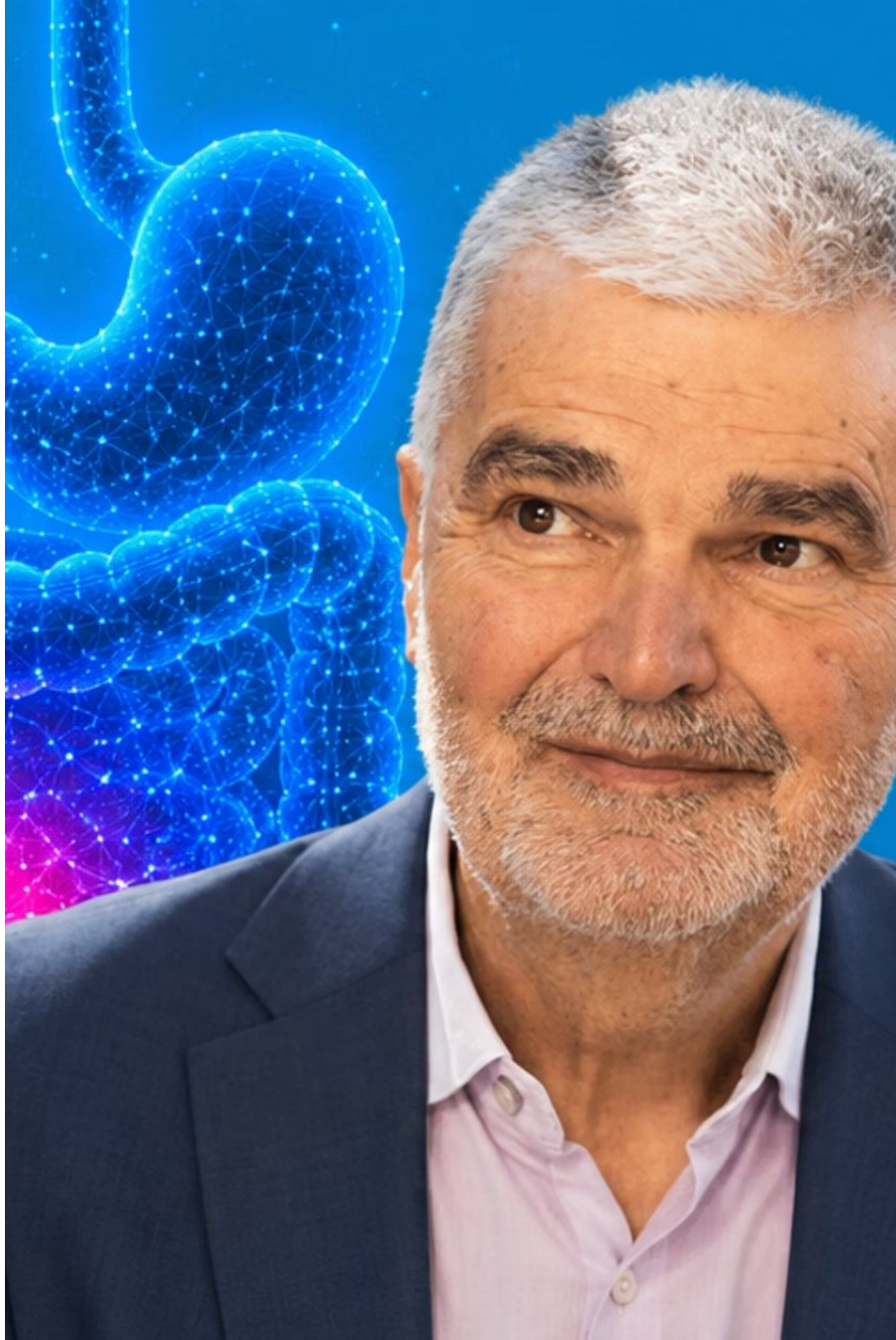
# Ask Dr. Mayer: Live Q&A

## The Mind-Gut Connection, the Microbiome & Gut Health

An edited, searchable transcript of a public Ask Me Anything session with Dr. Emeran Mayer, gastroenterologist, neuroscientist, and UCLA researcher for nearly 45 years. Hosted by Mary Agnes Antonopoulos.

This session is for education only and is not medical advice. Please review anything here with your own healthcare team before making changes.



# Links from the session

- **The Mind-Gut Connection, 10th Anniversary Edition**. Includes a new chapter. Choose hardcover to get it now; the 10th anniversary edition ships in December.
- **The Mayer Model on Amazon**. Dr. Mayer's new book. Chapter 7 covers stress-relieving practices.
- **The Mayer Model free bonuses**. Book trailer, a new mini class, and a $5 coupon for Mayer Nutrition.
- **Dr. Mayer's membership**. $15 a month. Live AMA sessions about every six weeks.
- **Mayer Nutrition Organic Extra Virgin Olive Oil**. Discussed in the polyphenols answer.
- **Mayer Nutrition Synaptic Bloom**. Formulated by Dr. Mayer.

# Questions in this session

Tip: use Ctrl+F (Cmd+F on Mac) to search for any topic, such as estrogen, olive oil, or SIBO.

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# 1. How can we approach gut health and the mind-gut connection?

### Bidirectional

The brain and gut communicate in both directions, through the vagus nerve, hormone-producing cells, and the gut microbes.

### Beyond digestion

This system shapes immunity and metabolism, not only digestion.

### Enduring science

The core science in The Mind-Gut Connection has held up for ten years.

Dr. Mayer: The simple answer is to read my first book, The Mind-Gut Connection, which I wrote ten years ago. I would say 95% of what I wrote about how the brain and gut are connected is still valid today. There haven't been fundamental changes, just a lot more scientific detail.

In general, the mind-gut connection is about how the brain sends signals to the gut and its inhabitants, the microbes, and how the microbes and various cells in the gut, including nerve endings of the vagus nerve and hormone-producing cells, talk back to the brain. It is a bidirectional communication. This system turned out to have a lot to do not only with gut health but also with immunity and our metabolism. It is a central regulatory, homeostatic system in our bodies.

It's interesting that ten years after the book first came out, despite rapid and extensive advances in microbiome science, the main message has stayed the same. That led the publisher, HarperCollins, to do a 10th anniversary edition. We added a few new things, some of which come up in this session, but the core message holds.

The 10th anniversary edition includes a whole new chapter. **Get The Mind-Gut Connection, 10th Anniversary Edition**. Choose hardcover to get it now; the anniversary edition ships in December.

# 2. What are polyphenols, and why are they good for the gut?

### Too large to absorb

Polyphenols are too large to absorb in the small intestine. Gut microbes break them down into smaller, health-promoting molecules.

### Essential microbe food

Along with fiber, they are one of the two essential foods your microbes need.

### Variety beats supplements

A variety of polyphenols from whole plant foods or extra virgin olive oil does more than a single-polyphenol supplement.

Dr. Mayer: This is a very important question. Today a lot of people talk about fiber, fiber maxing, and probiotics. Polyphenols have been the stepchild of this media attention. They had a moment 10 or 15 years ago when they were featured as antioxidants: eat plenty of fruits and vegetables that contain them and you get the antioxidant benefit. That turned out to be the wrong advice.

Chemically they are antioxidants. But when you eat polyphenol-containing foods, the molecules are so large they can't be absorbed in the small intestine. They travel to the end of the small intestine and into the large intestine, where the microbes break them down into small, absorbable, health-promoting molecules. These molecules affect the nervous system, the brain, and the immune system, and they nurture the gut microbiome. So polyphenols are as important as fiber. I would call them one of the two essential foods microbes need to thrive: fiber and polyphenols.

What the microbes get in return for this work is their own food, which leads to a more diverse and richer microbial community inside us. You will hear more about this in the future.

The food that has received the most attention so far is extra virgin olive oil. The olive tree produces polyphenols as its own medicine, to protect itself against infestation, heat, insects, and drought. Whenever a plant is under stress, it produces polyphenols, and they are concentrated in its fruit and leaves. So olive oil is an extract of the plant's medicine, prepared for human consumption.

Evolution came up with both fiber and polyphenols in the plant kingdom. They are chemically very different and do different things, and there are thousands of different molecules in fruits and vegetables. One supplement of one specific polyphenol will never give you the same benefit as an extract with many polyphenols, like olive oil, or simply eating a plant-forward diet, which is probably the best way to do it.

Mary uses **Mayer Nutrition Organic Extra Virgin Olive Oil** at home and is giving it as holiday gifts this year.

Visit **themayermodel.com** for the free book bonuses, including a $5 coupon for Mayer Nutrition, the book trailer, and a new mini class.

# 3. Is stress the leading cause of the mind-gut disconnect?

**Best documented**

Stress is the best-documented driver of brain-gut disruption.

**Gut mirrors emotions**

The gut mirrors your emotions the way your face does, with changes in motility, secretion, and blood flow.

**Hostile microbes**

Stress chemicals act directly on gut microbes and make them less friendly, and chronic stress raises the risk of a leaky gut.

Dr. Mayer: I spent the first 20 years of my career studying the effect of stress on brain-gut communication, and we now know a lot about how stress affects the microbiome too. It is the best studied and best documented part of the whole brain-gut story.

The brain generates emotions, reacts to stress, and produces the stress response. Whatever happens in the brain during these moments is reflected in the gut, and even in the gut microbes. When you're angry, anxious, or happy, your facial expression shows it, and everyone recognizes that. What most people don't know is that the same thing happens inside the body, in the gut. The gut is a mirror image of the emotions and stressful experiences we have.

The gut is a complex system, from the esophagus to the stomach, small intestine, and large intestine, and each part receives different input from the stress system. Stress can change regional motility, meaning how fast things move through the stomach or small intestine. A very strong stress response can stop peristalsis, because the sympathetic nervous system inhibits motility. Stress also affects acid and mucus secretion, and it regulates blood flow.

One of the most intriguing findings is that the chemicals released by stress-activated nerve fibers leak into the gut and act on receptors on the microbes themselves. They change the microbes' gene expression and behavior, and the microbes become more hostile toward us, the host. We benefit from microbes in many ways, but those altered by chronic stress have many negative effects.

Put this together with what stress does to the mucus layer and gut permeability. Under chronic stress, a person is much more likely to develop increased permeability, the leaky gut. That engages the immune system, and it's connected to many of the symptoms, and even chronic diseases, that we've learned are related to the gut microbiome. So stress is one of the most important modulators of the brain-gut-microbiome system.

For practices you can use when stress comes up, see Chapter 7 of **The Mayer Model**.

# 4. How can we combat brain fog and anxiety?

### Glial cell activation

Brain fog likely reflects low-grade activation of the brain's own immune cells (glial cells), which slows how nerve cells process information.

### Stress chain reaction

Chronic stress can set off a chain from altered microbes to a leaky gut to inflammatory signals that reach the brain.

### Microbes and anxiety

Animal studies link gut microbes to anxiety-like behavior. In humans a causal role isn't proven, but anxiety does change how your microbes process a meal.

Dr. Mayer: Brain fog is an expression that didn't even exist when I went to medical school. It has become a very common complaint. It means the clarity of a healthy, fully functioning nervous system is compromised: the brain isn't processing information at the same level or speed. It was a common and very bothersome symptom of long COVID. Very high-functioning people experienced it, and it affected their ability to concentrate at work and in social interactions.

What underlies this vague concept? There's no fog in our head. One component is probably low-grade immune activation. Most people don't know that the brain contains not only nerve cells but also immune cells, called glial cells. These cells are activated under chronic stress, and many signaling molecules, particularly inflammatory signals, can engage this brain-based immune system.

There may be several explanations, but the one closest to the science as we understand it is low-grade activation of glial cells. That impairs the ability of nerve cells, the main workhorses of the brain, to do the same fast processing they do in an unaffected brain. We don't know how much of this comes from chronic stress acting on the brain alone. But we do know the classic sequence of the brain-gut-microbiome system: stress affects the microbes, the microbes attack the gut wall, permeability increases, the mucus layer thins, and inflammatory signals travel from the gut's immune system up to the brain. About 70% of our immune cells are in the gut. Those signals can produce something like brain fog.

On anxiety, most of what we know comes from animal experiments showing that microbes play a significant role in anxiety-like behavior. We can't do the same experiments in humans. For example, if you take stool from patients with an anxiety disorder and transplant it into germ-free mice, mice with no microbes of their own, the recipient mice develop anxiety-like behavior. So we have indirect evidence from these transplantation studies, but we can't say for sure that microbes cause anxiety disorders in people.

What we do know is that during a state of severe anxiety, the microbial community and the molecules it produces are altered. If you approach a meal very anxious that something in it won't agree with you, like gluten or histamine, your microbes will register that anxiety. They will process the meal differently than if you sat down, enjoyed your food, and talked with friends and family.

# 5. Mediterranean diet vs. Mediterranean lifestyle

### The Parma paradox

People in Parma eat a diet heavy in pasta and cheese, yet live as long as people in Sicily and Sardinia who eat the classic Mediterranean diet.

### Lifestyle is the key

The shared factor is lifestyle: close social connection around meals, plus spiritual connectedness.

### Rushed eating costs

Rushed, solitary eating gives up a real part of healthy living.

Dr. Mayer: I've been a big proponent of the Mediterranean diet, and I often enjoy it in Italy. Many people have written about it, and most scientific papers link this diet to general health, longevity, and brain health. But experiences in Italy gradually changed my opinion.

I was invited to a scientific meeting in Parma, in the Emilia-Romagna region. We were amazed that most restaurants weren't serving a Mediterranean diet. Pasta and cheese were the main macronutrients, with very little salad and very few vegetables. Life expectancy is one measure of a healthy diet, and people in that region have the same life expectancy as people in Sicily or Sardinia, who eat the classic Mediterranean diet of fish, seafood, and plant-forward meals, with some pasta. Despite dramatic differences in diet, life expectancy is the same.

What explains this paradox? The lifestyle in Parma and Sicily is very similar, and it's built on close social interaction. Go out to dinner in the evening and you see hundreds of people at outdoor tables, always with family and friends. We've spent time with Italian families where the social time starts in the kitchen. If you look at the research, social connection is a major factor in longevity and healthy longevity. It comes up in the Blue Zones as well.

I would add one more dimension: connectedness to something spiritual. Most people in Italy are Catholic, and religion is part of daily life for a larger share of the population than in other European countries, or maybe even the US. Connection to something higher, and to friends and family, is clearly a key ingredient of the Mediterranean lifestyle and accounts for much of its reported benefit.

It isn't only Italy. In Spain there's the siesta, when people go home, eat, and nap if their work allows. Across the Mediterranean there's this habit of taking a break and reconnecting with family, partly because it's so hot. You see it in the Blue Zones, and Latino culture has a well-known health paradox: Latino families often have closer daily interaction than many modern American families, who grab a hamburger or hot dog while driving from one place to the next. I think we have sacrificed this part of a healthy lifestyle because other priorities took over.

# 6. Gut symptoms after menopause: BPC-157 and the estrobolome

SUBMITTED LIVE BY AN ATTENDEE: Can Dr. Mayer share his thoughts on BPC-157 for gut challenges? I eat healthy and have taught and practiced yoga for many years, but I started having acid reflux in perimenopause, and four years later, after menopause, I still have it. I've tried an alkaline diet and supplements with little improvement. My naturopathic doctor suggested BPC-157, and I've tried it for a month with little improvement. I don't have a gallbladder, and I know that has also affected my body's ability to break down what I eat.

### Estrogen loss is key

Dr. Mayer didn't address BPC-157 directly. He focused on estrogen loss as the bigger factor, and said a single supplement is unlikely to resolve it.

### The estrobolome

The estrobolome, a group of gut microbes, can recycle estrogen back into circulation.

### Promising research

Probiotics that target the estrobolome are a promising area of research for easing menopause symptoms, though the evidence is still early.

Dr. Mayer: Estrogen is a universal regulator in our bodies, not just in the reproductive organs. It also plays a major regulatory role in the brain. If you suddenly shut off that estrogen supply, it's completely expected that many functions in the body are compromised. In many women, fortunately, only temporarily. In some, symptoms persist after menopause. A single supplement certainly won't get rid of this problem.

Something we've learned that is very fascinating, and it's part of the new chapter in The Mind-Gut Connection, is the role of microbes in estrogen recycling. There's a group of gut microbes called the estrobolome that can metabolize estrogen the liver has excreted so the body can eliminate it in the stool. Certain microbes have an enzyme called beta-glucuronidase that changes this glucuronidated estrogen so it can be reabsorbed into circulation instead of excreted. Depending on how many of these estrogen-recycling microbes you have, and how active they are, you will have different levels of residual estrogen during perimenopause and after menopause.

In the reproductive years, recycled estrogen makes up only about 10% of the total, but it becomes very important once the ovaries stop producing estrogen. One of the most exciting areas of probiotic development is targeting the estrobolome to increase the amount of estrogen that's recycled. Not through hormone replacement therapy, but by using the body's own mechanism to rescue some of the estrogen that is normally discarded in the stool. I would never have thought microbes played a role in this process.

If we could prevent the sudden, dramatic drop in estrogen, some of the symptoms women experience during and after menopause might be less severe and less common. We don't know that yet, but there is early, preliminary evidence that certain probiotics can ease some of these symptoms.

# 7. After 70 years of good gut health, how did I end up with dysbiosis and SIBO, and how do I recover?

CASE STUDY QUESTION: How can a person with great gut health for over 70 years end up with dysbiosis, followed by SIBO that required strong antibiotics? How do I get back on a path to recovery?

### Likely trigger

After decades of good gut health, the most likely trigger is a course of antibiotics or a gastrointestinal infection.

### Skeptical of SIBO

Dr. Mayer is skeptical of SIBO as an explanation for bloating and distension. True bacterial overgrowth mostly occurs when gut motility is impaired.

### Path to recovery

His recommended path: rebuild the microbial ecosystem by slowly adding plant-based foods and fermented foods, rather than more antibiotics.

Dr. Mayer: First of all, it's great that this person had great gut health for over 70 years. If I could have looked at their microbiome then, it would probably have been close to ideal, with no dysbiosis. So something must have happened. The most likely cause is antibiotics given for some reason. A one-week course of antibiotics is a very common medical intervention.

The second issue is the SIBO. I have a very skeptical opinion of SIBO. If the person means symptoms like bloating, abdominal distension, and discomfort, there's no way to know this is SIBO. Many other causes are much more likely. SIBO assumes so many bacteria have migrated from the colon and the end of the small intestine into the upper small intestine that they cause these symptoms. In reality, that happens mainly in people with compromised motility, where the gut's contractions no longer push the microbes back down. Certain connective tissue diseases that affect the small bowel, or gastric surgery, can disable this natural cleansing mechanism.

Treating this with strong antibiotics such as rifaximin and neomycin was, I think, a really bad thing. Antibiotics act against your normal gut microbes, and you don't want to use them for a diagnosis that is highly controversial and not accepted by many of my colleagues and authorities in gastroenterology.

I would ask what happened when the symptoms first started, like bloating, distension, or irregular bowel movements. Was it a course of antibiotics? A gastrointestinal infection? Rather than more antibiotics, I would recommend rebuilding a healthy gut microbial ecosystem by slowly increasing certain plant-based foods and fermented foods.

# 8. During pregnancy, what can help reduce the risk of neurodivergent conditions?

### Autism spectrum disorder

Dr. Mayer took this to mean autism spectrum disorder in the child.

### Metabolic risk factors

Metabolic syndrome and obesity in the mother are established risk factors.

### Evidence-based steps

Serious infections during pregnancy, such as the flu, are another. Managing weight and diet and avoiding serious infections are evidence-based protective steps.

Dr. Mayer: The question isn't framed perfectly clearly. I imagine the person means reducing the risk of autism spectrum disorder in the child. There are important things we have learned from both mouse and human studies. Metabolic syndrome and obesity are definitely risk factors for autism spectrum features in the baby. Many chemicals and medications could potentially play a role as well, but infections are another important factor identified in large studies.

There's a classic study of a flu epidemic, I believe in Scandinavia decades ago, that was followed by a significant increase in autism spectrum diagnoses in children born afterward. I was afraid we would see something similar after the COVID pandemic, but apparently that did not happen. I'm not sure why. In animal models, immune activation in a pregnant mother rat greatly increases the risk of offspring with autism-like features. You can't say that's the same as autism in children, but it is used in science as a model of autism.

So managing metabolic health, meaning BMI, weight, and diet, and avoiding the flu and other serious infections are evidence-based steps that help protect against having a child with autism spectrum symptoms.

# 9. What are the best tests for determining gut conditions?

### Red flag symptoms

New, unexplained digestive symptoms (red flags like a sudden change in bowel habits, bloating, nausea, or weight loss) call for a gastroenterologist, and possibly an endoscopy and lab work.

### Lifelong symptoms

Similar symptoms you've had all your life usually don't justify a major workup.

### Stool microbiome tests

Stool microbiome tests aren't a diagnosis or a reason to start a stack of supplements, but newer function-based tests are useful as a baseline for tracking progress.

Dr. Mayer: I don't know if this person means stool microbiome tests or gut tests in general. Anyone with unexpected, new-onset digestive symptoms should be evaluated by a medical professional, ideally a gastroenterologist. The older the patient, the more aggressive the diagnostic approach should be. The key is new-onset, unexpected symptoms without an obvious cause. If someone has had similar symptoms all their life, varying in severity, that doesn't justify a major workup. But for new symptoms, such as a sudden change in bowel habits, discomfort after meals, bloating, nausea, or weight loss, which we call warning signs or red flags, an endoscopy or at least lab tests are indicated.

Stool microbiome tests are not miracle tests that tell you everything that's wrong with you. And the results are not necessarily evidence that you need multiple supplements to normalize what was found. But they are very useful, especially the newer ones that look not just at which species and strains are in the gut, but at which genes the microbes express, so we can infer what they're actually doing.

If a physician or dietitian sees someone for unexplained gut symptoms, I think a baseline stool test, one of the newer ones, repeated after two months on a new diet or lifestyle, is helpful. It motivates the patient to work hard on improving those numbers.

A lot will happen with these tests. We will be able to predict the risk of developing anything from obesity to early cognitive decline, Alzheimer's disease, and many other disorders. It's a rapidly developing field. Right now, I use them to get baseline measures and to see how effective an intervention is, both on a patient's symptoms and on stool composition and function.

# 10. How does a carnivore diet affect the microbiome, and which stool tests are worth it?

### Starving the microbiome

A strict carnivore diet removes the fiber and polyphenols microbes need, essentially starving the microbiome and cutting production of anti-inflammatory short-chain fatty acids.

### TMAO risk

It also raises production of TMAO, a metabolite linked to cardiovascular disease.

### Recommended tests

For function-based stool testing, Dr. Mayer mentions Tiny Health (where he serves on the scientific advisory board) and Jona.

Dr. Mayer: We know that a plant-forward diet, like the Mediterranean diet or the diets in Okinawa and other Blue Zones, which are about 75% plant-based with a variety of plants (not just a tomato every day), is the best food for our microbes, as we discussed earlier. It's also the best for our own gut health.

A strict carnivore diet is the opposite. You remove the plant-based components and essentially starve your microbiome. Microbes transform those plant molecules into short-chain fatty acids, anti-inflammatory, health-promoting agents that act in the gut and also circulate through the body. Take that away and you put your microbes on starvation. A small number of microbes thrive on this kind of diet, but they're not health-promoting and have been associated with various diseases.

On a carnivore diet you also increase production of a metabolite called TMAO, made by microbes together with the liver, which has been shown to be a major risk factor for cardiovascular disease. Many scientific arguments and epidemiological studies show that health and longevity are almost consistently better on a diet that isn't necessarily vegan or vegetarian, but is plant-forward, with most calories coming from fruits and vegetables.

You can go to meetings where carnivore advocates make all kinds of arguments. One is that it's our ancestral diet, which is a myth. There were phases of human evolution when people relied heavily on hunting large animals like mammoths, which is one reason those animals died out. But most indigenous and traditional cultures around the world share a similar, mostly plant-based macronutrient pattern, and most include fermented foods. The Inuit are the exception, because fruits and vegetables don't grow in snowy, icy landscapes. So both scientific and epidemiological studies tell us a carnivore diet is not something we evolved to live on exclusively. Done temporarily, it may not have a big effect, but it is not a healthy long-term diet, and it gives you no benefit you wouldn't get from a largely plant-based diet.

On stool microbiome tests, there are a couple of companies I feel comfortable mentioning. I should disclose that I'm on the scientific advisory board of one of them, Tiny Health. The other is Jona. Both do state-of-the-art genetic testing of the microbes. Many traditional companies don't. They use older sequencing methods that are less accurate, have lower resolution, and tell you nothing about what the microbes are doing.

We're learning more and more that what matters is what the microbes produce by interacting with each other. It's not whether you have more or less of a particular species. It's how the microbes you have communicate with one another. The estrobolome I mentioned earlier, the microbes that help recycle estrogen, and testosterone too, is an example. Both the science and the testing have moved toward function, not just the players. The older approach is still common in some publications and marketing, but the science has moved on from the stool tests that came on the scene ten years ago.

# 11. How does folate microbiome signaling fit into The Mayer Model?

### Microbes make folate

Most gut microbes can make folate, in much smaller amounts than we get from food, and share it with neighbors that can't.

### Not a priority

The evidence for microbial folate is weaker than for other nutrients, so it isn't a priority in The Mayer Model.

Dr. Mayer: We did not cover this topic in my new book. Folate has complicated physiology and biology. We get it from many foods in a normal diet. But most microbes can also synthesize folate, in much smaller amounts than we take in with food. Interestingly, microbes that can't produce it get it from neighbors that can, so there is a whole ecosystem of microbial folate production.

I personally don't put a high priority on it. That's based on the literature: the evidence is not as strong as it is for many other nutrients with a demonstrated role in gut health and brain-gut health.

# 12. Energy and weight after menopause, stress, and partial colon removal

CASE STUDY QUESTION: I'm a menopausal woman who has harbored many years of stress in my gut. I had 24 centimeters of my colon removed due to diverticulitis, and I'm determined to find a path back to having energy and losing this menopausal weight. Any words of encouragement or ideas?

### Menopause is the main factor

Dr. Mayer sees menopause and the loss of estrogen, not the partial colon removal, as the main factor.

### Start with lifestyle

Start with daily moderate exercise and smaller meals. If weight stays resistant, a GLP-1 medication may be worth exploring with your doctor.

### Protect muscle

Pair any weight-loss drug with regular weight-bearing exercise to protect muscle.

Dr. Mayer: As we discussed earlier, menopause means losing one of the body's main regulatory molecules. Estrogen is the master coordinator of many functions, including metabolism. Most women probably don't think about the important role of estrogen made in the brain. A particularly frustrating part of menopause is the weight gain, especially belly fat that's hard to lose.

There are several things in this story. I wouldn't put much weight on the diverticulitis itself. The colon removal is interesting, and not something we completely understand. There are about 40 trillion microbes in the colon. What happens when you remove 20 centimeters? Do you live with fewer microbes, or does the rest of the colon and its microbes adapt? Many patients have no remaining GI symptoms after a partial colon removal. Even a total colectomy, in many patients, is surprisingly not associated with the symptoms you'd expect from removing this major microbial organ. So I don't think it played a major role here. It's the menopause, and the loss of estrogen throughout the body.

For weight that is really resistant, there are the GLP-1 drugs, which have turned out to be better than many of us predicted, without the dramatic side effects you might expect. In some ways they mimic the gut's own mechanisms: the hormones in these drugs are gut hormones that play a big role in normal satiety and metabolism.

In addition to what you've already done, I'd recommend daily, regular, moderate exercise and adjusting your diet. After menopause, you may want to reduce the size of meals and the number of calories. If that doesn't help, as is the case for many women, you might explore a GLP-1 drug together with those lifestyle changes. But you don't want to lose weight without counteracting the loss of muscle that comes with it. That would be the worst outcome. I would only go on a weight-loss drug if you're also willing to do regular weight-bearing exercise.

Looking ahead, we're optimistic about probiotic interventions that target the estrobolome. I hope that within five years we'll have natural compounds that can help raise estrogen levels in circulation and reverse some of the changes that happen after menopause.

Chapter 7 of **The Mayer Model** has stress-relieving practices for anyone carrying years of stress in the gut. The best time to start is right now.

# A closing note from Dr. Mayer

Thank you to everyone who joined. As you've probably noticed, I have strong views on many aspects of gut health, and they often run against what you hear on social media. One principle I have followed, and will keep following, including with Mayer Nutrition: it has to be evidence-based. We will not promote anything unless there's enough evidence that it actually makes a difference. If you want to hear more of these answers, I invite you to join future AMA sessions.

# Keep learning with Dr. Mayer

- Join the next AMA. **Dr. Mayer's membership** is $15 a month and includes a live Q&A about every six weeks, where members submit questions. Questions we didn't reach today carry forward to the next session.
- Get the books. Order **The Mayer Model** and claim the **free bonuses**, and get on the list for **The Mind-Gut Connection, 10th Anniversary Edition**.
- Leave a review. Amazon reviews help the book reach more readers, and they mean a great deal to Dr. Mayer.
- Try Mayer Nutrition. Dr. Mayer personally formulated each product in this small line to fill a gap he saw. Mary's favorite is **Synaptic Bloom**, which smells like blueberries.