

Science AMA Series: Hi Reddit! I'm Dr. Mark Pimentel, Gastroenterologist and scientist studying GI-Motility at Cedars-Sinai Medical Center. I'll be talking about the role of small bowel bacteria and IBS, and microbiome linked diseases. AMA!

Dr<sub>MarkPimentel</sub><sup>1</sup>and<sub>r</sub>/ScienceAMAs<sup>1</sup>

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### Abstract

Thanks so much for all the great questions! It is clear that IBS is so important. We will keep working on this disease. Sorry I could not get to all of you. Hopefully we can do this again soon. I have to go for now... patients to see and research to do... Thanks again! - Dr P Hello Redditors! I'm Dr. Mark Pimentel and I'm here to talk about the bugs in your body! More specifically, I'll focus on my research on the association between food poisoning (gastroenteritis) and disruption of gut flora, impairment of GI tract motility, and small intestinal bacterial overgrowth in the pathophysiology of irritable bowel syndrome – something I've been fascinated by and dedicated to studying over the last 20 years. Did you know that around 40 million people suffer from IBS? Despite low federal funding for motility research, there have still been many scientific advancements in this field. My research team has established the concept of small intestinal bacterial overgrowth as a potential cause of irritable bowel syndrome and discovered that methane-producing bacteria in the gut can cause constipation. More about me: I am the Director of the GI Motility Program and Laboratory at Cedars-Sinai Medical Center, Professor of Medicine (In-residence series) at UCLA David Geffen School of Medicine and Associate Professor of Medicine at Cedars-Sinai Medical Center. I am also the author of a (needing-to-be-revised when there is more time) book called A New IBS Solution: Bacteria-The Missing Link in Treating Irritable Bowel Syndrome. For more background on myself or my research lab, see here. I have been trying out new ways to disseminate information to patients and the public so I'm very excited to be on Reddit doing this AMA today! You can also find me on twitter, facebook, or for more in-depth information at our Global Outreach Symposium on IBS and SIBO in November. While I would love to answer all your questions, I will not be answering any specific patient medical questions due to HIPAA violations. I'll be back at 1 pm EST (10 am PST, 6 pm UTC) to answer your questions, let's get to it – AMA!

[REDDIT](#)

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DR\_MARK\_PIMENTEL [R/SCIENCE](#)

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CORRESPONDENCE:

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I was hoping to get your input about fecal transplants. Do you feel this is one of the best ways to reinstate bacteria in the gut if it has been lost because of an antibiotic, or can probiotics be just as effective?

[BassHeadVet](#)

Fecal transplant has become very popular in the last 10 years because of the great success seen in patients who have difficult to treat *C. difficile* (an infection in the colon that can sometimes be hard to treat). The data suggest it can work very well for this infection. What has happened since is that investigators have been excited to see if this works for other conditions. The success in other areas

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like ulcerative colitis have been mixed or negative. In IBS, the issue is complicated. We think there are too many bacteria in IBS to begin with so adding more may make things worse. We have seen examples in our clinic where a patient with IBS gets C. difficile and then a fecal transplant. The C. diff was made better but their IBS is now much worse. There is a study due to be released from NYU on fecal transplant in IBS. Excited to hear the results soon.

Thank you for this AmA!

How much of affect does medication help with IBS now a days? I feel like a few years back the medical community just sort of shrugged about anything IBS related and prescribed random meds and that was it.

[Verithos](#)

It's true. My greatest pet peeve is when patients are told to "live with it" or "it won't kill you". Some doctors want to help so when they try, they try a lot of different things. This 10 years ago. Now we have a better understanding of IBS (but not all the answers). Its not in you head. You have a real disease.

IBS=irritable bowel syndrome. So we call you irritable and a syndrome. I don't think patients like this connotation. It's a disease. We have proven that for some of IBS.

Are there any links between levels of physical activity/fitness and IBS?

[imaweirdo2](#)

Physical activity is important for all disease. It's part of healthy lifestyle. However, there is [one study](#) that suggest excercise is beneficial for IBS specifically.

What we know is that the gut works better with physical activity.

Edit: Included study

What is the connection between acid reflux and gastric emptying?

[insickness](#)

There is a lot to say here. Some people have a neuropathy of the gut which means the esophageal valve is not working and the stomach as well. So, the two are linked. If you just have gastroparesis, the pressure can build up in the stomach and cause more reflux.

Hi Dr. Pimentel, thank you for doing an AMA. I work in family medicine and whenever I prescribe antibiotics I warn patients about the potential risks of resistance and elimination of "good" bacteria from their gut. My partners usually suggest using a probiotic to help preserve gut flora when prescribing an antibiotic however I've read mixed research about it so I always tell patients they can try it but the efficacy hasn't been proven. Do you have any input on the use of probiotics and it's efficacy? Thank you!

[dizzyizzie](#)

There is so much to say about probiotics. Where do I start. First, probiotics have their merit. The philosophy is that if a but is low in number, replace it and things will be better. It is more complicated

than that. Think of it this way... in a city, there are plumbers, doctors, sanitation workers, contractors and so many other jobs to make the city balanced. Is it ok to add 1 billion lawyers to the city every day? Is that balance? But, some bacteria have anti-inflammatory properties, some fight other bacteria and the list of benefits goes on. Specifically, in IBS, the data have been mixed. The problem here is that there are too many types of probiotics and very few studies that show it works in IBS. This is why fecal transplant is popular...it is the ultimate probiotic. The bottom line is that there is no one good probiotic for IBS and mostly they have not worked. Good news is that most probiotics have not been harmful.

What are your thoughts on colonoscopies and their effects on gut flora during preparation? I recently had one and there's no way that anything in there survived.

[pencil364](#)

The prep for colonoscopy cleans the colon out. We know this temporarily affects the microbiome. However, the microbiome in a healthy individual usually recovers with in a couple of weeks.

I was born in Colombia, South America during the 80's. I grew up around a lot of farms, street animals, and other bacteria-prone organisms.

Throughout my life, I can say, I've been blessed with a moderately strong immune system and no health problems to speak of (knock on wood).

In your research, have you ever encountered a possible link to the exposure third world living has and it's effect on the immune system?

What I mean is do you think there is a correlation between gut health and exposing my immune system at such an early age to bacteria from both flora/fauna not traditionally found in first world settings?

Thanks for all you do, Dr.!

[villagezero](#)

We know food poisoning is a major cause of IBS. However, we have data to show that if you are exposed to these bugs early, it can be helpful. For example, measles, chickenpox, mumps as a adult for the first time can be lethal. As a child they are less significant illnesses. This may be why there is slightly less IBS in underdeveloped countries.

Do you have any dietary or other lifestyle advice for people without IBS or other similar problems, to ensure that they stay healthy? How can a healthy person best ensure that they don't get these types of gastrointestinal problems?

[I like the morning](#)

We don't know all the causes of IBS but we believe we know the big one. The only proven cause of IBS is food poisoning. In meta-analysis of all the prospective studies of food poisoning, outbreaks of Salmonella or E. coli lead to chronic IBS about 10% of the time. So if you get sick from food, you have a 1 in 10 chance you will get IBS. This is even more likely if you are female. It is important to eat responsibly and carefully. Here in California restaurants have health grades on the window (A, B and C) from the health department. Don't eat at a C restaurant. But its more complicated than that. If you travel, exercise caution about drinking the water (drink bottled water). Eat hot cooked food. Ice is made with the local water usually so don't be fooled.

Hi Dr. Mark,

This is probably a very basic question, but is IBS isolated to a specific part of the intestines? How does the process work from the bacteria infestation, to the constipation, the timeline of events? Also, if 40 million people have IBS, would that mean it's possible for people to not know they have it? To what severity would the bacteria have to be present before the patient would feel the need to go to the doctor?

Thanks!! It's a lot of questions, but it would be great to hear back from you.

[maybeifuckeduptwice](#)

1. Our research has focused on the role of small intestinal bacteria in IBS. That's where we think the problem is for IBS with diarrhea especially. We have published that 60% of IBS with diarrhea have excessive bacteria like E. coli and Klebsiella.
2. So many patients have IBS and don't know. Worse yet, patients who are embarrassed and don't see their doctor. Worse yet, they don't see doctors for their IBS because they were dismissed. Need to increase awareness. Hence this AMA!

Does your research suggest that IBS is purely environmentally caused? Would this make for easier treatment than if genetics had an effect?

[CaptCurmudgeon](#)

Complicated question. If 100 people were infected with Salmonella, only 10 would develop IBS. Why? Yes this is an environmental cause but if only 10 get it, there must be a genetic component. The good news is that if you can block the environmental factor it won't matter your genetics. That's what we are hoping for.

Hi there! I have heard a lot about FODMAP diets being beneficial for IBS, what is the mechanism behind this? Also - what are your thoughts as far as a timeline for fecal transplants being more mainstream? Especially in treatment of C. diff. Thank you!

[PrincessPenelopeJr](#)

I answered this question earlier. But the low FODMAP diet is a proven diet to help IBS. The problem is that it really affects lifestyle and is not necessarily healthy in the long term. It is very good for short term symptom control. If you don't have food that gets to the bacteria in the gut, there will be less bloating.

Is work being done to identify the bacteria that make up the human gut microbiome, and to identify an "ideal" composition?

Will there ever be probiotics that you can take that will actually colonize the gut? Or is there no interest in that, since it's a steady source of income for drug companies if the probiotics need to be continuously taken?

Will there be specialized treatments, such as for someone who has lost the ability to digest cheese (it just passes through undigested)?

[omgblvd](#)

Many groups are working on this from the perspective of the colon and stool. The small bowel is a

totally different environment. The colon is 5 ft long and only absorbs a little water. The small bowel is where everything you need to live gets absorbed. We did a study showing that there is almost no connection between what is seen in the stool and the small bowel. If something will affect you, the small bowel has a higher chance which is why we are focusing on the small bowel in our microbiome efforts.

Why do you think that most microbiome research focuses only on the bacterial flora and ignores bacteriophage? The few papers that do talk about phage almost always note that this area is under-researched. Isn't this like trying to understand an ecosystem by studying only the herbivores, ignoring the carnivores?

[tchad49](#)

There is so much complexity in the microbiome. We focus on bacteria, but there are fungus, virus, phages and maybe even prions. It is too complicated a topic for one easy answer but you are absolutely right there is much to learn here.

How is IBS prevalent in other countries? I am a recent migrant in US and suffer from IBS for the last 2 years here. I have never even heard even its name in my home country. I have eaten pounds of yogurt but it doesn't help. Why do you think this is so?

[jonstew](#)

The name for IBS is different in different countries. The prevalence of IBS is about 15% in most developed countries but less in underdeveloped countries. We don't know if chronic yogurt use is preventative but it is a good hypothesis.

Does gut flora play a role in digesting FODMAPs?

[sasha0827](#)

The low FODMAP diet is one that restricts all possible inciting foods in IBS. The data suggest that this diet is effective compared to conventional diets. However, recent evidence suggests that it may be no better than a good dietician taking a good history. Hence, having a good dietician either way is ideal. What some of the experts will tell you is that the low FODMAP diet is not a long term solution and that the diet is not balanced enough. As a result, you should consider supervised return to some foods after about 2 months.

Have there been any population studies done to evaluate the incidence of IBS pre vs post exposure to a) broad spectrum antibiotics b) narrow spect but highly gut flora specific? c) travel exposure to new flora?

[Dremd07](#)

There was one study showing that antibiotic treatment was associated with IBS later. But, there was a flaw with the study in that the patients were first examined after antibiotics had finished. We know antibiotics like rifaximin (FDA approved for IBS with diarrhea) help IBS. So maybe they were already better after the antibiotics. This is suggested because when they compared the antibiotic group to the control group there was less IBS.

Hi Dr. Pimentel, and thank you for coming to ama!

For years I thought I had become lactose intolerant - milk products made me fairly bloated, but caused no other typical hallmarks of the intolerance. After a course of antibiotics for a sinus infection, I realized I can now consume dairy bloat-free, and without fumigating my loved ones!

Question is, what caused this faux-intolerance, and how can I avoid it from happening in the future?

[Damaso87](#)

SIBO is a common cause of "lactose intolerance". Lactose intolerance means drink milk, have bloating. But if you have SIBO (bacteria in the small bowel) even if you are not lactase enzyme deficient you will have symptoms because the sugar is mixing with bacteria. We presented a consensus paper at DDW that states to diagnose lactose intolerance you must first rule out SIBO.

What do you think of the possible link between IBS and autoimmune disorders like hypothyroidism? I'm 33 and I've battled with constipation (and now diarrhea) my whole life and I have hypothyroidism, PCOS, endometriosis, and gastritis.

Do you believe in the leaky gut theory and think it could be the cause behind autoimmune disorders like mine? (I know, that is two questions, but they are related. 😊)

Thank you for taking the time out to answer these questions!

[captainbkfire82](#)

Based on the food poisoning as a cause of some of IBS, we have developed a blood test for IBS based on the detection of two antibodies. Anti-CdtB and Anti-vinculin. This is a major breakthrough because it makes IBS a disease, not a syndrome. Also the anti-vinculin antibody is an autoantibody. Therefore a subset of IBS is an autoimmune disease. These tests are now being used to diagnose IBS in the US.

What do you eat for breakfast?

[billypmacdonald](#)

I eat a high protein breakfast such as eggs or egg whites with toast. But most important is coffee. No brain activity till coffee.

Do we have samples of gut microbiomes from people from past decades? Can we compare the species and distributions of microbiota of people from 1970s and 80s to people of today and see if there have been shifts or even extinctions in microbiota populations?

I have often wondered if emerging disorders like the obesity epidemic or the rise of peanut allergies could be explained by nationwide changes in gut flora.

Do we know of any potential extinctions of such microorganisms in recent history?

[mavaction](#)

So many interesting things to say here. On a tangent, investigators from northern california recently dug soil from below the permafrost in the arctic (never seen the light of day for more than 10,000

years) and they found that all the resistance genes to antibiotics we say today were there then. We get our antibiotics from fungus and other natural sources so this is not surprising. We like to take credit for everything. Nature figures it out.

Main Questions:

- 1) Is the SIBO breath test reliable?
- 2) What are safe, healthy options for maintaining gut motility long-term?
- 3) What is your first-line treatment for SIBO?

Bonus Questions:

- 4) Is there any validity to the claims that Rifaximin targets small intestinal bacteria and is therefore better at preserving a healthy gut than other antibiotics?
- 5) Is there any validity to the claims that childhood antibiotic use can cause low gut motility?
- 6) How do appetite and satiety affect gut motility?

[sweng123](#)

The breath test is the only non-invasive tool to diagnose SIBO. There are problems which is why we recently presented a consensus on how to do and interpret it. Since there is not path for FDA approval of "SIBO drugs" there are no FDA approved drugs here and everything is off label. We have shown in published work that rifaximin preferentially reduces small bowel bacteria and since it does not produce durable resistance (another presentation at recent DDW), this is often used in the community (again off label).

Dr, thank you for your work! It is because of you (and a nutritionist who finally steered me in the right direction) that I forced my GI doc to test for SIBO, at which point all my symptoms made sense and I was able to find a treatment. Until that point the specialists never even mentioned SIBO, and my doctor even seemed skeptical that the rifaximin would do anything (it worked wonders). It seems that many doctors still don't understand or even believe in SIBO.

My questions is this: How can we help spread this new knowledge about the gut, and the huge importance that microbes play? As a patient, how should we discuss this with our doctors who might not be as current with the latest research?

[ever\\_the\\_skeptic](#)

It is really important for physicians to educate themselves. I hear all the time that doctors do not know what SIBO is. This is not helpful. There are many educational seminars and national meetings that address this. For example, the AGA DDW, the fall ACG meetings have plenty of commentary about IBS and SIBO. Our research group is trying to increase public and physician awareness of the evidence based work in this area.

Dr. Pimentel, your research sounds very cool! Do you have any advice for current students who are interested in medical school/medical research?

[Sjmman](#)

Yes. I tell my mentees two things: 1. Stay on topic. If you dig a hole here and hole there, planes will fly over the area and never see the holes. If you keep digging a hole in the same place eventually people will notice. 2. Just because someone says that's not possible, that does not mean they're right. Don't just swim with the salmon....

I've had IBS since I was little. I have tried everything. Literally everything. Did the fiber thing, stool softeners, FODMAPS diet and everything in between. I still cannot go regularly and have problems. Can you suggest anything else? I have been to the doctor about this problem also.

#### [Mamacookies](#)

In IBS there is so much bad information. Look...if you are a patient with a condition and a doctor tells you to "live with it", you look somewhere else. Sometimes that's another opinion from another doctor. Sometimes it is finding remedies on your own. Drugs are expensive. But so are supplements. Some might indeed help IBS but some might make things worse. What we are trying to do this year is to increase education around IBS and SIBO. We have major efforts planned. Reddit is a start. Later this year in September I am co-chairing a course for doctors, nurses, dieticians on the microbiome ([www.gutmicrobes.org](http://www.gutmicrobes.org)). There are many courses on gut microbiome but they are deep and technical. Our course boils it down to "what in the microbiome do you need to know to treat patients in 2016". Things we can use now! The final big meeting is our second Global Outreach Symposium on IBS and SIBO ([www.regonline.com/2016globalIBSSIBO](http://www.regonline.com/2016globalIBSSIBO)). This is a massive undertaking. We hire professional camera crews and pipe an entire 8 hour series of lectures through the internet to whoever wants to tune in. (Full disclosure: We wish it was free, but there is a fee because of set-up costs). There is also a limited live audience. While the lectures are happening, we are answering questions continuously via the web from the internet audience. When I look at Facebook pages on IBS and SIBO there are so many questions. I don't pretend that we have all the answers but some of the answers given on Facebook to people suffering are outright wrong. We can at least try to educate people to what is proven to be correct.

Personally, I just wonder why so many GI Doctors automatically assume that if you have IBS, then it's probably a mental condition that requires psychiatric medicine. You wouldn't believe how many highly regarded GI doctors I've been to in the metro NY area who are so quick to assume that there's nothing physical wrong with you from a cursory analysis. It's very frustrating.

If it wasn't for insisting on a Quintron breath test instead of the portable ones, they would NEVER have found that I tested positive for SIBO, although it was low, but to be fair I had been taking Magnesium and I had quite the movement 36 hours prior to the exam.

#### [Sprockettman](#)

This is a real problem. It is so important to recognize psychological illness! But there is no prospective study proving IBS is caused by psychological illness. Therefore, to use psych meds first is probably not wise. For example tricyclics cause, impotence, dry mouth, constipation, heart rhythm changes, drowsiness...to name a few.

Hi Dr Pimentel

You were speaking to how diet, whether it be high in simple sugars or complex sugars/protein, can alter your gut flora.

My question is can you speak to how alcohol alters the flora? Wine vs beer vs liquor?

Thanks very much

[norick13](#)

This is great question! Some think that bacterial overgrowth can produce alcohol. We just studied that. You will have to go to the ACG meeting in October to get that answer.

Is there one joke in your field you never get tired of? How about one everyone makes that's not funny anymore? Also, what guided you to gastroenterology?

[Skeetronic](#)

Why are gastroenterologists always tired?

Answer: They're pooped.

All GI jokes are funny. Especially at the dinner table.

I went into gastroenterology because there was a great need for more research. Even now, there are only 2-3 centers in the US who study the causes of IBS. This is sad for a disease that affects more than 45 million people. We need more people studying this and the only way is to have more funding for IBS.

Are there any specific or obvious symptoms present in those with SIBO+IBS as opposed to those with only IBS?

[intergalacticvoyage](#)

This is important! People ask "do I have SIBO or IBS?" Well both in some cases. We feel that the most common cause of SIBO is IBS and this is due to changes in the gut muscular function. However, SIBO can be caused by blockages in the bowel, pancreas disease and many other conditions so your doctor needs to take a good history. To your question, the most common symptom of IBS and SIBO to suggest they are both together is bloating. Another characteristic of SIBO is that the stool changes every day.

Does this mean that IBS can be triggered by a food poisoning event? If so, does that mean IBS patients are having a chronic inflammatory process as a direct consequence? Can it be related to cancers? Also will antibiotics help or worsen the condition?

Thank you for your AMA by the way. I am one of those 40 million. :( Guys like you give me hope.

[RURALJUROR](#)

We don't think IBS or SIBO are a cause of cancer. No link found. But, cancer can have similar symptoms to IBS.

IBS is autoimmune in some cases based on the new blood test. But not in all IBS. In those positive, it does suggest some degree of inflammatory reaction in the gut.