Yeah. I mean, it's really basic, but this is an easy way to tell, you know, like, it's lovely.

I use it, I, personally, love this. And my dentist also says, like, well, this is, this is really good. And, so I have very low numbers on the dental pocket score.

So it's good to hear. Yeah. Okay. So go ahead and sorry. So where do people go to learn more about, Dentalcidin and biocidin. So biocidin.com. We have consumer blog. We also have patient.

It's called Biocidin Academy where if you're a practitioner you can get we have so much educational content there not just on oral health but the microbiome in general.

and it's a great resource. We've worked really hard in the last 3 or 4 years to develop resources to help educate the practitioners. and I'd love to mention, too, that we have not just the toothpaste, but we also have an oral rinse that's a Liposomal Rinse so that if there is, an issue with the periodontal pockets, the Liposomal activity will get deeper into the periodontal pockets, whereas toothbrushing is more of like a superficial, where people where we really see the needle move for people with periodontal issues is when they include the Liposomal Dentalcidin LS is what it's called.

And we do also have an Oral Probiotic as well. That's one of our newest products in our line. And I gather that's the tablet. It's the tablet. And it has researched every where.

We've either done research or we include researched ingredients in all of our products. And in that dental, the Dentalflora is what it's called. It has a streptococcus species that's a beneficial species.

And it's, called (BLIS M18) and it has and it has. So it has 4 or 5. I can't remember now the number of microorganisms, two of which are strain specific and two of which are, You know, these, specific for, nitric oxide to.

Not know, you know, and I don't know, actually, if there is an oral microbe, I don't think there is an oral probiotic that that addresses those species in particular or that supplements those species.

Okay. Well, Dr. Jocelyn, this has been wonderful. I so enjoy always our interviews and chance to chat with one another. Well, it's a true honor always to speak with you, Dr. Wahls, thank you so much for having me.