Steph: Hello Damo, welcome back to the show.

Damo: Thanks, Steph. Thanks for having me again. It's always a pleasure to be with you.

Steph: Yeah. Thank you for joining us. And a topic today that you and I have eluded to before. We briefly spoke about food preferences from a genetic stand point and it is quite multi-factorial. So I wanted to get you back on the show to talk about this topic in itself. I just kind of wanted to set the scene though in terms of that genetic role. If we look at say, the evolution of humans and how things have changed over the years.

Damo: Yeah for sure. I think over the last eight to six years, I go backwards in that time frame just because of the speed at which information has been traveling. There has been a bit of concern around, and a bit of almost misinformation to suggest that humans haven't evolved. Humans have evolved, we continue to evolve every single day. But there was some conjecture and many people were confused with some of the information that was actually shared at some of the congresses and natural medicine information portals that suggested that humans haven't evolved for some 250,000 years. Now whilst we've maintained very similar biological function, and whilst we maintained the bulk of the way in which a human being exists has remained the same. So for example, and we spoke about this on one of our previous shows, with regards to the nervous system, the sympathetic nervous system. As it was back then is very similar to the way it is today. And so to is digestion. But we have actually evolved in terms of species. Primarily because of our amazing ability to adapt to our environment. And largely that's due to two things. One is the human genome, having the ability to adapt to the environment, I think that's really important to understand, but also, possibly and probably even more significant, the ability of the micro biome genome, or I think they call it the micro genome; I don't actually, what do they call them these days? But the microbiota, the bacteria in and on our body, that DNA has evolved and shifted and changed, and that has allowed us to adapt to our environment as well.

So, it's somewhat accurate that we haven't evolved, but it's also very inaccurate that we haven't evolved because we really have stepped through many phases of evolution and we see that with just simple little things that may have changed. And we can see that with our environments today. Some people get hay fever, some people don't. Some

people have food allergies to shellfish, some people don't. Some people have anaphylaxis to peanuts and some people don't, and so on an so forth. Even to that extent, that is some degree of immune evolution which translates to our own bodies evolutionary state.

Steph: Yeah, it's interesting that you use those examples because we also see a relative increase in prevalence of those issues. Maybe we've got to explore why but before we do, what are your thoughts on the genetic role there and do you believe there's a link as to why some people are more susceptible than others?

Damo: There's no doubt that we pass on various diseases and problems associated with our environment. While sensitivity is associated with the environment, through our genes, there's no doubt, that actually does happen. It has been proven and certainly we see, in various cases or types of cancers, there's a strong genetic correlation or a strong genetic link to those sorts of diseases. That's absolutely the case.

And it's also noticeable too, that where celiac disease exists in a family, it's highly likely that celiac disease will continue to exist in that bloodline as it continues on. And celiac disease is a severe allergy, an intolerance to gluten, which results in chronic malabsorption issues, bone loss, increase in certain types of cancer risks, heart disease, iron level changes, vitamin D issues. So many problems associated with celiac disease. Some people can have the celiac genes and not trigger the celiac disease diagnoses but still have the sensitivity to gluten in food. They might have a non- celiac gluten sensitivity. It's still genetic based but it doesn't ever go into a full blown allergy, which celiac disease is.

Genes have a complicating factor, let's just say that. But genes are a set of instructions that the body can work from, given a particular environment. We have the ability to change our environment, which is a unique thing for the animal kingdom, that we can have so much control over an environment, and humans are very adaptable. We can change our housing, change our sleep, our movement, our food, our thoughts. We can change almost every single factor that's in our life, we can alter, and that alters the way in which our genes are then utilized.

So where we can identify certain gene patterns, or the genome types that we do have or the gene mutations that we might have, we can alter our environment to help our body to respond better to our environment, if that makes sense.

Steph: Absolutely, we always say that genetics load the gun but environment pulls the trigger. And I think celiac disease is a really good example of that, that people can understand because we can see people, essentially born with celiac disease, which means that the environmental trigger was around at a very young age. But you can still get celiac disease in adulthood and that means that your genes haven't changed, obviously, but the environmental trigger occurred later in life. For a lot of people, that's an easy one to understand, because the trigger is clear, it's gluten right? So it's that final piece of bread or that final exposure to gluten that can switch on those genes, but there can also be other causes like stress, that can turn on that genetic predisposition.

Damo: Yeah, for sure, and we see that, particularly with Type 1 diabetes. Stressful event can trigger someone's diabetes, the pancreas will shutdown, they'll no longer produce enough insulin, and of course, that's a really big problem. So there's different things, it could just be a fright, or it might be the loss of a loved one. Those situations can actually trigger a genetic response, and again, that's alteration of our environment. It's important to think that, or to consider that, our environment consists of the things that can be seen and the things that aren't seen.

Yes, food, nutrition, contact with community, involvement, engagement, purpose, all of those are a triggers from our environment. Another things that we don't see. Pollutants, emotions, toxins, all those sorts of things we're not necessarily aware of, can actually affect our genes too. In that regard, we can also develop sensitivities to our environment. I remember developing hay fever, it's just a really simple thing, might just digress here a little bit, Steph.

I had a really stressful time when I was in New Zealand. Great, very, very productive, but very, very stressful at the same time. As a result, when I moved back to Australia, and I had a proper immune response, I was living in Middle Park at the time, and Middle Park is full of plane trees. And so because I started having an immediate immune response, because my stress levels had dropped and I started to rest again, I started to take care of myself, I started to develop hay fever. Anything I came into contact with, in large amounts, I started to develop a sensitivity to. I started to develop a sensitivity to things like passion fruit, kiwi fruit, plane trees, various other things that would normally not have affected me in the past but because of my stress and my then subsequent immune stimulation, I started to get that and so I had to calm that down.

So I triggered some genetic responses of some immune responses within my body, I'm not sure which it was or whether it was one and not the other, but I was able to calm that down by changing my environment. Yes I moved away from the plane trees but I was also able to take and utilize probiotics to down regulate an immediate response, which has shifted me away from having hay fever and plane tree needle sensitivity. I think it's very important, for people who are listening to this, to recognize that you can change your environment, and that will change your outward expression of symptoms and also your outward expression of your genetic potential.

Steph: Absolutely, that would have been a very fascinating, first hand experience for you.

Damo: It was-

Steph: Having lived in Melbourne previously. A lot of people, I find, they seem to experience the onset of hay fever when they're in a new environment. Say they've moved from the tropics, for example. So, you think it was mainly the stress, but obviously, a new exposure to that particular tree as well?

Damo: Yeah, it could've been a whole lot of different stresses. So yes, there was the stress of study, there was the stress of living away from my family, there was stress in flying, stress in setting up a new life back in Melbourne, stress of moving to a different location

for my workplace. There's different stresses, different home environment, so different bacteria loading, there's a whole host of different stressors, so it's not just the emotional stress that I was experiencing. There was, potentially food stressors, celebration; let's be honest here, probably some alcohol stressors. There's things that were stressing my body out that I think is important to recognize, triggered some stuff within my body that I'd even go on to complete repairing as opposed to just letting it fester and become a big problem.

Steph: Yeah, for sure, and I love that you mentioned the use of probiotics as well because if we circle back to what we were discussing earlier, it is the environmental change to the microbiome that can definitely cause either the onset to particular food allergies or maybe it is the external allergy like hay fever. I think in the West, we often look to more conventional treatments, like Zyrtec; I shouldn't probably say a brand but we know that probiotics, we know that particular strains including LGG and lactobacillus casei are really effective to help reduce allergic symptoms. And it does state that it's important looking after your immune system, which we know is largely found in the gut, up to 80-90 percent in fact.

Damo: Absolutely, and it's interesting that those strains of bacteria, are also considered transient but commensal, so they do live in the gut. So, they do live in the gut, but not in incredibly large numbers. But they instruct the villi of the gastrointestinal system to behave in a particular way. So the mucous producing cells in the gastrointestinal system, respond to these bacterial signals that then either down-regulates or up-regulates the immune response. The gastrointestinal system associated lymphoid tissue. So we've got the gut, which is the 80% of our immune system, our lymphatic system, and that's directly linked to the gastrointestinal function that's altered by the bacteria that transiently flow through our gastrointestinal system. And those two strains which you mention, are unbelievably important in altering the way which our body responds. So it's complicated, and we can make it sound way more simple than what it actually is. But essentially, what Steph's saying, and what we are all talking about at the moment is, finding ways to regulate our environment, our internal environment, our microbiome, by taking probiotics, eating pre and probiotic rich foods, using different types of fibres, and introducing resistant starch into our diets. So there's things that we're now learning will assist your microbiome in being very strong, but also understanding that many of the bacteria that we take orally will actually be transient by nature.

Steph: Yeah, which I think is an important conversation, because they do play a really important role, as you say they're commensal. But I think we're not so used to speaking about the different roles that probiotics play, because the really common, the bifidobacteria, the lactobacilli strains are definitely the most popular, and that's from where the research has been up to this point in time. But there are lots of individual strains that have been shown to have quite specific benefits. Which I'd love to be someone's, or part of someone's treatment plan if they are experiencing intolerances or allergies.

Damo: Yeah, 100 percent. But I think, and a great point that you raised there, is the specificity, like strain specificity. You mentioned lactobacillus casei, you also mentioned LGG, and these specific strains. And what we're finding now in our marketplace, and we see this

Steph in health food stores, in different environments in multi-level marketing companies. We're seeing that a non-strain specific, or a copy-cat strain is being sold. And that's where things start to become a little bit confusing for the consumer, because there's synthesized strains of the original strains. What some companies are doing, are getting the original research strains and synthesizing, or almost I suppose you could say genetically modifying these strains of bacteria, to be almost exactly the same as the original strain, but they don't behave in the same way. You might see lactobacillus rhamnosus, but it's not lactobacillus rhamnosus LGG, which is the LGG strain that we were talking about. You might see that, that sold next to each other, and people go, "Oh that's $20, and that one is $50, but it's got the same strain in it." It's not. You got bacteria from the same family in it, but not bacteria with the same members of the family that have a particular function, if that makes sense.

So it's important for people to consider what are they actually buying, and what are they actually putting into their body? Will it actually do anything? There's some strains of bacteria, and we can see this in our microbiome testing, you can look at microbiota testing and they'll talk about the strains of bacteria, so that'll be classified as, say ... let's say it's classified as a bifidobacterium infantis, and then there's a classification number there. That classification number is the type of bacteria that you got in your body. But that could be totally different to what Ian has in his body, and what I have in my body, and what Amber has in her body. We might all have bifidobacterium infantis, but we might have slightly different strains of bifidobacterium. With any defined strains that are similar to it, in terms of it's function as opposed to just putting in there a whole bunch of bifidobacterium infantis that have no known function if that makes sense.

Steph: Yeah.

Damo: It's a tricky one, and I think that We’re at the forefront of change and shift in understanding. So I think it's really important that when people are selecting probiotics, they're selecting ones with specific strains that have been researched, as opposed to ones that have just kind of a best guess scenario.

Steph: Yeah well I agree, and I think inner health plus, it has been probably that product that has made probiotics a lot more familiar to, say, Australian households, but we've gotta really acknowledge that it's quite different, like the genus might be lactobacilli, but that's an acidophilus, and that's the species, right?

Damo: Yes, yes.

Steph: And then we also see it contains, the bifidobacterium, which is the species and it contains lactis, which is the species. And so we speak about these lactobacilli and bifido, and I'm guilty of it. I speak about them, as a whole, but I think that is where things can get a little bit confusing, because it's a species and then it's the strain that really determines the role. So the significance in from a clinical standpoint, and with that comes the specific dose, depending on what we're trying to treat as well.

Damo: 100 percent. Yeah, absolutely Steph, that's a really really good point. If there's any confusion left with that, think about a family of people that all have the same surname. So you got Mac Northeast, Ian Northeast, and Steph Northeast. I'm just using that, 'cause that's easier with three.

Steph: Yeah.

Damo: Mac Northeast does something, Ian Northeast is a chiropractor, and Steph Northeast is one of the world's greatest nutritionists. If you went to Steph Northeast and asked Steph Northeast to be a chiropractor, she wouldn't be able to do it, because her training is a nutritionist. And if you went to Ian Northeast and asked him to be a nutritionist, he probably wouldn't be able to speak; he wouldn't be able to say any words, 'cause he wouldn't know what to do. But he's a really really great chiropractor, one of the world's greatest chiropractors is Ian. And Mac, I don't know what Mac does, but if we asked Mac to do any of those things-

Steph: He's a firey.

Damo: He's a firey, oh there you go. So if we ask Mac to put out a fire, he could do that, but if we asked Steph to put out a fire, she could probably put out the fire, but probably not as good. But we need to be asking our members of the family to do the things that they're trained to do. So if we want to decrease allergies, we don't just go and get lactobacillus whatever, we're getting lactobacillus rhamnosus LGG, because that's what it does. So in other words, we go to Steph for nutrition, we go to Ian for chiro, and we go to Mac to put out fires.

Steph: Love that. That's really really good, and I think a good example just circling back, you mentioned lactobacillus rhamnosus, that's genus and species, but then the strain is the GG and that's what we're looking for in this instance, when we're talking about, obviously hay fever, but it's got so many benefits for normal digestive function, especially beneficial for kids, but I know that the high doses of LGG's also really important for eczema. And we're talking about 20 billion a day, so that's where it needs to get quite specific.

Damo: Well I even use higher doses than that. If I'm treating an allergy, for example hay fever, or cats or whatever else, I'm using unbelievably high doses of LGG to get an immediate response, because in my figuring, and I don't know what is the lowest effective dose in this regard, I haven't actually tried it and maybe there's a study to be done there. So maybe if there's 25 people listening to this podcast, with allergies and hay fever, if you contact Steph and I, maybe we'll put you on a little study to try and do some research with it. But I've been using a really high dose; I've been using 80 billion CFU's three times a day for four weeks, to manage allergies and hay fever and getting an amazing result, like off the scale incredible result. But I don't know if that would work if I just used 20 billion.

The reason why I'm using such a high dose is 'cause I'm really trying to create a shift in the microbiome, we're talking about 70 trillion bacteria in the gut. So we're talking 70

trillion or a 100 trillion bacteria in the gut, but we're only throwing in there 20 billion. It's a long way away from being a really strong and effective loading. So my thought is that we throw in lots over a short period of time and try and bring about a change, and it's been really successful, so I think it's a really good thing. However, I would only ever do that with a practitioner 'cause ...

Steph: Thank you.

Damo: ... we've gotta be able to see if there's any effect, side effect, desired effect. It's not something you wanna risk, and I'm by no means at all suggesting that that would work for you, but I've been using that with some people, with great effect. I've been using other amounts too in other people too. I'm just saying that I'm using really high doses in some people.

Steph: Yeah. Interesting, again, just speaking to the specificity of it. So there is a lot to be considered, as well as obviously looking at the whole person. Looking at what else needs to be addressed, not just probiotic strains, although they do play a very significant role.

Damo: Yeah, absolutely, yeah yeah.

Steph: My intention wasn't to talk about hay fever, but that's been really really fascinating. I wanted to go back to the kinda gluten conversation we were having earlier, just because I think that this is an area I've been involved in for probably nearly a decade now, and I still get the argument that is, "My great grandmother has always been fine with eating wheat," or "I don't feel like I've got a problem with it," "I don't get any digestive symptoms." People get quite defensive, I think maybe 'cause they're quite attached to their bread, which I appreciate, but I think there's a lot to break down there when it comes to things like the genetic tolerance of wheat, but not to mention how different it looks in this day and age, and what else it's exposed to. So over to you.

Damo: It is a really different crop to the way in which it used to be, and Cindy O'Meara talks about this a lot too in her What's with Wheat documentary that she did. If we go back 100 years, we used to grow to about 6 feet high, almost as high as corn, but it was really similar sort of crop in terms of the way in which it would grow. When it was harvested, the grain was really really high, but it took a lot to grow it. It'd take quite a long time to grow a crop of grain. Maybe a whole season. These days, the crops have been hybridized to the extent that we now yield around three times as much wheat per plant. And the plants grow about one-third of the height, so only to about two and a half to three feet high. They grow very, very quick. They yield a lot of wheat and as a result, there's a large amount of gluten. The other thing that has also happened with the hybridization of our wheat is that, much of our crops have now been made what's called round up ready.

Round up ready means that they genetically modified to the extent that they can withstand herbicides such as Glyphosate. That in itself creates a seeding problem. Yes, it's great for the farmer, 'cause the farmer can grow unbelievable crops and get a huge yield. That might be assisting food shortages around the world.

However, you can't do stuff to nature without an implication or without a problem on the other side. The downside to using Glyphosate is that we're knocking off bacteria in the soil and we're knocking off bacteria on the plant and we're knocking off bacteria in the human.

Glyphosate actually causing a significant problem. Cyndi O'Meara describes it as the Glyphosate affecting a particular pathway called the Shikimate Pathway in bacterial transcription and DNA transcription. Then that then becomes the big problem.

My biggest concern is, you know beyond the Shikimate Pathway, is that because we're killing our bacteria that live in the soil, these are the micro organisms that give life to the earth. Without the bacteria in the soil, we don't maintain healthy soils and we don't maintain healthy plants. As a result, we start to rely on other outside factors, external factors to encourage a plant to grow or to yield fruit or whatever it is. I have concern about that.

The other thing to consider too is because the rapid hybridization of the wheat, the protein structure and the quantity of the protein gluten in wheat has changed significantly over time, in a really short space of time. Where the Greeks and Italians and the French and the Spanish might have been using wheat for thousands upon thousands of years in the past. It's changed a lot from what they evolved to be able to handle, compared to where they've evolved to be able to handle the current, modern wheat that we get exposed to today.

There's diseases and conditions and problems associated with the rapid shift in change or hybridization of the proteins that we're getting exposed to now compared to what we we're exposed to in the past.

Some people will be okay with it and other people won't be okay with it. This again highlights the genetic variance that we're all very different. That it's not just one size fits all.

Steph: Yeah. That's so interesting. I think it is definitely more, or it's multi factorial because it's not only the wheat, it's definitely what we're spraying the wheat in the West. I don't feel like that's on most people's radar unfortunately. Definitely got to think about, how long as Round up been around for? Like a drop in the ocean in relation to our evolutionary history. We don't have the ability to even process that toxin. For a lot of people that can manifest in huge issues.

Damo: Yeah.

Steph: But I love what you speak to about the cultural differences as well. Because a lot of people will say and I was talking to Cal about this, when he goes to these tiny regions of Southern France, he's totally fine eating the products over there.

Damo: Yeah.

Steph: And the conversation that we had around that, well it's definitely not the wheat that we're getting in this modern, agricultural Australia. It's coming probably off a farm out the back of the restaurant that he ate from. Again very different end result.

Damo: 100 percent. 100 percent. There's the preparation methods, the storage methods. There's the type of wheat. It is interesting because much of our wheat crops throughout the world are very similar these days. But there could also be variations in the type of yeast that we using.

The yeast that we're using in Australia could be different yeast to what they're using in Europe. The wheat crop could be very different. We might be just looking at one ingredient and not considering other ingredients. Maybe we've shifted to use a different form of Saccharomyces here in Australia that's not really as beneficial for the gut as say the Saccharomyces that they're using over in Europe to get their breads the rise. Maybe it's as simple as that. I don't think it's as simple as that. I think that there's definitely a wheat gluten issue. I think that if we're only looking at one part of the ingredient system, or maybe one part of the environment, what can you see in another big piece of the picture.

Steph: Mm-hmm (affirmative).

Damo: There's probably a lot more to consider there. A lot more to look at. So many more conversations to have. I love, one of my big things that I say, and Monash University has a massive post up in Clayton, that says, Science is best used when it helps you ask better questions.

Steph: Yeah.

Damo: I love that because you and I Steph can easily fall into the trap of being a little bit reductionistic because we go, oh gluten's the bad thing, gluten's really bad. We could because Science has proved that gluten is bad, we could just stop at that. But because both you and I have inquiring minds, I suspect that what it's gonna do for us is help us ask better questions. We go well what else is actually going on? Is it a microbiome thing? Is it another ingredient factor? Is there another environmental issues? Are people stuck in sympathetic dominance? Are there other factors that we can consider that might be issues associated with that or bundled into that?

I think we'll probably find that ten years down the track, we'll probably work out that gluten was certainly part of the problem. Much the same as what we learned with soy. We used to think that soy was unbelievable. Then we thought soy was really bad. Now we actually understand that soy as actually some solutions in some environments, but it depends also too on how we treat the soy. If it's just soy beans in the form of edamame, it's very different to soy milk, every single day in your latte. It's quite a different experience.

There's lots of questions to be had there and I think keeping in mind genetic differences with each of our individual beings. I think it's important, but also maybe trying to get

some kind of clarity around where do we come from? How have we evolved? Have we evolved to be able to handle eating some wheat? Or have we evolved, or have we not evolved to be able to handle not eating any wheat at all? Have we evolved to be able to eat coconut fruit or have we had no evolutionary exposure to coconut fruit? We can look at that through blood typing, that's one way of considering the way in which we might have actually evolved.

Steph: Yeah, that is really interesting. I think definitely you can start with looking sort of from a more cultural standpoint. Like if you do have more of a European descendancy than that might help explain why you tolerate some foods over, say your friends or colleagues. How would you use the blood type to further specify that?

Damo: What's interesting about the blood type and Peter D'Adamo did all this work with his dad actually. His dad did the bulk of the work and then Peter kind of developed it a little bit. What's interesting is that they looked at genetic variations and food, I suppose patterns through the evolution of different blood types.

They mapped where the O type blood came from, the A type blood came from, AB and the B type blood came from. They looked at the ways or the food's that these people had been exposed to. Then what they did they got a panel of foods and they exposed people to these panels of food based on their blood type. Then they measured the lectin response to the foods. They were able to chemically induced an allergic or sensitivity response to foods, classified according to blood types and then were able to determine what blood types are more sensitive to certain types of foods. They drew from that very loose Science, but they drew from that an assumption that there was a panel of foods that were beneficial, a panel of foods that were neutral and a panel of foods that were detrimental to a particular blood type based on that research or that Science.

That research and that Science unfortunately didn't go very far. However I've been using that approach to lifestyle and diet selection for 20 odd years and for the most part it's a really good place to start. It's not the answer, it's not the be and end all. It's just, it helps to narrow down the most appropriate diet for an individual. It doesn't actually provide the most appropriate diet for an individual, but it helps to narrow down what's the most appropriate diet for people. I think the reason it does that is because it acknowledges evolution. It acknowledges ancestry. As we move into a phase away from Paleo, we move into a phase away from, potentially away from Veganism. Moving toward a phase of diet which is probably more ancestral. I think we're gonna find that and understand, a greater understanding of how we've evolved, whether it be with our microbiome or with our own genetics. I think that's gonna direct us in the way in which we eat in the future.

Steph: Yeah, awesome. I look forward to learning more about that. It was really interesting to explore this topic with you. Thank you Damo, I think a lot of take homes. Food for thought, like you said. Just to get the ball rolling and to encourage people to do more research or to ask better questions.

Damo: Yeah, yeah, absolutely. Thank you Steph. Loved having this chat. There's such great chats to have and seriously they get me thinking a lot.

Steph: Yeah.

Damo: I hope it gets your listeners thinking a lot as well because I now have to go and rethink some of the chapters I'm writing in my book when I say things like that.

Steph: Oh wow.

Damo: It's interesting.

Steph: Yeah. Would be the never ending project so you might need to put some parameters around that.

Damo: I know. I know right. Oh dear, far out. Great chat, thanks so much Steph.

Steph: Awesome to have you on the show, we'll speak to you again soon.

Damo: Okay.