Episode 88 Transcript

Dr. Jaclyn Smeaton (00:01:05:23 - 00:02:26:04)
Hi everyone. Welcome back to the DUTCH Podcast live! I'm really excited to have Colleen Cutcliffe join with me today. She's from Pendulum Probiotics, which has really made a splash in the industry over the last several years, really innovating in the probiotic and digestive health space. So I want to share a little bit about Colleen. And then I'm really excited to dive in and let her share more about what she's seen on how probiotics and gut health can really impact overall health and longevity because there's a lot to talk about there before we dive in. I'm Colleen Cutcliffe is the chief executive officer and co-founder of Pendulum. She's more than 15 years of experience leading and managing biology teams across academia, pharmaceuticals and biotechnology. And prior to starting Pendulum, Colleen was a senior manager of biology at Pacific Biosciences, quite a bit company, and a scientist at Allen Pharmaceuticals.

Colleen completed her postdoctoral studies at Northwestern's Children's Memorial Hospital, and she received her Ph.D. in biochemistry and molecular biology from Johns Hopkins and her bachelors in Biochem from Wellesley. Another Mass native. That's where I live. So welcome. It's so nice to have you on the podcast today. So I love to start with just your story.

Where did the idea for Pendulum come from? And you know, why did you decide to kind of move into that space in science and in health?

Dr. Colleen Cutcliffe (00:02:26:04 - 00:03:38:15)
Well, I think one of the really interesting things about the microbiome is that up until about 10 or 20 years ago, there was very little data that supported what her actual targets in the microbiome.

And so you have a lot of probiotics and yoga to the shells for a very long time. But DNA sequencing technologies are actually what enabled us to fully sequence the entire microbiome and understand what are these bugs doing, how do they interact with each other, and how do they potentially help us in human health beyond just kind of GI issues?

And so for me, I was in a DNA sequencing instrument company. It was a huge opportunity to apply this technology in a new field of medicine that I think we all inherently know. Our gut health is important for us, and the science is just now catching up to that gut feeling if we want to start with the stupid puns now.

And so for me, there was this huge opportunity to really tackle the microbiome and human health from a different angle, which is rather than going after pharmaceutical drugs and the the kind of typical way in which you develop interventions go after the gut microbiome. And it started with what is the gut microbiome, what's in it, and how do you start to target it?

Dr. Jaclyn Smeaton (00:03:38:17 - 00:04:51:02)
You know, it's I just interviewed Dr. Darshan Shah and he called the gut the billion-dollar pharmaceutical factory that we all carry around with us. And really, it is amazing the more you learn about the byproducts. And we have like prebiotics and probiotics. But now we're learning about post-biotics, too, and just the impact that different strains of bacteria have on production of compounds that influence our overall health.

So, I mean, this is a fascinating field we're going to have so much to talk about today. But for people who are really just learning, because our podcast listeners are a lot of practitioners are probably here because they really want to advance their understanding of the microbiome, but also a lot of patients. And I think it can be surprising for patients to really realize just how big of an impact that gut microbiome can have on their health.

And now, thankfully, microbiomes everywhere. We're all hearing about it. But since you've entered the space, what have been the biggest surprises that you've learned about some kind of impact between, something in the microbiome in the gut and a human health condition that would normally seem unrelated?

Dr. Colleen Cutcliffe (00:04:51:02 - 00:06:40:04)
Well, I think the first surprise, is how little we've been able to target the microbiome to date. And so there are a lot of probiotics that are on the shelves right now. And if you have ever stood in a drugstore or Whole Foods and just been overwhelmed by everything on the shelf, you're not alone. Yeah. And one of the things that surprised me was how similar all of those products actually are to each other. There's a lot of marketing innovation that's happened, but not a lot of actually ingredient innovation.

And even companies that come out and say they've got a new strain, it's really, very subtly different from the strains that are already out there. And so they haven't really been able to tackle an entirely new part of the microbiome or a new to a new part of health through them. So the first thing was surprising to me is, oh my gosh, how little is available to us as consumers out there and how much more we could be getting access to.

I think the second thing is we really went after the gut metabolism access and GOP wants to become super popular nowadays. We've been targeting it for over a decade before anybody knew what GLP one was. And I love that everyone knows what it is now and how important it is for our bodies and for our metabolic health. And what a lot of people don't know is those GLP one drugs are a mimic of our body's natural GLP one hormone.

And so your body makes its own natural and hormone. And when it's making it in the right doses and in the right cycles, you actually get all those benefits of good weight, good metabolism of your sugars, good satiety, not overeating. And the microbiome is what stimulates GLP one production. And so probably the second most surprising and awesome thing is that you can impact your GLP one levels through your microbiome in a really completely natural way, and that you can use through certain, design strains of probiotic

formulations. You can actually lower your ANC and your blood glucose spikes through a probiotic alone.

Dr. Jaclyn Smeaton (00:06:40:04 - 00:07:09:08)
That's amazing. Yeah, that's and I want to spend more time diving into DLP one. One of the things you talked about was kind of innovation in the probiotic space. And I think there is I've seen that too. It was all like, you know, lacto and Bifidobacterium that you see across the board.

And there tell me a little bit about some of the challenges of bringing new strains to market, because I think, you know, we think of it in the gut. Let's just put it in a capsule and we'll deliver it. But it's not that simple, right? There's a lot more complexity to figuring out if a strain can make it, how it will survive.

Dr. Colleen Cutcliffe (00:07:09:08 - 00:08:06:06)
Yes. I think that, if we hadn't had this simplistic view that you just make it and throw in a capsule, give it to people, we probably never would have started this company. Because you're right, it turns out it's actually pretty hard to bring these things to market. Yes. The first challenge was, as you alluded to, actually growing the strains, for sure.

We thought we'll just outsource these growth. I mean, people have been manufacturing probiotics around the world forever. And so we thought, well, identify these strains will hand them off to a contract manufacturer, they'll make them throw them in a pill and then we'll sell them. Well, first of all, the gut microbiome that when we think about the gut microbiome and all the new science coming out of it, it's actually located in the distal colon.

So that means, you know, you eat food, it goes into the stomach. So it gets through the stomach acid, through the entire GI tract to the distal part of the GI, the distal colon. That's where all the action is. So when people say gut microbiome, they're really talking about the distal colon.

Dr. Jaclyn Smeaton (00:08:06:06 -00:08:06:28)
I didn't know that that it was like more of the but lower third of the colon.

Dr. Colleen Cutcliffe (00:08:06:28- 00:09:28:07)
Exactly. Right. And in the distal colon, there's no oxygen. So by the time you get all the way there, there's actually no oxygen there. So a lot of these next-generation strains can't even survive with any oxygen. Well, there's oxygen everywhere. And so it turns out when you try to manufacture them in just a regular plant, they were all dying because you had to create this closed end-to-end system that kept all the oxygen out.

So the first was, well, these are actually really hard to grow. And the second was, well, how do you then deliver them all the way back to the distal colon. So if you really want to deliver

them back, you need to have an enteric, coating which gives them to the stomach through the stomach acid and a time delayed release.

It gets them all the way to the distal colon. And so there's the how do you grow the strains? How do you get them into a capsule that's alive in a live fashion? How do you then deliver it? And then how do you hope that they colonize? And so we ended up including a small amounts of prebiotic with the strains in order to help them kind of have the food that they're going to eat.

You know, I mean, think about it like, if you were going to drop me on a deserted island, I'd love it if you dropped me off with a cooler full of beers and sandwiches. So we're giving them their beers and sandwiches so they have food to eat when they first reenter the world. And then they have to colonize and do their activity.

And so there's actually a lot of steps in between discovering, theoretical, intervention and then actually delivering on that promise.

Dr. Jaclyn Smeaton (00:09:28:07 - 00:09:43:09)
I think there's a lot of value in people understanding the number of steps it takes to make an effective product and bring it to market, because and I'm grateful that you didn't you weren't as aligned with that complexity about that because we wouldn't be where you are today.

Dr. Colleen Cutcliffe (00:09:43:09 - 00:09:55:19)
Yeah, absolutely. And the other part is also regulatory because when it truly is a new strain, you have to do all the safety studies to make sure that you're not giving people something that's going to be harmful to them.

Dr. Jaclyn Smeaton (00:09:55:19 - 00:10:01:02)
So tell me a little bit about how you identified the strains that have really become the keystone strains that you're utilizing in pendulum products?

Dr. Colleen Cutcliffe (00:10:01:02 - 00:11:02:00)
Well, it took us eight short years. I mean, it really was eight years of R&D before we got anywhere with, formulation. But we were doing a ton of DNA sequencing. We did sequencing of twins that were discordant for one twin is healthy, the other twin is obese or has diabetes. We were pulling data in from around the world on studies people were doing around metabolism and the differences between healthy people and metabolically, people with metabolic syndrome.

And then we were essentially taking those genetic sequences and saying, okay, are there genes in here where you could identify a potential mechanism of action of how they're, you know, why a person who's healthy might have a ton of them and a person who's sick is missing them, like, what are they doing in that healthy person's body?

And so it was a lot of DNA sequencing, biochemical assays, free clinical trials, clinical trials in order to identify strains that were doing two really important functions. One is metabolite using fiber in the short chain fatty acids, the others regulating the mucin layer of your gut lining.

Dr. Jaclyn Smeaton (00:11:02:00 - 00:11:07:22)
And so what are some of those strains that are really highlighted in pendulum products that make your company so unique?

Dr. Colleen Cutcliffe (00:11:07:22 - 00:12:53:21)
Well, probably one of the, more famous divas I call them divas because they were so hard to grow. One of the more famous ones, is acrobatic medicine, a fella, and this strain, I mean, it was just discovered in the early 2000, by Doctor Lee Caplan at Harvard, MD. She was actually a bariatric surgeon. I was trying to understand after bariatric surgery why people were immediately having resolution of their diabetes.

Symptoms and realized this must be something hormonal. So he's looking to the gut microbiome. And what we've learned over the last 15 or 20 years, that actor Mancilla has just been exposed and growth of knowledge of this strain. And it does two important things. One, it stimulates your body's natural GLP one hormone. They've only ever been two strains in the world.

Published to be able to directly stimulate GLP one. An actor, Sia is one of them. And the second thing it does is it's the only strain that we know up to date that actually regulates the mucin in your gut lining. So your gut lining is sort of like a wooden fence where, you know, you have these wooden planks.

They're held together by glue. Over time and seasons, the glue can start to thin a plank can fall. And now you've got a, a leak in your fence. Your gut lining has exactly the same structure. You've got these epithelial cells that are like your planks held together by a glue, which we call mucin and agar. Sia is able to consume that mucin as well as replenish the museum.

So in other words, it's the guy standing at the fence all day and all night stripping away the old glue. It gets old and putting up new glue to make sure that that fence is always really strong. So when you're depleted in the guy that's regulating your glue, you have all of these issues with your gut lining that show up in a wide variety of indications.

Dr. Jaclyn Smeaton 00:12:53:23 - 00:13:16:08
Now that's really interesting. And I you're what you're really speaking to now is like gut integrity and microbiome. And this kind of complex relationship. Because acromion won't grow or thrive in an environment where the gut is really inflamed and damaged. Right. And

I'm also hearing you talk about the fact that that can be the cause of a lot of that inflammation and damage.

Dr. Colleen Cutcliffe (00:13:16:10 - 00:13:36:00)
Yeah, it is this sort of, you know, it's a real feedback loop in the body where if you don't have that mucin there, you don't have anything to feed the acromion because it does consume the mucin. And then it's also not there to replenish the mucin. So you, you can end up in a really bad catch 22 if you start to become too low in necromancy.

Dr. Jaclyn Smeaton (00:13:36:00 - 00:14:01:14)
So one of the things I want to really understand, or really allow our listeners to hear more about is pendulum is really unique because you have a very strong commitment to science and to clinical studies. That's one thing that I love about your company, similar to Dutch. Right.

So can you tell us a little bit more like as you bring Aker to market, what are the types of research that you've done or that you're really proud of and that you've really been able to highlight through the product development process?

Dr. Colleen Cutcliffe (00:14:01:14 - 00:15:10:13)
Yeah, I would say, first of all, it's not just the research we've done, but we collaborate with a lot of universities and clinical organizations to create data because I think it's just it's all about, the different efficacy you see across different populations. And, we certainly couldn't afford to do all those trials on our own. But probably the study that I'm most proud of is a formulation that contains Aker Manuka as one of the strains in there.

And this is a formulation which is designed to help people with type two diabetes. And we did a placebo-controlled, double-blinded, you know, randomized trial that was published in BMJ. And what it showed was that, for people who were on this formulation compared to placebo, after being in it for 90 days, they were able to see their A1, CS go down by 0.6 and their blood glucose spikes go down by 33%.

And the majority of the people in that study were already on metformin. So this is on top of metformin. And it just goes to show you that Holy smokes. The gut microbiome is this entirely untapped opportunity. And we could all be benefiting so incredibly from it if we just had the right gut microbes and the right tools. Yeah.

Dr. Jaclyn Smeaton (00:15:10:13 - 00:15:34:14)
Are you seeing, kind of acceptance or like, encompassing in the metabolic health space where physicians are starting to look more to these multi layers of therapeutics and adding on products like the GLP one products or like pendulums product to metabolic health protocols.

Dr. Colleen Cutcliffe (00:15:34:14 - 00:17:39:1)

I think it's such an interesting time to be in the medical community right now because, you know, ten years ago it was all very fringe. I mean, no real doctor, you know, is going to talk about any kind of supplements and I feel like, what's happened because all of these companies have really invested in generating data and clinical science and outcomes that are using gold standard diagnostic tests. You start to see a larger and larger adoption at the same time that all of that's happening, consumers have really taken health into their own hands.

And so now they're coming to their doctor with, hey, I'm taking these for these reasons. And then as a doctor or a practitioner, well, you better be knowledgeable in what your patient is coming to you with because they're showing you data. And if you don't know it, that's kind of embarrassing. And so we start to see a lot more practitioners, getting a lot more curious about the space because there's more data and because consumers are really pushing them on it.

I don't know if you've, read, Eric Topol's book, The Patient Will See You Now, but this whole movement, I am 100% behind. Exactly, exactly, exactly. And, you know, it's it's not to get into like, too much of a soapbox on this, but like, the most unfortunate thing about health care right now in this space that we're both operating in is that, nothing is covered.

And there's a if you're not a pharmaceutical drug that's gone through the pharmaceutical, the FDA passed and gotten insurance, you know, on board of you, which is a very closed loop system between pharma, the FDA, and insurance companies. If you're outside of that very closed loop, like you are with a supplement, you can't break into it. And it's a shame because if you look at the outcomes and you look at the benefits people have, they can reduce their GP one dose.

With the right, products, they can lower their A1 C's. They can feel better in a multitude of ways, that are all measurable. The losers in all of this are us, the consumers, because we have to be able to pay out of pocket for everything that's helping us in our own health. And I hope that we are going to get to a place where coverage is based on things that actually help us, and not based on a closed-loop system from 50 years ago.

Dr. Jaclyn Smeaton (00:17:39:18 - 00:18:24:00
Yeah, I think you're right. We have such limited access and you have to be a self-advocate for your health. You have to finance it. You have to do the strategy development. You know, you really have to look into it and I'm really grateful for so many patients today who are looking into these things for themselves. And I think a lot of physicians are also taxed for time.

I mean, if you ask the physicians, what's challenging is time management. So when those patients bring those new products forward, you know, it really serves as an innovation pipeline for providers to stay on top of what patients are utilizing and get them to take a look at it.

Dr. Colleen Cutcliffe (00:18:24:00 - 00:18:29:00)
Absolutely, absolutely. And I think when it comes to probiotics, that's where more education about the different strains and what they do is going to start to be highlighted. I mean, when you were in clinical practice, how did you think about the different probiotics that are out there?

Dr. Jaclyn Smeaton (00:18:29:00 -00:20:02:10)
Well, one, there was very little data out there and it was everything was lactobacillus and bifida. And so really we had knowledge of how children's got were a little bit different. So there was a distinction between what you use in children under two and what you use.

And I will just say humans over to children and adults. And then there were some specific strains, like the work that Jarreau did on there, fend off a product to actually go through clinical trials for a specific condition with specific strains. And I'm really grateful that since that time, there has been more strain-specific data because I thought about I mean, I'm I am going to say this and you're probably going to laugh because my understanding, as I'm sure, very simplistic compared to yours.

But I really think that when we look at probiotics 20 years from now, probiotics will be askew. It's going to be an entire category, the way that vitamins are or the way that herbal medicines are. Because as we get more strain specific information and we get a better understanding of the patterns of functional and dysfunctional gut, and that ethnic differences and, gender differences, we're going to be able to get enough information to develop more specificity, you know, and utilize it.

I think the I love the way that Dr. Darshan Shah said it to like, you're really stimulating production of a different pharmaceutical in the gut. And I love that that picture, because it's so empowering to think that just strengthening that healthy microbiome and getting some supportive microbes in there could help you transform your own health.

Dr. Colleen Cutcliffe (00:20:02:10 - 00:20:21:22)
Absolutely, absolutely. And I completely agree with you on the level of sophistication that we're going to be at in the future.

And, you know, it's like with vitamins, if you say to someone, oh, I feel like I'm starting to get a colon, they don't say, well, just go take a vitamin. They say, okay, take some vitamin C. Exactly. So we are going to get there with probiotics I believe it. Yeah, I think you're right. I think when we look back 50 years from now, that's the era we're in right now is like the era of the first discovery of a vitamin.

Dr. Jaclyn Smeaton (00:20:22:02 - 00:20:38:02)
Yeah I agree, I agree. So I can't wait I can't wait to get there. Me too. So let's talk a little bit about why the microbiome is so important for us to be talking about. I really would love to hear your perspective on the biggest areas of health that the gut microbiome impacts.

Dr. Colleen Cutcliffe (00:20:38:02 - 00:23:16:10)
Okay, now you're talking to somebody who's in the microbiome.

So, I going to proselytize here, but I think we've often thought about or we've historically thought about the human body as having 11 systems in it. And what we are realizing over the last about 20 years of research is that the microbiome is tied to every one of those 11 systems. So it's not just our digestive systems, it's also our endocrine system, which is what we really work on.

But there's also a lot of really cool data emerging around the gut brain axis. The fact that your gut can produce these neurotransmitter in massive amounts, your your gut is making huge amounts of serotonin, dopamine, Gaba. Why is it doing that? What why is that in your gut? Some of those are making their way to the brain and actually affecting, you know, brain activity.

You actually have neurons in your gut, one of those guys doing there. And so there's this incredible signaling that's happening between the neurons in the gut and the neurons in the brain. And probably one of the most fascinating things that's come out is that not only do you have these neurons in your gut, but it looks like traditionally, the way that we think about Parkinson's and Alzheimer's disease, which is a disease of the brain and oh my gosh, you get these plaques that form in your neurons and in your brain.

That's what you should go after. We now know that those plaques appear to show up in your gut neurons before they show up in your brain neurons. That's amazing. That's amazing. Yeah. That says there might be an earlier way to affect them, and you can affect your gut much more easily than you can affect, you know, the brain.

And so when you think about the opportunity for interventions there, it's amazing. And another, disease we've often thought of as a neurological disease is autism. But you'll know if you, you know, read the literature that there are a ton of cases where, you can change the diet of a child and actually change their symptoms of autism.

And it's not been entirely clear. Exactly. You know, it's a lot of trial and error and testing of the parents. Typically that gets you there. But the microbiome of children with autism is distinct from the microbiome of their healthy siblings. And so there's something really interesting there. And one of the most potent ways to affect your microbiome is through your diet.

And so I think we're going to find that all these diseases where we've been going after the brain, there might be a real gut opportunity there as well. And then we were just talking about, the opportunity for hormone therapy and the fact that there are a, category of, you know, Department of Strains, if you think about your microbiome is this big factory.

There's a department in that factory which is really interact with hormones. And so also a huge opportunity for hormone replacement therapy to have a, you know, a counterpart in the microbiome.

Dr. Jaclyn Smeaton (00:23:16:10 - 00:24:23:12)
Yeah. It's interesting because there are studies on, microbiome in women with breast cancer and women without that show distinct differences. And we talk about that a lot with DUTCH because we study estrogen metabolism in urine.

I'm looking at acid in metabolite. And we know that the last step of elimination for estrogen is in the gut. And it requires a healthy gut. And when you have elevation of look you're on, it is made by some just biotic genes. You get resorption of estrogen. And let's not talk about just estrogen, many other toxins, that are eliminated through looking at.

And so we do talk about that a lot. And, and we've seen we actually have early data just internally. We haven't published it in peer review, but we use a measurement in urine called endocrine, which does rise when there is dysbiosis. And it's not a, you know, a distinct diagnostic marker. It is a general marker that when the guts just biotic indicator comes up.

But we have actually seen in our, you know, tens of thousands of patients that we have done testing for that one into elevated estrogen tends to also be elevated, which goes along with that. The role, the important role that that gut microbiome has in proper bio elimination of hormones.

Dr. Colleen Cutcliffe (00:24:23:12 - 00:25:15:08)
Well, not only the proper elimination but also the property of proper recirculation and putting things, you know, back in the circulation.

And it's really interesting because we women have a very distinct microbiome from men. And so if you take a woman before menopause or you take a person, and you sequence their, their gut microbiome, you can tell just from that sequencing whether it came from a man or a woman. But after we go through menopause, we look like men, you know, can no longer tell whether that microbiome came from a man, from a man or a woman.

And it's because we've lost these group of strains that distinguishes from men earlier on. And so, yeah, there's a lot of opportunity to think about how do we're bring back some of those strains that really are interacting with these hormones? Or how do we help us not kind of feel like we're falling off a cliff as right through perimenopause and menopause.

Dr. Jaclyn Smeaton (00:25:15:08 - 00:26:17:07)
And it does make you think about some of the impact of hormone therapy on disease later on in life. Like, for example, we know estrogen replacement therapy can improve cardiovascular marker as well. Is that a direct effect of estrogen, or is that effect of

estrogen influence on the microbiome and then the microbiomes influence on cardiovascular markers? It's really a fascinating thing to think about.

And there's been I mean, my whole practice practices women's health. So I look at this a lot. And the microbiome has been an area of particular interest for me lately. Just because there's so much innovation happening in the research. And even progesterone, you know, progesterone has been known to prevent miscarriage for a long time. And of course, it rises so much in pregnancy.

But progesterone also causes distinct changes in the microbiome. And there's been some nice studies showing that miscarriage rates go down with those microbiome changes. So it does open up the world, like when we think about the role that hormones have on health. I really think about whether the microbiome is a meaningful intermediate step that we've just missed as we've studied like hormone and outcome.

Dr. Colleen Cutcliffe (00:26:17:09 - 00:26:39:13)
Absolutely. And I think the fact that, you know, as you pointed out, the last stop before these hormones leave our body is through the gut microbiome, and that there are these systems in the microbiome, to undo that and put them back in circulation or, excrete them from the body. You're like, there's a major gating happening here that we haven't even tapped into yet. So it's a, it's a really big opportunity.

Dr. Jaclyn Smeaton (00:26:39:13 - 00:26:50:20)
Absolutely. So why do some people lack akkermansia? I want to get back to that. Kino is the one that you really introduced to the market? Definitely a specialty. What leads to someone being low in it?

Dr. Colleen Cutcliffe (00:26:50:20 - 00:28:41:00)
Well, the first thing to know about akkermansia is that, it's actually never been found on any food or beverages. So far, people have been looking and they can't find it anywhere except one place, and that's in mother's breast milk. So the idea is that you get seeded with it from mother's breast milk, and then you spend the rest of your life trying not to lose it. And so the different ways that you can lose it, one of the most potent ways you can lose it is if you have to take an antibiotic.

I mean, almost every single one of us has had to take an antibiotic at some point. And that really decimates your microbiome, including akkermansia. So if you've taken an antibiotic, that might be one really big reason why you're low and akkermansia, if you don't have a lot of fiber and polyphenols in your diet, that's the second reason those are the foods that help boost acromion levels.

And so if you're not feeding the strain, you're going to be low in it. So if you if you're really good with your nutrition in terms of high fiber, high polyphenol, think about the, you know,

the produce section of your grocery store, the lentils and beans section. You know, these are all great places to be able to keep akkermansia going.

Another reason you might be depleted in akkermansiais we know that we just sort of lose it as we age. We know that we lose it. We go through periods of intense stress. We know that we lose it. We go through menopause. There are lots of just life events related to aging and stress and hormonal changes that are, correlated with the loss of akkermansia.

So, I think that it is amazing to me when I get to meet people who are really healthy in every other way. They're eating healthy, they're exercising, and then you give them a formulation that contains an intervention, and even they see health benefits from that. It's just this incredibly important strain that you can lose through a variety of ways that they have nothing to do with, bad behavior. And you just need to give it back to your body.

Dr. Jaclyn Smeaton (00:28:41:00 - 00:28:51:02)
Well, and it sounds like if you can lose it so easily and there's no food source and it really plays a unique role, like as a supplement, as a dietary supplement to really receive that.

Dr. Colleen Cutcliffe (00:28:51:02 - 00:29:29:03)
It does. And if you really want to, you know, boost a person's akkermansia, you would supplement them with the probiotic directly with the live akkermansia strain and the nutrition that feeds that strain. So that's the one two punch, high fiber, high polyphenol foods. And delivery of live akkermansia. You'll get it back.

Dr. Jaclyn Smeaton (00:29:29:03 - 00:29:34:03)
I'm really grateful that you bring that up, because I think that when it comes to the gut microbiome, diet is so critically important for maintenance and rebuilding. And so you that diversity of fiber, that and all the different prebiotics and they kind of uniqueness that they add is so critical. And I'm so grateful that for a company that's selling a product, you also acknowledge the role that diet plays in that maintenance process.

Dr. Colleen Cutcliffe (00:29:29:03 - 00:29:56:22)
It's so important. Nutrition and the microbiome are tied at the hip. You know, it's it's kind of like a high-performing car if you're just putting in, you know, you need really good fuel and you need a really strong engine.

That's how you get your high performing vehicle. And here the fuel is your food and the engine is your microbiome. If you just have the good microbiome and you're putting shitty fuel on there, you're not going to get the most out of your high performing vehicle easily.

Dr. Jaclyn Smeaton (00:29:56:22 - 00:30:16:09)
Yeah, absolutely. So let's talk a little bit about with akkermansia specifically, are there research you talked about GLP one and metabolic health and the impact on blood sugar agency. What about other areas like inflammation is another one that we think a lot about

with microbiome and gut health and some probiotic streams. Can you share a little bit of information about other impacts you've seen?

Dr. Colleen Cutcliffe (00:30:16:09 - 00:31:35:20)
Yeah, inflammation is a really interesting one. And I'll I'll maybe hone in on, the skin. And so one of the, kind of unexpected results that we've had with, people using akkermansia is improvements to their skin health and to find out that there are all these dermatologists and, skin care specialists who are using akkermansia with their clients or their patients and seeing resolution of things like adult acne, eczema, atopic dermatitis, and, it it's sort of like, just to get back to the car analogy for one second, it's like your check engine light comes on and you put a piece of tape over it and used to say, like, okay, I've solved the problem. That's what the topicals are like in a little bit of ways. Literally, what you have to do is to get in there and fix your engine.

And so that's what a microbiome intervention is doing. And so when you are delivering something like akkermansia and you're really enhancing that gut lining, you're not allowing things to leak out of the gut and create heightened inflammation. You're actually able to see it show up in all kinds of things that are related to heightened inflammation, including better skin.

And so we have people who are on our products who started on it because their practitioner told them, you got diabetes. I want you to be taking, you know, pendulum glucose control and the and then you ask the patient, why are you on it? And they say, oh my gosh, my skin looks so good. And the things that matter, the things that matter.

Dr. Jaclyn Smeaton (00:31:35:23 - 00:32:01:10)
Well, it is interesting though, because a lot of people come in, you know, and we're in like a longevity phase. So how you feel and how your biomarkers measure, that's an important element to it. But another element of that that people really do care about is their skin energy and of these more subtle things. So, you know, make any kind of impact that's as simple and inexpensive comparatively to so many procedures out there that can help with that improvement. It's remarkable.

Dr. Colleen Cutcliffe (00:32:01:10- 00:32:11:02)
Well, yeah. And as we age, we're all looking for the little leg up. That's right. You know. Well not you know, you and I not us, not just natural.

Dr. Jaclyn Smeaton (00:32:14:14 - 00:32:27:20)
Absolutely. So tell me a little bit more about, like, how the microbiome can influence our health span and our lives. And we talked about brain health. We've talked about inflammation, talked about skin. Are you feel are there any other areas that really stand out to you?

Dr. Colleen Cutcliffe (00:32:27:20 - 00:33:40:00)

Yeah. I think when we think about Health span, obviously we know that the, you know, your ability to metabolize glucose super important, you know, having good metabolic health. And the one we haven't tackled yet is immune health. So, being able to, stimulate your immune response when it's supposed to be stimulated and not have it stimulated when it's not.

You know, a lot of that is regulated through the gut microbiome, the immune system in and of itself. Like, I just like, have, you know, PTSD from classes. But I took an immunology. I mean, the immune system itself is incredibly complicated. And so thinking about how to leverage the microbiome to alter the immune response is, I think an area of, incredible interest and research.

But I think it's really it's a difficult space because the on-off switches for your immune system are so sensitive and so important. It's not like, you know, oh, I just want this thing to always be on. You definitely don't want it to always be on or definitely want to always be off. And so I think, there though the gut microbiome will play an important role in the immune system.

So I think your metabolic health, your immune system, your energy levels that we talked about, all of those things are important to, I mean, enjoying the process of aging.

Dr. Jaclyn Smeaton (00:33:40:00 - 00:34:03:21)
So tell me a little bit about like where is the future headed with microbiome? You know, I know we're starting to look at microbiomes in other organ systems. There was some cool studies on like people who had more complications with Covid was related to a lung microbiome.

I mean, it seems like the innovation opportunities are endless. So I'd love to know, where are you guys headed? What are you interested in if you're willing to share? I don't want to break any R&D, you know?

Dr. Colleen Cutcliffe (00:34:03:21 - 00:34:28:02)
I think there's still a lot more to be had on the gut metabolism axis. We're really focused on that. And how can you, even more effectively boost a person's metabolism at different stages of life? In different circumstances? Through the gut microbiome. And I think that, certain stages of life for your hormones are different for women are a big, area of interest for us.

Dr. Jaclyn Smeaton (00:34:28:2 - 00:34:39:20)
That's fabulous, because we certainly need more targeted products that are specific to that group, and especially because you see these microbiome changes, you know, like in pregnancy, the diversity gets wiped away.

Actually, it mimics the gut of someone with metabolic syndrome, from what I understand during pregnancy. And then you have to rebuild that postpartum and then you have perimenopause and menopause.

Dr. Colleen Cutcliffe (00:34:39:20 - 00:35:34:01)
So absolutely. And I think as, you know, women think about getting pregnant, it's one of the interesting things is that, your body starts to generate, you know, all the systems needed to make breast milk way before that baby is born.

And so even during pregnancy, if you want to be thinking about how do I optimize for breast milk, I think there's an interesting relationship between the gut microbiome, the breast microbiome, akkermansia is only found in mothers breast milk. And so how does it get there? Is it is it important to have high levels in your gut? You know, all of this is, I think, super interesting areas of active research. And, stay tuned because we and people around the world are going to keep learning more and more and hopefully develop more tools for people to use.

Dr. Jaclyn Smeaton (00:35:34:01 - 00:35:49:22)
I can't wait so thank you so much for joining us today. It's been so wonderful to get the chance to talk with you. And I think, you know, we at DUTCH and just generally the integrative medicine community, we're really excited about what you're up to and just grateful for the tools that you've been able to give to us as providers to share with our patients.

Dr. Colleen Cutcliffe (00:35:49:22 - 00:35:51:14)
Thank you so much for having me.