

# **Gut-Brain Axis Dysfunction & The Mental M.A.P.™**

**Brendan Vermeire, FDN, CPT**



**Rebekah Kelley:** Welcome to the Humanized podcast, all about personalizing your health. I'm your host, Rebekah Kelley, and today we'll be discussing Gut-Brain Axis Dysfunction and The Mental M.A.P.™, with Brendan Vermeire. And before I introduce Brendan, I want to remind everyone to subscribe and get all of our variety of casts in audio, video and transcription at HumanizedHealth.com. I'd also like to thank our lead sponsor, Village Green Apothecary, at MyVillageGreen.com.

Brendan is a functional medicine consultant, clinical researcher, board certified holistic health practitioner, master nutrition coach, master personal trainer, USAW Sports Performance Coach, and CrossFit Certified Trainer. Brendan is regarded as one of the top leading experts in metabolic health and holistic education. He's the proud owner of the Metabolic Solutions Institute, dedicated to educating health professionals and clinicians with cutting edge strategies to best serve their clients and patients.

So Brendan, thanks for being here with us.

**Brendan Vermeire:** Thanks for having me, Rebekah. It's great to be here and I'm always excited to talk with you.

**Rebekah Kelley:** And you're so knowledgeable and you share things in such a great way. So I can't wait to learn how I'm going to get even more smart. But talk to me about how the gut-brain axis and gut dysfunction is the main driving force behind mental health, and how would you assess this?

**Brendan Vermeire:** Absolutely. Well, thank you very much for the compliment. I try to speak to these things well, and I think it's one thing to be able to grasp these complex scientific subjects, but if you can't effectively communicate it and educate people, then that science kind of doesn't get utilized well.

So with microglial activation, which is my main area of focus and research and expertise, there's a lot of underlying root cause factors that can contribute to the dysregulation of microglial cells, the architects and guardians of the central nervous system. So when it comes to root causes, the gut-brain axis is really kind of ground zero that we have to consider in regards to mental health. Certainly, there's all these axes in the body, right? There's the skin-gut axis and the gut-brain axis and the liver-brain axis and the HPA axis. You know, we can make up whatever axis we want, it's all connected. It's all linked to one another. But what's so profound about the gut-brain axis – and also really the liver-brain axis is equally in there because of how directly the gut and liver are connected – but the enteric nervous system and the central nervous system are connected through this bi-directional vagus nerve, which has become a hugely popular topic of vagal tone and vagus nerve activation and stimulation. And we even have seen that the FDA approved vagus nerve stimulators in 2010 for treatment-resistant depression. Because yeah, if you actually stimulate the vagus nerve, it can have a great anti-inflammatory effect in the brain,

which can help to treat treatment-resistant depression after some of your frontline drugs like SSRIs or benzos or whatever, maybe they haven't worked very well, because the efficacy of those drugs is actually pretty low, maybe like 30, 40%.

So with the gut-brain axis, we're learning so much more about the human microbiome and the role of leaky gut, leaky brain. So essentially, we're experiencing an extinction event of our microbiome – the microbiome of the planet, the microbiome of our own body, right? The microbiome being the constituent trillions of different types of bacteria, archaea, viruses, parasites, fungi that make up this, I call it the "garden of life." And really when you dig into microbiology, that's what it is. Without microbes, nothing about mother biology would be possible – no higher life, whether it's humans, animals, plants, it all starts with the microbes, the fungi, the bacteria, archaea, so on and so forth. And so I always like to think about this "garden of life" – if you want a healthy garden that produces food in your backyard, how would you treat it? Right? And you have to realize you have the same thing going on in your gut. So, you know, you have to think about it as soil. How do I build up healthy soil? And it's like, well, if you're a building a compost to create healthy soil, are you going to throw cheeseburgers and French fries and Coca-Cola in there? Or are you going to put banana peels and cabbage and all of your leftovers from...

**Rebekah Kelley:** You have the best analogies, you really do. Yes, I'm completely seeing this. Yes.

**Brendan Vermeire:** Yeah, absolutely. And so it kind of creates what I describe as like a microbial filter. So in the gastrointestinal tract, we've got the stomach and the small intestine, large intestine colon, and this whole zigzag-up-and-down system. And so most of our microbes really reside in the large intestine, primarily. They're all throughout the entire GI tract, but the concentration of microbes is much more abundant in the large intestine, just trillions. We actually have more microbes, more bacterial cells in us and on us than we have human cells. So we're actually more microbe than we are human. And this microbial genetic material is really what gave us a lot of our functionality. And so now we're facing this extinction event because of the glyphosate that is literally saturating all of the soil on the planet, which is... what is glyphosate? It's an anti-microbial agent. It kills microbes. We eat it, we drink it. It's everywhere. It's in us and on us, we can test it in the urine. So, I mean glyphosate, that could be its own whole episode of just that problem by itself.

But then of course, the rampant use of antibiotics, right? Antibiotics really being the first pharmaceutical and the birth of this big pharma thing that we're dealing with now.

But the standard American diet and lifestyle, the modernized, westernized processed food, diet and lifestyle, destroys our microbiome. It destroys that "garden of life," which very much damages our physiology and functionality. So this is where it sets the stage for this leaky gut effect, and now we have all these toxins, pathogens, antigens leaking into systemic circulation. That goes up to the blood-brain barrier, where we get the same leaky effect, a leaky brain. So

literally, I mean, under normal physiological circumstances, we have these barriers that keep things where they're supposed to be. And that's a very important function. You don't want the wrong guys in the wrong place. It sets off systemic inflammation, which we all agree that chronic inflammation drives chronic disease. And all of this can really be traced back to the microbiome in the gut. But also with that microbial filter, our microbes really regulate what nutrients get transformed and absorbed and utilized. So a dysfunctional, dysbiotic microbiome sets the stage for all sorts of chronic disease.

So we kind of have two different primary routes going on, where a dysbiotic microbiome sends pro-inflammatory signals up the vagus nerve into the brain that triggers proinflammatory neuroinflammation and microglial activation. So there's that direct kind of phone line from Batman to Chief Gordon of inflammation, brain on fire, mental illness, neurodegeneration – and that's through the vagus nerve. But then because of the leaky gut, we also have this vascular humoral circulation of all these bad things that will make their way up to the brain, are able to cross this leaky blood-brain barrier, and then kind of piss off the brain more and trigger more inflammation. So it's this kind of bi-directional way by which a dysbiotic leaky gut really creates mental illness and neurodegeneration.

**Rebekah Kelley:** So once this assessment is made, what is the next step that someone's going to take to address these issues that you're talking about?

**Brendan Vermeire:** Absolutely. Well, the assessment itself is a little finicky cause there's all sorts of different stool tests and functional tests out there. So I actually created my own test that I called The Mental M.A.P, where M.A.P. Stands for Microglial Activation Profile, which I think is really cool. But, you know, we decided that...

**Rebekah Kelley:** It's very cool. I agree! [Both laugh.]

**Brendan Vermeire:** I think it's cool. And you know, when it came to me, I was like, microglial activation pro... The Mental M.A.P.! I was like, oh, that's a branding goldmine right there. But I created The Mental Map to be the most reliable way to get to the root causes of mental health dysfunction by assessing microglial activation, primarily.

So there's all sorts of primarily blood markers and one particular urine marker that can give us a lot of insight into microglial activation, leaky brain, peripheral inflammation, immune activation, and so on and so forth. We have to have objective data, to be able to track the efficacy of our interventions, whether that's drugs, supplements, lifestyle, environment – we have to have reliable data. And so that was my primary inspiration, is you can't fix what you don't measure. And we don't know the efficacy of the intervention without that reliable data. I firmly believe that this Mental Map is the best assessment for neuroinflammation and mental health and microglial activation. So that's my primary tool.

So that way, as I start applying different therapeutics and intervention strategies – which I would say in regards to the gut-brain axis [are] endospore probiotics, prebiotic therapy, immunoglobulins, colostrum – the short-chain fatty acids, which, endospore probiotics and prebiotics dramatically increase the production of short-chain fatty acids, as well as plenty of fiber consumption (how many Americans are eating enough fiber in their diet? Like, none), that fiber is, that's the fuel source for our microbiome to produce these short-chain fatty acids, which have been shown to actually decrease neuroinflammation, decrease microglial activation, and promote neuroregeneration.

So I would say the short-chain fatty acids are one of the absolute top therapeutic strategies for decreasing neuroinflammation and promoting mental health and neuroregeneration. And ultimately you can supplement with short-chain fatty acids directly. But what we really want to do is heal the microbiome, heal that "garden of life," seal the tight junctions of the gastrointestinal tract and the blood-brain barrier. And so using more short-chain fatty acid promotion through the... well, first off the diet, the lifestyle has to get on point, but if we're just talking about supplements and therapeutics, the spore biotics, the prebiotics, the immunoglobulins can dramatically improve the diversity of the microbiome, heal the leaky gut and promote plenty of short-chain fatty acids that will circulate to the brain and cause all these healing effects.

**Rebekah Kelley:** That's really awesome. Brendan, you're so knowledgeable and you're so great about being able to make it accessible to those of us who are not as knowledgeable. Thank you so much. Brendan Vermeire can be found at Brendan at [MetabolicSolutionsLLC.com](http://MetabolicSolutionsLLC.com). I'm going to spell that. It's Brendan, B R E N D A N at M E T A B O L I C S O L U T I O N S L L C.com. And let me remind you to subscribe and get access to all Humanized videos, podcasts and transcriptions from all of our thought leaders on personalized health at [HumanizedHealth.com](http://HumanizedHealth.com). It's just such a pleasure. Thank you so much.

**Brendan Vermeire:** Thank you, Rebekah. It was a lot of fun.