Decoding the Gut Microbiome with AI Transcript

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Everybody, Dr. Rob Silverman here, Proven Health Alternatives. I have CEO of Jonah, Doctor Leo Grady. Just a little background on Dr Grade. He's an Illuminary in the field of functional medicine and the gut microbiome.

In addition, he has over 300 patents and is coined over 100 peer-reviewed journals. Dr, Gradi, it's a pleasure to have you. Let's just jump in and I want to ask you, how does the Gut Microbiome impact health?

Well, first of all, it's great to be here. And what's really surprising is that every aspect of our health has been linked with the gut microbiome at this point.

So it is not just gut health, not as GI symptoms, its obesity. It is metabolic disorders. Cardiovascular disease has linked to the microbiomes. Mental health.

Depression, anxiety, Parkinson's, Alzheimer's. Skin health is linked. athletic performance, osteoporosis, back pain, chronic pain. All of these elements of your health have been linked with the gut microbiome.

And the pathways by which the microbiomes impact all these aspects of health can vary, but effectively it is through a few mechanisms. One is which nutrients the micro biome is processing in your gut and what metabolites they're producing.

The microbiome can stimulate hormone production, interacts with the immune system, and furthermore can drive inflammation if you have intestinal permeability, if have leaky gut, where these chemicals can get into your Your bloodstream or organisms can get into your blood stream.

So there are many different channels Through the lining of your gut 70 of you immune system is there?

How the Gut Microbiome Affects Health

90 of serotonin is produced in your got 50 of dopamine There's a direct neural connection through the vagus nerve to the brain so there a lot of different signals that are being generated in the gut both chemical and immune and So the microbiome impacts all of that as well as how you process and digest energy harvest from food.

The gut is the epicenter of your health. As you said, 70% of immune cells in your gut, it's where macronutrients are absorbed. I think you alluded to 93% of serotonin is in your gut.

And 50% dopamine. Yeah, the origin of a lot of neurodegenerative diseases and you've got Alzheimer's, Parkinson's and the like. But isn't that also, if we could be specific, aren't they pathogens, are they bacteria, viruses and like, so isn' it critical to be able to ascertain what's going on in the gut ecosystem?

Yeah, there are certain single organisms like E. coli or C. difficile or Campylobacter shigella that that single pathogen can cause all sorts of GI issues or health issues.

Often when we're looking at the connection between the gut and health, it's an ecosystem shift. It's a signature, a consortium of organisms that are really out of whack in a dysbiotic state in your gut that is being linked to health.

So if you take a more complex disease, something like diabetes or even eczema or Parkinson's, there's never a single organism that's been linked with one of these diseases.

It's a whole set of organisms that are either too high or too low in the context of the overall ecosystem. And that complexity can be difficult to really ascertain, but it is essential for understanding how the gut microbiome is linked to your health.

So interesting. Ten years ago, if you had a conversation with a medical doctor, they probably would look at you in a very inquisitive manner. A lot of them have come to our side of the fence and started to think about how the gut makes an impact.

The real question is, how can we change the microbiome, make it a more health promoting environment, a garden of health, not a Garden of Hell, if you will.

I think this is one of the most exciting aspects of a gut microbiome is it's very malleable if you want to change it. And so there are effectively four different mechanisms that have been studied in the literature.

There's diet, there's lifestyle changes, supplements, and medications. Each one these can change the gut in different ways. But even these changes from one of these interventions is usually not a change in a single organism, it's a whole ecosystem shift.

So even if you take a simple strain probiotic, typically that has knock-on effects with other organisms and really shifts the ecosystem in your gut in way that goes beyond that single organisms.

So it's this whole ecosystem. I like to refer to it as a neighborhood. So like you said, there's diet, which for me I think is truly the white knight.

People don't realize that food is a code for communication with the outside world and the inside world. Good food allows for health promoting properties, especially in the gut.

Bad food promotes inflammation. You also talked about the lifestyle. Talked about supplements, pre and probiotics, and we can go in discuss them a little bit more, but it's more than pre and probiotics.

It's short-chain fatty acid, it is postbiotics, anti-inflammatory, etc., and medications. So, from the chiropractic functional medicine perspective, typically we are anti medications, which I think is a mistake because you just brought up a good point.

A medication may only knock out one strain of bad bacteria, let's say. Yeah, and A lot of medication will have all

sorts of impact on your gut, even if it's something like a Tylenol or an aspirin, will shift multiple different organisms in your You know, there's another way in which the gut also impacts health, which is that there are a number of studies that have shown that if you look at somebody's gut microbiome before taking a drug or before going on a FODMAP diet or doing some other kind of intervention, you can actually predict the success of that intervention for reducing symptoms.

So, for example, with the GLP-1 drug, People have done studies that have shown that the configuration of your gut before taking a GLP-1 is predictive of whether you're going to actually lose weight on that GLp-2 medication or not.

Could you go into a little bit? GLPs are really hot without question. They've taken the world by storm, no pun intended. 93 million American adults now fit the proverbial criteria for a glp1.

I asked a group of doctors six months ago and the consensus there was, incorrectly in my opinion, that it was going to go away. It was just a fad. Yeah, exactly.

That one is $12,000 to $16, 000 a year for the average person to pay the pharmaceutical companies or the doctors or whoever it may be for that. You know, it's an injection.

Unfortunately, eight out of 10 Americans don't get the results in the data. That said, could you go into a little bit more detail on that? Because I know that that hit a vein in most people's thought processes when you mentioned the GLP-1.

So, despite all the incredible success of GLPs, they don't actually work for about one out of three people.

Changing the Microbiome and Predicting Treatment Response

One out three don t get any significant benefit out a GLp-one. Furthermore, as you as, you know, there are some side effects that people experience with LP ones and they can range in severity, nausea.

believe, hypertension, pancreatitis, I believe as well. And these side effects and also the effectiveness seem to be predictable by looking at somebody's gut microbiome before they even take the drug.

These are early studies. There are only a few of them. We don't fully understand mechanisms. But even observationally, if that's true, that they're effectively gut biome microbiome biomarkers that we can measure before putting somebody on one of these medications that predicts whether the drug is going to work.

That almost suggests that everybody should be getting microbiomes tested before they go and actually take one these drugs. Well, I'm a big believer in testing and not guessing.

I've used that phrase many times on many of my different podcasts. Now, I can tell you that all my patients or a lot of my patience have said, what do you think about a stool test, a poop test if you will?

There are many types of gut tests that are currently on the market. Could you go over what's available for the patient population out there? Yeah, I'd say they're really, broadly speaking, two types of testing that you're going to find on the market.

They're the more consumer facing tests and the vast majority of them, the goal is really to sell you supplements. So they are offering you a gut microbiome test.

But the results that they give you don't really mean much. It's really just a pathway to put you on supplements. That's like saying that Scientology is a testing organization, right?

I mean, the goal is really something else. And so thinking of them from a test standpoint is probably misleading. Then there's a second group of tests that are more practitioner-based, more clinically focused.

These tend to be PCR- based tests where they're looking at a specific panel of pathogens and saying that, you know, this person, has C. difficile, they have Campylobacter, or they Chigella or E.

coli or not. But in the absence of having a single known pathogen, they're not measuring the rest of the gut. They're giving you a comprehensive part of a picture.

There missing 90% of different species that are there. And because they are not able to look at all the entire ecosystem in your gut, you really can't determine much about the person's health or what they should do about it based on those tests.

Interesting. So there's a stool test, there is a blood test and there a breath test. So the stool test analyzes the composition of bacteria. The blood test identifies inflammation and nutrient deficiencies.

And the breath test is small intestinal bacterial overgrowth, which I think we both have certain qualms about as effectiveness. Talk about some of the poop tests, if you will.

I would say that a lot of the stool tests are really based on very old technology and a very understanding of gut microbiome. Some of them have added some additional elements to their panel to look at lactobacillus or bifidobacterium or acrobancia or some of more popular probiotics that somebody can can buy in order to see whether or not they're fit for those probiotics.

But for the most part, it's a very, very limited picture of your overall gut microbiome. So trying to determine how your gut micro biome is impacting mental health or obesity or metabolic syndrome or whether it looks like a link to Crohn's disease or IBS or how to change it in the more effective way.

You're just not getting the information. They're not measuring what they would need to measure in order to be able to make those sort of determinations.

So you and I both agree some of these tests may be, as you said, antiquated like a 16S test and things of that nature. How can AI help clinicians make sense of this complex data?

So the advantage of modern testing is that genetic sequencing has gotten cheaper and cheaper ever since the Human Genome Project in the late 90s. And now it's possible to do genetic-sequencing at scale from a stool sample where we can get very, very rich data about someone's gut.

So, shotgun metagenomic sequencing can identify really comprehensively all the different organisms in your gut. 16S, which you mentioned, only looks at bacteria, looks only at a very high level, doesn't really get down to a strain level.

With shotgun megenomics, you not only get to the strain levels of bacteria but you also capture fungus and viruses and archaea and all sorts of other organisms.

However, it's a lot of data. It's a lot of data. So you have about eight gigabytes of coming off one sequencing. And to put that in perspective, eight gigabytes of date is about 8 high resolution cardiac CAT scans, cardiac CTs.

Gut Testing Options and Limitations

Right. It is a, it's lot data and so just presenting all of that sequencing data to a doctor is going to be very, make it very difficult for them to make sense of it.

And this is really where AI comes in. In addition, the scientific literature is growing really quickly. So every month, there are more than 2000 studies published in PubMed on the microbiome.

And so with AI, it offers us the possibility to do two things. One is to read all of those studies, more 220,000 peer-reviewed studies in pubmed. and then apply all of that knowledge to interpret, to analyze the data that's coming out

of the shotgun metagenomics sequencing to really build a comprehensive picture of how the gut microbiome is impacting somebody's health.

And to be able to present that to the clinician, and to patient in a way that is not only evidence-based, but then ultimately sourced back to original science.

The AI also allows us to go a step further and read the interventional literature and say, you know, we know that, for example, going vegan will change your gut in a certain way.

And so what we can do is digitally, stimulate what it would be like for you to grow vegan by shifting your got in the way that the science has shown that a vegan diet would shift your guy.

And so we can virtually simulate you as a vegan. And then we could virtually stimulate you on keto or gluten-free or taking metformin. Digitally, virtually, we give you every dietary change, every lifestyle change every supplement, and every drug and really figure out what is going to change your microbiome in a way to fix whatever patterns that are found that negatively impact your health.

because there's so much information we want to utilize AI. So the basic question is going to be, can people, the consumers use certain devices like chat, GPT, Claude, et cetera, to get a microbiome analyzation?

Not a good one. Um, so I mean to nerd out a little bit on how all of these systems work, right? I means those systems, uh, may have read through all the literature on the microbiomes.

But it gets mixed all together. And then to be able to analyze hundreds, thousands of different species at different levels is not something those systems were built to do.

So those aren't able to distinguish what studies they should pay attention to, animal studies, human studies sequencing-based studies stool samples versus colonoscopy, you know, based studies.

They're not able understand what normal ranges are for all these different organisms. So they're are not to operationalize those studies to actually analyze somebody's levels They hallucinate, they have all sorts of issues.

And so I think that those technologies, those tools are incredible for certain types of tasks, but analyzing very complex medical data in the way that you get out of a gut microbiome sequencing is just not something that they're capable of doing and really in order to do that well in a clinical grade, repeatable, deterministic way, you need to build a custom system that is really focused on solving that single problem.

So the AI finds your digital identity, your Digital Twin, if you will. Would that be a fair statement? Yeah. The AI is looking at your current gut microbiome.

and then simulating what would happen under different dietary changes, under lifestyle changes with different supplements. And we know based on the current literature how all of those dietary change and supplements will impact your microbiome.

So we can simulate that digitally and see which of these dietary or supplement changes or lifestyle change are going to really work best for fixing whatever is going wrong in your So I'm going to use a custom AI system for the gut microbiome to help it work better, to make it function better as a practitioner.

And take me through what the report looks like and take through some of the steps that I'll need to do where I will be able to individualize and personalize my N equals one for that patient.

So this AI, this custom AI that we're describing is exactly what we built at Jonah. We've built this Ai that is dedicated for interpreting gut microbiome data, a digital twin that allows the simulation of different interventions.

And so from a practitioner standpoint, from the clinician standpoint it works very similar to other gut tests.

AI, Sequencing, and the Digital Twin Approach

There's a kit, there's stool sample, patient sends it off to the lab, we do sequencing, then the AI interprets, analyzes all of that data, the digital twin analyases all these different simulations, figures out what's going to work best for that patient, and then all that information gets sent back to in two forms.

One is an interactive interface where you can click into depression and you click in to this organism and understand what's known about it and how to raise it or lower it.

Why this person's microbiome fits a pattern of depression or what to do about it or why and links you out to all of the source evidence. There's also a PDF summary that just nets out all the key information.

If any serious pathogens or parasites were found and then ultimately what the top. interventions are going to be for that individual. And then you as a clinician can either share access to the interactive interface or share to access the PDF with the patient you choose to.

So it's a great report card of what's going on in your gut with tremendous accuracy, allowing the practitioner again to have that pinpoint personalization, whereas previous tests, the older renditions, weren't quite as effective, sensitive, and specific.

That's a great takeaway. Yeah, we're very limited. They only measured a very small number of organisms. And they didn't really bring to bear an understanding of the entire literature to examine how those organisms were linked to your health.

You know, I'm going to take the hit on one. I am not going put you under the bus. as a baseline because I was always very concerned about the accuracy and we've talked about it.

Think functional medicine, the idea of root causes resolution is critical and obviously the gut is one huge root cause. try and get somebody healthy or it could be, or could it be their salubrious environment to allow them to stay healthy.

But the bottom line is that now with these types of AI tests, it's kind of funky. I feel like the Terminator is coming and playing doctor for me. Well, you're still the doctor and you are still making the decisions for this patient and the AI that is just think of it as an assistant that has read 220,000 studies in PubMed and effectively written you a personalized research report on what is known about this individual's gut microbiome linked to their health and how they can change it.

Right so it's the eyes doing this work for you as the doctor you don't have time to read two thousand studies a month. But the end of the day you're still the one making the decision you still want the patient you may have other testing you never be looking at blood work hormones or or.

know, other you know physical exams, and putting all of that together to really help the patient so can really think of it as a very extensive, highly personalized research tool to analyze the gut.

But at the end of the day, you're still the doctor making the decisions outstanding the digital twin. I'd love to go into a little bit more detail. That's exciting.

I mean, I want to find my digital twin. And I wanna take a Jonah test. Yeah. Could you go in a bit a more detailed and explain what it is and how it helps you differentiate from other microbiome tests a litte bit mor?

Because everybody's locked on a poop test to poop tests. Obviously we know that that's not the case. Yeah, we're the only company that's developed technology like this and the reason is because it's hard.

You know, I had the good fortune earlier in my career to build the first FDA approved digital twin in the cardiology space where a company called Heart Flow They just went public and we built a virtual stenting application that

allowed doctors to take a person's coronary arteries and put a vertical stent in and see how a stend in a certain location, a with would restore blood flow for that individual.

And we validated that technology. It gets used every day by doctors that are stent planning, especially in more complex diseases where you have multiple different blockages in somebody's coronary arteries to really figure out what's going to be the most effective strategy.

But through that and through the process of bringing that through to the FDA, I learned a lot about what it takes to build a really accurate, very useful digital twin and really brought that to Jonah for the gut microbiome.

And the way you can think about this working is a very simple level. It's like, let's say that low levels of acromantia are linked with Crohn's disease, which is true.

Well, now if there's a certain food, like say, uh, inulin or polyphenol, Which raises acromancia and this person is low in acromantia, then that poly phenol may be a good choice for them.

Right. But, you know, the reality is that other people may be really high in acrimansia. High levels of acromansi have been linked with Parkinson's disease.

So maybe there's a food that actually lowers acromancia. I can't think of one off the top of my head, but if there was a foot that lowered acro mancia and somebody was really hi, then we might recommend the food the lowers accrimantia for them.

right, to move them away from that too high condition. And because we know the levels of acromancia and every other organism in your gut, and we know what low levels are linked with, what high levels they're linked, and what foods change them in what direction.

Basically, we can do all of the math and figure out which organisms need to go in which direction and which foods are going to optimize moving in those directions, or which supplements or whatever are gonna move the organisms in all the right directions.

Do all that math, do that calculation, then just present it to you as the doctor and say, for this person, these are the foods, the dietary changes that are going to move all their organisms in the right direction to optimize their health.

So this allows you to use the idea of precision medicine, if you will, because we're personalized. That's fabulous. So let's talk about baseline. You know, patients come in.

One of the things that I do baseline is I like to take blood tests. I'd do a very comprehensive blood test. Big on food sensitivities, big on leaky gut.

Again, next here would have been a poop test. So it appears now I have a Poop test that I can put in my baseline. If that's the case, how often can I test and then retest?

So essentially on my protocol, How long should I wait to taking that follow-up test? And do you have to do a follow up test I know I just gave you a lot to unwind there.

Yeah. Well, so if we back up and we think about why we're doing a microbiome test in the first place, we really see three types of patients benefit from a micro biome task.

The first group are people that are having some kind of health problem and they're trying to find a root cause, they are trying find the solution. And they want to look in their microbiomes for that.

There's a second group of athletes and biohackers in the longevity community who don't necessarily have a health problem, but they want to optimize their health.

They want get even higher performance, get smarter, look better, feel better. And then there's the third group, of people who are just general wellness and checkup.

Jonah Report Workflow and Clinical Use

They're not necessarily looking to change anything, but they just want to know that if something is wrong that they can get ahead of it and start taking steps early.

And so among those three groups, you know, that last group that's just doing general wellness checkup and prevention, They would typically do Jonah on a once a year basis, right?

Like very similar to doing routine blood work, like a CBC or metabolic panel. But those other two groups, people that are actively looking at these results with a specific goal in mind, trying to make changes, they want to see if those changes are working.

Those groups, we recommend retesting after three to six months. And what that retest will allow you to do is see, is this intervention working? Are we changing the microbiome in the way that we expect?

How is that impacting somebody's health? how is their microbiomes readjusted to these interventions? And do we need to realign, read just in order to further optimize that person's gut?

Interesting. So if I were to ask you, I'd like to break it down in threes. I'm from New York, so we're going to do three and then we'll get to rapid fire.

We're gonna speed it up now. Get ready. Seatbelt on. Here we go. Give me three things, three key takeaways to your test. Health conditions are linked with your gut, what your guts says about your health.

What you can do about it. and whether or not any pathogens or parasites were detected. Outstanding. So rapid fire now. Here we go. All right. Would you take a poop test if you were concerned about small intestinal bacterial overgrowth?

Generally, no. There are some studies that have indicated that there are certain microbiome configurations that you see in the colon that are indicative of small and intestional bacterial growth.

They're small studies so far. It's not obvious that you can really detect those signatures effectively. And if what you're going to try to do is treat SIBO, I'm not sure that a microbiome test is the best test to determine that treatment.

All right. What about leaky gut? Yay or nay for a poop test? Yeah, absolutely. Absolutely. There are telltale signs of how your gut changes when you have leky gut and very clear things that can do about it.

Now, Likika, what about tight junctions? What will reveal the needed protein enzymes? Yeah, I mean, we see a lot from microbiome tests, short chain fatty acid productions.

We see whether or not you have organisms that are better in an aerobic environment indicating that you're having problems with intestinal permeability.

We can really tell a lot about that ecosystem and what state those tight junctions are in. Will the poop test tell me about commensal bacteria, bad bacteria and the good bacteria if you will?

Everything, everything. Wait, we're sequencing the DNA of everything, so. Essentially, I got to interrupt you. You're gonna tell the demographics of my garden of gut.

That's right. And it's a lot more variable than you might think. Hundreds and hundreds of different species. Yours and mine are very different from one another.

Right. Now, my understanding is, like you said, there's hundreds to thousands of strains of bacteria in our gut, viruses, et cetera. But some of the data that I've read has indicated that most people typically have a large quantity of four, whatever that four is.

Well, four different phyla. Right, so if you remember your high school biology, kingdom phylum class order, family genus, species, and strain, it's like saying there are a lot of animals in the forest.

A forest consists of plants and animals. Yeah, that's true, but which plants in which animals matter? So yes, at a high level, it's true. There are about four phyla that you typically find in somebody's gut, but that doesn't really tell you too much about the individual organisms that are there, how they're impacting your health.

For clarity, How would you differentiate the Jonah test from other microbiome tests? Yeah, it's three things. First of all is the fact that we're doing genomic sequencing.

So we get fully comprehensive view of your gut rather than just a very limited set of organisms that you get from a PCR test or 16S test. The second is that when you see that comprehensive set of organisms, the AI has read 220,000 studies, gone study by study, used each one of those studies to analyze this person's gut.

And then third is this digital twin where we're simulating different diets, lifestyle supplements, and really trying to figure out how to lift up certain organisms, lower down other organisms in a way that optimizes your gut.

Other tests are generally using older technology, they're not comprehensively seeing your guy, and then they are telling you very piecemeal bits of information that are based on usually not much, rather than really systematically and comprehensive using the literature to analyze someone's gut So with Jonna, would you use it also to test for blood brain barrier permeability?

Now the gut, as we all know, has a barrier. The brain has an equal barrier made up of the same proteins. It protects the brain. Actually filters 400 miles of blood.

Its quite unique. So would use the test to determine the status of a blood-brain barrier? I'm not familiar with any studies that have indicated that the condition of the blood-brain barrier shows signs in the gut.

So if those studies are there, then potentially, but I'm not aware of those. Could this technology be applied to other areas of medicine? Yeah, 100%, 100%. I mean, we see osteoporosis linked to the gut microbiome.

Cardiovascular disease, the progression and speed of atherosclerosis being linked the composition of your gut micro biome, We have a lot of dermatologists that have started using Jonah or med spas because they're seeing that eczema, psoriasis, acne, you know, instead of applying a topical cream, if you change a few things in somebody's gut, these conditions can just disappear.

And so it's really, because the gut is such an important pillar across all of your health, it really touches every area of medicine. Interesting, interesting.

You know I think the next test is probably the gum microbiome. Because the gums and the guts are interrelated without question. I mean, It really begs the question, why are we not using these tests more often for neurodegenerative diseases?

Since, you know, as we said before, the origin in these neuro-degeneral diseases is in the gut. I mean, this should be a baseline test. It's funny you say that because we were spinning up working with our first academic medical center and we haven't announced that yet, but it's within the psychiatry department.

So they're going to be using Jonah to evaluate psychiatry patients that are coming in and determine what sort of lifestyle interventions can really impact their gut.

You know, there are a lot of studies that have shown that the right dietary interventions at a personalized basis can

be more effective than SSRIs and other drugs, as well as the fact that certain microbiome configurations predict whether or not an SSRI is going to be effective or no.

And so it really seems like the gut microbiome should be a tool in psychiatry and neurodegenerative disorders going forward. You know, interestingly enough, there's been some studies that's spoken about changing the and having a dramatic effect on specific symptomology.

And the one that comes at the top of the list is the mental health symptomologies personality. Number two would be the obvious, gas and bloating and brain fog.

Retesting, Key Takeaways, and Rapid-Fire Q&A

So really to volumize what you just said, I mean, see psychiatry coming into our world and really dominating. I see dentists coming in and starting to dominate.

As a chiropractor, and I'm always trying to purport chirepractors to do more holistic venues, i.e. functional medicine, functional nutrition, laser, etc., this is really a starting point.

So my question is, where can I get the test? Yeah, 100%. I think the neurology element is really particularly interesting. As you may know, the first symptom of Parkinson's disease is often constipation.

Can you imagine having constipation today? You would never think to go to a neurologist. You'd go a GI doc, you'd got to your primary care. Maybe they would do a scope.

They would tell you to get a laxative. In fact, if what's happening is early stage Parkinson's disease, really should be going to neurologists and getting put on treatment and watch for that earlier on.

And there do seem to be a lot of studies that have indicated that the gut microbiome plays a key role in Parkinson's disease and that there are telltale signatures of changes in your gut micro biome that indicate early stage Parkinson.

Yeah, it seems to be alpha-synculin is the key component. Bacillus subtilis is probiotic. It's more of the GI tract and the environmental toxins. A new study came out that you have a dramatic increase in the incidence of Parkinson's if you live between one and three miles of a golf course because of toxic runoff.

I happen not to golf. But nevertheless, I live in Westchester County, which has the largest amount of golf courses per square foot. So most of my patients are toxic.

It's a fascinating thing. And I'm really happy you were able to help knit this together. I have a buddy of mine and he watches my podcast all the time and says, hey, Rob.

He's very well-educated guy, went to Oxford. All that, speak about him every day. podcast and he says, tell the guests to give me one thing I need to do differently on Monday that I can implement to make an indelible mark on my health life.

Avoid processed foods and eat whole foods. And I'll give you a second one to only take antibiotics if you really need them. Here, here, indeed. Indubitably, I agree.

You know, interesting, when it came to the ultra-processed foods, 57% of the average American consumes calories that are made from ultra processed foods.

A study came out yesterday. Ultra processed versus processed food. Same calories, same food, twice the amount of weight you could lose if it was just a processed food, meaning if you just cooked a whole food versus ultra processed foods, so to speak, biomes.

What effect does an ultra-processed food have on your gut microbiome? A lot. And it's not just the I mean, one of the things that's really just shocked me was it's also artificial sweeteners, emulsifiers.

These things can have profound impacts on your gut microbiome. And you can see in somebody's gut based on the levels of different species and organisms Whether they have a diet that is really in that, you know, highly processed category or someone who's eating a lot more whole foods can tell somebody is eating, a lotta meat or fish or plants.

And so it has a really strong impact. But one of the biggest impacts is, really, lowering the level of diversity because only certain organisms are able to really consume these highly processed foods.

And so it narrows the set of organisms that ultimately are in your gut. So I'm not going to hold your feet to the fire. Well, if they're artificial sweeteners, don't eat them.

If they are natural sweetener, we could consider them, so would stevia have an adverse effect on the gut microbiome? I haven't looked for studies on stevia specifically.

The studies I've seen have looked at artificial sweeteners as a category, but I can't speak to stevias specifically You mentioned diversity. We want more biodiversity in the gut, the more bio diversity the better.

Autism, a lot of studies indicating 90% of people from autism have a gut problem. They have less diversity, higher incidence of LPS, Do you feel that this test may be opening a venue that we can vector in to start utilizing this as a precursor to autism for both the child and the mom?

Yeah, I do. I think, we still don't fully understand the mechanisms of autism, at least in some of the animal models. It seems that getting the microbiome right during early childhood development can have a big impact on the development of autism and the severity of Autism.

Although it does seem like changing the gut microbiome at a later stage is less likely to change the Severity. However, as you point out, many people with autism have all sorts of really serious GI and gut issues.

And we can with a technology like this, we cannot analyze their gut. We can tell them what's wrong with it. You can't tell him how it's impacting their health and we could tell exactly what to do about it on a personalized basis.

So I do think and and are actually seeing uptake in the autism community for this sort of technology. And I think as we learn more, were going to want to test babies and were gonna want test moms.

Applications in Psychiatry, Neurology, and Closing

and really intervening at a much earlier phase. But I don't think we have the science to do that just yet. I want to go to an imaginary three-part circle.

We've got mitochondria dysfunction, so they're all intertwined. It's not a Venn diagram. it would appear that they all have one commonality, dysbiosis, the unleveling of good and bad bacteria.

Your test is testing for that, correct? Yeah, exactly. We're testing all bacteria and all fungus and everything beyond bacteria, and we're taking every study that's ever looked at dysbiotic states, whether they are associated with GLP-1 production or mitochondrial dysfunction or leaky gut and bring all that information to bear to analyze your microbiome and see if any of these dysbiotic signatures are present.

I believe that dysbiosis, that unleveling of good and bad bacteria is the look behind the curtain of the black cloud of our health, especially our gut health.

So we're trying to pull that curtain back. Yeah, you know, it's not like the curtain at the price is right, where you get a gift, the kind of gift that they're offering is not what you want.

So this new test, Jonah, how can they get it and how they can follow you? They can get through their practitioners or they could order it directly on our website.

And we're going to put a code in the show notes to give your audience a discount. You can find me on Instagram, Leo Grady Jonah or LinkedIn. or TikTok, as well as the company Jonah.

So please follow us. We post a lot of really interesting content and let you know about what's going on in the gut. Outstanding. This has been great. I really appreciate your time.

And know you're a busy man. we've got to do part two and we're going to part 2 with some case studies. Sound good? Perfect. Love it. All right. It's been my pleasure.

Dr. Leo Grady, an expert in gut microbiome. Jonah is the test.