Healthy Microbiome with Viome

Episode 216 · February 25, 2021 · with Dr. Damon Tanton and Janelle Connell

IN THIS EPISODE

You are home to roughly 40 trillion microbes, and according to Dr. Damon Tanton, Viome's chief medical officer, and registered dietitian Janelle Connell, they may be running far more of your health than your own cells do. In this sponsored episode, Dr. Elliot Berlin, DC sits down with the Viome team to ask what the microbiome actually is, how it trains the immune system, and why looking at RNA — what your microbes are doing, not just who is there — changes everything. They get practical about pregnancy and babies: how a baby's microbiome is seeded at birth, what C-sections and antibiotics change, and how simple food choices can shift your inner ecosystem. Plus: stool-sample date night, a dad's unexpected microbiome donation, and why broccoli is not a superfood for everyone.

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DR. ELLIOT BERLIN, DC: Welcome to the informed pregnancy and parenting podcast I'm your host dr Elliott Berlin if you're interested in seriously improving your physical and mental health and you have tuned in to the right episode Well, my guests today are not prescribing medical advice They are going to educate us about the world's most intelligent doctor the human body Today's health care system has evolved tremendously in many ways with incredible advances in disease detection and treatment So really it's a disease care system. The emphasis is on the elimination of symptoms But if you have no symptoms, there isn't much your doctor can do for you The problem is that the absence of symptoms is in no way the definition of good health as

DR. ELLIOT BERLIN, DC: the study of biological sciences advances We're learning more about the complex inner workings of the body and the miraculous ways in which it diagnoses Heals and maintains its own health We're also learning how we can facilitate that process or at least get out of its way in today's episode Sponsored by a company called volume I'm very excited to introduce you to two individuals who are part of a team of pioneers whose official mission is to digitize decode and decipher human biology to prevent and reverse chronic diseases and promote optimal health Dr. Damon Tanton is viomes chief medical officer. He's an endocrinologist and an obesity medicine specialist He formerly served as an endocrinologist in the United States Air Force

DR. ELLIOT BERLIN, DC: Janelle canal is a registered dietitian She has over a decade of experience in personal nutrition and health coaching that has brought her an understanding of the link between Everyone's unique biology and a healthy life She leads the volume food and nutrition recommendations and is involved in ongoing clinical studies Dr. Tanton and Janelle welcome to the podcast

DR. DAMON TANTON: Thank you

DR. ELLIOT BERLIN, DC: Honored and I'm truly excited because I think that the topics we're going to discuss so they are extremely important and Not that well understood in general and certainly not how to really personalize and customize what's going on So let's start at the very beginning and we'll talk about microbiome. What is the microbiome?

DR. DAMON TANTON: So, yeah, this is a great question and for a lot of people it's confusing, right? We hear about the microbiome But what does that actually mean? I think we probably need to start with a safe definition Formal definition right and that is the community of microbes which are bacteria viruses fungi parasites That inhabit a given environment. So in this particular case, we're talking about humans So it would be all of the microbes that inhabit us either inside or on us. It's fascinating we have estimation of about 40 trillion with a T Non-human organisms living within us are honest. So that number is unfathomable. I don't even know what a trillion is, right?

DR. DAMON TANTON: But 40 trillion non-human organisms that actually outnumbers the total number of human cells So we have more non-human cells than human cells part of the confusion is that our knowledge of the specifics and the Significance of the microbiome remains immature. So we're still learning I'm learning every day Scientists are doing experiments to cast light on what the functions of the microbiome But we now have sophisticated technology, and that's part of what biome brings to the table. And this technology helps us to decode the microbiome. So we can not only identify the types of organisms, which is important, but also we need to know the function. And it's when we start to determine these functions that it allows us to start unlocking

DR. DAMON TANTON: some of those mysteries of this environment.

DR. ELLIOT BERLIN, DC: That's already mind blowing. Something that blows my mind is the U.S. deficit is like a trillion dollars, and I already thought that was impossible to wrap my head around 40 trillion little buggers like inside us and on us. And these are all micro. So you can't see them with the naked eye. Is that right?

DR. DAMON TANTON: Oh, you cannot, but you just have to imagine that they're crawling all over you and inside of you.

DR. ELLIOT BERLIN, DC: And, you know, I think up until recently, people talked about the gut bacteria, and that became popular and helpful in some ways, like learning more about which bacteria we have in our gut and which ones are sort of the good ones versus the neutral ones versus the bad ones and kind of how to give an advantage by boosting the good ones. But that's first of all, just in our gut and also just bacteria. You mentioned a whole bunch of other microorganisms, and I don't think that most of us realize that it's that complex. And I'm trying to picture what the aquarium would look like.

DR. DAMON TANTON: Yeah, so it's so complex that we don't even completely understand it. Right. But it takes companies like Viome to shed some light, because when you're talking about literally thousands of species of so-called bugs, right, viruses, fungi, parasites, bacteria, it really gets back to the science. So you bring up the analogy of an aquarium in order to determine what species are in the aquarium. We actually have to do complicated testing. Right. And we can get into that a little bit later. But remember the microbiome is made up of what we call commensal organisms. So these are organisms that are supposed to be there that help us that are favorable, that live peacefully with each other and support the body.

DR. DAMON TANTON: And then there's the pathogenic organisms, right? So these are the harmful organisms that can or can be harmful if the numbers or the functions increase disproportionately. So from a health standpoint, we are supposed to have a large variation or so-called diversity. When we have this diversity, it tends to be helpful, but when one or a few organisms start to dominate, this can lead obviously to infection, inflammation, and disease.

DR. ELLIOT BERLIN, DC: And I know you have different tests to figure out, but in terms of the science, how has the studies done to figure out, you know, those multitude of microorganisms, which ones are good for us, which ones are neutral and which ones harm us?

DR. DAMON TANTON: Right. So it is extremely complex. So I leave some of the details to our chief scientific officer, Momo and his team, but I'll tell you that what Viomis does differently is it has figured out ways to test the function. So you can look at say a stool sample and you say, well, there's so-and-so organisms, let me make it simple, there's 10 different organisms there, obviously there's thousands, but there's 10. So does the organism that is most populous contribute the most function? We don't know unless we test the function. And so this is where in the past, we have kind of hit a stagnation because everybody reports out what's in the gut, not what the organisms in the gut

DR. DAMON TANTON: are doing, and I think that's the big difference when you just look at DNA, you get kind of structure. When you look at RNA, you get function. Okay.

DR. ELLIOT BERLIN, DC: Let's expand that a little bit deeper. DNA and RNA, meaning our DNA and RNA or the microbiome's DNA and RNA. Both.

DR. DAMON TANTON: Yeah. So when people send in samples to Viomis and blood sample, they'll send a stool sample, obviously. And then sometimes they send saliva. So we're looking at human genes and non-human genes in the analysis. Okay.

DR. ELLIOT BERLIN, DC: And what are DNA and RNA?

DR. DAMON TANTON: So DNA is basically the building blocks, right? And RNA is, I would say kind of the instruction manual for function. So RNA basically causes the body to make proteins, right? And then those proteins have functions. You hear a lot of this in the news right now with the vaccines, right? For COVID, these are mRNA vaccines. They cause the body to make proteins and then the body has antibodies against those proteins, which inevitably protect us against COVID. So the RNA is kind of like the instruction manual to tell us to make certain proteins, which have function. Okay.

DR. ELLIOT BERLIN, DC: So, I mean, obviously with the mRNA vaccine going around, we see that you can sort of trigger the human body to do things, right? You can trigger certain reactions. And are there ways that we can manipulate what the RNA is doing based on what we put into our body?

DR. DAMON TANTON: Absolutely. So if you think about the microbiome, it's not just DNA, but it's RNA. When you make changes, and Janelle will get into some of this a little bit later, but when you make changes to what you put into your gut, for say, right, let's start with the gut, that changes the composition, but it also changes the function. And I think that's a key point that obviously I've said a few times.

DR. ELLIOT BERLIN, DC: Yeah. I mean, that's ultimately the goal, because this is sort of developing the connection between what's going on in the microbiome and our overall health, right? So what kind of things in terms of health, what kind of things can be affected by that microbiome, which functions of the body?

DR. DAMON TANTON: So I'll give you the major ones, right, because there's many. The first one that comes to mind that most people think about is the immune system, right? So the microbiome establishes and fortifies the immune system, especially early in life. And in fact, on the microbiome is more discerning than our immune system. So it is able to tell what is native and non-native earlier than the immune system, because our immune system has to build, right? And so you can almost say that the gut teaches the rest of the body. And so the immune system's huge. Also digestion of food, right? So I'm an endocrinologist. So obviously, when I talk about the microbiome, it's linked to my

DR. DAMON TANTON: specific field. It's around, you know, metabolism, glucose, breaking down carbohydrates, et cetera. But the microbiome also helps with fiber as well as carbohydrates. It also assists with the breakdown of toxic components in foods and in the environment. So some of the toxicity that we experience is due to the fact that our microbiomes are perhaps dysregulated and not able to detoxify vitamins. Certain vitamins like B12 and K are synthesized by the microbiome. In fact, people that are strict vegans have trouble with B12 because everything is clean now. And so they don't get the bacteria that make the B12. And so they end up low on B12 without supplementation because our food is too clean.

DR. DAMON TANTON: Defense against infectious organisms, it limits the number of disease causing organisms. And then finally, I would say it has a huge effect on anxiety, depression, impulsivity, and even impacts our decision making. So, you know, this one was one that threw me for a loop was this whole gut brain axis and the way that the gut can determine the way that we react to certain situations. That was just, to me, fascinating when I started learning about it.

DR. ELLIOT BERLIN, DC: It's amazing. I mean, every system that you just mentioned, I mean, together, and you said that's a partial listing, really controls the function of every cell and organ in the body and all the things that we struggle with the top 10 things that we all struggle with, whether it's maintaining a healthy weight or fighting off infection, not constantly getting sick, and especially the mental health elements. Today, that's what I'm singing off. This is just a huge boost of people that are so stressed out and succumbing to anxiousness and sadness that spirals out of control. So I know we're just warming up, but I'm really interested to learn more. And we're going to get into with Janelle, who's the nutritionist here.

DR. ELLIOT BERLIN, DC: Once we have a better understanding of what's going on in our individual microbiome, how we can put things into our body that will manipulate them to maximize functionality in all of these systems to prevent disease and create true optimal health. Our office and our podcast also is pretty geared towards a growing family. So a lot of pregnancy and postpartum. And I know that the microbiome is exceedingly important during pregnancy. We're going to take a quick break and when we come back, we will talk more about that. Welcome back to the Informed Pregnancy Podcast. We are talking to Dr. Davin Tanton and Janelle Cannell about the microbiome. We dropped a whole bunch of science on you, and it's really even just a small

DR. ELLIOT BERLIN, DC: drop in the bucket of the complexity of what's going on in terms of the cutting edge research regarding microbiome. The good news is, though, that all of that research is producing information that we can use to make simple changes and have a huge impact on how the microbiome affects your health. Many of our listeners are pregnant or recently had a baby, and the microbiome is especially important during that time. Janelle, I know you have a bunch of kids, three. Yeah, I don't even know how you came up for air to do this podcast, but congratulations to you. So talk to me a little bit about microbiome in pregnancy and babies.

JANELLE CONNELL: Sure. So we can see that the microbiome changes during pregnancy and it actually, you know, if we look a little trimester to trimester early on during pregnancy, the microbiome becomes a little less diverse. It has more energy yielding functions and promotes anti-inflammatory environment. And we think that's probably to help sustain the pregnancy, right? We want the body to accept that baby later on in the third trimester, it reverses a bit and we get a little more pro-inflammatory and that's thought to help, you know, say, baby, it's time to come, right?

DR. ELLIOT BERLIN, DC: So that's right.

JANELLE CONNELL: So the body adjusts for those time periods and becomes even a little more acidic in the vaginal microbiome. And that will help to inhibit any infections, um, getting ready for birth.

DR. ELLIOT BERLIN, DC: It's incredible. I mean, every time I go back to studying the body, it's amazing how well crafted it is, how well developed it is, how efficient it is. And I was once at a medical conference and the guy who was running the conference, he got up there and he held up five fingers and he just held it there. And nobody knew what he was doing. He goes, I can safely say that we now understand about 5% of how the body works. And I was like, shame on you for exaggerating so much. It's incredible how much we've learned over the years and how much we're learning every single day. Um, that's just amazing how the microbiome changes during different trimesters of pregnancy. Now, when a baby's developing, where do they get their microbiome from?

DR. ELLIOT BERLIN, DC: How do they develop this complex soup of different microorganisms?

JANELLE CONNELL: Sure. Well, this is an area that's really exciting as a mom, because you can have an impact on your baby's microbiome. When a baby's born pretty rapidly, they start to get colonization of microbes and that can come from mom or parents and the surrounding environment. So we see the majority comes from a vaginal delivery would be from the vaginal microbiome of mom that gets on baby, but we also see that transmission comes through the breast milk as well, which contains the bacteria, as well as some of the fibers that those bacteria like to eat on and help it grow

and flourish. And then some transfer will also come through skin to skin contact, but primarily probably like a mouth to skin contact, a baby to mom.

DR. ELLIOT BERLIN, DC: So many things just exploded in my head when you said that, because I can see with the different ways that people give birth today and the different ways that people feed babies today, where some of the things that appear to be important for the development of microbiome that may be inhibited. So for example, if someone has groupy strep, right? So towards the end of pregnancy, and if you're pregnant now, and you haven't heard of group B strep, I would definitely look into it and most people don't find out about it until around 37 weeks into the pregnancy and it's when they're doing a little swab and they're trying to figure out if you have this type of bacteria and if you do then

DR. ELLIOT BERLIN, DC: typical treatment for it is that they give IV antibiotics to the laboring person during labor sometimes multiple times and so if we're trying to I know that's not just bacteria in the microbiome but if we're trying to populate a healthy gut bacteria and gut microbiome wouldn't giving IV antibiotics during labor have a big inhibitory role on that? Yeah it does impact both

JANELLE CONNELL: mom and baby's microbiome so anytime we take antibiotics you know whether it's during labor other times it can disrupt our gut microbiome and for women our vaginal microbiome as well we see just a lower count and diversity of microbes after antibiotic use but to apply that to that moment in pregnancy you know like I said you get some of that vaginal microbiome that the baby then takes on when we look at babies who are born to mothers who have those IV antibiotics we do see lower counts of bifidobacterium which is a favorable bacteria now that doesn't mean you shouldn't use the antibiotics obviously it's needed in those situations but it's good for moms to be mindful and look for other opportunities to expose their baby

JANELLE CONNELL: to healthy bacteria like through the breastfeeding or skin contact. Yeah absolutely I mean some of

DR. ELLIOT BERLIN, DC: the interventions that are necessary and helpful for preventing serious disease infections and other things like that also have a downside so the question is how do you maximize the upside of that intervention and minimize the downside so it sounds like what you're saying is if you're going to have those IV antibiotics during labor and delivery then at least you know skin-to-skin contact breastfeeding are other ways that you can sort of help nurture the growth of the healthy microbiome then again some people you know in the United States I think we're up to about one in three babies are born via cesarean birth so how would that

JANELLE CONNELL: have an impact? Yeah so that does impact the microbiome as well so we see that babies born by cesarean usually have higher pathogens which are like our bad guys we want to minimize that they can be associated with infections if we look at the actual numbers of it about 84 percent of babies born by cesarean have those pathogens in their gut whereas only 49 percent of vaginally delivered babies have those and that's simply because of the environment they're born into we see those pathogens in the hospital we see them in operating rooms and that's kind of a first exposure but it highlights for me as a mom particularly why research is so important because having a c-section can be just a situation that's

JANELLE CONNELL: necessary for both the health of the mom and the baby so as we can look at this more and we can strategize you know maybe either through the use of probiotic supplements or some people are practicing vaginal seeding and that's kind of a new technique but we can start to study those things and see how can we help babies microbiome after a c-section and then not

DR. ELLIOT BERLIN, DC: everybody wants to or is able to breastfeed but even if someone's not breastfeeding would you recommend i mean just bare skin-to-skin contact with the baby or for someone who's not producing that much milk maybe continuing to latch would that also help transfer some of

JANELLE CONNELL: the good guys definitely it's actually suggested that about 10 of the baby's microbiome comes from just the area of the skin around the mom's nipple so that's fascinating i know that moment when you have your baby and it's placed on your chest it's magic for a lot of reasons but once they latch i mean within moments of their birth you're already passing along microbiome to that baby even if you don't have much to offer them in terms of breast

DR. ELLIOT BERLIN, DC: milk at that moment that's really powerful and actionable information just out of curiosity

JANELLE CONNELL: do dads have it dads will have microbiome on their skin as well so dads can get involved you know sometimes baby you hold them on their shoulder and they'll kind of knot your shoulder a little bit any of that mouth to skin contact can make a difference

DR. ELLIOT BERLIN, DC: well now i feel much better about this awkward situation that i had when my first born was three months old and my wife was feeding him and i came out of the shower and i was watching this high speed chase on tv and i was just glued to it in a trance and And I must've subconsciously heard her say, Hey, I'm going to give you the baby to hold while I go use the restroom. Then I'm going to feed them on the other side. And I was just holding him in a trance, watching this chase. And all of a sudden I felt the most unusual sensation down in the nebula region. And because I didn't go to the lactation class, I didn't know there's a secret technique to how to break the vacuum section.

DR. ELLIOT BERLIN, DC: So I was just trying to pull them off and I was crying and he was crying. And I thought there was no value there. But now I learned that maybe I gave him something.

DR. DAMON TANTON: You gave him your microbiome.

DR. ELLIOT BERLIN, DC: I gave him some microbiome. It was definitely a bonding moment, you know? And also I learned about the magic of nipple butter. So I have a question. How long once the baby's born, does it take to like build a microbiome for them? Is it something that happens in a few days, a few months?

JANELLE CONNELL: I think it's usually about the first three years are critical for developing that microbiome.

DR. ELLIOT BERLIN, DC: And during that time, is some of it environmental? I mean, you just see like in different cultures where sometimes people are so antimicrobial in their setup, everything has to

be bacteriostatic and other cultures where kids are just crawling around in the mud, having a good time. Does that kind of exposure set us up for trouble, like bringing in things we don't want in our gut? Or does that kind of expose us the other way to things that would be helpful to us?

JANELLE CONNELL: I think it can go either way. Early exposure does shape the child's microbiome and that can have long-term effects. I think we've swung probably in our beliefs from being ultra clean to now, you know, let your kids go out and play in the dirt and run around. It's OK to be exposed to some different environments and get that diversity.

DR. DAMON TANTON: We do know that families that have pets typically have a more diverse microbiome, right? Because there are bacteria that dogs especially bring in. And I have not read any literature showing that this is harmful.

DR. ELLIOT BERLIN, DC: I mean, now I feel much better about the two guinea pigs that reside in our home.

DR. DAMON TANTON: Guinea pigs as well. Amazing.

DR. ELLIOT BERLIN, DC: All right. I am going to take another break. When we come back, I would really love to dig into the nuts and bolts of how you test an individual's microbiome, because that's what we're learning that everything boils down to. I can't just put a list out there and say, these are the things that you can do to improve your gut health, because our guts are all very different. Those 40 trillion microorganisms swimming around in there are different from person to person. And until you understand what your individual microbiome is doing, it's hard to know how you can feed it, what it needs to do to boost your health. So the good news is once you understand that, it's really not that challenging. We can do small changes to have huge impact.

DR. ELLIOT BERLIN, DC: When we come back, we're going to learn a lot more about that process. Welcome back to the informed pregnancy podcast. We are talking about microbiome, you know, fascinating information. We've dumped a lot on you in terms of trying to get an understanding of quite the enormity of what's going on in the microbiome, why it's so important, how it affects your body in so many different ways. But in this segment, we're going to talk about the practicality of finding out what our individual microbiome looks like, how you test for that and how you react to it. Once you know what's going your individual body, what are the changes that you can make to have a positive impact? So my guests, Dr.

DR. ELLIOT BERLIN, DC: Damon Tanton and Janelle Canal, let's talk about the nuts and bolts here. I have, and my wife has Viome testing kits that came in the mail. We rarely get a chance. We both work insane hours and we have all these kids running around for kids, which was her idea. Anyway, so we had all these kids running around the house and we don't get too much date night. And I'm always trying to come up with a creative date night. So we're going to have a Viome date night. What's in these kits and what do we do with them?

JANELLE CONNELL: All right. So in your kit, it's a gut intelligence test, which requires a stool sample. So it's going to be a really fun date night for this year. It is beautiful. It comes with everything you need to collect it. Luckily it's really simple. You collect it in a little vial, shake it out, the packaging's all in there and you just drop it in the post box to send it back to us at Viome. Okay.

DR. ELLIOT BERLIN, DC: So we're going to send you a stool sample. And I looked at the video on how to do it. And at first I'm like, ah, I don't know if I want to do that. And then I saw the apparatus that you have for collecting. It's so super simple and easy. So if you're weirded out by it, don't be, it's really simple to collect the stool sample. And then also you're going to take a blood sample.

JANELLE CONNELL: That's right. So the health intelligence aspect of it is just a simple finger prick, few drops of blood. and you send that back in and that's going to give us more information about your personal cellular health. So then we can combine that and look at what's going on with your microbiome and also what's going on with your cells.

DR. ELLIOT BERLIN, DC: And then what do you do with that information?

DR. DAMON TANTON: So herein lies the problem with big data, right? So we get all this big data back and without appropriate interpretation, it's worthless, right? So we at Viome have a very robust machine learning division headed by Gudu. Gudu was the head of IBM Watson prior to joining Viome. And so they take this massive amount of data and they distill it down into something that's actionable, right? So they give you these scores that can tell you what is right and what is not so right with your microbiome. And then we give personalized recommendations and perhaps even precision supplements to correct those things that are wrong.

DR. ELLIOT BERLIN, DC: So an example of a recommendation might be?

JANELLE CONNELL: So, for example, we can look at, like Dr. Tanton mentioned before, not only what characters are there in your gut, but also what they're doing. So an example would be some of our microbiome, they produce butyric acid and that's really good for our gut. It feeds our colon cells, it helps our gut lining, so we're preventing things like leaky gut. Now, if we were to look and see that maybe you don't have enough of those microbes, we could use personalized nutrition to say, hey, we're going to provide butyric acid through foods that might be recommended for you. Or maybe you have some of those microbes there, but they're just not very active.

JANELLE CONNELL: Then we would say, let's provide you with foods that contain prebiotic fibers, things like bananas and artichokes and asparagus. And that kind of fiber, the microbes can start working on and convert to butyric acid so that you're strengthening your gut lining.

DR. ELLIOT BERLIN, DC: I'm glad you guys have the information. I mean, it sounds like for me, it's going to be more simple instructions, you know, eat some bananas or maybe cut some of this out of your system, which I can do. But it's so complex what you're doing behind the scenes to figure out those recommendations. Are there also things outside of food that could be recommended for supplementation, things that are missing?

JANELLE CONNELL: Yeah. So our newest product offers precision supplements. And that's so exciting because it's a more targeted approach to improving your gut health, your microbiome, and just really your general health. So we can look specifically at compounds that would be helpful. Even, you know, let's say a really common supplement I'm sure a lot of people take is turmeric. It has curcumin in it, which helps to reduce inflammation. If we see that you have high inflammatory scores, we may recommend some ingredients that help to calm that inflammation. And when inflammation is calmed, it helps your gut microbiome to flourish and for those good microbes to push out the bad.

DR. ELLIOT BERLIN, DC: What is the information that you send back because you're talking about different scores? What information will I be able to learn about myself?

JANELLE CONNELL: Oh, we have a variety of scores. So things that look at your digestive efficiency, various gas production. And that one's really interesting with your food choices as well. Inflammation. Yes. So a great example of that is like our cruciferous vegetables, broccoli and Brussels sprouts. We see that those have so many health benefits, right? They're packed with vitamins, potassium, folate. They have antioxidants in them. They have compounds that help to prevent cancer. So you may think like, oh, a superfood for everyone. But if we look at your specific results and we say, hey, you produce a lot of sulfide gas might not be so good for you because they also contain sulfur compounds and that can exacerbate that gas production.

DR. ELLIOT BERLIN, DC: I feel you just resonated with a lot of spouses.

DR. DAMON TANTON: Yeah, they're going to be ordering to find out how much gas they produce.

JANELLE CONNELL: I need this for my husband.

DR. ELLIOT BERLIN, DC: OK, over time, like you do the testing, you learn a lot about what's going on. You do and make recommendations and then you also share with me so I can understand what's happening better with my own body. After I make those changes, we expect that boots on the ground are going to change. The microbiome is going to respond to the changes that I'm making. Am I able to go back and test it again and see if the changes that we're wanting are taking place?

DR. DAMON TANTON: So that's why we retest, right? So longitudinally, we want to see that the recommendations that we make actually in the real world setting lead to the changes that we anticipate. Right. And so we have thousands upon thousands of people that have retested. And by doing so, we can then. also refine our recommendations better, right? So it helps to validate what we're telling people is in fact truth because anyone can say anything, right? Nowadays but we're trying to make sure that it's grounded in truth.

DR. ELLIOT BERLIN, DC: Well that's an incredible amount of information and I'd love to hear any closing thoughts that you have and then I have one as well. Once again

DR. DAMON TANTON: thanks for having us. I know that we've been focused mainly on pregnancy and its association with the microbiome, but just real quick what of attracted me to this company early on was the bigger implications. As an endocrinologist, I think everything is hormones, right? That's just my training. Everything reduces back to hormones, but what I've come to realize over time as I've learned more about the microbiome is the microbiome may be the foundation and it may be where we find the origins of disease. And so that to me is revolutionary and it's kind of mind-altering to think about that the gut could actually be the most important organ in the body. So I'm looking at it from a big disease

DR. DAMON TANTON: standpoint and I'm hoping that as we learn more about the function of the microbiome through the testing that we're doing at Biome, that we'll be able to intervene early in these big diseases like diabetes and anxiety and depression and irritable bowel disease and things like that. I think there's the potential to have a much broader impact.

DR. ELLIOT BERLIN, DC: Oh, it's like you're reading my case file over there. Some of those things anyway. And it's kind of interesting because you're an endocrinologist and I'm a nerve guy. And you know, the digestive system has as many nerves as the entire rest of the body. It's called enteric nervous system, like its own nervous system. So both from an endocrine and nerve perspective, there's obviously tremendous importance on what's going on over there. And I bet my vitamin D habit with donuts is not helping the situation. Janelle, do you have any closing thoughts?

JANELLE CONNELL: For me, primarily as a health coach, what's exciting is that you can make really practical changes in your routine with what you eat, that make a big difference on your microbiome, but also just the way that you feel. And so I love just getting in my own biome results, the really practical eat this, try to stay away from this and seeing the results and how it has changed for me.

DR. ELLIOT BERLIN, DC: I'm also looking forward to that. And I'm just getting started. I'm very excited and curious to do our tests our little date night to learn more about what's going on with each of us, to implement the changes that you recommend, and then to test again, and not just feel the changes, but actually see them happening. The one closing thought I have is something that's so powerful, that it's a little technological, but I think everyone can also understand is that most of the things that are going on research wise are about DNA. And however much or little you understand about DNA, it's what your blueprint is, it's what you're born with, and it never changes. But then you have RNA and RNA is what's doing the work in your body.

DR. ELLIOT BERLIN, DC: And Viom is studying the RNA and what the RNA is doing, and you can influence changes in what the RNA is doing. And that's why this is so exciting to me. I'm really grateful to all of you and also the great minds that are behind us, the deep scientists and thinkers who are really exploring this uncharted territory, so that we can all benefit from it. Where can we find you online? Where can we find Viom?

DR. DAMON TANTON: Very simple. Viom.com. V-I-O-M-E.com.

DR. ELLIOT BERLIN, DC: To our audience, thanks for listening to the Informed Pregnancy podcast. If you like our program, share us with your friends, leave us some feedback in your podcast app. And for more pregnancy and parenting information, visit us online at InformedPregnancy.com.

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