

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



The following transcript and information is not intended to take the place of medical advice and/or treatment from your personal physicians.

Sean: Andrea, welcome to the Digestion Sessions.

Andrea: Thank you, Sean.

Sean: I really appreciate you being here. You have a wonderful story, which I want to make sure we get to, but you're also a functional nutritionist, you're the founder of Replenish PDX and the Holistic Nutrition Lab. We're going to run this interview very early in our event. I want to make sure that everybody knows exactly what functional nutrition and functional medicine means. Tell our audience about that.

Andrea: It's important to establish that. Functional medicine is a real systems based approach where we're not looking just at signs and symptoms, but actually functional medicine is looking at the entire system and the interrelations and really creating a partnership between the physician and the patient.

In functional nutrition, I feel like we get to take it into a little bit more of a personal place because of the relationship we have with the actions that somebody's taking daily in their lives, their lifestyle, their diet, full nutrient potential and sleep patterns, all the different things that we look at, and we get to really hang out there with the person. In functional medicine, there's a timeline and a matrix and I've adapted those tools to work with our practices with people in the nutrition realm.

Sean: This doesn't sound like somebody goes into the doctor's office for a 12-minute appointment and walks out with a prescription. This sounds more like coaching.

Andrea: It is a lot of coaching. We really have to meet the individual where they are. It's a very dynamic relationship. No two people are the same and even if they're coming in with the same diagnoses or the same signs and symptoms, they have a difference history, a different lifestyle,

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



different relationship to food, and it's our job to really get in there and make what it is that we are recommending a success for them. That's in accordance to what they're going to be able to do.

Sean: Is it for everyone?

Andrea: I think it's for people who are ready to take on a different level of ownership with their health. A lot of people do want to be told what to do. I don't see that as a long lasting model for health, so people who are just looking to be told what to do will keep searching for the next practitioner or the next model that's going to help them the next diet or cleanse or theory. Functional nutrition is really moving into a place where a person starts to understand what's happening within their own body and have a relationship with that.

Sean: They're taking responsibility for their body as well, right?

Andrea: Taking responsibility and we're given this body to live in and I think that so much has taken us away from what it's actually doing. People don't understand themselves physiologically and I like to think of it as a form of non-violent communication, which was a practice in the 60s where we learned to listen to each other, but we've stopped listening to our bodies.

We just override the signs and symptoms and we don't hear what's going on and pay heed to it. Really what we're teaching is how to get in there and listen better.

Sean: People just tend to wait for it to get bad enough and then they're looking for a quick solution. You've got a great story though. I want to make sure everybody hears about it because it's a really good one about how you got into this field. Talk about that.

Andrea: Speak about not paying heed to the individual, in April 2000, my husband was diagnosed with glioblastoma multiforme and that is the most aggressive brain tumor that you can get. It's the scariest thing when people say "and he got a brain tumor." When my husband was diagnosed with a brain tumor, he was in his early 30s, I was seven weeks pregnant and he was given about six months to live. The doctors didn't think that he'd live to see our son born.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



When you have something like a brain tumor, you go into different doctors and you're treated like a dead man basically, so that was my first exposure to the cold hearted truth of our medical system, really seeing how somebody isn't treated like a man who was very proud and stoic and ready to start a family, and just seeing him treated like he was invisible, like he was already gone.

We did everything we could do to try to keep him alive. We weren't really in a place of thinking about the fact that he was going to die. I had to visit it every so often but we really were striving for life and living our life fully. Through that, we made a lot of dietary changes, we looked at the nutrients, we looked at the relationship of sugar and cancer and we did everything we could and he lived two and a half years.

He died when our son was about 19 months old. That really started my journey into understanding the powers of nutrition, not just that we kept him alive for longer, but that everything we were doing could make a difference.

Sean: When did you make that transition over to actually helping other people?

Andrea: It took a little bit. It really became my passion. I was such a foodie before the brain tumor diagnosis and that switched my focus more to the nutritional realm, what could we do. It was like boot camp for me. I started researching and after he died, I had a very successful other career, but I kept doing my thing with food and making good healthy food and at a certain point, a friend was diagnosed with colon cancer, and I found myself doing my research thing.

As I was researching, I realized this is my calling. This is what I'm supposed to do and I put myself back through school while working as a single mom and many years of anatomy and physiology and biochemistry to get to the place where I am now.

Sean: Isn't it cool to do what you love to do?

Andrea: So cool to do what you love to do. The best thing ever.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Sean: I know as a former health practitioner that when you're working with people who have digestive problems, it's like an art form, and you really have to know what you're doing. You have something called the Key and Lock approach. Talk about how that fits into this whole digestive problem thing we're talking about.

Andrea: It really is the digestive complex when we're talking about the key and lock because I like to think of the food as the key. Often times, when we're just looking at dietary theory or what we're eating, we're just stuck on the key, but that key has to fit into and unlock the potential of the physiology.

We need to make sure that the food is really the appropriate key for somebody's particular body. The way that we're utilizing the food is through our digestive system so it's really the most prominent way that we work with this key and lock approach, what can be unlocked in the physiological potential.

Sean: What are we trying to unlock? What does that mean?

Andrea: For me, what I want to unlock is optimum performance so that we're utilizing the nutrients that we can so that everything's moving and functioning to its best abilities, so that inflammation is down, blood sugar is regulated, and from there really what I like to think about is what further potential is available for the person when the body, the physiology, when the vessel is functional.

You asked me how does it feel to do what you love. Ultimately I feel like I'm in the job of bringing people to do what they love because when our body functions, we have so much more capacity to pursue our dreams and our passions other than worrying about our aches and pains and not feeling great.

Sean: So we want it running tiptop.

Andrea: Tiptop shape. Get this thing running tiptop shape.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Sean: We want it to do what it's supposed to do. Talk about what's going on in there.

Andrea: Yeah! That's our thing, what's going on in there. The outside world interacts with the inside world in several different ways. The skin is a big way, the respiratory system, the urogenital system, but the digestive system is one of the biggest ways in which the outside world is interacting with the inside world. To say that it doesn't matter is literally absurd because we are taking food and utilizing our breakdown of the food, the micronutrients for feeding our blood and ultimately feeding our cells.

I like to remind people that digestion starts in the brain. There's cephalic digestion and in our culture we're skipped over that phase a lot. It comes from thinking about food, smelling food, cooking food, all those things that we bypass with fast food so we're really not moving into the place where we stimulate all the production of the juices for the digestive system and the enzymes.

We're moving through and then really what I like to think about is each organ in the digestive system has its gastric juices, it has its enzymes, it has a mechanical function, it has a chemical function and it also has other things that it's interacting with that aren't necessarily us, in fact, more of those than there are our cells in the body. But we move from the brain to the mouth where there's chemical and mechanical digestion happening down the esophagus—

Sean: I was hoping you were going to bring that up, the whole mouth thing because I feel like people forget about that. Do you emphasize chewing your food?

Andrea: Chew your food. It's so important and we all need reminders. I know I need reminders every time I teach about the digestive system. I get that reminder of chew your food. You can see how it gets harder as people get older to digest food and part of that is related to the enzymes and juices we produce in our mouth and in our stomach.

Chewing really helps to break everything down, allows more of a surface coverage of those enzymes and juices so that we can break it down further as it moves along. We got the mouth, we got to

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



break everything down particularly our carbohydrates and a little bit of fat breakdown happens chemically in the mouth along with the mechanical chewing.

Then we have chemical movement through the esophagus. We get to the stomach, which is often overlooked and really important. People don't often even know which organ is where in their body and the stomach should be very, very acidic. We really need an acidic stomach to kill any bacteria that's coming into the body in order to break down the proteins.

This is the first place of protein digestion. Proteins are very complex molecules so we need to break them down so we can utilize the components, the amino acids later on, that feed our brain, feed our cells. Stomach acid, if we're looking at pH balance, needs to be between 1 and 2, really acidic. Really, really acidic.

Sean: That can burn your skin, right?

Andrea: That can burn your skin.

Sean: How does it not burn your stomach?

Andrea: We have a mucosal lining around the stomach and when the stomach is acidic enough, it has several mechanisms in place. One is there's a mucosal lining that's very thick that prevents that acid from moving anywhere else in the body, but that stomach acid and the thick mucosa actually are part of nutrient absorption.

It's where we help break down some of our iron that we're eating or we can utilize our B12 with the intrinsic factor that's in that mucosal lining. So somebody could be back to that key and lock eating a diet that's high in iron, a lot of meat, and still be B12 and iron deficient because the lock isn't functioning well.

Really acidic stomach with a very thick mucosal lining, that acid also helps to keep the lower esophageal sphincter, the little flap between the stomach and the esophagus, that helps prevents

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



any GERD or reflux. When the stomach is more acidic, that flap is closed. As the stomach gets less acidic, that flap might get a little lazy. Often times, people take antacids because they feel like they have too much acid in the stomach. They likely don't have enough.

Sean: So that flap is supposed to open up downward letting stuff out of the esophagus and into the stomach, but it's not supposed to go backwards. When it gets dysfunctional, it goes backwards and then you've got problems.

Andrea: Correct. Things come up, some of the acid is going to come up, you're going to feel like you have too much acid in your esophagus and in your throat, feels like indigestion, heart burn, but in fact we have to build the stomach acid.

Sean: So in the stomach, you've got this really acidic bolus of food that has to pass out of there and go into the small intestine.

Andrea: Then we get to the small intestine. This is really the seat of absorption so there's more digestion happening here. Digestion really the breakdown of those macronutrients, our carbohydrates, our fats and our proteins. Carbohydrates in the mouth, a little bit of fat breakdown, proteins mostly get their first breakdown in the stomach, small intestine we're really starting to break down the fats.

Sometimes when we think of all these good fats that we're introducing into the body, if someone has small intestinal issues, it's harder to break down those fats and this is where it gets very personalized and we can't rely on those theories. Again more break down happening and then this is where the food, the micronutrients, will really get absorbed into the bloodstream.

At this point, we should be working with glucose, fatty acids and amino acids. We're working with our components to feed the bloodstream, to feed the cells, unless of course there's more leaking into the bloodstream through a leaky gut, which I'm sure you will explore throughout the sessions.

Sean: We got the small intestine. You want to talk about the large intestine?

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Andrea: Absolutely, because if we're going to talk about some of these places that are interacting with the food, the large intestine is a huge one. After the small intestine, most of the absorption of the nutrients is done. There's a little bit more absorption of nutrients that happens in the colon, which is wrapping around the small intestine, and most of the things we don't need, bad bacteria or

fibers, are passing out of the body through your stool. The colon is really the seat of the bacterial population and where most things are moving through. It's doing a lot of wonders for us. Hopefully you're utilizing what you do need and you're extracting what you don't need, which is unfortunately not the case for most of us these days.

We're taking in things into our bloodstream that we don't need, we're inciting an immune reaction because of what's getting into the bloodstream and we may be feeding the wrong guys in there. In addition to what's going on in there, I also like to think about who's in there in terms of the digestive system.

Sean: So, let's talk about that I'm really glad that you mentioned that: bacteria. That's what's going on in there. We've got good bacteria and we've got bad bacteria. What I think is really cool is that if you watch TV these days, you'll see commercials about probiotics and good bacteria, so they're getting the word out that bacteria isn't always bad. Talk about bacteria and start from the beginning.

Andrea: It's really important that all that publicity is out there about bacteria, but bacteria has been around forever and it's part of what keeps us healthy. It's important to remember that we are more bacteria, we are more other, than we are cells. We're 10 times as much bacterium as we are cells in our body and we also have bacteria that create genes.

Some of our genetic expression is from our bacteria as well, so we really need to pay heed to these guys of who's in there and recognize that we have whole other ecosystems functioning in us. We can go back to the beginning from the lens of food, but let's go back to the beginning from the lens of human evolution just in utero. There isn't a lot of exposure to bacteria. We don't have a lot of bacterial exposure. We're safe from any bacteria good or bad.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



There is more research showing a little bit of exposure in utero, but the primary exposure for bacteria comes through the vaginal canal during birth. The vagina is host to a lot of populations of bacteria and also the positioning of the baby coming out of the vaginal canal, usually the mouth is pointed towards the anus, and when you're pushing a baby out, you tend to poop a little bit too.

They might actually take in the vaginal bacteria and a little bit of the fecal bacteria and that's the baby's first exposure. There's a lot of good bacterial exposure depending on mom's bacterial population. The bacterial population has been changing quite a bit over time. There's said to be over a thousand different kinds of bacterial species but we're becoming more homogenous.

There's probably in the colon 30 to 40 kinds of species and it may even be depleting and that's because of our food supply and how the food interacts with the bacteria. Also the air we breathe, the water we use, the skin products, all of that's affecting our microbiome.

Sean: Antibiotics in the food, do they have an impact?

Andrea: Huge impact. Antibiotics in the food is probably one of the biggest detriments to our bacterial population and it's making more bacteria that are antibiotic resistant. It's harder for us to even use modern medicine to its good effects because we have more resistance to what's there because of the antibiotics in the food.

Sean: What if someone is born by C-section?

Andrea: Then we actually don't have as much good bacteria exposure that way, so there's a lot of studies that show that the immune systems, because the bacteria really boosts our immunity most of our immunity is in our intestines and it's really training the immune system. Babies born C-section tend to show lower immunity than babies born vaginally.

I heard Martin Blazer speaking about how his wife is doing some studies about taking swabs from the vagina for a baby that's born cesarean and applying them to the baby after birth to see if that overtime changes the immunity because that vaginal bacteria is so important.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Sean: It makes sense. You talk about immunity. What other role do the bacteria play in the gut or with health in general?

Andrea: With health in general, there's so many ways that our gut is responsible for our immune system. Every health issue stems back to the health of the gut. When we look at that key and lock approach, first and foremost, I'm always saying back it up. A lot of my students might be seeing people with lupus or MS or Hashimoto's or Crohn's, really complex health issues and sometimes many at once.

First and foremost, we have to work on digestive health. Also polymorphisms, things going on with the liver, gotta work on digestion first and foremost because digestion is going to affect everything. That leaky gut that I'm sure you're going to talk more about affects the immune system. The bacteria are training the immune cells, but digestion is a way in which foreigners get into the bloodstream and can cause havoc.

Things that don't belong in the bloodstream are as foreign as those bad bacteria or a virus and cause an immune reaction that can then become an autoimmune reaction. Autism, allergies, eczema, all mental health issues, definitely autoimmunity, all stem back to the health of the gut.

Sean: Talk about that war going on in the gut between the good bacteria and the bad bacteria. From what I understand, there's supposed to be a certain ratio of good to bad, and for a lot of people, it's way out of whack.

Andrea: The one thing I want to point out, we went through the digestive system there and we talked about the acidity of the stomach. The acidity of different parts of the digestive system is different so that acidity also lends itself to what that bacterial population is. In different organs that we identified, there are different natural bacterial populations that exist there because of the pH acidity in those regions.

In different regions of the body, there should be different relationships happening and I like to look at the bacteria even without getting too specific as having different kinds of relationships with the

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



host and the body. We have mutualistic relationships with bacteria where they're benefitting from us and we're benefitting from them. Surprisingly to most people, E. Coli is one of those bacteria.

We think of it as bad, but there are so many different strains of E. Coli and some of them are really good for us. They help us get the vitamin K from our foods and utilize that vitamin K, which is important for many body functions, including blood clotting. That's a mutual relationship; you get from me and I get from you.

There are commensal relationships where one of us is benefitting from the other and it's not reciprocal. That's also fine. And then there's parasitic relationships, which is what you're talking about where one bacterium may be feeding off the host and taking advantage. It could be stealing nutrients, it can be an overpopulation that's in battle in there, taking over and causing some of the good guys that we need for nutrient absorption and nutrient utilization so many things to be, that population is decreased.

There are different bacteria that would work in that way. There are different populations. It's really not a static environment in there. We start from birth but then we're interacting with our environment and it's changing all the time

Sean: What causes it to change for the worst? Is it poor diet, prescription drug use?

Andrea: All of the above. Definitely the antibiotic-laden meats that we eat and as a result our water often has antibiotics in it. There's more in the air that interacts with our bacteria. The GMO foods, Roundup, all of these things that we're exposed to have an affect and change the population in there and therefore change what we can get from the food we eat.

There's a lot of interaction between the food that we put in our body and the bacteria, and there are things through life. Also, anytime you kiss someone or have sex, you're trading bacteria all the time and so that population is constantly in flux.

Sean: Everybody's got to eat. Good bacteria got to eat, we got to eat, and bad bacteria got to eat. How do we make sure that we're feeding the good guys?

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Andrea: We definitely want to be feeding the good guys and there are three things I'm going to think of off the top of my head that I think could be really helpful tips in how we feed the good guys. First I think a lot of people have heard about eating probiotic rich foods. Those probiotics are really good to feed the good guys and a lot of times these things that I'm talking about are selective.

They know to feed the good guys and not feed the bad guys, so we bring in probiotic rich foods like sauerkraut, kimchi, fermented vegetables, miso, which you can get from soy or not soy forms these days, any fermented kefirs whether its from a dairy source or a coconut source, yogurt, again dairy or coconut, whatever you can tolerate. I haven't eaten that many fermented or high meats, raw meats that are naturally fermented without sugars, there are populations who really work with eating some of those high meats.

There are all these ways that we feed our good bacteria through our fermented foods and it's not a one-time thing. It's something we want to include in our diets on a regular basis and be thinking about how do I feed the good bacteria and therefore my health and what does it mean to be doing that. You eat probiotic rich foods daily if you're able and that's one way.

Sean: Does anybody really do that though?

Andrea: It's tough. Some people do.

Sean: Even for healthy guys like me, I don't really want to eat fermented foods everyday.

Andrea: It's not that easy for people to get in there. At Replenish, we tend to work with people who are pretty motivated in that direction, and so I do have people, students and clients that act as my inspiration because they're doing it. They're fermenting their own foods, they're making kombucha, all those things that help to benefit our good bacteria. I think it is a practice and once you get in the practice, it's easier to remember.

Sean: Do what you got to do to get better.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Andrea: Exactly.

Sean: What about probiotic supplements?

Andrea: I'm a fan of probiotic supplements because I think many people are depleted in their good bacteria these days. I like to work with a multi-strain lower billion-usage probiotic.

Sean: What does that mean?

Andrea: People are often looking at how many parts per billion in the probiotic and going for the highest, thinking highest is best. That doesn't always work for people because they may have a lot of that war going on, so we have to slowly build, and sometimes we have to get really specific. That's where I might be doing a stool analysis or looking at an organic acids test to see metabolites from the bacteria so we know specifically what does this person need.

It's important to remember that the bacterial population in you is as unique to you as your fingerprint. None of us are the same so we can't just say that one off the shelf is the right one for me. It might feel horrible in me, it might make you feel great and improve how your energy feels and your poop and just feel like the best thing ever, and we can't say that one size fits all.

Sean: On the stools test, you'll actually see if this person is low in lactobacillus and you'll put them on a lactobacillus supplement.

Andrea: Absolutely. I'm going to look at a strain of something that is just lactobacillus or conversely something that's higher in bifidum. I might even get more specific there. There's more and more research that gets into strain specificity so which strains of which species are for which kinds of conditions so I might not be able to see that from a test, but working with signs and symptoms get into some strain specificity.

I typically do that down the line a little bit because if I'm working with a multi-strain probiotic, then I'm going to be able to just make sure we're hitting all targets, and then if we still need to, get into some strains specificity.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Sean: In an ideal world, everybody would get a stool test and get a practitioner. But if they couldn't afford it, is there a general recommendation that you can give them for probiotics?

Andrea: Yes. We have a store called replenishme.com and we have our standard probiotic, which is GUTPro, which is for highly sensitive people. It doesn't have D-lactate, which people can be reactive to, it doesn't have maltodextrin, which some of them have, so it's for very sensitive people and we also can do it very slowly, really start to build up in the quantity that somebody's taking in what I would call probiotic therapy. We're really building up the probiotics in that way.

Sean: I want you to talk more about antibiotics and exactly what they do to the gut bacteria in terms of wiping things out. Should people take a probiotic while they're on an antibiotic, what probiotic, how long and such?

Andrea: Antibiotics are definitely not selective and I'm not anti-antibiotics. In certain situations, they are people who need them for certain conditions. I think they're way overprescribed. We do want to be really careful and work with somebody who's definitely giving us the right recommendation when the time is right.

We do have too much exposure to antibiotics that are working like stealth bombs. If we think about the population of the bacteria in there, we take antibiotics and it's like killing the bad and we're going to kill off some good at the same time.

I always recommend that we take probiotics with antibiotics. You don't want to take them at the same time of day so probiotics are best taken with food just like we would eat probiotic rich foods. That's how they're going to make it through the digestive system intact and get to where they need to go, which is lower digestion. Probiotics with food at times away from the antibiotics.

Sean: I know sometimes people start eating fermented foods or they'll start taking probiotics and you alluded to this earlier, they'll start to have digestive side effects. Why is that?

Andrea: We definitely have those unique populations in us and as we bring in different strains that are coming from our food or from supplements, there's going to be that interaction, that war that

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



you alluded to earlier, so we need to be careful. Sometimes we just need to back it up and go more slowly and sometimes it's the wrong form of bacteria for that person.

We work with a number of people who can't take in any probiotics because there's so much dysbiosis so we have to start very slowly, maybe even with a quarter of a teaspoon of a coconut probiotic drink that's therapeutic and work our way up. Our side effects from probiotics is what's called die off. We're getting rid of some bad stuff and we're bringing in some good stuff. People often ask me "what's die off going to look like?" and my answer is it's going to look different for every single person.

It usually looks like an exacerbation of your symptoms. If you already have digestive systems, it's going to show up that way. I have done intensive probiotic therapy on myself just to see what die off would feel like. I went with really high dosages at one time because I like to experiment on myself that way. For me, it shows up as a little fatigue.

Fatigue isn't something I feel, but my digestive issues I don't feel in my gut, they show up more with my autoimmune condition Hashimoto's. It represents itself for me as oh, I'm a little bit more tired than I usually am and that's when I know I need to back it up or plow through. I'm usually a fan of backing it up.

Sean: You back off and you wait for the symptoms to dissipate?

Andrea: I will back off to a dosage that my body can handle and then titrate up very slowly until I'm at a therapeutic dose that I feel I'm going to stay at for some time. I really am a fan of them making sure I'm bringing in different strains so if I can't do a stool analysis and see what I need, I'm always playing with the ecosystem within, how is it that I can feed different populations because we need diversity in our bodies.

Sean: And you're increasing your dosage every couple of days or weeks or...?

Andrea: That depends on the individual. It's really dependent on working with somebody who can be in that dynamic relationship with you. I often was starting very low and if I'm at the place with

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



someone where they're not symptomatic based on that, then we can try going up a little bit and I might even put those at different times of the day, breakfast and dinner, to separate it a little bit. It's really this art form of how do we play with that so we can do the reparation. There's really no reparation in health that can happen without restoring some good bacterial balance and population.

Sean: Give us some more foods that feed the good bacteria.

Andrea: Another one I like to think about are the polyphenols and we often think about those in relation to antioxidants or phytonutrients like blueberries, but they also really help to feed some of the short chain fatty acids in the colon that help with tissue repair.

The important ones that I like to think about there, and they all have some historical basis, are blueberries, green tea, which I'm a fan of drinking a thick matcha green tea, chocolate, but I have a caveat with chocolate, raw apple cider vinegar, all those work as good polyphenols in the system to help feed the short chain fatty acids in the colon that help with our tissue repair and the entire digestive system. Pistachios as well if they're fresh and they haven't fermented in any way or gotten stale or moldy.

Sean: From a supplement perspective, what about something like *saccharomyces boulardii*?

Andrea: Then we're talking a little bit more about yeast and that was my caveat with the chocolate. I am not a fan of sugar in the diet. When people often ask me— "for everyone?" and I say if they're walking in our doors, there are certain foods that are going to go out because they're basically raising their hands saying I don't feel well and sugar is one of those foods.

Different than our bacteria, sugar does feed the bad bacteria but they also feed the yeast. When we look at who's in there, we're mostly looking at bacteria, but we're also looking at yeast or fungi and protozoa, worms and those are a smaller percentage, but those two can get out of control and sugars feed the yeasts and *saccharomyces boulardii* is a form of yeast.

Sean: Got anything else for us?

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Andrea: We were talking about fermented foods and I always like to remember that cultures didn't exist without cultured foods. We are really people that have come from always including cultured foods in our diets so that's even a fun thing to look at your own heritage and think about what cultured foods were part of your particular ancestral diet.

Then we have the polyphenols, which feed the short chain fatty acids in the colon, and then we have resistant starch, which is also getting a lot more play in the news lately in terms of how does the resistant starch feed our colon population again in terms of short chain fatty acids, particularly butyrate. When we think about starches, we're typically talking about carbohydrates, long branches of sugars.

As a culture, we tend to eat more shorter branches of sugars, more simple carbohydrates. These resistant starches are basically resistant to digestion. They pass through the entire digestive system until they get to the colon where particular bacteria, good bacteria, feed off of them and break them down and create byproducts that feed other healthful bacteria and as a result, they start to feed to reparation of the tissue and the mucosa in the colon.

Sean: What kinds of foods are high in resistant starch?

Andrea: There are beans, particularly lentils if people eat them, also grains have a lot of resistant starch, raw oats in particular, but some of us don't eat those foods, so we want to think about other foods. Here's where we might think if you eat potatoes, you might eat potatoes, cook them and then let them be cold, the starches are going to change as they go through those different processes.

Eating a potato salad, I would recommend if doing that, doing it from a more phytonutrient rich potato like a red potato or a purple potato with the skin so you're getting more nutrients in there. I don't even eat those three things so I don't eat legumes, I don't eat grains personally and I don't eat potatoes. I do eat plantains. I love green plantains. You really want them green.

Plantains and bananas, when they're green, have resistant starch. As soon as they start to yellow, they change into those shorter branched carbohydrates or starches. When they're green, they don't

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



peel. You actually have to cut them apart and I make something you can find on our website under the nutrition information called “macho bread” because in certain parts of the states, the plantains are called macho and so we make macho bread that’s really just a scone with psyllium husk and plantain. That’s a nice bread like thing for those of us that don’t eat bread. That contains a lot of these good fuel-feeding constituents to help the bacteria.

Sean: Does it taste good?

Andrea: Yeah.

Sean: I want to back up. I don’t think we mentioned the word prebiotics at all and I know people look at their probiotics and it says with prebiotics. What does that mean?

Andrea: Probiotics are actually feeding the good life, they mean “for life,” and our prebiotics are feeding the probiotics. There are some dietary theories that are not a proponent of prebiotics. I think it’s really individual how it feels to the person so I do well with prebiotics. I try them out very delicately with people because of what they might be feeding, and you want to make sure that it feels good to the person.

It could cause gas and bloating so this is from Jerusalem artichokes, yacon syrup, which is a very low glycemic sweetener that can be used. Those are forms of prebiotics that feed the good bacteria and they actually are very selective. They don’t feed the bad bacteria, but by feeding the good bacteria, sometimes like the probiotics, it might cause a little bit of that war disruption that at first doesn’t feel good.

Sean: Would they be what you call fructooligosaccharides, when you see FOS on there?

Andrea: Yes. Fructooligosaccharide is a prebiotic so if you’re taking something and it doesn’t feel right, often times people are taking a probiotic and they say it doesn’t feel good, it’s the same thing when people try a gluten free, dairy free diet and it didn’t work. It often times is about taking it to the next step or understanding where it works for you.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



If your probiotic isn't working for you, it may not be the right kind for your body, may have constituents in it like fructooligosaccharides, may have fillers in it that don't work for you, so definitely working with somebody or doing their research to figure out what's right for your unique microbiome is important.

Sean: This has been some really great stuff. I've learned a lot here and I'm sure our audience has learned a lot as well. Anything else you want to share with us?

Andrea: It's really interesting as we start to learn more with more of the research about the microbiome and what it means to our health. There's more information coming out about two classes of bacteria that live in our colons and those are the firmicutes and the bacteroidetes.

The firmicutes aren't so cute in the system. When they are in larger population in the colon, they extract more calories from fats from the body and lead to more fat storage, more insulin resistance and cause more problems in the metabolic issues that we see.

Sean: So people can be gaining weight because of the type of bacteria in their gut?

Andrea: Absolutely. Bacteria definitely inform our hormones as well as our immune systems, so definitely the bad bacteria can be informing a whole bunch about how we feel, our health, but also how we look and as a result how we feel. Definitely the firmicutes are feeding how we absorb nutrients from our fat, not necessarily in a positive way. If you look at different cultures, most western cultures have higher populations of the firmicutes as opposed to the bacteroidetes.

It's just important not that there's much we can do about that other than tend to the whole, but what I like to think about is just what a huge role like I said at the beginning, a lot of these bacteria have genetic expression. When we're turning those genes on, they're contributing to that; is it positive or negative and how do we tend to our microbiome as something that could be a mutualistic relationship for us that could be benefitting our health as we benefit their health as well.

Sean: That is really cool stuff. Your website is replenishpdx.com, holisticnutritionlab.com as well. Talk about how you work with clients and also about your course that you offer.

Gut Flora 101: How to Build a Healthy Microbiome

Presenter: Andrea Nakayama



Andrea: Replenishpdx.com is where we offer courses for the general public. It tends to be a very highly educated general public that we speak to and we also have nutrition counseling. I have a team of nutritionists that's highly trained in our way of seeing clients, which is really about the art and the science of functional nutrition, how we do this dance and stay in a dynamic relationship with each and every person that we're working with.

It's a very committed dynamic relationship and that's our pledge through ReplenishPDX. Holisticnutritionlab.com is where I train other holistic professionals around the globe in this art and science so we're going into the physiology understanding its relationship in terms of the nutrition, so where does food meet physiology and how do we really get into that understanding so that they can also learn this art and go out there and feed more people.

Sean: If somebody wanted to become a part of Holistic Nutrition Lab, what's the first step for them?

Andrea: The first intensive, and it's the only standalone intensive before the nine-month training, is the digestive intensive. We need to start with digestion, that's firmly my belief for all health issues so the digestive intensive can be taken at anytime of year and you can learn more about it at holisticnutritionlab.com.

Sean: Thanks so much.

Andrea: Thank you.