Dr. Ron Ehrlich: Hello and welcome to “Unstress”. I'm Dr. Ron Ehrlich. The gut is the second brain. The gut is the site of a great deal of the immune system. We've got more microbes in our body or on our body than human cells. There's a microbiome in the mouth, there's a microbiome in the gut, probiotics, prebiotics, the dangers of antibiotics leaky gut.

Listen, if you've read or heard anything about health, physical or mental then the issue of gut health is front and centre. My guest today is Dr. Robert Rountree. Now, Bob has been providing a unique combination of traditional family medicine, nutritional herbal medicine and mind-body therapy in Boulder, Colorado in the USA. He's been doing that since 1983.

In addition to writing numerous book chapters and magazine articles, he's co-authors of five books on integrative and nutritional medicine and he travels the world teaching doctors. He's on the teaching faculty of the Institute of Functional Medicine which I truly believe is changing the face of healthcare and medicine globally. I met him in Melbourne earlier this year when he was a keynote speaker for the annual conference for the Australasian College of nutritional and environmental medicine - ACNEM, where he really presented some great stuff on gut health. I hope you enjoy this conversation I had with Dr. Bob Rountree.

Welcome to the show Bob.

Dr. Robert Rountree: Hi there.

Dr. Ron Ehrlich: Bob we met in Australia when you were out giving some great lectures for the Australasian College of nutritional and environmental medicine and I wanted to talk to you today about gut but before we did I just wanted to get a little bit of about your own journey because I'm guessing that nutrition wasn't a big part of your initial medical training. How did you come to this point in your life where you are actually teaching the doctors?

Dr. Robert Rountree: Yeah, I think it's an understatement to say nutrition wasn't part of my training. I grew up in the southern United States in Alabama and I basically grew up eating the worst kind of diet you can imagine. Lots of fried foods and pork chops and gravy mashed potatoes that sort of thing. I had no clue what nutrition was all about really until my freshman year in college I went off to Massachusetts and got exposed to a whole different mindset. I actually became a vegetarian for a few years there.

That was kind of my first foray into understanding that there might be something to do with the effect of how you eat on your body. Then somebody gave me a book by Paul Twitchell called “Herbs the magic healers” and it was a really fascinating book that talked about all different kinds of herbal medicines and how they could be used to treat chronic illness, how people had different metabolic types that might respond to different kind of herbs and diets. That really started me on my journey.

That's really why I went to medical school. I read the book and I thought “Well, I don't know what kind of future there would be if I wanted to be a herbalist”. I was 19 at the time and there really just wasn't much in the way of an opportunity for that path. I decided to go more the straight and narrow biology medical school basically just to get a degree. I got into medicine as you said there's hardly any training in nutrition and I was quite appalled at that and I was also really appalled at the sense that whenever I did mention using a herb to treat a condition that it was put down very quickly as some kind of quackery.

I just decided to keep my mouth shut, keep my nose down and not say anything until I got out of training. I learned what I needed to learn there and frankly there was some useful information. I appreciated learning how to tackle the problem from a scientific perspective, learning how to analyse the physiology of a condition and come to some kind of conclusion. I gained an appreciation for the scientific method. I still have that same appreciation for the scientific method. I just was a little appalled at how limited a way that it was being applied. There was no sense of what we call today systems biology and how you might apply systems biology to health. Really what opened my eyes to that was meeting a guy named Jeffrey Bland.

Dr. Ron Ehrlich: Yeah, a legend.

Dr. Robert Rountree: A lot of people probably know Jeffrey. I'm sure you've known his work.

Dr. Ron Ehrlich: Yes. I was exposed to it in the early 80s actually and he still remains a legend.

Dr. Robert Rountree: He's a living legend.

Dr. Ron Ehrlich: He is but goes on tell us how he inspired you.

Dr. Robert Rountree: When I was in medical school I believe I went to a holistic health conference and he lectured there, and it blew my mind and what I appreciated is that he had this immense command of the published literature and understand at that time if you talked about nutrition that generally was the purview of the Home Economics Department. That's what it was called at the time, Home Economics in the schools and the purpose of Home Economics was to teach women how to be good housewives or how to design a nutritional program for a hospital or a prison or a school. It wasn't really in the sense that nutrition was a legitimate science.

What Jeff did is he basically he showed us the way to making nutrition and especially nutritional biochemistry a legitimate science. He said here's the literature, I'm just a scientist reading literature and this literature says zinc is useful for this condition, vitamin b12 is used for that condition.

Jeff is the one that really started putting it all together and really opened my eyes to the possibilities.

Dr. Ron Ehrlich: Yeah, it's always interesting and I'm sure you get annoyed by this too when you here so-called experts say there's no evidence to support a nutritional protocol whereas they really should be saying they haven't read the evidence and there's a very big difference in that, isn't it? Tell our listener a little bit about systems biology because that is an important part of modern health care.

Dr. Robert Rountree: Yeah, systems biology says you can't just look at the old linear models that really came out of the notion that there was a magic bullet for every disease. I think when Pasture discovered penicillin it was quite revolutionary because people are still thinking in terms of the four humours. They had no idea what caused tuberculosis or strep throat or anything like that and when it was finally realised that these things were caused by bacteria and then furthermore that there were these drugs called antibiotics that could treat them that changed the face of medicine. Many people are still stuck in that paradigm that linear paradigm that says “Gee if we can just find the cause of hypertension, odds of diabetes we could treat it with a specific drug with one drug or two drugs or three”. But that's still a very linear model whereas systems biology says “Gee if a person has got diabetes or the precursor to that which we call metabolic syndrome there are many different factors that could play into that”. They've got too much body fat, they've got too much cortisol from too much stress in their lives, they've got environmental toxins, they may have an imbalance of intestinal bacteria and all of those different factors are playing a role in the condition, not just one factor. It's not just the diabetes is a failure of the pancreas. Diabetes is a multifactorial condition.

Dr. Ron Ehrlich: Yeah, yeah. This is really looking at things in a very dare I say holistic way.

Dr. Robert Rountree: Yes, absolutely.

Dr. Ron Ehrlich: Look, you've actually come at it from a very interesting perspective because a lot of people just enrol in medicine and feel that this is the paradigm and study it and go through their entire professional life doing it. But you actually came into it expecting a little bit more perhaps disappointed by what wasn't there. But it was a kick-start so when you were listening to the physiology and biochemistry I think I wish I'd known about nutrition when I was studying biochemistry because then it would have been a fascinating topic.

Dr. Robert Rountree: Yeah, well, the two are one of the same but we were taught that nutrition somehow didn't apply. When I look back at in the early days and the way I was trained there really was no overlap between nutrition and chemistry and that's astounding to me.

Dr. Ron Ehrlich: I know you teach a lot of health practitioners because you were at that conference the keynote speaker and it was fantastic I really enjoyed it but you're also the editor of a journal in complementary and alternative medicine. It's often referred to as CAM. Can you tell our listener what that means?

Dr. Robert Rountree: To be honest I don't love the term alternative but it's what we have, and we've used it for a while. Basically, is a forum for anything that is outside of the mainstream and the idea with alternative medicine as you say "Gee, just because the mainstream doesn't endorse a particular practice that doesn't mean it isn't legitimate". I've already mentioned that in terms of herbal medicine. In some countries like Germany botanical medicine was studied as part of medical school so it's not considered to be alternative but in the United States and I think also Australia, New Zealand that herbal medicine is kind of considered to be a soft science or an alternative science.

We have a journal alternative and complementary therapies that are there to provide a forum for people that have been shut out of the traditional publishing world. That traditional publishing world as I'm sure you will know it is often dominated by Big Pharma.

Dr. Ron Ehrlich: Perhaps a better term that I know is becoming more accepted is functional medicine.

Dr. Robert Rountree: Yes. There's functional medicine and there's integrative medicine they're two slightly different things. In integrative medicine, the idea is if you've got a person with a problem then the main focus is on finding something that will work and being less focused on making sure that you have documented all the evidence behind everything that you're doing. If somebody has got cancer, then you may want to go with a mainstream approach with chemotherapy but maybe they should also get a massage or meditation and prayer and acupuncture. Maybe they're going to do energy healing. The whole idea with integrative medicine is "Let's just pull out all the stops and let's do everything that we can". I think that's great, it's a lot of what I do in my own clinical practice is integrative medicine.

The functional medicine I guess you would say overlapped with that. But functional medicine it came out of work done by Jeffrey Bland that said: "Gee, you can look at the underlying molecular biology and biochemistry of just about any problem and if you can understand what that molecular biology is then it allows you to generate interventions". If you understand the molecular biology of metabolic syndrome, pre-diabetes or diabetes then you can address the condition based on that molecular biology which is a very liberating concept because in mainstream medicine you diagnose somebody with diabetes and you look up in a book what the drugs are or the injectable like insulin therapies that you might use and you follow the guidelines. Medicine is very guideline driven whereas in functional medicine we are less focused on the guidelines and more focused on the underlying biochemical cause, what's happening on a cellular level.

Dr. Ron Ehrlich: Yeah and that understanding tends to overlap in various conditions that a particular person may have and it's easy to go down that linear path and deal with each symptom individually but there are connections. Which brings us to our discussion today about the gut and I heard you say when you were in Australia we think the gut is inside our body but it's not as simple as that.

Dr. Robert Rountree: No, it's not.

Dr. Ron Ehrlich: Go on please explain. I thought that was a great statement, I love that so go on.

Dr. Robert Rountree: The human organism is basically a tube inside of a tube. We have all these surfaces on our body and my friend Michael Ash who you might have heard is a well-known DO from the UK. He talks about the dry surfaces and the wet surfaces of the body. The skin there's a dry surface, the scalp is a dry surface, the membranes lining your nose, your mouth, your throat, your lungs those are wet and the gut surface is wet.

But otherwise, the skin and the gut lining are very similar. They're exposed to the outside world. Your skin is exposed to water, to the air, to microbes in the air, and your gut is exposed to food and microbes and even contaminants that you're swallowing all of the time. But you're still talking about the inner world of the circulation and the organs and the outer world of what's in the gut in the skin.

Dr. Ron Ehrlich: This sounds so obvious but let's talk about it. Why is the gut so important?

Dr. Robert Rountree: Well, it's a huge organ. If you think of the gut is an organ by itself, you've got trillions of bacteria. The estimates vary but the current estimate is somewhere around twenty to thirty trillion bacteria and God knows how many viruses and fungi that are living inside of our bodies all of the time. It turns out that those microbes are having a huge influence on every process in our body. They don't just digest our food. We used to think that that's what they did, they digest our food, and, in that sense, humans are a lot like termites. A termite can chew on wood and digest the cellulose. Well, the termites not digesting the cellulose, the bacteria and in its intestines are digesting the cellulose.

Well, that might seem a little esoteric, but it turns out that certain indigenous peoples that live off a lot of roots and naturally growing grains, they're actually eating foods that have a lot of cellulose in it and because their diet is rich in that cellulose they actually develop the ability to digest it. There can be a huge difference between say an African or Aboriginal person and their ability to ingest certain raw foods and what we think is a normal healthy diet.

The microbes are a big part of what makes the gut such a unique organism. The microbes also influence how we think and how we feel. Microbes can actually make neurotransmitters.

Dr. Ron Ehrlich: Yeah, well, this is the whole expression about the gut as “The second brain” – “I've got this feeling in my gut, I've got a gut feeling”. There's actually good science behind that, isn't there?

Dr. Robert Rountree: Yeah, I'm blanking on the guy’s name that wrote that book “The second brain”, I think it was Michael Gershon. He wrote it a number of years ago and I heard him speak at a functional medicine conference. I was very fascinated by what he had to say. The way he framed it is that when he first started off his career as a neurologist he thought I'll study the gut because it's much simpler than the brain.

Dr. Ron Ehrlich: Yeah, good one.

Dr. Robert Rountree: The microscopy of the brain, the neurologic connections that just way too much. I'll look at the gut, and he started studying the gut and he said “Gee, I found out something really surprising. There are more nerve connections that are going from the gut to the brain than the other way around”.

Dr. Ron Ehrlich: Yeah, that's quite a revelation, isn't it?

Dr. Robert Rountree: When we say “I got this gut feeling” it's not just an intuition, it's the real deal.

Dr. Ron Ehrlich: You mentioned that the neurotransmitters are a big part of what goes on in the gut and they influence our mood, but there's the immune system as well. That's all happening in there.

Dr. Robert Rountree: If you don't have microbes in your gut in the first year of life your immune system will not develop properly. That's what this whole notion of the hygiene hypothesis is about that we are growing up at a time when our intestinal cells and especially the immune cells that line our intestines are not getting exposure to the normal kind of bugs, the normal microbes that have been part of human existence for a millennium.

Dr. Ron Ehrlich: Yeah, have we just become to clean, do you think?

Dr. Robert Rountree: Well, that's the whole idea. It is that we benefit from being exposed to certain microbes that are in the dirt. I mean that's the way humans have evolved for a very long time. Yeah, we're too clean and

the consequence of that is that when we get older our immune system is a little confused when it's exposed to what you might call dangerous strangers or foreign invaders and the immune system can overreact. Not even to just dangerous strangers but just to strangers in general. That's probably what ulcerative colitis is about. The immune system is overreacting to the normal bacteria found in the gut.

Here's an interesting thing, the more courses of antibiotics a child takes the more likely they are to get ulcerative colitis. Why would that be? Well, the antibiotics are killing off the healthy bacteria that maintained peace in the gut.

Dr. Ron Ehrlich: The whole issue of peanut allergies and allergies and kids are going through the roof and I remember when I was a kid, I know we didn't have those kinds of sensitivities. Well, that's part of this problem too, isn't it?

Dr. Robert Rountree: Yeah, the immune system plays a role that we call regulatory. We may already have cells in our system that could potentially react to peanuts, but we have these regulatory cells that will keep those potentially reactive cells under control. What activates the regulatory cells? Healthy bacteria. If you don't have the healthy bacteria you don't get activation of the regulatory cells and that allows the immune system to get out of balance and go haywire. Autoimmune diseases are the same thing.

Dr. Ron Ehrlich: Well, that segues into another definition that I think we could talk about our concept and that is the concept of leaky gut. What does that mean?

Dr. Robert Rountree: When I was in training, when I was in residency some 40 years ago I remember hearing that concept and when I brought it up to my colleagues they said oh that's quackery, there's nothing to it. Now I think if you went to a search engine like Google and you type in “leaky gut” or if you go to the U.S. national library of medicine and type it in you will find tens of thousands of articles written about that so it sounds kind of goofy “leaky gut” but actually that is what's happening on a microscopic level. The intestines were designed to be semipermeable. The intestines are not a solid barrier, instead, the intestines have openings between the cells and those openings are highly regulated by proteins made by cells that line the gut. Those openings are closing and opening all the time depending on the kind of nutrients that you're exposed to.

What happens if those membranes open up full-bore and don't close properly then fragments of food, microscopic fragments or fragments of bacteria can leak and can get into the bloodstream. Well, they're not supposed to be in the bloodstream and our immune system, our circulating immune cells will see those circulating fragments and create an inflammatory reaction.

One of the best documents and examples of that is something called endotoxin. Endotoxin is also called lipopolysaccharide. It's a component of bacteria, not bad bacteria just healthy bacteria that are normally found in the intestines. Well, if fragments of that lipopolysaccharide, the endotoxin get into the bloodstream they activate the immune system. That can go down several pathways that are not desirable. One pathway is it just creates this chronic low-level inflammation that can actually lead to diabetes. Or it can lead to brain fog or it can lead to joint aches. Depending on the person's predisposition that leaky gut is the connection between what they eat or the balance of bacteria in their gut and how they feel.

Dr. Ron Ehrlich: This is going back to this concept of the gut being inside the body. We're exposed to things from the outside - nutrients, bacteria, toxins, that pass through our gut and the gut kind of regulates what gets into our bloodstream, but a leaky gut means more gets into our bloodstream than should.

Dr. Robert Rountree: That's absolutely right.

Dr. Ron Ehrlich: That then triggers these many autoimmune conditions and chronic inflammation. Look, how do we know when we have a gut problem? Because it's not always as obvious as you might think, is it?

Dr. Robert Rountree: The obvious examples are a person that has chronic gas or bloating. A patient I saw yesterday who said “When I eat my tummy just doesn't feel right. It feels uncomfortable”. Or a person could have chronically loose stools, or they can have pain with bowel movements, they can have constipation. Those are the obvious things but as you said some people can either not have those symptoms or maybe they're not aware of those symptoms but what they notice is that they eat a certain food and then say one or two hours later they feel itchy or maybe they get a rash or maybe they get a headache. There's a pretty good amount of data showing that people with migraine headaches can actually be reacting to certain foods.

Whenever I see a patient with migraines, especially with chronic migraines it's one of the first things I ask is “Have you kept the diet diary? Have you really looked at the foods that you eat and to see if there's a group of foods or one particular food that triggers your headache?” That can surprise a person. It is like “I don't think I've got gut problems. This is a pain in my brain, why do you think it's my gut?” Well, why not?

Dr. Ron Ehrlich: Yeah, because I think people get a bit preoccupied with the fact that sensitivity occurs straightaway and that's how we define sensitivity. Like if you break out in a rash or you have a runny nose or whatever you start sneezing. That's an immediate reaction but again it's not always as simple as that it can sometimes take hours or even a day or two.

Dr. Robert Rountree: One or two days.

Dr. Ron Ehrlich: That kind of food sensitivity is something that people don't always focus on but can be profound, can’t it?

Dr. Robert Rountree: It can be really profound and what's important to understand is that there are a lot of different mechanisms that can explain that delayed-type hypersensitivity. We used to just assume that it was an immune system issue, now I think the understanding about leaky gut has wandered into the conversation and instead of immediately thinking “Well, it's the foods that are the culprit, maybe it's the gut lining that's the culprit and if you treat the gut lining if you heal up the gut lining then maybe the person won’t react to the foods as much”.

Dr. Ron Ehrlich: What are some of the common triggers that you see in your daily practice of leaky gut? The term that's a lot more accepted in the medical area is intestinal permeability. Doesn't that sound far more scientific than leaky gut?

Dr. Robert Rountree: Hyperpermeability.

Dr. Ron Ehrlich: Even more impressive.

Dr. Robert Rountree: Hyperpermeability.

Dr. Ron Ehrlich: But what are some common triggers of that?

Dr. Robert Rountree: Well, probably the two biggest ones are alcohol and non-steroidal anti-inflammatory drugs like aspirin, ibuprofen, naproxen. Those are well known well described to cause leaky gut. One of the worst things a person can do is have a little bit too much to drink and then load up on ibuprofen because the alcohol is causing leaky gut and then the ibuprofen is sustaining it.

Here's another scenario - Person has said the early stages of autoimmune arthritis like rheumatoid arthritis and they take high doses of aspirin or ibuprofen. Well, those drugs will actually perpetuate the problem, so they may treat the symptom, but they create a bit of a negative spiral and that the more the person takes the drug the more dependent they get on the drug.

That's sort of the obvious scenario. Do you have a question about that?

Dr. Ron Ehrlich: No, that's just amazing really, isn't it? Because that's almost a perfect business model isn't it?

Dr. Robert Rountree: It's a great business model for a Rheumatologist which I don't want to mock a rheumatologist. I certainly work with them. They know their medications, but they don't understand much about the physiology in my experience. They know how to diagnose rheumatoid arthritis or systemic lupus and then they look up the drugs in a book and give them the treatment and that's the end of the story.

When I have a patient with rheumatoid arthritis and I've started talking to them about the lifestyle factors or dietary factors that might play a role then the rheumatologist tends to say "Well, there's no evidence that's true" and that's simply not the case. There are many published articles showing that the lifestyle factors dietary factors can influence the course of the disease. That brings us to well what foods are common, and I think its ones that people are already familiar with gluten is certainly at the top of the list.

Gluten is not just in bread, it's in many, many processed foods. There's the rub. I have people that say I don't eat a lot of bread so why would you suspect gluten? And then I start telling them you need to look on the label because gluten has been added as a thickener. It is a food additive to many, many different foods so if you're not tracking that very carefully you could be missing out.

There are very good published studies showing that if you put somebody with an autoimmune disease on an elimination diet then often their symptoms will go away. I've seen it in my practice. I put people on very restricted diets. Either a simple water fast or perhaps a rice protein fasts that's designed to be hypoallergenic, have them do that for three days and their joint symptoms go away and they go "Wow, that's impressive something's happening here".

Gluten is one of the top culprits. Ten you also think about dairy products. You think about corn, soy, eggs, food additives in general. I basically just start going down on the list.

Dr. Ron Ehrlich: Because there's an issue - We all get drawn into what is the one, what is the linear answer to our problem, but cross-reactivity is a very common issue, isn't it?

Dr. Robert Rountree: Yeah, I certainly do a food allergy test, blood tests for people with what seems to be a simple gluten sensitivity and you find out that they're reactive to do a whole range of foods that are somewhat like gluten. You never really know until you start looking. There are hundreds of thousands of different antibodies in our bloodstream and so it stands to reason that those antibodies which are little proteins made by our immune cells that are basically heat-seeking missiles that latch on the particular target. Like a food or a microbe and they're supposed to be very specific, but it turns out that those antibodies are not that specific.

Dr. Ron Ehrlich: The other concept though that I love it keeps coming back in so many different areas of the world of life is diversity. When we come down to gut that's a pretty important word too. What is the importance of diversity?

Dr. Robert Rountree: Okay, diversity it's a scientific term from the biology community that basically points to the number of different types of microbes that we have in our gut. It's mostly applied to bacteria because that's where the research has been done but it probably also applies to viruses and fungi as well. The notion is that again with the overuse of antibiotics and the consumption of foods that have chemicals in them that act like antibiotics and probably the best-known one is glyphosate also called roundup which is used with genetically modified crops. It turns out that glyphosate is in a lot of food that people are eating and glyphosate was initially licensed to be used as an antibiotic.

Here's this antibiotic that's in our food and then they also give antibiotics to animals, they put them in animal feed. We're consuming these antibiotics which then kill off our healthy gut bacteria, so we end up with less diversity.

This led to the publication of a book called “Missing microbes” by Dr. Blaser who's a researcher from New York. I can't remember the school that he's a member of now but he's a professor at a major medical school and his whole book is about how we've been killing off the healthy microbes that normally make up our diversity.

An example of the contrast of that was the study that was recently done on an uncontacted Amerindian tribe from the jungles of Venezuela. These anthropologists found this tribe way out in the remote part of the Amazon. They swooped in and collected samples from these people from their skin and their nose and their intestines and then measure them.

I often think about what that must have been like for this tribe. They've never had any contact with the outside world. Suddenly helicopters come down from the sky…

Dr. Ron Ehrlich: And someone's putting a swab up their nose and God knows where else.

Dr. Robert Rountree: And not just their nose.

Dr. Ron Ehrlich: Yeah, we come in peace.

Dr. Robert Rountree: We come in peace, but we'd like to sample your faecal material.

Dr. Ron Ehrlich: Yeah, and what did they find?

Dr. Robert Rountree: They found that these people had phenomenal diversity. In fact, they had certain organisms in their gut that we would consider dangerous. That we would say “Gee, if I found that in one of my patients I would tell them they need to be on antibiotics” and yet when we did physical examinations on these people and they found that they didn't see any evidence of heart disease or autoimmune disease or any of the chronic diseases that affect humankind. That's the idea. We know that the gut microbiome of these ancient people, of Aboriginal people, we know it seems to be richer and more diverse. Is that just an interesting finding or does it really have an impact on health? And it appears to have an impact on health. It appears the more diverse a person's microbiome is the less likely they are to have a number of chronic diseases.

Dr. Ron Ehrlich: Yeah, so that kind of begs the question how do we diagnose gut issues? What're some standard ways of diagnosing that?

Dr. Robert Rountree: Well, you can start with just a simple questionnaire which I always do that with my patients. I make sure I ask gut related questions. In the world of functional medicine, we have what we call the medical symptom questionnaire the MSQ and that's kind of a standardised set of questions that you ask - “Do you have abdominal pain? Do you have more frequent bowel movements than you think? Do you have malodorous gasps? Do you have bloating?” The kind of things that a mainstream doctor probably wouldn't ask unless there was a gastroenterologist or unless the person came in with a specific complaint about the gut. But I would ask that for anybody that came into my office.

I would say the gut symptom questionnaire is a good start. I also do a fair amount of microbiome testing and that testing is based on a new technology that actually measures sequences of DNA that are found in the stool. Using those DNA sequences, the computer can then determine the likelihood of having certain kinds of bacteria or the diversity in their bacteria.

I do find that testing very useful. That's different than how I was trained in the medical school which is a person comes in they've been on a trip to another country and they developed traveller’s diarrhoea and you're looking for a specific microorganism. For doing that we used to do a culture. We perform a particular culture, or you might do that in the mouth. If a person has a dental infection you might do a swab and send off the culture and look for a particular microorganism and then try to treat them with an antibiotic. But with this new DNA technology, it's more that you're not looking for a specific microorganism you're looking for the overall spread of microorganisms. You want to know the different types, the relative abundance, you want to know if there's

enough of the good guys that are there to help prevent problems. This is a pattern we're looking at and this is really where systems biology comes into play.

Dr. Ron Ehrlich: Yeah, and I'm guessing it's reliable because there are some challenges there in terms of anaerobic and aerobic organisms - those that need oxygen and those that don't and culturing those. I know we do a stool analysis in Australia. Is it reliable? You've obviously found it useful otherwise you wouldn't be using it.

Dr. Robert Rountree: Yeah. What I found that was unreliable was the old methodology where you tried to culture things. We could only culture what we could grow and if you've got an anaerobic bacterium that can't tolerate oxygen as soon as it comes out of the intestinal tract it dies.

Dr. Ron Ehrlich: Hence the DNA and the DNA sequencing bypasses that issue.

Dr. Robert Rountree: Yeah, the DNA sequencing I think is reasonably reliable. It's getting better all the time. What people need to understand is that DNA sequencing that's not measuring actual bacteria. That's measuring genetic code and then it's matching that genetic code against a library of known organisms.

Let's get technical here - The biologists say when you're doing the sequencing you're not looking at bacteria you're looking at OTUs and OTUs are operational taxonomic units. They are acknowledging. We can't tell you for sure that we are looking at this particular bacterium, but the sequence is a 90% match and that's different.

Dr. Ron Ehrlich: Yeah, this is going back to establishing whether a gut microbiome is diverse or not which as we've said is important. Tell me what would be a few tips for people listening to this who are thinking “Gee, maybe I actually do have a gut problem?”

Dr. Robert Rountree: The number one thing is just a simple practical idea of keeping a diet diary. I will tell you there's a number of really phenomenal apps that are out there now for this kind of diet diaries that will help people keep track on their phone of symptoms. A typical patient will come in and say, “Yeah I have gas and bloating”. I'll ask “Well, does it happen before or after meals? Does it happen in the morning or middle of the day or the end of the day?” “Well, I don't know”. Why don't you get one of these apps and the app will help you track that?

A really good example of this is a condition called small intestinal bacterial overgrowth or SIBO. Now the small intestine normally has some bacteria in there but for various reasons, there can be an overgrowth of bacteria that will ferment foods in our diet and when those foods are fermented they will produce a lot of gas. This bacterial overgrowth produces gas from certain foods.

There was research done at Monash University which has now become world-famous research looking at a diet called a FODMAP diet which is fermentable carbohydrates that can contribute to this problem.

I've had some pretty good success putting people on diets that eliminate these FODMAPs, but it can be difficult to implement. I'd recommend that my patients get the app put out by Monash University which goes into great detail about which foods are low, medium or high in these particular FODMAPs and help the person make dietary choices.

Dr. Ron Ehrlich: Yeah, it sounds familiar with that app and it's really good one. Do you have a diet diary app that you recommend to your patients?

Dr. Robert Rountree: There are several of them. I think there's one called “My symptoms”. I seem to recall that I was looking at that one the other day, that does a really good job of tracking symptoms for people with irritable bowel syndrome.

Dr. Ron Ehrlich: Okay, so keeping a diet diary, filling out the questionnaire, doing a DNA, sequencing. You've mentioned the elimination diet because that's obviously a big part of rebuilding a gut, isn't it?

I mean people are also looking for quick solutions but in terms of timeframes, what's the sort of range of when you're saying to somebody you've got a gut problem, leaky gut and we need to sort of rebuild the diversity, we really need to rebuild the gut lining, what time frame should people be expecting realistically?

Dr. Robert Rountree: Realistically, I think it takes several months and for people with really bad gut problems it can take a year, sometimes longer. I've certainly seen the whole range. It's always gratifying to me when I make some simple recommendations "Hey, take some probiotics and some l-glutamine" and they call back in two weeks and say "Wow, I'm dramatically better". But I would say for a person with a chronic gut problem that's the exception rather than the rule.

The analogy I use for the gut is it is like a garden. The garden is a very complex ecosystem. If you're going to hit your garden with chemicals to try to wipe out any fungi that are in there you may also wipe out the worms which are beneficial. A better approach to making the garden healthy is to create richer more diverse soil and the same thing is true with your gut. But if you're going to work on a garden, any gardener knows that you can't change those conditions overnight, but it may take a whole season to change those conditions.

Dr. Ron Ehrlich: Yeah, that's a great analogy I love that. Now you just touched on and mentioned that word probiotics and so I wanted to also ask you what would be some tips for people wanting to avoid gut problems?

Dr. Robert Rountree: To avoid gut problems? The number one thing is not too much alcohol and avoid non-steroidal anti-inflammatory drugs except for rare occasions. I certainly have had clients and patients come in saying that they take ibuprofen every day. Well, that's a problem. Avoiding those drugs unless they're absolutely necessary. If a person is at high risk for a stroke, then I may actually recommend that they take a low dose aspirin. That's one exception but then I would also tell them to do some things to keep their gut healthy. That would be number one, is being careful with those drugs. Number two again would be to only use antibiotics when absolutely necessary.

I have patients that come in and say hey I've got a little sinus congestion can't you give me some erythromycin? And I do my best to talk them out of it. For one thing, the data shows that sinus infections don't respond all that well to antibiotics so it's more of a public perception that the antibiotics are necessary.

I try to talk people out of antibiotics whenever possible. I like to use more natural substances whenever possible. Even just having people flush out their nose with salt water can sometimes help resolve a sinus infection. Cutting back on that.

Then number three would be to try to eat as diverse a diet as possible with a lot of fresh fruits and vegetables, lots of salads, hopefully locally grown fruits and vegetables whenever possible, things that haven't been shipped halfway across the planet. It's actually been shown that when you eat a lot of raw fruits and vegetables you pick up bacteria from those foods and those bacteria can hang out in your gut for a while. They don't really implant in your gut, but they will hang out for a while. If you're eating them every day that will contribute to your diversity.

Dr. Ron Ehrlich: Yeah and we hear a lot about prebiotics.

Dr. Robert Rountree: Yeah, foods are prebiotics, especially fibres. I certainly do recommend that people try to include fibres in their diet as much as they can because we tend to eat fairly high processed food, low fibre diet in modern civilisation. The prebiotics are very helpful prebiotics are basically fertiliser for healthy bacteria so that's the whole idea behind them.

Again, you can get that from grains, you can get that from lots of fruits and vegetables, you can get it from root vegetables, it turns out dandelions are very good. Banana flower, it's really a good prebiotic and then one that I mentioned when I was in Melbourne was baobab which I was surprised to find baobab trees in Australia.

Dr. Ron Ehrlich: Spell that for me.

Dr. Robert Rountree: B-A-O-B-A-B. They are funny looking trees, they look like they're upside down trees and their fruits have a very good prebiotic fibre in them. You can buy that online, I've seen it for sale in like one-kilogram bags and you just put a teaspoon in your smoothie in the morning or in a little bit of a drink. For people who feel like they're not getting enough fibre certainly that's a good way to go. Then probiotics are basically healthy bacteria and there's a range of them that they were initially found in fermented milk products like kefir, yogurt and then later a number of them were actually isolated from human stool specimens which sounds gross but they've taken that bacteria out and then grew it in the lab so there's no faecal material left and many of these have been grown successfully in the lab for decades.

I tend to think that probiotics are generally beneficial. They're not like drugs, they just tend to help the garden grow better. It's like adding an additive to your garden so that the soil will be healthier.

Dr. Ron Ehrlich: Okay, that's great Bob, that has given us a lot to think about. I just want to ask you finally because I can't believe we're coming to the end of our conversation but here's a question taking a step back from your role as a doctor and we're all on this health journey in our lives, what do you think the biggest challenges for people on their health journey through life in our modern world?

Dr. Robert Rountree: My Gosh, that's a huge one. I would say I can think about my own life is that maintaining the discipline to get enough exercise and to make sure that I've gotten in some kind of relaxation technique or mindfulness meditation, something like that. Make sure that I take care of myself. I'm a real believer in walking in the woods on a regular basis or walking by the ocean which has the same kind of benefits. One drop of seawater has tens of thousands of viruses in it. When you walk along the sea and the moisture in the air is coming into your face and you're breathing it you're actually improving your microbiome.

A challenge that I see in a lot of my patients is that they get so busy and they get so overworked that they start putting off their outdoor time. They start putting off their exercise, they are putting off their meditation time and at the same time, it's really easy to start eating more processed foods, maybe having a little bit more alcohol to drink and then getting into some bad habits. It seems like it's a hard discipline to want to eat a clean diet and do all these practices that are going to keep you healthy. The biggest challenge I have with patients is to convince them these things are all for their benefit. If they eat a healthier diet they're going to live a lot longer.

Dr. Ron Ehrlich: Yeah, great message to end on. Bob thank you so much for joining us today, I've so enjoyed talking to you.

Dr. Robert Rountree: It's been a great pleasure.

Dr. Ron Ehrlich: Maintaining discipline, isn't that everyone's challenge? The other word that keeps popping up is diversity. The more diverse the microbiome the better, healthier and more resilient you are. Whether it's in the gut or for that matter the mouth it's all part of that tube which connects our insides to the outside world. It's called the digestive tract and that runs from the mouth to the anus.

Our conversations in past episodes on regenerative agriculture with Joel Salatin, Charles Massey and Allan Savory all made that point about healthy soils tube. The more diverse the microbiome of the soils the healthier and more resilient they are.

Diversity equals resilience. Actually, I think that's a great metaphor for our world in general but that's another story.

The other issue is that of food sensitivity. Now from my own experience food sensitivities are so much more than the immediate response of breaking out and a rash or a runny nose when you've eaten something. Many food sensitivities take hours or even days to manifest so you might never associate a food you have just eaten with an inflammatory or hypersensitive reaction. It's definitely worth remembering that and if you have a nagging health issue that won't resolve well, delayed food sensitivities are definitely worth exploring.

Bob mentioned the app “My symptoms” which we will have links to and also that medical symptoms toxicity questionnaire which we will also have a link to and give it a go to, see how you score. We will have links also to the Institute of functional medicine of which he is a faculty member.

Lots of links, lots of things to think about. Until next week, this is Dr. Ron Ehrlich, be well.